

Adequate Channel Guidance Document

(1) Adequate drainage of surface waters means the effective conveyance of storm and other surface waters through and from the development site and the discharge of such waters into a natural watercourse, i.e., a stream with incised channel (bed and banks), or a concave swale, or drainage facility of sufficient capacity without adverse impact upon the land over which the waters are conveyed or upon the watercourse or facility into which such waters are discharged. Complete calculations and a narrative shall be included on the plan. Verification of channel adequacy should include the following:

- Channel geometry: A minimum of three channel cross-sections should be taken at a minimum spacing of 50' along the channel length downstream of the discharge point. The channel top of bank should be well defined and identifiable by field parameters such as a flattening or change in bank slope, flattened vegetation in the direction of flow, soil types or other obvious indicators of frequent flow levels. When the top of bank does not appear to be obvious, a hydrologic analysis of the contributory drainage area and the corresponding two (2)-year undeveloped peak discharge may be used to define the cross-sectional flow area using Manning's equation.
- Channel lining: The channel lining material should be evaluated to determine the permissible velocities as found in Table 5-22 of the Virginia Erosion and Sediment Control Handbook, 1992 Edition.
- Slope: These include, for natural and manmade conveyance, respectively:
- Channel slope: Relative elevations should be taken along the channel length at the channel cross-sections in order to determine the average longitudinal slope of the channel.
- Energy slope: A hydraulic grade line calculation should accompany any analysis of an existing or proposed pipe system to verify that the flow is contained within the system during the ten (10)-year frequency storm.