Amendment to Kendall County
Subdivision Control Ordinance

SECTION 10.00 - REQUIRED LAND IMPROVEMENTS

F. Design Standards

3. Storm Water: There shall be provided storm water sewer or a surface drainage system to serve adequately the area being platted, considering but not limited to the following:

a. The results and recommendations of the Division of Waterways, State of Illinois, the U.S. Army Corps of Engineers, the Kendall County Soil and Water Conservation District and drainage district if applicable.

b. In any subdivision qualifying as an Urban Subdivision, storm sewers are required to meet the following minimum specifications:

(1) The sewers shall not be less than fifteen (15) inches inside diameter.

(2) The sewers shall be designed in such a way as to insure a minimum velocity flow of two (2) feet per second, and a maximum velocity flow of eight (8) feet per second.

(3) Manholes shall be provided at all changes in direction of pipe, and pipe size shall be of the type specified in State of Illinois Standards Specifications No. 1527-3, Type A, or equivalent. Inlets shall be located not more than Five Hundred (500) feet apart and shall be of the type specified in State of Illinois Standard Specifications No. 1683-2, Type A, or equivalent.

(4) Stormsewers shall be located in the parkway opposite the sanitary sewer.

c. In any subdivision not qualifying as an Urban Subdivision ditches' meeting the following standards may be used.

(1) With grades to four (4) per cent, ditches may have sod bottoms and banks.

(2) With grades from four (4) to eight (8) percent, ditches should have ditch checks.

(3) With greater than eight (8) per cent grades, ditches should have rip-rap or be paved.

(4) Culverts must be provided at all street or driveway intersections sized to eliminate flooding or ponding of water, and with a minimum cover of six (6) inches. The

location of culverts is to be determined by the County Superintendent of Highways or the Township Road Commissioner.

d. Standards for storm runoff control

(1) Intent and Purposes: The basic purpose of this Section is to eliminate the storage or transportation of excess storm water in or through hatibable structures - the use of flood routes or by-pass flood routes for runoff is, therefore, encouraged. Since political and ownership boundaries often make the use of "natural" flood routes difficult, the earthmoving that is accomplished to create the maximum land usage should also be planned to provide a "by-pass" flood route for storm water that will not create a diversion of storm water drainage or radically change the watershed boundaries.

(2) Definitions:

a. Site - A delimited area considered for a specific use which may be part of a larger area and which may vary in size from a one acre parcel of land to a 1200 acre watershed.

b. Onsite - The area within the limits of the site under consideration in which drainage functions occur (e.g. runoff, storage, etc.)

c. Offsite - The area outside or beyond the limits of the site under consideration in which drainage functions occur (e.g. runoff, storage, etc.)

d. Storm Water Runoff - Water that results from percipitation which is not absorbed by soil and plant material or evaporated.

e. Excess Storm Water - That portion of storm water runoff which exceeds the transportation capacity of storm sewers or channels serving a specific watershed.

f. Storm Water Storage Area - Areas designated to store excess storm water to which storm sewer systems, flood routes, or by-pass flood routes are tributary.

g. Tributary Watershed - All of the area that contributes storm water runoff to a given point.

h. Recognized Agency - An agency or governmental unit that has statistically and consistently examined local and climitac and geologic conditions and maintained records as they apply to storm water runoff (e.g. Metropolitan Sanitary District of Greater Chicago,

U.S. Weather Bureau, University of Illinois Engineering Experiment Station, Illinois State Water Survey, Soil & Water Conservation District, etc.)

i. Safe Storm Drainage Capacity - The capability of a storm water facility (e.g. drain, sewer, conduit, open channel, etc.) to function without exceeding its design capacity; so that the hydraulic gradient always remains below the adjacent ground surface.

j. Onsite Drainage - The removal of excess water produced by precipitation, snowmelt, irrigation, overland flow or underground seepage from adjacent areas by means of a drainage system.

k. Surface Drainage - The removal of excess water from the ground suface.

l. Subsurface Drainage - The removal of excess water from below the ground surface.

m. Stream - A natural waterway of continued or intermittent operation.

n. Ditch - An open waterway excavated below the ground surface to convey drainage water.

o. Channel - That portion of a stream or ditch where the flow of water is carried.

p. Drain - A conduit, such as a tile, pipe or tubing, installed below the ground surface which collects and/or conveys drainage.

q. Positive Outlet - The terminal point of the drainage system under consideration that is above the hydraulic gradient of the receiving drainage system under normal non-flooding conditions.

r. Land Grading - The shaping of the ground surface by cutting, filling and leveling to planned grades. Normally, this operation is required in order to convert a site from one land use to another.

s. Berm - An embankment constructed of earth with gentle slopes used to divert storm water flows, to protect lower lying areas, or to provide a restriction to create storm water storage areas.

t. Control Structure - That structure or device in the storm water drainage system used to control the rate of flow past a specific point.

u. Release Rate - The rate at which storm water runoff is allowed to flow from a site. This may be given in cfs (preferably), gpm or inches per house (average).

v. Flood Route - The overland route that flood waters would naturally flow through a site.

w. By-Pass Flood Route - A flood route formed in the surface topography of the site to supplement or replace the natural flood route.

x. Flood Plain - The areas adjacent to a well defined main stream drainage system that are submerged when the volume of storm water exceeds the main channel capacity.

y. Flood-Way - That portion of the flood plain adjacent to and including the main channel where flood flow velocities are greater than zero in the direction of main stream flow.

z. Flood Fringe - That area in the flood plain either side of the flood-way where flow velocities are low or zero.

(3) The following standards shall be followed:

a. The controlled release rate of storm water runoff from all developments shall not exceed the existing "safe" storm drainage capacity of the downstream outlet channel or storm sewer system. The release rate for any one development shall be the proportionate share by area of the safe storm drainage capacity for the tributary watershed area. This value shall not exceed, however, an average runoff rate of 0.15 inches per hour which is compatible with the receiving drainage system. The rate at which storm water runoff is delivered to a designated storm water storage area shall be unrestricted.

b. A "natural" flood route or by-pass flood route shall be designated with adequate capacity to convey through the development the storm water runoff from all tributary upstream areas. These flood routes shall be designed to carry the peak rate of runoff from a 100-year storm, assuming all storm sewers are blocked and that the upstream areas are fully developed and have been saturated with antecedent rainfall. No habitable structures shall be constructed within this floodway, however, streets and parking or playground areas and utility easements shall be considered compatible uses.

Design of this floodway system shall also take into consideration control of storm water velocity to prevent erosion or other damage to the facility which will restrict its primary use. Depths of flow shall be kept to a minimum and retention of channel configurations shall be totally under County control. In the event

that the area within these flood routes is reshaped or restricted for use as a floodway the County will cause to have any restrictions removed at the expense of the party or parties causing said restriction.

Should the development contain an existing natural stream this land configuration shall be preserved as part of the flood route system. Construction of a "low flow" system of storm sewers to carry the minor storm runoff and reshaping of the stream channel with a maximum of four (4) horizontal to one (1) vertical side slopes and bottom of a width adequate to facilitate maintenance and carry the flood runoff without eroding velocities shall be included in the plans for land development.

c. The required volume for storm water detention shall be calculated on the basis of the runoff from 100-year frequency rainfall of any duration as published in the report Standards and Specifications for Soil Erosion and Sediment Control prepared with the assistance of Northeast Illinois Natural Resource Service Center. The storm water release shall be considered when calculating the storm water storage capacity and the control structure designed to maintain a relatively uniform flow rate regardless of the depth of storm water in the storage area.

d. Dry bottom storm water storage areas shall be designed to serve a secondary purpose for recreation, open space or other types of uses that will not be adversely affected by occasional or intermittent flooding. A method of carrying the low flow through these areas shall be provided in addition to a system of drains, and both shall be provided with a positive outlet to a natural channel or storm sewer with adequate capacity as described in paragraph A.

The combination of storage of the water from a 100-year storm and the design release rate shall not result in a storage duration in excess of 72 hours. Maximum depth of planned storm water storage shall not exceed four (4) feet unless the existing natural ground contours and other conditions lend to greater storage depth, which shall be approved by the County. Minimum grades for turf areas shall be two (2) per cent and maximum slopes shall be 10 per cent (10 units horizontally to one (1) unit vertically). Storage area side slopes shall be kept as close to the natural land contours as practical and a 10 per cent slope or less shall be used wherever possible. If slopes greater than 10 per cent are necessary to meet storage requirements or area restrictions, approval shall be obtained from the County and suitable erosion control provided in addition to the protection required to insure public health, safety and welfare.

Outlet control structures shall be designed as simply as possible and shall require little or no attention for proper operation. Each storm water storage area shall be provided with a method of emergency overflow in the event that a storm in excess of the 100-year frequency storm occurs. This emergency overflow facility shall be designed to function without attention and shall become part of the downstream flood route or by-pass flood route system described in paragraph B. Hydraulic calculations shall be submitted to substantiate all design features.

Both outlet control structures and emergency overflow facilities shall be designed and constructed to fully protect the public health, safety and welfare. Storm water runoff velocities shall be kept at a minimum and turbulent conditions at an outfall control structure will not be permitted without complete protection for the public safety. The use of restrictive fences shall be kept to a minimum and used only as a last resort when no other method is feasible.

e. Wet bottom storm water storage areas shall be designed with all of the items required for dry bottom storm water storage areas except that flow conduit and a system of drains with a positive gravity outlet shall be eliminated. However, the following additional condition. shall be complied with:

aa. Water surface area shall not exceed 1/10 of the tributary drainage area.

bb. Shoreline protection shall be provided to prevent erosion from wave action.

cc. Minimum normal water depth shall be four (4) feet. If fish are to be used to keep the pond clean, a minimum of 1/4 of the pond area shall be a minimum of 10 feet deep.

dd. Facilities shall be available, if possible, to allow the pond level to be lowered by gravity flow for cleaning purposes and shoreline maintenance.

ee. Control structures for storm water release shall be designed to operate at full capacity with only a minor increase in the water surface level. Hydraulic calculations shall be submitted to substantiate all design features.

ff. In the event that the water surface of the pond is to be raised for purposes of storing water for irrigation or in anticipation of the evapotranspiration demands of dry weather, the volume remaining for storage of excess storm water runoff shall still be sufficient to contain the 100-year storm runoff.

f. Paved surfaces that are to serve as storm water storage shall be designed with permanent-type control inlets and parapet walls to contain runoff on the rooftop. Emergency overflow areas shall be provided to insure that the weight of water stored will not exceed the structural capacity of the roof. Release rates and storage volume requirements for paved storage areas remain the same as outlined in paragraphs A & B. If a portion of an area within a storm water storage area is to be paved for parking or recreational purposes, the paved surface shall be placed at the highest elevation within the storage area as possible. Maximum parking lot grades shall not exceed normal design parameters of three (3) to five (5) per cent.

g. Where developments from only a portion of a watershed or contain portions of several watersheds, the requirement for providing storage shall be based upon the proportion of the area being developed as compared to the remaining undeveloped watershed tributary to the storage area. All existing developed areas in the watershed tributary to the storage area shall be provided for pursuant to these regulations. Compensating storage will be acceptable whenever it is justified and feasible. As a watershed is developed with a series of storm water storage facilities, due consideration will be given for calculation of the allowable release rate and capacity of the "natural" flood route or by-pass flood route system as described in paragraph B.

h. Where development of a property presents the threat of flooding or damage by flash runoff to downstream residents, the facilities for storm water runoff control shall be constructed prior to any earthmoving or drainage construction on the project site.

i. The ability to retain and maximize the ground water recharge capacity of the area being developed is encouraged Design of the storm water runoff control system shall give consideration to providing ground water recharge to compensate for the reduction in the percolation that occurs when the ground surface is paved and roffed over. The use of natural gravel deposits for the lower portions of storm runoff storage areas, the flattening of drainage slopes and the retention of existing topography are examples of possible recharge methods.

j. During the construction phases of land development facilities shall be provided to prevent the erosion and washing away of the earth. Silting of downstream areas can be prevented through the strategic use of stilling basins, sodding of runoff channels, and by limiting the period of time during which the earth is stripped of vegetation.

(4) Plans, specifications and all calculations for storm water runoff control as required hereunder shall be submitted to the Building and Zoning Officer for review and approval prior to the approval of a final plat.

(5) Final engineering plans shall show complete details for all of the items covered in this ordinance and shall be submitted for review and approved prior to the start of construction.

ADOPTED this 12th day of August, 1975.

Howard Shroyer
Chairman, Kendall County Board

Attest: Jean P. Brady
Clerk