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# THE BUILDING CODE

OF THE

Ohio: Department of Inspection of  
Workshops, Factories and  
Public Buildings

OF THE

## STATE OF OHIO

RELATING TO THE CONSTRUCTION OF

# SCHOOL BUILDINGS

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COLUMBUS, OHIO :  
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## NOTICE.

Architects, owners and building committees are requested to submit to this department the complete working drawings and specifications for contemplated buildings before beginning the erection of the same.

The drawings and specifications must give the name of the owner, kind of building, city in which same is to be erected, and the name and address of the architect.

Each room must be marked, showing the purpose for which the same is to be used.

Before final approval can be given, two complete sets of plans and specifications must be submitted to this department, one for the office files and the other for formal approval and to be returned to the owners of the building.

Plans will be examined in the order in which they are received, and the department reserves the right to withhold inspection for ten days after receipt of plans and specifications.



## PREFACE.

This code has been prepared as a guide to assist architects and others in the preparation of plans and specifications for school buildings and kindred structures, and to inform them in a general way as to the requirements of this department.

This department in presenting this code does not waive the right to alter, revise or add to the same at any time as the conditions or experience may dictate.

Any plan or specification approved by *this* department through oversight, concealment or omission shall not waive the right of this department to order changes in the finished structure.





## SCHOOL BUILDINGS.

Under this heading will be included all school buildings, colleges, academies, seminaries and all buildings or structures containing one or more rooms for the assembling of persons for the purpose of acquiring knowledge, or for mental training.



## CLASSIFICATION ACCORDING TO CONSTRUCTION.

### *First Class Construction. Fireproof Buildings.*

This classification includes such buildings as are built entirely of incombustible, fire and water proof material, with all metal structural parts thoroughly fireproofed, except that the floors, doors, windows and the usual trim of rooms are of ordinary construction.

### *Second Class Construction. Composite Buildings.*

This classification includes such buildings as have the inclosing walls and roof covering of incombustible materials with doors, windows and frames of wood, and the interior walls of brick; or, columns and girders made of fireproofed iron and steel; the floor construction of wooden beams.

In buildings of this class a single thickness of metal lath or furring and hard incombustible plaster will be deemed sufficient protection for iron and steel columns and girders.

### *Third Class Construction. Frame Buildings.*

This classification includes such buildings

as have the inclosing and interior partition walls constructed entirely of wood. Wood frames covered with a veneer will be included in this class.

## CLASSIFICATION REQUIRED ACCORDING TO HEIGHT.

Where the basement ceiling is 6' 0" (six feet no inches) or more above the grade line, the basement will be rated as the first story.

All buildings over two stories high shall be of No. 1 (fireproof) construction.

All buildings two stories or less in height (except buildings of the third class) shall be of No. 2 (composite) construction.

All buildings one story high, without basement and with the floor line not over 3' 0" (three feet no inches) above the grade line, can be of No. 3 (frame) construction.

## AUDITORIUMS.

Any room where more than one hundred (100) persons can congregate will be considered an assembly room.

No assembly room can be located above the second story in buildings of the first class, above the first story in buildings of the second class; or in any building of the third class.

One balcony may be used in connection with auditoriums, providing the same has means of egress in the same proportion as called for, for school rooms.

## DIMENSIONS OF SCHOOL AND CLASS ROOMS.

### *Floor Space.*

The minimum floor space per pupil to be as follows:

Primary Grades 12 (twelve) square feet per pupil.

Grammar Grades 16 (sixteen) square feet per pupil.

High Schools 18 (eighteen) square feet per pupil.

### *Height of Stories.*

Basement play and toilet rooms to be not less than eight feet high.

Class rooms 20' 0" (twenty feet no inches) wide and less, 11' 0" (eleven feet no inches) story.

Class rooms from 20' 1" (twenty feet, one inch) to 24' 0" (twenty-four feet no inches) wide. 12' 0" (twelve feet no inches) story.

Class rooms 24' 1" (twenty-four feet, one inch) to 28' 0" (twenty-eight feet no inches) wide, 13' 0" (thirteen feet no inches) story.

## HEATER ROOM.

*For Buildings of First and Second Class Construction.*

Furnaces, hot water heating boilers and low pressure steam boilers may be located in the basements, providing the heating apparatus, breeching, fuel room and firing room are inclosed in fireproof apartments, with masonry walls not less than 1' 1" (one foot one inch) thick; with ceiling of reinforced concrete, brick or hollow tile arches, and provided with self-closing (not automatic) fire doors of a type as approved by the National Board of Fire Underwriters.

No boiler or furnace shall be located under stairways or corridors.

## EXITS.

*Buildings of First Class Construction.*

Exits from rooms in the superstructure shall be in the proportion of 30" (thirty inches) in width to every fifty persons or fraction thereof; but in no case shall an exit be less than 3' 0" (three feet no inches) nor more than 6' 0" (six feet no inches) wide.

No fire escapes or stair towers will be necessary in buildings of first class construction and all exits shall lead to the corridors.

Each basement room shall have a direct exit not less than 3' 0" (three feet no inches) wide with stone, cement or iron stairs leading up to the grade line; area-ways around stairways shall have substantial hand rails and guards on both sides. These exits to be in addition to the usual service stairways and means of ingress.

*Buildings of Second Class Construction.*

Each room in superstructure used by pupils, or the public, shall have at least two separate and distinct means of egress.

Two doors or openings leading into the same hall or corridor will be considered as only one means of egress.

Communicating doors between any two class rooms will not be considered as a means of egress.

The proportion of exits to the seating capacity shall not be less than 30" (thirty inches) to each fifty persons or fraction thereof. One-half of the exits shall lead to the main corridors, and the other half to fire escapes or inclosed fireproof stairways. No exit shall be less than 3' 0" (three feet no inches) or more than 6' 0" (six feet no inches) wide. Each room in the basement shall have a direct exit not less than 3' 0" (three feet no inches) wide, with stone,

cement or iron stairs leading up to the grade line.

Area-ways around such stairways to have substantial hand and guard rails on both sides.

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

#### *Buildings of Third Class Construction.*

Each room shall have at least two, three-foot exits; one leading to the open with steps to the grade, and the other the usual means of ingress; all steps to have handrails on both sides.

### STAIRWAYS.

#### *Buildings of First Class Construction.*

Buildings of first class construction shall have at least two stairways located as far apart as possible; the same to be continuous from the grade line to the topmost story. No further means of egress will be necessary.

Stairways must be separated from main corridors by self closing doors at each story.

#### *Buildings of First and Second Class Construction.*

No basement stairway shall be placed under nor within twenty feet of any stairway from



the first to the second story, except under the following conditions, viz; basement stairs may be placed under a first story stairway only when a grade line platform open to the air is inserted and no direct connection is made between the stairway below the platform and the one above the same.

Inside stairways from the basement to the first story shall be inclosed in masonry walls not less than 1' 1" (one foot one inch) thick, with fireproof ceiling or soffit above and be provided with a self closing fire door, as approved by the National Board of Fire Underwriters, which shall be placed at the head and foot of the stairway; the steps shall be of iron or concrete.

Width of stairway shall be at the rate of 30" (thirty inches) per hundred persons or fraction thereof.

No stairway shall be less than 3' 6" (three feet six inches) nor more than 6' 0" (six feet no inches) wide; or have less than three nor more than sixteen risers in any run.

No stairway shall have winders and all nosings shall be on a straight line.

Maintain a uniform width in all stairways and stair platforms by rounding the corners and beveling the angles.

Provide hand rails on both sides of all stairways and steps.

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

Primary schools to have not over 6" (six inch) rise or less than 11" (eleven inch) tread.

Grammar schools to have not over 6½" (six and one-half inch) rise or less than 11" (eleven inch) tread.

High schools to have not over 7" (seven inch) rise or less than 10½" (ten and one-half inch) tread.

The above dimensions to be the cut on the stair horse.

All treads shall be covered with rubber or lead mats..

## FIRE ESCAPES.

*To be Used on Buildings of Second Class Construction.*

One fire escape shall be used for each one hundred and fifty persons or fraction thereof.

Fire escapes shall be 3' 6" (three feet six inches) wide, with 7" (seven inch) rise, 10" (ten inch) tread and shall be constructed according to the Standard Specifications as prepared by this department.

No run shall have more than 18 (eighteen) nor less than 3 (three) risers.

No winders shall be used, and return plat-

forms, if used, shall be 3' 6" x 7' 0" (three feet six inches by seven feet no inches).

Platforms inserted in straight runs of fire escapes shall be no less than 3' 6" x 3' 6" (three feet six inches by three feet six inches).

Where there are no openings in the walls, the fire escapes may be placed against the wall, and be supported upon standard brackets and will be built according to the B Standard Specifications as prepared by this department.

Where openings occur, the fire escape may be run either at right angles to the wall; or, parallel to the wall provided it is placed 2' 6" (two feet six inches) away from same, and will be constructed according to the B Standard Specifications except that columns will be used instead of brackets and the construction will be known as the "C" Standard.

Fire escapes shall be supported every eight feet, either by standard brackets or steel columns as the case may require.

Where fire escapes run at right angles to the building, they will be supported on gas-pipe or angle iron columns with a 3" x 3" x 3/8" (three by three by three-eighths inches) angle riveted to the top of the two columns, with columns thoroughly sway braced.

When fire escapes parallel the wall, they must be supported by gas pipe or angle iron

columns, with 3" x 3" x  $\frac{3}{8}$ " (three by three by three-eighths inches) L angle riveted to the top of the two columns and bolted to and through the wall.

Balconies level with the floor line shall be placed at the top of all fire escapes.

Where fire escapes run at right angles to the building, or are placed against the wall of the building, the top balcony must be at least 3' 6" x 3' 6" (three feet six inches by three feet six inches).

Where fire escapes parallel the building and are placed 2' 6" (two feet six inches) away from the wall, the top balcony must be at least 3' 6" x 6' 0" (three feet six inches by six feet no inches).

Where balconies are used in connection with C fire escapes, channel irons will be used instead of lattice work to support the balcony and the construction for the same must be figured to safely support a total live and dead load of 125 (one hundred and twenty-five) pounds per square foot.

The following dimensions given for gas pipe columns, refer to the internal diameter of the same.

#### *Gas Pipe Columns.*

2 $\frac{1}{2}$ " column, 15 ft. and under.

3" column, 15 to 17 ft.

- 3½" column, 17 to 19 ft.
- 4' column, 19 to 21 ft.
- 5" column, 21 to 25 ft.
- 6" column, 25 to 30 ft.

*L. Angle Columns.*

- 2½ x 2½ x ⅜" L's, 15 ft. and less.
- 2½ x 3 x ⅜" L's, 15 to 20 ft.
- 2½ x 3½ x ⅜" L's, 20 to 25 ft.
- Two 2½ x 2½ x ⅜" riveted, 25 to 30 ft.

## INCLOSED FIRE PROOF STAIRWAYS.

*To be Used in Buildings of Second Class Construction.*

Emergency stairways shall be enclosed by masonry wall not less than 1' 1" (one foot one inch) thick, with brick, hollow tile or reinforced concrete floors, platforms and ceiling, and with iron, stone or concrete steps; and provided with a sufficient number of windows to properly light the same.

No open risers can be used.

There shall be no basement openings into space under inclosed fireproof stairways.

The same enclosure can be used for more than one stairway providing there is no direct connection between any two stairways or stories.

Width of stairs shall be at the rate of 30" (thirty inches) per hundred persons or fraction thereof. No stairway shall be less than 3' 6" (three feet six inches) nor more than 5' 0" (five feet no inches), or have less than three or more than eighteen risers in any one run.

No winders shall be used and all nosings shall be on straight lines.

Maintain a uniform width in all stairways and stair platforms by rounding the corners and beveling the angles.

Provide gas pipe hand rails on both sides of stairways.

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

Primary schools to have not over 6" (six inch) rise or less than 11" (eleven inch) tread.

Grammar schools to have not over 6½" (six and one-half inch) rise or less than 11" (eleven inch) tread.

High schools to have not over 7" (seven inch) rise or less than 10½" (ten and one-half inch) tread.

The above width of tread to be measured from nosing to nosing.

Treads shall have roughened surface.

## EXIT DOORS.

*For Buildings of First, Second and Third Class Construction.*

Exit doors shall not be less than 3' 0" (three feet no inches) wide, swing outward (viz., towards the open), and be so hung as not to interfere with passageways or close other openings.

No double acting doors will be permitted.

## SEATS, DESKS AND AISLES.

All class, recitation, study, high school or assembly rooms seating more than fifteen persons shall be equipped with seats, chairs or desks securely fastened to the floor by screws.

The chairs and desks of teachers may be portable.

*Auditorium Seats and Aisles.*

The least average width of chairs, measuring from center to center of arm, shall not be less than 20" (twenty inches); and the least spacing of seats from back to back, measuring horizontally, shall not be less than 30" (thirty inches).

No seat shall have more than six seats between it and the aisle on either side.

Aisles with seats on both sides of same

shall not be less than 3' 0" (three feet no inches) wide where they begin, and shall be increased in width towards the exits in the ratio of  $\frac{1}{2}$ " (one-half inch) to the foot.

Aisles having seats on one side only shall not be less than 2' 0" (two feet no inches) wide at their beginning, and increase in width the same as aisles having seats on both sides.

### *Class Room Seats and Aisles.*

Class rooms shall have aisles on all wall sides.

In primary rooms center aisles shall not be less than 17" (seventeen inches), and wall aisles not less than 2' 4" (two feet four inches) wide.

In grammar rooms center aisles shall not be less than 18" (eighteen inches), and wall aisles not less than 2' 6" (two feet six inches) wide.

In high school rooms center aisles shall not be less than 20" (twenty inches), and wall aisles not less than 3' 0" (three feet no inches) wide.

## PASSAGEWAYS.

No halls or passageways leading to stairways shall be less in width than the width of the stairway.

Halls and passageways shall be so designed



and proportioned as to prevent congestion or confusion.

## HEATING.

The heating system shall be so designed and proportioned as to uniformly heat all parts of the building to a uniform temperature of 65° (sixty-five degrees) in zero weather, and must be either ~~a direct indirect,~~ indirect or a furnace system.

Vertical warm air flues shall be inclosed in brick walls not less than 9" (nine inch) thick. Division or partition walls shall be no less than 4" (four inches) thick.

No steam boiler carrying over 20 (twenty) pounds pressure shall be located within the main walls of any school building.

Stoves may be used only in buildings of the third class construction, providing they are set on cast iron trays at least 2' 0" (two feet no inches) in diameter larger than the greatest diameter of the stove, and raised at least 3" (three inches) above the floor line; they shall be connected to brick flues by metal stove pipe not over 5' 0" (five feet no inches) long.

All flues shall rest on and start from the ground and shall be built with no less than 9" (nine inch) walls.

No ashes are to be stored in buildings of the third class construction, and not more than one day's accumulation of ashes shall be stored in the basements of buildings of the first and second class construction.

All warm air pipes are to be wrapped in asbestos paper and steam and hot water pipes must be wrapped in sectional asbestos pipe coverings.

## VENTILATION.

Each pupil shall be supplied with no less than 250 (two hundred and fifty) cubic feet of air space.

Vent flues for class, recitation and high school rooms shall be of such a size as to provide not less than ten square inches of flue space per pupil. Registers shall be 50% (fifty per cent) larger than the area of the flue.

Vents for toilet rooms shall provide one square inch of flue space to thirteen cubic feet of contents.

Vertical ventilating flues shall be built of brick with an outer wall not less than 8" (eight inch) thick.

Division walls shall be no less than 4" (four inch) thick.

Vent flues shall extend through and above the roof.

Ventilation carried through floor construction, furring or stud partitions will not be permitted.

### OPTICS.

The proportion of glass surface in each class, study, recitation or high school room shall be not less than one square foot of glass to every five square feet of floor surface.

Windows must be placed either at the left, or the left and rear of the room, but in no case on the two opposite sides of any room.

Tops of windows shall not be placed more than 8" (eight inches) below the ceiling line.

### VAULTS.

Vaults for outside water closets to be not over six feet deep, and must be constructed of brick or concrete walls not less than 9" (nine inches) thick. No part of the vault to extend under the floor of the closet.

### FIRE EXTINGUISHERS.

Provide standpipe and hose in basement with sufficient length of 1½" (one and one-half inch) hose to reach any part of the story. Hose lines shall be provided with nozzles and

hose racks, and hose shall be connected ready for use.

Provide three-gallon chemical fire extinguishers of a type approved by the National Board of Fire Underwriters for all stories above the basement. Fire extinguishers shall be provided in the proportion of one to every four class rooms, or equivalent or fraction thereof.

Hose and extinguishers must be examined at least once every six months, and be put in first class working condition ready for use.

## PLUMBING.

Remove waste plug from lavatory bowls, or use sinks instead of lavatories.

Use sanitary school house drinking fountains with jet giving a continuous flow of water where holly service is available.

Where pumps are used invert the outlet.

No tin cup or tumblers shall be allowed in or about the building.

Provide one water closet for each fifteen girls, and one for each twenty-five boys or fraction thereof. Provide one ventilated individual urinal for each fifteen boys, or fraction thereof.

No dry closet system will be permitted.

Plumbing shall be installed as per code prepared by this department.

## GAS FITTINGS.

No rubber hose connections shall be made with any stove or heater; the same must be made with metallic piping.

All piping shall be capped, tested and proved tight before plastering is done.

## ELECTRIC WORK.

Electric equipment shall be installed according to the "National Electrical Code."

## FIRE ALARM.

All buildings with basement, and all buildings over one story high, to be provided with an 8" (eight inch) in diameter fire gong with connections enabling the ringing of same from any story or basement.

In semi-detached buildings provide gong for each section. All gongs to be connected up so as to ring simultaneously from any story or basement of either section.

## CONSTRUCTION.

No nine inch wall can be used over ten feet high except for flues.

Cover all floor joists with rough sub-floor as soon as the joists are laid.

In calculating construction the superimposed load on class room floors must be assumed at 60 (sixty) pounds per square foot uniformly distributed, and for halls, auditoriums, stairs and corridors it must be assumed at 80 (eighty) pounds per square foot uniformly distributed.

### HARDWARE.

All entrance, exit and emergency doors shall be equipped with hardware of such nature as to be unlockable from within.

No top and bottom door bolts will be permitted.

Single doors to fire escapes, inclosed stair-towers and emergency exits from basement shall be fitted with one knob latch (without key), or equivalent.

School room doors shall have knob latch (without key), or equivalent.

Double doors shall have one double expansion bolt.

The only doors in the building that may have key locks will be one main entrance-door, library door, closets and boiler room doors.

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