

171. *Notice of Intended Removals or Alterations.*—No person shall remove or make any alteration in any drain-pipe, soil-pipe, water-closet, urinal, trap, or other sanitary fitting communicating with any sewer unless he shall have previously given the Clerk forty-eight hours' notice in writing of his intention to do so.

172. *Authorized Plumbers and Drainlayers only to be employed.*—No person shall be allowed to do any plumbing work in connection with the drainage of any property unless he shall have applied to and shall have been licensed by the Board as an "authorized plumber," and shall have engaged to conform to and comply with these regulations. The application to be made on Form 4 and the license shall be in Form 1 of the Schedule hereto. All plumbers and drainlayers shall be licensed annually under this by-law. No person shall be allowed to lay any drains, or remove or alter or make any connection with the drains of any property, unless he shall have been licensed by the Board as an "authorized drainlayer and connector," obtained the necessary permit, and shall have engaged to conform to and comply with these regulations.

173. *Application for Provisional License.*—Applicant for drainlayer's license not having held a license previously may be granted a provisional license until such time as the Inspector shall be satisfied that he is competent, when a drainlayer's license will then be issued.

174. *Defective Drains.*—Each defective drain laid by a licensed drainlayer shall count a black mark against his license. Three such marks shall render his license liable to be cancelled at the discretion of the Engineer, and the said drainlayer shall be debarred from holding a further license within the district governed by these by-laws.

175. *Inspection of Drainage-works.*—Any and all work connected in any way with the drainage of any premises shall be executed in every respect in accordance with this by-law; all such work shall be inspected by the Inspector, and every facility shall be offered for such inspection. No underground or enclosed work shall on any account be covered up or concealed from view until the same has been duly tested and passed by the Inspector, twenty-four hours' notice to be given.

176. *Defective Drain-pipes, &c.*—Any drain-pipe, trap, water-closet, urinal, sink, or other fitting laid, used, or constructed otherwise than in accordance with these regulations, or which shall, in the opinion of the Inspector, be or become of bad or defective quality, shall, upon notice in writing from the Inspector, be removed or repaired in the manner and within the time fixed by the Inspector; and the Board may, should it think fit, on failure by the person liable to perform such removal or repair, remove or repair the said defective fitting, and charge the owner or occupier of the premises with the cost incurred.

177. *Construction of House Drains.*—No house drain shall be less than four inches internal diameter, and every such drain shall be constructed of glazed stoneware or cast-iron pipes of the best quality; no soft-burnt, cracked, crooked, or distorted pipes shall be used; right-angled junctions will not be allowed; curves shall be formed by proper bend-pipes, having inspection-eye of approved make. A disconnecting trap of an approved make, complete with ventilating shaft, shall be fixed at the street boundary of each drain, or at such point as the Board's Inspector deems necessary.

178. *Laying of Drains.*—As far as possible all house drains shall be laid in straight lines; where changes of direction occur such shall be made by the construction of an inspection chamber, or by an approved bent-pipe as directed by the Inspector. The pipes must be laid with true gradients, the inclination as steep as circumstances will conveniently permit; if possible, not less than 1 in 40 for four-inch pipes and 1 in 60 for six-inch pipes. All pipe trenches shall be carefully cut in the solid ground, and well rammed, and all pipes laid as follows:—

179. *Pipes to be laid in Concrete.*—All earthenware pipes shall be carefully laid and bedded on a concrete bed four inches thick up to the shoulders, and jointed in two-to-one cement mortar. The concrete must be put in carefully round them, and rammed to fill in everything tight; also, after the cement joint has been made, a scraper must be used inside to remove any mortar that has squeezed in, and the joints left perfectly level. All gully-traps and disconnecting traps must have at least four inches of concrete under and around them, and be well bedded in it up to their top.

180. *Drain beneath Buildings.*—As far as possible no drain-pipe shall pass beneath any building. Where, however, this is unavoidable, the pipe must be of cast-iron, lead-jointed; or if of stoneware, the pipe must be bedded in and surrounded with good cement concrete four inches in thickness. In every case the pipe shall be ventilated in the manner directed by the Inspector, by a suitable shaft or opening at each end.

181. *Ventilating-shaft, &c.*—On the sewer side of every disconnecting trap a ventilation shaft shall, if required by the Board, be furnished, having a diameter of four inches. Such connection shall be made on the top of the drain by means

of a vertical branch. No part of such shaft shall be placed inside any building. Such shaft shall be carried to a height not less than three feet above the highest point of the highest roof within a radius of fifty feet in a horizontal direction from the shaft. A cap or cowl of an approved pattern shall be fixed on the top thereof. The outlet of the ventilation shaft shall be placed as far away as possible, not being less than six feet, measured in any direction, from any window or chimney-top. Where underground, every such ventilation shaft shall be of stoneware drain-pipes laid in a workmanlike and efficient manner, and to the satisfaction of the Inspector, or of cast-iron pipe with lead or rust joints. To a height of six feet above the surface of the ground the shaft shall be of cast iron, not less than three-sixteenths of an inch in thickness, similarly jointed, or of screwed wrought-iron piping; thence to its outlet it may be made of cast-iron, screwed wrought-iron pipe, 6 lb. lead, or galvanized iron of not less than 22 B.W.G. The connection between the stoneware and the vertical pipe shall be made with cement, which together with all other joints shall be perfectly airtight. If galvanized iron is used, the pipes shall be in long lengths, with double lapped and soldered longitudinal joints, and the transverse joints shall be not less than two inches in length, slipped or socketed, and soldered. The connection between the galvanized-iron pipe and the cast-iron portion of the shaft shall be of lead run in and caulked, the portion of the galvanized-iron pipe inside the socket of the cast-iron pipe being strengthened by a galvanized-iron band, three inches wide, of 22 B.W.G. soldered to it. Putty shall not under any circumstances be used for jointing any ventilation pipes. No angular joints or elbows shall be used below the eaves level. This shaft shall be properly constructed and supported, and carried in as direct a manner as possible. Where any ventilating pipe passes through the soffit or eaves of any building it shall be encased by a galvanized-iron sleeve of not less than 22 B.W.G.

182. *Ventilating-pipes.*—At the head of every house drain, and at the end of every branch drain if it exceeds fifteen feet in length, a ventilating-pipe with approved top to be provided, carried up at least three feet above the eaves of the most suitable adjacent building, or to the ridge of the roof, as may be directed. No communication whatever will be allowed with the interior of any building except by means of a proper trap, in addition to that fixed by the Board at the boundary, and duly ventilated by a pipe carried up to a sufficient height. Pipes used solely as ventilating-pipes and situated wholly outside buildings may be of cast iron or lead. Where one such pipe only is fixed upon a line of drain its internal diameter shall be not less than four inches; where more than one pipe is fixed upon the same line of drain the internal diameter of each pipe shall be not less than three inches. Ventilation-pipes shall be carried up without angles or horizontal lengths three feet at least above the eaves, or better to three feet above the ridge of the highest adjacent building, as may be directed by the Inspector. Rain-water pipes shall not be used as ventilators. As far as possible, all ventilating-pipes shall be placed outside buildings.

183. *Soil-pipes not to be placed within Buildings.*—Soil-pipes shall not be fixed inside any building, but shall be placed outside the walls thereof, and the connection with the closet inside shall be made as short and straight as possible. Every soil-pipe shall be ventilated by being carried up above the roof of the building. No soil-pipe shall be less than four inches internal diameter, and no connection thereof for ventilation shall be less than four inches internal diameter. Every soil-pipe shall be of cast iron or lead.

184. *Waste and Discharge Pipes.*—Waste or overflow pipes from sinks, baths, washtubs, urinals, or other sanitary fittings must be brought outside the house by the shortest and straightest route, and there discharged over a properly ventilated disconnecting trap. All waste-pipes exceeding ten feet in length must be fitted with an anti-siphon vent-pipe. All discharge-pipes to be trapped to the satisfaction of the Inspector. All waste-pipes must have a siphon trap of the same area fitted close under the intake of waste.

185. *Grease-trap.*—In case of hotels, boardinghouses, restaurants, and eating-houses there shall be provided in addition to the above requirements a suitable grease-trap. No wood will be allowed to be built around sinks unless well bedded around with red-lead putty, and to the satisfaction of the Inspector.

186. *Sinks, &c., inside Buildings in Cellars.*—No sink, gully, water-closet, urinal, bath, lavatory, wash-house, or other appliance for domestic, trade, or manufacturing purposes necessitating drainage therefrom will be allowed inside buildings, in cellars, or basements unless absolutely necessary, and for which a special permit has been granted by the Board. In all such cases the outlet pipe shall be trapped and shall discharge into an open shaft outside the building, which shall communicate with the drain leading to the sewer by a properly ventilated trap. Special means shall, if required, be provided to ensure a proper supply of water to the said traps.