

Ordinance No. 00145

[\(Council Minuts 11/17/97\)](#)

ORDINANCE NO. 145

AN ORDINANCE of the City Council of the City of Lakewood, Washington creating a new Chapter 18.36 of the Lakewood Municipal Code relating to Development Standards for Flood Damage Prevention

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WHEREAS, in order to ensure that the people who live in those areas of the City of Lakewood that are subject to periodic flooding, mudslides (i.e., mudflows), or flood-related erosion, are able to obtain relief available in the form of Federally subsidized flood insurance as authorized by the National Flood Insurance Act of 1968, it is appropriate for the City to provide Flood Damage Prevention Development Standards in its City Code.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LAKEWOOD, WASHINGTON DO ORDAIN as follows:

1. That a new Chapter 18.36 of the Lakewood Municipal Code relating to Development Standards for Flood Damage Prevention is created to read asfollows:

CHAPTER 18.36

FLOOD DAMAGE PREVENTION

Sections:

18.36.010 Findings of Fact.

18.36.020 Statement of Purpose.

18.36.030 Methods of Reducing Flood.

18.36.040 Definitions.

18.36.050 General Provisions.

18.36.060 Administration.

18.36.070 Alteration of Watercourses.

18.36.080 Interpretation of FIRM Boundaries.

18.36.090 Conditions for Variances.

18.36.100 Provisions for Flood Hazard Reduction.

18.36.110 Critical Facilities.

18.36.010 Findings of Fact.

A. The flood hazard areas of the City of Lakewood are subject to periodic inundation which results in loss of life and property, health, and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base; all of which adversely affect the public health, safety, and general welfare.

B. These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately flood-proofed, elevated, or otherwise protected from flood damage also contribute to the flood loss.

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18.36.020 Statement of Purpose.

It is the purpose of this Chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

A. To protect human life and health;

B. To minimize expenditure of public money and costly flood control projects;

C. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

D. To minimize prolonged business interruptions;

E. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard;

F. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;

G. To ensure that potential buyers are notified that property is in an area of special flood hazard; and,

H. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

18.36.030 Methods of Reducing Flood.

In order to accomplish its purposes, this ordinance includes methods and provisions for:

A. Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;

B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Controlling the alteration of natural flood plains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;

D. Controlling filling, grading, dredging, and other development which may increase flood damage; and,

E. Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or may increase flood hazards in other areas.

18.36.040 Definitions.

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted as defined in this Code.

A. **AAppeal@** means a request for a review of the interpretation of any provision of this Chapter.

B. **AArea of Shallow Flooding@** means a designated AO, or AH zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from one (1) to three (3) feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and, velocity flow may be evident. AO is characterized as sheet flow and AH indicated ponding.C.

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D. **ABase Flood@** means the flood having a one (1) percent change of being equaled or exceeded in any given year; also referred to as the **A100-year flood@**. Designation on maps always includes the letters A or V.E.

ABase Flood@ means the flood having a one (1) percent change of being equaled or exceeded in any given year; also referred to as the **A100-year flood@**. Designation on maps always includes the letters A or V.E. **ABasement@** means any area of the building having its floor subgrade (below ground level) on all sides.

F. **ABreakaway Wall@** means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system. G.

ABreakaway Wall@ means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system. G. **ACoastal High Hazard Area@** means an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The area is designated on the FIRM as Zone V1-130, VE or V.

H. **ACritical Facility@** means a facility for which even a slight change of flooding might be too great. Critical facilities include, but are not limited to schools, nursing homes, hospitals, police, fire and emergency response installations, installations which produce, use or store hazardous materials or hazardous waste.I.

ACritical Facility@ means a facility for which even a slight change of flooding might be too great. Critical facilities include, but are not limited to schools, nursing homes, hospitals, police, fire and emergency response installations, installations which produce, use or store hazardous materials or hazardous waste.I. **ADevelopment@** means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations located within the area of special flood hazard, and as otherwise defined in this Code.

J. **AElevated Building@** means, for insurance purposes, a non-basement building which as its lowest elevated floor raised above ground level by foundation walls, shear walls, post, piers, pilings, or columns.K.

AElevated Building@ means, for insurance purposes, a non-basement building which as its lowest elevated floor raised above ground level by foundation walls, shear walls, post, piers, pilings, or columns.K. **AExisting Manufactured Home Park@** means a manufactured home park (as defined in this Code) which was established before the effective date of the adopted floodplain management regulations.

L. **AExpansion to an Existing Manufactured Home Park@**. The expansion or intensification of an existing Manufactured Home Park.M.

AExpansion to an Existing Manufactured Home Park@. The expansion or intensification of an existing Manufactured Home Park.M. **AFlood@** or **AFlooding@** means a general and temporary condition of partial or complete inundation of normally dry land areas from:

1. The overflow of inland or tidal waters and/or
2. The unusual and rapid accumulation of runoff of surface waters from any source.

N. **AFlood Insurance Rate May (FIRM)@** means the official map on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

O. AFlood Insurance Study@ means the official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Boundary-Floodway Map, and the water surface elevation of the base flood.P.

AFlood Insurance Study@ means the official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Boundary-Floodway Map, and the water surface elevation of the base flood.P. AFloodway@ means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

Q. ALowest Floor@ means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building=s lowest floor, provided that such enclosure is not build so as to render the structure in violation of the applicable non-elevation design requirements of this Code.R.

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S. ANew Construction@ means structures for which a building permit was issued on or after the effective date of this ordinance.T.

ANew Construction@ means structures for which a building permit was issued on or after the effective date of this ordinance.T. ARecreational Vehicle@ means a vehicle as defined in this Code.

U. AStart of Construction@ means commencement of construction activities as defined in this Code.V.

AStart of Construction@ means commencement of construction activities as defined in this Code.V. ASubstantial Damage@ means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.W. ASubstantial Improvement@ means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure either:

1. Before the improvement or repair is started; or,
2. If the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition, ASubstantial improvement@ is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.
3. The term does not, however, include either:
 - a. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or,
 - b. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

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 - b. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

X. AVariance@ means a grant of relief as defined in this Code.Y. AWater Dependent@ means a structure for commerce or industry which cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations as defined in this Code.

A. Basis For Establishing the Areas of Special Flood Hazard. The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled AThe Flood Insurance Study for the Unincorporated Areas of Pierce County, WA, Vols. 1 and 2@, dated August 19, 1987, as amended with an accompanying Flood Insurance Map (FIRM), as amended, are hereby adopted by reference and declared to be a part of this Chapter. The Flood Insurance Study is on file in the City Engineers Department. The best available information for flood hazard area identification as outlined in this Chapter shall be the basis for regulation until a new FIRM is issued which incorporates the data utilized in administration of this Chapter.

B. Penalties for Non-compliance. No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations of the provisions of this Chapter are subject to the penalties identified in this Code.

C. Abrogation and Greater Restrictions. This chapter is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance and other ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions, shall prevail.

D. Interpretations. In the interpretation and application of this Chapter, all provisions shall be:

1. Considered as minimum requirements;
2. Liberally construed in favor of the governing body; and,
- 3 Deemed neither to limit or repeal any other powers granted under State statutes.

E. Disclaimer of Liability. The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This Chapter does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This Chapter shall not create liability on the part of the City of Lakewood, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

18.36.060 Administration.

A. Development Review. All land use applications, permits and building permits shall be reviewed in accordance with this Chapter.

B. Administrative Official.

1. The City Engineer or Designee is hereby appointed to administer and implement this Chapter by granting or denying development permit applications in accordance with its provisions.
2. Duties of the City Engineer or Designee shall include, but not be limited to:
 - a. Review all development permits to determine that the permit requirements of this ordinance have been satisfied.
 - b. Review all development permits to determine that all necessary permits have been obtained from those Federal, State, or local governmental agencies from which prior approval is required.
 - c. Review all development permits to determine if the proposed development is located in the floodway. If located in the floodway, assure that the encroachment provisions of this Code are met.

C. Use of Other Base Flood Data. When base flood elevation data has not been provided in accordance with this Code, the City Engineer or Designee shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source, in order to administer the intent of this Chapter.

D. Information to be Obtained and Maintained.

1. Where base flood elevation data is provided through the Flood Insurance Study or required by this Chapter, obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures, and whether or not the structure contains a basement.

2. For all new or substantially improved flood-proofed structures:
 - a. Verify and record the actual elevation (in relation to mean sea level); and,
 - b. Maintain the flood-proofing certifications required in this Chapter.
- E. Maintain for public inspection all records pertaining to the provisions of this Code.

18.36.070 Alteration of Watercourses.

- A. Notify adjacent communities and the Department of Ecology prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration.
- B. Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

18.36.080 Interpretation of FIRM Boundaries.

A. The City Engineer or Designee shall make interpretations where needed, as to exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions).

B. The person contesting the location of the boundary may appeal the interpretation as provided in this Code.

C. The appeal shall consider all technical evaluations, all relevant factors, standards specified in other sections of this ordinance, and :

1. The danger that materials may be swept onto other lands to the injury of others;
2. The danger to life and property due to flooding or erosion damage;
3. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
4. The importance of the services provided by the proposed facility to the community;
5. The necessity to the facility of a waterfront location, where applicable;
6. The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
7. The compatibility of the proposed use with existing and anticipated development;
8. The relationship of the proposed use to the Comprehensive Plan and Flood Plain Management Program for that area;
9. The safety of access to the property in times of flood for ordinary and emergency vehicles;
10. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site; and,
11. The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, water systems, streets and bridges.

D. The City may attach such conditions to the granting of variances as deemed necessary to further the purposes of this ordinance.

E. The City Engineer or Designee shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.

18.36.090 Conditions for Variances.

A. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of

Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in this section.

B. Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.

C. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

D. Variances shall only be issued upon:

1. A showing of good and sufficient cause;

2. A determination that failure to grant the variance would result in exceptional hardship to the applicant in accordance with this Code; and,

3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with this Code.

18.36.100 Provisions for Flood Hazard Reduction.

A. General Standards. In all areas of special flood hazards, the following standards are required:

1. Anchoring.

a. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

b. All manufactured homes must be anchored to prevent flotation, and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-tip or frame ties to ground anchors (Reference FEMA's A Manufactured Home Installation in Flood Hazard Areas@ Guidebook for additional techniques).

2. Construction Materials and Methods.

a. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

b. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

c. Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

3. Utilities.

a. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;

b. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters; and,

c. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

4. Subdivision Proposals.

a. All subdivision proposals shall be consistent with the need to minimize flood damage;

b. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;

c. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage; and,

d. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least fifty (50) lots or five (5) acres (whichever is less).

5. Review of Building Permits.

a. Where elevation data is not available either through the Flood Insurance Study or from another authoritative source, applications for building permits shall be reviewed to assure that proposed construction will be reasonable safe from flooding. The test of reasonableness is a local judgment and includes use of historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate at least two (2) feet above grade in these zones may result in higher insurance rates.

b. Specific Standards, Residential Construction. In all areas of special flood hazards where base flood elevation data has been provided, the following provisions are required for residential construction.

(1) New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated one (1) foot above the base flood elevation.

(2) Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood-waters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

(a) A minimum of two (2) openings having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding shall be provided.

(b) The bottom of all openings shall be no higher than one (1) foot above grade.

(c) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of flood-waters.

(3) Specific Standards, Non-residential Construction. New construction and substantial improvement of any commercial, industrial or other non-residential structure shall either have the lowest floor, including basement, elevated one (1) foot above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

(a) Be flood-proofed so that below one (1) foot above the base flood level the structure is watertight with walls substantially impermeable to the passage of water;

(b) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

(c) Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans;

(d) Non-residential structures that are elevated, not flood-proofed, must meet the same standards for space below the lowest floor as described in this Chapter; and,

(e) Applicants flood-proofing non-residential buildings shall be notified that flood insurance premiums will be based on rates that are one (1) foot below the flood-proofed level (e.g. a building flood-proofed to the base flood level will be rated as one (1) foot below.

(4) Specific Standards, Manufactured Homes.

(a) All manufactured homes to be placed or substantially improved within Zones A1-A30, AH, and AE on the community=s FIRM shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated one (1) foot above the base flood elevation and is securely anchored to an adequately designed foundation system to resist flotation, collapse and lateral movement.(b) Manufactured homes to be placed or substantially improved within Zones A1-30, AH, and AE on the community=s FIRM that are not subject to the above manufactured home provisions shall be elevated so that either:

(i) The lowest floor of the manufactured home is elevated one (1) foot above the base flood elevation; or,

(ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.

(5) Recreational vehicles parked within Zones A1-30 , AH, and AE on the community(5) Recreational vehicles parked within Zones A1-30 , AH, and AE on the community=s FIRM shall conform to the requirements of this Code or meet the elevation and

anchoring requirements for manufactured homes.

(6) Floodways. The floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential. The following provisions apply:

(a) Prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional engineer is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(b) Construction or reconstruction of residential structures is prohibited within designated floodways, except for:

(i) Repairs, reconstruction, or improvements to a structure which do increase the ground floor area; and,

(ii) Repairs, reconstruction or improvements to a structure, the cost of which does not exceed fifty (50) percent of the market value of the structure either before the repair, or reconstruction is started, or if the structure has been damaged, and is being restored, before the damage occurred. Work done on structures to comply with existing health, sanitary, or safety codes or to structures identified as historic places shall not be included in the fifty (50) percent.

(7) Encroachments. The cumulative effect of any proposed development, where combined with all other existing and anticipated development, shall not increase the water surface elevation of the base flood more than one (1) foot at any point.

(8) Standards for Shallow Flooding Areas (AO Zones).

(a) Shallow flooding areas appear on FIRM=s as AO zones with depth designations. The base flood depths in these zones range from one (1) to three (3) feet above ground where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow.

(b) New construction and substantial improvements of residential structures and manufactured homes within AO zones shall have the lowest floor (including basement) elevated above the highest grade adjacent to the building, one (1) foot or more the depth number specified on the FIRM (at least two (2) feet if no depth number is specified).

(c) New construction and substantial improvements of non-residential structures within AO zones shall either:

(i) Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, one (1) foot or more above the depth number specified on the FIRM (at least two (2) feet if no depth number is specified); or,

(ii) Together with attendant utility and sanitary facilities, be completely flood proofed to or above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect.

(d) Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.

(e) Recreational vehicles parked within AO zones on the community=s FIRM shall conform to the requirements of this Code or meet the elevation and anchoring requirements for manufactured homes.

18.36.110 Critical Facilities.

Construction of new critical facilities shall be, to the greatest extent possible, located outside the limits of the special Flood Hazard Area (SFHA) (100-year floodplain). Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three (3) feet or more above the level of the base flood elevation (100-year) at the site. Flood-proofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into flood waters. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the greatest extent possible.

2. That if any section, sentence, clause or phrase of this Ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this Ordinance.

3. That this Ordinance shall be in full force in effect five (5) days after publication of the Ordinance Summary, as provided by law.

ADOPTED by the City Council this 17th day of November, 1997.

CITY OF LAKEWOOD

Attest: Bill Harrison, Mayor

Alice M. Bush, CMC, City Clerk

Approved as to Form:

Daniel B. Heid, City Attorney

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(b) New construction and substantial improvements of residential structures and manufactured homes within AO zones shall have the lowest floor (including basement) elevated above the highest grade adjacent to the building, one (1) foot or more the depth number specified on the FIRM (at least two (2) feet if no depth number is specified).

(c) New construction and substantial improvements of non-residential structures within AO zones shall either:

(i) Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, one (1) foot or more above the depth number specified on the FIRM (at least two (2) feet if no depth number is specified); or,

(ii) Together with attendant utility and sanitary facilities, be completely flood proofed to or above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect.

(d) Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.

(e) Recreational vehicles parked within AO zones on the community=s FIRM shall conform to the requirements of this Code or meet the elevation and anchoring requirements for manufactured homes.

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Construction of new critical facilities shall be, to the greatest extent possible, located outside the limits of the special Flood Hazard Area (SFHA) (100-year floodplain). Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three (3) feet or more above the level of the base flood elevation (100-year) at the site. Flood-proofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into flood waters. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the greatest extent possible.

2. That if any section, sentence, clause or phrase of this Ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this Ordinance.

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2. Construction Materials and Methods.

a. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

b. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood

damage.

c. Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

3. Utilities.

a. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;

b. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters; and,

c. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

4. Subdivision Proposals.

a. All subdivision proposals shall be consistent with the need to minimize flood damage;

b. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;

c. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage; and,

d. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least fifty (50) lots or five (5) acres (whichever is less).

5. Review of Building Permits.

a. Where elevation data is not available either through the Flood Insurance Study or from another authoritative source, applications for building permits shall be reviewed to assure that proposed construction will be reasonable safe from flooding. The test of reasonableness is a local judgment and includes use of historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate at least two (2) feet above grade in these zones may result in higher insurance rates.

b. Specific Standards, Residential Construction. In all areas of special flood hazards where base flood elevation data has been provided, the following provisions are required for residential construction.

(1) New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated one (1) foot above the base flood elevation.

(2) Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood-waters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

(a) A minimum of two (2) openings having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding shall be provided.

(b) The bottom of all openings shall be no higher than one (1) foot above grade.

(c) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of flood-waters.

(3) Specific Standards, Non-residential Construction. New construction and substantial improvement of any commercial, industrial or other non-residential structure shall either have the lowest floor, including basement, elevated one (1) foot above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

(a) Be flood-proofed so that below one (1) foot above the base flood level the structure is watertight with walls substantially impermeable to the passage of water;

(b) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

(c) Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans;

(d) Non-residential structures that are elevated, not flood-proofed, must meet the same standards for space below the lowest floor as described in this Chapter; and,

(e) Applicants flood-proofing non-residential buildings shall be notified that flood insurance premiums will be based on rates that are one (1) foot below the flood-proofed level (e.g. a building flood-proofed to the base flood level will be rated as one (1) foot below.

(4) Specific Standards, Manufactured Homes.

(a) All manufactured homes to be placed or substantially improved within Zones A1-A30, AH, and AE on the community=s FIRM shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated one (1) foot above the base flood elevation and is securely anchored to an adequately designed foundation system to resist flotation, collapse and lateral movement.(b) Manufactured homes to be placed or substantially improved within Zones A1-30, AH, and AE on the community=s FIRM that are not subject to the above manufactured home provisions shall be elevated so that either:

(i) The lowest floor of the manufactured home is elevated one (1) foot above the base flood elevation; or,

(ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.

(5) Recreational vehicles parked within Zones A1-30 , AH, and AE on the community(5) Recreational vehicles parked within Zones A1-30 , AH, and AE on the community=s FIRM shall conform to the requirements of this Code or meet the elevation and anchoring requirements for manufactured homes.

(6) Floodways. The floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential. The following provisions apply:

(a) Prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional engineer is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(b) Construction or reconstruction of residential structures is prohibited within designated floodways, except for:

(i) Repairs, reconstruction, or improvements to a structure which do increase the ground floor area; and,

(ii) Repairs, reconstruction or improvements to a structure, the cost of which does not exceed fifty (50) percent of the market value of the structure either before the repair, or reconstruction is started, or if the structure has been damaged, and is being restored, before the damage occurred. Work done on structures to comply with existing health, sanitary, or safety codes or to structures identified as historic places shall not be included in the fifty (50) percent.

(7) Encroachments. The cumulative effect of any proposed development, where combined with all other existing and anticipated development, shall not increase the water surface elevation of the base flood more than one (1) foot at any point.

(8) Standards for Shallow Flooding Areas (AO Zones).

(a) Shallow flooding areas appear on FIRM=s as AO zones with depth designations. The base flood depths in these zones range from one (1) to three (3) feet above ground where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow.

(b) New construction and substantial improvements of residential structures and manufactured homes within AO zones shall have the lowest floor (including basement) elevated above the highest grade adjacent to the building, one (1) foot or more the depth number specified on the FIRM (at least two (2) feet if no depth number is specified).

(c) New construction and substantial improvements of non-residential structures within AO zones shall either:

(i) Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, one (1) foot or more above the depth number specified on the FIRM (at least two (2) feet if no depth number is specified); or,

(ii) Together with attendant utility and sanitary facilities, be completely flood proofed to or above that level so that any space

below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect.

(d) Require adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.

(e) Recreational vehicles parked within AO zones on the community=s FIRM shall conform to the requirements of this Code or meet the elevation and anchoring requirements for manufactured homes.

18.36.110 Critical Facilities.

Construction of new critical facilities shall be, to the greatest extent possible, located outside the limits of the special Flood Hazard Area (SFHA) (100-year floodplain). Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three (3) feet or more above the level of the base flood elevation (100-year) at the site. Flood-proofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into flood waters. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the greatest extent possible.

2. That if any section, sentence, clause or phrase of this Ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this Ordinance.

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ADOPTED by the City Council this 17th day of November, 1997.

CITY OF LAKEWOOD

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Alice M. Bush, CMC, City Clerk

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=s AManufactured Home Installation in Flood Hazard Areas@ Guidebook for additional techniques).

2. Construction Materials and Methods.

a. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

b. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

c. Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

3. Utilities.

a. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;

b. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters; and,

c. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

4. Subdivision Proposals.

a. All subdivision proposals shall be consistent with the need to minimize flood damage;

b. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage;

c. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage; and,

d. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least fifty (50) lots or five (5) acres (whichever is less).

5. Review of Building Permits.

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CITY OF LAKEWOOD

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