

Bill No. 95-13

Ordinance No. 95-12

AN ORDINANCE OF THE CITY OF NEOSHO, MISSOURI, AMENDING THE CODE OF ORDINANCES BY ADDING A SECTION TO ESTABLISH A STORMWATER RUNOFF MANAGEMENT SYSTEM.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, AS FOLLOWS:

SECTION ONE: That the Code of Ordinances of the City of Neosho, Missouri, be amended by adding a section to read as follows:

PREFACE

A STORMWATER RUNOFF MANAGEMENT ORDINANCE
COMMENTARY

Secondary System (Area outside Flood Insurance Program Part II)

I. Background.

Concentrated rainfall over a very short period of time has created disastrous flooding on Neosho area streams in the past. Such damage, much of which was caused by overloaded storm drainage facilities, awakened local government officials to the realization that improved stormwater management methods (along with floodplain management) must be implemented in the future to prevent or at least minimize flooding in urbanized and urbanizing areas of the City. The past flooding thus provided the impetus for the establishment of a model stormwater runoff management ordinance for the City of Neosho.

The City of Neosho has sought out a MODEL STORMWATER RUNOFF MANAGEMENT ORDINANCE for its use. The local SCS office has also been of great assistance

Care should be taken to use a mix of management techniques to control runoff. If one type of technique is used exclusively, such as detention, eventually a watershed could be developed with controls all designed to the same safety level as specified in the ordinance. An extraordinary event could then trigger a far more disastrous situation because all safety valves would be in use simultaneously.

In this commentary the purposes and functions of the ordinance will be briefly explained. Such a brief discussion is necessary given the complexity of the various engineering, legal and other concepts involved in stormwater runoff management.

As the stormwater management system is developed, cognizance should be given to any risks which may be created by the system's physical structures, and efforts should be taken to protect against those risks and to educate the public to the risks.

III. A Stormwater Runoff Management Ordinance: A Brief Review.

This ordinance would require persons proposing to develop land to submit for approval stormwater runoff management plans detailing how stormwater runoff will be managed or controlled. Drainage permits would have to be obtained prior to undertaking "development," which is broadly defined in the ordinance. The term, "development," means any change of land use or any improvement on any parcel of land.

Article II of the ordinance establishes the stormwater runoff management system which is composed of various elements. The primary system of stormwater management is the regulatory floodplain system established pursuant to the Nation Flood Insurance Program. The secondary system is composed of all watercourses and drainage facilities that are not a part of the primary system. This ordinance is designed to work in conjunction with the national floodplain management program.

The stormwater management system also includes management controls and management practices. Management controls are those features of or areas within the secondary system that require direct land use controls in order to maintain or protect the operation of stormwater management facilities such as detention basins or open channels.

Management practices are approved methods of handling stormwater runoff. Persons developing land may utilize detention basins, rooftop or parking lot storage, open channels, drainage swales, streets, curbs and gutters, and enclosed conveyance systems to manage stormwater runoff. Other approved methods may be utilized if the requirements of this ordinance are complied with.

Section 2.6 of this ordinance makes it clear that stormwater management is both a public and private responsibility. The governing jurisdiction, in addition to reviewing and approving stormwater management plans, is responsible for the operation and maintenance of stormwater management facilities owned by the public.

Each private developer of land has the responsibility to manage stormwater runoff on its property to ensure proper drainage and control of runoff both during and after construction. Each developer also has the duty to maintain and operate any on-site stormwater management facilities which are not dedicated to and accepted for maintenance by the public or to transmit such responsibility to subsequent owners of the land through covenants.

Maintenance of facilities provided for under this ordinance should also be of concern, and thought should be given to the added burden which will be placed on available public operating funds if such facilities are accepted for maintenance by the governing body. In adopting this ordinance, it is considered essential that the governing body adopt policies which will define and assign responsibility for the perpetual maintenance of all storm drainage facilities, such as dedication of such facilities to the City; the formation of homeowners'

associations or other entity charged with maintenance responsibilities; or a combination of the above.

Article III of the this ordinance details the procedure for the submission, review and approval of stormwater management plans for individual land developments. This article makes it clear that any land developments which might increase the quantity and rate of stormwater runoff emanating from the proposed development site must have the prior approval of the City Building Inspector. The Inspectors' approval or disapproval is based on a stormwater management plan for the proposed development site submitted by the developer in accordance with Article III.

Article III is applicable to any "development" as defined in this ordinance. Thus, the builder of a single-family home would have to submit a plan in the same manner as the developer of a 100-unit subdivision or a shopping center. However, according to the language of section 1.3 and 3.1 of this ordinance the City Inspector could determine that a small scale development, such as a one single-family home, would not substantially increase the quantity and rate of stormwater emanating from the proposed site. In this fashion, the small builder might be exempted from the provisions of Article III. It is urged, however, that no development be exempt from the design criteria and performance standards of the model ordinance.

Article IV of this ordinance establishes design criteria and performance standards for stormwater management. The design of stormwater management systems can utilize various methodologies with the concurrence of the City Building Inspector. Such flexibility is desirable because no one method or solution is possible for all areas. Certain methods may be desirable for assessing small sites with simple drainage patterns, but may be inappropriate for larger sites with more complex patterns.

It should be noted that the design criteria adopted by the Kansas City Metropolitan Chapter of the American public Works Association, 1973 Edition, Sections 5100 to 5112, as amended, governs the design of enclosed stormwater systems and open channels. With respect to other stormwater management facilities no specific set of design criteria is preferred. However, with respect to detention, the most current issue of Practices in Detention of Urban Stormwater Runoff published by the National Chapter of the American Public Works association is recognized as an important source of information regarding the design of detention facilities. Likewise, Technical Release No. 55, Urban Hydrology for Small Watersheds, published by the U.S. Department of Agriculture, Soil Conservation Service, is a significant source of knowledge regarding stormwater management, which should be consulted.

It is important to note that no single management system approach is required or preferred. Once it is determined that the proposed development will increase stormwater runoff and/or cause downstream flooding during the 100-year storm, the developer with the approval of the City Building Inspector, may utilize a number of approaches to prevent or minimize the problem. Downstream improvements may be

undertaken to deal with the situation. Alternatively, detention storage may be utilized and the requirements of the model ordinance will govern.

Article V sets forth requirements with respect to performance assurances, maintenance assurances, and drainage permits. Performance bond, cash escrow, certified check or other acceptable forms of security are required to guarantee completion of stormwater management improvements in accordance with approved stormwater management plans.

Maintenance of stormwater improvements is vitally important and therefore this ordinance requires a maintenance agreement. The maintenance agreement between the developer and the governing body would provide for perpetual maintenance of stormwater control facilities. A two-year maintenance bond against defect in workmanship may also be required for stormwater control improvements dedicated to and accepted by the public.

As noted earlier, land development cannot occur until a final stormwater management plan is approved. Upon such approval a drainage permit would be issued to the developer, provided that performance and maintenance guarantees have been provided.

Articles VI and VII deal with enforcement and general provisions, respectively. Most important here are the inspection and remedial work requirements of Article VI and the appeal procedures of Article VII. Section 6.3 provides that the City Building Inspector is responsible for inspecting stormwater improvement to make sure that they are completed in accordance with approved stormwater management plans and drainage permits. If through inspection it is determined that work is not in substantial compliance with such approvals, the City Building Inspector must require that remedial work be undertaken. Drainage permits may be revoked and stop work orders issued if remedial work is not completed as required.

Among the general provisions is an appeal procedure which would enable aggrieved persons to appeal to a Technical Review Committee (TRC). The TRC would be composed of three persons knowledgeable of hydrology, geology, civil engineering, environmental science and/or physical planning. The committee would participate in the review of appeals from decisions of the City Building Inspector. The TRC would serve in an advisory capacity. It would not be empowered to overrule the decision of the City Building Inspector. The City Building Inspector could reaffirm or modify his/her decision in light of the findings and recommendations of the TRC.

IV A Recommendation

Because every parcel of land is part of a larger watershed, the optimum stormwater runoff management solution for each development project would be based on, and supportive of, a plan for its entire drainage basin. It is recommended that the City undertake the development of a master drainage plan for the city.

A STORMWATER RUNOFF MANAGEMENT ORDINANCE

An ordinance adopting regulations designed to lessen or avoid hazards to persons and property caused by increased stormwater runoff or by obstruction of drainage, and to otherwise promote the public health, safety, and general welfare, and to supplement existing BOCA and city codes with specific regulation contained in "Neosho Stormwater Runoff Management Handbook" amended as needed.

ARTICLE I

INTRODUCTORY PROVISIONS

- 1.1 Title - These regulations shall hereafter be known, cited and referred to as the "Stormwater Management Regulations" of the City of Neosho.
 - 1.2 Authority - These regulations are adopted pursuant to the power and authority vested in the Neosho City Council by chapter {89} of revised statutes of State of Missouri, and other applicable laws and statutes of the State of Missouri.
 - 1.3 Applicability - Any person, firm, corporation or business proposing to construct buildings or develop land equal to/or greater than 10,000 square feet in the City of Neosho shall apply to the City Building Inspector for approval of a Stormwater Management plan and issuance of a drainage permit as specified in these regulations. Section 4.2A shall apply to all developments and a drainage permit must be obtained or exemption given by City Building Inspector before getting a building permit. This ordinance does not replace any other City and Subdivision ordinances. No land shall be developed except upon issuance of such permit or exception granted.
- Purpose - In order to promote the public health, safety, and general welfare of the citizens of Neosho, these Stormwater Management Regulations are hereby enacted for the general purpose of assuring the proper balance between man's use of land and the preservation of a safe and beneficial environment. More specifically, the provisions of these regulations, as amended from time to time, are intended to (1) reduce property damage and human suffering and (2) to minimize the hazards of person injury and loss of life due to flooding, to be accomplished through the approval of Stormwater Management Plans pursuant to the provisions of these regulations, which:
- (A) establish the primary and secondary stormwater management systems,
 - (B) define and establish stormwater management practices and use restrictions,
 - (C) establish guidelines for handling increases in volume and peak discharges of runoff, and
 - (D) establish a technical review committee to review decisions of the City Building Inspector.

1.5 Definitions - For the purpose of this ordinance certain terms and words shall be used, interpreted and defined as set forth in this section. Unless the context clearly indicates to the contrary, words used in the present tense include the future tense; words used in the singular shall include the plural, and vice-versa; the words, "these regulations," mean "this ordinance;" the word, "person," includes corporation, partnership, and unincorporated association of persons; and the word, "shall," is always mandatory.

(A) Base Flood - the flood having a one percent chance of being equalled or exceeded in any given year, i.e., the one hundred year flood.

(B) Bond - any form of security for the completion or performance of a Stormwater Management Plan or the maintenance of drainage improvements, including surety bond, collateral, property or instrument of credit, or escrow deposit in an amount and form satisfactory to the governing body.

(C) Building - any structure built for the support, shelter or enclosure of persons, animals, chattels, or movable property of any kind.

(D) Channel - a watercourse of perceptible extent which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water.

(E) Detention basins - any man-made area which serves as a means of controlling and temporarily storing stormwater runoff.

(F) Detention Storage - the temporary detaining or storage of stormwater in reservoirs, on rooftops, on parking lots and other areas under pre-determined and controlled conditions.

(G) Development - any change of land use or improvement on any parcel of land.

(H) Differential Runoff - the volume and rate of flow of stormwater runoff discharged from a parcel of land or drainage area which is or will be greater than that volume and rate which pertained prior to proposed development or redevelopment.

(I) Drainage Permit - a permit issued by the City Building Inspector upon approval of a Final Stormwater Management Plan.

(J) Dry Bottom Basin - a facility designed for the temporary storage of stormwater runoff.

(K) Easement - authorization by a property owner for use by another party or parties of all or any portion of his/her land for a specified purpose.

(L) Floodplain - a land area adjoining a river, stream, watercourse, or lake which is likely to be flooded.

(M) Floodway - 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 a designated height.

(N) Freeboard - a factor of safety expressed as the difference in elevation between the top of the detention basin dam and the design surface water flow elevation.

(O) Habitable Dwelling Unit - a dwelling unit intended for and suitable for human habitation.

to the secondary system under the provisions of this ordinance. Such controls shall limit any activity which will adversely affect hydraulic function of detention facilities, open channels, drainage swales, or enclosed stormwater conveyance systems.

2.5 Management Practices - The following practices may be utilized upon approval of the City Building Inspector.

(A) Storage - Runoff may be stored in temporary or permanent detention basins, or through rooftop or parking lot ponding, or percolation storage, or by other means in accordance with the design criteria and performance standards set forth in these regulations.

(B) Open Channels - Maximum feasible use shall be made of existing drainageways, open channels and drainage swales that are designed and coordinated with the design of building lots and streets in accordance with the design criteria and performance standards set forth in these regulations.

(C) Streets and Curbs - streets, curbs, and gutters shall be an integral part of the stormwater runoff management system. To the maximum extent possible, drainage systems, street layout and grades, lotting patterns and the location of curbs, inlets and site drainage and overflow swales shall be concurrently designed in accordance with the design criteria and performance standards set forth in these regulations.

(D) Enclosed conveyance Systems - Enclosed conveyance systems consisting of inlets, conduits, and manholes may be used to convey stormwater runoff. Where used, such systems must be designed in accordance with design criteria and performance standards set forth in these regulations.

(E) Other - The stormwater runoff management practices enumerated herein shall not constitute an exclusive listing of available management practices. Other generally accepted practices and methods may be utilized if the purposes, design criteria and minimum performance standards of these regulations are complied with.

2.6 Public and Private Responsibilities Under the Stormwater Management System.

(A) Public Responsibilities:

(1) Administration - The administration of these regulations shall be the responsibility of the City Building Inspector, who shall review and approve Stormwater Management Plans as provided herein.

(2) Operation and Maintenance of Publicly Owned Facilities - The City Public Works Department shall be responsible, during and after construction, for the operation and maintenance of all drainage structures and improved courses which are part of the stormwater runoff management system under public ownership and which are not constructed and maintained by or under the jurisdiction of any state or federal agency.

(B) Private Responsibilities:

(1) Each developer of land within the City of Neosho has the responsibility to provide on the developer's property all approved stormwater runoff management facilities to ensure the adequate drainage and control of stormwater on the developer's property both during and after construction of such facilities.

(2) Each developer or owner has the responsibility and duty before and after construction to properly operate and maintain any on-site stormwater runoff control facility which has not been accepted for maintenance by the public. Such responsibility is to be transmitted to subsequent owners through appropriate covenants.

ARTICLE III

PROCEDURE FOR THE SUBMISSION, REVIEW AND APPROVAL OF STORMWATER RUNOFF MANAGEMENT PLANS

- 3.1 General - No development equal to or greater than 10,000 square feet shall increase the quantity and rate of stormwater emanating from said land areas except in accordance with an approved Stormwater Management Plan as provided in these regulations. The Stormwater Management Plan shall be prepared by a licensed professional engineer in the state where the development occurs. No building permits shall be issued until and unless the Stormwater Management Plan has been approved by the City Building Inspector.
- 3.2 Submission of Preliminary Stormwater Management Plan - The Preliminary Stormwater Management Plan for any proposed development shall contain but not be limited to the following information and data:
 - (A) Topographic map outlining the limits of the contributing area. Topographic maps should be the best available U.S.G.S. 7.5 minute quadrangle topographic maps with a 10' contour interval will be accepted as a minimal requirement;
 - (B) Site plan suitable scale and contour interval, showing the land to be developed and such adjoining land whose topography may affect the layout or drainage patterns for the development;
 - (C) The location of streams and other flood water runoff channels, the extent of flood plains at the established high water elevations, the limits of the floodway, if pertinent, and any additional information, all of which shall be properly identified;
 - (D) The normal shoreline of lakes, ponds, swamps, and detention basins including their flood plains and inflow and outflow structures if such structures exist;
 - (E) The location and calculated flow rates of other existing storm drains, inlets and outfalls;
 - (F) The location and calculated flow rates of any existing storm, sanitary and combined sewers which occur within the proposed project site or adjacent thereto within a distance of approximately 500 feet from the perimeter of said site;
 - (G) The location and observed flow rates of any flowing springs, existing wells or any existing seepage areas as determined by means of a field inspection of the property;
 - (H) General information regarding the type and characteristics of soils which will be encountered within the project;
 - (I) Concepts which will be considered within the development to handle safely all stormwater runoff, including the methods for detention or control of increased stormwater runoff generated by the project development;
 - (J) A general plan showing the extent and nature of the storm drainage facilities which will be planned to serve the proposed

project including preliminary calculations indicating the runoff which must be handled by such facilities, the methods and criteria which have been utilized in calculating such runoff, and basic information regarding the receiving stream channel into which such drainage facilities will discharge;

(K) Calculations supporting the method and capacity needed for safe and temporary storage of increased runoff resulting from the proposed development, if temporary storage is needed;

(L) Basic information regarding the receiving stream or channel into which proposed storm drainage facilities will discharge including the channel location, general cross section, existing downstream culverts and bridges and other waterway openings, any existing detention basins or lakes and other information required to determine, in preliminary form, the effect which the proposed development will have on downstream drainage conditions;

(M) A general plan indicating the exterior perimeter of the site, the general development proposed for the project, and an indication by means of rough contours showing the terrain after grading of the site.

(*Note 1: The information required in section 3.2 shall be submitted in accordance with existing subdivision plat approval procedures.)

3.3 Review of Preliminary Stormwater Management Plan - Following receipt of the Preliminary Stormwater Management Plan, and information to be included with such plan, the general drainage concepts and planning proposals will be reviewed by the City Building Inspector. A review meeting then will be scheduled by the City Building Inspector with representatives of the developer, including the developer's engineer, to review the overall concepts included in the Preliminary Stormwater Management Plan. The purpose of this review shall be to jointly agree upon an overall Stormwater Management Concept for the proposed development and to review criteria and design parameters which shall apply to final design of the project.

3.4 Final Stormwater Runoff Management Plan - Following review of the Preliminary Stormwater Management Plan and after the concept review meeting and general approval of the preliminary plan by the City Building Inspector, a Final Stormwater Management Plan shall be prepared for each phase of the proposed project as each phase is developed. The final plan shall constitute a refinement of the concepts approved in the Preliminary Stormwater Management Plan with preparation and submittal of the following additional detailed information unless specifically excluded during the preliminary concept review meeting:

(A) A topographic map of the project site and adjacent areas, of suitable scale and contour interval, which shall define the location streams, the extent of flood plans and calculated high water elevations, the shoreline of lakes, ponds, swamps and detention basins including their inflow and outflow structures, if any;

(B) The location and flowline elevation of all existing sanitary, storm or combined sewers, and the location of any existing sewage treatment facilities, which fall within the project limits and within a distance of 250 feet beyond the exterior boundaries of said project;

(C) Detailed determination of runoff anticipated for the entire project site following development indicating design volumes and rates of proposed runoff for each portion of the watershed tributary to the storm drainage system, the calculations used to determine said runoff volumes and rates and restatement of the criteria which have been used by the project engineer throughout his/her calculations;

(D) A refined layout of the proposed stormwater management system including the location and size of all drainage structures, storm sewers, channels and channel sections, detention basins, and analyses regarding the effect said improvements will have upon the receiving channel and its high water elevation;

(E) The slope, type, size and flow calculations for all existing and proposed storm sewers and other waterway;

(F) For all detention basins, if any, a plot or tabulation of storage volumes with corresponding water surface elevations and of the basin outflow rates for those water surface elevations;

(G) For all detention basins, if any, design hydrographs of inflow and outflow for the fifty-year differential runoff from the site under proposed development conditions;

(H) A refined grading plan for the entire project site drawn at a suitable scale and contour interval, or the terrain within the proposed project site including contours of the existing terrain along with contours indicating final grades which will be established during completion of the project. The grading plan shall also include a plotting of the line defining the high water elevation to be expected under one hundred year peak flow conditions produced by the projected development of the contributing watershed based on the best available land use information;

(I) A profile and one or more cross sections of all existing and proposed channels or other open drainage facilities, showing existing conditions and the proposed changes thereto, together with the high water elevations expected from stormwater runoff under the controlled conditions called for by these regulations and the relationship of structures, streets, and other utilities to such channels.

3.5 Review and Approval of Final Stormwater Management Plans

Final Stormwater Management Plans shall be reviewed by the City Building Inspector. If it is determined according to present engineering practice that the proposed development will provide control of stormwater runoff in accordance with the purposes, design criteria and performance standards of these regulations and will not be detrimental to the public health, safety and general welfare, the City Building Inspector shall approve the plan or conditionally approve the plan, setting forth the conditions thereof. If approved, a drainage permit for the development shall be granted.

If it is determined that the proposed development will not control stormwater runoff in accordance with these regulations the City Building Inspector shall disapprove the Final Stormwater Management Plan.

If disapproved, the application and data shall be returned to the applicant for resubmittal.

(*Note 2: Time frames for filing, review and approval of Stormwater Management Plans should coincide with time periods applicable in existing subdivisions regulations.)

ARTICLE IV

DESIGN CRITERIA AND PERFORMANCE STANDARDS

4.1 Design Criteria - Unless otherwise provided, the following rules shall govern the design of improvements with respect to managing stormwater runoff:

(A) Methods of Determining Stormwater Runoff - Developments where the area contributing runoff is twenty-five (25) acres or less shall be designed using the Rational Method of calculating runoff. Developments where the area contributing runoff is four hundred (400) acres or less shall be designed using either the Rational Method of calculating runoff or other methods as approved by the City Building Inspector. For developments where the area contributing runoff is four hundred (400) acres or more, the applicant shall submit a proposed method of evaluation for the calculation of runoff to the City Building Inspector for review and approval. All such development proposals shall be prepared by a licensed professional engineer.

(B) Development Design - Streets, blocks, depth of lots, parks, and other public grounds shall be located and laid out in such a manner as to minimize the velocity of overland flow and allow maximum opportunity for infiltration of stormwater into the ground, and to preserve and utilize existing and planned streams, channels, and detention basins, and include, whenever possible, streams and floodplains within parks and other public grounds.

(C) Enclosed Systems and Open Channels - Unless otherwise provided by the City Building Inspector the most recent Design Criteria for Storm Sewers and Appurtenances, Revised, 1973 prepared by the Kansas City Metropolitan Chapter of the American Public Works Association, Sections 5100 to 5112, inclusive, or as amended, which is by reference made a part hereof as though expressly rewritten and incorporated in the ordinance, shall govern the design of enclosed systems and open channels within the City of Neosho.

(D) Methods of Controlling Downstream Flooding - The City Building Inspector shall determine whether the proposed plan will cause or increase downstream flooding conditions. This determination shall be made on the basis of existing downstream development and an analysis of stormwater runoff with and without the proposed development as set forth in this Article. When the City Building Inspector determines that the proposed development will cause or increase downstream flooding conditions during the 100-year storm, provisions to minimize such flooding conditions shall be included in the design of storm drainage improvements. Such provisions may include downstream improvements and/or the temporary controlled detention of stormwater runoff and its regulated discharge to the downstream storm drainage system.

(E) Downstream Improvements - Improvements to minimize downstream flooding conditions may include, but not be limited to, the construction of dams, dikes, levees and floodwalls; culvert enlargements; and channel clearance and modification projects. Such downstream improvements should be discussed between the City Building Inspector and developer's engineer so that appropriate provisions with respect to planning and implementing said improvements can be made at the earliest possible date.

(F) Detention - Developments also may include temporary detention of stormwater runoff in order to minimize downstream flooding conditions. The following design criteria shall govern the design of temporary detention facilities;

(1) Storage Volume - The volume of storage provided in detention basins shall be sufficient to control the differential runoff from the fifty (50) year storm frequency of twenty-four (24) hour duration. The differential runoff is that volume and rate of flow of stormwater runoff discharged from a parcel of land or drainage area which is or will be greater than that volume and rate which pertained prior to proposed development or redevelopment.

(2) Freeboard - Detention storage areas shall have adequate capacity to contain the storage volume of tributary stormwater runoff with at least two (2) feet of freeboard above the water surface of flow in the emergency spillway in a 50-year storm or as required by State law.

(3) Outlet Control Works -

a. Outlet works shall be designed to limit peak outflow rates from detention storage areas to or below peak flow rates that would have occurred prior to the proposed development.

b. Outlet works shall not include any mechanical components or devices and shall function without requiring attendance or control during operation.

c. Size and hydraulic characteristics shall be such that all water in detention storage is released to the downstream storm sewer systems within 24 hours after the end of the design rainfall.

(4) Spillway - Emergency spillways shall be provided to permit the safe passage of runoff generated from a 50 year storm, or greater, if required by law, or if appropriate because of downstream high hazard, such as loss of life or damage to high value property.

(5) Design Data Submittal - In addition to complete plans, the following design data shall be submitted to the City Building Inspector for all projects including temporary detention facilities:

a. Rainfall hyetograph plotted in units of inches per hour as ordinates, and time from beginning of the storm as abscissas.

b. Runoff hydrograph plotted in units of cubic feet per second runoff rate of the tributary area as ordinates, and time from the start of runoff as abscissas.

c. Area - Capacity curve for proposed detention facility plotted in units of datum elevation as ordinates, and cumulative volume of storage as abscissas.

d. Discharge characteristics curve or outlet works plotted in units of detention facility water surface elevation as ordinates, and discharge rate for cubic feet per second (CFS) as abscissas.

e. Storage capacity - Inflow and outflow curves in units of accumulated volume as ordinates, and time from the start of runoff as abscissas. Curves shall be so arranged that the vertical distance between the accumulated storage and accumulated discharge will indicate the net volume in storage at any point in time. Curves shall be extended to the time required for complete discharge of all runoff stored in the detention facility.

(6) Detention Methods - In addition to the above criteria, the following shall be applicable, depending on the detention alternative(s) selected by the City Building Inspector and the developers engineer.

a. Wet Bottom Basins - For basins designed with permanent pools.

1. Minimum Depths - The minimum normal depth of water before the introduction of excess stormwater shall be four (4) feet.

2. Depth for Fish - If fish are to be used to keep the basin clean, at least one-quarter of the area of the permanent pool must have a minimum depth of eight (8) feet.

3. Facilities for Emptying - For emptying purposes, cleaning or shoreline maintenance, facilities shall be provided or plans prepared for the use of auxiliary equipment to permit emptying and drainage.

b. Dry Bottom Basins - For basins designed to be normally dry.

1. Interior Drainage - Provisions must be incorporated to facilitate interior drainage to outlet structures.

2. Multipurpose features - These shall be designed to serve secondary purposes for recreation, open space or other types of use which will not be adversely affected by occasional or intermittent flooding.

c. Rooftop Storage - Detention storage may be met in total or in part by detention on roofs. Details of such designs, which shall be included in the drainage permit applications, shall include the depth and volume of storage, details of outlet devices and downdrains, elevations of overflow scuppers, design loadings for the roof structure and emergency overflow provisions. Direct connection of roof drains to sanitary sewers is prohibited.

d. Parking lot Storage - Paved parking lots may be designed to provide temporary detention storage of

stormwater on all or a portion of their surfaces. Outlets will be designed so as to slowly empty the stored waters and depths of storage must be limited so as to prevent damage to parked vehicles.

e. Other Storage - All or a portion of the detention storage may also be provided in underground or surface detention facilities, to include basins, tanks, or swales, etc.

4.2 Performance Standards -

A. Stormwater Channel Location - Generally acceptable locations of stormwater runoff channels in the design or any development including subdivision, may include but not be limited to the following:

(1) In a depressed median of a double roadway, street or parkway provided the median is wide enough to permit maximum three (3) to one (1) side slopes.

(2) Centered on lot lines or entirely within the rear yards of a single row of lots or parcels.

(3) In each of the foregoing cases, a drainage easement to facilitate maintenance and design flow shall be provided and shown on the plat. No structures shall be constructed within or across stormwater channels.

(4) The minimum channel shall be designed to handle a 25 year, 24 year storm with a maximum velocity of 5 feet / sec.

B. Storm Sewer Outfall - The storm sewer outfall shall be designed so as to provide adequate protection against downstream erosion and scouring.

C. Lot Lines - Whenever the plans call for the passage and/or storage of floodwater, surface runoff or stormwater along lot lines, the grading of all such lots shall be prescribed and established for the passage and/or storage of waters, and no structure may be erected which will obstruct the flow of stormwater, no fences, shrubbery, or trees planted, or changes made to the prescribed grades and contours of the specified floodwater or stormwater runoff channels.

D. Manholes - All sanitary sewer manholes constructed in a floodplain or in an area designed for the storage or passage of flood or stormwater, shall be provided with either a water-tight manhole cover or be constructed with a rim elevation of a minimum of one (1) foot above the high water elevation of the base flood or the high water elevation of the design storm, whichever is applicable to the specific area.

E. Easements - Permanent easements for the detention and conveyance of stormwater, including easements of access to structures and facilities, shall be dedicated to the City of Neosho.

F. Maintenance - Provisions acceptable to the City of Neosho for perpetual maintenance of detention facilities, outlet works, and appurtenances shall be made, as provided, in section 5.2 of these regulations.

G. Drainage Permits - A drainage permit for projects including detention facilities may be granted by the City Building Inspector only after the Stormwater Management Plan has been approved and

all easements have been dedicated, accepted, and recorded, and all required maintenance assurances and required bonds have been executed, as required in section 5.4 of these regulations.

ARTICLE V

BONDS, MAINTENANCE ASSURANCES, AND DRAINAGE PERMITS

- 5.1 Performance Bonds and Other Assurances for Completion of Stormwater Management Improvements - Upon approval of the final stormwater Management Plan, but before the issuance of drainage permit, the City Building Inspector shall require the applicant to post a performance bond, cash escrow, certified check, or other acceptable form of performance security for the amount of the work to be done pursuant to the approved Stormwater Management Plan.
- 5.2 Maintenance Agreement - A maintenance agreement, approved by the governing body of the City of Neosho, assuring perpetual maintenance of stormwater management improvements shall be agreed upon by the City and the applicant, if the facilities are to be maintained by the developer.
- 5.3 Maintenance Bond - A two-year maintenance bond against defects in workmanship may be required by the City for any portion of the stormwater management improvements dedicated to the public.
- 5.4 Drainage Permits - Upon approval of the Final Stormwater Management Plan and acceptance of the applicant's assurances of performance and maintenance as provided in these regulations, the City Building Inspector shall issue a drainage permit. The drainage permit shall be issued to the applicant who shall then be known and thereafter be referred to as the permittee. The permit shall set forth the terms and conditions of the approved Stormwater Management Plan.
- 5.5 The building inspector may request an engineering review of any permit application on behalf of the city.
- 5.6 Fees - A fee of actual cost of plan review shall be paid to the City for each drainage permit.

ARTICLE VI ENFORCEMENT

- 6.1 General - It shall be the duty of the City Building Inspector to bring to the attention of the City Attorney any violation or lack of compliance herewith.
- 6.2 Violations and Penalties - Violations of the provisions of this ordinance or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with grants of variances or special exceptions) shall constitute a misdemeanor. Any person who violates this ordinance or fails to comply with any of its requirements shall upon conviction thereof be fined not more than five hundred dollars (\$500.00) or imprisoned for not more than ninety (90) days, or both, and in addition shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense.
- 6.3 Inspection - The City Building Inspector shall be responsible for

determining whether the Stormwater Management Plan is in conformance with requirements specified in Article IV, and whether development is proceeding in accordance with the approved drainage permit. Periodic inspection of the development site shall be made by the City Building Inspector. Through such periodic inspections the City Building Inspector shall ensure that the Stormwater Management Plan is properly implemented and that the improvements are maintained.

- 6.4 Remedial Work - If it is determined through inspection that development is not proceeding in accordance with the approved Stormwater Management Plan and drainage permit, the City Building Inspector shall immediately issue written notice to the permittee and the surety of the nature and location of the alleged non-compliance, accompanied by documentary evidence demonstrating non-compliance and specifying what remedial work is necessary to bring the project into compliance. The permittee so notified shall immediately, unless weather conditions or other factors beyond the control of the permittee prevent immediate remedial action and shall complete the remedial work within seventy-two hours or within a reasonable time after receipt of said notice. Upon satisfactory completion of the remedial work the City Building Inspector shall issue a notice of compliance and the development may proceed.
- 6.5 Revocation of Permits; Stop Orders - The City Building Inspector, after giving three days written notice, may revoke a permit issued pursuant to these regulations for any project which is found upon inspection to be in violation of the provisions of these regulations, and for which the permittee has not agreed to undertake remedial work as provided in section 6.4. Drainage permits may also be revoked if remedial work is not completed within the time allowed. Upon revocation of a drainage permit the City Building Inspector shall issue a stop work order. Such stop work order shall be directed to the permittee and he shall immediately notify persons owning the land, the developer, and those person or firms actually performing the physical work of clearing, grading and developing the land. The stop work order shall direct the parties involved to cease and desist all or any portion of the work on the development or a portion thereof which is not in compliance, except such remedial work necessary to bring the project into compliance.

ARTICLE VII GENERAL PROVISIONS

- 7.1 INTERPRETATION, Conflict, and Separability Interpretations -
- (A) Interpretation - In their interpretation and application, the provisions of these regulations shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare.
 - (B) Conflict with Public and Private Provisions -
 - (1) Public Provisions - These regulations are not intended to interfere with, abrogate or annul any other ordinance, rule or regulation, statute or other provision of law. Where any provision of these regulations imposes restrictions different

from those imposed by any other provision of these regulations or any other ordinance, rule or regulation or other provision of law, whichever provisions are more restrictive or impose higher standards, shall control.

(2) Private Provisions - These regulations are not intended to abrogate any easement, covenant or any other private agreement or restriction, provided that where the provisions of these regulations are more restrictive or impose higher standards or regulations than such easement, covenant or other private agreement or restriction, the requirements of these regulations shall govern. Where the provisions of the easement, covenant or private agreement or restriction impose duties and obligations more restrictive, or higher standards than the requirements of these regulations, and such private provisions are inconsistent with these regulations or determinations thereunder, then such private provisions shall be operative and supplemental to these regulations and determinations made hereunder.

C. Separability - If any part or provisions of these regulations or application thereof to any person or circumstances is adjudged invalid by any court of competent jurisdiction, such judgement shall be confined in its operation to that part, provision, or application directly involved in the controversy in which such judgement shall have been rendered and shall not affect or impair the validity of the remainder of these regulations or the application hereof to other person or circumstances. The governing body hereby declares that it would have enacted the remainder of these regulations even without any such part, provision, or application found to be unlawful or invalid.

7.2 Saving Provision - These regulations shall not be construed as abating any action now pending under, or by virtue of, prior existing regulations, or as discontinuing, abating, modifying or altering any penalty accruing or about to accrue, or as affecting the liability of any person, firm or corporation, or as waiving any right of the City under any section or provision existing at the time of adoption of these regulations, or as vacating or annulling any rights obtained by any person, firm or corporation, by lawful action of the City, except as shall be expressly provided for in these regulations.

7.3 Amendments - For the purpose of providing for the public health, safety and general welfare, the governing body may, from time to time, amend the provisions of these regulations.

7.4 Appeals - Any person aggrieved by a decision of the City Building Inspector may appeal any order, requirement, decision or determination first to the Technical Review Committee and then to a court of competent jurisdiction in accordance with the procedures set forth below.

(A) A hearing before the Technical Review Committee may be required within ten (10) days of a final order, requirement, decision or determination of the City Building Inspector. The Technical Review Committee shall consider any information offered by the aggrieved person bearing on the dispute and may recommend to the City Building Inspector an appropriate course of action: either reversal, modification, or confirmation. The City Building

Inspector, who shall be present at the hearing, shall act on the recommendation in a manner consistent with his/her responsibilities under these regulations.

(B) Any person aggrieved by any final decision of the City Building Inspector following review by the Technical Review Committee may seek review by a court of competent jurisdiction in the manner provided by the laws of the State of Missouri.

7.5 The Technical Review Committee - The Technical Review Committee on Stormwater Management, which shall be appointed by the governing body, shall consist of three (3) members from the fields of hydrology, geology, environmental science, civil engineering or physical planning. The Chairman shall be elected by the members of the committee. The committee shall have the following responsibilities:

(A) Participate in the review of appeals as provided in section 7.4 (A) above;

(B) Mediate disputes regarding the interpretation and applicability of the technical provisions of the ordinance, particularly with respect to design criteria and performance standards set forth in Article IV; and

(C) Submit recommendations and findings pertinent to any dispute to the City Building Inspector.

ARTICLE VIII LIABILITY

8.1 Disclaimer of Liability - The performance standards and design criteria set forth herein establish minimum requirements which must be implemented with good engineering practice and workmanship. Use of the requirements contained herein shall not constitute a representation, guarantee, or warranty of any kind by the City, or its officers and employees, of the adequacy or safety of any stormwater management structure or use of land. Nor shall the approval of a Stormwater Management Plan and the issuance of a drainage permit imply that land uses permitted will be free from damages caused by stormwater runoff. The degree of protection required by these regulations is considered reasonable for regulatory purposes and is based on historical records, engineering and scientific methods of study. Larger storms may occur or stormwater runoff heights may be increased by man-made or natural causes. These regulations therefore shall not create liability on the part of the City or any officer with respect to any legislative or administrative decision lawfully made hereunder.

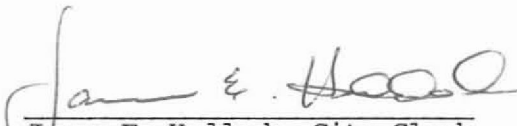
SECTION TWO: All ordinances or parts of ordinances in conflict herewith are hereby repealed.

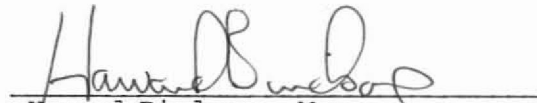
SECTION THREE: This ordinance shall be in full force and effect fifteen (15) days after final passage and approval.

APPROVED after final passage this 7th day of March, 1995.

ATTEST:

CITY COUNCIL, CITY OF NEOSHO


James E. Haddock, City Clerk


Howard Birdsong, Mayor

APPROVED:


Greg Bridges, City Attorney