Storm drain and culvert pipe installations can be sensitive to the presence of moisture in the bedding, backfill and surrounding soil. Soils placed and compacted in the pipe envelope need to be stable in the presence of water.

**Concerns and Precautions:**
According to the AASHTO LRFD code Table 12.12.3.5-2, materials that contain certain amounts of sand are not to be used as backfill for flexible pipe unless specific measures are included in the contract documents to account for proper control of moisture content and to monitor compaction of these materials during the installation process. (see note 2 below).

**Needed Steps:**
Given the important information above, the engineering community must design their projects with consideration given to gradient control of the backfill envelope. As the AASHTO Section 12 Plastic Pipe Design procedure warns, uniformly graded material with an average particle size smaller than a No. 40 sieve “**should not be used as backfill for thermoplastic culverts.**” If, however, the design engineer allows the use of such material, that decision **requires extra precautions** during design and installation. The design engineer must take into consideration the actual moisture content and compaction levels of the chosen backfill material **and additionally monitor and measure these factors** during construction. A very large component of the structural capacity of the soil-pipe system is dependent on the design of the backfill envelope for plastic pipe design. That can only be achieved by mandating a high quality installation with a thorough understanding of the project variables, such as moisture sensitivity of the backfill materials. The engineering community will help **reduce their liability** when specifying a plastic pipe system by following the **very important** steps outlined above for **each and every** project.