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SANITARY SCHOOLHOUSES

LEGAL REQUIREMENTS IN INDIANA AND OHIO

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, November 1, 1913.

SIR: Scores of millions of dollars are spent annually in the United States for new school buildings. With this large expenditure has come a general desire that schoolhouses shall be usable, healthful, comfortable, and beautiful. Educators and architects have united in devising plans for school buildings. This bureau has published a valuable bulletin on *American School Architecture* and has two more in an advanced stage of preparation. Its specialist in school hygiene and sanitation, Dr. Frederick B. Dresslar, devotes much of his time in advising school officials about school buildings. But it becomes ever more evident that there can be no certainty that all or most schoolhouses in any State will be properly constructed in the absence of adequate building laws, and school officials and legislators everywhere are seeking information as to the best forms of such laws. Of course these must vary from section to section. The building best suited to one climate, environment, or kind of school may not be best for another climate, environment, or kind of school; yet certain general principles, and certain methods of applying them, must be common to all sections, all environments, and all types of schools. A building code carefully worked out for one State can not fail to contain much of value for all States. For this reason I recommend that the sanitary schoolhouse law of Indiana, the rules and regulations of the Indiana State Board of Health governing the construction and sanitation of school buildings and school sites, and the building code of the State of Ohio, brought together in the accompanying manuscript, be published as a bulletin of the Bureau of Education. They seem to be as nearly typical of the best as any in this country.

Respectfully submitted.

P. P. CLAXTON,
Commissioner.

To the SECRETARY OF THE INTERIOR.

SANITARY SCHOOLHOUSES.

THE INDIANA "SANITARY SCHOOLHOUSE LAW."

AN ACT To protect the health and lives of school children, and increase their efficiency, by providing healthful schoolhouses, and requiring the teaching of hygiene. (Approved March 1, 1911; amended by an act approved March 14, 1913.)

SCHOOLS—SANITARY BUILDINGS.

SECTION 1. *Be it enacted by the General Assembly of the State of Indiana*, That after the going into effect of this act all schoolhouses which shall be constructed or remodeled shall be constructed in accordance and conform to the following sanitary principles, to wit:

(a) **Sites.**—All sites shall be dry, and such drainage as may be necessary to secure and maintain dry grounds and dry buildings shall be selected and supplied. Said site and said buildings shall not be nearer than 500 feet to steam railroads, livery stables, horse, mule, or cattle barn used for breeding purposes, or any noise-making industry, or any unhealthful conditions. And when such school building or school site is so located and established, no livery stable, horse, mule, or cattle barn used for breeding purposes, or any noise-making industry, or any unhealthful conditions shall thereafter be constructed, erected, or maintained within 500 feet of any school building, school site, or school grounds. Good dry walks shall lead from the street or road to every schoolhouse, and to all outhouses, and suitable playgrounds shall be provided.

(b) **Buildings.**—School buildings, if of brick, shall have a stone foundation, or the foundation may be of brick or concrete: *Provided*, a layer of slate, stone, or other impervious material be interposed above the ground line, or the foundation may be of vitrified brick and the layer of impervious material will not be required. Every two-story schoolhouse shall have a dry, well-lighted basement under the entire building, said basement to have cement or concrete floor, and ceiling to be not less than 10 feet above the floor level. The ground floor of all schoolhouses shall be raised at least 3 feet above the ground level and have, when possible, dry well-lighted basement under the entire building, and shall have solid foundation of brick, tile, stone, or concrete, and the area between the ground and the floor shall be thoroughly ventilated. Each pupil shall be provided with not less than 225 cubic feet of space, and the interior walls and the ceiling shall be either painted or tinted some neutral color, as gray, slate, buff, or green.

(c) **Lighting and seating.**—All schoolrooms where pupils are seated for study shall be lighted from one side only, and the glass area shall be not less than one-sixth of the floor area, and the windows shall extend from not less than 4 feet

from the floor to at least 1 foot from the ceiling, all windows to be provided with roller or adjustable shades of neutral color, as blue, gray, slate, buff, or green. Desks and desk seats shall preferably be adjustable and at least 20 per cent of all desks and desk seats in each room shall be adjustable and shall be so placed that the light shall fall over the left shoulders of the pupils. For left-handed pupils desks and seats may be placed so as to permit the light to fall over the right shoulder.

(d) **Blackboards and cloakrooms.**—Blackboards shall be preferably of slate, but of whatever material, the color shall be dead black. Cloakrooms, well lighted, warmed, and ventilated, or sanitary lockers, shall be provided for each study schoolroom.

(e) **Water supply and drinking arrangements.**—All schoolhouses shall be supplied with pure drinking water, and the water supply shall be from driven wells or other sources approved by the health authorities. Only smooth, stout glass or enameled metal drinking cups shall be used; water buckets and tin drinking cups shall be unlawful and are forbidden; and, whenever it is practicable, flowing sanitary drinking fountains which do not require drinking cups shall be provided. All schoolhouse wells and pumps shall be supplied with troughs or drains to take away waste water, and under no conditions shall pools or sodden places or small or large mudholes be allowed to exist near a well. When water is not supplied at pumps or from water faucets or sanitary drinking fountains then covered tanks or coolers supplied with spring or self-closing faucets shall be provided.

(f) **Heating and ventilation.**—All schoolhouses hereafter constructed or remodeled, shall be supplied with heating and ventilating systems. Fresh air shall be taken from outside the building and properly diffused without drafts through each schoolroom during school session. Each schoolroom shall be supplied with foul-air flues of ample size to withdraw the foul air therefrom at a minimum rate of 1,800 cubic feet per hour for each 225 cubic feet of said schoolroom space, regardless of outside atmospheric conditions; and heaters of all kinds shall be capable of maintaining a temperature of 70° Fahrenheit in all schoolrooms, halls, office rooms, laboratories, and manual training rooms, in all kinds of weather, and maintaining in each schoolroom a relative humidity of not less than 40 per cent: *Provided*, That when artificial ventilation, by use of fan or blower, is adopted, the provision as to entrance of fresh air shall be from outside of the building.

It is hereby made lawful for any township trustee, board of school trustees, and boards of school commissioners to establish and maintain open-air schools, and when such open-air schools are established the provisions of this act governing heating and ventilation shall not apply to such open-air schoolrooms.

(g) **Water-closets and outhouses.**—Water-closets, or dry closets when provided, shall be efficient and sanitary in every particular and furnished with stalls for each hopper or place; and when said water or dry closets are not provided, then sanitary outhouses, well separated for the sexes, shall be provided. Good dry walks shall lead to all outhouses, and screens or shields be built in front of them. Outhouses for males shall have urinals arranged with stalls and with conduits of galvanized iron, vitrified drainpipe, or other impervious material, draining into a sewer vault or other suitable place approved by the health authorities. Any agent, person, firm, or corporation, selling, trading, or giving to any township trustee, school trustee, or board of school commissioners, any materials, supplies, sanitary apparatus, or systems, which when constructed or remodeled or installed, in or for any schoolhouse, hereafter constructed or remodeled, which does not in all respects comply with the provisions of this act, shall be guilty of a misdemeanor, and upon conviction thereof shall

be fined in any sum not more than $500, to which may be added imprisonment in the county jail for any determinate period not more than six months, and shall be punished by a further fine of not less than $5 for each day he shall fail to comply with any order of any court having jurisdiction for the correction of any such defects in such schoolhouses hereafter constructed or remodeled; and any money claim for the construction or remodeling, or for any materials, supplies, sanitary apparatus or systems furnished or constructed in or for any schoolhouse hereafter constructed or remodeled, which does not in every way and in all respects comply with the requirements of this act, shall be null and void.

SEC. 2. **Temperature—Uncleanliness—Teachers—Penalties.**—Whenever, from any cause, the temperature of a schoolroom falls to 60° Fahrenheit or below, without the immediate prospect of the proper temperature, namely, not less than 70° Fahrenheit, being attained, the teacher shall dismiss the school until the fault is corrected; and it shall also be the duty of all teachers to immediately send home any pupil who is perceptibly ill in any way or who is unclean and emits offensive bodily odors or who is infested with lice or other vermin; and the truant officer shall arrest and prosecute parents or guardians who do not rid their children of vermin and bodily uncleanliness, when notified to do so. Refusal of parents or guardians to free their children or wards of vermin or to bathe and cleanse them, making them fit to go to school, shall be punished by a fine of not less than $5, or imprisonment for 10 days, or both. And if the refusal or neglect of parents or guardians to bathe and cleanse their children or wards makes it necessary, then the truant officer, upon order of the school authorities, shall have it done, the cost to be paid by the school authorities from the school funds. Whenever diphtheria, scarlet fever, or other contagious and infectious diseases break out in any school it shall be the duty of the township trustee, school board, school trustee, or the school authority or authorities having control to have medical inspection made of the pupils, and all found in any degree ill shall be sent home and there retained until the local health officer gives a certificate of health; then such child may be again admitted to school. It shall be unlawful for school authorities to employ teachers or janitors who are not able-bodied or who are addicted to drugs or intemperate or who have tuberculosis or syphilis. All schoolhouses shall be specially cleaned and disinfected each year, before they are used for school purposes. The cleaning shall consist in first sweeping, then scrubbing the floors, washing the windows and all woodwork, including the wooden parts of seats and desks, and the disinfecting shall be done in accordance with the rules of the State board of health. Township trustees, school boards, and boards of school commissioners who neglect or refuse to obey the provisions of this section shall be fined in any sum of not less than $10 nor more than $100, and each said refusal or neglect shall constitute a separate offense.

SEC. 3. **Hygiene and sanitary science—Printed data.**—There shall be taught in each year in the fifth grade of every public school in Indiana the primary principles of hygiene and sanitary science, and especially shall instruction be imparted concerning the principal modes by which each of the dangerous, communicable diseases are spread, and the best sanitary methods for the restriction and prevention of each such disease. Hygiene may also be taught in other grades at the will of school authorities. The State health commissioner and the State superintendent of public instruction shall jointly write, compile, or originate printed data in leaflet form setting forth as plainly as possible the primary principles of hygiene and sanitary science, and information concerning the prevention of diseases, and supply the same to all county

superintendents, and said superintendents shall supply all the schools in their respective counties and see to it that teachers do not fail to comply with this section: *Provided*, That for all cities and towns having school superintendents the said leaflets and pamphlets shall be sent direct to such superintendents, who shall see to it that teachers comply with this section. The State printing board shall publish from its funds all health leaflets or pamphlets as are herein provided for and shall also pay the cost of distribution of the same to the county, city, or town superintendents from the State printing funds.

SEC. 4. **School officers—Powers.**—For the purpose of enforcing this act and making it practical, township trustees, boards of school trustees, and boards of school commissioners shall have the power, and it is herewith made lawful for said trustees and said boards, to make a levy not to exceed 5 cents on each $100, the sum thus raised to be added to the special school fund, but to be used only for building and furnishing of schoolhouses. This levy shall not be made unless plainly necessary.

SEC. 5. **Penalty as to officers.**—Any township trustee or the members of any board of school trustees, or any teacher or any person who violates any provision of this act, except as herewith or otherwise provided, shall upon conviction be fined not less than $50.

SEC. 6. **Repeal.**—All laws in conflict with this act are repealed.

RULES AND REGULATIONS OF INDIANA STATE BOARD OF HEALTH GOVERNING CONSTRUCTION AND SANITATION OF SCHOOL BUILDINGS AND SCHOOL SITES.[1]

Site and Grounds.

1. All schoolhouse sites shall be convenient of approach, either from a public road or street. A slight elevation is preferable, but if the site must necessarily be low, or even level, surface drainage and subsoil drainage shall be provided to insure proper playgrounds and freedom from dampness. The site shall not be nearer than 500 feet to any of the following conditions, to wit: Swampy ground, body of stagnant water, cemetery, slaughterhouse, fertilizer reduction plant, any business or manufacturing establishment which engenders noxious odors or vapors or that pollutes the surrounding atmosphere by smoke or dust, or any place of industry where undue noises prevail. No school site shall have an area less than 1 acre, and wherever possible shall have an area of 2 acres or more. The school playground shall have an area of at least 30 square feet for each pupil. The playground shall be well drained, well graveled, free from depressions in which water can stand, and shall be equipped with such apparatus as will encourage and afford wholesome exercise and recreation. For the purpose of inculcating a love of the beautiful and imparting practical knowledge concerning the growth and care of vegetation, that part of all school grounds not occupied by buildings shall be laid out according to an approved plan in lawn and garden, with shrubs and shade trees.

The School Building.

2. No school building shall be constructed more than two stories above the basement. The doors of all school buildings shall open outward, and where double doors or storm houses are provided, the outer doors shall be devoid of fastenings, but shall be held in place by spring hinges. All entrance and exit doors shall be unlocked at all times when school is in session. No classroom

[1] By court decision these regulations have the force of law.

shall exceed 24 feet in width, with the ceiling not less than 12 feet nor more than 14 feet in height. Main corridors shall not be less than 11 feet in width, and in buildings of more than eight rooms not less than 13 feet in width.

The floors of all toilet rooms, all basement rooms not used for class purposes, and all inclosures for plumbing fixtures and steam fittings within the building shall be of nonabsorbent waterproof material, with nonabsorbent waterproof base not less than 6 inches high and nonabsorbent waterproof sanitary cove. Wherever possible, the floors of laboratories, domestic-science rooms, and corridors shall be of nonabsorbent waterproof material with nonabsorbent waterproof base not less than 6 inches high and nonabsorbent waterproof sanitary cove. Mattings or other floor coverings shall not be used in any part of the school building, except in superintendent's or principal's office, rest rooms, and teachers' rooms.

Whenever possible, window and door jambs shall be rounded and plastered. All interior wood finish shall be as small as possible and free from unnecessary dust catchers.

Lighting.

3. No window sash shall have more than four lights, and the tops of all windows shall be square. Whenever the proximity of other buildings or a portion of the same building interferes with the proper lighting of a classroom, the light shall be properly projected and diffused by the use of prism glass. When artificial lighting by means of electricity or gas is used, the lights shall be placed near the ceiling and the lights deflected by proper shades toward the ceiling, either indirect or semidirect lighting being used. Where the light in any schoolroom is from the north, the proportion of glass area to floor area should be not less than 1 to 5.

Heating and Ventilation.

4. Heating and ventilating systems of all kinds shall take fresh air from outside the school building, evenly diffuse the same throughout each schoolroom during school session, and withdraw foul air from said schoolroom at a minimum rate of 1,800 cubic feet per hour for each 225 cubic feet of said schoolroom space, regardless of outside atmospheric conditions. The State board of health will test the efficiency of ventilating systems in school buildings as follows: With jacketed heaters and gravity systems, the anemometer test shall be made over the foul-air vents in the classrooms. With plenum systems, the anemometer test shall be made over the fresh-air inlet of the fresh-air room and the fresh-air inlet in classrooms. With a double system of mechanical ventilation, the anemometer test shall be made at the fresh-air intake and at the foul-air vents in classrooms. In every test five readings shall be taken, one near each corner and one at the center of the air opening to be tested. A deduction of 5 per cent shall be made for a grill in the air opening. All tests shall be based upon the seating capacity of classrooms at 225 cubic feet of space per pupil. Before such test shall be made by the State board of health, the heating contractor shall be given notice of the time when such test is to be made. The State board of health will make such tests upon the written request of trustees, school boards, boards of school commissioners, county, city, or State superintendents, or upon petition of ten or more patrons of the school.

Stoves and Heaters.

In small buildings, where furnace or steam heat with fresh air from outside the building is impracticable, stoves or floor furnaces of suitable size and con-

struction, surrounded by heat-proof metal jacket with open top, with fresh-air intake from outside the building and foul-air flue, shall be installed. The heater shall be of sufficient capacity to uniformly heat the room to 70° Fahrenheit in zero weather.

Jacket.

The jacket shall be made of heavy galvanized iron, black iron, or other material equally durable, and shall be lined with sheet asbestos. There shall be an inner jacket of tin or other metal equally efficient, with air space of not less than 3/4 inch between the jackets. The jacket shall stand not less than 3 inches from the stove or floor furnace, and shall extend to tray, floor shield, or other foundation upon which the heater rests. The lower 12 inches of the jacket may have sliding doors or hinged doors opening on the inside, in order to permit of recirculation of air when such recirculation may be necessary in order to heat the room more quickly. Such doors shall be closed at all times when school is in actual session, but may be opened in the morning before school or at intermissions if necessary to properly heat the room.

The fresh-air duct shall be provided with damper with operating device in plain view and easily accessible from inside the room.

Dimension of Flues, Fresh-Air Flues, and Vent Pipes.

Following is a table giving the sizes of flue, fresh-air duct, and vent pipe to be used in a system having the same flue for smoke and foul air:

TABLE I.

	Cubic feet in room.		
	8,000 or less.	8,000 to 12,000.	12,000 to 16,000.
Cross-sectional area of chimney not less than .....square inches..	144	256	400
Diameter of vent pipe not less than.....inches..	12	16	20
Free area of foul-air vent not less than.....square inches..	144	256	400
Cross-sectional area of fresh-air intake not less than.....do....	144	256	400

Following are the dimension of flues, foul-air vents, and fresh-air intakes to be used in connection with a system having separate flues for smoke and foul air:

TABLE II.

	Cubic feet in room.		
	8,000 or less.	8,000 to 12,000.	12,000 to 16,000.
	Sq. in.	*Sq. in.*	*Sq. in.*
Cross-sectional area of smoke flue not less than.....	64	96	144
Cross-sectional area of vent flue not less than.....	189	525	651
Free area of foul-air vent not less than.....	189	525	651
Cross-sectional area of fresh-air intake not less than.....	144	256	400

Where an old building contains a vent flue larger than that required for new buildings, the vent opening shall be reduced to the minimum area required for new buildings.

Smoke Pipe.

No smoke-pipe connection between the heater and the smoke flue shall be more than 5 feet long, measuring horizontally.

No metal, tile, or other smoke pipe shall extend through the walls, ceiling, or roof in any manner, except as prescribed in these rules.

Chimney and Ventilating Flue.

Each room in which a heater is installed shall be provided with a masonry stack with single flue for smoke and foul air, or with separate flues for the same. Double-flue chimneys shall not be used unless the same are entirely within the building, with no wall exposed to the outside. Double-flue chimneys shall be built of masonry with one compartment for smoke and one for ventilation, with the dividing wall not more than 4 inches thick, and with the inside of all walls plumb true and finished to a smooth finish.

In lieu of a dividing wall a metal stack of not less than 16 inches gauge, noncorroding metal, or stack of glazed tile of not less than 1 inch thickness, may be constructed within the masonry chimney. Such stack may be used for smoke, shall rest on the foundation of the chimney for support, shall be held in place by metal side braces, and the smoke shall enter such stack at the usual smoke-pipe height.

Where the same flue is used for both smoke and foul air, a suitable drum or mixing chamber shall be used for bringing the smoke and foul air together, in order to insure proper draft in both foul-air flue, or pipe, and in smoke pipe. In no case shall the free area through the mixing chamber or in the space surrounding the smoke pipe in the drum be less than the cross-sectional area of the flue. The foul air may be taken out through a metal pipe extending from within 6 inches of the floor and connected with the smoke pipe through the drum before entering the flue, or may be taken directly through a register or registers in the base of the flue. The bottom of register faces shall be at the floor level, and the free area of register, after deducting 5 per cent for grill, shall equal the cross-sectional area of the flue. Where the chimney projects into the room, registers may be placed on two sides in order to reduce the height of the registers. Clean-outs, accessible from the room, shall be provided for all flues and drums. A suitable damper with operating device in plain view and easily accessible from the room shall be provided so that vent flues can be shut off when not in use.

Location of Chimneys and Heaters.

Wherever possible the heater and chimney shall be located at the same end of the room as the entrance door.

In buildings of more than one room, when the same flue is used for both smoke and foul air, each room shall be provided with a separate chimney. When separate compartments for smoke and foul air are used, each room shall be provided with separate vent flue, but the same smoke flue may be used to accommodate not more than two rooms, and such flue shall have a cross-sectional area of not less than 144 square inches.

All flues shall start upon substantial foundation at the ground, and shall extend to at least 4 feet above the highest point of the roof of the building. Flues shall be built the same size the entire height, and all walls shall be plumb and true.

The outside walls of all chimneys shall be not less than 8 inches thick.

Systems Permissible in Portable Buildings, or in Old Buildings about to be Abandoned.

A system with a metal smoke pipe placed within a metal vent flue extending through the roof may be permitted in portable buildings, and in old one-story buildings, when said old building is to be used for a period of not more than two years after such system is installed. The smoke pipe used in such system shall be of extra heavy material; the elbow inside the vent flue shall be of cast iron; the smoke pipe shall be supported from the vent flue by steel supports placed at intervals of not more than 3 feet; the vent flue shall be provided with an asbestos lined collar, with at least 1 inch air space between the collar and vent flue where the same passes through the roof, and shall be properly flashed and made watertight. Complete plans and specifications covering such system shall be submitted to and approved by the State board of health before the same is installed.

Plenum and Gravity Systems of Ventilation.

Where plenum systems of ventilation are used, the warm air flues shall have a cross-sectional area of not less than 9 square inches for each occupant of the room. The vent flues shall have a cross-sectional area of not less than 10 square inches for each occupant of the room.

Where gravity systems of ventilation are used, the warm air flues shall have a cross-sectional area of not less than 16 square inches for each occupant of the room. The vent flues shall have a cross-sectional area of not less than 14 square inches for each occupant of the room.

Location of Flues.

In all school buildings of more than one room the warm-air flues and vent flues shall be on or in the inside walls of the building, and the warm-air inlets and foul-air vents shall be on the same side of the room. Warm-air inlets shall be located not less than 5 feet from the floor. Wire screens of 8-inch gauge wire with 1½-inch mesh shall be used to cover the warm-air inlets, except in rooms of such size and shape as to require the air to be deflected, in which case diffusers may be used. Foul-air vents shall be at the floor level, shall have a cross-sectional area not less than the cross-sectional area of the flue, and shall be clear of all obstruction. Grills or registers shall not be used in foul-air vents, except with stoves and heaters, but a sliding damper of wood to match the finish of the room, or chain damper similar to the cut shown, shall be used to close the vent when not in use. The floor and baseboard shall be carried into the bottom of vent flue, and that part of the flue exposed to view shall be plastered and finished the same as the walls of the room.

All foul-air, smoke, and closet ventilating flues shall extend not less than 4 feet above the highest point of the roof, so that the vitiated air shall be discharged above the roof of the building.

No vitiated air shall be reheated except as provided under jacketed heaters and floor furnaces, or except where an air-washing system has been installed and such system of rewashing and reheating air has been approved by the State board of health.

So-called foot warmers, if used, shall be placed in the walls of the main corridors at the floor level. No warm-air register or pedestal register shall be placed in the floor in any school building.

In gravity or plenum systems of ventilation, except where wall openings directly into schoolrooms are used, the air supply shall be taken from outside

of the building through a window or windows into a room in the basement especially constructed for this purpose with tight-fitting door, impervious and smooth walls, floor, and ceiling, known as the fresh-air room. The window or windows in the outer wall shall have a free area not less than the combined free area of all the warm-air supply ducts. This fresh-air room shall be kept clean and free from obstruction at all times. In no case shall basement air be permitted to enter the air supply.

In gravity systems where wall openings directly into the room are used, the combined cross-sectional area of fresh-air intakes shall be not less than the cross-sectional area of foul-air flue. Such fresh-air intakes shall be free of all obstruction and shall be provided with a damper with an operating device in plain view and easily accessible from inside the room. This damper shall be kept open at all times when school is in session. The outside openings of such fresh-air intakes shall be covered with substantial wire screen of not more than ½-inch mesh and shall be provided with a suitable hood or elbow to protect from rain or snow.

No fresh-air opening or foul-air vent in connection with any system of ventilation shall be closed at any time when school is in session.

Cloakrooms and Wardrobes.

Where cloakrooms or wardrobes are not separated from classrooms or are separated only by skeleton doors, they shall be considered as part of the classroom, and the foul-air vent shall be placed in the cloakroom or wardrobes. Where cloakrooms or wardrobes are separated from classrooms they shall be separately heated and ventilated the same as classrooms. Where suitable cloakrooms can not be provided, sanitary steel lockers may be placed in the corridors, provided that such lockers will not in any way become an obstruction to the free passageway of the corridor.

Gas plates and gas stoves used in domestic science or laboratory work shall be provided with suitable ventilating hoods connected with a vertical vent flue. This flue shall be separate from any other vent flue, and the updraft in such flue shall be positive at all times.

When practicable, temperature regulation should be used.

Whatever system of ventilation is used, the windows in all schoolrooms shall be opened whenever practicable at recess periods and before the opening of the afternoon school session in order to thoroughly change the air of the rooms.

In every stairway leading from the first floor to the basement there shall be a swinging door with spring hinges to prevent basement air from entering the classrooms and corridors above, except where basement rooms are finished, have close-fitting doors, and are properly warmed and ventilated.

Water Supply.

Open or dug wells or springs shall not be used. No well shall be within 100 feet of any privy, cesspool, or other known possible source of contamination. The water supply of every school shall be tested by the State board of health from sample submitted by the school trustee, school board, or the local health officer, whenever in the opinion of the local health officer such test shall be necessary or whenever the State board of health shall require such test.

Drinking Fountains.

Where pressure water supply is available, sanitary drinking fountains shall be installed. Such drinking fountains shall be of the bubbling-stream type and

shall have vitreous china cup with two or more portholes, so the user must drink from the bubbling stream. The construction of the sanitary head shall be such that when the finger is placed over the nozzle the water passes to the waste through the ports provided for that purpose.

Lavatories.

Every schoolhouse shall be provided with substantial enameled iron sinks or washbasins, soap, and sanitary paper towels. Common or roller towels shall not be used. Lavatories shall be of cast iron porcelain enameled or vitreous china. Where wall-trap lavatory with back is used, it must be all in one piece. All traps shall be cast brass, with cleanout and ground joints on sewer side of fixture.

In all school buildings where a sewer outlet is practicable, the toilet room, washroom, boiler and furnace room shall be provided with floor drains connected with such sewer outlet. These floor drains shall be conveniently located with the floor, sloping to the drain from all parts of the room. Whenever domestic-science rooms and lavatories have waterproof floors and sewer outlet is practicable, these rooms shall also be provided with floor drains as above.

Toilets.

Where a sewer system or pressure water supply is available or practicable, water-closets to the number of 1 seat for each 15 females or fractional part thereof, 1 seat for each 25 males or fractional part thereof, and 1 urinal for each 15 males or fractional part thereof, shall be installed. In estimating the number of closets to be installed, the occupants shall be divided as follows: 40 per cent males and 60 per cent females. Where the syphon type of closet is used, it shall be provided with seat-action flush, with working parts of sufficient strength to withstand rough usage. Closets having any working parts of valve or any metal parts inside of bowl shall not be used. All receptacles used for water-closets and urinals, except as otherwise provided in these rules, shall be vitrified earthenware, hard natural stone, or cast iron, white porcelain enameled on the inside. If cast iron is used, it shall be enameled or painted on the outside with at least three coats of nonabsorbent and noncorrosive paint. Where latrines are used, they shall be provided with cast iron automatic dumping tanks, to hold not less than 10 gallons of water, and arranged so the closets will be flushed at intervals of not longer than 15 minutes. The entire volume of water shall be delivered at once at one end of the range, passing through the entire length of the same and discharging at the other end through the sewer trap. The bottom of the latrines shall have a depression under the center of each seat at least 1½ inches deep to retain water at all times. There shall be a ventilating opening back of each individual water-closet bowl and each seat of the latrine of not less than 10 square inches of area, and each urinal stall shall have a ventilating opening both top and bottom of not less than 8 square inches of area. These toilet ventilating openings shall be connected to a vertical brick vent flue extending at least 4 feet above the highest point of the roof. The updraft in this stack shall be positive at all times and shall be maintained either by aspiration or by use of an exhaust fan. If aspiration is used, the cross-sectional area of this toilet vent flue shall be not less than 360 square inches. If an exhaust fan is used, the cross-sectional area of this toilet vent flue shall be equal to the combined area of the toilet ventilating openings connected with such flue.

Whenever proper ventilation of the toilet room is not provided by means of the closet system installed, the toilet room shall be properly ventilated by means of a separate vent flue.

All closets shall be equipped with wooden seat tops and lids. Long hopper water-closets and similar appliances shall not hereafter be installed in any school building. All urinals shall be constructed of materials impervious to moisture and that will not corrode, and shall be divided into stalls not less than 16 inches nor more than 20 inches in width.

When closets are located in the basement, they shall be separated as to sexes by solid, sound-proof wall and shall be approached by separate stairways. Boys' toilet rooms shall be clearly marked "Boys' Toilet," and girls' toilet rooms shall be clearly marked "Girls' Toilet."

Indoor Crematory Closet.

Whenever a sewer system or pressure water supply is not available or practicable, either an indoor crematory sanitary closet system or outdoor sanitary closets shall be provided to the same number as specified for water-closets. If an indoor crematory sanitary closet system is used, the vault of same shall be constructed of brick, with cement floor, properly drained. The vault heater, gratings, floors, and stools shall be made of cast iron. The urinals shall be constructed either of enameled iron slate, marble, or glass, and shall be ventilated both at top and bottom. The seat shall be made either of wood or aluminum, and if wood seats are used, the underside of same shall be lined with metal. The lids of the seats shall be provided with a self-closing device. Such closets shall be connected to a vent flue or stack with a free cross-sectional area of not less than 60 square inches for each seat and each stall of urinal, to which stack shall be connected a stack heater. Fire must be kept in both the stack heater and the vault heater at all times when the school is in session, in order to maintain a positive updraft in the stack and to destroy the contents of the vault.

So-called dry closets shall not hereafter be used in any school building.

Outdoor Sanitary Closets.

If an outdoor sanitary closet system is used, the vault receptacle and floor of such closet shall be of cement construction. Dry loamy earth, wood ashes, sifted coal ashes, or slaked lime shall be thrown in the vault receptacle at least once each day when school is in session, and the contents of the vault shall be removed at least twice in each school year. All outdoor closets shall be kept effectually screened and protected against flies. The interior walls of such closets shall be sided with corrugated metal sheathing, painted a drab color, and sanded while the paint is still wet.

In the boys' closet a urinal of metal, cement, or other nonabsorbent material with stalls shall be constructed and made to discharge through a proper drain into the soil away from the closet and not nearer than 100 feet to any source of water supply.

Seating.

Class and study rooms shall have aisles on all wall sides. In primary rooms, center aisles shall be not less than 17 inches wide, with wall aisles not less than 28 inches wide. In grade rooms, center aisles shall be not less than 18 inches wide, with wall aisles not less than 30 inches wide. In high-school

rooms, center aisles shall be not less than 20 inches wide, with wall aisles not less than 36 inches wide. All groups of seats shall be so arranged as to have an aisle on either side.

Stairways.

No stairway shall be less than 5 feet in width in the clear, with uniform rise and tread. The riser shall be not more than 6½ inches, and the tread not less than 11 inches, which dimensions shall be from tread to tread and from riser to riser.

To overcome any difference in floor levels which would require less than three risers, gradients shall be employed of not more than 1 inch rise in each 12 inches of run. Stairways shall be constructed with straight runs, changes in direction being made by platforms. No door shall open immediately upon a stairway, but a landing at least the width of the door shall be provided between such door and stairway. All stairways shall have handrails on either side. Stairways, corridors, and all passageways leading to exits shall be kept free from obstruction at all times, and shall not be used for storage or any other purpose, except ingress and egress, except as herein provided for sanitary lockers.

Whenever possible, and especially in large school buildings, the stairway should be superseded by the incline. In practice the 3-foot child is made to take the same step as the 6-foot man. This is both unjust and unwise. The incline permits the short and the tall, the weak and the strong, to take such steps as best suit the individual. The incline is more serviceable, safer, and better in every way than the stairway.

General.

Furnace, boiler, and fuel rooms shall be built of fireproof construction.

No boiler or furnace shall be located immediately beneath any lobby, corridor, stairway, or exit. Where a furnace is located in the basement, the floor immediately above such furnace shall be rendered fireproof. No closet for storage shall be placed under any stairway.

Foundations shall not be laid on filled or made ground or on any soil containing a mixture of organic matter. All entrances, exits, and emergency doors shall be equipped with hardware of such a kind as to be always unlockable from within.

Architects, sanitary engineers, and heating and ventilating engineers shall certify by affidavit indorsed on all plans and specifications submitted that such plans and specifications comply with the Indiana Sanitary Schoolhouse Law, and with the rules of the Indiana State Board of Health.

School Hacks.

The term "school hack" as used herein shall include all wagons, hacks, and other vehicles of any kind whatsoever, used for public transportation of pupils to and from school.

School hacks shall be substantially built, painted throughout, well lighted, warmed, and ventilated, clean and sanitary, kept in good repair, and shall be operated and maintained with strict regard to the influence of such school hacks upon the health, morals, and safety of the pupils thus transported.

All school hacks shall be swept and dusted thoroughly at least once each day, and in addition shall be specially cleaned and disinfected before being put in use at the beginning of school and again at the time of Christmas vaca-

tion. Such special cleaning shall consist in first sweeping and dusting the interior, then scrubbing the floor, washing the windows and all interior woodwork; including the seats; and then disinfecting the interior according to the rules of the State board of health.

The number of pupils to be transported in any school hack shall be limited to the normal seating capacity as provided in the construction of such hack. Every pupil must be provided with a comfortable seat without crowding.

All school hacks shall be so constructed and arranged that the pupils shall be in plain view of the driver.

Proper foot rests shall be provided for the use of smaller pupils when the seats are too high to allow the feet to rest comfortably on the floor.

No person shall be employed as driver of a school hack who is not able-bodied, or who is addicted to the use of intoxicants or habit-forming drugs, or who has tuberculosis, or syphilis, or other communicable disease, or who is uncleanly in person or clothing or immoral in habit.

Both school trustees and the drivers of school hacks shall be held responsible for the proper sanitary maintenance of such hacks and for the proper moral discipline of pupils while occupants of such hacks.

OHIO STATE BUILDING CODE.

PART 1.

ADMINISTRATION.

AN ACT Establishing a building code, regulating the construction of, repair of, alteration on, and additions to public and other buildings and parts thereof; regulating the sanitary condition of public and other buildings, providing for fire protection and fire prevention; and providing for the construction and erection of elevators, stairways, and fire escapes in and upon public buildings. (Approved, June 14, 1911; amended by act approved May 9, 1913.)

Be it enacted by the General Assembly of the State of Ohio:

SECTION 1. It shall be the duty of the State fire marshal or fire chief of municipalities having fire departments to enforce all the provisions herein contained relating to fire prevention.

It shall be the duty of the chief inspector of workshops and factories or building inspector or commissioner of buildings in municipalities having building departments to enforce all the provisions herein contained for the construction, arrangement, and erection of all public buildings or parts thereof, including the sanitary condition of the same, in relation to the heating and ventilation thereof.

It shall be the duty of the State board of health or building inspector or commissioner, or health departments of municipalities having building or health departments to enforce all the provisions in this act contained, in relation and pertaining to sanitary plumbing. But nothing herein contained shall be construed to exempt any other officer or department from the obligation of enforcing all existing laws in reference to this act.

SEC. 2. It shall be unlawful for any owner or owners, officers, board, committee, or other person to construct, erect, build, equip, or cause to be constructed, erected, built, or equipped any opera house, hall, theater, church, schoolhouse, college, academy, seminary, infirmary, sanatorium, children's home, hospital, medical institute, asylum, memorial building, armory, assembly hall, or other building used for the assemblage or betterment of people in any municipal corporation, county, or township in this State, or to make any addition thereto or alteration thereof, except in case of repairs for maintenance without affecting the construction, sanitation, safety, or other vital feature of said building or structure, without complying with the requirements and provisions relating thereto contained in this act.

SEC. 3. It shall be unlawful for any architect, builder, civil engineer, plumber, carpenter, mason, contractor, subcontractor, foreman, or employee to violate or assist in violating any of the provisions contained in this act.

SEC. 4. * * *

SEC. 5. Nothing herein contained shall be construed to limit the council of municipalities from making further and additional regulations, not in conflict

with any of the provisions of this act contained nor shall the provisions of this act be construed to modify or repeal any portions of any building code adopted by a municipal corporation and now in force which are not in direct conflict with the provisions of this act.

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SEC. 6. The provisions of this act shall not apply to the construction or erection of any public building or to any addition thereto or alteration thereof, the plans and specifications of which have been heretofore submitted to and approved by the chief inspector of workshops and factories.

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SEC. 7. A justice of the peace, mayor, or police judge shall have final jurisdiction within his county in a prosecution for a violation of any provision of the foregoing act.

Chapter Penalties.

SECTION 1. Whoever being the owner or having the control as an officer, or as a member of a board or committee or otherwise of any opera house, hall, theater, church, schoolhouse, college, academy, seminary, infirmary, sanatorium, children's home, hospital, medical institute, asylum, memorial buildings, armory, assembly hall, or other building for the assemblage or betterment of people in any municipal corporation, township, or county in this State, violates any of the provisions of the foregoing [following] act or fails to conform to any of the provisions thereof, or fails to obey any order of the State fire marshal, chief inspector of workshops and factories, or building inspector, or commissioner in cities having a building inspection department, or the State board of health in relation to the matters and things in this act contained shall be guilty of a misdemeanor and upon conviction hereof shall be fined not more than $1,000 and stand committed until said fine and costs be paid or secured to be paid or until otherwise discharged by the due process of law.

SEC. 2. Any architect, civil engineer, builder, plumber, carpenter, mason, contractor, subcontractor, foreman, or employee who shall violate or assist in the violation of any of the provisions of this act or of any order issued thereunder shall be guilty of a misdemeanor and upon conviction thereof shall be fined not more than $1,000 and to stand committed until said fine and costs are paid or secured to be paid or until otherwise discharged by due process of law.

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PART 2.

SPECIAL REQUIREMENTS.

Preamble.

Under part two which follows will be found under their respective titles, the various classes of buildings covered by this code, together with the special requirements for their respective design, construction, and equipment.

The classifications of the various buildings will be found under the following titles, viz:

Title 1. Theaters and assembly halls.

Title 2. Churches.

Title 3. School buildings.
Title 4. Asylums, hospitals, and homes.
Title 5. Hotels, lodging houses, apartments, and tenement houses.
Title 6. Club and lodge buildings.
Title 7. Workshops, factories, and mercantile establishments.

Buildings or parts of buildings used only for the specific purposes mentioned under their respective title and classification shall be designed, constructed, and equipped as called for under all of the sections coming under such title and classification.

Buildings used for two or more different kinds of occupancy and combining the classifications covered under two or more different titles shall be designed, constructed, and equipped according to all of the various sections of the different titles affecting such building[s] or parts of such building[s].

The detailed requirements of the above-mentioned special requirements, together with standard devices will be found in subsequent parts of this code.

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Title 3.—School Buildings.

SECTION 1. [Classification.] Under the classification of school buildings are included all public, parochial, and private schools, colleges, academies, seminaries, libraries, museums, and art galleries, including all buildings or structures containing one or more rooms used for the assembling of persons for the purpose of acquiring knowledge or for mental training.

Grade A.—Under this grade are included all rooms or buildings appropriated to the use of primary, grammar, or high schools, including all rooms or buildings used for school purposes by pupils or students 18 years old or less.

Grade B.—Under this grade are included all rooms or buildings appropriated to the use of schools, colleges, academies, seminaries, libraries, museums, and art galleries, including all rooms or buildings not included under grade "A."

SEC. 2. [Class of construction.] *Grade A.*—Where the main first floor line is 8 feet or more above the grade line at any entrance to or exit from any story above the basement, the basement shall be rated as the first story. Stories over 15 feet high, measuring from the floor to the ceiling line shall be rated as two stories. All buildings more than two stories high shall be of fireproof construction.

All buildings two stories high and less shall be of fireproof or composite construction.

No school building of grade A shall be built more than three stories high.

Grade B.—Where any floor level is more than 26 feet above the grade line at any entrance to or exit from the building, the building shall be of fireproof construction.

Where floor levels are less than 26 feet above the grade line at any entrance to or exit from the building, the building shall be of composite or fireproof construction.

No school building of grade B shall be built more than five stories high nor shall the topmost floor level be more than 50 feet above the grade line at any entrance to or exit from the building.

Grades A and B—Exceptions.—All buildings one story high, without basement and with the floor line not more than 4 feet above the grade line shall be of fireproof, composite, or frame construction, providing when built of frame construction the same is erected 30 feet away from any other building structure or lot line and 200 feet beyond the city fire limits.

SEC. 3. [Exposure and courts.] *Exposure.*—No building of grade B shall occupy more than 95 per cent of a corner lot nor more than 90 per cent of an interior lot or site.

No building of grade A shall occupy more than 75 per cent of a corner lot nor more than 70 per cent of an interior lot or site. The measurements being taken at the lowest tier of floor joists.

No wall of any building coming under this classification containing windows used for lighting school or classrooms shall be placed nearer any opposite building, structure, or property line than 30 feet.

Courts.—By inner court is meant an open shaft or court, surrounded on all sides by walls.

By recess court is meant an open air shaft or court, having one side or end opened, and when such opening is on a lot line, it is an inner court.

Recess or inner light courts may be used, providing the least distance between any two opposite walls containing windows for lighting class and schoolrooms is equal to the height from the lowest window sill to the top of the highest cornice or fire wall. All walls to inner or recess courts shall be of masonry or other fireproof construction (except for buildings of frame construction).

No inner or recess court shall be covered by a roof, skylight, or other obstruction.

If area ways are used for lighting basements, the width of the area shall be not less than equal to the height from the lowest window sill to the top of the adjoining grade line.

SEC. 4. [Subdivisions and fire stops.] Buildings of this classification built in connection with a building of a lower grade of construction shall be separated from the other parts of the building by (a) standard fire walls, and all communicating openings in these walls shall be covered by double standard fire doors, using self-closing door on one side of the wall and an automatic fire door or an automatic rolling steel shutter on the other. The automatic shutters or doors for openings used as a means of ingress or egress shall be kept open during the occupancy of the building.

All rooms or apartments used for general storage, storing of furniture, carpenter shops, general repairing, paint shops, or other equally hazardous purposes shall be constructed with fireproof walls, ceilings, and floors, and all openings between these rooms or apartments and the other parts of the building shall be covered by double standard fire doors, using a self-closing door on one side of the wall and an automatic fire door or an automatic rolling steel shutter on the other.

No open wells communicating between any two stories shall be used, except the necessary stair and elevator wells.

All exterior and court walls of buildings coming under this classification (except buildings of frame construction) within 30 feet of any other building, structure, or lot line shall be provided with the following fire stops, viz:

Walls shall be standard fire walls.

All windows shall be automatic standard fireproof windows, and all door openings shall be covered by standard hinged fire doors without any automatic attachments.

SEC. 5. [Heater room.] Furnaces, hot-water heating boilers, and low-pressure steam boilers may be located in the buildings, providing the heating apparatus, breeching, fuel room, and firing room are inclosed in a standard fireproof heater room, and all openings into the same are covered by standard self-closing fire doors.

No boiler or furnace shall be located under any lobby, exit, stairway, or corridor.

No cast-iron boiler carrying more than 10 pounds pressure or steel boiler carrying more than 35 pounds pressure shall be located within the main walls of any school building.

SEC. 6. [Basement rooms.] No room(s) used for school purposes shall be placed wholly or partly below the grade line. Rooms for domestic science, manual training, and recreation may be placed partly below grade, provided the same are properly lighted, heated, and ventilated.

SEC. 7. [Dimensions of school and class rooms.] *Floor space.*—The minimum floor space to be allowed per person, in school and class rooms, shall not be less than the following, viz:

Primary grades, 16 square feet per person.

Grammar grades, 18 square feet per person.

High schools, 20 square feet per person.

All other school and class rooms, 24 square feet per person.

Cubical contents.—The gross cubical contents of each school and class room shall be of such a size as to provide for each pupil or person not less than the following cubic feet of air space, viz: Primary grades, 200 cubic feet; grammar grades, 225 cubic feet; high schools, 250 cubic feet; and in grade B buildings 300 cubic feet.

Height of stories.—Toilet, play, and recreation rooms shall be not less than 8 feet high in the clear, measuring from the floor to the ceiling line.

The height of all rooms, except toilet, play, and recreation rooms, shall be not less than one-half the average width of the room, and in no case less than 10 feet high.

Capacity of rooms.—The plans shall be clearly marked showing the maximum number of pupils or persons to be accommodated in each room.

SEC. 8. [Rest rooms.] In all school buildings of grade A containing four and not more than eight school or class rooms a rest or hospital room shall be provided, and in all school buildings of grade A containing more than eight school, or class rooms two such rooms shall be provided.

These rooms shall be provided with a couch and supplies for first aid to the injured, and where water supply is available shall be provided with water closets and sinks.

SEC. 9. [Assembly halls.] A room seating or accommodating more than 100 persons shall be considered as an assembly hall.

No assembly hall in a building of grade A shall be located above the second story in a building of fireproof construction, nor above the first story in a building of composite construction.

Otherwise assembly halls shall be constructed and equipped as called for under part 2, title 1.

SEC. 10. [Seats, desks, and aisles.] *Securing seats.*—Seats, chairs, and desks placed in class, recreation, study, and high-school rooms seating more than 15 persons shall be securely fastened to the floor. Desks and chairs used by the teachers may be portable.

Assembly hall seats and aisles.—Assembly hall seats and aisles shall be as called for under part 2, title 1.

Classroom seats and aisles.—Class and school rooms shall have aisles on all wall sides.

In primary rooms center aisles shall not be less than 17 inches and wall aisles not less than 2 feet 4 inches wide.

In grammar rooms center aisles shall not be less than 18 inches and wall aisles not less than 2 feet 6 inches wide.

In high-school rooms center aisles shall not be less than 20 inches and wall aisles not less than 3 feet wide.

In all other class and school rooms center aisles shall not be less than 24 inches and wall aisles not less than 3 feet wide.

SEC. 11. [Optics.] The proportion of glass surface in museums, libraries, and art galleries shall be not less than 1 square foot of glass to each 6 square feet of floor area.

The proportion of glass in each class, study, recitation, high-school room, and laboratory shall be not less than 1 square foot of glass to each 5 square feet of floor area. (For glass surface in rooms used for domestic science and manual training, see part 2, title 7, workshops, factories, and mercantile establishments.)

The proportion of glass surface in each play, toilet, or recreation room shall be not less than 1 square foot of glass to each 10 square feet of floor area.

Windows shall be placed either at the left or the left and rear of the pupils when seated.

Tops of windows, except in libraries, museums, and art galleries, shall not be placed more than 8 inches below the minimum ceiling height as established under section 7.

The unit of measurement for the width of a properly lighted room, when lighted from one side only, shall be the height of the window head above the floor.

The width of all class and recitation rooms, when lighted from one side only, shall never exceed two and one-half times this unit, measured at right angles to the source of light.

All windows shall be placed in the exterior walls of the building, except for halls, corridors, stock and supply closets, which may be lighted by ventilated skylights or by windows placed in interior walls or partitions.

Museums, libraries, and art galleries may be lighted by skylights or clear-story windows.

SEC. 12. [Means of egress.] All means of egress or exit shall be exit doors, unless the same lead to A-standard fire escapes, which shall be either exit doors or exit windows.

Grade A. Buildings of fireproof construction.—Means of egress from rooms in the basement and superstructure shall be in proportion to 3 feet in width to each 100 persons to be accommodated in building accommodating not more than 500 persons.

When buildings accommodate from 500 to 1,000 persons, 2 feet additional exit width shall be provided for each 100 persons or fraction thereof in excess of 500 persons.

When buildings accommodate more than 1,000 persons, 1 foot additional exit width shall be provided for each 100 persons or fraction thereof in excess of 1,000 persons, but in no case shall an exit be less than 3 feet or more than 6 feet wide.

No inclosed standard fireproof stairways or fire escapes will be necessary for buildings of fireproof construction and all exits shall lead to the main corridors.

Grade A. Buildings of composite construction.—Each room in the superstructure used by pupils as a class or school room shall have at least two separate and distinct means of egress.

No class, school, or high-school room shall have more than one door or opening between it and the main halls or corridors of the building.

Communicating doors between two class or school rooms shall not be considered as a means of egress.

The proportion of exits to the seating capacity shall no be less than 3 feet to each 100 persons to be accommodated.

One-half of the exits shall lead to the main corridors, and the other half to inclosed fireproof stairways, B, C, or D standard fire escapes or stone, cement, or iron steps leading to the grade line. No exit door shall be less than 3 feet or more than 6 feet wide. No fire escape or outside stairway shall be used when the height of the same exceeds 8 feet above the grade line.

Each room in the basement used by the pupils shall have a direct exit not less than 3 feet wide, with stone, cement, or iron stairways leading up to the grade line. Stairways shall be not less than 3 feet 6 inches wide.

Areaways around such stairways shall have substantial hand and guard rails on both sides.

These exits shall be provided in addition to the usual service stairways and means of ingress.

Grade B. Buildings of fireproof or composite construction.—Each room or apartment used for any purposes other than storage shall have two separate and distinct means of egress.

If the various rooms connect directly with a hallway, means of egress at each end of the hallway will be sufficient; providing, however, that it is not necessary to pass one means of egress in order to reach the other.

These means of egress shall be either an inside stairway running continuously from the grade line to the topmost story or from the basement to the grade line; A, B, C, or D standard fire escapes; stone, cement, or iron steps leading to the grade line; or self-closing doors leading directly to the main corridor of an adjoining section of the same building containing a stairway.

Means of egress shall be at the rate of 3 feet per hundred persons to be accommodated.

It shall be presumed that half the persons will go to either means of egress.

In libraries, museums, and art galleries the capacity of the building shall be established by allowing each person 15 square feet of floor area in all lobbies, exhibition rooms, toilet rooms, corridors, stairs, and other public parts of the building.

Grade A and B. Building of frame construction.—Each room shall have at least two 3-foot exits, one leading to the open, with steps to the grade, and the other the usual means of ingress; and all steps shall have hand rails on both sides.

Signs.—Over each exit door shall be painted a sign indicating the word EXIT in plain block letters not less than 6 inches high.

SEC. 13. [Stairways.] *Grade A. Buildings of fireproof construction.*—Buildings of fireproof construction shall have at least two stairways located as far apart as possible and the same shall be continuous from the grade line to the topmost story.

The basement shall have at least two stairways, located as far apart as possible and run from the basement floor level to the grade line, which stairways may be placed under the main stairway. No further means of egress will be necessary.

Stairways shall be inclosed with masonry (of) [or] fireproof walls with standard self-closing fire doors at each story, and shall be provided with platforms and exit doors not less than 3 feet wide at the grade line.

Grade A. Buildings of composite construction.—Basement stairways shall be inclosed with either brick walls not less than 9 inches thick, concrete walls [not less than] 6 inches thick, or hollow tile walls [not less than] 12 inches thick.

All openings in these walls shall be provided with standard self-closing fire doors. The width of stairways required under this classification shall be equally divided, one-half being placed in the main service stairways and the other half

in the inclosed fireproof stairs or fire escapes. No closet for storage shall be placed under any stairway.

Grade B. Buildings of fireproof construction.—Stairways shall be separated from the other parts of the building by masonry or fireproof partitions with standard self-closing fire doors.

Wire glass not less than ¼-inch thick, set in stationary metal sash and frames, may be used in place of stairway partitions. No wire glass shall be placed in partitions separating stairways from work or storage rooms containing highly combustible material.

Stairways shall be provided with grade line platforms with exit doors not less than 3 feet wide leading to streets, alleys, or open courts.

Grade B. Buildings of composite construction.—In buildings of composite construction the stairways shall be separated from the other parts of the building by masonry or fireproof walls, with fireproof ceiling at the topmost story, with fireproof floor at the lowermost level, and all openings to these inclosures shall be provided with standard self-closing fire doors.

The above inclosures shall be provided with grade line platforms, and with exit doors not less than 3 feet wide leading to streets, alleys, or open courts.

No closet for storage shall be placed under any stairway.

Monumental stairs.—Monumental stairs from the basement to the second story may be used in buildings of grade B, providing they are placed as far distant from the other stairways as possible.

Stairway construction.—Width of stairways shall be at the (rate) [ratio] of 3 feet per 100 persons accommodated in buildings accommodating not more than 500 persons; when building accommodates from 500 to 1,000 persons 2 feet of additional stairway width shall be provided for every 100 persons or fraction thereof in excess of 500; when buildings accommodate more than 1,000 persons, 1 foot additional stairway width shall be provided for every 100 persons or fraction thereof in excess of 1,000 persons.

No stairway shall be less than 3 feet 6 inches nor more than 6 feet wide, measuring between the handrails. Stairways over 6 feet wide shall have substantial center handrails, with angle and newel posts not less than 6 feet high. No stairway shall have less than 3 nor more than 16 risers in any run.

No stairway shall have winders and all nosing shall be straight.

A uniform width shall be maintained in all stairways and stair platforms by rounding the corners and beveling the angles.

Handrails shall be provided on both sides of all stairways and steps.

Outside stairways and areaways shall be provided with guard rails not less than 2 feet 6 inches high.

Stairways shall have a uniform rise and tread in each run as follows, viz:

Primary schools shall have not more than a 6-inch rise nor less than 11-inch tread.

Grammar schools shall have not more than a 6½-inch rise nor less than 11-inch tread.

All other schools shall have not more than a 7-inch rise nor less than 10½-inch tread.

The above dimensions shall be from tread to tread, and from riser to riser.

No door shall open directly upon a stairway, but shall open on a platform or landing equal in length to the width of the door.

In combination primary and grammar school buildings all stairways below the first-floor level shall be designed for primary school pupils, and all stairways above the first-floor level may be designed for either primary or grammar pupils.

No closet for storage shall be placed under any stairway.

All treads shall be covered with rubber or lead mats or equal nonslipping surface.

SEC. 14. [Gradients.] To overcome any difference in floor level which would require less than three risers, gradients shall be employed of not over 1-inch rise in 12-inch run.

Floors at all exits shall be so designed as to be level and flush with the adjacent floors.

SEC. 15. [Passageways.] No hall or passageway leading to a stairway or exit shall be less in width (of) [than] the stairway or exit, as the case may be.

Halls and passageways shall be so designed and proportioned as to prevent congestion and confusion.

SEC. 16. [Elevators.] Elevators shall be inclosed in standard fire walls, or by fireproof walls, ceilings, and floors, and all openings to the inclosures shall be covered by standard fire doors for elevators.

SEC. 17. [Exit doors and windows.] Exit doors shall not be less than 3 feet wide, nor less than 6 feet 4 inches high, level with the floor, swing outward, viz, toward the open, or toward the natural means of egress, and shall be so hung as not to interfere with passageways or close other openings.

No single door or leaf to a double door shall be more than 4 feet wide. No two doors hinged together shall be used as a means of ingress or egress. Accordion doors may be used in dividing classrooms, providing the free sections swing outward and give the required amount of exit width.

No double acting, rolling, sliding, or revolving exit or entrance doors shall be used.

Exit windows leading to "A" standard fire escapes shall have the lower sash hinged to the side to swing out, or hung on weights to (rise) [raise]. This sash shall not be less than 2 feet 6 inches wide, not less than 3 feet high, and not more than 2 feet above the floor line.

SEC. 18. [Scuttles.] Every building exceeding 25 feet in height shall have in the roof a bulkhead or scuttle not less than 2 feet wide and not less than 3 feet long, covered on the outside with metal and provided with a stairway or permanent ladder leading thereto.

Bulkhead and scuttle doors shall never be locked.

SEC. 19. [Special construction.] All floors to toilet rooms, lavatories, water-closet compartments, or any inclosure where plumbing fixtures are used within the building shall have a waterproof floor and base made of nonabsorbent indestructible waterproof material, viz: Asphalt, glass, marble, vitrified or glazed tile or terrazzo, or monolithic composition.

Base shall be not less than 6 inches high and shall have a sanitary cove at the floor level.

All basement rooms used by the pupils or public shall have a damp[proof] or waterproof floor.

All basement ceilings except where concrete or brick is used shall be plastered or be covered with pressed or rolled steel ceiling.

Whenever possible, window and door jambs shall be rounded and plastered, except in museums, libraries, and art galleries.

All interior wood finish shall be as small as possible and free from unnecessary dust catchers.

All floors between the finished portions of the building shall be deadened or made sound proof.

SEC. 20. [Floor and roof loads.] In calculating construction the superimposed load uniformly distributed on the various floors and roofs shall be assumed at not less than the following, viz:

Class rooms, 60 pounds per square foot.

Halls, assembly halls, stairs, and corridors, 80 pounds per square foot.

Museums, libraries, and art galleries, 100 pounds per square foot.

Attics not used for storage, 20 pounds per square foot.

Roofs, 40 pounds per square foot.

SEC. 21. [Heating and ventilat (ion) [ing].] A heating system shall be installed which will uniformly heat all corridors, hallways, playrooms, toilet rooms, recreation rooms, assembly rooms, gymnasiums, and manual-training rooms to a uniform temperature of 65° in zero weather, and will uniformly heat all other parts of the building to 70° in zero weather.

EXCEPTIONS. Rooms with one or more open sides used for open-air or outdoor treatment.

The heating system shall be combined with a system of ventilation which will change the air in all parts of the building except the corridors, halls, and storage closets not less than six times per hour.

The heating system to be installed where a change of air is required shall be either standard ventilating stoves, gravity or mechanical furnaces, gravity indirect steam or hot water, or a mechanical indirect steam or hot-water system.

Where wardrobes are not separated from the classroom they shall be considered as part of the classroom and the vent register shall be placed in the wardrobe.

(These) [Where] wardrobes are separated from the classrooms, they shall be separately heated and ventilated the same as the classrooms.

The bottom of warm-air registers shall be placed not less than 8 feet above the floor line, except foot warmers, which may be placed in the floors of the main corridors or lobbies.

Vent registers shall be placed not more than 2 inches above the floor line.

The fresh-air supply shall be taken from the outside of the building and no vitiated air shall be reheated. The vitiated air shall be conducted through flues or ducts and be discharged above the roof of the building.

A hood shall be placed over each and every stove in the domestic-science room, over each and every compartment desk or demonstration table in the chemical laboratories and chemical laboratory lecture rooms, of such a size as to receive and carry off all offensive odors, fumes, and gases.

These ducts shall be connected to vertical ventilating flues placed in the walls and shall be independent of the room ventilation as previously provided for.

Where electric current is available electric exhaust fans shall be placed in the ducts or flues from the stove fixtures in domestic-science rooms and chemical laboratories, and where electric current is not available and a steam or hot-water system is used, the main vertical flues from the above ducts shall be provided with accelerating coils of proper size to create sufficient draft to carry away all fumes and offensive odors.

SEC. 22. [Sanitation.] Where a water supply and sewerage system are available a sanitary equipment shall be installed as follows:

In the superstructure of the building one sink and one drinking fountain shall be installed on each floor to each 6,000 square feet of floor area or less.

In the basement one sink and one drinking fountain shall be installed on the males' side and the same on the females' side to each 350 pupils or less.

Sinks shall be the ordinary slop sinks, or, in lieu of same, lavatories may be used providing the waste plug or stopper has been removed.

Sanitary schoolhouse drinking fountains with jet giving a continuous flow of water shall be installed, and no tin cups or tumblers shall be allowed in or about any school building.

In libraries, museums, and art galleries there shall be provided the following fixtures, viz:

One water-closet to each 100 females or less.

One water-closet to each 200 males or less.

One urinal to each 200 males or less.

The above to be based upon the actual number of persons to be accommodated, the capacity being established as prescribed under section 12, Means of Egress.

In all other school buildings there shall be provided the following fixtures, viz:

One water-closet for each 15 females or less.

One water-closet for each 25 males or less.

One urinal for each 15 males or less.

Toilet accommodations for males and females shall be placed in separate rooms, with a traveling distance between the same of not less than 20 feet.

Juvenile or short closets shall be used for primary and grammar-grade schools. This does not apply when latrine closets are used.

In buildings accommodating males and females it shall be presumed that the occupants will be equally divided between males and females.

Where water-supply and sewerage systems are not available no sanitary equipment shall be installed within the building, but pumps, in lieu of drinking fountains, closets, and urinals in the above proportions shall be placed upon the school building grounds, and no closets or urinals shall be placed nearer any occupied building than 50 feet.

Where pumps or hydrants are used the outlet shall be inverted.

Buildings more than three stories in height shall be provided with toilet rooms in each story and basement, and in these shall be installed water-closets and urinals in the above required ratios in proportion to the number of persons to be accommodated in the various stories.

Toilet rooms for males shall be clearly marked "Boys' toilet" or "Men's toilet" and for females "Girls' toilet" or "Women's toilet."

SEC. 23. [Gas lighting.] A system of gas lighting if used shall be installed as follows:

All outlets in class and recitation rooms shall be dropped from the ceiling and be equally distributed so as to uniformly light the room.

The number of burners provided shall not be less than the following:

In auditoriums one 3-foot burner to each 15 square feet of floor area.

In gymnasiums one 3-foot burner to each 15 square feet of floor area.

In halls and stairways one 3-foot burner to each 24 square feet of floor area.

In class and recitation rooms one 3-foot burner to each 12 square feet of floor area.

Inclosed fireproof stairways, service stairways, corridors, passageways, and toilet rooms shall be well lighted by artificial light, and said lights shall be kept burning when the building is occupied after dark.

Burners shall be placed 7 feet above the floor line.

No swinging or movable gas fixtures or brackets shall be used.

SEC. 24. [Electric work.] An electric-lighting system if used shall be installed as follows:

All wiring shall be done in conduit. All outlets in class and recitation rooms shall be dropped from the ceiling and be equaly distributed so as to uniformly light the room.

The candlepower of lamps provided shall not be less than the following, viz:

Auditorium, 1 candlepower to 2½ square feet of floor area.

Gymnasium, 1 candlepower to 2½ square feet of floor area.

Halls and stairways, 1 candlepower to 4 square feet of floor area.

Class and recitation rooms, 1 candlepower to 2 square feet of floor area.

Inclosed fireproof stairways, service stairways, corridors, passageways, and toilet rooms shall be lighted by artificial light, and said lights shall be kept burning when the building is occupied after dark.

SEC. 25. [Finishing hardware.] All entrance, exit, and emergency doors shall be equipped with hardware of such [a] nature as to be always unlockable from within.

Single outside entrance doors shall have key locks that can be locked from the outside, but can always be opened on the inside by simply turning the knob or lever or by pushing against a bar or plate, whether same are locked on the outside or not, the locks being operated by key from the outside only. No night-latch attachment shall be placed on face of these locks, or other bolts, hooks, thumb knobs, or other locking device shall be placed on these doors.

Outside doors used for exit purposes only, including doors to inclosed fireproof stairways, shall have one knob latch or a double extension bolt as hereinafter mentioned, and no bolts, hooks, or other locking device shall be placed on these doors.

Doors from halls to rooms and cloakrooms shall have no locks upon same, but shall be equipped with knob latches only. If locks are desired, the same style locks as above specified for entrance doors shall be used and the same shall be so placed on the door (so) that they can be locked on the hall side and can always be opened on the room or cloakroom sides, whether locked on hall side or not.

One of each pair of outside or inside double doors shall have a double extension panic bolt on same, bolt to have knob, lever, push bar, push plate, push handle, or devise whereby the simple act of turning a knob or lever or pushing against the same will release the top and bottom bolts at the same time and allow the doors to open.

Independent top and bottom bolts shall not be used.

The outer door of each pair of outside and inside double doors shall have lock, or latch as above specified.

All bolts, latches, face of locks, working parts of extension bolts, and other exposed working parts about this hardware shall be of cast metal properly protected from corrosion.

Double box windows to A standard fire escapes shall be provided with sash locks and two bar lifts, and hinged sash with either a sash lock, one-knob latch, or lever bolt.

SEC. 26. [Fire extinguishers.] Standard stand pipe and hose shall be provided in basement of grade A buildings and in each story and basement of grade B buildings with sufficient length of 1½-inch hose to reach any part of the story.

Hose lengths shall be not more than 75 feet, and where hose of such length will not reach the extreme portions of the story additional standpipes and hose shall be provided.

Where water supply is not available, standard chemical fire extinguishers shall be provided in the proportion of one extinguisher to each 2,000 square feet of floor area or less.

Standard chemical fire extinguishers shall be provided in each story above the basement of grade A buildings in the proportion of one extinguisher to each 2,000 square feet of floor area or less.

All fire extinguishers shall be prominently exposed to view and always accessible.

SEC. 27. [Fire alarm.] All buildings with basement, and all buildings over one story high shall be provided with 8-inch in diameter trip fire gongs, with connections enabling the ringing of same from any story or basement.

In semidetached buildings gongs shall be provided for each section and shall be connected up so as to ring simultaneously from any story or basement of either section.

Gongs shall be centrally located in the main halls, and the operating cords shall be placed so as to be always accessible.

Exceptions.—In institutions for the deaf, electric lights with red globes shall be placed near each teacher's desk, and these shall be operated simultaneously by switches placed in each story and basement.

SEC. 28. [Blowers in workshops.] For blowers in workshops and factories, including rooms for manual training, see General Code, State of Ohio, section No. 1027.

SEC. 29. [Guarding machinery and pits.] For the necessary devices for guarding machinery and pits, see General Code, State of Ohio, section No. 1027.

PART 3.

STANDARD DEVICES.

Preamble to Part 3.

Under the different titles of part 3 will be found detailed descriptions of, or specifications for, the various standard devices to which reference is made under the several titles of part 2.

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Title 9.—Standard Inclosed Fireproof Stairways.

SECTION 1. [Where used.] Standard inclosed fireproof stairways shall be used as one means of egress from the second story of school buildings of A grade; may be used in place of fire escapes for theaters and in place of the ordinary service stairways and fire escapes for all other buildings.

SEC. 2. [General construction.] These stairways shall be inclosed by fireproof walls, ceilings, and floors (see part 3, title 2), and the doors leading to the same need not be fireproof. All landings and platforms shall be of brick or hollow-tile arches, stone, or reenforced concrete, and all steps shall be of either reenforced concrete or of stone laid with an absolutely tight cement joint.

Stairways shall be provided with sufficient number of windows, transom or sash doors to properly light the same, and such windows, transoms, or doors shall be placed in the external walls of the building.

Platforms, landings, and treads shall be finished with a roughened face.

The same inclosure may be used for two or more stairways, providing there is no direct connection between any two stairways or stories, and such divisions are constructed of incombustible material.

Or the same stairway may be used for two or more stories, providing entrance to the same at each story or tier is gained by an exit door leading to an open balcony or platform placed beyond the wall of the building, from which platform or balcony an exit door shall lead directly to the inclosed fireproof stairway.

The traveling distance between the above doors shall be not less than 5 feet.

The above platforms or balconies may be constructed according to either the B, C, or D standard fire-escape requirements or shall be built of fireproof materials and be inclosed by a substantial railing not less than 3 feet high, made of combustible material.

SEC. 3. [Detailed construction.] Stairways shall be of the width as required for exits and be constructed and equipped the same as called for for stairways under the various titles of part 2 unless otherwise above mentioned.

SEC. 4. [Grade-line doors.] Exit doors shall be placed at the grade-line platform, the width of which shall be equal to the greatest width of the stairway, and such doors shall open onto streets or alleys or to open courts leading to public highways.

SEC. 5. [Incumbrances.] Inclosed fireproof stairways shall be kept free from incumbrances or obstructions at all times, and all courts or passageways leading from the inclosed fireproof stairs to public highways shall not be used for storage or any other purpose whatsoever, except for means of egress or ingress.

Title 10.—Standard Ventilating Stoves.

SECTION 1. [Stove.] A standard ventilating stove may be any style or design of heating stove, placed within the room to be warmed and ventilated, and shall be inclosed in a jacket made of galvanized or black iron. Jacket shall extend from the stove tray to a point 4 inches above the top of the stove.

SEC. 2. [Fresh-air supply.] Fresh-air supply shall be taken from outside the building, be carried to the stove below the floor line either in vitrified sewer pipe, masonry ducts, or ducts made of wrought iron or steel of not less than ⅛ inch in thickness, riveted together with tight joints.

Ducts shall be turned up and discharged under the center of the stove, from which point the air shall ascend between the radiating surface of the stove and jacket and enter the room from the top of the stove.

SEC. 3. [Tray.] Stove shall be placed on a cast-iron tray raised 3 inches above the floor line, of the same size as the inclosing jacket, provided with an opening of proper size to receive the fresh-air duct and projecting beyond the stove door 1 foot in all directions. Stove door shall be provided with a metal collar extending from the face of the stove to the face of the jacket.

SEC. 4. [Smoke pipe.] No smoke pipe connection between the stove and the smoke flue shall be more than 5 feet long, measuring horizontally.

SEC. 5. [Ventilation.] Each room in which a standard ventilating stove is installed shall be provided with a ventilating flue placed close to the stove.

The vent flue shall be of the same area as the fresh-air supply and run through and above the roof. Vent flues of not over 150 square inches of area shall be inclosed with walls of brick or concrete not less than 4 inches thick, and vent flues of a larger area shall be made of brick walls not less than 8 inches thick, brick walls 4 inches thick lined with tile flue lining, or monolithic concrete walls not less than 4 inches thick.

Openings to vent flues shall be placed at the floor line, and if vent registers are used the same shall be 50 per cent larger than the area of the flue.

PART 4.

SANITATION.

Title 11.—Fixtures.

SECTION 1. [Materials.] All receptacles used for water-closets, urinals, or otherwise for the disposal of human excreta, shall be either vitrified earthenware, hard natural stone, or cast iron white porcelain enameled on inside. If cast iron is used, it shall be enameled or painted on the outside with at least three coats of nonabsorbent and noncorrosive paint.

SEC. 2. [Water-closet bowls.] The bowls and traps for water-closets shall be made in one piece and of such shape and form as to hold a sufficient quantity of water when filled up to the trap overflow so as to completely submerge any matter deposited in them and properly flush and scour the soil pipe when the contents of the bowl are discharged, except that nothing in this section shall apply to latrine closets.

SEC. 3. [Visible trap seal.] All water-closets, pedestal urinals, or slop sinks with trap combined shall have visible trap seals.

SEC. 4. [Flushing rims.] All water-closets or pedestal urinals shall be provided with flushing rims, constructed so as to flush the entire interior surface of the bowl thereof with water as prescribed in subsequent sections of this title.

SEC. 5. [Open plumbing.] All plumbing fixtures shall be installed or set free and open from all inclosing work.

Where practicable all pipes from fixtures shall be run to the wall.

SEC. 6. [Low down closets.] Water-closets with low down tanks shall be of a siphon pattern, provided with refilling devices.

SEC. 7. [Water-closets prohibited.] Pan, valve, plunger, offset washout, and other water-closets except latrines having invisible seals or an unventilated space, or the walls of which are not thoroughly washed at each discharge, are prohibited.

Long hopper water-closets and similar appliances shall not hereafter be installed in any building.

The provisions of this section shall also apply to the dry closet system or other system of closets in which the venting, back venting, or local venting is to be made otherwise than in this code prescribed.

SEC. 8. [Urinals.] All urinals, troughs, or gutters other than these heretofore prescribed shall be constructed of materials impervious to moisture and that will not corrode under the action of urine. When floor gutters are used as urinals the gutters shall be made with Portland cement or other impervious material, and the floors and wall within 5 feet of such gutter shall be made equally water-tight and impervious. In districts having no sewer connections copper or galvanized iron urinal troughs may be used in outhouses, sheds, barns, and in yards, and at least 20 feet distant from any building of a better grade.

SEC. 11. [Latrines and range closets.] Latrine or range water-closets shall be made of cast iron with all interior surfaces white porcelain enameled and all other surfaces coated with noncorrosive paint, or latrines or range closets may be of vitreous earthenware thoroughly glazed.

Latrines or ranges shall have flushing rims or other means of adequately flushing the front and rear inside surfaces constantly or at intervals. If pipes are used for such purposes they shall be made of brass.

Latrines or ranges shall be provided with automatic dumping tanks which shall discharge at intervals of not more than 10 minutes and supply to each single latrine or range not less than 10 gallons of water at each discharge. The entire volume of water shall be delivered at once at one end of the latrine or range, passing over the entire length of the same and discharging at the other end through the sewer trap. Latrines in school buildings shall be flushed at least every three minutes during recess periods.

The bottom of latrines or ranges shall have a depression under the center of each seat that shall retain a body of water at least 1½ inches deep over an area of 6 inches in diameter, gradually diminishing in all directions so that the surface of the water retained shall not be less than 60 square inches.

There shall be an opening back of each seat of not less than 10 square inches of area, covered by a screen of noncorroding material.

The local vent duct within 4 feet of the floor line shall be of not less than No. 27 copper, with riveted and soldered joints, shall be graduated in size in proportion to the fixtures added, and shall be installed in such a manner as to be self-draining.

Where electric current or water pressure is available, local vent ducts shall be connected to a ventilating flue provided with an electric or hydraulic exhaust fan of such a capacity or size as to create sufficient draft to carry off all offensive odors. Where electric current or water pressure is not available, ventilating flues with stack heaters shall be provided.

Covers shall be so attached that all interior surfaces of the latrines and ranges can be exposed to view.

No latrine or range shall have more than eight compartments, and each latrine or range shall have a separate trap not less than 6 inches, with a 4-inch clean out which shall be back vented by a 4-inch pipe.

There shall be an iron top for each latrine or range section porcelain coated on the under side, and each iron top shall be covered by a square oak seat and lid properly reenforced.

Wood seats shall be thoroughly painted on the bottom and be varnished throughout; put together with brass hinges, cast-iron braces, and brackets to make them closed when not held up, and so equipped that they can not be tampered with and can be easily opened for cleaning.

Latrines and ranges shall be substantially supported and be graduated for the proper fall toward the outlet.

SEC. 12. [Frost-proof closets—where permissible.] Frost-proof closets may only be installed in compartments which have no direct connection with any building used for human habitation or occupancy. The soil pipe between the hopper and the trap shall be not less than 3 inches in diameter and shall be either lead or cast iron enameled on the inside.

SEC. 13. [Water supply to fixtures.] All water-closets, urinals, or other plumbing fixtures shall be provided with a sufficient supply of water for flushings, to keep them in a proper and sanitary condition.

SEC. 14. [Water-closet supply.] No water-closet or urinal bowl shall be supplied directly from the water-supply pipes, excepting antifreezing closets. Every water-closet or urinal bowl shall be indirectly flushed through a flushing tank of at least 4 gallons capacity for water-closet and 2 gallons for urinals. The tank shall be properly supplied with water and the flush pipe to the water-closet or urinal shall be at least 1¼ inches in diameter, except for outside hoppers and urinals.

SEC. 15. [Flushing tanks—Groups of fixtures.] A group of urinals, on the same floor, subject to constant use, as in schools and factories, may be supplied from one tank if provided with an automatic simultaneous flush, provided that each individual urinal shall receive not less than 1 gallon of water at each flushing and the discharge is of such force as to cleanse each individual bowl at each flush.

SEC. 16. [Automatic flushing tanks.] All urinals having either intermittent or automatic flushing devices shall be flushed at regular intervals not to exceed 10 minutes each during the hours that such fixtures are in use.

The backs of gutter stalls to the height of 3½ feet shall be kept constantly moist with a proportionate supply of water while in use.

SEC. 17. [Urinal trough and gutters.] Urinal troughs and gutters shall be flushed either by an automatic flushing tank, the same as required for individual urinals, or may be flushed by a direct water supply through a brass pipe carried the full length of the trough, perforated every 2 inches.

SEC. 18. [Flushing tanks.] All valves of flushing tanks shall be so fitted and adjusted as to prevent the waste of water. The water from flushing tanks shall be used for no other purposes.

Title 12.—Toilet Rooms.

SECTION 1. [Toilet-room floors.] All floors to toilet rooms, lavatories, water-closet compartments, or any other inclosure where plumbing fixtures are used within the building shall have a waterproof floor and base made of non-absorbent indestructible waterproof material, viz, asphalt, glass, marble, Portland cement, vitrified or glazed tile, or terrazzo or monolithic composition.

Base shall not be less than 6 inches high, and shall have a sanitary cove at the floor level.

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No water-closet shall be set directly on top of a wood floor.

SEC. 2. [Sound-proof partitions.] Where toilet rooms for males and females are adjacent to each other, they shall be separated by sound-proof partitions extending to the ceiling, and the entrance shall be screened and the traveling distance between them shall not be less than 20 feet.

Title 16.—Cesspools.

SECTION 1. [Cesspools permitted.] Tight or leaching cesspools may be used to receive the discharge from water-closets and sinks only when written permission to that effect has been secured from the local board of health of the city in which the same is constructed, if in a city, and if not, then by the Ohio State Board of Health, and such permission can be given only when a public sewerage system is not available.

SEC. 2. [Cesspools prohibited.] No cesspools for sewage shall be constructed where a sewer is available, nor shall any connection from such cesspool be made with any sewer.

Cesspools now existing in premises accessible to a sewer, and cesspools that may hereafter become accessible to a sewer, must be discontinued, emptied of their contents, cleaned out, and be filled with earth or ashes, and the house sewer shall be disconnected from the old cesspool and be reconnected with the public sewer.

SEC. 3. [Sewage cesspools.] Where a public sewer is not available, and written authority has been secured from the proper board of health (see sec. 1) to construct such cesspool, and there is sufficient grounds for the purpose, a

water-tight cesspool may be used to receive the discharge of house sewage, which may be overflowed to a leaching cesspool, providing there is no danger of contaminating a water supply, well, or spring, and the soil is of an absorbent character. Otherwise a tight cesspool shall only receive the discharge from water-closets and sinks, and the waste from all other fixtures shall discharge to a surface-water course.

SEC. 4. [Tight cesspools.] A water-tight cesspool for drainage shall not be less than 6 feet in diameter by 10 feet deep in clear, or its equivalent oval, built of cast iron, hard brick, 8 inches thick, laid in Portland cement mortar and plastered on the inside with a 1-inch coat of Portland cement mortar, or Portland cement concrete 8 inches thick, and made water-tight.

SEC. 5. [Leaching cesspools.] A leaching cesspool shall be not less than the dimensions of the water-tight cesspool, lined with dry brick or stone, viz, without mortar.

SEC. 6. [Ring and cover.] Tight and leaching cesspools shall be provided with a 20-inch cast-iron ring and cover.

SEC. 7. [Location of cesspools.] No tight cesspool shall be placed within 2 feet of any lot, or 20 feet of any building or cistern, or 30 feet from any well, spring, or other source of water supply used for drinking or culinary purposes, and shall be maintained tight.

No leaching cesspool shall be placed within 100 feet of any dwelling or water-tight cistern or within 300 feet of the source of any water supply.

SEC. 8. [Cesspool vents.] Tight cesspools shall be vented with 4-inch cast-iron vent pipe extending not less than 10 feet above the ground and not less than 20 feet from any window, door, or other opening in buildings used for human habitation.

SEC. 9. [Piping.] The outlet from the tight cesspool shall be through a deep invert the same size as the house sewer, and the piping between the tight and leaching cesspool may be either of earthenware or cast iron.

Title 17.—Septic Tanks.

SECTION 1. [Permission to construct and use.] Septic tanks and filtration beds can be constructed only after the site has been inspected and the plans and specifications for the construction of the same approved by the Ohio State Board of Health, and no such tank or bed can be used to receive human or animal excreta until after the construction and equipment of the same has been approved in writing by the Ohio State Board of Health.

Title 18.—Vaults.

SECTION 1. [Privy vaults permitted.] Privy vaults may be constructed only on premises where water and sewers are not accessible.

SEC. 2. [Privy vaults prohibited.] Privy vaults shall not be constructed where a sewerage system is available, nor on any lot where in cleaning the night soil would have to be carried through any building or human habitation, nor shall any old vault be connected to a sewer.

Vaults now existing on premises accessible to a sewer shall be cleaned to the bottom and filled with ashes or earth.

SEC. 3. [Location of vault.] No vault, manure pit, open-top cesspool, septic tank, or other reservoir which is used as a privy or receptacle for human or animal excreta shall be located within 2 feet of any lot or alley line, or 20 feet of any street line or any building of human habitation or occupancy, or within 50 feet of any cistern, well, spring, or other source of water supply used for

drinking or culinary purposes, whether they are located on the same or an adjoining lot or premises.

Exception.—No privy vault shall be located within 50 feet of any school building.

SEC. 4. [Construction of vaults.] All vaults, pits, or other open-top reservoirs described in section 3 shall be made of either brick or concrete. The walls of such vaults, if made of brick, shall be of hard-burned sewer brick not less than 8 inches thick, laid in Portland cement mortar, and the walls plastered outside and inside with a half-inch coat of Portland cement mortar in proportion of one part of Portland cement and two parts of clean, sharp sand. After this coating is put on it shall be given one coat wash of liquid Portland cement. The bottom shall be at least three-brick course, laid in cement mortar, or of Portland cement concrete 8 inches thick.

When Portland cement concrete is used to construct vaults the walls shall be at least 6 inches thick, laid to a form, and the concrete shall be made of one part of live Portland cement, three parts of clean sharp sand, five parts crushed stone, free from dust, and of sizes between ¼ and 1½ inches in largest diameter, and shall be plastered and grouted inside and out as prescribed above for brick construction.

Vaults shall be made tight and their walls continued 12 inches above the ground surface to prevent surface drainage. No retempered cement shall be used.

If the vault is used in connection with an outhouse the vault shall be of such a shape and size as not to extend under any portion of the floor of the said outhouse, but only under the space occupied by the seats. Any portion of the vault extending beyond the walls of the outhouse shall be covered by a 4-inch brick arch, 4-inch stone flagging, reenforced concrete slab, or cast iron.

SEC. 5. [Outhouses.] Over each privy vault, which shall receive nothing but human excreta, there shall be placed an outhouse constructed as prescribed in title 12, section 3.

The seats shall be provided with tight-fitting covers, and the space underneath shall be ventilated by a vent pipe or box extending upward through and 3 feet above the roof. Such vent pipe shall be at least 6 inches square for every square yard or part thereof of vault surface.

SEC. 6. [Clean-out doors.] Vaults shall be provided with a clean-out extension not less than 2 by 1½ feet in size, connecting directly with the vault.

Clean out shall be provided with a trapdoor the full size of the clean out. Clean-out extension shall extend at least 1 foot above the grade line.

SEC. 7. [Floors.] Floors of outhouses shall be made as tight as possible.

SEC. 8. [Outhouses for different sexes.] Where outhouses are provided for the different sexes, if located within 40 feet of each other, the walks or approaches thereto shall be separated by a tight fence at least 6 feet high, but in no case shall such outhouses be located within 10 feet of each other.

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