BERGEN COUNTY

STORM WATER MANAGEMENT PROGRAM

PERFORMANCE AND DESIGN STANDARDS

In accordance with the New Jersey County Planning Enabling statutes (N.J.S.A. 40:27-1 et seq.) wherein County Planning Boards are enabled to require adequate drainage facilities and easements in the review and approval of development applications affecting County facilities, the Bergen County Planning Board may require storm water management facilities in accordance with the following performance and design standards:

A. Storm Water Management

1. Procedures

   a. All applications for development of two (2) acres (gross area) or more including those of governmental agencies are required to submit data to the County Planning Board specifying the change in runoff due to the proposed improvements. (The additional area of improvements to County roads, or facilities required by the County Planning Board, shall be excluded from the calculations of both the gross area required and the change in runoff calculations).

   b. Those applications for development that propose one (1) acre or more of additional impervious surfaces are required to detail on the plans submitted storm water management facilities to retain/detain the additional storm water runoff being generated if downstream drainage has been determined to be inadequate to meet design standards. Residential roof areas not directly connected to storm water system shall be calculated at 60%.

   c. Any proposed development which does not have an adequate drainage outlet as determined by the County Engineer, and/or causes or increases existing flooding of a County road or adjacent land is required to submit plans indicating how these problems will be ameliorated.

   d. All applications for development (with the exception of major regional commercial centers) which drain directly to a tidal body (Hudson River, Hackensack River to Oradell Dam, Passaic River to Dundee Dam, Overpeck Creek to tide gates) or a controlled regional facility (i.e. Oradell and Woodcliff Lake Reservoirs, Lake Tappan, Darlington Lake and Overpeck Creek Lake) are exempt.

   e. Where the County engineer has determined that the receiving stream channel from a development site is adequate to handle the 100- year flood flows in bank or within the undeveloped, protected flood plain area without an adverse impact to downstream properties, on-site storm water management facilities will not be required. Flood plain areas are as defined by the N.J. Department of Environmental Protection.

   f. Where site constraints make on-site storm water management facilities clearly impractical for physical (steep slopes, rock conditions or aesthetics), public health (septic tanks), or economic reasons, (which shall be presented by the applicant and approved by the Planning Board) the County Planning Board

shall require an in-lieu cash contribution, or a combination of facilities and cash contribution, toward the construction or maintenance of regional storm water management or drainage facilities located in the particular drainage basin in which the site is located. The cash contribution will be equal to the estimated cost of providing on-site storm water management facilities that would have otherwise been required. Said monies collected shall be held and disbursed from a trust fund to be established. Said disbursements shall be used only for storm water management purposes as specifically approved by the Board of Chosen Freeholders upon recommendation of the Bergen County Planning Board and/or the County Engineer.

g. County storm water management requirements shall be coordinated with existing municipal storm water management ordinances. Where pre-application meetings are held with the applicant the results of such meetings shall be forwarded to the appropriate municipal agencies.

2. Performance Standards

a. Additional storm water runoff produced as a result of the proposed development shall be retained or detained on-site, unless exempt for reason of section 1D, 1E, or 1F.

b. Flow velocities from the outlets of storm water management facilities shall be designed in such manner as to prevent scour, erosion and siltation in channels and spillways.[1]

c. Standards for Soil Erosion and Sediment Control in New Jersey [2] shall be adhered to and soil erosion and sediment control plans shall be certified where applicable by the Bergen County Soil Conservation District in accordance with P. L. 1979, Ch. 459.

d. The applicant shall post performance bonds to the municipality or county for the total cost of installation of the approved storm water management facilities based on estimates of construction quantities to be provided by the applicant.

e. The applicant shall post maintenance bonds for the upkeep of the approved storm water management facilities for a period of two years after the release of the performance bond. The maintenance bond shall be equal to 10% of the amount of the performance bond for storm water management facilities.

f. Maintenance of storm water management facilities, after the release of the maintenance bond, shall be the responsibility of the owners of property (excluding one and two family dwellings) on which the facility is located or the responsibility of a legally constituted home-owners (residents) association, if one exists for the development in question, or the responsibility of appropriate governmental unit assuming responsibility.

g. In instances where for reasons of public health and safety it would be appropriate for a governmental body to assume the responsibility of maintaining an approved storm water management basin, the following conditions should exist:

1. Adequate easements shall be provided around the storm water management basin as well as an access easement, for maintenance to the facility.

3. Design Standards

a. Storm water management facilities include, but are not limited to, drywells, swales, basins, porous pavement, open drainage pipes, rooftop storage or a combination of these or other methods.

b. All storm water retention or detention facilities shall be designed using the 25 year design storm.[3]

c. Runoff coefficients for developed and undeveloped conditions shall be used to determine increase in runoff to be stored.

d. Methodology for determining runoff shall conform to generally accepted engineering standards and practices. (e.g. SCS Runoff Equation, Runoff Curve Numbers and dimensionless unit hydrograph[4,5] or the Rational Formula and runoff coefficients as published in the Handbook of Applied Hydrology.[6])

e. Facilities shall be designed in such manner that the rate of discharge shall not exceed that which occurred under predevelopment conditions for the design storm.

f. Storm water retention/detention basins may be depressions in parking areas, excavated basins, basins created through use of curbs, stabilized earth berms or dikes, or any other form of grading which serves to temporarily impound and store water. The following standards apply to basins:

    1. If routing study is required a short procedure may be used as described in SCS Technical Release #55 [5] or any other acceptable method.

    2. If earth berms or dikes are used to create the impounding area, they shall be provided with an emergency spillway or outlet to pass the 100 year storm and be adequately stabilized and the slopes protected with vegetative cover, paving, or rip-rap to protect against failure or breaching.

    3. Outlet pipes shall be at least 6 inches in diameter to facilitate cleaning.

    4. Suitable linings shall be placed upstream and downstream of principal outlets to prevent scour and erosion.

    5. Earthen Dam embankments shall have side slopes not steeper than 3:1. Emergency spillways must be adequately stabilized.

    6. Basin bottoms should be designed to protect against residual water periods to prevent mosquito breeding.

    7. Safety ledges shall be constructed when feasible on the side slopes steeper than 3:1 of all basins having a permanent pool of water. These ledges shall be at least 4 feet in width with one located 1-l½ feet above and-the other located 2½-3 feet below the permanent water surface.

    8. Fencing and/or vegetative screening may be erected around basins when desirable.

g. Ground absorption systems such as drywells, porous pavement or the like shall be used only where the infiltration rate of the receiving soil is acceptable as determined by percolation tests or soil borings, or as determined by the County Engineer.

h. Rooftop storage can be accomplished through temporary impoundment and storage of storm water on flat or slightly pitched building rooftops by use of drain outlets which restrict the storm water runoff from the roof surface. A design certification as to the ability of the structure to bear this weight must be presented by an appropriate licensed professional.

i. Drainage easements, where deemed necessary, will be required to assure the continuance of storm water management facilities. For subdivision applications, if the necessary drainage easements cannot be conveyed to a public body, a hardship will be deemed to exist and a cash contribution in-lieu of construction will be required, as outlined in Section A-1-f.

4. These standards shall be reviewed in approximately 6 months and periodically thereafter as determined after initial review by the Planning Board, the Board of Chosen Freeholders and a committee of representatives of appropriate professional associations to determine their effectiveness and equitability and a status report shall be given to the Board of Freeholders on the interest bearing trust fund accounts.

REFERENCES

1. Open Channel Hydraulics, Ven Te Chow, McGraw-Hill, 1959
2. Standards for Soil Erosion and Sediment Control in New Jersey, New Jersey State Soil Conservation Committee. September, 1974
3. Technical Paper Number 40 - Rainfall Frequency Atlas of the United States, U.S. Department of Commerce, Weather Bureau, 1961
4. National Engineering Handbook-Section 4 - Hydrology, U. S. Department of Agriculture, Soil Conservation Service, August 1972
5. Technical Release Number 55 - Urban Hydrology for Small Watersheds, U. S. Department of Agriculture, Soil Conservation Service, Engineering Division, January 1975
6. Handbook of Applied Hydrology, Ven Te Chow, Editor, McGraw-Hill, 1964