

# City of Manhattan, KS

## Stormwater Management Criteria

### Why update the criteria?

To replace in full the May 1994 Stormwater Management Criteria to reflect experience gained, satisfy regulatory requirements, and to establish clear, and consistent criteria for stormwater infrastructure.

### What is included in the criteria?

- ▶ General Requirements
- ▶ Drainage Impact Study
- ▶ Drainage Easements
- ▶ Hydrology
- ▶ Conveyance
- ▶ Collection
- ▶ Detention
- ▶ Post-Construction Stormwater Best Management Practices (BMPs)

### What type of Drainage Impact Studies are required?

A Drainage Impact Study is the most complete form of submittal and will be used on most projects that go through planning, building permit or public works processes. It includes an analyses of the drainage in the area, the offsite sources of water, the nature of the storm drains, and any detention or stormwater quality BMPs that will be required.

The Drainage Impact Study is intended to supplement the design drawings to provide an understanding of the site. Certain smaller projects may not require a full Drainage Impact Study but will use the project plans and more streamlined reviews. The City's new processes are intended to emphasize earlier communications about the drainage design so it can be integrated better into the overall site.

### Level of Service Requirements

**Hydrology:** Method based on drainage area

- ▶ **Less than 300 acres** = Rational Method or Hydrograph Method
- ▶ **Less than 640 acres** = Hydrograph Method
- ▶ **Greater than 640 acres** = regional guidance

**Conveyance:** Capacity based on type

- ▶ **Enclosed and open channel systems:**
  - ▶ Up to 10-year event
- ▶ **Overflow pathways:**
  - ▶ 100-year event
- ▶ **Engineered swales and channels:**
  - ▶ Minimum 10-year event
- ▶ **Culverts:**
  - ▶ Arterial streets = 50-year event
  - ▶ All other streets = 10-year event

**Collection:** Allowable gutter spread for the 10-year event based on street typology

- ▶ **Local Street** (2 lanes) = 7.5 feet
- ▶ **Collector** (3 lanes) = 7.5 feet
- ▶ **Arterial** (4 lanes) = 13.5 feet

**Detention:** Required when impervious area increases by 10,000 square feet or more. Post-project peak discharge rates from detention facilities shall not exceed the following allowable release rates:

- ▶ **2-year event** = 0.5 cfs/ac
- ▶ **10-year event** = 1.5 cfs/ac
- ▶ **100-year event** = 3.0 cfs/ac

**Post Construction Stormwater BMPs:**

Required when projects disturb  $\geq$  one acre, and for projects  $<$  one acre that are part of a larger common plan of development or sale.