ORDINANCE No. 118553

Council Bill NO 111686

AN ORDINANCE relating to building and construction codes: repealing Section 22.300.010 and adopting a new Section 22.300.010 of the Seattle Municipal Code to adopt the 1996 National Electrical Code with Seattle amendments as the Seattle Electrical Code and amending Sections 307.2, 711 and 1012 of the Seattle Building Code.

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Honorable President:

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REPORT OF COMMITTEE

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Full Council vote 9-0

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Committee Chair

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Ordinance 118553

AN ORDINANCE relating to building and construction codes: repealing Section 22.300.010 and adopting a new Section 22.300.010 of the Seattle Municipal Code to adopt the 1996 National Electrical Code with Seattle amendments as the Seattle Electrical Code and amending Sections 307.2, 711 and 1012 of the Seattle Building Code.

BE IT ORDAINED BY THE CITY OF SEATTLE AS FOLLOWS:

Section 1. Section 22.300.010 of the Seattle Municipal Code adopting the 1993 National Electrical Code as last amended by Ordinance 116790 is hereby repealed, and a new Section 22.300.010 is added to the Seattle Municipal Code to read as follows:

22.300.010 Adoption of National Electrical Code

The National Electrical Code, 1996 Edition, published by the National Fire Protection Association, one copy of which is filed with the City Clerk in C.F. 301831, is hereby adopted and by this reference made a part of this subtitle. The National Electrical Code, 1996 Edition, together with the amendments and additions thereto adopted by Ordinance 118563, shall constitute the Seattle Electrical Code.

Section 2. The National Electrical Code, 1996 Edition, is amended by adding Chapters 1, 2, and 3 as follows:

CHAPTER 1

APPLICATION OF THIS CODE

TITLE

Section 101. This code shall be known as the "Seattle Electrical Code " and may be so cited. It is referred to herein as the "Electrical Code" or "this code."

PURPOSE

Section 102. The purpose of this code is to protect persons, buildings and the contents thereof in a practical manner from hazards arising from the use of electricity for lights, heat, power, radio, signaling and other purposes. An additional purpose of this code is to provide equal, higher or better standards of construction and/or equal, higher or better standards of materials, devices, appliances and equipment than that required by the State of Washington under the provisions of Chapter 19.28 RCW (Revised Code of Washington). This code is intended to provide for and promote the health, safety and welfare of the general public, and not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this code. This code is not intended as a design specification nor an instruction manual for untrained persons.

SCOPE

Section 103. The Electrical Code shall apply to all electrical wiring and equipment, including communications systems, installed or used within the City.

Exception No. 1: Installations in ships and watercraft not connected to public utilities, railway rolling stock, aircraft or automotive vehicles.

Exception No. 2: Installations of railways or generation, transformation, transmission or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communication purposes.

Exception No. 3: Installations of communication equipment under exclusive control of communication utilities, located outdoors or in building spaces used exclusively for such installations.

Exception No. 4: Installation of communication or signaling equipment used exclusively for the operation of a municipal fire alarm or police telegraph system.

Exception No. 5: Installations under the exclusive control of electric utilities for the purpose of communication, metering or for the generation, control, transformation, transmission and distribution of electric energy located in buildings used for such purposes or leased by the utility or on public highways, streets, roads or other public ways, or outdoors on established rights on private property up to service point as defined in this code. The installation and maintenance of all service conductors up to the point of connection to the consumer's service entrance conductors shall be the responsibility of the serving utility.

APPLICATION TO EXISTING BUILDINGS

Section 104. (a) **Additions, Alterations and Repairs.** Additions, alterations and repairs may be made to the electrical system of existing buildings or structures without making the entire electrical system comply with all of the requirements of this code for new buildings or structures, provided the additions, alterations or repairs that are made shall comply with the requirements of this code except as otherwise specifically provided in other applicable retroactive ordinances of the City.

Exception: Subject to the approval of the building official, repairs may be made with the same materials of which the building or structure is constructed, provided the repair complies with the electrical code in effect at the time of original installation and provided further that no change shall be permitted which increases its hazard.

(b) **Existing Electrical Systems.** Electrical systems in existence at the time of the passage of this code may continue to be used provided such use was legal at the time of the passage of this code and provided continued use is not dangerous to life or limb.

(c) **Maintenance.** All buildings or structures, both existing and new, and all parts thereof shall be maintained in a safe condition. All devices or safeguards which are required by this code or which were required by a code in effect when the building or structure was erected, altered or repaired shall be maintained in good working order. The owner or the owner's agent shall be responsible for the maintenance of buildings and structures.

It shall be the duty of the owner or the owner's agent to maintain in a safe and usable condition all parts of buildings or equipment which are intended to assist in the extinguishing of fire, or to prevent the origin or spread of fire, or to safeguard life or property. It shall be unlawful to fail to immediately comply with any notice or order of the fire chief or the building official.

Exception: The building official may modify the requirements of this subsection where all or a portion of a building is unoccupied.

(d) **Historic Buildings and Structures.** The building official may modify the specific requirements of this code as it applies to buildings and structures designated as landmarks of historical or cultural importance and require in lieu thereof alternate requirements which, in the opinion of the building official, will result in a reasonable degree of safety to the public and the occupants of those buildings.

A historic building or structure is one which has been designated for preservation by City Council or the State of Washington, has been listed, or has been determined eligible to be listed, on the National Register of Historic Places, has been officially nominated for such status, or is a structure contributing to the character of a designated landmark or special review district.

(e) **Moved Buildings.** Buildings or structures moved into or within the City shall comply with standards adopted by the building official. No building shall be moved into or within the City unless, prior to moving, the building official has inspected the building for compliance with those standards and the permit holder has agreed to correct all deficiencies found and has been issued an electrical permit for the work. Any moved building that is not in complete compliance with those standards within one year from the date of permit issuance and is found to be a public nuisance may be abated.

TESTS

Section 105. Whenever there is insufficient evidence of compliance with the provisions of this code or evidence that any material or construction does not conform to the requirements of this code, the building official may require tests as proof of compliance to be made at no expense to the City.

Test methods shall be specified by this code or by other recognized test standards. If there are no recognized and accepted test methods for the proposed alternate, the building official shall determine the test procedures.

All tests shall be made by an approved agency. Reports of tests shall be retained by the building official.

ALTERNATE MATERIALS AND METHODS OF WIRING

Section 106. The provisions of this code are not intended to prevent the use of any material, method or design of wiring not specifically prescribed by this code, provided any alternate has been approved and its use authorized by the building official.

The building official may approve an alternate provided the building official finds that the proposed design is satisfactory and complies with the provisions of this code and that the material, method or design offered is, for the purpose intended, at least the equivalent of that prescribed in this code in suitability, strength, effectiveness, fire resistance, durability, safety and sanitation.

The building official may require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding the use of an alternate. The building official may, but is not required to, record the approval of modifications and any relevant information in the files of the building official or on the approved permit plans.

MODIFICATIONS

Section 107. The building official may grant modifications for individual cases whenever there are practical difficulties involved in carrying out the provisions of this code. The building official must first find that a special individual reason makes the strict letter of this code impractical and that the modification is in conformity with the intent and purpose of this code and does not lessen any fire protection requirements or any degree of structural integrity. The building official may, but is not required to, record the approval of modifications and any relevant information in the files of the building official or on the approved permit plans.

CHAPTER 2

ORGANIZATION AND ENFORCEMENT

AUTHORITY

Section 201. Whenever the term or title "Authority Having Jurisdiction," "Administrative Authority," "Responsible Official," "Building Official," "Chief Inspector" or "Code Enforcement Officer" is used in this code, it shall be construed to mean the Director of the Department of Construction and Land Use of the City of Seattle.

POWERS AND DUTIES OF THE BUILDING OFFICIAL

Section 202. (a) **General.** The building official is authorized and directed to interpret and enforce the provisions and intent of this code.

Compliance with the requirements of this code shall be the obligation of the owner of the building, structure or premises, the duly authorized agent of the owner, or other person responsible for the condition or work, and not of the City or any of its officers or employees.

(b) **Deputies.** The building official may appoint such officers, inspectors, assistants and other employees as shall be authorized from time to time. The building official may

deputize such employees as may be necessary to carry out the functions of the Department of Construction and Land Use.

(c) **Right of Entry.** With the consent of the owner or occupier of a building or premises, or pursuant to a lawfully issued warrant, the building official may enter a building or premises at any reasonable time to perform the duties imposed by this code.

(d) **Stop Orders.** Whenever any installation, alteration, repair or removal of electrical work is being done contrary to the provisions of this code, or in the event of dangerous or unsafe conditions related to electrical work, the building official may order the affected work stopped and a notice describing the violation in writing posted on the premises or served on any person responsible for the condition or work. It shall be unlawful for any person to engage in or cause any further work to be done until authorization from the building official is received.

(e) **Authority to Disconnect Utilities.** The building official shall have the authority to disconnect or order discontinuance of any utility service or energy supply to buildings, structures or equipment therein regulated by this code in cases of emergency or where necessary for safety to life and property. The building official may enter any building or premises to disconnect utility service or energy supply. Utility service shall be discontinued until the equipment, appliances, devices or wiring found to be defective or defectively installed are removed or restored to a safe condition.

It shall be unlawful for any person to reconnect any electrical equipment which has been disconnected by the building official until the equipment has been placed in a safe condition and approved by the building official.

(f) **Liability.** Nothing contained in this code is intended to be, nor shall be construed to create or form the basis for any liability on the part of the City, or its officers, employees or agents, for any injury or damage resulting from the failure of a building to conform to the provisions of this code, or by reason or in consequence of any inspection, notice, order, certificate, permission or approval authorized or issued or done in connection with the implementation or enforcement of this code, or by reason of any action or inaction on the part of the City related in any manner to the enforcement of this code by its officers, employees or agents.

Neither the building official nor any employee charged with the enforcement of this code shall be personally liable for any damage that accrues to persons or property as a result of any act or omission committed in the discharge of their duties, provided that the building official or employee acted in good faith and without malice.

(g) **Code Interpretation or Explanation.** Electrical inspectors may give information as to the meaning or application of the National Electrical Code and the Seattle Electrical Code, but shall not lay out work or act as consultants for contractors, owners or users.

(h) **Cooperation of Other Officials and Officers.** The building official may request, and shall receive so far as may be necessary in the discharge of duties, the assistance and cooperation of other officials of the City of Seattle and officers of public and private utilities.

UNSAFE CONDITIONS

Section 203. The building official may inspect any new or existing electrical installation or equipment, and if the installation or equipment is found to be maintained or used in an unsafe condition or found to be in violation of this code, the building official shall serve upon the owner or user a notice or order requiring correction. Any person served such notice who fails to comply with the order therein shall be in violation of this ordinance and subject to the penalties provided in this code.

Whenever the building official finds that any building or structure, or portion thereof, is in such a dangerous and unsafe condition as to constitute an imminent hazard to life or limb, the building official may issue an emergency order directing that the building or structure, or portion thereof, be restored to a safe condition. The order shall specify the time for compliance. The order may also require that the building or structure, or portion thereof, be vacated within a reasonable time, to be specified in the order. In the case of extreme danger,

the order may specify immediate vacation of the building or structure, or may authorize disconnection of the utilities or energy source pursuant to Section 202(e). No person shall occupy the building or structure, or portion thereof, after the date on which it is required to be vacated until it is restored to a safe condition as required by the order and this code. It shall be unlawful for any person to fail to comply with an emergency order issued by the building official.

VIOLATIONS AND PENALTIES

Section 204. (a) **Violations.** It shall be a violation of this code for any person, firm or corporation to erect, construct, enlarge, repair, move, improve, remove, convert or demolish, equip, occupy, or maintain any building or structure in the City, contrary to or in violation of any of the provisions of this code.

It shall be a violation of this code for any person, firm or corporation to aid, abet, counsel, encourage, hire, commend, induce or otherwise procure another to violate or fail to comply with any of the provisions of this code.

It shall be a violation of this code for any person, firm or corporation to use any materials or to install any device, appliance or equipment which does not comply with applicable standards of this code or which has not been approved by the building official.

(b) **Civil Penalty.** Any person, firm or corporation failing to comply with the provisions of this code shall be subject to a cumulative civil penalty in an amount not to exceed $500 per day for each violation from the date the violation occurs or begins until compliance is achieved.

(c) **Criminal Penalties.** 1. Anyone violating or failing to comply with any order issued by the building official pursuant to this code shall, upon conviction thereof, be punished by a fine of not more than $1,000 or by imprisonment for not more than 360 days, or by both such fine and imprisonment. Each day's violation or failure to comply shall constitute a separate offense.

2. Anyone violating or failing to comply with any of the provisions of this code and who within the past five years has had a judgment against them pursuant to Section 204(b), shall upon conviction thereof be fined in a sum not to exceed $500 or by imprisonment for not more than 180 days, or by both such fine and imprisonment. Each day's violation or failure to comply shall constitute a separate offense.

(d) **Additional Relief.** The building official may seek legal or equitable relief to enjoin any acts or practices and abate any condition which constitutes a violation of this code when civil or criminal penalties are inadequate to effect compliance.

NOTICES

Section 205. It shall be unlawful for any person to remove, mutilate, destroy or conceal any lawful notice issued or posted by the building official pursuant to the provisions of this code.

The building official may record a copy of any order or notice with the Department of Records and Elections of King County.

The building official may record with the Department of Records and Elections of King County a notification that a permit has expired without a final inspection after reasonable efforts have been made to obtain a final inspection.

RULES OF THE BUILDING OFFICIAL

Section 206. (a) **Authority.** The building official is authorized to promulgate, adopt and issue the following rules:

(1) "Electrical Wiring Standards" to promulgate standards which are acceptable as a method or as an alternative design for meeting code-required performance criteria, to edit or update national standards which are referenced in the Electrical Code and to eliminate conflicts among code requirements.

(2) "Code Interpretations" to interpret and clarify conditions or language expressed in this code.

(3) "Product Approvals" to approve a specific building construction material or product, or a particular component fabricator which has been found acceptable as meeting required performance criteria of this code.

(4) Any other rule necessary for administration of the purpose and intent of this code.

(b) **Procedure for Adoption of Rules.** The building official shall promulgate, adopt and issue rules according to the procedures specified in Chapter 3.02 of the Administrative Code, Seattle Municipal Code.

CONSTRUCTION CODES ADVISORY BOARD

Section 207. An Electrical Code Committee of the Construction Codes Advisory Board, as established in Section 105 of the Seattle Building Code, may examine proposed new editions of, and amendments to this code and any proposed administrative rules promulgated to enforce this code. The Electrical Code Committee may make recommendations to the building official and to the City Council relating to this code and administrative rules. The committee shall be called on an as-needed basis for the Construction Codes Advisory Board.

APPEALS

Section 208. Appeals from decisions or actions pertaining to the administration and enforcement of this code shall be addressed to the building official. The applicant may request a review by a panel of the Construction Codes Advisory Board, convened by the Board Chair. The Chair shall select a panel of at least three members from the Electrical Code Committee. The results of the panel's review shall be advisory only.

CHAPTER 3

PERMITS AND INSPECTIONS

PERMITS REQUIRED

Section 301. (a) **Permits Required.** It shall be unlawful to install, alter, extend or connect any electrical equipment in a building or premises, or allow the same to be done, without first obtaining a permit for the work from the building official.

(b) **Exempted Work.** An electrical permit shall not be required for the following work:

(1) Replacing flush or snap switches, fuses, lamp sockets, receptacles, or ballasts.

(2) Reconnecting or replacing a range within an individual dwelling unit, hot plate, water heater, electric baseboard, or wall heating unit to a circuit which has been lawfully installed and approved, when no alteration of the circuit is necessary.

(3) The setting of meters by the City Light Department of the City of Seattle or anyone else engaged in the business of supplying electricity to the public, provided that meter loops have been installed under permit and that such meters are not connected to any electrical installation regulated by this code until approval for such connection has been given by the building official.

(4) The installation of 1,000 feet or less of wiring for communications systems.

(5) The installation or repair of electrical equipment installed in connection with an elevator, dumbwaiter, or similar conveyance, provided that work is covered under the issuance of an elevator permit.

Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of the City.

(c) **Flood Hazard Areas.** In addition to the permit required by this section, all work to be performed in areas of special flood hazard, as identified in the report entitled "Flood Insurance Study for King County, Washington and Incorporated Areas" and the accompanying Flood Insurance Rate Maps filed in C.F. 295948, is subject to additional standards and requirements, including floodplain development approval or a Floodplain Development License, as set forth in Chapter 25.06, the Seattle Floodplain Development Ordinance.

APPLICATION AND PLANS

Section 302. (a) **Application.** Application for an electrical permit shall be made on a form provided by the building official. Each application shall state the name and address of the owner, vendee or occupant in possession of the building or premises where the work is to be done, the name of the licensed contractor, if any, that will be responsible for the installation, and such other information as the building official may require. Application shall include documentation of compliance with the Seattle Energy Code. The building official may refuse to issue or revoke a permit if any statement in the permit application is found to be untrue.

(b) **Plans and Specifications.** 1. **General.** In addition to the requirements of Section 302(a), two sets of plans and specifications shall be submitted with each application for an electrical permit for an installation of: services or feeders of 400 amperes or over; all switches or circuit breakers rated 400 amperes or over; any proposed installation which cannot be adequately described on the application form; and installations of emergency generators.

> **Exception:** Plans and specifications shall not be required for installations for one- and two-family dwellings.

Two sets of electrical plans shall be submitted with each application for an electrical permit for new or altered electrical installations in educational, institutional, and health or personal care occupancies as indicated in Section 300-1(c) of this code.

> **Exception:** One set of electrical plans shall be submitted with each application when a service or feeder is new or altered and the sum of the equipment ampere rating is less than 200 amperes.

Three sets of plans and specifications for fire alarm systems shall be submitted.

2. **Clarity of Plans.** Plans shall be drawn to a clearly indicated and commonly accepted scale of not less than 1/8 inch to 1 foot upon substantial paper such as blueprint quality or standard drafting paper. Tissue paper, posterboard or cardboard will not be accepted. The plans shall be of microfilm quality and limited to a minimum size of 11 inches by 17 inches and maximum size of 41 inches by 54 inches. Plans shall indicate the nature and extent of the work proposed and shall show in detail that it will conform to the provisions of this code. All electrical work shall be readily distinguishable from other mechanical work. If plans are incomplete, unintelligible or indefinite, the building official may require that the plans be prepared by a licensed electrical engineer, or may reject or refuse to examine such plans, even though a plan examination fee has been paid.

3. **Information on Plans and Specifications.** Plans and specifications shall indicate the following:

(1) The proposed use or occupancy of the various portions of the building in which the installation is to be made.

(2) A complete riser diagram.

(3) The calculated load schedule and demand factor selected for each branch circuit, feeder, subfeeder, main feeder and service. Panel and circuit schedules shall be shown. Note: Load calculations and heat loss calculations may be submitted on separate computation sheets.

(4) Fault current calculations and the listed interrupting rating for feeder or service installation or alteration.

(5) A key to any symbols used.

(6) Letters and numbers designating mains, feeders, branch circuits and distribution panels.

(7) Wattage, number of sockets and type of lighting fixture.

(8) Wattage and purpose of all other outlets.

(9) Voltage at which any equipment will operate.

(10) Identification of size of wires, type of insulation and all conduit sizes.

(11) Any other information as may be required by the plans examiner.

(c) **Advance Plan Examination**. An architect or engineer registered in the State of Washington may apply for an electrical permit and may request an advance plan examination of electrical plans where the electrical contractor has not yet been selected. Upon submission of an application including required plans, and payment of fifty percent of the estimated permit fee, the Department will review the application. When the application and plans are found to be in compliance with the Seattle Electrical Code, the Department will approve the application and plans as ready for issuance. Neither the permit nor the plans shall be issued until the remainder of the fee is paid and the electrical contractor's name and license number is placed on the permit.

PERMITS

Section 303. (a) **Issuance.** 1. **General.** The application and plans filed by an applicant for a permit shall be checked by the building official. Such plans may be reviewed by other departments of the City to check compliance with the laws and ordinances under their jurisdiction. If the building official finds that the work as described in an application for permit and the plans filed therewith conforms to the requirements of this code and other pertinent laws and ordinances and that the fees specified in the Fee Subtitle have been paid, the building official shall issue a permit to the applicant who becomes the permit holder. The building official may refuse to issue an electrical permit to any person who refuses or fails to complete the work permitted by an existing permit on the same building or premises.

Exception No. 1: The building official may issue a permit for the installation of part of the electrical system of a building or structure before complete plans for the whole building or structure have been submitted or approved, provided adequate information and detailed statements have been filed complying with all pertinent requirements of this code. Holders of such permits may proceed at their own risk without assurance that the permit for the entire building or structure will be granted.

Exception No. 2: A permit may be issued for work to commence prior to the approval of plans, if such approval is delayed beyond 10 working days after the plans have been submitted for examination. The holders of such permits may proceed at their own risk, with the understanding that any work undertaken prior to approval of plans shall be done in accordance with the provisions of this code and in accordance with the plans as subsequently approved.

2. **Compliance with Approved Plans and Permit.** When issuing a permit, the building official shall endorse the permit in writing and endorse in writing or stamp the plans **APPROVED**. Approved plans shall not be changed, modified or altered without authorization from the building official, and all work shall be done in accordance with the approved plans, except as the building official may require during field inspection to correct errors or omissions.

3. **Amendments to the Permit.** When substitutions and changes are made during construction, approval shall be secured prior to execution; however, the electrical inspector may approve minor modifications to the plans for work not reducing the fire and life safety of the structure. Substitutions, changes and clarifications shall be as shown on two sets of plans which shall be submitted to the building official, accompanied by redesign fees, prior to occupancy. These changes shall conform to the requirements of this code and other pertinent laws and ordinances.

4. **Requirement for License.** No electrical permit shall be issued to an applicant who is engaging in or conducting or carrying on the business of installing wires or equipment to convey electric current or of installing apparatus to be operated by electric current unless the applicant possesses a valid State of Washington license as required by RCW 19.28. The licensed installer responsible for the work shall be identified on the electrical permit.

> **Exception:** Persons not possessing a license may obtain an electrical permit in order to do electrical work at a residence, farm, place of business or other property which they own as described in RCW 19.28.610.

5. **Cancellation of Permit Application.** If a permit is not issued after a period of sixty days from the date of approval for issuance or if corrections are not received after a period of sixty days from the date of notification of required corrections, the building official may initiate cancellation procedures. Prior to cancellation, the building official shall notify the applicant that the permit application will expire and shall be canceled after 30 days. After the applicant has been notified, the site may be inspected to verify that no work has taken place. The application shall be canceled 30 days after notice has been sent to the applicant, and it and any accompanying plans and specifications destroyed and the portion of the fee paid forfeited. Upon written request of the applicant, the building official may extend the life of the permit application for a period not to exceed six months, with no further extensions possible, except that applications may be further extended by the building official where permit issuance is delayed by litigation, appeals or similar problems.

(b) **Retention of Plans and Permits.** One set of approved plans, which may be on microfilm, shall be retained by the building official. One set of approved plans shall be returned to the applicant and shall be kept at the site or the building or work at all times during which the work authorized thereby is in progress. The plans shall be available at the site of the work or installation for use by inspection personnel at all times. The permit issued by the building official shall be kept posted on the premises at all times during the course of the installation or work.

(c) **Validity.** The issuance or granting of a permit or approval of plans shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or any other ordinance. No permit presuming to give authority to violate or cancel the provisions of this code shall be valid, except insofar as the work or use which it authorizes is lawful.

The issuance of a permit based upon plans shall not prevent the building official from later requiring the correction of errors in the plans. The issuance of a permit based upon plans shall not be construed as permitting violations of this code or of any other ordinance of the City.

The issuance of an electrical permit shall not prevent the building official from requiring correction of conditions found to be in violation of this code or any other ordinance of the City. The period of time for which a permit is issued shall not be construed to extend or otherwise affect any period of time for compliance specified in any notice or order issued by the building official or other administrative authority requiring the correction of any such conditions.

(d) **Expiration and Renewal.** 1. **Expiration.** Permits and renewed permits shall expire one year from the date of issuance.

> **Exception No. 1**: Initial permits for major construction projects that require more than one year to complete, according to a construction schedule submitted by the applicant, may be issued for a period that provides reasonable time to complete the work but, in no case longer than three years.

> **Exception No. 2:** Permits which expire in less than one year may be issued where the building official determines a shorter period is appropriate.

2. **Renewal.** Permits may be renewed and renewed permits may be further renewed by the building official provided the following conditions are met:

A. Application for renewal shall be made within the thirty-day period immediately preceding the date of expiration of the permit;

B. The work authorized by the permit has been started and is progressing at a rate approved by the building official;

C. If an application for renewal is made more than one year after the effective date of a new or revised edition of the Electrical Code, the permit shall not be renewed unless:

(i) The building official determines that the permit complies, or is modified to comply, with the code or codes in effect on the date of application for renewal; or

(ii) The work authorized by the permit is substantially underway and progressing at a rate approved by the building official.

Permits may also be renewed where commencement or completion of the work authorized by the permit was delayed by litigation, appeals, strikes or other causes related to the work authorized by the permit, beyond the permit holder's control.

3. **Reestablishment.** A new permit shall be required to complete work where a permit has expired and was not renewed.

Exception: A permit which has been expired for less than one year may be reestablished upon approval of the building official, provided it complies with Items B and C of subsection 2, above.

(e) **Suspension or Revocation**. The building official may, by written order, suspend or revoke a permit issued under the provisions of this code whenever the permit is issued in error or on the basis of incorrect information, or in violation of any ordinance or regulation or any provision of this code.

(f) **Permit for Temporary Installations.** The building official may issue permits for temporary electrical installations for use during the construction of buildings or for carnivals, conventions, festivals, fairs, the holding of religious services, temporary lighting of streets and the like if it is found that life or property will not be jeopardized.

Permission to use a temporary installation shall be granted for no longer than six months, except that a permit for a temporary installation to be used for the construction of a building may be issued for the necessary period of construction. Should temporary lighting be over the street area, proper authority for use of the street shall first be obtained from Seattle Transportation. All temporary installations shall comply with all other requirements of this code.

PERMIT FEES

Section 304. A fee for each electrical permit and for other activities related to the enforcement of this code shall be paid as set forth in the Fee Subtitle.

INSPECTIONS

Section 305. (a) **General.** It shall be unlawful to connect or to allow the connection of any electrical installations, extensions thereof, or electrical equipment to the electric current until the work is inspected and approved by the building official.

(b) **Inspection Requests.** It shall be the duty of the owner of the property, the owner's authorized agent, or the person designated by the owner/agent to do the work authorized by a permit to notify the building official that work requiring inspection as specified in this section is ready for inspection. Where a permit has been issued to a licensed contractor, it shall be the duty of the contractor to notify the building official that work requiring inspection is ready for inspection.

It shall be the duty of the person requesting any inspections required by this code to provide access to and means for proper inspection of the work. It shall be the duty of the permit holder to cause the work to be accessible and exposed for inspection purposes. Neither the building official nor the City shall be liable for expense entailed in the required removal or replacement of any material to allow inspection.

(c) **Inspection Record.** Work requiring a permit shall not be commenced until the permit holder or agent has posted an inspection record in a conspicuous place on the premises and in a position which allows the building official to conveniently make the required entries thereon regarding inspection of the work. This record shall be maintained in such position by the permit holder until final approval has been granted by the building official and the serving utility has made the connection to the electric current.

(d) **Approvals Required.** No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the written approval of the building official. Written approval shall be given only after an inspection has been made of each successive step in the construction as indicated by each of the inspections required in subsection (e).

(e) **Required Inspections**. 1. **Cover Inspection**. Cover inspections may be required when all of the following work has been completed:

A. All piping, ducts, plumbing and like installations of other trades which are liable to interfere or run in close proximity to the electrical installation are permanently in place and inspected, but prior to any work to cover or conceal any installation of electrical equipment, and;

B. For make-up of equipment conductors, see Article 250-1 of this code; and

C. For conduit systems, after all conduit has been installed and properly secured to the structure.

2. **Final Inspection.** A final inspection shall be made after all wiring has been completed and all permanent fixtures such as switches, outlet receptacles, plates, electric hot water tanks, lighting fixtures and all other equipment has been properly installed. The permit holder shall call for a final inspection when the work described on the permit has been completed.

(f) **Other Inspections.** In addition to the called inspections specified in subsection (e), the building official may make or require any other inspections of any construction work to ascertain compliance with the provisions of this code and other laws which are enforced by the building official.

Where work, for which any permit or approval is required, is commenced or performed prior to making formal application and receiving the building official's permission to proceed, the building official may make a special investigation inspection before a permit may be issued for the work. Where a special investigation is made, a special investigation fee may be assessed in accordance with the Fee Subtitle.

(g) **Reinspections**. The building official may require a reinspection when work for which inspection is called is not complete, corrections called for are not made, the permit card is not properly posted on the work site, the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or when deviations from plans which require the approval of the building official have been made without proper approval.

For the purpose of determining compliance with Section 104(c) Maintenance, the building official or the fire chief may cause any structure to be reinspected.

The building official may assess a reinspection fee as set forth in the Fee Subtitle for any action listed above for which reinspection may be required, whether or not a reinspection is actually performed. A reinspection fee shall not be assessed the first time the work subject to inspection is rejected for failure to comply with the requirements of this Electrical Code.

In instances where reinspection fees have been assessed, no additional inspection of the work shall be performed until the required fees have been paid.

Section 3. Sections 90-1 and 90-2 of the National Electrical Code, 1996 Edition, are hereby repealed.

Section 4. Article 100 of the National Electrical Code, 1996 Edition, is amended as follows:

ARTICLE 100 - DEFINITIONS

SCOPE. This article contains only those definitions essential to the proper application of this Code. It is not intended to include commonly defined general terms or commonly defined technical terms from related codes and standards. In general, only those terms used in two or more articles are defined in Article 100. Other definitions are included in the article in which they are used but may be referenced in Article 100.

Part A of this article contains definitions intended to apply wherever the terms are used throughout this Code. Part B contains definitions applicable only to the

parts of articles specifically covering installations and equipment operating at over

600 volts, nominal.

Terms and phrases used in this Code but not defined herein shall be as defined in the Seattle Building Code and the Seattle Mechanical Code. Where undefined terms are used, the definitions of Webster's Third New International Dictionary of the English Language, Unabridged, copyright 1986, shall apply.

* * *

SERVICE POINT: Service point is the point of connection between the facilities of the serving utility and the premises wiring, which is further defined and located as follows:

(1) For overhead service drop conductors from the utility pole to the point of attachment to the building, connections of the service entrance conductors shall be at a weatherhead outside the building.

(2) For underground service connections outside of buildings, connection shall be made in one of the following:

(i) A service terminal box or current transformer cabinet.

(ii) A handhole or power transformer installed outdoors in accordance with requirements of the utility, the Seattle Building Code, or any other applicable ordinance.

(iii) A meter socket of 200 amperes minimum size, direct-metered.

(3) For underground service connections inside of buildings, connection shall be made to one of the following:

(i) Where utility-supplied conductors are used, a service terminal box or current transformer cabinet connected by no more than 18 inches of rigid conduit inside the building.

(ii) A transformer vault within the building.

(iii) A meter socket of 200 amperes minimum size, direct-metered.

SERVICE TERMINAL BOX: An approved box to be used exclusively for the connection of the utility distribution system to the consumer's service entrance conductors.

* * *

Section 5. Section 110-13 (a) of the National Electrical Code, 1996 Edition, is amended as follows:

(a) Mounting. Electric equipment shall be firmly secured to the surface on which it is mounted. Wooden plugs driven into holes in masonry, concrete, plaster, or similar materials shall not be used.

No electrical equipment shall project beyond the face of the wall in halls, corridors or other locations which would reduce the width required by the Building Code for such locations. No electrical equipment such as pull boxes, junction boxes, conduit, panels, transformers, water heaters, motors, compressors, or similar equipment shall be installed within a required stairway enclosure. Electrical raceways pertaining to fire and life safety devices may be installed within a required stairway enclosure.

Section 6. Section 110-16 (e) of the National Electrical Code, 1996 Edition, is amended as follows:

(e) Headroom. The minimum headroom of working spaces about service equipment, switchboards, panelboards, or motor control centers shall be 6-1/2 feet (1.98 m). Where the electrical equipment exceeds 6-1/2 ft (1.98 m) in height, the minimum headroom shall not be less than the height of the equipment.

((~~**Exception:** Service equipment or panelboards, in existing dwelling units, that do not exceed 200 amperes.~~))

(FPN): For higher voltages, see Article 710.

Section 7. Article 110 of the National Electrical Code, 1996 Edition, is amended by adding Section 110-23 as follows:

110-23 Electrified Fences.

Electrified fences, associated equipment and similar devices shall be permitted only by special permission from the building official.

Section 8. Section 210-8 (a) of the National Electrical Code, 1996 Edition, is amended as follows:

(a) Dwelling Units. All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified below shall have ground-fault circuit-interrupter protection for personnel.

(1) Bathrooms.

(2) Garages and grade-level portions of unfinished accessory buildings used for storage or work areas.

Exception No. 1: Receptacles that are not readily accessible.

Exception No. 2: A single receptacle or a duplex receptacle for two appliances located within dedicated space for each appliance that in normal use is not easily moved from one place to another, and that is cord- and plug-connected in accordance with Section 400-7(a)(6), (a)(7), or (a)(8).

Receptacles installed under exceptions to Section 210-8(a)(2) shall not be considered as meeting the requirements of Section 210-52(g).

(3) Outdoors.

Exception: Receptacles that are not readily accessible and are supplied from a dedicated branch circuit for electric snow-melting or deicing equipment as covered in Article 426 shall be permitted to be installed without ground-fault circuit-interrupter protection for personnel.

(4) Crawl spaces. Where the crawl space is at or below grade level.

(5) Unfinished basements. For purposes of this section, unfinished basements

are defined as portions or areas of the basement not intended as habitable rooms and limited to storage areas, work areas, and the like.

Exception No. 1: Receptacles that are not readily accessible.

Exception No. 2: A single receptacle or a duplex receptacle for two appliances located within dedicated space for each appliance that in normal use is not easily moved from one place to another, and that is cord-and plug-connected in accordance with Section 400-7(a)(6), (a)(7), or (a)(8).

Receptacles installed under exceptions to Section 210-8(a)(5) shall not be considered as meeting the requirements of Section 210-52(g).

(6) Kitchens. Where the receptacles are installed to serve the countertop surfaces.

(7) ((~~Wet bar~~)) All other sinks. Where the receptacles are installed to serve the countertop surfaces and are located within 6 ft (1.83 m) of the outside edge of ((~~the wet bar~~)) a sink.

Section 9. Section 215-2 of the National Electrical Code, 1996 Edition, is amended by adding Section (c) as follows:

(c) Panelboards. Panelboards, existing or installed in an individual unit of multifamily dwellings, shall be supplied by one feeder and shall be calculated as per Section 220-10.

Section 10. Section 220-3 (b) of the National Electrical Code, 1996 Edition, is amended as follows:

(b) Lighting Load for Listed Occupancies. A unit load of not less than that specified in Table 220-3(b) for occupancies listed therein shall constitute the minimum lighting load for each square foot (0.093 sq m) of floor area. The floor area for each floor shall be computed from the outside dimensions of the building, dwelling unit, or other area involved. For dwelling unit(s), the computed floor area shall not include open porches, garages, or unused or unfinished spaces not adaptable for future use.

(FPN): The unit values herein are based on minimum load conditions and 100 percent power factor, and may not provide sufficient capacity for the installation contemplated.

Exception: Occupancy Lighting Loads. In determining feeder and service entrance conductor sizes and equipment ratings, the currently adopted Seattle Energy Code Unit Lighting Power Allowance table and footnotes may be used in lieu of NEC Table 220-3(b).

Section 11. Article 220 of the National Electrical Code, 1996 Edition, is amended by adding Section 220-5 as follows:

220-5 Individual Branch Circuits.

Each fixed or portable appliance rated at more than 15 amperes shall be supplied by an individual branch circuit except as otherwise permitted by Section 210-23.

The individual branch circuits may be calculated for the nameplate rating, but shall be wired not less than specified in Table 220-5.

Table 220-5

		Volt-Amps Rating	Minimum Amps	Minimum Wire Size
(a)	Ranges	8000	40	8cu/6al
(b)	Water heaters	4500	30	10
(c)	Clothes dryers	5000	30	10
(d)	Dishwashers	1500	20	12
(e)	Disposals	750	15	14
(f)	Trash compactors	750	15	14
(g)	Motor-operated space-heating equipment	750	15	14

Exception No. 1: Secondary and instantaneous water heaters - 20 Amps, #12 Wire.

Exception No. 2: Any two of the following list of appliances may be wired with 20 Amps, #12 wire:

Trash Compactors up to 750 Volt-Amps, Disposals up to 750 Volt-Amp rating, Insta-hot up to 750 Volt-Amp rating.

Section 12. Section 220-15 of the National Electrical Code, 1996 Edition, is amended as follows:

220-15 Fixed Electric Space Heating. Fixed electric space heating loads shall be computed at 100 percent of the total connected load; however, in no case shall a feeder load current rating be less than the rating of the largest branch circuit supplied. Where fixed electric space heating is installed as the primary means of heating, heat loss calculations shall be submitted.

Exception No. 1: ((~~Where reduced loading of the conductors results from units operating on duty cycle, intermittently, or from all units not operating at one time, the authority having jurisdiction may grant permission for feeder conductors to have an ampacity less than 100 percent provided the conductors have an ampacity for the load so determined.~~)) A minimum demand factor of 75 percent of the installed heating capacity may be used in sizing service entrance and feeder equipment for dwelling, commercial and industrial occupancies when electric service is provided to four or more fixed space heaters, or electric furnaces sequentially controlled. These exceptions shall not apply when optional calculations allowed by Section 220-32 are used.

Exception No. 2: The use of the optional calculations in Sections 220-30 and 220-31 shall be permitted for fixed electric space heating loads in a dwelling unit. In a multifamily dwelling the use of the optional calculation in Section 220-32 shall be permitted.

Section 13. Section 220-17 of the National Electrical Code, 1996 Edition, is amended as follows:

220-17 Appliance Load - Dwelling Units(s). It shall be permissible to apply a demand factor of 75 percent to the nameplate-rating load of four or more appliances fastened in place, other than electric ranges, clothes dryers, space-heating equipment, or air-conditioning equipment, that are served by the same feeder in a one-family, two-family, or multifamily dwelling. For space-heating equipment, see Section 220-15.

Section 14. Section 225-8 (d) of the National Electrical Code, 1996 Edition, is amended as follows:

(d) Identification and Limitation of Disconnects. For the purpose of Article 225-8(b), additional buildings or structures on the same property and under single management shall be supplied by a single branch circuit or feeder, unless the provisions of the exceptions to NEC Article 230-2 apply. Where a building or structure is supplied by more than one feeder or branch circuit, or by any combination of branch circuits, feeders, and services, a permanent plaque or directory shall be installed at each feeder and branch circuit disconnect location denoting all other services, feeders, and branch circuits supplying that building or structure and the area served by each. See Section 230-2(b).

Exception No. 1: A plaque or directory shall not be required for large capacity multibuilding industrial installations under single management, where it is ensured that disconnection can be accomplished by establishing and maintaining safe switching procedures.

Exception No. 2: This identification shall not be required for branch circuits installed from a dwelling unit to a second building or structure.

Section 15. Section 230-1 of the National Electrical Code, 1996 Edition, is amended as follows:

230-1 Scope.

(a) This article covers service conductors and equipment for control and protection of services and their installation requirements.

(FPN): See Figure 230-1.

(b) Service Requirements. The serving utility shall be consulted by the owner, the owner's agent or the contractor making the installation regarding service entrance location before installing equipment. Provisions for metering equipment, attachment of service drop, or for an underground service lateral shall be made at a location acceptable to the serving utility.

Section 16. Article 230 of the National Electrical Code, 1996 Edition, is amended by adding Section 230-5 as follows:

230-5 Types of Services. All services shall be single-phase or three-phase 4-wire. Three-phase 3-wire services may be installed if prior approval is granted by the utility and the building official.

Section 17. Section 230-28 of the National Electrical Code, 1996 Edition, is amended as follows:

230-28 Service Masts as Supports.

(a) Where a service mast is used for the support of service-drop conductors, it shall be of adequate strength or be supported by braces or guys to withstand safely the strain imposed by the service drop. Where raceway-type service masts are used, all raceway fittings shall be identified for use with service masts. Only power service drop conductors shall be permitted to be attached to a service mast.

(b) Where service masts are used for support of the service-drop conductors, the conduit shall be secured as required by WAC 296-46-23028 Drawings E-101, E-102, and E-103.

(c) Service drops to buildings with service conduits extended through the roof shall be attached to the bracket installed on the mast, or other approved supporting structure located within 24 inches of the mast.

Service conduits for mast-type services shall be rigidly supported with minimum 5/16-inch U-bolts fastened through at least 2-inch solid wood backing. A minimum of 2 x 6 inch wood solidly secured between rafters shall be installed and drilled for snug fit of the conduit.

Brackets shall be installed to permit a clearance of not less than 18 inches from the roof to the lowest wire. Service conduits through the roof shall be a minimum of 2-inch rigid steel conduit. Service conduits over 26 inches above the roof shall be rigidly supported with brackets or guy wires. The serving utility shall be consulted for bracket and guy wire requirements.

In no case shall a coupling be installed between the last support below the roof line to the bracket. All connections and service drops shall be below the weatherhead.

Openings where service conduits pass through the roof shall be made watertight with approved neoprene or lead flashings.

Section 18. Section 230-29 of the National Electrical Code, 1996 Edition, is amended as follows:

230-29 Supports Over Buildings and Wires On or About Buildings or Structures Over Water.

((~~Service drop conductors passing over a roof shall be securely supported by substantial structures. Where practicable, such supports shall be independent of the building.~~))

(a) All service entrance conductors for piers, docks, wharves and other structures over water shall terminate in a disconnecting means or service equipment at the street side or end of such structure, or as otherwise approved by the building official.

Exception: When the vault for the utility transformer is located over water, a disconnecting means for the service entrance conductors shall be provided immediately outside the vault at a location acceptable to the building official.

(FPN): For utility service conductors on piers, docks or wharves refer to "Requirements for Electric Service Connection" published by Seattle City Light.

(b) Service entrance conduit containing wires not protected by circuit breakers or switches and fuses shall follow and be supported on parapets or other walls and shall not be laid upon or across roofs.

(c) All service entrance conduits in a Fire District shall terminate on the side of the building nearest to the lines or mains of the utility. The service shall not terminate over adjacent private property, and shall extend to the street or alley wall of the buildings.

(d) Open wiring for service conductors shall contact the building at only one point except where the utility will agree to contact the building at more than one point.

(e) No wire access fittings or junction boxes of any type shall be permitted within 15 feet of the ground level on street, alley, or driveway margins.

Section 19. Article 230 of the National Electrical Code, 1996 Edition, is amended by adding Section 33 as follows:

230-33 Conversion to Underground Service or Increasing Existing Overhead Services.

Where service for an existing single-family dwelling is converted to an underground service or where existing overhead services are increased, the following requirements shall be met:

(a) Unless a 200 ampere meter enclosure was provided for the existing service, a new 200 ampere approved wide meter enclosure may be installed over the existing meter enclosure. Service grounding continuity shall be maintained and the perimeter of such new enclosure shall be sealed watertight with a silicone sealant or approved equivalent.

(b) Conversions to underground service shall have existing overhead service conductors removed and the top opening of the existing conduit at the weatherhead shall be closed.

(c) Where a new meter enclosure is installed the interior of the existing meter enclosure shall be removed and service conductors of the same size as those removed shall be installed from the new meter enclosure to the existing service panel. Conductors shall be run through a 2-inch bushing in the back of such new enclosure, through the void area between enclosures, and continue in the existing conduit to the panel.

(d) Any exposed wood or combustible material between the two meter enclosures shall be covered with noncombustible material.

(e) On installations where a meter has been moved outdoors, the existing meter shall be removed. An approved fitting shall be installed on the existing conduit with new conduit of the same size as the existing, to extend from such fitting to a new 200 ampere meter enclosure.

(f) Conductors shall be continuous from the new meter enclosure to the service panel.

(g) On existing services, a weatherhead-to-weatherhead connection shall be permitted. The distance between weatherheads shall not exceed 24 inches.

Section 20. Section 230-40 of the National Electrical Code, 1996 Edition, is amended as follows:

230-40 Number of Service-Entrance Conductor Sets.

(a) Each service drop or lateral shall supply only one set of service-entrance conductors.

Exception No. 1: Buildings with more than one occupancy shall be permitted to have one set of service-entrance conductors run to each occupancy or to a group of occupancies.

Exception No. 2: Where two to six service disconnecting means in separate enclosures are grouped at one location and supply separate loads from one service drop or lateral, one set of service-entrance conductors shall be permitted to supply each or several such service equipment enclosures.

Exception No. 3: A single-family dwelling unit and a separate structure shall be permitted to have one set of service-entrance conductors run to each from a single service drop or lateral.

(b) Service-Entrance Conductors.

(1) Service-entrance conductors shall extend at least 18 inches from the service head to permit connection to the service drop.

(2) Service-entrance raceways shall extend no more than 15 feet inside a building.

Section 21. Section 230-42 (a) of the National Electrical Code, 1996 Edition, is amended as follows:

230-42 Size and Rating.

(a) General. Service-entrance conductors shall be of sufficient size to carry the loads as computed in Article 220 and shall not be sized less than the rated ampacity of the service equipment, including service accessory buss gutters, when rated 800 amperes or less. Ampacity shall be determined from Section 310-15.

Exception No. 1: The maximum allowable current of approved busways shall be that value for which the busway has been listed or labeled.

Exception No. 2: Except as provided in Section 240-3 (b), (c).

Exception No. 3: Dwelling units.

Section 22. Section 230-43 of the National Electrical Code, 1996 Edition, is amended as follows:

230-43 Wiring Methods for 600 Volts, Nominal, or Less. Service-entrance conductors shall be installed in accordance with the applicable requirements of this Code covering the type of wiring method used and limited to the following methods: (((~~(1) open wiring on insulators; (2) Type IGS cable;~~)) (3) rigid metal conduit; (4) intermediate metal conduit; (((~~(5) electrical metallic tubing; (6) electrical nonmetallic tubing (ENT); (7) service entrance cables; (8) wireways;~~)) (9) busways; (((~~(10) auxiliary gutters;~~)) (11) rigid non-metallic conduit; (12) cablebus; (((~~(13) Type MC cable;~~)) (14) mineral-insulated, metal-sheathed cable; (((~~(15) flexible metal conduit not over 6 ft (1.83m) long or liquidtight flexible metal conduit not over 6 feet (1.83 m) long between raceways, or between raceway and service equipment, with equipment bonding jumper routed with the flexible metal conduit or the liquidtight flexible metal conduit according to provisions of Section 250-79(a), (c), (d), and (f); or (16) liquidtight flexible nonmetallic conduit.~~))

Approved cable tray systems shall be permitted to support cables approved for use as service-entrance conductors.

Section 23. Section 230-52 of the National Electrical Code, 1996 Edition, is amended as follows:

230-52 Individual Conductors Entering Buildings or Other Structures. ((~~Where individual open conductors enter a building or other structure, they shall enter through roof bushings or through the wall in an upward slant through individual, noncombustible, nonabsorbent insulating tubes. Drip loops shall be formed on the conductors before they enter the tubes.~~)) Individual open conductors shall not enter buildings or other structures.

Section 24. Section 230-62 of the National Electrical Code, 1996 Edition, is amended by adding Sections 230-62 (c) and (d) as follows:

(c) Location. Service equipment shall be readily accessible and shall not be located in a bathroom, clothes closet, shower room, cupboard, attic, stairway, nor above a washer, range, dryer, water heater, sink, plumbing fixture or drain board.

(d) Accessible. Service equipment shall be readily accessible after any subsequent building additions.

Section 25. Section 230-82 of the National Electrical Code, 1996 Edition, is amended as follows:

230-82 Equipment Connected to the Supply Side of Service Disconnect. Equipment shall not be connected to the supply side of the service disconnecting means.

Exception No. 1.: Cable limiters or other current-limiting devices by special permission of the building official.

When fault current limiters are installed on the line side (utility's side) of the first disconnect or main breaker, there shall be a "current limiter enclosure" for the installation of such current limiters which shall meet the following requirements:

(a) The "current limiter enclosure" shall be separate from the utility's service termination point. The weatherhead, service terminal box, meter socket or current transformer can is not an acceptable location.

(b) The "current limiter enclosure" shall not be used for service taps or extensions and shall be clearly recognized and marked "fault current limiters."

Exception No. 2: Fuses and disconnecting means or circuit breakers suitable for use as service equipment, in meter pedestals or otherwise provided and connected in series with the ungrounded service conductors and located away from the building supplied.

Exception No. 3: (i) Meters nominally rated not in excess of 600 volts, provided all metal housings and service enclosures are grounded in accordance with Article 250.

(ii) Current transformer cabinets shall contain only the main service conductors, metering equipment and secondary wiring and shall not be used as a junction box or gutter for the purpose of making taps. One tap shall be permitted on the load side of the current transformers on all installations for emergency service and one tap shall be permitted on the load side of the current transformers for a fire pump service. Approved terminal lugs shall be provided for the main service conductors and for all taps. One additional normal power service tap from the current transformer enclosure may be made by special permission of the service utility. In a single-family dwelling, two connections shall be permitted on the load side of the current transformers where approved terminal lugs are provided. Taps under meter socket lugs shall not be permitted.

Exception No. 4: Instrument transformers (current and voltage), high-impedance shunts, surge-protective devices identified for use on the supply side of the service disconnect, load management devices, and surge arresters.

Exception No. 5: Taps used only to supply load management devices, circuits for emergency systems, stand-by power systems, fire pump equipment, and fire and sprinkler alarms if provided with service equipment and installed in accordance with requirements for service-entrance conductors.

Exception No. 6: Solar photovoltaic systems or interconnected electric power production sources. See Articles 690 or 705 as applicable.

Exception No. 7: Where the service disconnecting means is power operable, the control circuit shall be permitted to be connected ahead of the service disconnecting means if suitable overcurrent protection and disconnecting means are provided.

Exception No. 8: Ground-fault protection systems where installed as part of listed equipment, if suitable overcurrent protection and disconnecting means are provided.

Section 26. Section 250-1 of the National Electrical Code, 1996 Edition, is amended as follows:

250-1 Scope. This article covers general requirements for grounding and bonding of electrical installations, and specific requirements in (a) through (f) below.

All electrical equipment grounding (boxes, service and equipment, and provisions for grounding receptacles, etc.) for all systems, shall be completely made up at the time of rough-in.

(a) Systems, circuits, and equipment required, permitted, or not permitted to be grounded.

(b) Circuit conductor to be grounded on grounded systems.

(c) Location of grounding connections.

(d) Types and sizes of grounding and bonding conductors and electrodes.

(e) Methods of grounding and bonding.

(f) Conditions under which guards, isolation, or insulation may be substituted for grounding.

(FPN No. 1): Systems and circuit conductors are grounded to limit voltages due to lightning, line surges, or unintentional contact with higher voltage lines, and to stabilize the voltage to ground during normal operation. Equipment grounding conductors are bonded to

the system grounded conductor to provide a low impedance path for fault current that will facilitate the operation of overcurrent devices under ground-fault conditions.

(FPN No. 2): Conductive materials enclosing electrical conductors or equipment, or forming part of such equipment, are grounded to limit the voltage to ground on these materials and bonded to facilitate the operation of overcurrent devices under ground-fault conditions. See Section 110-10.

Section 27. Section 250-80 of the National Electrical Code, 1996 Edition, is amended by adding Sections 250-80 (d) and (e) as follows:

(d) Metallic Plumbing Lines. All metallic water lines including waste systems, shall be bonded together by approved means. The metallic water lines shall not be relied upon as the grounding means.

(e) Water System Requirements. It shall be unlawful to connect to or use any water main or water pipe belonging to Seattle Public Utilities distribution and transmission systems for electrical grounding purposes.

Section 28. Section 250-84 of the National Electrical Code, 1996 Edition, is amended as follows:

250-84 Resistance of Made Electrodes. A single electrode consisting of a rod, pipe, or plate ((~~that does not have a resistance to ground of 25 ohms or less~~)) shall be augmented by one additional electrode of any of the types specified in Section 250-81 or 250-83. ((~~Where multiple rod, pipe, or plate electrodes are installed to meet the requirements of this section,~~ t))They shall not be less than ((~~6~~)) 8 feet (((~~1.83~~))) (2.44 m) apart.

(FPN): The paralleling efficiency of rods longer than 8 ft (2.44 m) is improved by spacing greater than 6 ft (1.83 m).

Section 29. Section 300-1 of the National Electrical Code, 1996 Edition, is amended by adding a new Section (c) as follows:

(c) Wiring Methods for Designated Building Occupancies. See classifications and definitions of occupancies in WAC 296-46-130 and WAC 296-46-140.

Section 30. Section 300-21 of the National Electrical Code, 1996 Edition, is amended as follows:

300-21 Spread of Fire or Products of Combustion. Electrical installations in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be so made that the possible spread of fire or products of combustion will not be substantially increased. Flexible raceways are not permitted. Openings around electrical penetrations through fire-resistant-rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating. All out-of-service nonrated cable shall be removed from accessible ceiling spaces.

(FPN): Directories of electrical construction materials published by qualified testing laboratories contain many listing installation restrictions necessary to maintain the fire resistive rating of assemblies where penetrations or openings are made. An example is the 24-in. (610-mm) minimum horizontal separation between boxes on opposite sides of the wall. Assistance in complying with Section 300-21 can be found in these directories and product listings.

Section 31. Section 324-4 of the National Electrical Code, 1996 Edition, is amended as follows:

324-4 Uses Not Permitted. Concealed knob-and-tube wiring shall not be used in commercial garages, theaters and similar locations, motion picture studios, hazardous (classified) locations, or in the hollow spaces of walls, ceilings, and attics where such spaces are insulated by loose, rolled, or foamed-in-place insulating material that envelops the conductors.

Exception: This provision of Section 324-4 shall not be construed to prohibit the installation of loose or rolled thermal insulating material in such a concealed space provided all the following conditions are met:

(1) The wiring shall be surveyed by an appropriately-licensed electrical contractor who shall certify that the wiring is in good condition with no evidence of improper overcurrent protection, conductor insulation failure or deterioration, and with no improper connections or splices. Repairs, alterations or extensions of or to the electrical system shall be inspected by an electrical inspector as defined in RCW 19.28.070.

(2) The insulation shall meet Class I specifications as identified in the Uniform Building Code, with a flame spread factor of 25 or less as tested using ASTM E84-81a. Foam insulation may not be used with knob-and-tube wiring.

(3) All knob-and-tube circuits shall have overcurrent protection limited to 15 amp, or protection which is appropriate for the wire size. Overcurrent protection devices must either be circuit breakers or S-type adapters, equipped with S-type fuses.

Section 32. Section 334-3 of the National Electrical Code, 1996 Edition, is amended as follows:

334-3 Uses Permitted. Except where otherwise specified in this Code and where not subject to physical damage, Type MC cables shall be permitted as follows: (1) for ((~~services,~~)) feeders((~~,~~)) and branch circuits; (2) for power, lighting, control, and signal circuits; (3) indoors or outdoors; (4) where exposed or concealed; (5) direct buried where identified for such use; (6) in cable tray; (7) in any raceway; (8) as open runs of cable; (9) as aerial cable on a messenger; (10) in hazardous (classified) locations as permitted in Articles 501, 502, 503, and 504; (11) in dry locations and embedded in plaster finish on brick or other masonry except in damp or wet locations; and (12) in wet locations where any of the following conditions are met:

(1) The metallic covering is impervious to moisture.

(2) A lead sheath or moisture-impervious jacket is provided under the metal covering.

(3) The insulated conductors under the metallic covering are listed for use in wet locations.

Exception: See Section 501-4 (b), Exception.

(FPN): See Section 300-6 for protection against corrosion.

Section 33. Section 334-10 of the National Electrical Code, 1996 Edition, is amended as follows:

334-10 Installation. Type MC cable shall be installed in compliance with Articles 300, 710, 725, and Section 770-52 as applicable.

(a) Support. Type MC cable shall be supported and secured at intervals not exceeding ((~~6 ft (1.83 m)~~)) 4-1/2 ft (1.37 m). Cables ((~~containing four or fewer conductors, sized no larger than No. 10,~~)) shall be secured within 12 in. (305 mm) of every box, cabinet, or fitting.

Exception No. 1: Lengths not more than 6 ft (1.83 m) from an outlet for connections within an accessible ceiling to lighting fixtures or equipment.

Exception No. 2: Where Type MC cable is fished.

Exception No. 3: Cables installed in other than vertical runs through bored or punched holes in wood or metal framing members, or through notches in wooden framing members and protected by a steel plate at least 1/16-in. (1.59-mm) thick, shall be considered supported and secured where such support does not exceed ((~~6 ft (1.83 m)~~)) 4-1/2 ft (1.37 m) intervals. Cables ((~~containing four or fewer conductors sized no larger than No. 10~~)) shall be secured within 12 in. (305 mm) of each box, cabinet, fitting, or other cable termination.

(b) Cable Tray. Type MC cable installed in cable tray shall comply with Article 318.

(c) Direct Buried. Direct buried cable shall comply with Section 300-5 or 710-4, as appropriate.

(d) Installed as Service-Entrance Cable. ((~~Type MC cable installed as service-entrance cable shall comply with Article 230.~~)) Type MC cable is not permitted to be installed as service-entrance cable.

(e) Installed Outside of Buildings or as Aerial Cable. Type MC cable installed outside of buildings or as aerial cable shall comply with Article 225 and Article 321.

(f) Through or Parallel to Joists, Studs, and Rafters. Type MC cable shall comply with Section 300-4 where installed through or parallel to joists, studs, rafters, or similar wood or metal members.

(g) In Accessible Attics. The installation of Type MC cable in accessible attics or roof spaces shall also comply with Section 333-12.

Section 34. Section 336-4 of the National Electrical Code, 1996 Edition, is amended as follows:

336-4 Uses Permitted. Type NM, Type NMC, and Type NMS cables shall be permitted to be used in one- and two-family dwellings, multifamily dwellings, and other structures, except as prohibited in Section 336-5. Where installed in cable trays, cables shall be identified for this use.

(FPN): See Section 310-10 for temperature limitation of conductors.

(a) Type NM. Type NM cable shall be permitted for ((~~both exposed and~~)) concealed work in normally dry locations. It shall be permissible to install or fish Type NM cable in air voids in masonry block or tile walls where such walls are not exposed or subject to excessive moisture or dampness.

(b) Type NMC. Type NMC cable shall be permitted:

(1) For ((~~both exposed and~~)) concealed work in dry, moist, damp, or corrosive locations;

(2) In outside and inside walls of masonry block or tile;

(3) In a shallow chase in masonry, concrete, or adobe protected against nails or screws by a steel plate at least 1/16-inch (1.59-mm) thick and covered with plaster, adobe, or similar finish.

(c) Type NMS. Type NMS cable shall be permitted for ((~~both exposed and~~))

concealed work in normally dry locations. It shall be permissible to install or fish Type NMS cable in air voids in masonry block or tile walls where such walls are not exposed or subject to excessive moisture or dampness. Type NMS cable shall be used as permitted in Article 780.

Section 35. Section 336-5 (a) of the National Electrical Code, 1996 Edition, is amended as follows:

(a) Types NM, NMC, and NMS. Types NM, NMC, and NMS cables shall not be used:

(1) In any dwelling or structure exceeding three floors above grade.

((~~For the purpose of this article, the first floor of a building shall be that floor that has 50 percent or more of the exterior wall surface area level with or above finished grade.~~)) The Department's building permit shall be used to determine the number of habitable floors above grade. One additional level that is the first level and not designed for human habitation and used only for vehicle parking, storage, or similar use shall be permitted.

Exception: An additional level shall be permitted where the renovation of attic, vehicle parking, or storage space creates a habitable floor level in an existing one-family dwelling.

(2) As service-entrance cable and shall not be permitted as feeders in multifamily buildings and other structures of more than one story.

(3) In commercial garages having hazardous (classified) locations as provided in Section 511-3.

(4) In theaters and similar locations, except as provided in Article 518, Places of Assembly.

(5) In motion picture studios.

(6) In storage battery rooms.

(7) In hoistways.

(8) Embedded in poured cement, concrete, or aggregate.

(9) In any hazardous (classified) location, except as permitted by Sections 501-4(b), Exception, 502-4(b), Exception, and 504-20.

(10) In any building or structure located in a Fire District.

Section 36. Section 336-6 of the National Electrical Code, 1996 Edition, is amended as follows:

336-6 Exposed Work - General. In exposed work, except as provided in Section 300-11(a), the cable shall be installed as specified in (a), ((~~and~~)) (b), (d), and (e) below.

(a) ((~~**To Follow Surface.** The cable shall closely follow the surface of the building finish or of running boards.~~)) **Work Considered as Concealed.** Nonmetallic-sheathed cable shall be considered as concealed where installed in inaccessible void areas of buildings or where run in between or through bored holes of studs, joists and similar members as required in Section 300-4, provided that all outlet, junction or device boxes shall be installed as required for concealed work.

(b) Protection from Physical Damage. The cable shall be protected from physical damage where necessary by conduit, electrical metallic tubing, Schedule 80 PVC rigid nonmetallic conduit, pipe, guard strips, or other means. ((~~Where passing through a floor, the cable shall be enclosed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 80 PVC rigid nonmetallic conduit, or other metal pipe extending at least 6 in. (152 mm) above the floor.~~)) Nonmetallic-sheathed cable shall not be considered as concealed by notching and grooving, or by the use of running boards, and shall not be run across the face of ceilings, walls, beams or similar unoccupied locations.

Exception No. 1: Nonmetallic-sheathed cable may be installed in the attic and unexcavated space of buildings, provided such cable is protected from physical damage by the use of running boards, conduit, guard strips or other approved means as required in Section 336-6 (d) and (e).

Exception No. 2: Exposed nonmetallic-sheathed cable which is properly supported and neatly disposed may enter the top section only of a surface-mounted main service panel where the distance from the top of the panel to the bottom of the ceiling joist above does not exceed 2-1/2 feet.

(((~~(c) **In Unfinished Basements.** Where the cable is run at angles with joists in unfinished basements, it shall be permissible to secure cables not smaller than two No. 6 or three No. 8 conductors directly to the lower edges of the joists. Smaller cables shall either be run through bored holes in joists or on running boards.~~))

(d) **In Accessible Attics.** The installation of cable in accessible attics or roof spaces shall also comply with Section 333-12.

(e) **Unexcavated Spaces.** Type NM cable installed in compliance with the requirements of this section may be used in unexcavated spaces under dwellings provided that all outlet and junction boxes are installed in accessible locations.

Section 37. Section 336-21 of the National Electrical Code, 1996 Edition, is hereby repealed.

Section 38. Section 338-2 of the National Electrical Code, 1996 Edition, is amended as follows:

338-2 Uses Permitted as Service-Entrance Conductors. ((~~Service entrance cable used as service entrance conductors shall be installed as required by Article 230.~~)) Type SE and USE cables shall not be permitted for service entrance conductors and shall not be permitted for feeders or branch circuits in a Fire District.

((~~Type USE used for service laterals shall be permitted to emerge aboveground outside at terminations in meter bases or other enclosures where protected in accordance with Section 300-5(d).~~))

Section 39. Section 338-3 (b) of the National Electrical Code, 1996 Edition, is amended as follows:

(b) Grounded Conductor Not Insulated. Type SE service-entrance cables without individual insulation on the grounded circuit conductor shall not be used as a branch circuit or as a feeder within a building, except a cable that has a final nonmetallic outer covering and is supplied by alternating current at not over 150 volts to ground shall be permitted as a feeder to supply only other buildings on the same premises.

Type SE service-entrance cable shall be permitted for use where the fully insulated conductors are used for circuit wiring and the uninsulated conductor is used for equipment grounding purposes.

Exceptions 1 and 2 shall apply to (a) and (b) above.

Exception 1: Type SE and USE cables shall not be permitted in a Fire District.

Exception 2: Type SE cable shall not be permitted as feeders in structures over one story, excluding one- and two-family dwellings.

Section 40. Article 342 of the National Electrical Code, 1996 Edition, is hereby repealed.

Section 41. Section 348-1 of the National Electrical Code, 1996 Edition, is amended as follows:

348-1 Use. The use of listed electrical metallic tubing shall be permitted for both exposed and concealed work. Electrical metallic tubing shall not be used (1) where, during

installation or afterward, it will be subject to severe physical damage; (2) where protected from corrosion solely by enamel; (3) in cinder concrete or cinder fill ((~~where subject to permanent moisture unless protected on all sides by a layer of noncinder concrete at least 2 in. (50.8 mm) thick or unless the tubing is at least 18 in. (457 mm) under the fill~~)); (4) in any hazardous (classified) location except as permitted by Sections 502-4, 503-3, and 504-20; ((~~or~~)) (5) for the support of fixtures or other equipment except conduit bodies no larger than the largest trade size of the tubing; or (6) underground. Where practicable, dissimilar metals in contact anywhere in the system shall be avoided to eliminate the possibility of galvanic action.

Galvanized steel electrical metallic tubing may be installed in noncinder concrete above grade. All fittings shall be concrete tight and listed for use in concrete.

Exception: Aluminum fittings and enclosures shall be permitted to be used with steel electrical metallic tubing.

((~~Ferrous or nonferrous electrical metallic tubing, elbows, couplings, and fittings shall be permitted to be installed in concrete, in direct contact with the earth, or in areas subject to severe corrosive influences where protected by corrosion protection and judged suitable for the condition.~~))

(FPN): See Section 300-6 for protection against corrosion.

Section 42. Article 348 of the National Electrical Code, 1996 Edition, is amended by adding Section 348-3 as follows:

348-3 Damp Locations. Electrical metallic tubing shall be permitted in damp locations as defined in Article 100.

(FPN): See Section 300-6 for protection against corrosion.

Section 43. Section 348-4 of the National Electrical Code, 1996 Edition, is hereby repealed.

Section 44. Section 348-8 of the National Electrical Code, 1996 Edition, is amended as follows:

348-8 Couplings and Connectors. Couplings and connectors used with tubing shall be made up tight. Where buried in masonry or concrete, they shall be concretetight type. Where installed in ((~~wet~~)) damp locations, they shall be of the raintight type.

Section 45. Section 370-1 of the National Electrical Code, 1996 Edition, is amended as follows:

370-1 Scope. This article covers the installation and use of all boxes and conduit bodies used as outlet, junction, or pull boxes, depending on their use. Cast, sheet metal, nonmetallic, and other boxes such as FS, FD, and larger boxes are not classified as conduit bodies. This article also includes installation requirements for fittings used to join raceways and to connect raceways and cables to boxes and conduit bodies. Fittings such as capped elbows and service entrance elbows are not classified as conduit bodies.

(FPN): For systems over 600 volts, nominal, see Part D of this Article.

See Section 1206 of the Seattle Building Code for location of outlet boxes in sound transmission control assemblies.

Section 46. Section 373-3 of the National Electrical Code, 1996 Edition, is amended as follows:

373-3 Position in Wall and Above Floor. In walls of concrete, tile, or other noncombustible material, cabinets shall be so installed that the front edge of the cabinet will not set back of the finished surface more than 1/4 in. (6.35 mm). In walls constructed of wood or other combustible material, cabinets shall be flush with the finished surface or project therefrom.

Cabinets, cutout boxes and similar equipment shall be so placed that no overcurrent device installed therein will be more than 6 ft 7 in. nor less than 1 ft above the floor or working platform, provided that in private residences and apartments, the cabinet shall be so installed that the lowest overcurrent device placed therein shall not be less than 2 ft above the floor. Cabinets, cutout boxes and similar equipment shall be readily accessible. They shall not be located: in a bathroom, clothes closet, shower room, cupboard, attic; above a range, washer, dryer, water heater, sink, plumbing fixture, drain board; or where continuous headroom is less than 6 ft 6 in.

Section 47. Section 380-3 of the National Electrical Code, 1996 Edition, is amended as follows:

380-3 Enclosure. Switches and circuit breakers shall be of the externally operable type mounted in an enclosure listed for the intended use. The minimum wire bending space at terminals and minimum gutter space provided in switch enclosures shall be as required in Section 373-6.

((~~**Exception No. 1:** Pendant- and surface-type snap switches and knife switches mounted on an open-face switchboard or panelboard shall be permitted without enclosures.~~))

((~~**Exception No. 2:** Switches and circuit breakers installed in accordance with Sections 110-17(a)(1), (2), (3), or (4) shall be permitted without enclosures.~~))

Section 48. Section 380-10 (a) of the National Electrical Code, 1996 Edition, is repealed.

Section 49. Section 380-13 of the National Electrical Code, 1996 Edition, is amended by adding Sections (e) and (f) as follows:

(e) Service Switches. For service switches, see also Section 230-70 of the National Electrical Code.

(f) Capacity Limitation. All switches shall be of the interlocking type. All switches used as service disconnecting means or those rated over 300 volts shall have two-way interlocking.

Section 50. Section 384-14 of the National Electrical Code, 1996 Edition, is amended as follows:

384-14 Lighting and Appliance Branch-Circuit Panelboard. For the purposes of this article, a lighting and appliance branch-circuit panelboard is one having more than 10 percent of its overcurrent devices rated 30 amperes or less, for which neutral connections are provided. Lighting and appliance panelboards shall not be installed outside of a building or structure.

Exception No. 1: Approved lighting and appliance branch-circuit panelboards in single-family dwellings shall be permitted to be installed outdoors in an approved dry or damp location, as defined in Article 100 for damp or dry locations. Illumination shall be provided. Installations in damp locations shall be raintight-type factory-built in accordance with NEMA-3R standards.

Exception No. 2: Lighting and appliance branch-circuit panelboards which only serve outdoor electrical equipment.

Section 51. Section 450-10 of the National Electrical Code, 1996 Edition, is amended as follows:

450-10 Grounding.

(a) Exposed noncurrent-carrying metal parts of transformer installations, including fences, guards, etc., shall be grounded where required under the conditions and in the manner specified for electric equipment and other exposed metal parts in Article 250.

(b) Transformer Neutral Grounding. Where services over 600 volts are supplied from multi-ground, neutral systems in which transformer protection is provided by fuses in the primary feeders as provided in the National Electrical Code, Section 450-3(a), the grounded neutral conductor shall be connected to a grounding electrode at each transformer location. Where the secondary of the transformer or transformers is grounded, the secondary ground shall be connected to the common neutral ground.

Exception: Will not apply to industrial distribution systems.

Section 52. Section 450-13 of the National Electrical Code, 1996 Edition, is amended as follows:

450-13 Location. Transformers and transformer vaults shall be readily accessible to qualified personnel for inspection and maintenance.

Exception No. 1: Dry-type transformers 600 volts, nominal, or less, located in the open on walls, columns, or structures, shall not be required to be readily accessible.

Exception No. 2: Dry-type transformers 600 volts, nominal, or less and not exceeding 50 kVA shall be permitted in fire-resistant hollow spaces of buildings not permanently closed in by structure and provided they meet the ventilation requirements of Section 450-9. Transformers so installed shall not be required to be readily accessible.

Unless specified otherwise in this article, the term "fire resistant" means a construction having a minimum fire rating of 1 hour.

(FPN No. 1): See Method for Fire Tests of Building Construction and Materials, ANSI/ASTM E119-88, and Standard Methods of Tests of Fire Endurance of Building Construction and Materials, NFPA 251-1995.

((~~(FPN No. 2): The location of different types of transformers is covered in Part B of Article 450. The location of transformer vaults is covered in Section 450-41.~~))

(a) Outdoor Oil-Filled Pad-Mounted Transformers.

Definition. A pad-mounted transformer installation is an installation of an oil-filled transformer outdoors wherein all bushings, handholes and live and operating parts are guarded by a solid metal enclosure so secured as to be available to authorized qualified personnel only. This will not prohibit the use of approved glass monitoring devices or properly baffled ventilators.

(1) Where a pad-mounted transformer is to be installed adjacent to a structure of combustible material, it shall not be closer than 10 ft. This ten-foot separation shall be measured from the nearest metal portion of the pad-mounted transformer installation to the nearest building features required to be safeguarded. In the case of overhanging eaves or roof lines of combustible material on standard single-story structures, the ten-ft measurement shall be made in such a way as to provide at least ten ft of clear space between the eaves and the nearest metal portion of the pad-mounted transformer installed outside a vertical line extended from the ends of the eaves to the ground if this distance is at least ten ft horizontally from a combustible wall. In addition, the grade of the ground at the location

of the pad-mounted transformer shall be such that any oil leaking from the transformer will flow away from the building and will not form pools.

Exception: In urban residential areas where improved alleyways are used, and where a pad-mounted transformer is to be installed adjacent to a structure of combustible material, it shall not be closer than 2 ft provided the structure is noninhabited, such as a detached automobile garage.

(2) Pad-mounted transformer installations shall not be made nearer than two ft, measured horizontally, to a noncombustible building surface having no doors, windows or other openings closer than indicated in paragraph (1).

(3) Pad-mounted transformer installations shall not be located where exposed to damage by automobiles, trucks or other mobile types of machinery. Where transformers are installed in areas subject to other than pedestrian traffic, they shall be provided with additional guarding.

(4) Pad-mounted transformer installations shall meet the requirements for being effectively grounded as provided in Section 250-51, National Electrical Code.

(b) Total Underground Transformers. Enclosures for total underground transformers shall not be located within 10 ft of a doorway or fire escape. Adequate space shall be maintained above the total underground transformer enclosure so that a boom may be used to lift the transformer.

(c) Transformer Vaults. Sections 450-41 through 450-48, inclusive, of the NEC are repealed. See the Seattle Building Code, Section 414 and Appendix Chapter 4 for construction requirements for transformer vaults.

Section 53. Article 450 of the National Electrical Code, 1996 Edition, is amended by adding Section 450-20 as follows:

450-20 Rating of Dry-type Transformers. Dry-type transformers shall be rated not less than the load served as determined in accordance with Article 220 of the National Electrical Code.

Section 54. Sections 450-41 through 450-48, inclusive, of the National Electrical Code, 1996 Edition, are hereby repealed.

Section 55. Section 553-4 of the National Electrical Code, 1996 Edition, is amended as follows:

553-4 Location of Service Equipment. The service equipment for a floating building shall be located adjacent to, but not in or on, the building.

Exception: In existing situations the service equipment may be located in or on the building by special permission.

Section 56. Section 555-4 of the National Electrical Code, 1996 Edition, is amended as follows:

555-4 Branch Circuits. Every boat space shall be individually supplied with shore power except such spaces reserved for transient use only. Each single receptacle that supplies shore power ((~~to boats~~)) for a boat space shall be supplied from a power outlet or panelboard by an individual branch circuit of not less than No. 12 copper wire and of the voltage class and rating corresponding to the rating of the receptacle.

(FPN): Supplying receptacles at voltages other than the voltages marked on the receptacle may cause overheating or malfunctioning of connected equipment; for example, supplying single-phase, 120/240-volt, 3-wire loads for a 208Y/120-volt, 3-wire source.

Section 57. Section 555-10 of the National Electrical Code, 1996 Edition, is amended as follows:

555-10. Location of Service Equipment. The service equipment for floating docks or marinas shall be located adjacent to, but not on or in, the floating structure.

(FPN): See Section 230-29 of this code.

Section 58. Article 555 of the National Electrical Code, 1996 Edition, is amended by adding Section 555-11 as follows:

555-11 Lighting Fixtures. All walkways over water shall be illuminated to provide safe access. All lighting fixtures shall be listed for the use.

Section 59. Section 600-7 of the National Electrical Code, 1996 Edition, is amended as follows:

600-7 Grounding. Signs and metal equipment of outline lighting systems shall be grounded. Listed flexible metal conduit that encloses the secondary wiring of a transformer or power supply for use with electrical discharge tubing shall be permitted as a grounding means provided the flexible metal conduit terminates in a connector that ensures positive bonding connection. Where flexible nonmetallic conduit or tubing is used to enclose the secondary wiring of a transformer or power supply and a bonding conductor is required to bond metal electrode receptacles and other metal parts of a sign, the bonding conductor shall be:

(1) Installed on the exterior of the flexible nonmetallic tubing or conduit; and

(2) Copper not smaller than No. 12 in accordance with Section 250-95.

Exception: Where portions of electric-discharge neon or cold cathode signs with noncurrent-carrying metal parts which are insulated from ground and from other conductive surfaces and are inaccessible to unauthorized persons.

Section 60. Section 620-5 of the National Electrical Code, 1996 Edition, is amended as follows:

620-5 Working Clearances. Working space shall be provided about controllers, disconnecting means, and other electrical equipment. The minimum working space shall not be less than specified in ((~~Section 110-16(a)~~)) the Seattle Building Code, Section 3016.3.

((~~Where conditions of maintenance and supervision ensure that only qualified persons will examine, adjust, service, and maintain the equipment, the clearance requirements of Section 110-16(a) shall be waived as permitted in (a) through (d) below.~~

~~**(a) Flexible Connections to Equipment.** Electrical equipment in (1) through (4) below is provided with flexible leads to all external connections~~

~~**(1)** Controllers and disconnecting means for dumbwaiters, escalators, moving walks, wheelchair lifts, and stairway chair lifts installed in the same space with the driving machine.~~

~~**(2)** Controllers and disconnecting means for elevators installed in the hoistway or on the car.~~

~~**(3)** Controllers for door operators.~~

~~**(4)** Other electrical equipment installed in the hoistway or on the car.~~

~~**(b) Guards.** Live parts of the electrical equipment are suitably guarded, isolated, or insulated, and the equipment can be examined, adjusted, serviced, or maintained while energized without removal of this protection.~~

~~(FPN): See definition for "Exposed" in Article 100.~~

~~**(c) Examination, Adjusting, and Servicing.** Electrical equipment is not required to be examined, adjusted, serviced, or maintained while energized.~~

~~**(d) Low Voltage.** Uninsulated parts are at a voltage no greater than 30 volts RMS, 42 volts peak, or 60 volts dc.~~))

The clear working space in front of a disconnecting means shall be not less than 48 in.(1.22 m) in depth and 30 in. (.76 m) in width.

Elevator machine rooms are required to have not less than 7 ft 0 in. of headroom, per ASME A17.1, Rule 101.4.

Section 61. Section 620-21 of the National Electrical Code, 1996 Edition, is amended as follows:

620-21 Wiring Methods. All ((~~C~~))conductors and optical fibers (power, signal, telephone, communications, fire alarm, smoke detector, etc.) located in hoistways, in escalator and moving walk wellways, in wheelchair lifts, stairway chair lift runways, and machinery spaces, in or on cars, and in machine and control rooms, not including the traveling cables connecting the car or counterweight and hoistway wiring, shall be installed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, ((~~rigid nonmetallic conduit,~~)) or wireways, ((~~or shall be Type MC, MI, or AC cable~~)) unless otherwise permitted in (a) through (c) below.

Type MC cable or Type MI cable shall be permitted to be installed in elevator spaces only by special permission and prior approval of the building official.

(a) Elevators.

(1) Hoistways.

((~~a.~~)) Flexible metal conduit((~~,~~)) or liquidtight flexible metal conduit((~~, or liquidtight flexible nonmetallic conduit~~)) shall be permitted in hoistways between risers and limit switches, interlocks, operating buttons, and similar devices. Flexible metal conduit runs are limited to 6 ft (1.83 m) in length.

((~~b. Cables used in Class 2 power-limited circuits (30 volts RMS or less or 42 volts dc or less) shall be permitted to be installed between risers and signal equipment and operating devices provided the cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.~~))

Feeders shall be permitted inside the hoistway for elevators with driving machine motors located in the hoistway or on the car or counterweight.

(2) Cars.

a. Flexible metal conduit((~~,~~)) or liquidtight flexible metal conduit ((~~, or liquidtight flexible nonmetallic conduit of 3/8 in. nominal trade size or larger,~~)) not exceeding ((~~6 ft (1.83 m)~~)) 3 ft (.915 m) in length shall be permitted on cars where so located as to be free from oil, and if securely fastened in place and cannot be walked on or damaged.

b. Hard-service cords and junior hard-service cords conforming to the requirements of Article 400 (Table 400-4) shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates. Hard-service cords only shall be permitted as flexible connections for ((~~the~~)) portable type top-of-car operating devices or ((~~the~~)) car-top work lights. Devices or fixtures shall be grounded by means of an equipment grounding conductor run with the circuit conductors. Cables with smaller conductors and

other types and thicknesses of insulation and jackets shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates, if listed for this use.

((~~c. Flexible cords and cables that are components of listed equipment and used in low voltage circuits (30 volts RMS or less or 42 volts dc or less) shall be permitted in lengths not to exceed 6 ft (1.83 m) provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.~~))

(3) Machine Room and Machinery Spaces.

a. Flexible metal conduit((~~,~~)) or liquidtight flexible metal conduit ((~~, or liquidtight flexible nonmetallic conduit of 3/8 in. nominal trade size or larger,~~)) not exceeding 6 ft (1.83 m) in length, shall be permitted between control panels and machine motors, machine brakes, motor-generator sets, ((~~disconnecting means,~~)) and pumping unit motors and valves.

b. Where motor-generators, machine motors, or pumping unit motors and valves are located adjacent to or underneath control equipment and are provided with extra-length terminal leads not exceeding 6 ft (1.83 m) in length, such leads shall be permitted to be extended to connect directly to controller terminal studs without regard to the carrying-capacity requirements of Articles 430 and 445. Auxiliary gutters shall be permitted in machine and control rooms between controllers, starters, and similar apparatus.

((~~c. Flexible cords and cables that are components of listed equipment and used in low voltage circuits (30 volts RMS or less or 42 volts dc or less) shall be permitted in lengths not to exceed 6 ft (1.83 m) provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.~~))

d. On existing or listed equipment, conductors shall also be permitted to be grouped together and taped or corded without being installed in a raceway. Such cable groups shall be supported at intervals not over 3 ft (914 mm) and so located as to be protected from physical damage.

(4) Counterweight.

Flexible metal conduit, liquidtight flexible metal conduit ((~~, liquidtight flexible nonmetallic conduit~~)) or flexible cords and cables, or conductors grouped together and taped or corded that are part of listed equipment, a driving machine, or a driving machine brake shall be permitted on the counterweight assembly, in lengths not to exceed 6 ft (1.83 m) without being installed in a raceway and where located to be protected from physical damage and are of a flame-retardant type.

(b) Escalators.

(1) Flexible metal conduit((~~,~~)) or liquidtight flexible metal conduit((~~,or liquidtight flexible nonmetallic conduit~~)) shall be permitted in escalator and moving walk wellways. Flexible metal conduit or liquidtight flexible metal conduit, of 3/8-in. nominal trade size, shall be permitted in lengths not in excess of 6 ft (1.83 m).

((~~(2) Cables used in Class 2 power-limited circuits (30 volts RMS or less or 42 volts dc or less) shall be permitted to be installed within escalators and moving walkways provided the cables are supported and protected from physical damage and are of jacketed and flame-retardant type.~~))

(3) Hard-service cords conforming to the requirements of Article 400 (Table 400-4) shall be permitted as flexible connections on escalators and moving walk control panels and disconnecting means where the entire control panel and disconnecting means are arranged for removal from machine spaces as permitted in Section 620-72.

(c) Wheelchair Lifts and Stairway Chair Lift Raceways.

(1) Flexible metal conduit or liquidtight flexible metal conduit shall be permitted in wheelchair lifts and stairway chair lift runways and machinery spaces. Flexible metal

conduit or liquidtight flexible metal conduit, of 3/8-in. nominal trade size, shall be permitted in lengths not in excess of 6 ft (1.83 m).

(2) Traveling ((~~C~~))cables used in Class 2 power-limited circuits (30 volts RMS or less or 42 volts dc or less) shall be permitted to be installed within wheelchair lifts and stairway chair lift runways and machinery spaces provided the cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

Section 62. Section 620-22 of the National Electrical Code, 1996 Edition, is amended as follows:

620-22. Branch Circuits for Car Lighting, Receptacles(s), Ventilation, Heating, and Air Conditioning.

(a) Car Light Source. A separate branch circuit shall supply the car lights, receptacle(s), auxiliary lighting power source, and ventilation on each elevator car.

Required lighting shall not be connected to the load side terminals of a ground-fault circuit-interrupter receptacle(s).

(b) Air Conditioning and Heating Source. A dedicated branch circuit shall supply the air-conditioning and heating units on each elevator car.

Section 63. Section 620-32 of the National Electrical Code, 1996 Edition, is amended as follows:

620-32 Metal Wireways ((~~and Nonmetallic Wireways~~)). The sum of the cross-sectional area of the individual conductors in a wireway shall not be more than 50 percent of the interior cross-sectional area of the wireway.

Vertical runs of wireways shall be securely supported at intervals not exceeding 15 ft (4.57 m) and shall have not more than one joint between supports. Adjoining wireway sections shall be securely fastened together to provide a rigid joint.

Section 64. Section 620-44 of the National Electrical Code, 1996 Edition, is amended as follows:

620-44 Installation of Traveling Cables. Traveling cable shall be permitted to be run without the use of a raceway for a distance not exceeding 6 ft (1.83m) in length as measured from the first point of support on the elevator car or hoistway wall, or counterweight where applicable, provided the conductors are ((~~grouped together and taped or corded, or~~)) in the original sheath.

Traveling cables shall be permitted to be continued to elevator controller enclosures and to elevator car and machine room connections, as fixed wiring, ((~~provided they are suitably supported and protected from physical damage~~)) and shall be installed in conduits or raceways.

Section 65. Section 620-51 (b) of the National Electrical Code, 1996 Edition, is amended as follows:

(b) Operation. No provision shall be made to open or close this disconnecting means from any other part of the premises. If sprinklers are installed in hoistways, machine rooms, or machinery spaces, the disconnecting means shall be permitted to ((~~automatically~~)) open the power supply to the affected elevator(s) prior to the application of water. No provision shall be made to automatically close this disconnecting means. Power shall only be restored by manual means.

(FPN): To reduce hazards associated with water on live elevator electrical equipment.

Section 66. Section 620-71 of the National Electrical Code, 1996 Edition, is amended as follows:

620-71 Guarding Equipment. Elevator, dumbwaiter, escalator, and moving walk driving machines, motor-generator sets, motor controllers, and disconnecting means shall be installed in a room or enclosure set aside for that purpose unless otherwise permitted in (a) or (b) below. The room or enclosure shall be secured against unauthorized access. Non-elevator equipment, wiring, pipes, etc. are prohibited in elevator hoistways, pits, machine rooms and spaces. Only such equipment and wiring that pertain to the elevator and its operation are permitted in these elevator spaces. See Section 3022 of the Seattle Building Code.

By special permission, when prior written approval is obtained from the building official, elevator motor controllers and driving machines may be permitted inside the hoistway.

(a) Motor Controllers. Motor controllers shall be permitted outside the spaces herein specified, provided they are in enclosures with doors or removable panels capable of being locked in the closed position and the disconnecting means is located adjacent to or is an integral part of the motor controller. Motor controller enclosures for escalator or moving walks shall be permitted in the balustrade on the side located away from the moving steps or moving treadway. If the disconnecting means is an integral part of the motor controller, it shall be operable without opening the enclosure.

(b) Driving Machines. Elevators with driving machines located on the car, counterweight, ((~~or in the hoistway,~~)) and driving machines for dumbwaiters, wheelchair lifts, and stairway lifts shall be permitted outside the spaces herein specified.

(FPN): Elevators with the driving machines located on the car, counterweight, or in the hoistway include rack and pinion, screw column, and linear induction motor types. For additional information, see *Safety Code for Elevators and Escalators, ANSI/ASME A17.1-1993.*

Section 67. Section 700-4 of the National Electrical Code, 1996 Edition, is amended as follows:

700-4 Tests and Maintenance.

(a) Conduct or Witness Test. The authority having jurisdiction shall conduct or witness a test of the complete system upon installation and periodically afterward under the control of the Seattle Fire Department.

(b) Tested Periodically. Systems shall be tested periodically by the building owner and/or manager on a schedule acceptable to the authority having jurisdiction to ensure the systems are maintained in proper operating condition.

(c) Battery Systems Maintenance. Where battery systems or unit equipments are involved, including batteries used for starting, control, or ignition in auxiliary engines, the authority having jurisdiction shall require periodic maintenance by the building owner and/or manager.

(d) Written Record. A written record shall be kept of such tests and maintenance.

(e) Testing Under Load. Means for testing all emergency lighting and power systems during maximum anticipated load conditions shall be provided.

Section 68. Section 700-12 (b) of the National Electrical Code, 1996 Edition, is amended as follows:

(b) Generator Set.

(1) A generator set driven by a prime mover acceptable to the authority having jurisdiction and sized in accordance with Section 700-5. Means shall be provided for automatically starting the prime mover on failure of the normal service and for automatic transfer and

operation of all required electrical circuits. A time-delay feature permitting a 15-minute setting shall be provided to avoid retransfer in case of short-time reestablishment of the normal source.

(2) Where internal combustion engines are used as the prime mover, ((~~an on-site~~)) a fuel supply shall be provided with an on-premise fuel supply sufficient for not less than 2 hours full-demand operation of the system. The fuel supply shall be on-site unless otherwise approved by the building official.

(3) Prime movers shall not be solely dependent upon a public utility gas system for their fuel supply or municipal water supply for their cooling systems. Means shall be provided for automatically transferring from one fuel supply to another where dual fuel supplies are used.

Exception: Where acceptable to the authority having jurisdiction, the use of other than on-site fuels shall be permitted when there is a low probability of a simultaneous failure of both the off-site fuel delivery system and power from the outside electrical utility company.

(4) Where a storage battery is used for control or signal power, or as the means of starting the prime mover, it shall be suitable for the purpose and shall be equipped with an automatic charging means independent of the generator set.

(5) Generator sets that require more than 10 seconds to develop power shall be acceptable, providing an auxiliary power supply will energize the emergency system until the generator can pick up the load.

Section 69. Section 700-16 of the National Electrical Code, 1996 Edition, is amended as follows:

700-16 Emergency Illumination. Emergency illumination shall include all required means of egress lighting, illuminated exit signs, and all other lights specified as necessary to provide required illumination.

Emergency lighting systems shall be so designed and installed that the failure of any individual lighting element, such as the burning out of a light bulb, cannot leave in total darkness any space that requires emergency illumination.

Where high-intensity discharge lighting such as high- and low-pressure sodium, mercury vapor, and metal halide is used as the sole source of normal illumination, the emergency lighting system shall be required to operate until normal illumination has been restored.

Exception: Where alternative means have been taken to ensure that the emergency lighting illumination level is maintained.

Fixtures of alternate design may be used when specifically approved by the building official.

Exit signs with open bottom lighting shall not be considered as taking the place of a required pathway light unless specifically approved for the purpose.

Exit illumination (pathway lighting) and emergency area lighting shall comply with Chapter 10 of the Seattle Building Code.

Section 70. Section 701-10 of the National Electrical Code, 1996 Edition, is amended as follows:

701-10 Wiring Legally Required Standby Systems. For shaft pressurization systems required to comply with Section 711.7.3 of the Seattle Building Code, the legally required standby system wiring shall be kept entirely independent of all other wiring and equipment and shall not enter the same raceway, cable, box, or cabinet with other wiring. For other ((~~The~~)) legally required standby systems, wiring shall be permitted to occupy the same raceways, cables, boxes, and cabinets with other general wiring.

Section 71. Section 701-11 of the National Electrical Code, 1996 Edition, is amended as follows:

701-11 Legally Required Standby Systems. Current supply shall be such that, in event of failure of the normal supply to, or within, the building or group of buildings concerned, legally required standby power will be available within the time required for the application but not to exceed 10 seconds for shaft pressurization systems required to comply with Section 711.7.3 of the Seattle Building Code, and 60 seconds for other legally required standby systems. The supply system for legally required standby purposes, in addition to the normal services to the building, shall be permitted to comprise one or more of the types of systems described in (a) through (f) below. Unit equipment in accordance with Section 701-11(f) shall satisfy the applicable requirements of this article.

In selecting a legally required standby source of power, consideration shall be given to the type of service to be rendered, whether of short-time duration or long duration.

Consideration shall be given to the location or design, or both, of all equipment to minimize the hazards that might cause complete failure due to floods, fires, icing, and vandalism.

(FPN): Assignment of degree of reliability of the recognized legally required standby supply system depends on the careful evaluation of the variables at each particular installation.

Section 72. Section 307.2 of the Seattle Building Code, 1994 Edition, is amended as follows:

307.2 Construction, Height and Allowable Area.

307.2.1 General. Buildings or parts of buildings classed in Group H because of the use or character of the occupancy shall be limited to the types of construction set forth in Table 5–B and shall not exceed, in area or height, the limits specified in Sections 504, 505 and 506. For restrictions on H Group Occupancies in the Downtown Fire District, see Section 511.

307.2.2 Floors. Except for surfacing, floors in areas containing hazardous materials and in areas where motor vehicles, boats, helicopters or airplanes are stored, repaired or operated shall be of noncombustible, liquid–tight construction.

EXCEPTION: In Group H, Divisions 4 and 5 Occupancies, floors may be surfaced or waterproofed with asphaltic paving materials in that portion of the facility where no repair work is done.

307.2.3 Spill control. When required by the Fire Code, floors shall be recessed a minimum of 4 inches (102 mm) or shall be provided with a liquid–tight raised sill with a minimum height of4 inches (102 mm) so as to prevent the flow of liquids to adjoining areas. Except for surfacing, the sill shall be constructed of noncombustible material, and the liquid–tight seal shall be compatible with the material being stored. When liquid–tight sills are provided, they may be omitted at door openings by the installation of an open–grate trench which connects to an approved drainage system.

307.2.4 Drainage. When required by the Fire Code, the room, building or area shall be provided with a drainage system to direct the flow of liquids to an approved location or, the room, building or area shall be designed to provide secondary containment for the hazardous materials and fire–protection water.

Drains from the area shall be sized to carry the sprinkler system design flow rate over the sprinkler system design area. The slope of drains shall not be less than 1 percent. Materials of construction for the drainage system shall be compatible with the stored materials.

Incompatible materials shall be separated from each other in the drain systems. They may be combined when they have been rendered acceptable for discharge by an approved means into the public sewer. Drainage of spillage and fire–protection water directed to a neutralizer or treatment system shall comply with the following:

1. The system shall be designed to handle the maximum worst-case spill from the single largest container plus the volume of fire-protection water from the system over the minimum design area for a period of 20 minutes.

2. Overflow from the neutralizer or treatment system shall be provided to direct liquid leakage and fire-protection water to a safe location away from the building, any material or fire-protection control valve, means of egress, adjoining property, or fire department access roadway.

307.2.5 Containment. When required by the Fire Code, drains shall be directed to a containment system or other location designed as secondary containment for the hazardous material liquids and fire-protection water, or the building, room or area shall be designed to provide secondary containment of hazardous material liquids and fire-protection water through the use of recessed floors or liquid-tight raised sills.

Secondary containment shall be designed to retain the spill from the largest single container plus the design flow rate of the sprinkler system for the area of the room or area in which the storage is located or the sprinkler system design area, whichever is smaller. The containment capacity shall be capable of containing the flow for a period of 20 minutes.

Overflow from the secondary containment system shall be provided to direct liquid leakage and fire-protection water to a safe location away from the building, any material or fire-protection control valve, means of egress, fire access roadway, adjoining property or storm drains.

If the storage area is open to rainfall, the secondary containment shall be designed to accommodate the volume of a 24-hour rainfall as determined by a 25-year storm.

When secondary containment is required, a monitoring method capable of detecting hazardous material leakage from the primary containment into the secondary containment shall be provided. When visual inspection of the primary containment is not practical, other approved means of monitoring may be provided. When secondary containment may be subject to the intrusion of water, a monitoring method for such water shall be provided. Whenever monitoring devices are provided, they shall be connected to distinct visual or audible alarms.

307.2.6 Smoke and heat vents. Smoke and heat venting shall be provided in areas containing hazardous materials as set forth in the Fire Code in addition to the provisions of this code.

307.2.7 Standby power. Standby power shall be provided in Group H, Divisions 1 2, and 3 Occupancies and in Group H, Division 7 Occupancies in which there is use or storage of corrosives, highly toxic solids and liquids. The standby power system shall be designed and installed in accordance with Article 701-11 (a), (b), (c) or (f) of the Electrical Code to automatically supply power to all required electrical equipment when the normal electrical supply system is interrupted.

307.2.8 Emergency power. An emergency power system shall be provided in Group H, Division 6 Occupancies and in Group H, Division 7 Occupancies in which highly toxic or toxic gases are stored or used. The emergency power system shall be designed and installed in accordance with the Electrical Code to automatically supply power to all required electrical equipment when the normal electrical supply system is interrupted.

Interpretation I307.2: The standby and emergency power systems required by Sections 307.2.7 and 307.2.8 shall be provided for required mechanical exhaust ventilation, treatment, temperature control, liquid-level limit control, pressure control, alarm, and detection or other required electrically-operated systems. For required systems, see the Fire Code.

The systems shall be designed and installed in accordance with Article 700-12 (a), (b), (c) or ((~~(f)~~)) (e) of the Electrical Code, or, if the building official approves at the predesign conference, they may be designed and installed in accordance with Article 700-12 (d) ((~~,(e)~~)) of the Electrical Code.

307.2.9 Special provisions for Group H, Division 1 Occupancies. Group H, Division 1 Occupancies shall be in buildings used for no other purpose, without basements, crawl spaces or other under–floor spaces. Roofs shall be of lightweight construction with suitable thermal insulation to prevent sensitive material from reaching its decomposition temperature.

Group H, Division 1 Occupancies containing materials which are in themselves both physical and health hazards in quantities exceeding the exempt amounts in Table 3–E shall comply with requirements for both Group H, Division 1 and Group H, Division 7 Occupancies.

307.2.10 Special provisions for Group H, Divisions 2 and 3 Occupancies. Group H, Divisions 2 and 3 Occupancies containing quantities of hazardous materials in excess of those set forth in Table 3–G shall be in buildings used for no other purpose, shall not exceed one story in height and shall be without basements, crawl spaces or other under–floor spaces.

Group H, Divisions 2 and 3 Occupancies containing water–reactive materials shall be resistant to water penetration. Piping for conveying liquids shall not be over or through areas containing water reactives, unless isolated by approved liquid–tight construction.

EXCEPTION: Fire–protection piping may be installed over reactives without isolation.

307.2.11 Special provisions for Group H, Division 4 Occupancies. A Division 4 Occupancy having a floor area not exceeding 2,500 square feet (232 m^2) may have exterior walls of not less than two–hour fire–resistive construction when less than 5 feet (1524 mm) from a property line and of not less than one–hour fire–resistive construction when 5 feet (1524 mm) or more but less than 16 feet (4877 mm) from a property line.

307.2.12 Special provisions for Group H, Division 6 Occupancies. See Section 307.11.

Section 73. Section 711.7 of the Seattle Building Code, 1994 Edition, is amended as follows:

711.7 Elevator and Stairway Shafts.

711.7.1 Scope. Shafts containing elevators which serve 4 or more floors and located in buildings which meet all of the following conditions and which do not comply with Section 905 shall comply with either Section 711.7.2 or Section 711.7.3.

1. Buildings occupied by Group B offices; and

2. Buildings, other than high-rise, of Types I or II- F.R. construction; and

3. Buildings which have an occupant load of 30 or more per floor.

Item 3 shall also apply to shafts containing either elevators or stairways in other buildings when referenced by other provisions of this code.

711.7.2. Lobbies. When compliance with this section is required by Section 711.7.1, elevators on all floors shall open into elevator lobbies which are separated from the remainder of the building by walls of not less than one-hour fire-resistive construction. Openings through such walls shall conform to Section 1005.8.

711.7.3. Emergency Shaft Pressurization. When compliance with this section is required by Section 711.7.1, shafts shall be protected by an emergency shaft pressurization system complying with the following:

1. Shafts shall be pressurized to 0.15 inch of water column relative to atmospheric pressure. Stairway pressurization shall be measured with all stairway doors closed. Elevator pressurization shall be measured with elevator cars at the designated recall level with the doors in the open position.

EXCEPTION: In buildings protected throughout with an automatic sprinkler system, elevator shafts may be pressurized to not less than 0.10 inch of water column.

2. The emergency shaft pressurization shall be activated by a fire alarm system which shall include smoke detectors in the corridors located near the shaft on each floor in a manner approved by the building official and the fire chief. If the building has a fire alarm panel, smoke detectors shall be connected to, with power supplied by, the fire alarm panel.

3. Emergency pressurization equipment and its duct work located within the building shall be separated from other portions of the building by construction equal to that required for the shaft.

4. Shaft pressurization air intakes shall be located at the exterior of the building.

EXCEPTION: Intakes for elevator shaft pressurization may be located within the building provided they shall be located no more than 20 feet (6096 mm) from major openings in the building exterior such as loading docks and vehicular entrances. Such intake shall be provided with smoke detectors which shall deactivate the pressurization system for that shaft.

5. An emergency source of power shall be provided for the fire alarm system, ((~~and~~))

6. A legally required standby source of power shall be provided for the emergency pressurization system. One power source shall be permitted if it conforms to Seattle Electrical Code Section 230-82, Exception 5; otherwise two sources of power shall be provided conforming to Electrical Code Section 700-12 (a) through (((~~f~~))) (e).

7. Other measures to prevent loss of pressurization shall be provided in the design and construction of shafts, such as quality of workmanship and caulking of penetrations and joints.

Section 74. Section 1012.2 of the Seattle Building Code, 1994 Edition, is amended as follows:

1012.2 Separate Sources of Power. The power supply for exit illumination shall normally be provided by the premises wiring system. In the event of its failure, illumination shall be automatically provided from an emergency system for Group I, Divisions 1.1 and 1.2 Occupancies and for all other occupancies where the exiting system serves an occupant load of 100 or more. The emergency system shall be as specified in the Seattle Electrical Code Section 700-12 a, b, c or ((~~f~~)) e.

For high-rise buildings, see Section 403.

Section 75. This ordinance shall take effect and be in force thirty (30) days from and after its approval by the Mayor, but if not approved and returned by the Mayor within ten (10) days after presentation, it shall take effect as provided by Municipal Code Section 1.04.020.

Passed by the City Council the 7 day of April 1997, and signed by me in open session in authentication of its passage this 7 day of April, 1997.

President of the City Council

Approved by me this 9 day of April, 1997.

Norman B. Rice, Mayor

Filed by me this 9 day of April, 1997.

City Clerk

(SEAL)

Seattle
Department of Construction and Land Use

R. F. Krochalis, Director
Norman B. Rice, Mayor

MEMORANDUM

TO: Jan Drago, City Council President

VIA: Tom Tierney, Director
Office of Management and Planning
ATTN: Pascal St. Gerard, Budget Analyst

FROM: Rick Krochalis, Director

DATE: March 10, 1997

SUBJECT: Seattle Electrical Code Ordinance

Attached for your consideration is the proposed 1996 Seattle Electrical Code, with minor related amendments to the 1994 Seattle Building Code. A cost report for the adoption of this code is also included.

BACKGROUND

The National Electrical Code, a model electrical code, is promulgated by the National Fire Protection Association and is reissued every three years. The code is adopted by Washington State and local municipalities. The most recent edition was published in 1996. Seattle amendments provide greater flexibility in complying with the code, address issues unique to a large municipality, incorporate requirements of Seattle's publicly-owned electrical utility, and address issues of practice not regulated by the model code. Other Seattle amendments provide the administrative chapters, which regulate the permitting and enforcement of this code.

PUBLIC REVIEW

The Electrical Code Review Committee was appointed in the Fall of 1996 by the Construction Codes Advisory Board. Members included electrical engineers and contractors, organized labor and the public. The review process for the code was announced to the public in DCLU's newsletter to the community at large. Environmental Review of this ordinance has been completed by DCLU.

Working with staff from the Department of Construction and Land Use, Fire Department and City Light, the committee reviewed the 1996 National Electrical Code and the proposed local amendments. The committee and staff successfully resolved all points of discussion in an atmosphere of positive partnership, dedicated to the adoption of an electrical code which would benefit the community at large. The Construction Codes Advisory Board reviewed the proposed code and recommended approval December 19, 1996.

CHANGES AND IMPROVEMENTS

The Electrical Code amendments proposed allow greater flexibility in design or offer potential construction cost reductions. These amendments:

- will allow the owner of a business or home to add a licensed contractor to their electrical permit, thereby simplifying and reducing cost for certain permits;
- will allow the use of optional load calculation sections for new and existing homes, which offers a reduction in cost for some projects;
- will allow one additional normal service connection on the supply side for small services, when approved by the utility, which offers the potential of a reduction in cost;
- will delete restrictions to the use of electrical nonmetalic tubing (i.e. PVC conduit) in the Downtown Fire District, thereby allowing greater flexibility in design and a potential reduction in construction cost;
- will continue to allow a tap ahead of the main disconnection for the pressurization of stairway and elevator shafts in lowrise buildings, thereby avoiding the cost of an emergency power generator for lowrise construction.

COST OF IMPLEMENTATION

The estimated one-time cost for the implementation of the 1996 Seattle Electrical Code is $10,380, of which the primary element is the training of electrical plans reviewers and inspectors. A minor cost is incurred for providing staff with copies of the new code. There will be no net increase in the ongoing costs for the department.

We have scheduled a hearing for April 1, 1997 before the Business, Economic and Community Development Committee.

We would appreciate your consideration and action as soon as possible.
If you have any questions, please call Alan Justad, project manager, at 233-3891.

City of Seattle

Executive Department—Office of Management and Planning

Thomas M. Tierney, Director
Norman B. Rice, Mayor

March 25, 1997

The Honorable Mark Sidran
City Attorney
City of Seattle

Dear Mr. Sidran:

The Mayor is proposing to the City Council that the enclosed legislation be adopted.

REQUESTING DEPARTMENT:	Construction and Land Use
SUBJECT:	AN ORDINANCE relating to building and construction codes: repealing Section 22.300.010 and adopting a new Section 22.300.010 of the Seattle Municipal Code to adopt the 1996 National Electrical Code with Seattle amendments as the Seattle Electical Code and amending Sections 307.2, 711 and 1012 of the Seattle Building Code.

Pursuant to the City Council's S.O.P. 100-014, the Executive Department is forwarding this request for legislation to your office for review and drafting.

After reviewing this request and any necessary redrafting of the enclosed legislation, return the legislation to OMP. Any specific questions regarding the legislation can be directed to Pascal St. Gerard at 684-8085.

Sincerely,

Norman B. Rice
Mayor

by

TOM TIERNEY for
Director

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Enclosure

97-062

City of Seattle

Executive Department—Office of Management and Planning

Thomas M. Tierney, Director
Norman B. Rice, Mayor

March 14, 1997

COPY RECEIVED
97 MAR 14 AM 10: 12
SEATTLE CITY ATTORNEY

The Honorable Mark Sidran
City Attorney
City of Seattle

Dear Mr. Sidran:

The Mayor is proposing to the City Council that the enclosed legislation be adopted.

New title approved
Ordinance OK as to form 3/25 MK

REQUESTING DEPARTMENT: Construction and Land Use

SUBJECT: AN ORDINANCE relating to the Seattle Electrical Code, repealing Section 22.300.010, Seattle Municipal Code; adopting a new Section 22.300.010; adopting by reference and amending the 1996 National Electrical Code; and amending Sections 307.2, 711 and 1012 of the Seattle Building Code, regulating power supply for hazardous occupancies, shaft pressurization and exit illumination.

Pursuant to the City Council's S.O.P. 100-014, the Executive Department is forwarding this request for legislation to your office for review and drafting.

After reviewing this request and any necessary redrafting of the enclosed legislation, return the legislation to OMP. Any specific questions regarding the legislation can be directed to Pascal St. Gerard at 684-8085.

Sincerely,

Norman B. Rice
Mayor

by

TOM TIERNEY
Director

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Enclosure

TIME AND DATE STAMP

SPONSORSHIP

THE ATTACHED DOCUMENT IS SPONSORED FOR FILING WITH THE CITY COUNCIL BY THE MEMBER(S) OF THE CITY COUNCIL WHOSE SIGNATURE(S) ARE SHOWN BELOW:

FOR CITY COUNCIL PRESIDENT USE ONLY

COMMITTEE(S) REFERRED TO: _____

_____

_____

_____
PRESIDENT'S SIGNATURE

C.S. 20-29

STATE OF WASHINGTON - KING COUNTY

79721
City of Seattle, City Clerk

---ss.

No. ORDINANCE IN

Affidavit of Publication

The undersigned, on oath states that he is an authorized representative of The Daily Journal of Commerce, a daily newspaper, which newspaper is a legal newspaper of general circulation and it is now and has been for more than six months prior to the date of publication hereinafter referred to, published in the English language continuously as a daily newspaper in Seattle, King County, Washington, and it is now and during all of said time was printed in an office maintained at the aforesaid place of publication of this newspaper. The Daily Journal of Commerce was on the 12th day of June, 1941, approved as a legal newspaper by the Superior Court of King County.

The notice in the exact form annexed, was published in regular issues of The Daily Journal of Commerce, which was regularly distributed to its subscribers during the below stated period. The annexed notice, a

CT:ORD 118553

was published on

04/25/97

The amount of the fee charged for the foregoing publication is the sum of $, which amount has been paid in full.

L. Patterson

Subscribed and sworn to before me on

04/25/97

M C Alvarez

Notary Public for the State of Washington,
residing in Seattle

systems and circuit conductors are grounded to limit voltages due to

Three sets of plans and specifications for fire alarm systems shall be submitted.

2. **Clarity of Plans.** Plans shall be drawn to a clearly indicated and commonly accepted scale of not less than 1/8 inch to 1 foot upon substantial paper such as blueprint quality or standard drafting paper. Tissue paper, fiberboard or cardboard will not be accepted. The plans shall be of microfilm quality and limited to a minimum size of 11 inches by 17 inches and maximum size of 41 inches by 54 inches. Plans shall indicate the nature and extent of the work proposed and shall show in detail that it will conform to the provisions of this code. All electrical work shall be readily distinguishable from other mechanical work. If plans are incomplete, unintelligible or indefinite, the building official may require that the plans be prepared by a licensed electrical engineer, or may reject or refuse to examine such plans, even though a plan examination fee has been paid.

3. **Information on Plans and Specifications.** Plans and specifications shall indicate the following:

(1) The proposed use or occupancy of the various portions of the building in which the installation is to be made.

(2) A complete riser diagram.

(3) The calculated load schedule and demand factor selected for each branch circuit, feeder, subfeeder, main feeder and service. Panel and circuit schedules shall be shown. Note: Load calculations and heat loss calculations may be submitted on separate computation sheets.

(4) Fault current calculations and the listed interrupting rating for feeder or service installation or alteration.

(5) A key to any symbols used.

(6) Letters and numbers designating mains, feeders, branch circuits and distribution panels.

(7) Wattage, number of sockets and type of lighting fixture.

(8) Wattage and purpose of all other outlets.

(9) Voltage at which any equipment will operate.

(10) Identification of size of wires, type of insulation and all conduit sizes.

(11) Any other information as may be required by the plans examiner.

(c) **Advance Plan Examination.** An architect or engineer registered in the State of Washington may apply for an electrical permit and may request an advance plan examination of electrical plans where the electrical contractor has not yet been selected. Upon submission of an application including required plans, and payment of fifty percent of the estimated permit fee, the Department will review the application. When the application and plans are found to be in compliance with the Seattle Electrical Code, the Department will approve the application and plans as ready for issuance. Neither the permit nor the plans shall be issued until the remainder of the fee is paid and the electrical contractor's name and license number is placed on the permit.

PERMITS

Section 303. (a) **Issuance. 1. General.** The application and plans filed by an applicant for a permit shall be checked by the building official. Such plans may be reviewed by other departments of the City to check compliance with the laws and ordinances under their jurisdiction. If the building official finds that the work as described in an application for permit and the plans filed therewith conforms to the requirements of this code and other pertinent laws and ordinances and that the fees specified in the Fee Subtitle have been paid, the building official shall issue a permit to the applicant who becomes the permit holder. The building official may refuse to issue an electrical permit to any person who refuses or fails to complete the work permitted by an existing permit on the same building or premises.

> **Exception No. 1:** The building official may issue a permit for the installation of part of the electrical system of a building or structure before complete plans for the whole building or structure have been submitted or approved, provided adequate information and detailed statements have been filed complying with all pertinent requirements of this code. Holders of such permits may proceed at their own risk without assurance that the permit for the entire building or structure will be granted.
>
> **Exception No. 2:** A permit may be issued for work to commence prior to the approval of plans, if such approval is delayed beyond 10 working days after the plans have been submitted for examination. The holders of such permits may proceed at their own risk, with the understanding that any work undertaken prior to approval of plans shall be done in accordance with the provisions of this code and in accordance with the plans as subsequently approved.

2. **Compliance with Approved Plans and Permit.** When issuing a permit, the building official shall endorse the permit in writing and endorse in writing or stamp the plans **APPROVED**. Approved plans shall not be changed, modified or altered without authorization from the building official, and all work shall be done in accordance with the approved plans, except as the building official may require during field inspection to correct errors or omissions.

3. **Amendments to the Permit.** When substitutions and changes are made during construction, approval shall be secured prior to execution; however, the electrical inspector may approve minor modifications to the plans for work not reducing the fire and life safety of the structure. Substitutions, changes and clarifications shall be as shown on two sets of plans which shall be submitted to the building official, accompanied by redesign fees, prior to occupancy. These changes shall conform to the requirements of this code and other pertinent laws and ordinances.

4. **Requirement for License.** No electrical permit shall be issued to an applicant who is engaging in or conducting or carrying on the business of installing wires or equipment to convey electric current or of installing apparatus to be operated by electric current unless the applicant possesses a valid State of Washington license as required by RCW 19.28. The licensed installer responsible for the work shall be identified on the electrical permit.

> **Exception:** Persons not possessing a license may obtain an electrical permit in order to do electrical work at a residence, farm, place of business or other property which they own as described in RCW 19.28.610.

(5) In motion picture studios.

shall be the duty of the contractor to notify the building official that work requiring inspection is ready for inspection.

It shall be the duty of the person requesting any inspections required by this code to provide access to and means for proper inspection of the work. It shall be the duty of the permit holder to cause the work to be accessible and exposed for inspection purposes. Neither the building official nor the City shall be liable for expense entailed in the required removal or replacement of any material to allow inspection.

(c) **Inspection Record.** Work requiring a permit shall not be commenced until the permit holder or agent has posted an inspection record in a conspicuous place on the premises and in a position which allows the building official to conveniently make the required entries thereon regarding inspection of the work. This record shall be maintained in such position by the permit holder until final approval has been granted by the building official and the serving utility has made the connection to the electric current.

(d) **Approvals Required.** No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the written approval of the building official. Written approval shall be given only after an inspection has been made of each successive step in the construction as indicated by each of the inspections required in subsection (e).

(e) **Required Inspections. 1. Cover Inspection.** Cover inspections may be required when all of the following work has been completed:

A. All piping, ducts, plumbing and like installations of other trades which are liable to interfere or run in close proximity to the electrical installation are permanently in place and inspected, but prior to any work to cover or conceal any installation of electrical equipment, and;

B. For make-up of equipment conductors, see Article 250-1 of this code; and

C. For conduit systems, after all conduit has been installed and properly secured to the structure.

2. **Final Inspection.** A final inspection shall be made after all wiring has been completed and all permanent fixtures such as switches, outlet receptacles, plates, electric hot water tanks, lighting fixtures and all other equipment has been properly installed. The permit holder shall call for a final inspection when the work described on the permit has been completed.

(f) **Other Inspections.** In addition to the called inspections specified in subsection (e), the building official may make or require any other inspections of any construction work to ascertain compliance with the provisions of this code and other laws which are enforced by the building official.

Where work, for which any permit or approval is required, is commenced or performed prior to making formal application and receiving the building official's permission to proceed, the building official may make a special investigation inspection before a permit may be issued for the work. Where a special investigation is made, a special investigation fee may be assessed in accordance with the Fee Subtitle.

(g) **Reinspections.** The building official may require a reinspection when work for which inspection is called is not complete, corrections called for are not made, the permit card is not properly posted on the work site, the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or when deviations from plans which require the approval of the building official have been made without proper approval.

For the purpose of determining compliance with Section 104(c) Maintenance, the building official or the fire chief may cause any structure to be reinspected.

The building official may assess a reinspection fee as set forth in the Fee Subtitle for any action listed above for which reinspection may be required, whether or not a reinspection is actually performed. A reinspection fee shall not be assessed the first time the work subject to inspection is rejected for failure to comply with the requirements of this Electrical Code.

In instances where reinspection fees have been assessed, no additional inspection of the work shall be performed until the required fees have been paid.

Section 3. Sections 90-1 and 90-2 of the National Electrical Code, 1996 Edition, are hereby repealed.

Section 4. Article 100 of the National Electrical Code, 1996 Edition, is amended as follows:

ARTICLE 100 - DEFINITIONS

SCOPE. This article contains only those definitions essential to the proper application of this Code. It is not intended to include commonly defined general terms or commonly defined technical terms from related codes and standards. In general, only those terms used in two or more articles are defined in Article 100. Other definitions are included in the article in which they are used but may be referenced in Article 100.

Part A of this article contains definitions intended to apply wherever the terms are used throughout this Code. Part B contains definitions applicable only to the

parts of articles specifically covering installations and equipment operating at over

600 volts, nominal.

Terms and phrases used in this Code but not defined herein shall be as defined in the Seattle Building Code and the Seattle Mechanical Code. Where undefined terms are used, the definitions of Webster's Third New International Dictionary of the English Language, Unabridged, copyright 1986, shall apply.

* * *

SERVICE POINT: Service point is the point of connection between the facilities of the serving utility and the premises wiring, which is further defined and located as follows:

(1) For overhead service drop conductors from the utility pole to the point of attachment to