

TRANSACTIONS OF THE
**American
Foundrymen's Association**



Proceedings of the
Twenty-first Annual Meeting

CLEVELAND, OHIO.

Sept. 11 to 16, 1916

Volume XXV

Edited by
A. O. BACKERT
Secretary

Published by the American Foundrymen's Association
Cleveland, Ohio
1917

PAID by The Book Shop Bindery - 3809 W. Division St. - Chicago 51, Ill.

00641

Proposed American Foundrymen's Association Safety Code

RULE A.—DEFINITION

1.—A "foundry" shall mean a place where any metal, alloy or composition is melted and poured into molds for the making of castings.

RULE B.—ENTRANCES

1.—The term "entrances" shall mean passages for common use provided for employes during working hours, between the foundry and open air.

2.—Entrances to foundries shall be protected by a covered vestibule or its equivalent, which shall be so constructed as to eliminate drafts and of such dimensions as to answer ordinary purposes, such as the passage of wheelbarrows, trucks and small industrial cars. This rule shall not apply to entrances used for railroad or industrial cars handled by locomotives or motors, or for traveling cranes, horse-drawn vehicles or automobiles; these entrances may remain open for such time as is necessary for the ingress and egress of such cars, trucks and cranes, horse-drawn vehicles or automobiles. No locomotive shall be permitted to remain inside the foundry during the loading or unloading of the cars.

RULE C.—GANGWAYS

1.—The term "gangways" shall mean well defined passage-ways dividing the working floors of foundries, but not the spaces between molds.

2.—Gangways other than those for carrying molten metal shall be of sufficient width and properly illuminated to safely allow the passage of men and materials. They shall be kept free from obstruction at all times.

3.—Main gangways where metal is carried by hand or buggy shall be of sufficient width to allow the passage of two

ladles going in opposite directions, with an additional side clearance of six (6) inches.

4.—Main gangways for crane ladles shall be wide enough to allow a clearance of eighteen (18) inches on each side of the largest ladle used, except in such cases where ladles are carried with a clearance of at least six (6) feet above the floor.

RULE D.—AISLES

1.—Spaces between molds shall be divided into three classes, which shall be known as "hand-ladle" aisles, "buggy-ladle" aisles and "crane-ladle" aisles.

2.—Hand-ladle aisles—when a ladle is carried by one (1) man shall be of sufficient width to allow two (2) men to pass.

3.—Hand-ladle aisles—when ladles are carried by more than two (2) men—shall be wide enough to allow two (2) men to walk abreast, with an additional total clearance of six (6) inches.

4.—Buggy-ladle aisles shall be of sufficient width to accommodate the ladle with a clearance of six (6) inches on each side.

5.—Crane-ladle aisles—leading from the molds to gangway—shall be of sufficient width to permit the safe ingress and egress of employees and safe use of ladles.

6.—During the progress of casting, every gangway or aisle shall be kept entirely free from pools of water or obstruction of any nature. Every gangway where industrial tracks are used shall be constructed of a hard material of substantial character, and the top of the rails shall be flush with the floor.

RULE E.—VENTILATION

Removal of Smoke, Steam, Gases and Dust

1.—Every foundry shall be so ventilated during working hours that smoke, gases, fumes or dust injurious to the health of employees shall, as far as practicable, be rendered harmless by means of natural circulation of air, or by ventilating hoods, fans or other effective devices.

2.—Where the operation of drying ladles causes fumes or gases within the foundry, ventilating hoods shall be provided to remove such fumes or gases.

3.—All ovens from which fumes or gases escape shall be provided with hoods of sufficient capacity to remove such fumes and gases.

4.—Foundries in which alloys containing zinc or aluminum are melted or poured shall have a minimum ceiling height of at least fourteen (14) feet. Every furnace shall be provided with ventilating apparatus to effectively remove all noxious fumes and gases. The ceiling of such foundries shall be at least six (6) feet above curb lines.

RULE F.—LIGHTING

1.—The light in every foundry shall be sufficient to provide safe entrance and exit of employees, and to carry on work safely during working hours.

2.—When natural light is insufficient to properly light the foundry, artificial light of sufficient power shall be provided.

3.—The continuous use of hand torches or other lamps that emit injurious smoke or gases is prohibited.

RULE G.—HEATING

1.—The temperature in every foundry shall be maintained at not less than fifty (50) degrees Fahrenheit during working hours in all sections where employees are regularly working.

2.—The use of open salamander stoves shall be prohibited.

RULE H.—SANITATION

Water Closets

1.—Water closets shall be provided in every foundry for each sex, according to the following table:

Number of Persons.	Number of Closets.	Ratio.
1 to 10.....	1	1 for 10
11 to 25.....	2	1 for 12½
26 to 60.....	3	1 for 16 2/3
61 to 80.....	4	1 for 20
81 to 125.....	5	1 for 25

For every unit of 45 or fractional part thereof in excess of 125 employees an additional water closet shall be provided. Where water and sewage facilities are not available, sanitary chemical closets may be used.

RULE I.—URINALS

1.—Urinals shall be provided in accordance with the following table:

Number of Persons.	Number of Urinals.	Ratio.
1 to 30.....	1	1 to 30
31 to 80.....	2	1 to 40
81 to 160.....	3	1 to 53 1/3

And thereafter an additional urinal to every eighty (80) employed. One individual urinal shall be considered equivalent to two (2) lineal feet of trough or slab urinals.

RULE J.—WASHROOMS

1.—Wash basins with faucets for hot and cold water shall be supplied according to the following table:

Number of Persons.	Number of Wash Basins.	Ratio.
1 to 8.....	1	1 for 8
9 to 16.....	2	1 for 8
17 to 30.....	3	1 for 10
31 to 45.....	4	1 for 11 1/4
46 to 65.....	5	1 for 13

For each additional twenty-five (25) employees at least one additional wash basin shall be supplied. Twenty inches of enameled sink, or its equivalent in sanitary properties shall be considered the equal of one wash basin.

RULE K.—SHOWER BATHS

1.—Shower baths shall be provided according to the following table:

Number of Persons.	Number of Showers.	Ratio.
1 to 50.....	1	1 for 50
51 to 100.....	2	1 for 50
100 to 200.....	3	1 for 66 2/3
200 to 400.....	4	1 for 100

For each additional two hundred (200) employees, one additional shower shall be supplied.

RULE L.—LOCKERS

1.—Individual metal lockers arranged for locking shall be provided for employees, and shall be placed in a space used exclusively for such purposes. This space may be located in the washroom, the drying room, or at convenient places in the molding room.

RULE M.—DRYING ROOM

1.—Facilities shall be provided, either in connection with locker room, wash or toilet rooms for the sanitary drying of workmen's clothes.

RULE N.—GENERAL

1.—All the above sanitary provisions shall be conveniently located in a place accessible to and connected with the foundry so that entrance thereto can be had without exposure to the open air. General recommendations to be approved at end of code.

RULE O.—DRINKING FOUNTAINS

1.—Drinking fountains shall be installed at convenient places, and the use of a common drinking cup prohibited.

RULE P.—CORE ROOMS

1.—All regulations pertaining to the foundry such as heating, lighting, ventilating and sanitation shall apply equally to the core room.

2.—When core ovens are located in the same room in which the cores are made, the temperature of that part of the room devoted to core making shall not exceed one hundred (100) degrees Fahrenheit.

3.—Separate working space shall be provided where females are engaged in the making of cores.

00644

4.—No female employed in any core making room shall be permitted to handle cores having a temperature in excess of one hundred ten (110) degrees Fahrenheit.

RULE Q.—CLEANING AND FINISHING OPERATIONS

1.—All castings shall, where practicable, be cleaned or chipped in rooms separated from those used for other purposes; but where castings are cleaned or chipped in molding or casting room, there shall be provided suitable screens, partitions, or other effective means to protect employes against flying chips or excessive dust.

2.—When finishing rails or benches are used, these must be sufficiently far apart to allow the operatives to pass between them without being endangered by falling castings.

3.—All cleaning and finishing floors shall be cleaned and leveled at sufficient intervals to insure safe working conditions.

4.—When dry tumbling mills are used exhaust apparatus shall be installed and operated that will effectively draw off the dust created by the operation of such mills; or the mills shall be enclosed in reasonably dust-tight compartments while in operation.

5.—Where dry grinding, buffing or polishing floor stand machines are used, exhaust apparatus or its equivalent shall be installed and operated that will effectively remove the dust created by the operation of such machines. This rule shall not apply to floor or bench stands used especially for grinding.

6.—Where swing frame or portable buffing, grinding or polishing machines are used, screens shall be provided to protect adjacent workmen.

7.—All abrasive wheels shall be provided with protection hoods adapted to a proper presentation of the work and be mounted with compression blotters and with relieved flanges, at least one-half the diameter of the wheel.

8.—Sand-blasting by hand-operating apparatus shall be carried on in suitable sand-blast rooms. Sand or shot blast operatives shall be provided with suitable helmets or masks, respirators, approved safety goggles, gloves and leggings.

9.—All men engaged in the cleaning and finishing departments shall be provided with approved safety goggles.

10.—All tools shall be kept free from mushroomed heads and kept properly dressed.

11.—All chisel and hammer handles shall be properly fitted and provided with safety wedges.

12.—All electric arc welding shall be properly enclosed to prevent egress of light rays. Such enclosures shall be properly ventilated.

13.—The operatives shall be provided with improved masks, gloves and slow combustion aprons.

14.—The use of high explosives is absolutely prohibited on the foundry premises.

15.—The breaking of castings by the use of a drop inside the foundry during the general working hours is prohibited. When a drop is used for the breaking of castings or scrap outside of the foundry, a permanent shield of heavy planking or other protection shall be provided.

16.—Every employe in every foundry shall use the devices furnished for his protection by his employer where there is a hazard connected with his employment.

RULE R.—EQUIPMENT

1.—The floor beneath and immediately surrounding a cupola shall be kept free from collection of water.

2.—All pits or openings located in foundry floors shall be guarded by suitable covers or railings or by watchmen.

3.—All ladles pouring from the lip, of two thousand (2,000) pounds or over capacity, shall be equipped with a worm-gear device for tilting them.

4.—All crane, truck and trolley pouring ladles shall be so constructed that the center of gravity shall be below the trunnion, and shall be equipped with a dog to prevent it from overturning.

5.—All single shank hand ladles shall be provided with sheet metal guards.

6.—Where the crown plate of an upright crucible furnace is elevated above the surrounding floor in excess of twelve (12)

inches, the furnace shall be equipped with a platform having a standard rail; such platform shall be constructed of metal or other fireproof material, and shall extend along the fronts and sides of the furnace, flush with the crown plate, and shall be at least four (4) feet in width, and shall be clear of all obstructions during pouring time. If the platform is elevated above the floor in excess of twelve (12) inches the lowering from same of crucible containing molten metal shall be by mechanical means.

7.—When the combined weight of crucible, tongs and molten metal exceeds one hundred (100) pounds, it shall be removed from furnace by two men, or mechanical means, and deposited on the floor.

8.—Equipment used for the movement of materials by overhead cranes, such as sand buckets, shall be of substantial construction. When buckets have movable bails, safety locks or catches shall be provided, and the use of such locks must be enforced.

9.—Substantial cast steel handles shall be provided on grab buckets to afford safe means of pulling or prying apart the jaws in case the cylinders stick.

10.—All equipment such as sand mills, tumblers, etc., shall have gears, belts and all movable parts safely guarded.

11.—All gears, including trolley gears, couplings, keys, set screws and other movable parts shall be completely closed by guards, so constructed as to afford easy access for inspection and repairs. Guards shall be strong enough and properly attached to cranes to catch and prevent the falling of the parts which are guarded.

12.—Foot-walks extending the entire length of the crane bridge girders on the line shaft side shall be of substantial construction, rigidly braced to eliminate vibration, having standard railing and toe boards to prevent the falling of workmen and tools, and provide a safe and adequate means of travel about cranes.

13.—Crane cages shall be enclosed to a height of 3 feet 6 inches above floor with non-combustible material, where molten metal is carried by the crane, otherwise a standard railing and toe board is sufficient.

14.—Fenders shall be provided on all crane and carriage and trolley wheels. These fenders shall be of such shape that they will tend to push a man's hand, arm or leg away from the wheel.

15.—In all new construction clearances between crane-walks, cages, etc., and the building walls and roof-trusses shall be ample to insure the safety of crane-men and repairmen.

16.—Suitable electrical or mechanical brakes shall be provided to insure the safe movement of cranes and loads.

17.—All cranes shall be provided with a safety lock switch box so that the electric control of the crane can be locked in the off position during inspection and repairs.

18.—All overhead cranes shall be provided with good strong foot gongs to warn workmen of the passage of overhead loads.

19.—The practice of riding chain and crane loads shall be prohibited.

20.—The swinging or dangling of loose crane chains as the crane moves down the floor shall be prohibited. In case it is necessary to move the crane along the floor with the chains dangling, the ends must be guided by chainmen walking beneath.

21.—All jib cranes shall be mounted on substantial foundations, and securely anchored to the building. All gears and moving parts shall be guarded.

22.—All sling beams shall be securely suspended from jib crane hooks, and guards shall be installed on the hook to prevent the beams from jumping out of the hooks. Sling beams shall be so constructed that the slings cannot jump off the beam, and can be readily moved to accommodate different size flasks.

23.—Slings of all kinds shall be constructed of material of proper quality and sizes to insure at all times a safety factor of 10.

RULE S.—INSPECTION

1.—All ladles, ladle shanks, crucibles, crucible shanks, crucible tongs, yokes, skimmers, slag hoes, crane chains, cables, ropes and slings shall, prior to their use, be inspected in regard to

their safe condition by the men preparing and using such appliances.

2.—An inspection in regard to the safe condition of all hoisting apparatus and accessories shall be made at least once a month by a man designated by the employers for the purpose and a record shall be kept of such inspection.

RULE T.—EMPLOYMENT OF FEMALES

1.—No female shall be employed in a foundry unless upon examination by a physician, it has been determined she is of normal health.

2.—No female employed in any foundry shall lift any object exceeding twenty-five (25) pounds in weight, unless she uses mechanical mean by which her physical effort is limited to exertion equivalent to that number of pounds.

RULE U.—GENERAL REGULATIONS

1.—Regulations affecting industrial establishments generally in respect to the safeguarding of transmission machinery, miscellaneous machinery, elevators, stairways, platforms, chains and cranes, or relating to sanitary conveniences and first aid equipment, not included in this Safety Code, shall apply with equal force to foundries.

2.—When handling molten metal, employes shall wear leggings, Congress type shoes, and when possible, goggles.

Recommendations

The Committee makes the following recommendations which it deems most essential in successful accident-prevention work.

1.—All injuries must be promptly reported, no matter how trivial, to proper authorities.

2.—Special efforts shall be made to impress upon all men the necessity of immediately taking care of all minor injuries, cuts, scratches and burns.

3.—It is recommended that tincture of iodine, and not peroxide shall be used for first aid purposes.

4.—Employes must not, under any circumstances, attempt to remove foreign particles from the eyes of a fellow workman; as infection is almost certain to follow the use of toothpicks, matches, fingers or handkerchiefs for this purpose.

5.—All eye injuries shall be attended to by a regular physician.

6.—The use of liquor shall absolutely be prohibited during working hours. Its use shall be discouraged at all times.

7.—Accident prevention will be encouraged by the formation of safety committees among the men. All foremen must take a personal interest in accident prevention and are expected to set an example of carefulness.

8.—Strict enforcement of workshop regulations is one of the best methods of accident prevention.

9.—First aid kits should contain—

A.—Package done up in waxed paper containing aseptic dressing and a bandage for some safe and effective antiseptic, such, for example, as a small vial holding 1 dram of 3 per cent solution of tincture of iodine, together with a camel hair brush and a bandage.

B.—Splints and roll of large bandages.

C.—Tourniquet.

10.—It has been proved that 75 per cent of all accidents can be eliminated by educational methods; therefore, the use of bulletin boards, motion pictures, safety meetings and suggestion boxes are to be encouraged.

11.—A room shall be provided and kept in a sanitary condition for the employes' use to eat their meals.

Discussion

MR. V. T. NOONAN.—I presume that all of you have a copy of the printed report of the Safety Committee. This report has been very carefully prepared and finally, at the last moment, some modifications were made. I want to impress upon all the members of the American Foundrymen's Association that