CHAPTER 32

STORMWATER CONTROL CODE

ARTICLE I – GENERALLY

32-1-1 AUTHORITY AND PURPOSE. This Code is enacted pursuant to the police powers granted to the City by the **Illinois Compiled Statutes 55 ILCS 5/5-1041, 55 ILCS 5/5-1113, 55 ILCS 5/5-15001, and 55 ILCS 5/5-12001**.

The purpose of this Code is to diminish threats to public health and safety, protect property, prevent damage to the environment and promote public welfare by guiding, regulating and controlling the design, construction, use and maintenance of any new development or redevelopment or other activity which disturbs or breaks the topsoil or otherwise results in the movement of earth, and/or changes the stormwater drainage pattern and/or stormwater flows from that which would have occurred if the land had been left in its natural state. This stormwater runoff and resulting soil erosion could result in the inundation of damageable properties, the erosion and destabilization of downstream channels, and the pollution of valuable stream and lake resources. This Code regulates these activities to minimize adverse impacts.

This Code is adopted to accomplish the following objectives:

(A) To assure that new development or redevelopment does not increase the drainage or flood hazards, or create unstable conditions susceptible to soil erosion;

(B) To protect new buildings and major improvements to buildings from flood damage due to increased stormwater runoff and soil erosion;

(C) To protect human life and health from the hazards of increased flooding and soil erosion on a watershed basis;

(D) To lessen the burden on the taxpayer for flood control projects, repairs to flood-damaged public facilities and utilities, correction of channel erosion problems, and flood rescue and relief operations caused by storm water runoff and soil erosion quantities from new development or re-development;

(E) To protect, conserve, and promote the orderly development of land and soil, water, air, animal, and plant resources;

(F) To preserve the natural hydrologic and hydraulic functions of watercourses and flood plains and to protect water quality and aquatic habitats;

(G) To preserve the natural characteristics of stream corridors in order to manage flood and stormwater impacts, improve water and groundwater quality, reduce soil erosion, protect aquatic and riparian habitat, maintain quality forest resources, provide recreational opportunities, provide aesthetic benefits, enhance community and economic development.

32-1-2 OTHER RELEVANT PERMITTING. Before a Development Permit under this Code becomes effective, all required Federal, State, and Local permits will have been officially approved. The acquisition of these permits shall be the sole responsibility of the applicant. These may include but are not limited to Section 404 of the Clean Waters Act, Section 106 of the National Historic Preservation Act, Section 10 of the Rivers and Harbors Act, or permitting required by the Illinois Department of Natural Resources, Office of Water Resources in accordance with the Rivers, Lakes and Streams Act, 615 ILCS, the Soil and Water Conservation Districts Act, 70 ILCS, the Farmland Preservation Act, 505 ILCS the Illinois Groundwater Protection Act, 415 ILCS and the National Pollutant Discharge Elimination System Permit (NPDES) through the Illinois Environmental Protection Agency, Division of Water Pollution Control. Compliance is also required with but not limited to the Subdivision Control Code and the Zoning Code.

32-1-3 APPLICABILITY. This Code applies to all new development or re-development in the City. Except as otherwise provided in this Code, no person, firm or corporation, public or private, the State of Illinois and its agencies or political subdivisions, the United States of America, and its agencies or political subdivisions, any agent, servant, officer or employee of any of the foregoing which meets the

following provisions or is otherwise exempted in this Code, shall commence any development activities without first having obtained a Permit from the Zoning Administrator.

(A) Any new development or re-development contains an area **ten thousand (10,000) or more square feet** of total impervious surface (i.e., streets, roof, patio or parking area or any combination thereof); or

(B) Any land disturbing activity (i.e., clearing, grading, stripping, excavation, fill, or any combination thereof) that affects an area of **ten thousand (10,000) or more square feet**, or that will exceed **one hundred (100) cubic yards**; or

(C) Any land disturbing activity if the activity is within **twenty-five (25) feet** of a river, lake, pond, stream, sinkhole, or wetland; and is done in conjunction with paragraphs (A) and (B) of this Section; or

(D) Any land disturbing activity on the sloping side of the slope disturbance line and is in conjunction with this Section.

32-1-4 DEVELOPMENT PERMIT EXEMPTIONS. A Development Permit shall not be required for the following:

(A) Any new development, re-development or other activity falling below the minimum standards as set forth in **Section 32-1-3**.

(B) The agricultural use of land, including the implementation of conservation measures included in a farm conservation plan approved by the Soil and Water Conservation District, and including the construction of agricultural structures.

(C) The maintenance of any existing stormwater drainage/detention component or structure or any existing soil erosion/sediment control component or structure; including dredging, levee restoration, tree removal or other function which maintains the original design capacities of the above.

(D) The construction of, improvements to, or the maintenance of any street, road, highway or interstate highway performed by any unit of government whose powers grant such authority.

32-1-5 DEVELOPMENT PERMIT. A Development Permit is required for these uses but shall not be subject to the provisions of **Article III**, Stormwater Drainage and Retention.

(A) Any land disturbing activity that is **one (1) acre** (43,560 S.F.) or less; or development of tracts of land where not more than **one (1)** single family dwelling is being erected; or, any lots in a new subdivision of land where the lots front and have their sole access on an existing street or roadway.

32-1-6 EXCEPTIONS. The Zoning Board of Appeals may, in accordance with the following procedures, authorize exceptions to any of the requirements and regulations set forth in this Code:

(A) Application for exception shall be made by a verified petition of the applicant for a Development Permit, stating fully the grounds of the petition and the facts relied upon by the applicant. Such petition shall be filed with the Development Permit application. In order for the petition to be granted, it shall be necessary that the Board of Appeals find all of the following facts with the respect to the land referred to in the application:

(1) That the land is of such shape or size or is affected by such physical conditions or is subject to such title limitations of record, that it is impossible or impractical for the applicant to comply with all of the requirements of this Code;

(2) That the exception is necessary for the preservation and enjoyment of a substantial property right of the applicant; and

(3) That the granting of the exception will not be detrimental to the public welfare, environment or injurious to other property in the vicinity of the subjects property.

(B) Each application for an exception shall be made to the Building and Zoning Administrator. The Administrator will review and transmit recommendations to the Board of Appeals, which shall review such recommendations prior to granting or denying the exception.

(C) The Board of Appeals shall hold a public hearing on each application for exception, within **thirty (30) days** after receiving the application, in the manner by ordinance. Within **thirty (30) days** after public hearing, the Board of Appeals shall either approve the site Development Permit application with the exceptions and conditions it deems necessary or it shall disapprove such Development Permit application and exception application, or it shall take other such action as appropriate.

32-1-7 SEPARABILITY/SEVERABILITY. The provisions and sections of this Code shall be deemed to be separable, and the invalidity of any portion of this Code shall not affect the validity of the remainder.

32-1-8 RESPONSIBILITY. The applicant shall not be relieved of responsibility for damage to persons or property otherwise imposed by law, and the City or its officers or agents will not be made liable for such damage, by (1) the issuance of a Development Permit under this Code, (2) compliance with the provisions of that Development Permit or conditions attached to it by the Building and Zoning Administrator, (3) failure of City Officials to observe or recognize hazardous or unsightly conditions, (4) failure of City Officials to recommend denial or to deny a Development Permit, or (5) exemptions from Development Permit requirements of this Code.

ARTICLE II - DEFINITIONS

32-2-1 DEFINITIONS. For the purposes of this Code certain terms are defined and set forth below:

Adverse Impacts: Any negative impact on plant, soil, air or water resources affecting their beneficial uses including recreation, aesthetics, aquatic habitat, quality, and quantity.

Applicant: Any person, firm, or governmental agency who executes the necessary forms to procure official approval of a development or permit to carry out construction of a new development or re-development from the City.

Base Flood Elevation: The elevation at all locations delineating the level of flooding resulting from the 100-year frequency flood event, which has a **one percent (1%)** chance of occurring in any given year.

Building Permit: A permit issued by the City of Griggsville, Illinois for the construction, erection or alteration of a structure or building and the related ground and surface preparation prior to and after completion of construction, erection or alteration of a structure or building.

Bypass Flows: Stormwater runoff from upstream properties tributary to a property's drainage system but not under its control.

Certify or Certification: Formally attesting that the specific inspections and tests were performed, and that such inspections and tests comply with the applicable requirements of this Code.

Channel: Any defined river, stream, creek, brook, branch, natural or artificial depression, ponded area, on-stream lake or impoundment, karst area (sinkhole), flowage, slough, ditch, conduit, culvert, gully, ravine, wash, or natural or manmade drainage way, which has a definite bed and bank or shoreline, in or into which surface or groundwater flows, either perennially or intermittently.

Channel Modification: Alteration of a channel by changing the physical dimensions or materials of its bed or banks. Channel modification includes damming, riprapping (or other armoring), filling, widening, deepening, straightening, relocating, lining, and significant removal of bottom or woody rooted vegetation. Channel modification does not include the man-made clearing of debris or removal of trash.

Clearing: Any activity which removes the natural vegetative ground cover.

Compensatory Storage: An artificially excavated, hydraulically equivalent volume of storage within the floodplain used to balance the loss of natural flood storage capacity when fill or structure are placed within the floodplain.

Conduit: Any channel, pipe, sewer or culvert used for the conveyance or movement of water, whether open or closed.

Cubic Yard: A **one (1) yard** by **one (1) yard** by **one (1) yard** amount of material in excavation and/or fill.

Detention Basin: A facility constructed or modified to provide for the temporary storage of stormwater runoff and the controlled release by gravity of this runoff at a prescribed rate during and after a flood or storm.

Detention Time: The amount of time stormwater is held within a detention basin.

Development: Any manmade change to real estate or property, including:

(A) The division or subdivision of any duly recorded parcel of property;

(B) Construction, reconstruction or placement of a building or any addition to a building;

(C) Installation of a manufactured home on a site, preparing a site for a manufactured home, or installing a travel trailer on a site for more than **one hundred eighty (180) days** per year;

(D) Construction of roads, bridges, or similar projects;

(E) Redevelopment of a site;

(F) Filling, dredging, grading, clearing, excavating, paving or other non-agricultural alterations of a ground surface;

(G) Storage of materials or deposit of solid or liquid waste;

(H) Any other activity that might alter the magnitude, frequency, direction, or velocity of stormwater flows from a property.

Drainage Plan: A plan, including engineering drawings and supporting calculations, which describes the existing stormwater drainage system and environmental features, including grading, as well as proposed alterations or changes to the drainage system and environment of a property.

Dry Basin: A detention basin designed to drain after temporary storage of stormwater flows and to normally be dry over much of its bottom area.

Erosion: The general process whereby soil or earth is moved by rainfall, flowing water, wind or wave action.

Excavation: Any act by which organic matter, earth, sand, gravel, rock or any other similar material, is cut into, dug, quarried, uncovered, removed, displaced, re-located or bulldozed and shall include the conditions resulting from such actions.

Excess Stormwater Runoff: The volume and rate of flow of stormwater discharged from a new development or re-development which is or will be in excess of that volume and rate which existed before development or re-development.

Existing Grade: The vertical location of the existing ground surface prior to excavation or filling.

Fill: Any act by which earth, sand, gravel, rock, or any other material, is deposited, placed, replaced, pushed, dumped, pulled, transported or moved by man to a new location and shall include the conditions resulting therefrom.

Final Grade: The vertical location of the ground surface after grading work is completed in accordance with the engineering plans.

Flood Fringe: That area as designated by the Federal Emergency Management Agency (FEMA) on either side of the floodway. This area is subject to inundation from the base flood but conveys little or no flow.

Flood Hazard Boundary Map (FHBM): A very generalized map prepared by the Federal Emergency Management Agency (FEMA) which shows only where floodplains are located based on very basic data. FHBM's do not include base flood elevations.

Flood Insurance Rate Map (FIRM): A map prepared by the Federal Emergency Management Agency (FEMA) that depicts the special flood hazard area (SFHA) within a community. This map includes insurance rate zones and regulatory floodplains and may or may not depict regulatory floodways. **(See Chapter 14 of City Code)**

Floodplain: That land adjacent to a body of water with ground surface elevations at or below the base flood or the 100-year frequency flood elevation which is subject to inundation. The floodplain as designated

by the Federal Emergency Management Agency (FEMA) is also known as the Special Flood Hazard Area (SFHA). These areas can be found on the (FIRM), Flood Boundary and Floodway Map, or the Flood Hazard Boundary Map (FHBM) of the community. This area is the collective combination of the regulatory floodway and the flood fringe.

Floodway: The channel and that portion of the floodplain, including on-stream lakes, adjacent to a stream or watercourse which is needed to store and convey the anticipated existing and future 100-year frequency flood discharge with no more than a **0.1 foot** increase in stage due to any loss of flood conveyance or storage and no more than a **ten percent (10%)** increase in velocities. Floodways are designated by FEMA on some Flood Insurance Rate Maps and Flood Boundary and Floodway Maps. However, there are floodways on all streams whether mapped by FEMA or not.

Grading: The excavation or fill or any combination thereof and shall include the conditions resulting from any excavation or fill.

Hydrograph: A graph showing for a given location on a stream or conduit, the flow rate with respect to time.

Hydrograph Method: This method estimates runoff volume and runoff hydrographs for the point of interest by generating hydrographs for individual sub areas, combining them, and routing them through stream lengths and reservoir structures. Factors such as rainfall amount and distribution, runoff curve number, time of concentration, and travel time are included.

Impervious Surface: That area of property that is covered by materials other than soil and vegetation and that has no intended capacity to absorb water, such as parking lots, driveways, sidewalks, patios, tennis courts, roofs and other structures.

Infiltration: The passage or movement of water into the soil surfaces.

Loessal Soil: A sediment, commonly non-stratified and unconsolidated, composed predominately of silt sized particles with accessory clay and sand.

Lot: An individual platted parcel in an approved subdivision.

Major Drainage System: That portion of a drainage system needed to store and convey flows beyond the capacity of the minor drainage system.

Minor Drainage System: That portion of a drainage system designed for the convenience of the public. It consists of street gutters, storm sewers, small open channels, and swales and, where manmade, is to be designed to handle the 2-year runoff event.

Mitigation: Mitigation is when the prescribed controls are not sufficient and additional measures are required to offset the development, including those measures necessary to minimize the negative effects which stormwater drainage and development activities might have on the public health, safety and welfare. Examples of mitigation include, but are not limited to compensatory storage, soil erosion and sedimentation control, and channel restoration.

Modified Rational Method: As described in the Illinois Department of Transportation "Drainage Manual" is based on the principal that the maximum rate of runoff from a given drainage area occurs at that point in time when all parts of the watershed are contributing to the flow. The rainfall generating the peak flow is assumed to be of uniform intensity for the entire watershed with a rainfall duration equal to the time of concentration.

Natural: Conditions resulting from physical, chemical, and biological processes without intervention by man.

Natural Drainage: Channels formed in the existing surface topography of the earth prior to changes made by unnatural causes.

One Hundred-Year Event: A rainfall, runoff, or flood event having a **one percent (1%)** chance of occurring in any given year. A **twenty-four (24) hour** storm duration is assumed unless otherwise noted.

Parcel: All contiguous land in one ownership.

Peak Flow: The maximum rate of flow of water at a given point in a channel or conduit.

Permittee: Any person to whom a building permit is issued.

Person: Any individual, firm or corporation, public or private, the State of Illinois and its agencies or political subdivisions, the United States of America, and its agencies or political subdivisions, and any agent, servant, officer or employee of any of the foregoing.

Positive Drainage: Provision for overland paths for all areas of a property including depressional areas that may also be drained by storm sewer.

Prime Farmland: Prime farmland is land that is best suited to food, feed, forage, fiber and oilseed crops. It may be cropland, pasture, woodland, or other land, but it is not urban and built up land or water areas. It is either used for food or fiber or is available for those uses. The soil qualities, growing season and moisture supply are those needed for a well managed soil to economically produce a sustained high yield of crops. Prime farmland produces the highest yields with minimum inputs of energy and economic resources, and farming it results in the least damage to the environment.

Property: A parcel of real estate.

Retention Basin: A facility designed to completely retain a specified amount of stormwater runoff without release except by means of evaporation, infiltration, emergency bypass or pumping.

Sedimentation: The process that deposits soils, debris, and other materials either on other ground surfaces or in bodies of water or stormwater drainage systems.

Site: A parcel of land, or a contiguous combination thereof, where grading work is performed as a single unified operation.

Sinkhole, (Karst Areas): A Sinkhole or Karst topography is a land surface depression or blind valley which may or may not have surface openings to cavernous underground areas and are the result of water movement through silts and jointed limestone. These conditions make such areas unstable and susceptible to subsidence and surface collapse. Fractures in the limestone may channel runoff water to public or private water supplies, making those sources especially susceptible to groundwater contamination.

Slope Disturbance Line: The line which delineates relatively level building areas from areas where slopes exceed **eight percent (8%)** and where special precautions must be taken.

Stormwater Drainage System: All means, natural and manmade, used for conducting stormwater to, through or from a drainage area to the point of final outlet from a property. The stormwater drainage system includes but is not limited to any of the following: conduits and appurtenance features, canals, channels, ditches, streams, culverts, streets, storm sewers, detention basins, swales and pumping stations.

Stormwater Runoff: The waters derived from melting snow or rain falling within a tributary drainage basin which are in excess of the infiltration capacity of the soils of that basin, which flow over the surface of the ground or are collected in channels or conduits.

Storm Sewer: A closed conduit for conveying collected stormwater.

Stream: Any river, creek, brook, branch, flowage, ravine, or natural or man-made drainage way which has a definite bed and banks or shoreline, in or into which surface or groundwater flows, either perennially or intermittently.

Stripping: Any activity which removes the vegetative surface cover including tree removal, by spraying or clearing, and storage or removal of top soil.

Ten-Year Event: A runoff, rainfall, or flood event having a **ten percent (10%)** chance of occurring in any given year. A **twenty-four (24) hour** storm duration is assumed unless otherwise note.

Time of Concentration: The elapsed time for stormwater to flow from the most hydraulically remote point in a drainage basin to a particular point of interest in that watershed.

Tributary Watershed: All of the land surface area that contributes runoff to a given point.

Two-Year Event: A runoff, rainfall, or flood event having a **fifty percent (50%)** chance of occurring in any given year. A **twenty-four (24) hour** storm duration is assumed unless otherwise noted.

Vacant: Land on which there are no structures or only structures which are secondary to the use or maintenance of the land itself.

Watershed: All land area drained by, or contributing water to, the same stream, creek, ditch, lake, marsh, stormwater facility, groundwater or depressional area.

Wet Basin: A detention basin designed to maintain a permanent pool of water after the temporary storage of stormwater runoff.

Wetlands: Wetlands are defined by regulation as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." For general, but not inclusive locations of designated wetlands refer to mapping prepared jointly by the U.S. Department of Interior, Fish and Wildlife Service and the Illinois Department of Natural Resources, Office of Resource Conservation; National Wetlands Inventory Mapping, 1987. The applicant may be required to provide a field investigation by a qualified wetland delineator.

ARTICLE III - STORMWATER DRAINAGE AND DETENTION

32-3-1 DRAINAGE PLAN SUBMITTAL REQUIREMENTS. Each applicant shall submit the following information, to ensure that the provisions of this Code are met. The submittal shall include sufficient information to evaluate the environmental characteristics of the property, the potential adverse impacts and benefits of the development on water resources both on-site and off-site, and the effectiveness of the proposed drainage plan in managing stormwater runoff, and meet the provisions of **Section 32-1-2**. The applicant shall certify on the drawings that all clearing, grading, drainage, and construction shall be accomplished in strict conformance with the drainage plan. The following information shall be submitted for both existing and proposed property conditions for all new development or re-development.

(A) **Drainage Plan Requirements.** A topographic survey of the property at **two (2) foot** contours unless otherwise specified or approved by the City. If the mapping is compiled using a digital format and the Global Positioning System (GPS), the applicant will provide both paper and digital copies including GPS points.

(B) **Mapping and Descriptions.** An existing drainage and proposed drainage plan, for the property and **one hundred (100) feet** surrounding the property at a scale of not more than **one hundred (100) feet** to **one (1) inch** and including the following:

(1) property boundary, dimensions, and approximate acreage;
(2) building setback lines;
(3) all existing and proposed structures and sizes;
(4) "area in" square feet of existing and proposed impervious surface;
(5) all existing, or proposed easements;
(6) all existing, abandoned, or proposed water or monitoring well head locations;
(7) all sanitary or combined sewer lines and septic systems;
(8) the banks and centerline of streams and channels;
(9) shoreline of lakes, ponds, and detention basins with normal water level elevation;
(10) known farm drains and tiles;
(11) soils classifications;
(12) location, size and slope of stormwater conduits and drainage swales;
(13) depressional storage areas;
(14) detention facilities;
(15) roads, streets and associated stormwater inlets including finished grades;
(16) base flood elevation, flood fringe, and regulatory floodway;
(17) basis of design for the final drainage network components.
(18) a statement giving any applicable engineering assumptions and calculations
(19) a vicinity map showing the relationship of the site to its general surroundings at a scale of not less than **two thousand (2,000) feet** to **one (1) inch** (1:24,000)
(20) title, scale, north arrow, legend, seal of Licensed Professional Engineer, date, and name of person preparing plans.
(21) cross-section data for open channel flow paths and designated overland flow paths;
(22) direction of storm flows;
(23) flow rates and velocities at critical points in the drainage system (may be included in the supporting documentation);
(24) a statement by the design engineer of the drainage system's provision for handling events greater than the 100-year, 24 hour runoff (may be included in the supporting documentation); and,
(25) a statement of certification of all drainage plans, calculations, and supporting data by an Illinois Licensed Professional Engineer.

(C) **Environmental Features.** A depiction of environmental features of the property and immediate vicinity including the following:

(1) the limits of designated regulatory and non-regulatory wetland areas;
(2) the location and limits of known sinkholes (karst areas);
(3) any known designated natural areas, prime farmland; and
(4) any known proposed environmental mitigation features.

32-3-2 MINIMIZATION OF INCREASES IN RUNOFF VOLUMES AND RATES. In the selection of a drainage plan for a new development or re-development, the applicant shall evaluate and implement site design features which minimize the increase in runoff volumes and rates from the site. The applicant's drainage plan submittal shall include evaluations of site design features which are consistent with the following hierarchy:

(A) Preservation of regulatory floodplains, flood prone and wetland areas;
(B) Minimize impervious surfaces on the property, consistent with the needs of the project;
(C) Attenuate flows by use of open vegetated swales and natural depressions and preserves the existing natural stream channel.
(D) Infiltration of runoff on-site;
(E) Provide stormwater retention structures;
(F) Provide wet or wetland detention structures;
(G) Provide dry detention structures; and
(H) Construct storm sewers.

32-3-3 WATER QUALITY AND MULTIPLE USES. The drainage system should be designed to minimize adverse surface and groundwater quality impacts off-site and on the property itself. Detention basins shall incorporate design features to capture stormwater runoff pollutants. When designers propose wet bottom and wetland type designs, all flows from the development shall be routed through the basin (i.e. low flows shall not be bypassed). When it is not practical or feasible to route all of the project's flow to the detention basin, the design of the basin shall compensate for the bypass flow. In cases where detention facilities are practical and the long term maintenance of such facilities are provided for, detention of stormwater shall be promoted throughout the property's drainage system to reduce the volume of stormwater runoff and to reduce the quantity of runoff pollutants.

The drainage system should incorporate multiple uses where practicable. Uses considered compatible with stormwater management include open space, aesthetics, aquatic habitat, recreation (boating, fishing, trails, playing fields), wetlands and water quality mitigation.

32-3-4 DESIGN CRITERIA, STANDARDS, AND METHODS.

(A) **Release Rates.** The drainage system for new developments or redevelopments shall be designed to control the peak rate of discharge from the property for the **two (2) year**, 24-hour and 100-year, 24 hour events to discharge rates at or below those which existed prior to development. Additionally, the discharge from a stormwater detention facility shall not cause an increase in flooding or channel instability downstream when considered in aggregate with other developed properties and downstream drainage capacities.

(1) **Detention Basin Outlet Design.** The detention basin outlet control structure shall be designed to account for observed or anticipated downstream tailwater elevations. The tailwater elevations used in the detention model shall be for the particular storm frequency being routed through the detention basin. An emergency spillway or overflow device shall be provided and set at an elevation equivalent to the 100-year design high water.
(2) **Calculations.** A calculation shall be made to determine the water elevation in the detention basin that would result from a 100-year storm

with the outflow control structure openings blocked. The discharge rate flowing through the emergency spillway shall not exceed the 100-year pre-development flow rate. The top of bank for the detention basin shall be set at least **one (1) foot** above this elevation. The lowest finished floor elevation of adjacent structures shall also be at least **one (1) foot** above the detention basin top of bank.

(B) **Detention Storage Requirements. See Section 32-3-4(A)**.

(C) **Drainage System Design and Evaluation.** The following criteria should be used in evaluating and designing the drainage system. The design will provide capacity to pass the 10-year peak flow rate in the minor drainage system and an overload flow path for flows in excess of the design capacity.

(1) **Design Methodologies.** Detention basin design shall be calculated using SCS TR-55 methods. Basins with drainage areas of **ten (10) acres** or less may be calculated using the Rational Method as approved by the Illinois Department of Transportation. Other applicable methods, i.e. HEC-1, TR-20, SWMM, etc. shall be used for large watersheds.

(2) **Positive Drainage.** Whenever practicable, all developments must be provided an overland flow path that will pass the 100-year, 24 hour event flow at a stage at least **one (1) foot** below the lowest grade, adjacent to a structure, in the vicinity of the flow path. Street ponding and flow depths shall not exceed curb heights.

(D) **Rainfall.** Unless a continuous simulation approach to drainage system hydrology is used, all design rainfall events shall be based on the Illinois State Water Survey's Bulletin 70. The first quartile point rainfall distribution shall be used for the design and analysis of conveyance systems with critical durations less than or equal to **six (6) hours**. The second quartile distribution shall be used for storms with durations greater than **six (6) hours** and less than or equal to **twelve (12) hours**. The third quartile point rainfall distribution shall be used for the design and analysis of detention basins and conveyance system with critical durations greater than **twelve (12)** and less than or equal to **twenty-four (24) hours**. The fourth quartile distribution shall be used in the design and analysis of systems with durations greater than **twenty-four (24) hours**. The first, third, and fourth quartile distributions described by Huff are presented in Table 37 of Bulletin 70. Refer to Table 13 of Bulletin 70 for rainfall depth, duration, and frequency. The NRCS Type II distribution may be used as an alternate to the Huff distributions. The total rainfall value for the design storm shall be adjusted for the "St. Louis Urban Effect" as given in Table 4, Illinois State Water Survey Circular 172.

(E) **Antecedent Moisture.** Average antecedent moisture conditions shall be assumed when calculating runoff curve numbers for use in the SCS TR-55 method.

(F) **Wet Detention Basin Design.** Wet detention basins shall be designed to remove stormwater pollutants, to be safe, to be aesthetically pleasing, and as much as feasible to be available for recreational use.

(1) **Wet Basin Depths.** Wet basins shall be at least **three (3) feet** deep, excluding near-shore banks and safety ledges. If fish habitat is to be provided they shall be at least **eight (8) feet** deep over **twenty-five percent (25%)** of the bottom area to prevent winterkill.

(2) **Wet Basin Shoreline Slopes.** The side slopes of wet basins at the normal pool elevation shall not be steeper than **three to one** (3 to 1 horizontal to vertical). It is recommended that aquatic vegetation be established around the perimeter to provide protection from shoreline erosion. For basins in excess of **five (5) acres**, rip rap shoreline protection shall be provided.

(3) **Permanent Pool Volume.** The permanent pool volume in a wet basin at normal depth shall, at a minimum, be equal to the runoff volume from its watershed for the 2-year, 24-hour event (calculated during dry weather conditions).

(4) **Wet Basin Inlet and Outlet Orientation.** The distance between detention inlets and outlets shall be maximized. Inlets and outlets shall be

at opposite ends of the basin providing that the orientation does not create undue hardship based on topography or other natural constraints.

(G) **Dry Detention Basin Design.** In addition to the other requirements of this Code, dry basins shall be designed to remove stormwater pollutants, to be safe, to be aesthetically pleasing and as much as feasible to be available for multiple uses. Paved low flow channels may be used in a dry basin provided provisions are made to prevent ponding.

(1) **Dry Basin Drainage.** Dry basins shall be designed so that **eighty percent (80%)** of their bottom area shall have standing water no longer than **seventy-two (72) hours** for any runoff event less than the 100-year, 24 hour event. Grading plans shall clearly distinguish the wet portion of the basin bottom. Underdrains directed to the outlet may be used to accomplish this requirement.

(2) **Velocity Dissipation.** Velocity dissipation measures shall be incorporated into dry basin designs to minimize erosion at inlets and outlets and to minimize resuspension of pollutants.

(3) **Dry Basin Inlet and Outlet Orientation.** Shall be the same as **Section 32-3-4(F)(4)**.

(H) **Existing Depressional Areas.** Existing depressional storage volume will be maintained and the volume of detention storage provided to meet the requirements of this Code shall be in addition to existing storage.

(I) **Minimum Detention Outlet Size.** Where a single pipe outlet or orifice plate is to be used to control discharge, it shall have a minimum diameter of **twelve (12) inches** for larger basins. Smaller basins may install a smaller rectangular or v-notch weir to control discharge. If this minimum orifice size permits release rates greater than those specified in this Section, and regional detention is not a practical alternative, outlets, structures such as perforated risers, or flow control orifices shall be used.

(J) **Detention in Flood Plains.** The placement of detention basins within the flood plain is strongly discouraged because of questions about their reliable operation during flood events. However, the stormwater detention requirements of this Code may be fulfilled by providing detention storage within flood fringe areas on the project site provided the following provisions are met as well as compliance with **Section 32-1-2**.

(1) **Detention in Flood Fringe Areas.** The placement of a detention basin in a flood fringe area shall require compensatory storage for **one and one-half (1.5) times** the volume below the base flood elevation occupied by the detention basin including any berms. The release from the detention storage provided shall still be controlled consistent with the requirements of this Section. The applicant shall demonstrate its operation for all stream-flow and flood plain backwater conditions. Excavations for compensatory storage along watercourses shall be opposite or adjacent to the area occupied by detention. All flood plain storage lost below the existing ten-year flood elevation shall be replaced below the existing ten-year elevation. All flood plain storage lost above the existing ten-year flood elevation shall be replaced above the existing ten-year flood elevation. All compensatory storage excavations shall be constructed to drain freely and openly to the watercourse and comply with **Section 32-1-2**.

(2) **Detention on Prime Farmland.** The placement of detention basins shall avoid the utilization of prime farmland. All detention basin construction shall examine potential impacts to adjacent agricultural land and shall address measures that will be implemented to eliminate such impacts and comply with **Section 32-1-2**.

(3) **Detention in Floodways.** Detention basins shall be placed in the floodway only in accordance with **Section 32-3-4(J)**.

(4) **On-Stream Detention.** On-stream detention basins are discouraged but allowable if they provide regional public benefits and if they meet the other provisions of this Code with respect to water quality and control of the 100-

year 24-hour events from the property. Further criteria are presented in **Section 32-3-5** of this Code. If on-stream detention is used in watersheds larger than **one (1) square mile**, the applicant will use hydrographic modeling to demonstrate that the design will not increase the water level for any properties upstream or downstream of the property. Also, impoundment of the stream as part of on-stream detention:

(a) shall not prevent the migration of indigenous fish species, which require access to upstream areas as part of their life cycle, such as for spawning,

(b) shall not cause or contribute to the degradation of water quality or stream aquatic habitat,

(c) shall include a design calling for gradual bank slopes, appropriate bank stabilization measures, and a pre-sedimentation basin,

(d) shall not involve any stream channelization or the filling of wetlands,

(e) shall require the implementation of an effective non-point source management program throughout the upstream watershed which shall include as a minimum: runoff reduction "Best Management Practices" (BMP's) consistent with **Section 32-3-2**; 2 year, 24 hour detention/sedimentation basins for all development consistent with this Section.

(f) shall not occur downstream of a wastewater discharge, and

(g) shall not contribute to the duration or flood frequency of any adjacent land.

(h) shall comply with **Section 32-1-2**.

(K) **Drainage Into Wetlands, Rivers, Streams, Lakes, Ponds, and Depressional Storage Areas.** Wetlands, lakes, ponds and depressional storage areas shall be protected from damaging modifications and adverse changes in runoff quality and quantity associated with land developments. In addition to the other requirements of this Code, the following requirements shall be met for all developments whose drainage flows into wetlands, rivers, lakes, ponds or depressional storage areas:

(1) **Detention in Wetlands, Rivers, Streams, Lakes, Ponds or Depressional Storage Areas.** Existing wetlands, rivers, lakes, ponds or depressional storage areas shall not be modified for the purposes of stormwater detention unless it is demonstrated that the proposed modifications will maintain or improve its habitat and ability to perform beneficial functions and shall comply with **Section 32-1-2**. Existing storage and release rate characteristics of wetlands, rivers, lakes, ponds or depressional storage areas shall be maintained and the volume of detention storage provided to meet the requirements of this Section shall be in addition to this existing storage.

(2) **Sediment Control.** The existing wetlands, rivers, lakes, ponds, or depressional storage areas shall be protected during construction and as further regulated in **Article IV** of this Code.

(3) **Alteration of Drainage Patterns.** Site drainage patterns shall not be altered to substantially decrease or increase the existing area tributary to the wetlands, rivers, lakes, ponds or depressional storage areas.

(4) **Detention/Sedimentation.** All runoff from the development shall be routed through a preliminary detention/ sedimentation basin designed to capture the two-year, 24-hour event and hold it for at least **twenty-four (24) hours**, before being discharged to the wetland, river, lake, pond, or depressional storage area. This basin shall be constructed before property grading begins and shall be maintained throughout the construction process. In addition, the drainage hierarchy defined in **Section 32-3-1** should be followed to minimize runoff volumes and rates being discharged to the wetland, river, stream, lake, pond, or depressional storage area and as further regulated in and **Article II**

of this Code.

(5) **Loessal Soils.** Care must be taken to avoid open flow discharges of stormwater over silt (loessal) soils due to high potential for erosion.

(6) **Sinkholes, Karst Area.** The following requirements apply for new developments or redevelopments where sinkholes are determined to be present:

(a) A stormwater detention basin shall not be placed in or over a sinkhole.

(b) Stormwater detention basins shall not be located closer than **one hundred (100) feet** from the rim of a sinkhole.

(c) The outflow from a stormwater detention basin, channel, ditch or any stormwater runoff generated as a result of a new development or redevelopment shall not empty into or be directed, redirected by any means into or through any sinkhole.

(d) If, after the review of the stormwater drainage plan, the Building and Zoning Administrator may determine that more detailed information is required, a sinkhole evaluation may be required. A sinkhole evaluation which addresses the geologic, engineering and environmental factors resulting from a new development or redevelopment be performed by a professional with experience and expertise in karst topography, whom shall certify the results of the evaluation. This evaluation shall be the responsibility of the applicant and performed at no cost to the City. After a review of this evaluation and with the consultation of the Pike County Soil and Water Conservation District, the Building and Zoning Administrator may either approve or disapprove the drainage plan as submitted.

(e) Whenever a new sinkhole appears or it becomes apparent that the sinkhole has not yet been identified, it shall be reported to the County Soil and Water Conservation District.

(f) Shall comply with **Section 32-1-2**.

(L) **Street Detention, Parking Lot Detention, and Culvert Drainage.**

(1) **Street Detention.** If streets are to be used as part of the minor or major drainage system, ponding depths shall not exceed curb heights and shall not remain flooded for more than **eight (8) hours** for any event less than or equal to the 100-year, 24 hour event.

(2) **Parking Lot Detention.** The maximum stormwater ponding depth in any parking area shall not exceed **six (6) inches** for more than **four (4) hours**.

(3) **Culvert, Road and Driveway Crossings.** Sizing of culvert crossings shall consider entrance and exit losses as well as tailwater conditions on the culvert.

(M) **Infiltration Practices.** To effectively reduce runoff volumes, infiltration practices including basins, trenches, and porous pavement should be located in hydrologic soil groups "A" and "B" as designated by the USDA Natural Resources Conservation Service. Infiltration basins and trenches designed to re-charge groundwater shall not be located within **seventy-five (75) feet** of a water supply well or building foundation and comply with **Section 32-1-2**. A sediment settling basin shall be provided to remove coarse sediment from stormwater flows before they reach infiltration basins or trenches. Stormwater shall not be allowed to stand more than **seventy-two (72) hours** over **eighty percent (80%)** of the dry basin's bottom area for the maximum design event to be ex-filtrated. The bottom of infiltration basins or trenches shall be a minimum of **four (4) feet** above the seasonally high groundwater and bedrock level. Engineering calculations demonstrating infiltration rates shall be included with the application.

(1) **Vegetated Filter Strips and Swales.** To effectively filter stormwater pollutants and promote infiltration of runoff, sites should be designed to maximize the use of vegetated filter strips and swales. Whenever practicable, runoff from impervious surfaces should be directed onto filter

strips and swales comprised of native grasses and forbs before being routed to a storm sewer or detention basin.

(N) **Safety Considerations.** The drainage system components, especially all detention basins, shall be designed to protect the safety of any children or adults coming in contact with the system during runoff events and shall comply with **Section 32-1-2**.

(1) **Side Slopes.** The side slopes of all detention basins at 100-year, 24-hour capacity shall be as level as practicable to prevent accidental falls into the basin and for stability and ease of maintenance. Side slopes of detention basins and open channels shall not be steeper than three (3) to one (1) (horizontal to vertical).

(2) **Safety Ledge.** All wet detention basins shall have a level safety ledge at least **four (4) feet** in width **two and one-half (2.5)** to **three (3) feet** below the normal water depth or must be protected by an enclosed fence, at least **forty-eight (48) inches** in height.

(3) **Velocity.** Velocities throughout the surface drainage system shall be controlled to safe levels taking into consideration rates and depths of flow.

(4) **Overflow Structures. See 32-3-4(A)(1)**.

(O) **Maintenance Considerations.** The stormwater drainage system shall be designed to minimize and facilitate maintenance. Turfed side slopes shall be designed to allow lawn-mowing equipment to easily negotiate them. Wet basins shall be provided with alternate outflows which can be used to completely drain the pool for sediment removal. Pumping may be considered if drainage by gravity is not feasible. Pre-sedimentation basins shall be included, where feasible, for localizing sediment deposition and removal. Site access for heavy equipment shall be provided.

32-3-5 ACCOMMODATING FLOWS FROM UPSTREAM TRIBUTARY AREAS. Stormwater runoff from areas tributary to the property shall be considered in the design of the property's drainage system. Whenever practicable, flows from upstream areas that are not to be detained should be routed around the basin being provided for the site being developed.

(A) **Upstream Areas Not Meeting Code Requirements.** When there are areas not meeting the storage and release rates of this Code, tributary to the applicant's property, regionalized detention on the applicant's property may be explored by the applicant or the City. When it is deemed beneficial by the City or the Applicant to explore such a design, the following steps shall be followed:

(1) The applicant shall compute the storage volume needed for his property using the release rates of **Section 32-3-4**, the applicant's property area, and the procedures described in **Section 32-3-3**.

(2) Areas tributary to the applicant's property, not meeting the storage and release rate requirements of this Code, shall be identified.

(3) Using the areas determined above plus the applicant's property area, total storage needed for the combined properties shall be computed.

Allowable release rates shall be computed using the combined property areas. Storage shall be computed as described in **Section 32-3-4**. If tributary areas are not developed, a reasonable fully developed land cover, based on local zoning, shall be used for the purposes of computing storage.

Once the necessary combined storage is computed, the City may choose to pay for over-sizing the applicant's detention basin to accommodate the regional flows. The applicant's responsibility will be limited to the storage for his property as computed above. If regional storage is selected by the City, then the design produced in **Section 32-3-3** shall be implemented. If regional storage is rejected by the City, the applicant shall bypass all tributary area flows around the applicant's basin whenever practicable. If the applicant must route upstream flows through his basin and the upstream areas exceed **one (1) square mile** in size, the applicant must meet the provision of **Section 32-3-5(B)** for on-stream basins.

(B) **Upstream Areas Meeting Code Requirements.** When there are areas which meet the storage and release rate requirements of this Code, tributary to the applicant's property, the upstream flows shall be bypassed around the applicant's detention basin if this is the only practicable alternative. Storage needed for the applicant's property shall be computed as described in **Section 32-3-5(A)**. However, if the City decides to route tributary area flows through an applicant's basin, the final

design stormwater releases shall be based on the combined total of the applicant's property plus tributary areas. It must be shown that at no time will the release rate from the combined property exceed the allowable release rate for applicant's property alone.

32-3-6 EARLY COMPLETION OF DETENTION FACILITIES. Where detention, retention, or depressional storage areas are to be used as part of the drainage system for a property, they shall be constructed as the first element of the initial earthwork program. Any eroded sediment captured in these facilities shall be removed by the applicant on a regular basis and before project completion in order to maintain the design volume of the facilities.

ARTICLE IV - SOIL EROSION AND SEDIMENT CONTROL

32-4-1 FINDINGS. The City hereby finds that:

(A) The soil types found in the City are susceptible to erosion and if left unprotected could cause severe loss of soil with resultant damage to property;

(B) The topography of the City contains areas with steep slopes upon which, if clearing of trees and/or inappropriate construction takes place, could result in severe erosion and slope stability problems which could result in damage to property;

(C) Excessive quantities of soil may erode from areas undergoing development for certain non-agricultural uses including but not limited to the construction of dwelling units, commercial buildings and industrial plants, the building of roads and highways, the modification of stream channels and drainage ways, and the creation of recreational facilities;

(D) The washing, blowing, and falling of eroded soil across and upon roadways endangers the health and safety of users thereof, by decreasing vision and reducing traction of road vehicles;

(E) Soil erosion necessitates the costly repairing of gullies, washed out fills, and embankments;

(F) Sediment from soil erosion tends to clog sewers and ditches and to pollute and silt rivers, streams, lakes, sinkholes, wetlands, and reservoirs;

(G) Sediment limits the use of water and waterways for most beneficial purposes, promotes the growth of undesirable aquatic weeds, destroys fish and other desirable aquatic life, and is costly and difficult to remove; and

(H) Sediment reduces the channel capacity of waterways and the storage capacity of flood plains and natural depressions, resulting in increased chances of flooding at risk to public health and safety.

32-4-2 GENERAL PRINCIPLES. It is the objective of this Code to control soil erosion and sedimentation caused by development activities, including clearing, grading, stripping, excavating, and filling of land, in the City. Measures taken to control soil erosion and off-site sediment runoff shall be adequate to assure that sediment is not transported from the site by a storm event of ten-year, 24 hour frequency or less. The following principles shall apply to all new development or redevelopment activities within the City and to the preparation of the submissions required under **Section 32-4-3** of this Code.

(A) New development or redevelopment shall be related to the topography and soils of the site so as to create the least potential for erosion. Areas of steep slopes greater than **thirty-three percent (33%)** where high cuts and fills may be required are to be avoided wherever possible, and natural contours should be followed as closely as possible.

(B) Natural vegetation shall be retained and protected wherever possible. Areas immediately adjacent to natural watercourses, lakes, ponds, sinkholes, and wetlands are to be left undisturbed wherever possible. Temporary crossings of watercourses, when permitted, must include appropriate stabilization measures.

(C) Special precautions shall be taken to prevent damages resultant from any necessary development activity within or adjacent to any stream, lake, pond, sinkhole or wetland. Preventive measures shall reflect the sensitivity of these areas to erosion and sedimentation.

(D) The smallest practical area of land should be exposed for the shortest practical time during development.

(E) Sediment basins or traps, filter barriers, diversions, and any other appropriate sediment or runoff control measures shall be installed prior to site clearing and grading and maintained to remove sediment from run-off waters from land undergoing development.

(F) The selection of erosion and sediment control measures shall be based on assessment of the probable frequency of climatic and other events likely to contribute to erosion, and on evaluation of the risks, costs, and benefits involved.

(G) In the design of erosion control facilities and practices, aesthetics and the requirements of continuing maintenance must be considered.

(H) Provision shall be made to accommodate the increased run-off caused by changed soil and surface conditions during and after development. Drainage ways should be designed so that their final gradients and the resultant velocities and rates of discharge will not create additional erosion on-site or downstream.

(I) Permanent vegetation and structures shall be installed and functional as soon as practical during development.

(J) Those areas being converted from agricultural purposes to other land uses shall be vegetated with an appropriate protective cover prior to development.

(K) All waste generated as a result of site development activity shall be properly disposed of and shall be prevented from being carried off the site by either wind or water.

(L) All construction sites shall provide measures to prevent sediment from being tracked onto public or private roadways.

(M) All temporary soil erosion and sediment control practices shall be maintained to function as intended until the contributing drainage area has been permanently stabilized at which time they shall be removed.

32-4-3 EROSION AND SEDIMENT CONTROL PLAN SUBMITTAL REQUIREMENTS. Each applicant shall submit the information depending on development size, as regulated to ensure that the provisions of this Code are met. The submittal shall include sufficient information to evaluate the environmental characteristics of the property, the potential adverse impacts of the development related to erosion both on-site and off-site, and the effectiveness of the proposed erosion and sediment control plan in reducing sediment loss and meet the provisions of **Section 32-1-2**. The applicant shall certify on the drawing that all clearing, grading, drainage, and construction shall be accomplished in strict conformance with the erosion and sediment control plan. The following information shall be submitted for both existing and proposed property conditions; new developments or re-developments meeting the requirements of **Section 32-1-3**.

(A) **Erosion and Sediment Control Plan Requirements.** Shall meet the requirements of **Section 32-3-1(A)**, **Section 32-3-1(B)**, and **Section 32-1-1**.

(B) **Mapping and Descriptions.** The existing and proposed erosion and sediment control features of the property and immediate vicinity including:

(1) As required in **Section 32-3-1(A)**, **Section 32-3-1(B)**, and **Section 32-3-1(C)**;

(2) Location of the slope disturbance line;

(3) Location and description of the erosion and sediment control measures to be employed during construction;

(4) For any structures proposed to be located on the slope side of the slope disturbance line the map shall include the limits of disturbance including tree removal, erosion and sediment control measures during construction, cross section view of any proposed cut or fill, erosion and sediment control measures during construction, details of method(s) proposed for providing slope stability, permanent stormwater control measures, and permanent erosion and sediment control measures all being certified by a registered professional engineer or a "Certified Professional Erosion Control Specialist."

(5) The predominant soil types on the site, their location, and their limitations for the proposed use as defined by the USDA Natural Resources Conservation Service.

(6) The proposed use of the site, including present and planned development, areas of clearing, stripping, grading, excavation and filling; proposed contours, finished grades, and street profiles; the stormwater plan as required in **Article II**; kinds and locations of utilities, areas and acreages proposed to be paved, sodded or seeded, vegetatively stabilized, or left undisturbed; and the location of specimen trees over **eighteen (18) inches** in diameter and their type.

(7) The erosion and sediment control plan showing all measures necessary to meet the requirements of this Code throughout all phases of construction and those remaining permanently after completion of the development of the site, including:

(a) Location and description, including standard details, of all sediment control measures, runoff control measures, including diversions, waterways and outlets, and design specifics of sediment basins and traps including outlet details.

(b) Location and description of all soil stabilization and erosion control measures, including seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type and rate of lime and fertilizer application, kind and quantity of mulching for both temporary and permanent vegetative control measures, and types of non-vegetative stabilization measures.

(c) Location and description of methods to prevent tracking of sediment off-site including construction entrance details, as appropriate.

(d) Description of dust and traffic control measures.

(e) Locations of stockpiles and description of stabilization methods.

(f) Location of off-site fill or borrow volumes, locations and methods of stabilization.

(g) Provisions for maintenance of control measures, including type and frequency of maintenance, easements, and estimates of the cost of maintenance.

(h) The proposed phasing of development of the site, including stripping and clearing, rough grading and construction, and final grading and landscaping. Phasing should identify the expected date on which clearing will begin, the estimated duration of exposure of cleared area, and the sequence of installation of temporary sediment control measures (including perimeter controls), installation of stormwater drainage, paving streets and parking areas, final grading and the establishment of permanent vegetative cover, and the removal of temporary measures. It shall be the responsibility of the applicant to notify the Building and Zoning Administrator of any significant changes which occur in the site development schedule after the initial erosion and sediment control plan has been approved.

32-4-4 DESIGN AND OPERATION STANDARDS AND REQUIREMENTS. The preparation of soil erosion and sediment control plans shall follow the principles outlined in the "Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control", excepting **Chapter 6** published by the Urban Committee of the Association of Illinois Soil and Water Conservation Districts. The design criteria, standards, and methods shall be prepared in accordance with the requirements of this Code and the standards and specifications contained in "Illinois Urban Manual" prepared for the Illinois Environmental Protection Agency by the USDA Natural Resources Conservation Service, which standards and methods are hereby incorporated into this Code by reference. In the event of conflict between the provisions of said manuals and of this Code, this Code shall govern.

(A) **Erosion and Sediment Control Design Requirements.** New developments or redevelopments shall comply with **Section 32-4-3** and meet the following:

(1) Control measures shall be constructed to control runoff from the property to such an extent possible that sediment is retained on-site.

(2) Temporary on-site control measures required shall be constructed and functional prior to initiating clearing, grading, stripping, excavating or fill activities on the site.

(3) Disturbed areas shall be stabilized with permanent measures within **seven (7) calendar days** following the end of active disturbance, or re-disturbance consistent with the following criteria:

(a) Appropriate permanent stabilization measures shall include seeding, mulching, sodding, with non-vegetative measures as a last resort.

(b) Areas having slopes greater than **thirty-three percent (33%)** shall be stabilized with sod, mat, or blanket in combination with seeding or equivalent.

(4) All temporary and permanent erosion and sediment control practices must be maintained and repaired as needed to assure effective performance of their intended function.

(5) All temporary erosion and sediment control measures shall be disposed in a proper manner within **thirty (30) days** after final site stabilization is achieved with permanent soil stabilization measures. Trapped sediment and other disturbed soils resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

(6) **Site Development Requirements.** On-site sediment control measures, as specified by the following criteria, shall be constructed as specified in the referenced handbooks, and functional prior to initiating clearing, grading, stripping, excavating or fill activities on the site.

(a) For new developments or redevelopments less than **one (1) acre**, or for a tract of land where a single family dwelling is being erected and less than **ten thousand (10,000) square feet** of impervious surface is being developed, filter barriers (including filter fences, straw bales, or equivalent control measures) shall be constructed to control all on-site runoff. Vegetated filter strips, with a minimum width of **twenty-five (25) feet**, may be used as an alternative only where runoff in sheet flow is expected.

(b) For new developments or re-developments more than **one (1) acre** but less than **five (5) acres**, a sediment trap designed in accordance with the IEPA Standards and Specifications for Soil Erosion or equivalent control measure shall be constructed at the downslope point of the disturbed area.

(c) For new developments or redevelopments greater than **five (5) acres**, a sediment basin or equivalent control measure shall be constructed at the downslope point of the disturbed area.

(d) Sediment basin and sediment trap designs shall provide for both "dry" detention and "wet" detention sediment storage. The detention storage shall be composed of equal volumes of "wet" detention storage and "dry" detention storage and each shall be sized as regulated in **Article III**. The release rate of the basin shall be that rate as regulated in **Article III**. The elevation of the outlet structure shall be placed such that it only drains the dry detention storage.

(e) The sediment storage shall be sized to store the estimated sediment load generated from the site over the duration of the construction period with a minimum storage equivalent to the volume or sediment generated in **one (1) year**. For construction periods exceeding **one (1) year**, the 1-year

sediment load and a sediment removal schedule may be substituted.

(f) The alteration of sinkholes by filling, grading or excavation is prohibited, including an area within **twenty- five (25) feet** from the rim.

(g) To the extent possible or as otherwise regulated in this Code all desirable trees **eight (8) inches** in diameter and larger shall be protected for their present and future value for erosion protection and other environmental benefits. Trees that have been selected for preservation shall be marked prior to the beginning of any clearing, grading, stripping, excavation, or filling of the site. A "No" construction zone shall be established and marked at the perimeter of the drip line of each tree which is to be preserved.

(7) Stormwater conveyance channels, including ditches, swales, and diversions, and the outlets of all channels and pipes shall be designed and constructed as regulated in **Article III**. All constructed or modified channels shall be stabilized within **forty-eight (48) hours**, consistent with the standards as required in the IEPA Erosion Control Manual "Standards and Specifications for Soil Erosion and Sediment Control".

(8) Land disturbance activities in stream channels shall be avoided, where possible, or as regulated in **Article III**. If disturbance activities are unavoidable, the following requirements shall be met.

(a) Construction vehicles shall be kept out of the stream channel to the maximum extent practicable. Where construction crossings are necessary, temporary crossings shall be constructed of non-erosive material, such as riprap or gravel.

(b) The time and area of disturbance of stream channels shall be kept to a minimum. The stream channel, including bed and banks, shall be stabilized within **forty-eight (48) hours** after channel disturbance is completed, interrupted, or stopped.

(9) Storm sewer inlets and culverts shall be protected by sediment traps or filter barriers meeting accepted design standards and specifications.

(10) Soil storage piles containing more than **ten (10) cubic yards** of material shall not be located with a downslope drainage length of less than **twenty-five (25) feet** to a roadway, drainage channel, or sinkhole. Filter barriers, including straw bales, filter fence, or equivalent, shall be installed immediately on the downslope side of the piles.

(11) If dewatering devices are used, discharge locations shall be protected from erosion. All pumped discharges shall be routed through appropriately designed sediment traps or basins, or equivalent and shall not be deposited into a sinkhole.

(12) Each site shall have graveled (or equivalent) entrance roads, access drives, and parking areas of sufficient length and width to prevent sediment from being tracked onto public or private roadways. Any sediment reaching a public or private road shall be removed by shoveling or street cleaning (not flushing) before the end of each workday and transported to a controlled sediment disposal area.

32-4-5 MAINTENANCE OF CONTROL MEASURES. All soil erosion and sediment control measures necessary to meet the requirements of this Code shall be maintained periodically by the applicant or subsequent land owner during the period of land disturbance and development of the site in a satisfactory manner to ensure adequate performance.

ARTICLE V - LONG TERM MAINTENANCE RESPONSIBILITY

32-5-1 LONG TERM MAINTENANCE RESPONSIBILITY. Maintenance of stormwater drainage, and erosion and sediment control facilities located on private property shall be the responsibility of the owner of that property. Before an appropriate permit is obtained from the City the applicant shall execute a maintenance agreement with the City guaranteeing that the applicant and all future owners of the property will maintain its stormwater drainage and erosion and sediment control system. Such agreement shall be recorded with the Recorder of Deeds of the County. The maintenance agreement shall include a schedule for regular maintenance of each aspect of the property's stormwater drainage and erosion and sediment control system and shall provide for access to the system for inspection by authorized personnel of the City. The maintenance agreement shall also stipulate that if the appropriate personnel of the City notify the property owner in writing of maintenance problems which require correction, the property owner shall begin such corrections within **twenty-four (24) hours** and shall not extend beyond **seven (7) calendar days** of such notification. If the corrections are not made within this time period the City may have the necessary work completed and assess the cost to the property owner. The City has the option of requiring a bond to filed by the property owner for maintenance of the stormwater drainage and erosion and sediment control system.

ARTICLE VI - INSPECTIONS

32-6-1 INSPECTIONS. The Building and Zoning Administrator shall make inspections as hereinafter required and shall either approve that portion of the work completed or shall notify the permittee wherein the work fails to comply with the stormwater drainage or erosion and sedimentation control plan as approved. Plans for grading, stripping, excavating, and filling work bearing the stamp of approval of the Building and Zoning Administrator shall be maintained at the site during progress of the work. In order to obtain inspections and to ensure compliance with this Code, the permittee shall notify the Building and Zoning Administrator within **two (2) working days** of the completion of the construction stages specified below:

(A) Upon completion of installation of the stormwater drainage and erosion and sediment control measures (including perimeter controls and diversions), prior to proceeding with any other earth disturbance or grading,

(B) After stripping and clearing,

(C) After rough grading,

(D) After final grading,

(E) After seeding and landscaping deadlines, and

(F) After final stabilization and landscaping, prior to removal of sediment controls.

If stripping, clearing, grading and/or landscaping are to be done in phases or areas, the permittee shall give notice and request inspection at the completion of each of the above work stages in each phase or area. If an inspection is not made and notification of the results given within **five (5) working days** after notice is received by the City from the permittee, the permittee may continue work at his/her own risk, without presuming acceptance by the City. Notification of the results of the inspection shall be given in writing at the site.

32-6-2 BI-WEEKLY INSPECTIONS. Bi-weekly inspection reports shall be submitted to the City for all Permits. Except for permits involving the development of one single family dwelling, the Bi-weekly reports must be certified by a registered professional engineer, describing the current status of construction for proposed drainage and detention system, including whether drainage construction and erosion control has been installed in accordance with construction plans. Report shall define whether maintenance has been provided as needed for the erosion control.

32-6-3 SPECIAL PRECAUTIONS. If at any stage of the grading of any development site the Building and Zoning Administrator determines by inspection that the nature of the site is such that further work authorized by an existing permit is likely to imperil any property, public way, stream, lake, wetland, or drainage structure, the Building and Zoning Administrator may require, as a condition of allowing the work to be done, that such reasonable special precautions to be taken as is considered advisable to avoid the likelihood of such peril. "Special precautions" may include, but shall not be limited to, a more level exposed slope, construction of additional drainage facilities, berms, terracing, compaction, or cribbing, installation of plant materials for erosion control, and recommendations of a registered soils engineer and/or engineering geologist which may be made requirements for further work.

(A) **Possibility of Storm Damage.** Where it appears that storm damage may result because the grading on any development site is not complete, work may be stopped and the permittee required to install temporary structures or take such other measures as may be required to protect adjoining property or the public safety. On large developments or where unusual site conditions prevail, the Building and Zoning Administrator may specify the time of starting grading and time of completion or may require that the operations be conducted in specific stages so as to ensure completion of protective measures or devices prior to the advent of seasonal rains.

32-6-4 AMENDMENT OF PLANS. Major amendments to stormwater drainage and detention or erosion and sediment control plans shall be submitted to the Building and Zoning Administrator and shall be processed and approved or disapproved in the same manner as the original plans. Field modification of a minor nature may be authorized by the Building and Zoning Administrator by written authorization to the permittee.

ARTICLE VII - PERMITTING

32-7-1 APPLICATION FOR PERMIT. Application for a Development Permit shall be made by the owner of the property or his authorized agent to the Building and Zoning Administrator on a form furnished for that purpose. Each application shall bear the name(s) and address(es) of the owner or developer of the site, the contractor(s) and any consulting firm retained by the applicant together with the name of the applicant's principal contact at such firm, and shall be accompanied by a filing fee of **Two Hundred Dollars ($200.00)** for any permit subject to the requirements of **Article III**, Stormwater Drainage and Detention. No permit fee is assessed for those developments where only the requirements of **Article IV**, Soil Erosion and Sediment Control, apply. Each application shall include certification that any land clearing, construction, or development involving the movement of earth shall be in accordance with the plans approved upon issuance of the permit.

32-7-2 BOND REQUIRED. The applicant for a Development Permit may be required to file with the City, a faithful performance bond or bonds, letter of credit, or other improvement security satisfactory to the City in an amount deemed sufficient by the Building and Zoning Administrator to cover all costs of improvements, landscaping, maintenance of improvements and landscaping, and soil erosion and sediment control measures for such period as specified by the City, and engineering and inspection costs to cover the cost of failure or repair of improvements installed on the site.

32-7-3 REVIEW AND APPROVAL. Each application for a Development Permit shall be reviewed and acted upon according to the following procedures:

(A) The Building and Zoning Administrator will review each application for a Development Permit to determine its conformance with the provisions of this Code. The Administrator may also refer any application to the County Soil and Water Conservation District, a consulting engineer retained by the City, and/or any other local government or public agency within whose jurisdiction the site is located for review and comment. Within **thirty (30) days** after receiving an application, the Building and Zoning Administrator shall in writing:

(1) Approve the permit application if it is found to be in conformance with the provisions of this Code, and issue the permit;

(2) Approve the permit application subject to such reasonable conditions as may be necessary to secure substantially the objectives of this Code, and issue the permit subject to these conditions; or

(3) Disapprove the permit application, indicating the deficiencies and the procedure for submitting a revised application and/or submission.

(B) No Development Permit shall be issued for an intended development site unless:

(1) The development, including but not limited to subdivision or planned unit development, has been approved by the City where applicable, or

(2) such permit is accompanied by or combined with a valid building permit issued by the City, or

(3) the proposed earth moving is coordinated with any overall development program previously approved by the City for the area in which the site is situated; and

(4) all relevant federal and state permits have been received for the portion of the site subject to soil disturbance as noted in **Section 32-1-2**.

(C) Failure of the Building and Zoning Administrator to act on an original or revised application within **thirty (30) days** of receipt shall authorize the applicant to proceed in accordance with the plans as filed and in compliance with the regulations contained herein, unless such time is extended by agreement between the Building and Zoning Administrator and the applicant. Pending preparation and approval of a revised plan, development activities shall be allowed to proceed in accordance with conditions established by the Building and Zoning Administrator.

32-7-4 FINAL CERTIFICATION. Prior to final approval by the City a registered professional engineer shall certify that the detention basin has been constructed in accordance with construction plans and proposed volume has been provided. An "as-built" survey of the detention basin, prepared by a licensed surveyor, shall be included with the certification for approval.

32-7-5 EXPIRATION OF PERMIT. Every Development Permit shall expire and become null and void if the work authorized by such permit has not been commenced within **one hundred eighty (180) days**, or if not completed by a date which shall be specified in the permit; except that the Building and Zoning Administrator may, if the permittee presents satisfactory evidence that unusual difficulties have prevented work being commenced or completed within the specified time limits, grant a reasonable extension of time if written application is made before the expiration date of the permit. The Building and Zoning Administrator may require modification of the erosion control plan to prevent any increase in erosion or off-site sediment runoff resulting from any extension.

32-7-6 APPEALS. The applicant, or any person or agency which received notice of the filing of the application, may appeal the decision of the Building and Zoning Administrator to the Board of Appeals. Upon receipt of an appeal, the Board of Appeals shall schedule and hold a public hearing, after giving **fifteen (15) days** notice thereof. The Board shall render a decision within **thirty (30) days** after the hearing. Factors to be considered on review shall include, but need not be limited to, the effects of the proposed development activities on the surface water flow to tributary and downstream lands, any comprehensive watershed management plans, or the use of any retention facilities; possible saturation of fill and unsupported cuts by water, both natural and domestic; runoff surface waters that produce erosion and silting of drainageways; nature and type of soil or rock which when disturbed by the proposed development activities may create earth movement and produce slopes that cannot be landscaped; and excessive and unnecessary scarring of the natural landscape through grading or removal of vegetation.

ARTICLE VIII - ENFORCEMENT

32-8-1 STOP-WORK ORDER; REVOCATION OF PERMIT. In the event any person holding a Development Permit pursuant to this Code violates the terms of the permit, or carries on-site development in such a manner as to materially adversely affect the health, welfare, environment, or safety of persons residing or working in the neighborhood of the development site or so as to be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood, the Building and Zoning Administrator may suspend or revoke the Development Permit.

(A) Suspension of a permit shall be by a written stop-work order issued by the Building and Zoning Administrator and delivered to the permittee or his agent or the person performing the work. The stop-work order shall be effective immediately, shall state the specific violations cited, and shall state the conditions under which work may be resumed. A stop-work order shall remain in effect until the next regularly scheduled meeting of the Board of Appeals at which time the conditions of **Section 32-7-5** above can be met.

(B) No Development Permit shall be revoked until a hearing is held by the Board of Appeals. Written notice of such hearing shall be served on the permittee, either personally or by registered mail, and shall state:

(1) The grounds for complaint or reasons for suspension or revocation, in clear and concise language; and

(2) The time when and place where such hearing will be held.

Such notice shall be served on the permittee at least **five (5) days** prior to the date set for the hearing. At such hearing, the permittee shall be given an opportunity to be heard and may call witnesses and present evidence on his behalf. At the conclusion of the hearing the Board of Appeals shall determine whether the permit shall be revoked.

32-8-2 VIOLATIONS AND PENALTIES. No person shall construct, enlarge, alter, repair or maintain any grading, excavation or fill, or cause the same to be done, contrary to or in violation of any terms of this Code. Any person violating any of the provisions of this Code shall be deemed guilty of a misdemeanor, and each day during which any violation of any of the provisions of this Code is committed, continued, or permitted shall constitute a separate offense. Upon conviction of any such violation, such person, partnership, or corporation shall be punished by a fine of not more than **Five Hundred Dollars ($500.00)** for each offense. In addition to any other penalty authorized by this Section, any person, partnership, or corporation convicted of violating any of the provisions of this Code shall be required to restore the site to the condition existing prior to commission of the violation, or to bear the expense of such restoration.