

REGULAR MEETING.

COUNCIL CHAMBER, CITY OF INDIANAPOLIS, IND.

MONDAY, November 17, 1913.

The Common Council of the City of Indianapolis met in the Council Chamber, Monday evening, November 17, 1913, at 7:30 o'clock, in regular session, President Charles F. Copeland in the chair.

Present: The Hon. Charles F. Copeland, President of the Common Council, and 6 members, viz.: Messrs. Rubens, Denny, Owen, Stilz, Blumberg and Troy.

Absent, 2, viz.: Messrs. Johnson and McCarthy.

Mr. Rubens moved that the reading of the Journal be dispensed with. Carried.

COMMUNICATIONS FROM THE MAYOR.

EXECUTIVE DEPARTMENT,
CITY OF INDIANAPOLIS,
INDIANAPOLIS, IND., November 13, 1913.

To the President and Members of the Common Council and City Clerk, City:

GENTLEMEN: I return herewith with my approval the following ordinances:

General Ordinance No. 73, 1913, being an ordinance granting to the Indianapolis Salvage Corps the right to enter buildings on fire or exposed to fire, and to protect and save property therein.

General Ordinance No. 75, 1913, being an ordinance providing for the transfer of \$500.00 from a certain fund to a certain fund in and for the use of the Department of Public Works and fixing a time when the same shall take effect.

General Ordinance No. 76, 1913, being an ordinance providing for the transfer of \$600.00 from a certain fund to a certain fund in and for the use of the Department of Public Health and Charities and fixing a time when the same shall take effect.

General Ordinance No. 83, 1913, being an ordinance granting to the Indianapolis Salvage Corps the privilege of the streets of the City of Indianapolis, Indiana.

Appropriation Ordinance No. 73, 1913, being an ordinance appropriating the sum of \$55.00 to and for the use of the Department of Finance and fixing a time when the same shall take effect.

Appropriation Ordinance No. 39, 1913, being an ordinance appropriating the sum of \$1,200.00 to and for the use of the Department of Public Works and fixing a time when the same shall take effect.

Appropriation Ordinance No. 40, 1913, being an ordinance appropriating the sum of \$5,000.00 to and for the use of the Department of Public Works and fixing a time when the same shall take effect.

Appropriation Ordinance No. 47, 1913, being an ordinance appropriating the sum of \$2,700.00 to and for the use of the Department of Public Safety and fixing a time when the same shall take effect.

Appropriation Ordinance No. 52, 1913, being an ordinance appropriating the sum of \$200.00 to and for the use of the Department of Finance and fixing a time when the same shall take effect.

I have the honor to remain,

Very truly yours,

S. L. SHANK,

Mayor City of Indianapolis.

EXECUTIVE DEPARTMENT.

CITY OF INDIANAPOLIS.

INDIANAPOLIS, IND., November 15, 1913.

*To the President and Members of the Common Council and City Clerk,
City of Indianapolis:*

GENTLEMEN: I return herewith with my approval Resolution No. 19, 1913. I have the honor to remain,

Very truly yours,

S. L. SHANK,

Mayor City of Indianapolis.

REPORTS FROM CITY OFFICERS.

From City Controller:

FINANCE DEPARTMENT,
CITY OF INDIANAPOLIS,
INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council:

GENTLEMEN: I submit herewith a communication from the Department of Public Safety requesting me to recommend an appropriation of \$306.45 to the fund known as "Weights and Measures Salaries."

I submit herewith an ordinance providing for the amount of the appropriation requested and recommend its passage.

• Respectfully submitted,

HARRY R. WALLACE,
City Controller.

FINANCE DEPARTMENT,
CITY OF INDIANAPOLIS,
INDIANAPOLIS, IND., November 17, 1913.

Mr. Harry R. Wallace, City Controller:

DEAR SIR: We find it will take the following amount to pay the salaries for November and December in the below named department, this being caused by raise in salaries without the appropriation being made to cover same. We would respectfully request you to recommend to the Common Council to appropriate same:

Weights and Measures Salaries.....\$306.45

Respectfully yours,

BOARD OF PUBLIC SAFETY,
WM. E. DAVIS, *President.*

From City Controller:

FINANCE DEPARTMENT,
CITY OF INDIANAPOLIS,
INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council:

GENTLEMEN: I submit herewith a communication from the Department of Public Safety requesting me to recommend an appropriation of \$58,000.00 to the fund known as "Police Force Payroll."

I submit herewith an ordinance providing for the amount of the appropriation requested and recommend its passage.

Respectfully submitted,

HARRY R. WALLACE,
City Controller.

DEPARTMENT OF PUBLIC SAFETY,
OFFICE OF THE BOARD.
INDIANAPOLIS, IND., November 17, 1913.

Mr. Harry R. Wallace, City Controller:

DEAR SIR: We find it will take the following amounts to pay the salaries for November and December in the below named departments, this being caused by raise in salaries without the appropriation being made to cover same. We would respectfully request you to recommend to the Common Council to appropriate same:

Police Force Payroll -----\$58,000.00

Respectfully yours,
BOARD OF PUBLIC SAFETY,
WM. E. DAVIS, *President.*

From City Controller:

FINANCE DEPARTMENT,
CITY OF INDIANAPOLIS.
INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council:

GENTLEMEN: I submit herewith a communication from the Department of Public Safety requesting me to recommend an appropriation of \$349.88 to the fund known as "Station House Salaries."

I submit herewith an ordinance providing for the amount of the appropriation requested and recommend its passage.

Respectfully submitted,

HARRY R. WALLACE,
City Controller.

FINANCE DEPARTMENT,
CITY OF INDIANAPOLIS.
INDIANAPOLIS, IND., November 17, 1913.

Mr. Harry R. Wallace, City Controller:

DEAR SIR: We find it will take the following amount to pay the salaries for November and December in the below named department, this being caused by raise in salaries without the appropriation being made to cover same. We would respectfully request you to recommend to the Common Council to appropriate same:

Station House Salaries -----\$349.88

Respectfully yours,
BOARD OF PUBLIC SAFETY,
WM. E. DAVIS, *President.*

From City Controller:

FINANCE DEPARTMENT,
CITY OF INDIANAPOLIS.
INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council:

GENTLEMEN: I am in receipt of a bill for \$178.75 from the City

Court for 2,000 Annual Reports of the City Court for the year 1912, and our fund is exhausted for Miscellaneous Expense City Offices. I am requesting an appropriation for the above amount so that this bill may be paid.

I submit herewith an ordinance providing for the amount of the appropriation requested and recommend its passage.

Respectfully submitted,

HARRY R. WALLACE,
City Controller.

From City Controller:

FINANCE DEPARTMENT,
CITY OF INDIANAPOLIS.
INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council:

GENTLEMEN: I received a communication from the Department of Public Works requesting me to recommend the transfer of \$1,500.00 from the fund for Fire Headquarters and City Garage Building to the Furniture and Fixture fund of the Department of Public Safety.

It is my understanding that this building will be completed by December 15th, and it was the desire of the Board of Public Safety to furnish the same at that time so as to be ready to be occupied.

I submit herewith an ordinance providing for the amount of the transfer requested and recommend its passage.

Respectfully submitted,

HARRY R. WALLACE,
City Controller.

DEPARTMENT OF PUBLIC WORKS,
OFFICE OF THE BOARD.
INDIANAPOLIS, IND., November 17, 1913.

Harry R. Wallace, City Controller:

DEAR SIR: You are requested to recommend to the Common Council the passage of an ordinance transferring the sum of \$1,500.00 from the fund for Fire Headquarters and City Garage Building to the Furniture and Fixture Fund of the Department of Public Safety for the purchase of furniture and fixtures for the Fire Headquarters Building and City Garage.

Respectfully,

C. A. SCHRADER,
CHARLES L. HUTCHINSON,
E. J. O'REILLY,
Board of Public Works.

From Board of Public Health and Charities:

DEPARTMENT OF PUBLIC HEALTH AND CHARITIES,
OFFICE OF THE BOARD.
INDIANAPOLIS, IND., November 12, 1913.

To the President and Members of the Common Council, City:

GENTLEMEN: The Department of Public Health and Charities hereby

submits the following balances and expenditures of the various funds of the City Hospital for the month of October, 1913:

	<i>Expense</i>	<i>Balances</i>
Drugs -----	\$225.81	\$387.95
Dry Goods -----	153.83	809.66
Electrical Supplies -----	18.61	325.47
Engine Room Supplies -----	151.50	229.38
Furniture Fund -----	453.65	466.16
Fuel -----	481.41	481.55
Flower Mission Hospital -----	252.86	619.83
Gas -----	-----	10.42
Hardware -----	13.03	188.10
Horse Shoeing -----	9.00	140.00
Incidentals -----	455.06	46.37
Laundry Supplies -----	150.85	2.47
Nurses' Fund -----	769.59	1,151.72
Paints and Painting -----	155.19	626.45
Plumbing Supplies -----	72.32	556.04
Provisions -----	2,293.97	801.17
Printing and Stationery -----	64.15	178.15
Queensware -----	.55	207.24
Repairs to Buildings -----	56.94	677.73
Salaries -----	2,895.76	5,519.24
Stable Supplies -----	-----	1.66
Surgical Supplies -----	257.45	173.06
Telephones -----	-----	95.61
Contagious Disease Fund -----	452.25	B. of H.
Tuberculosis Fund -----	-----	B. of H.
Total -----	\$9,383.78	-----

Total number of patients treated during the month of October,
1913 ----- 6,692
\$9,383.78 ÷ 6692 = \$1.40, average cost of one patient per day.

Very truly yours,

H. G. MORGAN, M. D.,
Secretary.

REPORTS FROM STANDING COMMITTEES.

From the Committee on Finance:

INDIANAPOLIS, IND., November 10, 1913.

To the President and Members of the Common Council of the City of Indianapolis:

GENTLEMEN: We, your Committee on Finance, to whom was referred Appropriation Ordinance No. 38, 1913, being "An ordinance appropriating the sum of \$20,000.00 to and for the use of the Department of Public Works and fixing a time when the same shall take effect," beg leave to

report that we have had said ordinance under consideration and would recommend that the same do pass. Respectfully submitted,

JOHN BLUMBERG,
FRED C. OWEN,
CHARLES B. STILZ,
GEORGE B. RUBENS,

Mr. Blumberg moved that the report of the committee be concurred in. Carried.

From the Committee on Finance:

INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council of the City of Indianapolis:

GENTLEMEN: We, your Committee on Finance, to whom was referred Appropriation Ordinance No. 41, 1913, being "An ordinance appropriating the sum of \$1,500.00 to and for the use of the Department of Public Works and fixing a time when the same shall take effect," beg leave to report that we have had said ordinance under consideration and would recommend that the same do pass.

Respectfully submitted,

JOHN BLUMBERG,
FRED C. OWEN,
CHARLES B. STILZ,
GEORGE B. RUBENS,
JAMES E. TROY.

Mr. Blumberg moved that the report of the committee be concurred in. Carried.

From the Committee on Finance:

INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council of the City of Indianapolis:

GENTLEMEN: We, your Committee on Finance, to whom was referred Appropriation Ordinance No. 42, 1913, being "An ordinance appropriating the sum of \$600.00 to and for the use of the Department of Public Works and fixing a time when the same shall take effect," beg leave to report that we have had said ordinance under consideration and would recommend that the same do pass.

Respectfully submitted,

JOHN BLUMBERG,
FRED C. OWEN,
CHARLES B. STILZ,
GEORGE B. RUBENS,
JAMES E. TROY.

Mr. Blumberg moved that the report of the committee be concurred in. Carried.

From the Committee on Finance:

INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council of the City of Indianapolis:

GENTLEMEN: We, your Committee on Finance, to whom was referred Appropriation Ordinance No. 43, 1913, being "An ordinance appropriating the sum of \$3,500.00 to and for the use of the Department of Public Works and fixing a time when the same shall take effect," beg leave to report that we have had said ordinance under consideration and would recommend that the same do pass.

Respectfully submitted,

JOHN BLUMBERG,
FRED C. OWEN,
CHARLES B. STILZ,
GEORGE B. RUBENS,
JAMES E. TROY.

Mr. Blumberg moved that the report of the committee be concurred in. Carried.

From the Committee on Finance:

INDIANAPOLIS, IND., November 17, 1913.

To the President and Members of the Common Council of the City of Indianapolis:

GENTLEMEN: We, your Committee on Finance, to whom was referred Appropriation Ordinance No. 44, 1913, being "An ordinance appropriating the sum of \$1,700.00 to and for the use of the Department of Public Works and fixing a time when the same shall take effect," beg leave to report that we have had said ordinance under consideration and would recommend that the same do pass.

Respectfully submitted,

JOHN BLUMBERG,
FRED C. OWEN,
CHARLES B. STILZ,
GEORGE B. RUBENS,
JAMES E. TROY.

Mr. Blumberg moved that the report of the committee be concurred in. Carried.

From the Committee on Public Safety:

INDIANAPOLIS, IND., November 17, 1913.

Gentlemen of the Common Council:

Your Committee on Public Safety begs leave to report that it has had under consideration General Ordinance No. 72, and that it recommends the following changes in said general ordinance, which changes are more particularly referred to and set out in the following, which is attached hereto and made a part of this report.

SECTION 1, page 2. Sixth line after the word "wiring" strike out the words "with not less than one nor more than three assistant inspectors."

SECTION 2, page 3. Paragraph (c) first and second lines after the word "that" strike out "all inspectors and assistant inspectors" and insert the words "the inspector." In the third line, paragraph (c) after the word "elevator" change "inspectors" to "inspector." Paragraph (d) same section, first line after the word "that" strike out "all inspectors and assistant inspectors" and insert the words "the inspector." And in the last line change the word "inspectors" to "inspector."

SECTION 5, page 4. At the end of the section insert as "(c) The electrical wire inspector shall be appointed by the Board of Public Safety on the recommendation of two (2) competent architects and two competent master electricians selected by the Board of Public Safety for such purpose, who shall have examined into and approved the qualifications and fitness of such appointee, and who shall serve without compensation."

SECTION 8, page 4. Paragraph (b), fourth line after the word "company" insert the words "or other surety."

SECTION 11, page 5. Third line after the word "code" insert the words "except as otherwise provided herein."

SECTION 12, page 5. Paragraph (b) fifth line after the word "any" strike out the word "necessary."

SECTION 17, page 5. First line before the word "fire" insert the word "the" and after the word "limits" strike out the word "boundaries" and insert the words "of the City of Indianapolis shall be bounded as follows."

SECTION 18, page 10. Paragraph (a) third line after the word "furnace" strike out the word "wiring."

SECTION 19, page 10. Paragraph (a) fifth line after the word "furnace" insert the word "or" and after the word "elevator" strike out the words "or wiring." Paragraph (b) fifth line after the word "elevator" strike out the word "wiring." Paragraph (c), page 11, second line after the word "furnace" insert the word "or." After the word "elevator" strike out the words "or electric wiring." Paragraph (d) third line after the word "furnace" insert the word "or." After the word "elevator" strike out the words "or electric wiring."

SECTION 24, page 12. Paragraph (c) second line after the word "furnace" insert the word "or." After the word "elevator" strike out the words "or wiring." Same paragraph, page 13, second line after the word "furnace" insert the word "or." After the word "elevator" strike out the words "or wiring." Sixth line after the word "above" change the word and figure "one dollar (\$1.00)" to the word and figure "twenty-five dollars (\$25.00)."

SECTION 30, page 17. Paragraph (a) seventh line before the word "before" change the word "must" to the word "may."

SECTION 37, page 20. Paragraph (b) fourth line after the word "framing" insert the words "of structural steel."

SECTION 38, page 20. Paragraph (a) first line after the word "class"

insert the words "unless of skeleton construction with curtain walls." Paragraph (e) same section, page 21, second line after the word "than" change the word "eight" to the word "seven and one-half ($7\frac{1}{2}$)."

SECTION 43, page 22. Paragraph (b) last line after the word "sewer" insert the words "where depth of the city sewer makes the same practicable."

SECTION 46, page 23. Third line after the word "and" change the word "therefore" to "thereafter."

SECTION 47, page 23. Paragraph (a) second line after the word "cement" change the word "two" to the words "two and one-half ($2\frac{1}{2}$)."

SECTION 48, page 24. Paragraph (b) in the last column of the table under the words "Yellow Pine" insert "Oregon Fir."

SECTION 49, page 24. First line after the words "structural metal" strike out "Paragraph (a) structural metal of its various kinds for various structural purposes shall be of a quality equal to that expressed by specifications of the rules and requirements of the Board of Public Safety. Said rules and requirements when officially made and adopted shall have the full force and effect of ordinances." In the fifth line change "Paragraph (b)" to "Paragraph (a)" and in the ninth line change "Paragraph (c)" to "Paragraph (b)."

SECTION 64, page 31. Paragraph (a) second line after the word "than" change the word and figure "two hundred (200)" to the word and figure "two hundred fifty (250)."

SECTION 66, page 33. Third line after the word "concrete" insert "tile." Seventh line after the word "over" change the word and figure "sixteen (16)" to the word and figure "twenty-two (22)."

SECTION 70, page 34. Paragraph (b) sixth line after the word "line" change the word "shall" to the word "may."

SECTION 72, page 35. Paragraph (b) in the first column of the table under "non-fire-proof buildings" change the figures "6000" to "6600" and "7200" to "8200" and "9000" to "10,000." Also the two last figures in the same column "6000" to "6600" and "7500" to "8200." In the second column of the table under "fireproof buildings" the next to the last figure, "12,000" change to "13,200."

SECTION 75, page 35. (a) First line change the word and figure "four (4)" to the word and figure "three (3)." In the fourth line after the word "measurements" strike out the word and figure "fifteen (15)" and insert the word and figure "eleven (11)."

SECTION 83, page 39. Paragraph (c) first line after the word "place" change the word "where" to the word "when."

SECTION 88, page 40. Third line after the word "the" change the word "building" to "property." After the word "plinths" insert the words "or base of." Fourth line after the word "inches" strike out the words "and shall not extend over one story in height." Fifth line after the word "plinths" insert the words "or base of." At the end of the section after the word "width" insert "stone or concrete water tables may project beyond the property line not to exceed two (2) inches."

SECTION 99, page 44. Paragraph (e) fourth line after the word "passage" insert the words "of water."

SECTION 104, page 46. Third line after the word "all" insert the word "public."

SECTION 111, page 50. Paragraph (b) fifteenth line after the word "than" change the word and figure "six (6)" to the word and figure "five (5)."

SECTION 112, page 52. Paragraph (g) fourth line after the word "gyration" strike out the words "the limiting length for cast iron columns shall be seventy (70) times the least radius of gyration." Same section strike out entire "Paragraph (h) cast iron columns shall not be used in

buildings of greater height than twice the least width or in buildings over fifty (50) feet high."

SECTION 114, page 52. Paragraph (c) second line after the word "section" strike out the words "of the body of the member and the net section back of the pin hole parallel with the axis of the member," shall not be less than the net section of the body of the member," and insert the words "through the pin hole twenty-five (25) per cent. in excess of that through body of member. The minimum net section back of the pin hole and parallel to the axis of the member shall not be less than that through main member."

SECTION 118, page 55. Paragraph (a) fifth line after the word "matter" insert the words "and as provided in Section 148."

SECTION 119, page 55. Third line after the word "hold" insert the words "on the floor until the completion of the building."

SECTION 121, page 55. Paragraph (b) second line after the word "exceed" strike out the words "one-third (1-3) of its elastic limit and shall not exceed 18,000 pounds per square inch" and insert the words "sixteen thousand (16,000) pounds per square inch of structural steel grade and shall not exceed eighteen thousand (18,000) pounds per square inch for hard steel grade."

SECTION 123, page 57. Paragraph (m) second line after the word "formula" strike out the formula and insert a new formula to read

$$R = \frac{L^3}{L^3 + B^3}$$

SECTION 141, page 61, 62 and 63. Strike out entire section and insert as section 141 the following words: "Section 141. Reinforced concrete columns—limit of length—per cent. of reinforcement—bending moment in columns—tying vertical rods. (a) Reinforced concrete may be used for columns in which the concrete shall not be leaner than a 1:2:4 mixture and in which the ratio of length to least side or diameter does not exceed fifteen (15), but in no case shall the cross section of the column core be less than sixty-four (64) square inches. (b) Longitudinal reinforcing rods must be tied together to effectively resist outward flexure at intervals of not more than twelve (12) times least diameter of rod and not more than twelve (12) inches. When compression rods are not required, reinforcing rods shall be used equivalent to not less than one-half (1-2) of one (1) per cent. (.005) of the cross sectional area of the column; provided, however, that the total sectional area of the reinforcing steel shall not be less than one (1) square inch; and that no rod or bar be of smaller diameter or less dimensions than one-half (1-2) inch. (c) The area of reinforcing compression rods shall be limited to four (4) per cent. of cross sectional area of the column. (d) The concrete in such column may be stressed axially not to exceed twenty-two and one-half (22½) per cent. of the ultimate compressive strength of the concrete, the steel also being computed to carry its proportionate stress. (e) When the reinforcement consists of vertical bars and bands of spiral hooping the amount of vertical reinforcement shall not be less than the amount of the spiral reinforcement, nor greater than five (5) per cent. of the area within the hooping; the percentage of spiral hooping shall not be less than one (1) per cent., nor greater than one and one-half (1½) per cent; the pitch of the spiral hooping shall be uniform and not greater than one-eighth (1-8) of the diameter of the column, nor greater than two and one-half (2½) inches. The spiral shall be secured to the verticals in such a manner as to insure the maintaining of its form and position; the verticals shall be spaced so that their distance apart, measured on the circumference of the column be not greater than nine (9) inches, nor one-eighth (1-8) of the circumference of the column within the hooping. (f) Ends of

bands must be united in such a way as to develop their full strength. The ratio of the unsupported length of the column to diameter of hooped core shall not exceed eight (8). (g) Such columns with longitudinal bars and hoops or spirals may be stressed axially not to exceed thirty-two (32) per cent. of the ultimate compressive strength of the concrete, the longitudinal steel being computed to carry its proportionate load. The hoops or bands are not to be counted upon directly as adding to the strength of the column. No part of the concrete outside of the hooping shall be considered as a part of the effective column. (h) Proper provision must be made for transmitting the stresses from the longitudinal steel in columns to the footings. (i) When beams or girders are made monolithic with or rigidly attached to reinforced concrete columns, the latter shall be designed to resist a bending moment equal to the greatest possible unbalanced moment in the beams or girders at columns in addition to the direct loads for which the columns are designed."

SECTION 173, part 13, page 73. Paragraph (b) second line after the word "exceeding" change the word and figure "six thousand (6,000)" to the word and figure "six thousand six hundred (6,600)." In the fourth line change the word and figure "six thousand (6,000)" to the word and figure "six thousand six hundred (6,600)," and in the same line after the word "exceeding" change the word and figure "seven thousand two hundred (7,200)" to the word and figure "eight thousand two hundred (8,200)." In the fifth line after the word "of" change the word and figure "nine (9)" to the word and figure "ten (10)." In the sixth line change the word and figure "seven thousand two hundred (7,200)" to the word and figure "eight thousand two hundred (8,200)," and in the same line change the word and figure "nine thousand (9,000)" to the word and figure "ten thousand (10,000)." In the seventh line after the word "of" change the word and figure "eleven (11)" to the word and figure "thirteen (13)." At the end of the section after the word "inches" insert as "Paragraph (d). In every building hereafter erected or altered to be used for mercantile business in which goods are displayed and sold in the basement thereof, there shall be at least one (1) stairway of incombustible material leading from such basement directly to a street, alley or yard. Such stairway to be inclosed with a fireproof partition with an approved fire door to open outward, which must be kept unlocked during business hours or be equipped with a self-releasing fastening, easily operated by pressure from within."

SECTION 174, page 74. Paragraph (b) first line after the word "exceeding" change the word and figure "six thousand (6,000)" to the word and figure "six thousand six hundred (6,600)." In the third line change the word and figure "six thousand (6,000)" to the word and figure "six thousand six hundred (6,600)" and after the word "exceeding" in the same line change the word and figure "twelve thousand (12,000)" to the word and figure "thirteen thousand two hundred (13,200)." In the fifth line change the word and figure "twelve thousand (12,000)" to the word and figure "thirteen thousand two hundred (13,200)."

SECTION 186, page 79. Paragraph (a) third line after the word "that" strike out the words "said offices or stores are not over fifty (50) feet in depth from the front building line, and that."

SECTION 237, page 91. Paragraph (b) after the word "be" strike out the word "properly" and after the word "ventilated" insert the words "to the outside air."

SECTION 245 and 246. By striking out all of sections two hundred forty-five (245) and two hundred forty-six (246).

SECTION 268, page 98. Paragraph (e) second line after the word "outlet" change the word "or" to the word "and." In the fourth line

after the word "molar" insert the words "or lined with other refractory material approved by the Commissioner of Buildings."

SECTION 269, Page 98. Paragraph (c) second line after the word "boilers" insert the word "in."

SECTION 272, page 99. Paragraph (c) third line after the word "hearth" change the word "or" to the word "on."

SECTION 302, page 114. Paragraph (d) at the end of the paragraph, after the words "branch" insert the words "so located as to prevent freezing."

SECTION 305, page 115. Second line after the word "hotels" insert the words "flats, apartment buildings."

SECTION 311, page 117. Second line after the word "erecting" insert the words "manufacturing, painting."

SECTION 312, page 117. Third line after the word "specifications" insert the words "when required by the Commissioner of Buildings."

SECTION 315, page 118. Paragraph (a) after the word "all" change the word "signs" to the words "bulletin boards." Paragraph (b) at the end of the paragraph after the word "limits" insert the words "except as set out in Section 325."

SECTION 318, page 119. Paragraph (d) fourth line after the word "exceed" change the word and figure "twenty-five (25)" to the word and figure "forty (40)." Paragraph (e) second line after the word "structure" strike out the words "which is over eighty (80) feet in height" and insert the words "when such sign is over forty (40) per cent. of solid surface."

SECTION 319, page 119. Paragraph (b) third line strike out the word and figure "four (4) feet" and insert the words and figure "one-third (1-3) the width of the sidewalk," and in the fifth line after the word "than" change the word and figure "twelve (12)" to the word and figure "nine (9)."

SECTION 320, page 119. Strike out the words "weight of signs. No projecting sign of any class herein referred to, mentioned or described shall have a greater weight than eight hundred (800) pounds" and insert "Temporary flat signs. Temporary canvass or muslin flat signs may be erected and maintained in front of any place of business, for a stipulated time, with the consent of the Commissioner of Buildings, provided the same is constructed according to Section 314."

SECTION 321, page 119. Paragraph (b) second line after the word "than" strike out the words and figure "sixty-four (64) candle power" and insert the words and figure "four (4) candle power per square foot."

SECTION 325, page 120. First line after the word "wall" change the word "incombustible" to the word "wood."

SECTION 330, page 122. Third line after the word "or" change the word "engine" to the word "boiler."

SECTION 325, page 125. Seventh line after the word "carry" strike out the words "but no more than seventy-five (75) per cent. thereof shall be carried thereon."

SECTION 340, page 126. First line after the word "safety" change the word "door" to the word "operating." In line three after the word "cable" insert the words "or other operating device."

SECTION 350, page 127. First line after the word "elevators" strike out the words "of over two thousand (2,000) pounds capacity and."

Page 129, part 25. Strike out all of sections 355, 356 and 357 and insert.

SECTION 355. WIRE INSTALLATION. All electrical wires and apparatus shall be installed in accordance with the following rules and requirements and not otherwise.

SECTION 356. APPLICATIONS AND CERTIFICATES. (a) Any individual, corporation, co-partnership, company or organization desiring to install

or place any electrical wiring or electrical apparatus shall make application to the Electrical Wire Inspector not less than twelve (12) hours before the time of desiring to start such installation. (b) No electrical work or wiring shall be put to use or connected to service wires or any other source of electrical energy until a certificate of approval and acceptance is issued by said inspector. (c) Records of electrical inspection shall be kept in a book on file in the office of said inspector.

SECTION 357. ELECTRICAL WORK. POWER OF COMMISSIONER OF BUILDINGS. When any such electrical work or wiring is found to have been installed in a manner conflicting with the provisions of this Code, the Commissioner of Buildings is hereby empowered to remove fuses, cut the wires or otherwise render the system inoperative until such defects have been corrected and the department notified in writing that the work may be again inspected and approved.

SECTION 361. Paragraph (b) third line, page 130, strike out the last two words "the rules" and insert "this code."

SECTION 362. GENERATORS. (a) Must be located in a dry place. (b) Must never be placed in a room where any hazardous process is carried on, nor in places where they would be exposed to inflammable gases or flyings of combustible materials. (c) Must, when operating at a potential in excess of five hundred fifty (550) volts, have their base frames permanently and effectively grounded. Must, when operating at a potential of five hundred fifty (550) volts or less, be thoroughly insulated from the ground wherever feasible. Wooden base frames used for this purpose, and wooden floors which are depended upon for insulation where, for any reason, it is necessary to omit the base frames, must be kept filled to prevent absorption of moisture, and must be kept clean and dry. (d) Constant potential generators, except alternating current machines and their exciters, must be protected from excessive current by safety fuses or equivalent devices. For two-wire, direct current generators, single pole protection will be considered as satisfying the above rule, provided the safety device is located in the lead not connected to the series winding. When supplying three-wire systems, the generators must be so arranged that these protective devices will come in the outside leads. For three-wire, direct-current generators, a safety device must be placed in each armature, direct-current lead, or a double pole, double trip circuit breaker in each outside generator lead and corresponding equalizer connection. (e) Must each be provided with a name-plate, giving the maker's name, the capacity, in volts and amperes, and the normal speed in revolutions per minute. (f) Terminal blocks when used on generators must be made of approved non-combustible, non-absorptive, insulating material, such as slate, marble or porcelain. (g) The use of soft rubber bushings to protect the lead wires coming through the frames of generators is permitted, except when installed where oils, grease, oily vapors or other substances known to have rapid deleterious effect on rubber, are present in such quantities and in such proximity to motor or dynamo as may cause such bushings to be liable to rapid destruction. In such cases hardwood properly filled, or preferably porcelain or micamite bushings must be used.

SECTION 363. CONDUCTORS. (a) Must be in plain sight or readily accessible. Wire from generator to switchboard may be placed in a run-way in the brick or cement pier on which the generator stands. When protection against moisture is necessary lead covered cable or iron conduit must be used. (b) Must have an approved insulating covering, except that in central stations, on exposed circuits, the wire which is used must have a heavy braided, non-combustible outer covering. Bus-bars may be made of bare metal. Where a number of wires are brought close together, they must be surrounded with a tight, non-combustible outer cover. Flame proofing must be stripped back on all cables a sufficient

amount to give the necessary insulation distance for the voltage of the circuit on which the cable is used. (c) Must, where not in a conduit, be kept so rigidly in place that they cannot come in contact. (d) Must in all other respects be installed with the same precautions as required by rules for wires carrying a current of the same voltage and potential. (e) In wiring switchboards, the ground detector voltmeter, pilot lights and potential transformers must be connected to a circuit of not less than No. 14 B. & S. gauge wire that is protected by an approved fuse, this circuit is not to carry over six hundred sixty (660) watts.

SECTION 364. SWITCHBOARDS. (a) Must be so placed as to reduce to a minimum the danger of communicating fire to adjacent combustible material. Switchboards must not be built up to the ceiling, a space of three feet being left, if possible, between the ceiling and the board. The space back of the board must be kept clear of rubbish and not used for storage purposes. (b) Must be made of non-combustible material or of hardwood in skeleton form, filled to prevent absorption of moisture. If wood is used all wires and all current carrying parts of the apparatus on the switchboard must be separated therefrom by non-combustible, non-absorptive, insulating material. (c) Must be accessible from all sides when the connections are on the back, but may be placed against a brick or stone wall when the wiring is entirely on the face. If the wiring is on the back, there must be a clear space of at least eighteen inches between the wall and the apparatus on the board. (d) Must be kept free from moisture.

SECTION 365. RESISTANCE BOXES AND EQUALIZERS. (a) Must be placed on a switchboard, or at a distance of at least one (1) foot from combustible material, or separated therefrom by a slab or panel of non-combustible, non-absorptive, insulating material such as slate, soapstone or marble, somewhat larger than the rheostat, which must be secured in position independently of the rheostat supports. Bolts for supporting the rheostat shall be countersunk at least one-eighth (1/8) inch below the surface at the back of the slab and filled. For proper mechanical strength, slab should be of a thickness consistent with the size and weight of the rheostat, and in no case to be less than one-half (1/2) inch. If the resistance devices are installed in rooms where dust or combustible flyings would be liable to accumulate on them, they must be equipped with dust-proof face plates. (b) Where protective resistances are necessary in connection with automatic rheostats, incandescent lamps may be used, provided that they do not carry or control the main current nor constitute the regulating resistance of the device. When so used, lamps must be mounted in porcelain receptacles upon non-combustible supports, and must be so arranged that they cannot have impressed upon them a voltage greater than that for which they are rated. They must in all cases be provided with a name-plate, which shall be permanently attached beside the porcelain receptacle or receptacles and stamped with the candlepower and voltage of the lamp or lamps to be used in each receptacle. (c) Wherever insulated wire is used for connection between resistances and the contact plate of a rheostat, the insulation must be slow burning. For large field rheostats and similar resistances, where the contact plates are not mounted upon them, the connecting wires may be run together in groups so arranged that the maximum difference of potential between any two (2) wires in a group shall not exceed seventy-five (75) volts. Each group of wires must either be mounted on non-combustible, non-absorptive insulators giving at least one-half (1/2) inch separation from surface wired over, or, where it is necessary to protect the wires from mechanical injury or moisture, be run in approved lined conduit or equivalent.

SECTION 366. LIGHTNING ARRESTERS. (a) Must be attached to each wire of every overhead circuit connected with the station. (b) Must

be located in readily accessible places away from combustible materials, and as near as practicable to the point where the wires enter the building. In all cases, kinks, coils and sharp bends in the wires between the arresters and the outdoor lines must be avoided as far as possible. (c) Must be connected with a thoroughly good and permanent ground connection by metallic strips or wires having a conductivity not less than that of a No. 6 B. & S. gauge copper wire, which must run as nearly in a straight line as possible from the arresters to the ground connection. Ground wires for lightning arrestors must not be attached to gas pipes within the building nor be run inside of iron pipes. (d) All choke coils or other attachments, inherent to the lightning protection equipment, shall have an insulation from the ground or other conductors equal at least to the insulation demanded at other points of the circuit in the station.

SECTION 367. TESTING OF INSULATION RESISTANCE. (a) All circuits, except such as are permanently grounded, must be provided with reliable ground detectors. Detectors which indicate continuously and give an instant and permanent indication of a ground are preferable. Ground wires from detectors must not be attached to gas pipes within the building. (b) Where continuously indicating detectors are not feasible, the circuits should be tested at least once per day.

SECTION 368. MOTORS. (a) Must, when operating at a potential in excess of five hundred fifty (550) volts, have no exposed live metal parts, and have their base frames permanently and effectively grounded. Motors operating at a potential of five hundred fifty (550) volts or less must be thoroughly insulated from the ground wherever feasible. Wooden base frames used for this purpose, and wooden floors, which are depended upon for insulation where, for any reason, it is necessary to omit the base frames, must be kept filled to prevent absorption of moisture, and must be kept clean and dry. Where frame insulation is impracticable the frame must be permanently and effectively grounded. (b) Motors operating at a potential of five hundred fifty (550) volts or less must be wired with the same precaution as required for wires carrying a current of the same volume. Motors operating at a potential between five hundred fifty (550) and three thousand five hundred (3,500) volts must be wired with approved multiple conductor, metal sheathed cable in approved unlined metal conduit firmly secured in place. The metal sheath must be permanently and effectively grounded, and the construction and installation of the conduit must conform to rules for interior conduits, except that at outlets approved outlet bushings shall be used. The motor leads or branch circuits must be designed to carry a current at least twenty-five per cent. (25%) greater than that for which the motor is rated. Where the wires under this rule would be overfused in order to provide for the starting current, as in the case of many of the alternating current motors, the wires must be of such size as to be properly protected by these larger fuses. The current used in determining the size of varying speed alternating current motor leads or branch circuits must be the percentage of the thirty (30) minute current rating of the motor as given for the several classifications of service in the following table:

Classification of Services.	Percentage of current rating of motor.
Operating valves, raising or lowering rolls, tool heads, etc. -----	200
Hoists, rolls, ore and coal-handling machines -----	180
Freight elevators, shop cranes -----	160
Passenger elevators -----	140
Rolling tables, pumps -----	120

The insulation of the several conductors for high potential motors, where leaving the metal sheath at outlets, must be thoroughly protected from moisture and mechanical injury. The conduit must be substantially bonded to the metal casings of all fittings and apparatus connected to the inside high tension circuit. (c) Each motor and resistance box must be protected by a cut-out and controlled by a switch, said switch plainly indicating whether "on" or "off," except as provided for electric cranes. Small motors may be grouped under the protection of a single set of fuses, provided the rated capacity of the fuses does not exceed six (6) amperes. With motors of one-fourth ($\frac{1}{4}$) horse power or less, on circuits where the voltage does not exceed three hundred (300), single pole switches may be used. The switch and rheostat must be located within sight of the motor, except in cases where special permission to locate them elsewhere is given. Where the circuit-breaking device on the motor-starting rheostat disconnects all wires of the circuit, the switch called for in this section may be omitted. Overload-release devices on motor-starting rheostats will not be considered to take the place of the cut-out required by this section if they are inoperative during the starting of the motor. An automatic circuit-breaker disconnecting all wires of the circuit may, however, serve as both switch and cut-out. (d) Rheostats and auto starters must be so installed as to comply with all the requirements of this Code. Auto starters, unless equipped with tight casings inclosing all current-carrying parts, in all wet, dusty or lousy places, must be inclosed in dust-tight, fireproof cabinets. Where there is any liability of short circuits across their exposed live parts being caused by accidental contacts, a railing must be erected around them. (e) Must not be run in series-multiple or multiple-series, except on contact-potential systems, and then only by special permission of the Commissioner of Buildings. (f) Must be covered with a waterproof cover when not in use. (g) Must, when combined with ceiling fans, be hung from insulated hooks, or else must be an insulator interposed between the motor and its support. (h) Must each be provided with a name-plate, giving the maker's name, the capacity in volts and amperes, and the normal speed in revolutions per minute. All varying (or variable) speed alternating current motors must be marked with the maximum current which they can safely carry for thirty minutes (30 starting cold. (i) Terminal blocks when used on motors must be made of approved non-combustible, non-absorptive, insulating material such as slate, marble or porcelain. (j) Adjustable speed motors, unless of special and appropriate design, if controlled by means of field regulation, must be so arranged and connected that they cannot be started under weakened field.

SECTION 369. STORAGE OR PRIMARY BATTERIES. (a) When current for light and power is taken from primary or secondary batteries, the same general regulations must be observed as apply to similar apparatus fed from generators developing the same difference of potential. (b) Storage battery rooms must be thoroughly ventilated. (c) All secondary batteries must be mounted on non-absorptive, non-combustible insulators, such as glass or thoroughly vitrified and glazed porcelain. (d) The use of any metal liable to corrosion must be avoided in cell connections of secondary batteries.

SECTION 370. TRANSFORMERS. (a) In central or sub-stations the transformers must be so placed that smoke from the burning out of the coils or the boiling over of the oil (where oil filled cases are used) could do no harm. (b) In central or sub-stations, casings of all transformers must be permanently and effectively grounded. Transformers used exclusively to supply current to switchboard instruments need not be grounded, provided they are thoroughly insulated. (c) Must not be placed in any but metallic or other non-combustible cases. (d) Oil

transformers must not be placed inside of any building except central stations and sub-stations. (e) Air cooled transformers must not be placed inside of any building excepting central stations and sub-stations, if the highest voltage of either primary or secondary exceeds five hundred fifty (550) volts. (f) Must be so mounted that the case shall be at a distance of at least one (1) foot from combustible material or separated therefrom by non-combustible, non-absorptive, insulating material, such as slate, marble or soapstone. This will require the use of a slab or panel somewhat larger than the transformer. (g) Must be plainly marked where it may be readily seen after the transformer is installed with the name of the maker, with the primary and secondary voltage and the rated capacity. (h) Must be constructed to comply with the following tests:

1. Shall be run for a sufficient time to reach a practically constant temperature at full rated load, and at the end of that time a rise in temperature, as measured by the increase in resistance of the windings, shall not exceed one hundred twenty-two (122) degrees Fahrenheit.

2. When heated to normal full load operating temperature, the insulation of transformers shall withstand continuously for one (1) minute a difference of potential (alternating) between primary and secondary coils and between the primary coils and the core according to the following table:

Primary or Secondary Voltage.	Test Voltage.
Not exceeding 400 volts -----	1,500
From 400 to 550 volts -----	2,000

SECTION 371. WIRES, INSIDE WORK. (a) Wires must not be of smaller size than No. 14 B. & S. gauge, except as allowed for fixture work and pendant cord. (b) The wires must have an insulation equal to that of the conductors they confine, and may be used in connection with solid knobs for the support of wires of size No. 8 B. & S. gauge or over. Solid knobs or strain insulators must be used for all wires at the end of runs where conductors are terminated. Split knobs or cleats must be used for the support of conductors smaller than No. 8 B. & S. gauge, except at the end of runs. Knobs or cleats which are arranged to grip the wire, must be fastened by either screws or nails. If nails are used, they must be long enough to penetrate the woodwork not less than one-half ($\frac{1}{2}$) the length of the knob and fully the thickness of the cleat, and must be provided with washers which will prevent, under reasonable usage, injury to the knobs or cleats. (c) Must be so spliced or joined as to be both mechanically and electrically secure without solder. The joints must then be soldered unless made with some form of approved splicing device, and covered with an insulation equal to that on the conductors. Stranded wires (except in flexible cords) must be soldered before being fastened under clamps or binding screws, and whether stranded or solid, when they have a conductivity greater than that of No. 8 B. & S. gauge they must be soldered into lugs for all terminal connections, except where an approved solderless terminal connector is used. (d) Must be separated from contact with walls, floors, timbers or partitions through which they may pass by non-combustible, non-absorptive, insulating tubes, such as glass or porcelain, except at outlets where approved flexible tubing is required. Bushings must be long enough to bush the entire length of the hole in one continuous piece, or else the hole must first be bushed by a continuous waterproof tube. This tube may be a conductor, such as iron pipe, but in that case an insulating bushing must be pushed into each end of it, extending far enough to keep the wire absolutely out of contact with the pipe. (e) Where

not inclosed in approved conduit, moulding or armored cable and where liable to come in contact with gas, water, or other metallic piping or other conducting material, must be separated therefrom by some continuous and firmly fixed non-conductor creating a permanent separation. Must not come nearer than two (2) inches to any other electric lighting, power or signaling wire, not inclosed as above, without being permanently separated therefrom by some continuous and firmly-fixed non-conductor. The non-conductor used as a separator must be in addition to the regular insulation on the wires. Where tubes are used, they must be securely fastened at the ends to prevent them from moving along the wire. (f) Must be so placed in wet places that an air space will be left between conductors and pipes in crossing, and the former must be run in such a way that they cannot come in contact with the pipe accidentally. Wires should be run over, rather than under, pipes upon which moisture is likely to gather or which, by leaking, might cause trouble on a circuit. (g) The installation of electrical conductors in wooden mouldings, or on insulators, in elevator shafts will not be approved, but conductors may be installed in such shafts if encased in approved metal conduits, or armored cables. (h) The following table, showing the allowable carrying capacity of copper wires and cables of ninety-eight (98) per cent. conductivity, must be followed in placing interior conductors. For insulated aluminum wire the safe carrying capacity is eighty-four (84) per cent. of that given in the following tables for copper wire with the same kind of insulation.

B. & S. G.	Table A.	Table B.	
	Rubber Insulation.	Other Insulation.	Circular Mills.
	Amperes.	Amperes.	
18	3	5	1,624
16	6	8	2,583
14	12	16	4,107
12	17	23	6,530
10	24	32	10,380
8	33	46	16,510
6	46	65	26,250
5	54	77	33,100
4	65	92	41,740
3	76	110	52,630
2	90	131	66,370
1	107	156	83,690
0	127	185	105,500
00	150	220	133,100
000	177	262	167,800
0000	210	312	211,600

Circular Mills.

200,000	200	300
300,000	270	400
400,000	330	500
500,000	390	590
600,000	450	680
700,000	500	760
800,000	550	840
900,000	600	920
1,000,000	650	1,000
1,100,000	690	1,080
1,200,000	730	1,150

Circular Mills.

1,300,000-----	770-----	1,220
1,400,000-----	810-----	1,290
1,500,000-----	850-----	1,360
1,600,000-----	890-----	1,430
1,700,000-----	930-----	1,490
1,800,000-----	970-----	1,550
1,900,000-----	1,010-----	1,610
2,000,000-----	1,050-----	1,670

SECTION 372. INSULATED WIRES, RULES. (a) Copper for insulated solid conductors of No. 4 B. & S. gauge and smaller must not vary in diameter more than .002 of an inch from the standard. On solid sizes larger than No. 4 B. & S. gauge the diameter shall not vary more than one (1) per cent. from the specified standard. The conductivity of solid conductors shall not be less than ninety-seven (97) per cent. of that of pure copper of the specified size. In all stranded conductors the sum of the circular mils of the individual wires, shall not be less than the nominal circular mils of the strand by more than one and one-half (1½) per cent. The conductivity of the individual wires in a strand shall not be less than is given in the following table, which applies to tinned conductors:

Number.	Per cent.
14 and larger.	97.0
15	96.8
16	96.6
17	96.4
18	96.2
19	96.0
20	95.8
21	95.6
22	95.4
23	95.2
24	95.0
25	94.8
26	94.6
27	94.4
28	94.2
29	94.0
30	93.8

(b) Wires and cables of all kinds designed to meet the following specifications must have a distinctive marking the entire length of the coil so that they may be readily identified in the field. They must also be plainly tagged or marked as follows:

1. The maximum voltage at which the wire is designed to be used.
2. The words "National Electrical Code Standard."
3. Name of the manufacturing company and, if desired, trade name of the wire.
4. Month and year when manufactured.
5. The proper type letter for the particular style of wire or cable as given for each type of insulation.

SECTION 373. RUBBER-COVERED WIRE. (a) Copper for conductors must be thoroughly tinned. (b) The insulation for voltages, 0 to 600 inclusive, must consist of a rubber compound, homogeneous in character, adhering to the conductor or to the separator, if one is used, and of a thickness not less than that given in the following tables. (c) Any one (1) foot sample of completed covering must show a dielectric strength sufficient to resist throughout five (5) minutes the application

of an electro-motive force proportionate to the thickness of insulation in accordance with the following table:

Thickness in 64ths inches.	Breakdown test on 1 foot.
1	3,000 volts A. C.
2	6,000 " "
3	9,000 " "
4	11,000 " "
5	13,000 " "
6	15,000 " "
7	16,500 " "
8	18,000 " "
10	21,000 " "
12	23,500 " "
14	26,000 " "
16	28,000 " "

The source of alternating electro-motive force shall be a transformer of at least one (1) kilowatt capacity. The application of the electro-motive force shall first be made at three thousand (3,000) volts for five (5) minutes, then the voltage increases by steps and not over three thousand (3,000) volts, each held for five (5) minutes, until the rupture of the insulation occurs. The tests for dielectric strength shall be made on a sample wire which has been immersed in water for seventy-two (72) hours. One (1) foot of the wire under test is to be submerged in a conducting liquid held in a metal trough, one of the transformer terminals being connected to the copper of the wire and the other to the metal of the trough. (d) Every length of completed wire or cable must be tested after not less than twelve (12) hours immersion in water, and while still immersed by the application for one minute of an alternating current voltage derived from apparatus of ample capacity, the test voltages to be those given in the tables of (e) and (f). After this voltage test every length of completed wire or cable while still immersed must show an insulation resistance after one (1) minute electrification not less than the values given in (e) and (f). Any length of completed wire or cable may be tested during thirty (30) days immersion in water, and must show not less than fifty (50) per cent. of the insulation resistance required after the twelve (12) hours immersion. The results of insulation test at different temperatures to be reduced to a basis of sixty (60) degrees F. by using the multipliers in the following table:

Temp. Degs. Fabr.	Multiplier.
50-52	.69
53-55	.78
56-58	.88
59-61	1.00
62-64	1.12
65-67	1.27
68-70	1.43
71-73	1.60
74-76	1.81
77-79	2.04
80-82	2.29
83-85	2.58

(e) Thickness of insulation, voltage tests and minimum insulation resistance to be in accordance with the following tables. The test voltages

are to be for one (1) minute. The insulation resistances are after one (1) minute electrification and at sixty (60) degrees Fahr.

Tests on Completed Lengths 0-600 Volt Class.

Type Letters R. S.

Size.	Thick- ness in 64ths inches	Megohms per mile after 12 hrs. immersion.	Voltage Test one Minutes.
14	3-64	300	1,500
12	3-64	250	1,500
10	3-64	225	1,500
8	3-64	200	1,500
6	1-16	200	2,000
4	1-16	150	2,000
2	1-16	125	2,000
1	5-64	150	2,500
0	5-64	125	2,500
00	5-64	125	2,500
000	5-64	100	2,500
0000	5-64	100	2,500
225,000 C. M.	3-32	100	3,000
300,000 C. M.	3-32	100	3,000
400,000 C. M.	3-32	100	3,000
500,000 C. M.	3-32	100	3,000
600,000 C. M.	7-64	100	3,500
700,000 C. M.	7-64	100	3,500
800,000 C. M.	7-64	100	3,500
900,000 C. M.	7-64	100	3,500
1,000,000 C. M.	7-64	100	3,500
1,250,000 C. M.	1-8	100	3,500
1,500,000 C. M.	1-8	75	3,500
1,750,000 C. M.	1-8	60	3,500
2,000,000 C. M.	1-8	50	3,500

(f) Tests on Completed Lengths 601 to 7,000 Volt.

Max. Operating Voltage.

1,500 V. Type Letters R. S.—15.

Size. B. & S. Gauge.	Thick Ins.	Ins. Res. Meg.	Volts. Test.
14-8	1-16	600	4,000
7-2	5-64	300	4,000
1-0000	3-32	200	4,000
C. M.			
225,000-500,000	7-64	175	4,000
525,000-1,000,000	1-8	150	4,000
Over 1,000,000	9-64	100	4,000

Max. Operating Voltage.

2,500 V. Type Letters R. S.—25.

Size. B. & S. Gauge.	Thick Ins.	Ins. Res. Meg.	Volts. Test.
14-8	3-32	700	6,250
7-2	3-32	350	6,250
1-0000	7-64	250	6,250
C. M.			
225,000-500,000	1-8	200	6,250
525,000-1,000,000	9-64	175	6,250
Over 1,000,000	10-64	125	6,250

Max. Operating Voltage.

3,500 V. Type Letters R. S.—35.

Size. B. & S. Gauge.	Thick Ins.	Ins. Res. Meg.	Volts. Test.
14-8	4-32	850	8,750
7-2	4-32	450	8,750
1-0000	4-32	300	8,750
C. M.			
225,000-500,000	9-64	225	8,750
525,000-1,000,000	10-64	200	8,750
Over 1,000,000	11-64	150	8,750

Max. Operating Voltage.

5,000 V. Type Letters R. S.—50.

Size. B. & S. Gauge.	Thick Ins.	Ins. Res. Meg.	Volts. Test.
14-8	6-32	1,000	12,500
7-2	6-32	650	12,500
1-0000	6-32	450	12,500
C. M.			
225,000-500,000	6-32	300	12,500
525,000-1,000,000	6-32	225	12,500
Over 1,000,000	7-32	175	12,500

Max. Operating Voltage.

7,000 V. Type Letters R. S.—70.

Size. B. & S. Gauge.	Thick Ins.	Ins. Res. Meg.	Volts. Test.
14-8	8-32	1,200	17,500
7-2	8-32	800	17,500
1-0000	8-32	550	17,500
C. M.			
225,000-500,000	8-32	400	17,500
525,000-1,000,000	8-32	275	17,500
Over 1,000,000	9-32	200	17,500

(g) For interior work only (type letters R. S. L.) the thickness of insulating wall of lead sheath rubber insulated conductors 6,000 volts to be the same as for braided cables, all cables to be covered with a compound filled tape or braid over the insulating wall. If braid is used, it shall be of such thickness as to increase the required diameter over the insulating wall by at least one-thirty-second (1-32) of an inch, and must comply with the requirements for braid on braided conductors. If tape is used it must not be less than one-sixty-fourth (1-64) of an inch thick and must lap at least one-fourth (1-4) of its width. The width of the tape used should not exceed twice the square root of the diameter of the conductor over the insulating wall; i. e., 500,000 C. M., three-thirty-seconds (3-32) rubber, tape not to exceed two (2) inches in width; No. 14, three-sixty-fourths (3-64) rubber, tape, should not exceed 0.8 inches in width. The lead on single conductor cables, 0-600 volt class, sizes 2 B. & S. and smaller, both solid and stranded, to be not less than the thickness of rubber called for by (e). On larger sizes the thickness of lead to be not less than the thickness of insulating wall called for, less one-sixty-fourth (1-64) of an inch; i. e., thickness of lead on No. 2, one-sixteenth inch (1-16); on 1,000,000 C. M., three-thirty-seconds (3-32) inch. On multiple conductor cables, thickness of lead to be that called for by single conductor, having same diameter over the insulation as the multiple conductor cable has over the bunched insulated conductors. Rubber insulated and lead sheathed cables, 601 to 7,000 volt classes inclusive (type letters R. S. L.—15, R. S. L.—25, etc.) shall comply with (f), and the lead sheath shall be the same as

called for in 0-600 volt class, having same diameter under the lead as 601-7,000 volt conductor.

SECTION 374. SLOW-BURNING WEATHERPROOF WIRE. (Type letters S. B. W.) (a) The insulation must consist of two (2) coatings, one (1) to be fireproof in character and the other to be weatherproof. The fireproof coating must be on the outside and must comprise about six-tenths (6-10) of the total thickness of the wall. The completed covering must be of a thickness not less than that given in the following table:

B. & S. Gauge.	Thickness.
14 to 8	3-64 inch.
7 to 2	1-16 inch.
1 to 0000	5-64 inch.
Circular Mills.	
250,000 to 500,000	3-32 inch.
500,000 to 1,000,000	7-64 inch.
Over 1,000,000	1-8 inch.

Measurements of insulating wall are to be made at the thinnest portion.

(b) The fireproof coating shall be of the same kind as that required for "slow-burning wire," and must be finished with a hard, smooth surface.

(c) The weatherproof coating shall consist of a stout brain, applied and treated as required for "weatherproof wire."

SECTION 375. SLOW-BURNING WIRE. (Type letters S. B.) (a) The insulation must consist of three (3) braids of cotton or other thread, all the interstices of which must be filled with the fireproofing compound or with material having equivalent resisting and insulating properties. The outer braid must be specially designed to withstand abrasion, and its surface must be finished smooth and hard. The completed covering must be of a thickness not less than that given in table under Section 374. (a).

SECTION 376. WEATHERPROOF WIRE. (Type letters W. R.) (a) The insulating covering shall consist of at least three (3) braids, all of which must be thoroughly saturated with a dense moisture-proof compound, applied in such a manner as to drive any atmospheric moisture from the cotton braiding, thereby securing a covering to a great degree waterproof and of high insulating power. This compound must not drip at one hundred sixty (160) degrees Fahrenheit. The thickness of insulation must not be less than that given in the table under Section 374. (a), and the outer surface must be thoroughly slicked down.

SECTION 377. FLEXIBLE CORD. (a) Cords for pendant lamps and for portable use, including Elevator, Lighting and Control Cables, and Theater Stage and Border Cable, must be made of copper conductors, each built up from wires not larger than No. 26, or smaller than No. 36 B. & S. gauge. Each conductor must have a carrying capacity not less than that of a No. 18 B. & S. gauge wire, and must be covered by an approved insulation and protected from mechanical injury according to the following specifications for the several types of cord or cable. Each conductor must be covered with a tight close wind of fine cotton, or some other approved method must be employed to prevent a broken strand puncturing the insulation and to keep the rubber compound from corroding the copper, and must comply with Section 372. (b) The insulating covering on each conductor must be of a rubber compound, and must comply with Section 373, and must have a thickness of wall not less than that given in the following table:

B. & S. Gauge.	—Thickness, Inches—	
	Dry Places.	Damp Places.
18 and 16	1-32	3-64
14	3-64	3-64

For exception see (c), 2.

Every completed single conductor shall be tested by passing it through a spring metal spiral not less than six (6) inches long, so formed as to come in contact with all points on the circumference of the wire, while a voltage of not less than five hundred (500) volts for one-sixty-fourth (1-64) inch insulation, not less than one thousand (1,000) volts for one-thirty-second (1-32) inch insulation or not less than one thousand five hundred (1,500) volts for three-sixty-fourths (3-64) inch insulation is applied to the conductor and to the spiral.

(c) Must have an outer protecting covering as follows:

1. For Pendant Lamps (Type letter C). In this class is to be included all flexible cord, which, under usual conditions, hangs freely in air, and which is not likely to be moved sufficiently to come in contact with surrounding objects. It should be noted that pendant lamps provided with long cords, so that they can be carried about or hung over nails, or on machinery, etc., are not included in this class, even though they are usually allowed to hang freely in air. Each conductor must have an approved braided covering so put on and sealed in place that when cut it will not fray out. For use in damp places (Type letters C, Wp) the insulation must be at least three-sixty-fourths (3-64) of an inch thick and the braided coverings must either be thoroughly saturated with a moisture-proof preservative compound or be inclosed in an outer braided moisture-proof preservative covering over the whole.

2. For Portables (Type letter P). Flexible cord for portable use, except in offices, dwellings or similar places, where cord is not liable to rough usage and where appearance is an essential feature, must meet all the requirements for flexible cord for pendants and in addition must have a tough braided cover over the whole. There must also be an extra layer of rubber between the outer cover and the flexible cord. For use in damp places (Type letters P Wp) the insulation must be at least three-sixty-fourths (3-64) of an inch thick and the cord must have its outer covering saturated with a moisture-proof preservative compound thoroughly slicked down or must have a filler of approved material instead of the extra layer of rubber and have two (2) outer braids saturated with a moisture-proof compound with the exterior surface thoroughly slicked down. In offices, dwellings or in similar places (Type letters P O), where cord is not liable to rough usage and where appearance is an essential feature, flexible cord for portable use must meet all of the requirements for flexible cord for "pendant lamps," both as to construction and thickness of insulation, and in addition must have a tough braided cover over the whole, or providing there is an extra layer of rubber between the flexible cord and the outer cover, the insulation proper on each stranded conductor of cord may be one-sixty-fourth (1-64) of an inch in thickness instead of as required for pendant cords. Flexible cord for portable use may, instead of the outer coverings described above, have an approved metal, flexible armor. (Type letters P, A.)

(d) For Portable Heating Apparatus (Type letter H). Applies to all smoothing and sad irons and to any other heating device requiring over two hundred fifty (250) watts. Must be made up as follows:

1. Conductors must comply with (a) or may be of braided copper. If braided, each wire to be not larger than No. 30, or smaller than No. 36 B. & S. gauge, except for conductors having a greater carrying capacity than No. 12 B. & S. gauge, when each wire may be large as No. 28 B. & S. gauge.

2. An insulating covering of rubber or other approved material not less than one-sixty-fourth (1-64) inch in thickness.

3. A braided covering not less than one-thirty-second (1-32) inch thick composed of long fiber asbestos and having not over ten (10) per cent. of carbon by weight.

4. An outer reinforcing covering not less than one-sixty-fourth (1-64) inch thick, especially designed to resist abrasion, must inclose either all the conductors as a whole or each conductor separately. (c) Theater Stage Cable (Type letter T). Shall consist of not more than three (3) flexible copper conductors, each of a capacity not exceeding No. 4 B. & S. gauge, each of which shall be built up of wires not larger than No. 26 B. & S. gauge. Each conductor to have a tight close wind of cotton, or some other approved method must be employed to prevent a broken strand puncturing the insulation and to keep the rubber compound from corroding the copper. The insulation proper to be of rubber complying with Section 373, except that insulations less than three-sixty-fourths (3-64) of an inch in thickness (conductors having a capacity less than No. 14 B. & S. gauge wire) must show an insulation resistance of not less than fifty (50) megohms per mile during two (2) weeks' immersion in water at seventy (70) degrees Fahrenheit, must have on each conductor an outer protective braided covering properly saturated with a preservative compound. The conductors to be twisted together, a filler of approved material being used to make cable round and to act as a cushion, and finished with two (2) weatherproof braids over the whole. (f) Border Cables (Type letter B). Shall consist of flexible copper conductors, each of which shall be built up of wires not larger than No. 26 B. & S. gauge. Each conductor to have a tight close wind of cotton or some other approved method must be employed to prevent a broken strand puncturing the insulation, and to keep the rubber compound from corroding the copper. The insulation proper to be of rubber complying with requirements of Section 373, must have on each conductor an outer protective braided covering properly saturated with a preservative compound. The conductors to be cabled together and finished with two (2) weatherproof braids over the whole. (g) Elevator Lighting and Control Cables (Type letter E). Must comply with the requirements for theater cable as regards insulation proper and the construction and covering of the individual conductors, except that none of these conductors shall be smaller than No. 14 B. & S. gauge for elevator lighting cables, or No. 16 for elevator control cables. The outer covering shall consist either of three (3) braids or of an extra layer of rubber and one (1) or more outer braids. All braids must be properly treated with a preservative compound.

SECTION 378. FIXTURE WIRE. (a) Fixtures may be wired with approved flexible cord or with approved rubber covered wire No. 14 B. & S. gauge or larger. In wiring show-case fixtures, coiling bulls-eyes and similar appliances in which the wiring is exposed to temperatures in excess of one hundred twenty (120) degrees Fahrenheit from the heat of the lamps, slow-burning wire may be used. All such forms of fixtures must be submitted for examination, test and approval before being introduced for use. For other wires for use in fixtures the following rules apply. (b) May be made of solid or stranded conductors, with no strands smaller than No. 30 B. & S. gauge, and must have a carrying capacity not less than that of a No. 18 B. & S. gauge wire. (c) Solid conductors must be thoroughly tinned. If a standard conductor is used, it must be covered by a tight, close wind of fine cotton, or some other approved method must be employed to prevent a broken strand puncturing the insulation and to keep the rubber compound from corroding the copper, and must comply with the requirements of Section 372. (d) The insulation on each conductor must consist of a rubber compound homogeneous in character, adhering to the conductor or to the separator, if one (1) is used, and not less than one-sixty-fourth (1-64) inch in thickness for No. 18 B. & S. gauge wire and not less than one-thirty-second (1-32) inch for No. 16 B. & S. gauge. (e) Must be protected with a covering or braid at least one-sixty-fourth (1-64) inch in thick-

ness, sufficiently tenacious to withstand the abrasion of being pulled into the fixture, and sufficiently elastic to permit the wire to be bent around a cylinder with twice the diameter of the wire without injury to the braid. (f) Must successfully withstand the tests specified in Section 373.

SECTION 379. CONDUIT WIRE (Type letters R D). (a) Single wire for lined conduits must comply with the requirements of Section 373. For unlined conduits it must comply with the same requirements (except that tape may be substituted for braid), and in addition there must be a second outer fibrous covering, at least one-thirty-second (1-32) of an inch in thickness for wires larger than No. 10 B. & S. gauge, and at least one-sixty-fourth (1-64) of an inch in thickness for wires No. 10 B. & S. gauge or less in size; this fibrous covering to be sufficiently tenacious to withstand abrasion of being hauled through the metal conduit. (b) For twin or duplex wires in lined conduit, each conductor must comply with the requirements of Section 373 (except that tape may be substituted for braid on the separate conductors), and must have a substantial braid covering the whole. For unlined conduit each conductor must comply with requirements of Section 373 (except that tape may be substituted for braid), and in addition must have a braid covering the whole, at least one-thirty-second (1-32) of an inch in thickness and sufficiently tenacious to withstand the abrasion of being hauled through the metal conduit. (c) For concentric wire, the inner conductor must comply with the requirements of Section 373 (except that tape may be substituted for braid), and there must be outside of the outer conductor the same insulation as on the inner, the whole to be covered with a substantial braid, which for unlined conduits must be at least one-thirty-second (1-32) of an inch in thickness, and sufficiently tenacious to withstand the abrasion of being hauled through the metal conduit. (d) The braids or tapes called for in (a), (b) and (c) must be properly saturated with a preservative compound.

SECTION 380. HIGH-POTENTIAL SYSTEMS. (a) Any circuit attached to any machine or combination of machines which develops a difference of potential between any two wires of over five hundred fifty (550) volts and less than three thousand five hundred (3,500) volts, shall be considered at a high-potential circuit, and as coming under that class, unless an approved transforming device is used, which cuts the difference of potential down to five hundred fifty (550) volts or less. For five hundred fifty (550) volt motor equipments a margin of ten (10) per cent. above the five hundred fifty (550) volt limit will be allowed at the generator or transformer without coming under high-potential systems. (b) Wires must have an approved rubber-insulating covering. (c) Must be always in plain sight and never encased, except as provided for in Section 368, (b). (d) Must (except as provided for in Section 368, (b)) be rigidly supported on glass or porcelain insulators, which raise the wire at least one (1) inch from the surface wired over, and must be kept about eight (8) inches apart. Rigid supporting requires under ordinary conditions, where wiring along flat surfaces, supports at least every four and one-half (4 1-2) feet. If the wires are unusually liable to be disturbed, the distance between supports must be shortened. In buildings of mill construction, mains of not less than No. 8 B. & S. gauge, where not liable to be disturbed, may be separated about ten (10) inches and run from timber to timber, not breaking around, and may be supported at each timber only. (e) Must be protected on side walls from mechanical injury by a substantial boxing, retaining an air space of one (1) inch around the conductors, closed at the top (the wires passing through bushed holes) and extending not less than seven feet from the floor. When crossing floor timbers, in cellars, or in rooms where they might be exposed to injury, wires must

be attached by their insulating supports to the under side of a wooden strip not less than one-half (1-2) an inch in thickness. (f) Any circuit attached to any machine or combination of machines which develops a difference of potential, between any two (2) wires, of over three thousand five hundred (3,500) volts, shall be considered as an extra high-potential circuit, and as coming under that class, unless an approved transforming device is used, which cuts the difference of potential down to three thousand five hundred volts (3,500) or less. (g) Must not be brought into or over buildings, except power stations and sub-stations. (h) Must be installed under rules for high-potential systems when their immediate primary wires carry a current at a potential of over three thousand five hundred (3,500) volts, unless the primary wires are installed entirely underground.

SECTION 381. CONSTANT-CURRENT SYSTEM WIRES. (a) Wires must have an approved rubber insulating covering. (b) Must be arranged to enter and leave the building through an approved double-contact service switch, mounted in a non-combustible case, kept free from moisture, and easy of access to police or firemen. (c) Must always be in plain sight, and never encased. (d) Must be supported on glass or porcelain insulators, which separate the wire at least one (1) inch from the surface wired over and must be kept rigidly at least eight (8) inches from each other, except within the structure of lamps, on hanger-boards, or in cut-out boxes, or like places, where a less distance is necessary. (e) Must, on side walls, be protected from mechanical injury by a substantial boxing, retaining an air space of one (1) inch around the conductors, closed at the top (the wires passing through bushed holes), and extending not less than seven (7) feet from the floor. When crossing floor timbers in cellars or in rooms where they might be exposed to injury, wires must be attached by their insulating supports to the under side of a wooden strip not less than one-half (1-2) an inch in thickness. Instead of the running-boards, guard strips on each side of and close to the wires will be accepted. These strips to be not less than seven-eighths (7-8) of an inch in thickness and at least as high as the insulators.

SECTION 382. LOW-POTENTIAL SYSTEMS. (a) Any circuit attached to any machine, or combination of machines, which develops a difference of potential between any two (2) wires, of over ten (10) volts and less than five hundred fifty (550) volts, shall be considered as a low-potential circuit, and as coming under this class, unless an approved transforming device is used, which cuts the difference of potential down to ten (10) volts or less. The primary circuit not to exceed a potential of three thousand five hundred (3,500) volts. For five hundred fifty (550) volt motor equipments a margin of ten (10) per cent. above the five hundred fifty (550) volt limit will be allowed at the generator or transformer. (b) Wires where entering cabinets must be protected by approved bushings, which fit tightly the holes in the box and are well secured in place. The wires should completely fill the holes in the bushings so as to keep out the dust, tape being used to build up the wires if necessary. On concealed knob and tube work approved flexible tubing will be accepted in lieu of bushings, providing it shall extend from the last porcelain support into the cabinet. (c) Must not be laid in plaster, cement or similar finish, and must never be fastened with staples. (d) Must not be fished for any great distance, and only in places where the inspector can satisfy himself that the rules have been complied with. (e) Twin wires must never be used, except in conduits, or where flexible conductors are necessary. (f) Must, where exposed to mechanical injury, be suitably protected. When crossing floor timbers in cellars, or in rooms where they might be exposed to injury, wires must be attached by their insulating supports to the under side of a wooden strip, not less than

one-half (1-2) inch in thickness, and not less than three (3) inches in width. Instead of the running-boards, guard strips on each side of and close to the wires, will be accepted. These strips to be not less than seven-eighths (7-8) of an inch in thickness and at least as high as the insulators. Protection on side walls must extend not less than five (5) feet from the floor and must consist of substantial boxing, retaining an air space of one (1) inch around the conductors, closed at the top (the wires passing through bushed holes) or approved metal conduit or pipe of equivalent strength. When metal conduit or pipe is used, the insulation of each wire must be reinforced by approved flexible tubing extending from the insulator next below the pipe to the one next above it, unless the conduit is installed according to Section 397, (c) and (f) excepted, and the wire is approved for conduit use. The two (2) or more wires of a circuit each with its flexible tubing (when required), if carrying alternating current, must, or if direct current, may, be placed within the same pipe. (g) When run in unfinished attics, will be considered as concealed, and when run in close proximity to water tanks or pipes, will be considered as exposed to moisture. In unfinished attics wires are considered as exposed to mechanical injury, and must not be run on knobs on upper edge of joists.

SECTION 383. OPEN WORK, WIRING. (a) All wires must have an approved rubber, slow-burning weatherproof, or slow-burning insulation. (b) Must be rigidly supported on non-combustible, non-absorptive insulators, which will separate the wires from each other and from the surface wired over in accordance with the following table:

Voltage.	Distance from Surface.	Distance Between Wires.
0 to 300	1-2 inch	2 1-2 inch
301 to 550	1 inch	4 inch

Rigid supporting requires under ordinary conditions, where wiring along flat surfaces, supports at least every four and one-half (4 1-2) feet. If the wires are liable to be disturbed, the distance between supports must be shortened. In buildings of mill construction, mains of not less than No. 8 B. & S. Gauge, where not liable to be disturbed, may be separated about six (6) inches, and run from timber to timber, not breaking around, and may be supported at each timber only. The neutral of a three-wire system may be placed in the center of a three-wire cleat where the difference of potential between the outside wires is not over three hundred (300) volts, provided the outside wires are separated two and one-half (2 1-2) inches. (c) Must not be "dead-ended" at a rosette socket or receptacle unless the last support is within twelve (12) inches of the same.

SECTION 384. MOLDING WORK, WIRING. (a) Wire must have an approved rubber insulating covering, and must be in continuous lengths from outlet to outlet, or from fitting to fitting, no joints or taps to be made in molding. Where branch taps are necessary in molding work, approved fittings for this purpose must be used. (b) Must never be placed in either metal or wooden molding in concealed or damp places, or where the difference of potential between any two (2) wires in the same molding is over three hundred (300) volts. Metal moldings must not be used for circuits requiring more than six hundred sixty (660) watts of energy. (c) Must for alternating current systems if in metal molding have the two (2) or more wires of a circuit installed in the same molding.

SECTION 385. CONDUIT WORK, WIRING. (a) Wire must have an approved rubber insulating covering, and must within the conduit tubing be without splices or taps. (b) Must not be drawn in until all mechanical work on the building has been, as far as possible, completed.

Conductors in vertical conduit risers must be supported within the conduit system in accordance with the following table:

- No. 14 to 0 every 100 feet.
- No. 00 to 0000 every 80 feet.
- 0000 to 350,000 C. M. every 60 feet.
- 350,000 C. M. to 500,000 C. M. every 50 feet.
- 500,000 C. M. to 750,000 C. M. every 40 feet.
- 750,000 C. M. every 35 feet.

(c) The following methods of supporting cables may be used:

1. A turn of ninety (90) degrees in the conduit system will constitute a satisfactory support.
2. Junction boxes may be inserted in the conduit system at the required intervals, in which insulating supports of approved type must be installed and secured in a satisfactory manner so as to withstand the weight of the conductors attached thereto, the boxes to be provided with proper covers.
3. Cables may be supported in approved junction boxes on two or more insulating supports so placed that the conductors will be deflected at an angle of not less than ninety (90) degrees, and carried a distance of not less than twice the diameter of the cable from its vertical position. Cables so suspended may be additionally secured to these insulators by tie wires. (d) Must, for alternating systems, have the two or more wires of a circuit drawn in the same conduit. The same conduit must not contain more than four (4) two-wire or three (3) three-wire circuits of the same system.

SECTION 386. CONCEALED "KNOB AND TUBE" WORK. WIRING. (a) Wire must have an approved rubber insulating covering. (b) Must be rigidly supported on non-combustible, non-absorptive insulators which separate the wire at least one (1) inch from the surface wired over, to be run singly on separate timbers, or studding, and must be kept at least five (5) inches apart. Must be separated from contact with the walls, floor timbers and partitions through which they may pass by non-combustible, non-absorptive, insulating tubes such as glass or porcelain. Wires passing through cross timbers in plastered partitions must be protected by an additional tube extending at least four (4) inches above the timber. At distributing centers, outlets or switches where space is limited and the five inch separation can not be maintained, each wire must be separately encased in a continuous length of approved flexible tubing. (c) When in a concealed knob and tube system, it is impracticable to place the whole of a circuit on non-combustible supports of glass or porcelain, that portion of the circuit which can not be so supported must be installed with approved metal conduit, or approved armored cable, except that if the difference of potential between the wires is not over three hundred (300) volts, and if the wires are not exposed to moisture, they may be fished if separately encased in approved flexible tubing, extending in continuous lengths from porcelain support to porcelain support, from porcelain support to outlet, or from outlet to outlet. (d) When using either conduit or armored cable in mixed concealed knob and tube work, the requirements for conduit work or armored cable work must be complied with as the case may be. (e) Must at all outlets, except where conduit is used, be protected by approved flexible tubing, extending in continuous lengths from the last porcelain support to at least one (1) inch beyond the outlet. In the case of combination fixtures the tubes must extend at least flush with outer end of gas cap. When the surface at any outlet is broken, it must be repaired so as to leave no holes or open spaces at such outlet.

SECTION 387. FIXTURE WORK. (a) Wire must be not smaller than No.

18 B. & S. gauge, and must have an approved rubber insulating covering. In wiring certain designs of show-case fixtures, ceiling bulls-eyes and similar appliances in which the wiring is exposed to temperatures in excess of one hundred twenty (120) degrees Fahrenheit from the heat of the lamps, approved slow-burning wire may be used. All such forms of fixtures must be submitted for examination, test and approval before being introduced for use. (b) Supply conductors, and especially the splices to fixture wires, must be kept clear of the grounded part of gas pipes, and where shell or outlet boxes are used, they must be made sufficiently large to allow the fulfillment of this requirement. (c) Must, when fixtures are wired outside, be so secured as not to be cut or abraded by the pressure of the fastenings or motion of the fixture. (d) Wires of different systems must never be contained in or attached to the same fixture, and under no circumstances must there be a difference of potential of more than three hundred (300) volts between wires contained in or attached to the same fixtures. (e) When supported at outlets in metal conduit, armored cable or metal molding systems, or from gas piping or any grounded metal work, or when installed on metal walls or ceilings, or on plaster walls or ceilings containing metal lath, or on walls or ceilings in fireproof buildings, must be insulated from such supports by approved insulating joints placed as close as possible to the ceilings or walls. The insulating joint may be omitted in conduit, armored cable or metal molding systems with straight electric fixtures in which the insulation of conductors is the equivalent of insulation in other parts of the system, and provided that approved sockets, receptacles or wireless clusters are used of a type having porcelain or equivalent insulation between live metal parts and outer metal shells, if any. Gas pipes must be protected above the insulating joint by approved insulating tubing, and where outlet tubes are used they must be of sufficient length to extend below the insulating joint, and must be so secured that they will not be pushed back when the canopy is put in place. Where insulating joints are required, fixture canopies of metal in fireproof buildings must be thoroughly and permanently insulated from the walls or ceilings, and in other than fireproof buildings they must be thoroughly and permanently insulated from metal walls or ceilings or from plaster walls or ceilings on metal lathing. Fixtures having so-called flat canopies, tops or backs, will not be approved for installation, except where outlet boxes are used. (f) Must, when installed outdoors, be of water-tight construction. (g) Must not, when wired on the outside, be used in show windows or in the immediate vicinity of especially inflammable stuff. (h) Must be free from short circuits between conductors and from contacts between conductors and metal parts of fixtures, and must be tested for such conditions before being connected to supply conductors. (i) Material must be of metal or hard wood, except that other approved material may be used if reinforced by metal or otherwise constructed to secure requisite mechanical strength. In all cases mechanical strength must be secured practically equivalent to an all-metal fixture of similar size and form. (j) All arms must be reliably secured to prevent turning. Arms of threaded tubing must not be lighter than No. 18 B. & S. gauge, and with screw joints of arms there must be not less than five (5) threads all engaging. All methods of fastening arms or making joints between metal parts by soldering, brazing or otherwise, must be such as to secure in every case ample strength and reliability. (k) Sockets must, except on pendant cords, be attached to the metal of the fixtures and must be secured in a reliable and permanent manner. Receptacles having exposed terminals must not be used in canopies or in any part of fixtures unless completely enclosed in metal. (1) In non-metallic fixtures wireways must be metal-lined unless approved armored conductors with suitable fittings are

used. On chains or similar parts where conductors are not completely inclosed in metal, wires must be stranded and must have rubber insulation not less than one-thirty-second (1-32) inch in thickness or approved pendant or portable cord may be used.

SECTION 388. FLEXIBLE CORD. INSTALLATION. (a) Must have an approved insulation and covering. (b) Must not, except in street railway property, be used where the difference of potential between the two (2) wires is over three hundred (300) volts. (c) Must not be used as a support for clusters. (d) Must not be used except for pendants, wiring of fixtures, portable lamps or motors, and portable heating apparatus. For all portable work, including those pendants which are liable to be moved about sufficiently to come in contact with surrounding objects, flexible wires and cables especially designed to withstand this severe service must be used. When necessary to prevent portable lamps from coming in contact with inflammable materials, or to protect them from breakage, they must be surrounded with a substantial wire guard. (e) Must not be used in show windows or show cases except when provided with an approved metal armor. (f) Must be protected by insulating bushings where the cord enters the socket. (g) Must be so suspended that the entire weight of the socket and lamp will be borne by some approved method under the bushing in the socket, and above the point where the cord comes through the ceiling block or rosette, in order that the strain may be taken from the joints and binding screws.

SECTION 389. UNDERGROUND CONDUCTORS. (a) Must be protected against moisture and mechanical injury where brought into a building, and all combustible material must be kept from the immediate vicinity. (b) Must not be so arranged as to shunt the current through a building around any catch-box. (c) Where underground service enters building through tubes, the tubes shall be tightly closed at outlets with asphaltum or other non-conductor, to prevent gases from entering the building through such channels. (d) No underground service from a subway to a building shall supply more than one building.

SECTION 390. SWITCHES, CUT-OUTS, CIRCUIT-BREAKERS, ETC. (a) On constant potential circuits, all service switches and all switches controlling circuits supplying current to motors or heating devices, and all fuses, unless otherwise provided, must be so arranged that the fuses will protect and the opening of the switch will disconnect all of the wires; that is, in the two-wire system the two (2) wires, and the three-wire system the three (3) wires, must be protected by the fuses and disconnected by the operation of the switch. When installed without other automatic overload protective devices automatic overload circuit breakers must have the poles and trip coils so arranged as to afford complete protection against overloads and short circuits, and if also used in place of the switch must be so arranged that no one (1) pole can be opened manually without disconnecting all the wires. (b) Must not be placed where exposed to mechanical injury nor in the immediate vicinity of easily ignitable stuff or where exposed to inflammable gases or dust or to flyings of combustible material. Where the occupancy of a building is such that switches, cut-outs, etc., cannot be located so as not to be exposed as above, they must be inclosed in approved dust-proof cabinets with self-closing doors, except oil switches and circuit breakers which have dust-tight casings. (c) Must, when exposed to dampness, either be inclosed in a moisture proof box or mounted on porcelain knobs. The cover of the box must be made that no moisture which may collect on the top or sides of the box can enter it. (d) Time switches, sign flashes and similar appliances must be of approved design and inclosed in an approved cabinet. (e) Single pole switches must never be used as service switches nor for the control of outdoor signs nor

placed in the neutral wire of a three-wire system, except in the two-wire branch or tap circuit supplying not more than six hundred sixty (660) watts. Three-way switches are considered as single pole switches. (f) Where flush switches or receptacles are used, whether with conduit systems or not, they must be inclosed in an approved box constructed of iron or steel, in addition to the porcelain inclosure of the switch or receptacle. No push buttons for bells, gas-lighting circuits, or the like shall be placed in the same wall plate with switches controlling electric light or power wiring. (g) Where possible, at all switch or fixture outlets, unless outlet boxes which will give proper support for fixtures are used, a seven-eighths (7-8) inch block must be fastened between studs or floor timbers flush with the back of lathing to hold tubing, and to support switches or fixtures. When this cannot be done, wooden base blocks, not less than three-fourths (3-4) inch in thickness, securely screwed to lathing, must be provided for switches, and also for fixtures which are not attached to gas pipes or conduit. (h) Sub-bases on non-combustible, non-absorptive, insulating material, which will separate the wires at least one-half inch from the surface wired over, must be installed under all snap switches used in exposed knob and cleat work. Sub-bases must also be used in moulding work, but they may be made of hardwood or they may be omitted if the switch is approved for mounting directly on the moulding.

SECTION 391. AUTOMATIC CUT-OUTS. (a) Must be placed on all service wires, either overhead or underground, in the nearest accessible place to the point where they enter the building and inside the walls, and arranged to cut off the entire current from the buildings. For three-wire systems the fuse in the neutral wire may be omitted, provided the neutral wire is of equal carrying capacity to the larger of the outside wires, and is grounded. In risks having private plants, the yard wires running from building to building are not considered as service wires, so that cut-outs would not be required where the wires enter buildings, provided that the next fuse back is small enough to properly protect the wires inside the building in question. (b) Must be placed at every point where a change is made in the size of wire (unless the cut-out in the larger wire will protect the smaller). For three-wire direct current or single phase systems the fuse in the neutral wire except that called for under (d) may be omitted, provided the neutral wire is grounded. (c) Must be in plain sight, or inclosed in an approved cabinet, and readily accessible. They must not be placed in the canopies or shells of fixtures. Link fuses may be used only when mounted on approved slate or marble bases and must be inclosed in dust-tight, fire-proofed cabinets, except on switchboards. (d) Must be so placed that no set of incandescent lamps requiring more than six hundred sixty (660) watts, whether grouped on one fixture or on several fixtures or pendants, will be dependant upon one (1) cut-out. All branches or taps from any three-wire system which are directly connected to lamp sockets or other translating devices, must be run as two-wire circuits if the fuses are omitted in the neutral, or if the difference of potential between the two (2) outside wires is over two hundred fifty (250) volts, and both wires of such branch or tap circuits must be protected by proper fuses. The above shall also apply to motors, except that small motors may be grouped under the protection of a single set of fuses, provided the rated capacity of the fuses does not exceed six (6) amperes. The fuses in the branch cut-outs, except for motors as noted above, must not have a rated capacity greater than that given as follows for circuits at various potentials.

55 volts or less	12 amperes
Over 55 but less than 125 v.	6 amperes
125 to 250 volts	3 amperes

For sign and outline wiring supplied by circuit of fifty-five (55) volts or less, branch circuit fuses of twenty-five (25) amperes capacity may be used. On open work in large mills approved link fused rosettes may be used at a voltage of not over one hundred twenty-five (125) and approved inclosed fused rosettes at a voltage of not over two hundred fifty (250), the fuse in the rosettes not to exceed three (3) amperes, and a fuse of over twenty-five (25) amperes must not be used in the branch circuit. (c) The rated capacity of fuses must not exceed the allowable carrying capacity of the wire as given in Section 371. Circuit-breakers must not be set more than thirty (30) per cent. above allowable carrying capacity of the wire, unless a fusible cut-out is also installed on the circuit. Where rubber-covered wire is used for the leads or branches of A. C. motors of the types requiring large starting currents, the wire may be protected in accordance with Table B of Section 371, except when circuit breakers are installed which are equipped with time element devices. Fixture wire or flexible cord of No. 18 B. & S. gauge will be considered as properly protected by six (6) ampere fuses (f) Each wire of motor circuits, except on main switchboard or when otherwise subject to competent supervision, must be protected by an approved fuse whether automatic overload circuit breakers are installed or not. Single phase motors may have one (1) side protected by an approved automatic overload circuit breaker only if the other side is protected by an approved fuse. For circuits having a maximum capacity greater than that for which inclosed fuses are approved circuit breakers alone will be approved.

SECTION 392. SERIES ARC LAMPS. (a) Must be carefully isolated from inflammable material. (b) Must be provided at all time with a glass globe surrounding the arc, and securely fastened upon a closed base. Broken or cracked globes must not be used. (c) Must be provided with a wire netting (having a mesh not exceeding one and one-fourth (1 1/4) inches) around the globe and an approved spark arrester, when readily inflammable material is in the vicinity of the lamps, to prevent escape of sparks of carbon or melted copper. Outside arc lamps must be suspended at least eight (8) feet above sidewalks. Inside arc lamps must be placed out of reach or suitably protected. Arc lamps, when used in places where they are exposed to flyings of easily inflammable material, must have the carbons inclosed completely in a tight globe in such a manner as to avoid the necessity for spark arresters. "Inclosed arc" lamps having tight inner globes may be used. (d) Where hanger-boards are not used, lamps must be hung from insulating supports other than their conductors. (e) Lamps when arranged to be raised and lowered either for carboning or other purposes, shall be connected up with stranded conductors from the last point of support to the lamp, when such conductor is larger than No. 14 B. & S. gauge. (f) Incandescent lamps in series circuits must have the conductors installed as required in Section 381, and each lamp must be provided with an automatic cut-out. (g) Must have each lamp suspended from a hanger-board by means of rigid tube. (h) No electro-magnetic device for switches and no multiple-series or series-multiple system of lighting will be approved. (i) Must not, under any circumstances, be attached to gas fixtures.

SECTION 393.. ARC LAMPS ON CONSTANT POTENTIAL CIRCUITS. (a) Must have a cut-out for each lamp of each series of lamps. The branch conductors must have a carrying capacity about fifty (50) per cent. in excess of the normal current required by the lamp. (b) Must only be furnished with such resistance or regulators as are inclosed in non-combustible material, such resistance being treated as sources of heat. Incandescent lamps must be used for this purpose. (c) Must be supplied with globes and protected by spark arresters and wire netting around the globe,

as in the case of series arc lamps. Outside arc lamps must be suspended at least eight (8) feet above sidewalks. Inside arc lamps must be placed out of reach or suitably protected. (d) Lamps when arranged to be raised and lowered, either for carboning or other purposes, shall be connected up with stranded conductors from the last point of support to the lamp, when such conductor is larger than No. 14 B. & S. gauge.

SECTION 394. MERCURY VAPOR LAMPS. (a) Must have cut-out for each lamp or series of lamps except when contained in single frame and lighted by a single operation, in which case not more than five (5) lamps should be dependant upon single cut-out. (b) Must only be furnished with such resistance or regulators as are inclosed in non-combustible cases, such resistances to be treated as sources of heat. In locations where these resistances or regulators are subject to flyings of lint or combustible material, all openings through cases must be protected by fine wire gauze. (c) The tube must be so installed as to be free from mechanical injury or liability to contact with inflammable material. (d) High-potential coils and regulating apparatus must be installed in approved steel cabinet not less than one-tenth (1-10) inch in thickness; same to be well ventilated in such a manner as to prevent the escape of any flame or sparks, in case of burnout in the various coils. All apparatus in this box must be mounted on slate base and the inclosing case positively grounded. Supplying conductors leading into this high-potential case to be installed in accordance with the standard requirements governing low-potential systems, where such wires do not carry a potential of over three hundred (300) volts. (e) Economy and compensator coils for arc lamps must be mounted on non-combustible, non-absorptive, insulating supports, such as glass or porcelain, allowing an air space of at least one (1) inch between frame and support, and must in general be treated as sources of heat.

SECTION 395. ELECTRIC HEATERS. (a) Must be protected by a cut-out and controlled by indicating switches. Switches must be double pole except when the device controlled does not require more than six hundred sixty (660) watts of energy. (b) Must never be concealed, but must at all times be in plain sight. (c) Flexible conductors for smoothing irons and sad irons, and for all devices requiring over two hundred fifty (250) watts must have an approved insulation and covering. (d) For portable heating devices the flexible conductors must be connected to an approved plug device, so arranged that the plug will pull out and open the circuit in case any abnormal strain is put on the flexible conductor. This device may be stationary, or it may be placed in the cord itself. The cable or cord must be attached to the heating apparatus in such a manner that it will be protected from kinking, chafing or like injury at or near the point of connection. (e) Smoothing irons, sad irons, and other heating appliances that are intended to be applied to inflammable articles, such as clothing, must conform to the above rules so far as they apply. They must also be provided with an approved stand, on which they should be placed when not in use. (f) Stationary electric heating apparatus, such as radiators, ranges, plate warmers, etc., must be placed in a safe location, isolated from inflammable materials, and be treated as sources of heat. (g) Must each be provided with name-plate, giving the maker's name and the normal capacity in volts and amperes.

SECTION 396. ARMORED CABLES. (a) Must be continuous from outlet to outlet or to junction boxes, and the armor of the cable must properly enter and be secured to all fittings, and the entire system must be mechanically secured in position. In case of service connections and main runs, this involves running such armored cable continuously into a main cut-out cabinet or gutter surrounding the panel board, as the case

may be. (b) Must be equipped at every outlet with an approved outlet box or plate, as required in conduit work. Outlet plates must not be used where it is practicable to install outlet boxes. The outlet box or plate shall be so installed that it will be flush with the finished surface, and if this surface is broken it shall be repaired so that it will not show any gaps or open spaces around the edge of the outlet box or plate. In buildings already constructed where the conditions are such that neither outlet box nor plate can be installed, these appliances may be omitted, provided the armored cable is firmly and rigidly secured in place. (c) Must have the metal armor of cables permanently and effectually grounded to water piping, gas piping or suitable ground plate, provided that when connections are made to gas piping, they must be on the street side of the meter. If the armored cable system consists of several separate sections, the sections must be bonded to each other, and the system grounded, or each section may be separately grounded, as required above. The armor of cables and gas pipes must be securely fastened in outlet boxes, junction boxes and cabinets, so as to secure good electrical connection. Connections to grounded pipes and to armor of cables must be exposed to view or readily accessible, and must be made by means of approved ground clamps, to which the ground wires must be soldered. Ground wires must be of copper, at least No. 10 B. & S. gauge (where largest wire contained in cable is not greater than No. 0 B. & S. gauge), and need not be greater than No. 4 B. & S. gauge (where largest wire contained in cable is greater than No. 0 B. & S. gauge). They shall be protected from mechanical injury. (d) When installed in so-called fireproof buildings in course of construction or afterwards if exposed to moisture, or where it is exposed to the weather, or in damp places, such as breweries, stables, etc., the cable must have a lead covering at least one-thirty-second (1-32) inch in thickness placed between the outer braid of the conductors and the steel armor. The lead covering is not to be required when the cable is run against brick walls or laid in ordinary plaster walls unless same are continuously damp. (e) Where entering junction boxes, and at all other outlets, etc., must be provided with approved terminal fittings which will protect the insulation of the conductors from abrasion, unless such junction or outlet boxes are specially designed and approved for use with the cable. (f) Junction boxes must always be installed in such a manner as to be accessible. (g) For alternating current systems must have the two (2) or more conductors of the circuit inclosed in one (1) metal armor. (h) All bends must be so made that the armor of the cable will not be injured. The radius of the curve of the inner edge of any bend not to be less than one and one-half (1½) inches.

SECTION 397. INTERIOR CONDUITS. (a) No conduit tube having an internal diameter of less than five-eighths (5-8) of an inch shall be used. Measurements to be taken inside of metal conduits. (b) Must be continuous from outlet to outlet or to junction boxes, and the conduit must properly enter, and be secured to all fittings and the entire system must be mechanically secured in position. In case of service connections and main runs, this involves running each conduit continuously into a main cut-out cabinet or gutter surrounding the panel-board, as the case may be. (c) Must be first installed as a complete conduit system, without the conductors. (d) Must be equipped at every outlet with an approved outlet box or plate. At exposed ends of conduit (but not at fixture outlets) where wires pass from the conduit system without splice, joint or tap, an approved fitting having separately bushed holes for each conductor is considered the equivalent of a box. Outlet plates must not be used where it is practicable to install outlet boxes. The outlet box or plate must be so installed that it will be flush with the finished surface, and if this surface is broken it shall be repaired so that it will not

show any gaps or open spaces around the edge of the outlet box or plate. In buildings already constructed where the conditions are such that neither outlet box or plate can be installed, these appliances may be omitted, providing the conduit ends are bushed and secured. (e) Metal conduits where they enter junction boxes, and at all other outlets, etc., must be so provided with approved bushings or fastening plates fitted so as to protect wire from abrasion, except when such protection is obtained by the use of approved nipples, properly fitted in boxes or devices. (f) Must have the metal of the conduit permanently and effectually grounded. Where short sections of conduit (or pipe of equivalent strength) is used for the protection of exposed wiring on side walls, and such conduit or pipe and wiring is installed as required by Section 382, the conduit or pipe need not be grounded. Conduits and gas pipes must be securely fastened in outlet boxes, junction boxes and cabinets, so as to secure good electrical connections. Connections to grounded pipes and to conduit must be exposed to view or readily accessible, and must be made by means of approved ground clamps to which the ground wires must be soldered. Ground wires must be of copper, at least No. 10 B. & S. gauge (where largest wire contained in conduit is not greater than No. 0 B. & S. gauge), and need not be greater than No. 4 B. & S. gauge (where largest wire contained in conduit is greater than No. 0 B. & S. gauge). They shall be protected from mechanical injury. (g) Junction boxes must always be installed in such a manner as to be accessible. (h) All elbows or bends must be so made that the conduit or lining of same will not be injured. The radius of the curve of the inner edge of any elbow not to be less than three and one-half ($3\frac{1}{2}$) inches. Must have not more than the equivalent of four quarter bends from outlet to outlet, the bends at the outlets not being counted.

SECTION 398. METAL MOULDINGS. (a) Must be from outlet to outlet, to junction boxes, or approved fittings designed especially for use with metal mouldings, and must at all outlets be provided with approved terminal fittings which will protect the insulation of conductors from abrasion, unless such protection is afforded by the construction of the boxes or fittings. (b) Such mouldings where passing through a floor must be carried through an iron pipe extending from the ceiling below to a point five (5) feet above the floor, which will serve as an additional mechanical protection and exclude the presence of moisture often prevalent in such locations. In residences, office buildings and similar locations, where appearance is an essential feature, and where the mechanical strength of the moulding itself is adequate, this ruling may be modified to require the protecting piping from the ceiling below to a point at least three (3) inches above the flooring. (c) Backing must be secured in position by screws or bolts, the heads of which must be flush with the metal. (d) Must have the metal of moulding permanently and effectually grounded to water piping, gas piping, or suitable ground plate, provided that when connections are made to gas piping, they must be on the street side of the meter. If the metal moulding system consists of several separate sections, the sections must be bonded to each other and the system grounded, or each section may be separately grounded, as required above. Metal mouldings and gas pipes must be securely fastened to outlet boxes, junction boxes and cabinets, so as to secure a good electrical connection. Moulding must be so installed that adjacent lengths of moulding will be mechanically and electrically secured at all points. Connection to grounded pipes and to metal mouldings must be exposed to view, or readily accessible, and must be made by means of approved ground clamps, to which the wires must be soldered. Ground wires must be of copper, at least No. 10 B. & S. gauge. They shall be protected from mechanical injury. (e)

Must be installed so that for alternating systems the two or more wires of a circuit will be in the same metal moulding.

SECTION 399. WOODEN MOULDINGS. (a) Must have, both outside and inside, at least two (2) coats of waterproof material, or be impregnated with a moisture repellent. (b) Must be made in two (2) pieces, a backing and a capping, and must afford suitable protection from abrasion. Must be so constructed as to thoroughly encase the wire, be provided with a tongue not less than one-half (1-2) inch in thickness between the conductors, and have exterior walls which under grooves shall not be less than three-eighths (3-8) inch in thickness, and on the sides not less than one-fourth ($\frac{1}{4}$) inch in thickness.

SECTION 400. SOCKETS. (a) In rooms where inflammable gases may exist the incandescent lamp and socket must be inclosed in a vapor-tight globe, and supported on a pipe-hanger, wired with approved rubber-covered wire soldered directly to the circuit. (b) In damp or wet places "waterproof" sockets must be used. Unless made up on fixtures they must be hung by separate stranded rubber-covered wires not smaller than N. 14 B. & S. gauge, which should preferably be twisted together when the pendant is over three (3) feet long. These wires must be soldered direct to the circuit wires but supported independently of them. (c) Key sockets will not be approved if installed over specially inflammable stuff, or where exposed to flyings of combustible material.

SECTION 401. OUTLINE LIGHTNING. (a) Wiring other than signs or exterior of buildings must be connected only to low-potential systems. (b) Open or conduit work may be used, but moulding will not be permitted. (c) For open work, wires must have an approved rubber insulating covering. Must be rigidly supported on non-combustible, non-absorptive insulators, which separate the wires at least one (1) inch from the surface wired over, and must be kept apart at least two and one-half (2-1-2) inches for voltages up to three hundred (300), and four (4) inches higher voltages. Rigid supporting requires, under ordinary conditions where wiring over flat surfaces, supports at least every four and one-half ($4\frac{1}{2}$) feet. If the wires are liable to be disturbed, the distances between supports should be shortened. (d) Where flexible tubing is required, the ends must be sealed and painted with moisture repellent, and kept at least one-half ($\frac{1}{2}$) inch from surface wired over.

(e) Wires for use in rigid or flexible steel conduit must comply with requirements for unlined conduit work. Where armored cable is used, the conductors must be protected from moisture by lead sheath between armor and insulation. (f) Must be protected by its own cut-out, and controlled by its own switch. Cut-outs, switches, time switches, flashers and similar appliances, must be of approved design, and must, if located inside the building, be installed as required by the code for such devices. If outside the building they must be inclosed in a steel or cast-iron box. If a steel box is used, the minimum thickness of the steel must be 0.125 of an inch (No. 11 U. S. gauge). (g) Boxes must be so constructed that when switches operates the blade shall clear the door by at least one (1) inch, and they must be moisture-proof. (h) Circuits must be so arranged that not more than one thousand three hundred twenty (1,320) watts will be finally dependant upon a single cut-out; nor shall more than sixty-six (66) sockets or receptacles be connected to single circuit. (i) Sockets and receptacles must be of the keyless porcelain type, and wires must be soldered to lugs on same.

SECTION 402. ELECTRIC SIGNS (FOR LOW-POTENTIAL SYSTEMS ONLY). (a) Material must be constructed entirely of metal or other approved non-combustible material, except that wood may be used on outside for decoration if kept at least two (2) inches from nearest lamp receptacles. Sheet metal must be not less than No. 28 U. S. metal gauge. All metal must be galvanized, enameled or treated with at least three (3) coats of

anti-corrosive paint, or otherwise protected in an approved manner against corrosion. (b) Must be constructed so as to secure ample strength and rigidity. Must be so constructed as to be practically weatherproof and so as to inclose all terminals and wiring other than the supply leads, except that open work will be permitted for signs on roofs or open ground where not subject to mechanical injury, provided the wiring is in accordance with (e). Cut-outs, transformers, unless of weatherproof type, flashers and other similar devices on or within the sign structure, must be in a separate, completely inclosed, accessible and weatherproof compartment, or, in a substantial weatherproof box or cabinet of metal of thickness not less than that of the metal of the sign itself. Each compartment must have suitable provision for drainage through one (1) or more holes each not less than one-quarter ($\frac{1}{4}$) inch in diameter. (c) Receptacles must be so designed as to afford permanent and reliable means to prevent possible turning; must be so designed and placed that terminals will be at least one-half ($\frac{1}{2}$) inch from other terminals and from metal of the sign except that where open work is permitted, this separation must be one (1) inch. Miniature receptacles will not be approved for use in outdoor signs. (d) Wiring must be approved rubber covered, not less than No. 14 B. & S. gauge, and, except where open work is permitted, must be double braided. Must be neatly run, and so disposed and fastened as to be mechanically secure. Must be soldered to terminals, and exposed parts of wires and terminals must be treated to prevent corrosion. Must, where they pass through walls or partitions of the sign, be protected by approved bushings. On outside of sign structure, except where open work is permitted, must be in approved metal conduit or in approved armored cable. For open work, wire must be rigidly supported on non-combustible, non-absorptive insulators, which separate the wires at least one (1) inch from the surface wired over. Rigid supporting requires under ordinary conditions where wiring over flat surfaces, supports at least every four and one-half ($4\frac{1}{2}$) feet. If the wires are liable to be disturbed, the distances between supports should be shortened. In those parts of circuits where wires are connected to approved receptacles which hold them at least one (1) inch from surface wired over, and which are placed not over one foot apart, such receptacles will be considered to afford the necessary support and spacing of the wires. Between receptacles more than one (1) foot, but less than two (2) feet apart, an additional non-combustible non-absorptive insulator maintaining a separation and spacing equivalent to the receptacles must be used. Except as above specified, wires must be kept apart at least two and one-half ($2\frac{1}{2}$) inches for voltages up to three hundred (300), and four (4) inches for higher voltages. (e) Leads from sign must pass through the walls of sign either through approved metal conduit or armored cable, or must be neatly cabled and pass through one (1) or more approved non-combustible, non-absorptive bushings. (f) Not over one thousand three hundred twenty (1,320) watts shall be dependent upon final cut-out.

SECTION 403. REACTIVE COILS AND CONDENSERS. (a) Reactive coils must be made of non-combustible material, mounted on non-combustible bases and treated, in general, as sources of heat. (b) Condensers must be treated like other apparatus operating with equivalent voltage and currents. They must have non-combustible cases and supports, and must be isolated from all combustible materials and, in general, treated as sources of heat.

SECTION 404. WIRING OF THEATERS AND PLACES OF AMUSEMENT. All wiring apparatus, etc., for theaters and places of amusement not specifically covered herein, must conform to the requirements of Part 14 of this ordinance.

Change section numbers on page 131, part 26, as follows:

Section No. 362 to 405.

Section No. 363 to 406.

Section No. 364 to 407.

That with the changes and recommendations above set out made in said General Ordinance No. 72, we recommend that the same do pass.

CHARLES B. STILZ,
GEORGE L. DENNY,
FRED C. OWEN,
JAMES E. TROY.

DEPARTMENT OF LAW,
CITY OF INDIANAPOLIS.
INDIANAPOLIS, IND., November 17, 1913.

Committee of Public Safety of the Common Council:

GENTLEMEN: Your chairman has presented to us for consideration the amendment proposed by the Committee to General Ordinance No. 72, and we have examined the same and find no legal objections to any of the amendments proposed by such report, and submit this opinion to be taken in connection with the former opinion given by our department sometime ago, with reference to the validity of this ordinance.

Respectfully submitted,

MERLE N. A. WALKER,
City Attorney.

Mr. Stilz moved that the report of the committee be concurred in. Carried.

INTRODUCTION OF APPROPRIATION ORDINANCES.

By City Controller:

Appropriation Ordinance No. 53—1913: An ordinance appropriating the sum of \$178.75 to and for the use of the Finance Department and fixing a time when the same shall take effect.

SECTION 1. Be it ordained by the Common Council of the City of Indianapolis, Indiana, That the sum of one hundred seventy-eight dollars and seventy-five cents (\$178.75) be, and is hereby appropriated out of any moneys in the City Treasury, not otherwise appropriated, to and for the use of the Department of Finance, the amount appropriated herein to be known as "Annual Reports of the City Court Fund."

SECTION 2. This ordinance shall take effect and be in force from and after its passage.

Which was read a first time and referred to the Committee on Finance.

By City Controller:

Appropriation Ordinance No. 54—1913: An ordinance appropriating the sum of \$306.45 to and for the use of the Department of Public Safety and fixing a time when the same shall take effect.

SECTION 1. Be it ordained by the Common Council of the City of Indianapolis, Indiana, That the sum of three hundred six dollars and forty-five cents (\$306.45) be, and is hereby appropriated out of any moneys in the City Treasury, not otherwise appropriated, to and for the use of the Department of Public Safety, the amount appropriated herein to be added to and form a part of the fund known as "Weights and Measures Salaries."

SECTION 2. This ordinance shall take effect and be in force from and after its passage.

Which was read a first time and referred to the Committee on Finance.

By City Controller:

Appropriation Ordinance No. 55—1913: An ordinance appropriating the sum of \$58,000.00 to and for the use of the Department of Public Safety and fixing a time when the same shall take effect.

SECTION 1. Be it ordained by the Common Council of the City of Indianapolis, Indiana, That the sum of fifty-eight thousand dollars (\$58,000.00) be, and is hereby appropriated out of any moneys in the City Treasury, not otherwise appropriated, to and for the use of the Department of Public Safety, the amount appropriated herein to be added to and form a part of the fund known as "Police Force Payroll."

SECTION 2. This ordinance shall take effect and be in force from and after its passage.

Which was read a first time and referred to the Committee on Finance.

By City Controller:

Appropriation Ordinance No. 56—1913: An ordinance appropriating the sum of \$349.88 to and for the use of the Department of Public Safety and fixing a time when the same shall take effect.

SECTION 1. Be it ordained by the Common Council of the City of Indianapolis, Indiana, That the sum of three hundred forty-nine dollars and eighty-eight cents (\$349.88) be, and is hereby appropriated out of any moneys in the City Treasury, not otherwise appropriated, to and for the use of the Department of Public Safety, the amount ap-

propriated herein to be added and form a part of the fund known as "Station House Salaries."

SECTION 2. This ordinance shall take effect and be in force from and after its passage.

Which was read a first time and referred to the Committee on Finance.

INTRODUCTION OF GENERAL AND SPECIAL ORDINANCES.

By City Controller:

General Ordinance No. 84—1913: An ordinance providing for the transfer of \$1,500.00 from a certain fund to a certain fund in and for the use of the Department of Public Works and fixing a time when the same shall take effect.

SECTION 1. Be it ordained by the Common Council of the City of Indianapolis Indiana, That the sum of fifteen hundred dollars (\$1,500.00) be, and the same is hereby transferred from the fund for Fire Headquarters and City Garage Building to the Furniture and Fixture fund of the Department of Public Safety. All to and for the use of the Department of Public Works.

SECTION 2. This ordinance shall take effect and be in force from and after its passage.

Which was read a first time and referred to the Committee on Finance.

By Mr. Denny:

General Ordinance No. 85—1913: An ordinance supplemental to an ordinance, entitled "An ordinance regulating and requiring licenses for dances in the City of Indianapolis, and suppressing public dance halls," approved February 27, 1906, requiring the presence of a matron at all licensed dances and providing for the payment of her services.

SECTION 1. Be it ordained by the Common Council of the City of Indianapolis, That it shall hereafter be unlawful for any person, firm, corporation, club, society or association to give, manage, conduct or superintend any dance or ball in the City of Indianapolis, giving elsewhere than in a private residence, without having present in the dance hall or ballroom a matron duly designated by the Chief of Police of the City of Indianapolis, as hereinafter provided.

SECTION 2. It is hereby made the duty of the Chief of Police at the time any application is made to him for a permit under the authority of Section 3 of the ordinance to which this is supplemental, to name some matronly woman of exemplary character to be present at such dance or ball. Her duty shall be to preserve order and decorum, and her name shall be stated in such permit. And it shall be her further duty to see that no lewd, immoral or unseemly conduct is indulged in, or vulgar or indecent language used by any person attending such dance or ball. Said matron shall have the right, and she is hereby clothed with authority to cause any person who offends against the decent proprieties of a social gathering, in the matter of dress, actions or language, to be ejected from the room and building in which such dance or ball is being held. And to carry out the orders of said matron in that behalf, she may call to her assistance any policeman or the person holding said permit, whose duty it shall be to enforce her orders in so ejecting such offending person.

SECTION 3. The matron designated by said Chief of Police shall be entitled to charge and receive two dollars (\$2) for her attendance and services in chaperoning every such entertainment, which fee shall be paid by the person, firm, corporation, club, society or association giving or managing the same. And it shall be unlawful for any such person, firm, corporation, club, society or association giving or conducting such dance or ball to proceed to open the same, until such matron is present in the room designated and her fee shall have been paid.

SECTION 4. Nothing in this ordinance shall be so construed as to change, repeal or annul any provision of said ordinance of February 27, 1906, to which it is supplemental; but the same shall simply be considered and construed as adding to and strengthening the same.

SECTION 5. Every person violating any provision of the foregoing sections of this ordinance shall be fined in a sum not less than five (\$5) dollars or more than one hundred (\$100) dollars.

SECTION 6. This ordinance shall take effect and be in force from and after its passage, approval and publication once each week for two consecutive weeks in the Indianapolis Commercial, a daily newspaper printed and published in said city.

Which was read a first time and referred to the Committee on Finance.

ORDINANCES ON SECOND READING.

Mr. Blumberg called for Appropriation Ordinance No. 38, 1913, for second reading. It was read a second time.

Mr. Blumberg moved that Appropriation Ordinance No. 38, 1913, be ordered engrossed, read a third time and placed upon its passage. Carried.

Appropriation Ordinance No. 38, 1913, was read a third time and passed by the following vote:

Ayes, 6, viz.: Messrs. Rubens, Denny, Owen, Stilz, Blumberg and President Charles F. Copeland.

Noes, 1, viz.: Mr. Troy.

Mr. Blumberg called for Appropriation Ordinance No. 41, 1913 for second reading. It was read a second time.

Mr. Blumberg moved that Appropriation Ordinance No. 41, 1913, be ordered engrossed, read a third time and placed upon its passage. Carried.

Appropriation Ordinance No. 41, 1913, was read a third time and passed by the following vote:

Ayes, 7, viz.: Messrs. Rubens, Denny, Owen, Stilz, Blumberg, Troy and President Charles F. Copeland.

Noes none.

Mr. Blumberg called for Appropriation Ordinance No. 42, 1913, for second reading. It was read a second time.

Mr. Blumberg moved that Appropriation Ordinance No. 42, 1913, be ordered engrossed, read a third time and placed upon its passage. Carried.

Appropriation Ordinance No. 42, 1913, was read a third time and passed by the following vote:

Ayes, 7, viz.: Messrs. Rubens, Denny, Owen, Stilz, Blumberg, Troy and President Charles F. Copeland.

Noes none.

Mr. Blumberg called for Appropriation Ordinance No. 43, 1913, for second reading. It was read a second time.

Mr Blumberg moved that Appropriation Ordinance No. 43, 1913, be ordered engrossed, read a third time and placed upon its passage. Carried.

Appropriation Ordinance No. 43, 1913, was read a third time and passed by the following vote:

Ayes, 7, viz.: Messrs. Rubens, Denny, Owen, Stilz, Blumberg, Troy and President Charles F. Copeland.

Noes none.

Mr. Blumberg called for Appropriation Ordinance No. 44, 1913, for second reading. It was read a second time.

Mr. Blumberg moved that Appropriation Ordinance No. 44, 1913, be ordered engrossed, read a third time and placed upon its passage. Carried.

Appropriation Ordinance No. 44, 1913, was read a third time and passed by the following vote:

Ayes, 7, viz.: Messrs. Rubens, Denny, Owen, Stilz, Blumberg, Troy and President Charles F. Copeland.

Noes none.

Mr. Owen moved that the Council take a recess for five minutes. Carried.

At 10:05 o'clock P. M. President Copeland called the Council to order.

Mr. Stilz called for General Ordinance No. 72, 1912, for second reading. It was read a second time.

Mr. Stilz moved that General Ordinance No. 72, 1912, be amended as recommended by the committee. Carried.

Mr. Stilz moved that General Ordinance No. 72, 1912, be ordered engrossed as amended, read a third time and placed upon its passage. Carried.

General Ordinance No. 72, 1912, was read a third time and passed by the following vote:

Ayes, 7, viz.: Messrs. Rubens, Denny, Owen, Stilz, Blumberg, Troy and President Charles F. Copeland.

Noes none.

On motion of Mr. Rubens, the Common Council, at 10:10 o'clock p. m., adjourned.

Charles F. Copeland

President.

ATTEST:

Edward A. Ramsay

City Clerk

