

## L. ROADWAY DRAINAGE

### 1. Policy and Procedures

All drainage facilities shall be designed in accordance with VDOT's Drainage Manual and supplemental directives as amended. and the Virginia Erosion and Sediment Control Handbook, located on DEQ's website

<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/ErosionandSedimentControl.aspx> and

<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications.aspx>\* shall also be used in designing drainage systems.

Low Impact Development (LID) Techniques such as Buffers Strips, Bioretention, Rain Gardens, Vegetated Swales, and Tree Preservation should also be considered. The use of LID practices offers both economical and environmental benefits. LID measures result in less disturbance of the development area, conservation of natural features and can be less cost intensive than traditional stormwater control mechanisms. Cost savings for control mechanisms are not only for construction, but also for long-term maintenance and life cycle cost considerations.

For additional information on LID techniques see DEQ's Virginia Stormwater Management Program website at:

<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement.aspx>

U.S. EPA's Low Impact Development website at: <http://www.epa.gov/nps/lid/> and The National Resource Defense Council website at

<http://www.nrdc.org/water/pollution/storm/chap12.asp>. Maintenance of roadway drainage is addressed in the Secondary Street Acceptance Requirements.

### 2. Criteria

Standards appropriate to the functional classification of the street and the potential impact on adjacent property shall apply.

### 3. Design

Specific reference is made to the following design requirements:

- a. Roadside and median ditches should provide sufficient hydraulic capacity to contain the estimated runoff from a 10-year frequency storm. The estimated runoff and attendant velocity for the 2-year frequency storm is to be used for determining the needs, type and dimensions of special ditch lining for erosion control. Geometric configurations shall conform to appropriate safety standards.

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\* Rev. 1/14