

Date March 8, 2021

An Ordinance entitled, "AN ORDINANCE to amend the Municipal Code of the City of Des Moines, Iowa, 2000, adopted by Ordinance No. 13,827, passed June 5, 2000, as heretofore amended, by amending Sections 50-26, 50-32.05, and 50-34, relating to floodplain development",

(Council Communication No. 21-108)

presented.

Moved by _____ that this ordinance be considered and given first vote for passage.

FORM APPROVED:

(First of three required readings)

/s/ Glenna K. Frank
 Glenna K. Frank
 Assistant City Attorney

COUNCIL ACTION	YEAS	NAYS	PASS	ABSENT
COWNIE				
BOESEN				
GATTO				
GRAY				
MANDELBAUM				
VOSS				
WESTERGAARD				
TOTAL				

CERTIFICATE

I, P. Kay Cmelik, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

MOTION CARRIED

APPROVED

 Mayor

 City Clerk

ORDINANCE NO. _____

AN ORDINANCE to amend the Municipal Code of the City of Des Moines, Iowa, 2000, adopted by Ordinance No. 13,827, passed June 5, 2000, as heretofore amended, by amending Sections 50-26, 50-32.05, and 50-34, relating to floodplain development.

Be It Ordained by the City Council of the City of Des Moines, Iowa:

Section 1. That the Municipal Code of the City of Des Moines, Iowa, 2000, adopted by Ordinance No. 13,827, passed June 5, 2000, as heretofore amended, is hereby amended by amending Sections 50-26, 50-32.05, and 50-34, relating to floodplain development, as follows:

ARTICLE II. FLOODPLAIN DEVELOPMENT

Sec. 50-26. Definitions.

....

Flood insurance rate maps (FIRMs) means the official maps prepared as part of, but published separately from, ~~on which the Federal Flood Insurance Administration Studies~~ which has delineated both the flood hazard areas and the risk premium zones applicable to the city.

Flood insurance studies means the Polk County Flood Insurance Study dated February 1, 2019, including but not limited to Panels 19153C0189F, 0195F, 0215F, 0220F, 0327F, 0329F, 0335F, 0340F, 0345F, 0355F, 0360F, 0365F, 0370F, 0380F, and the Warren County Flood Insurance Study dated November 16, 2018, including but not limited to Panels 19181C0043G, 0044G, 0065G, 0068G, 0132G, 0151G, 0152G, 0156G, all of which are made a part of this article by reference, together with the flood profiles and all explanatory material contained therein, subject to any amendments thereto adopted by ordinance enacted by the city council pursuant to section 50-33. ~~The flood insurance studies are reports published by the Federal Management Agency (FEMA) for the city and issued together with the flood insurance rate maps. Said studies contain such background data as the base flood discharge and water surface elevation that were used to prepare the flood insurance rate map. Flood insurance rate maps, flood profiles and the water surface elevation of the 100-year flood are contained within the flood insurance studies.~~ The flood insurance studies shall be on file in the office of the city engineer.

....

Floodproofing and floodproofed means any combination of structural and nonstructural additions, changes or adjustments to structures, including utility and sanitary facilities, which will and/or have reduced or eliminated flood damage to such structures.

....

Lowest floor means the floor of the lowest enclosed area in a building or factory-built home, including a basement, except that when the lowest enclosed area satisfies all of the criteria

set forth in the following subsections, the lowest floor is the floor of the next highest enclosed area that does not satisfy such criteria:

- (1) The enclosed area is designed to flood to automatically equalize hydrostatic pressure from flood forces on exterior walls by allowing for the entry and exit of floodwaters through walls or openings which satisfy the requirements of subsection 50-34(4) of this article.
- (2) The enclosed area is unfinished (i.e., not carpeted, drywalled, etc.) and is used solely for low damage potential uses such as building access, parking or storage.
- (3) All machinery and service facilities (~~e.g., hot water heater, furnace, electrical service~~) contained in the enclosed area shall be elevated at or above the minimum flood protection elevation or floodproofed to such a level~~are located at least one foot above the 100-year flood level.~~
- (4) The enclosed area is not a basement, as defined in this section.

....

Minimum floodproofing/flood protection elevation means, for all floodplain areas except areas designated as AO zones on the flood insurance rate maps, the elevation of three feet above the 100-year flood elevation. The additional elevation above the 100-year flood elevation is also known as "freeboard". For all areas designated as AO zones on the rate maps, the minimum floodproofing/flood protection elevation shall be equal to the depth as specified on the rate map above the highest adjacent grade plus one foot, or, if no depth is specified, at least ~~two~~ three feet above the highest adjacent grade.

....

Section 50-32.05. Administration.

- (a) The City Engineer is hereby designated to administer and implement the provisions of this chapter.
- (b) The duties of the City Engineer under this chapter shall include, but not be limited to:
 - (1) Review of all applications for certificates of compliance to assure that sites are reasonably safe from flooding and that the performance standards of this chapter have been satisfied.
 - (2) Review all applications for certificates of compliance to assure that all necessary permits have been obtained from those governmental agencies from which approval is required by federal or state law, including, but not limited to and when applicable, the Iowa Department of Natural Resources for floodplain structure(s) and section 404 of the federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. §1334.
 - (3) Review all subdivision proposals and other new development, including manufactured home parks, to determine whether such proposals will be reasonably safe from flooding.
 - (4) Record and maintain a record of: (i) elevation of the lowest floor (including basement) of all new or substantially improved structure; or (ii) the elevation to which all new or substantially improved structures have been floodproofed.
 - (5) Issue certificates of compliance for all approved applications.

- (6) Notify adjacent communities and the state department of natural resources prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency.
- (7) Keep a record of all permits, appeals, and such other transactions and correspondence pertaining to the administration of this Chapter.
- (8) Maintain the accuracy of the community's Flood Insurance Rate Maps when;
 - a. Development placed within the Floodway results in any of following:
 1. An increase in the Base Flood Elevations, or
 2. Alteration to the floodway boundary.
 - b. Development placed in Zones A, AE, AH and A1–A30 that does not include a designated floodway that will cause a rise of more than one foot in the base elevation; or
 - c. Development relocates or alters a channel.
 Within 6 months of the completion of the development, the applicant shall submit to FEMA all scientific and technical data necessary for a Letter of Map Revision.
- (9) Maintain any certificates of floodproofing, and information on the elevation (in relation to ~~mean-sea-level~~North American Vertical Datum 1988) of the level of the lowest floor (including basement) of all new or substantially improved structures, and include whether or not such structures contain a basement, and if the structures have been floodproofed, the elevation (in relation to ~~mean-sea-level~~North American Vertical Datum 1988) to which the structures were floodproofed.
- (10) Maintain records of damage, reconstruction, rehabilitation, repairs, additions, modifications, or other improvements to buildings within floodplain areas.
- (11) Perform site observations at time of building permit issuance to ensure compliance with the standards of this chapter.

Sec. 50-34. Performance standards.

No structure or land shall hereafter be placed to a use and no structure shall be constructed, located, expanded, converted to a new use or structurally altered without full compliance with the terms of this chapter. All uses development within floodplain areas must be consistent with the need to minimize flood damage and shall meet the following applicable performance standards:

- (1) All structures and factory-built homes (whether or not placed in existing factory-built home parks or subdivisions) for which the start of construction commenced on or after February 4, 1981, or to which substantial improvements have been made on or after February 4, 1981, shall be:
 - a. Adequately anchored to prevent flotation, collapse or lateral movement of the structure during conditions of flooding. Anchorage systems may include, but are not limited to, use of over-the-top or frame tied ground anchors;
 - b. Constructed with materials and utility equipment resistant to flood damage;
 - c. Constructed by methods and practices minimizing flood damage; and

- d. ~~Constructed with any electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding~~ (i) machinery and equipment serving the building, such as electric meter and panel box, water heater, and heating, air conditioning, and ventilation equipment (including ductwork), elevated or floodproofed equal to or above the minimum floodproofing/flood protection elevation; and (ii) service utilities such as plumbing, electric service, gas service, and water/gas meters designed and installed to be watertight and withstand inundation to the minimum floodproofing/flood protection elevation.
 - e. Reviewed to assure that all necessary permits have been received from those governmental agencies from which approval is required by federal or state law, including, but not limited to and when applicable, the Iowa Department of Natural Resources for floodplain structure(s) and section 404 of the federal Water Pollution Control Act of 1972, 22 U.S.C. §1334.
- (2) All residential buildings and factory-built homes (whether or not placed in existing factory-built home parks or subdivisions) for which the start of construction commenced on or after February 4, 1981, or to which substantial improvements have been made on or after February 4, 1981, shall have the lowest floor, including basement, elevated equal to or above the minimum floodproofing/flood protection elevation. Machinery and equipment serving the building, such as electric meter and panel box, water heater, and heating, air conditioning and ventilation equipment (including ductwork), shall also be elevated equal to or above the minimum floodproofing/flood protection elevation, and service utilities such as plumbing, electric service, gas service, and water/gas meters must be designed and installed to be watertight and withstand inundation to the minimum floodproofing/flood protection elevation. Elevation shall be achieved by means of compacted fill or by such other methods, including piers, as the city engineer determines to be adequate to support the structure as well as withstand the various forces and hazards associated with flooding.
- (3) All nonresidential buildings and factory-built homes (whether or not placed in existing factory-built home parks or subdivisions) for which the start of construction commenced on or after February 4, 1981, or to which substantial improvements have been made on or after February 4, 1981, shall have the lowest floor, including basement, elevated equal to or above the minimum floodproofing/flood protection elevation or, ~~together with attendant utility and sanitary systems,~~ shall be floodproofed to such a level. Machinery and equipment serving the building, such as electric meter and panel box, water heater, and heating, air conditioning and ventilation equipment (including ductwork), shall also be elevated or floodproofed equal to or above the minimum floodproofing/flood protection elevation; and service utilities such as plumbing, electric service, gas service, and water/gas meters must be designed and installed to be watertight and withstand inundation to the minimum floodproofing/flood protection elevation. When floodproofing is utilized, a professional engineer registered in the state shall certify that the floodproofing methods used are

adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the 100-year flood and that the structure, below the minimum floodproofing/flood protection elevation, is watertight with walls substantially impermeable to the passage of water. A record of the certification indicating the specific elevation, in relation to National Geodetic North American Vertical Datum, to which any buildings are floodproofed shall be maintained by the office of the building official.

- (4) Within all buildings and factory-built homes (whether or not placed in existing factory-built home parks or subdivisions) for which the start of construction commenced on or after February 4, 1981, or to which substantial improvements have been made on or after February 4, 1981, any enclosed areas below the lowest floor shall be designed to automatically equalize hydrostatic pressure from flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement either must be certified by a registered professional engineer or must meet the following criteria:
 - a. A minimum of two openings having a total net area of not less than one 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 foot above grade.
 - c. Openings may be equipped with screens, louvers, valves, or other coverings or devices, provided that they permit the automatic entry and exit of floodwaters.
 - e. Such enclosed areas shall be used solely for parking of vehicles, building access and low damage potential storage.
- (5) Utility and sanitary systems shall satisfy the following criteria:
 - a. All new and replacement sanitary sewer systems shall be designed to minimize or eliminate infiltration of floodwaters into the system as well as the discharge of effluent into floodwaters. Wastewater treatment facilities shall be provided with a level of flood protection equal to or above the minimum floodproofing/flood protection elevation.
 - b. On-site waste disposal systems shall be located or designed to avoid impairment to the system or contamination from the system during flooding.
 - c. New or replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system. Water supply treatment facilities shall be provided with a level of protection equal to or above the minimum floodproofing/flood protection elevation.
 - d. Utilities such as gas and electrical systems shall be located and constructed to minimize or eliminate flood damage to the system and the risk associated with such flood damaged or impaired systems.
- (6) Flood control structural works such as levees and floodwalls shall provide, at a minimum, protection from a 100-year flood with a minimum of three feet of design freeboard and shall provide for adequate interior drainage. In addition, structural flood control works shall be approved by the state department of natural resources.

- (7) Storage of materials and equipment that are flammable, explosive or injurious to human, animal or plant life is prohibited unless stored indoors and elevated equal to or above the minimum floodproofing/flood protection elevation. Other material and equipment must either be:
 - a. Similarly elevated;
 - b. Not subject to major flood damage and anchored to prevent movement due to floodwaters; or
 - c. Readily removable from the area within the time available after flood warning.
- (8) No use development shall affect the capacity or conveyance of the channel or floodway of any tributary to the main stream, drainage ditch or other drainage facility or system.
- (9) All subdivisions shall be consistent with the need to minimize flood damages and shall have adequate drainage provided to reduce exposure to flood damage. Development associated with subdivision proposals shall meet the applicable performance standards. Subdivision proposals intended for residential development shall provide all lots with a means of vehicular access that will remain dry during occurrence of the 100-year flood. Proposals for subdivisions and other proposed developments, including proposals for manufactured home parks and subdivisions, greater than five (5) acres or (50) lots, whichever is the lesser, shall include 100-year flood elevations for those areas located within the floodplain.
- (10) Detached garages, sheds and similar accessory structures that are incidental to a single-family (single-household) or two-family (two-household) residential use are exempt from the minimum floodproofing/flood protection elevation requirements, provided all of the following criteria are met:
 - a. The structure shall not be used for human habitation, and shall be used solely for low flood damage potential purposes such as vehicle parking and limited storage.
 - b. The structure shall be designed to have low flood damage potential. Those portions of the structures located below the minimum flood protection elevation must be constructed of flood-resistant materials as determined by the Federal Emergency Management Agency.
 - c. The structure shall be constructed and placed on the building site so as to offer minimum resistance to the flow of floodwaters.
 - d. The structure shall be firmly anchored to prevent flotation, collapse and lateral movement which may result in damage to other structures.
 - e. The structure's service facilities such as electrical, heating, ventilation, plumbing, and air conditioning equipment shall be elevated or floodproofed to a level equal to or above the minimum floodproofing/flood protection elevation.
 - f. The structure's walls shall include openings that satisfy the provisions of subsection (4) of this section.
 - g. The owner of the structure must sign a non-conversion agreement whereby the owner agrees not to modify the enclosed area in any way that would make it more susceptible to flood damage. The agreement must contain a

legal description sufficient to identify the property upon which the structure is located, and be recorded at the owner's expense with the applicable county recorder. The agreement shall allow the city the right to inspect the enclosed area at any time.

- (11) Recreational vehicles shall not be placed on sites within the areas designated as A1-A30, AO, AE, and AH on the flood insurance rate maps or in other approximate "A-" zones for which base flood elevation data has been obtained or provided by IDNR or the city engineer, unless the recreational vehicle will:
- a. Be on the site for fewer than 180 consecutive days;
 - b. Be fully licensed and ready for highway use; or
 - c. Meet the permit, elevation and anchoring requirements for a factory-built home.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by disconnect-type utilities and security devices, and has no permanent attached additions.

- (12) Pipeline river and stream crossings shall be buried in the streambed and banks, or otherwise sufficiently protected to prevent rupture due to channel degradation and meandering or due to the action of flood flows, and shall be constructed, operated, and maintained so as not to create premature overbank flow or excessive scour to the channel or banks. Spoil material resulting from the construction of a pipeline crossing shall be disposed of in a manner which will not obstruct low flow or flood flows.

- (13) In the AH and AO Zones as shown by the flood insurance rate maps, all structures on slopes for which the start of construction commenced on or after February 4, 1981, or to which substantial improvements have been made after February 4, 1981, shall have adequate drainage paths to guide floodwaters around and away from the structure.

- a. In AO Zones, as designated on the Flood Insurance Rate Map, the minimum flood protection elevation for all new construction and substantial improvements of residential structures shall be equal to or above the number of feet as specified on the Flood Insurance Rate Map plus one foot (or a minimum of ~~2.0~~three feet, if no number is specified) above the highest adjacent grade to the structure, and the minimum flood protection elevation for all new construction and substantial improvements of nonresidential structures shall (i) be equal to the number of feet as specified in the Flood Insurance Rate Map plus one foot (or a minimum of ~~2.0~~three feet, if no number is specified) above the highest adjacent grade, or (ii) together with attendant utility and sanitary facilities be completely floodproofed so that below the base flood level the structure 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.
- b. In AH Zones, as designated on the Flood Insurance Rate Map, the minimum flood protection elevation for all new construction and substantial improvements of residential structures shall be equal to or above the elevation as specified on the Flood Insurance Rate Map plus one

foot, and the minimum flood protection elevation for all new construction and substantial improvements of nonresidential structures shall (i) be equal to or above the number of feet as specified in the Flood Insurance Rate Map plus one foot, or (ii) together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure 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.

- (14) All encroachments, including fill, new construction, substantial improvements, and other development, within a designated floodway are hereby prohibited unless it has been demonstrated to the reasonable satisfaction of the city engineer through hydrologic and hydraulic analysis performed in accordance with standard engineering practices that the proposed encroachment will not result in any increase in flood levels within the flood plain during the occurrence of a 100-year flood.
- a. No ~~use~~development shall be permitted in the Floodway that would result, individually or collectively, in any increase in the base flood elevation. Consideration of the effects of any development on flood levels shall be based upon the assumption that an equal degree of development would be allowed for all similarly situated lands. Notwithstanding the foregoing sentence, a structure, associated fill, or another potential obstruction owned, operated, or maintained by a local, state or federal governmental entity, whose location in the floodway provides a substantial public benefit, such as bridge embankments, water supply intake structures, and water wells with appurtenant fill, may be allowed if the resulting increase in flood levels is mitigated by purchase of flooding easements or execution of other appropriate agreements with the owners of property on which flooding would be increased.
 - b. No ~~use~~ development shall affect the capacity or conveyance of the channel or floodway of any tributary to the main stream, drainage ditch or any other drainage facility or system.
 - c. ~~Buildings~~Structures, if permitted, shall have a low flood damage potential and shall not be used for human habitation.
 - d. Storage of materials or equipment that are buoyant, flammable, explosive or injurious to human, animal or plant life is prohibited.
 - e. Watercourse alterations or relocations must be designed to maintain the flood carrying capacity within the altered or relocated portion. In addition, such alterations or relocations must be approved by the Department of Natural Resources.
 - g. Pipeline and river crossings shall be buried in the streambed and banks or otherwise sufficiently protected to prevent rupture due to channel degradation and meandering or due to the action of flood flows.
- (15) For any development in the floodplain in Zones A, AE, AH and A1-A30 for which no floodway is delineated, documentation must be provided to the City, in the form and to the extent required by the City Engineer, demonstrating that such

development will not cause a rise of more than one foot in the base flood elevation.

- (16) a. Any addition to a structure or factory-built home (whether or not placed in an existing factory-built home park or subdivision) constructed on or after February 4, 1981, which addition increases the original floor area of the applicable structure or factory-built home by any amount, shall comply with subsections (a) through (e) of subsection 1 of this section.

ab. Any addition constructed on or after February 4, 1981 to a residential building or factory-built home (whether or not placed in an existing factory-built home park or subdivision), which addition increases the original floor area of the applicable structure or factory-built home by any amount, shall have its lowest floor, including basement, elevated equal to or above the minimum floodproofing/flood protection elevation. Machinery and equipment serving the building, such as electric meter and panel box, water heater, and heating, air conditioning and ventilation equipment (including ductwork), shall also be elevated equal to or above the minimum floodproofing/flood protection elevation; and service utilities such as plumbing, electric service, gas service, and water/gas meters must be designed and installed to be watertight and withstand inundation to the minimum floodproofing/flood protection elevation. Elevation of the addition shall be achieved by means of compacted fill or by such other methods, including piers, as the city engineer determines to be adequate to support the structure as well as withstand the various forces and hazards associated with flooding.

be. Any addition constructed on or after February 4, 1981 to a nonresidential building or factory-built home (whether or not placed in an existing factory-built home park or subdivision), which addition increases the original floor area of the applicable structure or factory-built home by any amount, shall have its lowest floor, including basement, elevated equal to or above the minimum floodproofing/flood protection elevation or, ~~together with attendant utility and sanitary systems,~~ shall be floodproofed to such a level. Machinery and equipment serving the building, such as electric meter and panel box, water heater, and heating, air conditioning and ventilation equipment (including ductwork), shall also be elevated or floodproofed equal to or above the minimum floodproofing/flood protection elevation; and service utilities such as plumbing, electric service, gas service, and water/gas meters must be designed and installed to be watertight and withstand inundation to the minimum floodproofing/flood protection elevation. When floodproofing is utilized, a professional engineer registered in the state shall certify that the floodproofing methods used are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the 100-year flood and that the structure, below the minimum floodproofing/flood protection elevation, is watertight with walls substantially impermeable to the passage of water. A record of the certification indicating the specific elevation, in relation to ~~National~~

~~Geodetic~~North American Vertical Datum, to which any additions are floodproofed shall be maintained by the office of the building official.

- (17) Unless otherwise specified in this subsection, development in the floodplain shall result in no net loss of natural floodplain storage, and compensatory storage equal to at least 1.5 times the volume of floodplain storage displaced shall be provided for all development above grade in the floodplain. All required compensatory storage shall be located at a hydraulically equivalent site on the same cross-section or as demonstrated by modeling provided by the applicant and prepared by an engineer licensed in the state of Iowa. For developments that are required to have stormwater detention facilities, the storage volume required to meet the city's stormwater management regulations for the 100-year flood event does not count as credit towards satisfying the compensatory storage requirement.
- a. The following development projects are required to meet a compensatory storage requirement in accordance with this subsection equal to at least 1.0 times the volume of floodplain storage displaced, rather than equal to at least 1.5 times the volume of floodplain storage displaced:
 - i. Projects undertaken wholly within the geographic area mapped by the city engineer and generally described as the Des Moines River floodplain from the centerline of the East University Avenue bridge to a point that is 1,400 feet east of the centerline of the Southeast 14th Street bridge and the Raccoon River floodplain from the centerline of the Southwest 9th Street bridge to the confluence with the Des Moines River.
 - b. The following development projects are not required to meet the compensatory storage requirement unless specifically required by the city engineer after review of the initial certificate of compliance application:
 - i. Minor projects clearly having negligible impact, such as street/parking lot resurfacing/rehabilitation, certain utility infrastructure and appurtenances (e.g. hydrants, poles, manholes, underground pipes), bridge/culvert rehabilitation projects, landscaping, property maintenance, stream rehabilitation, restoration of natural floodplain functions, and minor water quality features which typically pose no increased fill or flood potential and do not inhibit the free flow of water.
 - ii. Flood protection of existing buildings for floodplain volume displaced by the building and within the area of 10 feet adjacent to said building.
- (18) All new ~~buildings~~ structures constructed on fill in the floodplain must be constructed on properly designed and compacted fill that has appropriate protection from erosion and scour. Compacted fill must be placed, compacted, and sloped to minimize shifting, slumping, and erosion during the rise and fall of flood water. Where shallow foundations will bear on compacted fill material, a geotechnical investigation report must be prepared in accordance with the International Building Code, published by the International Code Council, as adopted and amended in chapter 26 of this municipal code. Records of soil testing

and inspection must be provided to the city prior to prior to obtaining a certificate of occupancy.

Section 2. This ordinance shall be in full force and effect from and after its passage and publication as provided by law.

FORM APPROVED:

/s/ Glenna K. Frank
Glenna K. Frank
Assistant City Attorney