Each of the calculations involves converting impacts to a known and given reference point provided in the BEES documentation. The program then calculates the environmental loading of the product to allow designers to compare alternative materials. BEES software is available from the National Institute of Standards and Technology (NIST) along with a manual that describes the use of the software, explains the algorithms, and provides examples of material and product data already evaluated using BEES.

The American Society for Testing and Materials (ASTM) has developed the *Standard Guide for Environmental Life Cycle Assessment of Building Materials/Products,* E 1991–98. The standard guide describes a four-step process for conducting a life cycle assessment (LCA): a definition of goals, an analysis of inventory, an impact assessment, and an interpretation of findings. The LCA is broad based and comprehensive in scope and includes considerations of embodied energy, raw materials acquisition, and environmental impacts from cradle to grave, as well as performance considerations. Other more approachable methods have also emerged. There are public and private green building initiatives throughout the world. Many of these organizations have established standards or thresholds that products must meet to be listed as green. Since site work involves fewer materials as a rule than building construction, most of the work has been done on materials used in buildings. Still materials used in site development are not without their environmental "signature" as it were. The general elements of green building materials are summarized in Table 1.7.

The ASTM Subcommittee on Sustainability has developed the *Standard Practice for Data Collection for Sustainability Assessment of Building Products,* E 2129. This standard includes a checklist to guide the process of evaluating the environmental character of products. Most of the processed or manufactured materials specified in site work are related to paving and utility or storm water pipes. Even with these few categories of materials there is a wide range of choices designers may consider.

TABLE 1.7 Green Building Material Requirements

1. Products made from recycled or salvaged materials
2. Products made from wood harvested from Forest Stewardship Council Certified forests
3. Products made from materials that are renewable in the short term (10 years or less)
4. Products that do not contain toxics or environmentally damaging materials
5. Products (or methods) that reduce the material volume required
6. Products that reduce environmental impacts during the manufacturing process, construction, renovation or demolition
7. Products (or methods) that are energy efficient or that reduce the heating and cooling loads on a building
8. Products that are reusable or recyclable
9. Local products rather than products from far away