Part 543 – Materials

543.0 General

The designer is responsible for the choice of materials used in a design, the coordination of the design, and the material specifications. Materials used in construction must comply with the material specifications.

543.1 Scope

Materials are selected based on a number of factors, including but not limited to quality, project budget, availability, cost, longevity, project economic life, ease of installation and maintenance, life cycle costs, compatibility with site conditions and other materials, and public health and safety. Materials may be those items or products used in either conservation practices or construction specifications. NRCS does not maintain a national approved-products list for construction-related materials, although States may maintain such a list.

543.2 Use of New Materials

A. New materials are those materials that are not specifically identified either in a conservation practice standard or national material specification (Title 210, National Engineering Handbook (NEH), Part 642).

B. New materials and products frequently appear on the market. They may be selected for use with a conservation practice or construction project. The objective in selecting a new material is to meet or exceed the physical, cost-effectiveness, or functional characteristics of the currently specified material, including the longevity or design life of the material. If a new material could impact the cost or design life of a structure or practice, then the rationale for its use must be documented for the files.

C. A new material's physical or functional characteristics should meet or exceed those of the standard specified material. The new material should have reference standards directly applicable to it, so the physical characteristics can be verified and quantified. The decisionmaking process should also include verification of the material or product's past performance and independent laboratory test results. The State conservation engineer (SCE) is responsible for the selection, evaluation, and decision to use a new material within the appropriate level of engineering design approval authority. If a new material is proposed for a conservation practice, a variance from the conservation practice standard may need to be requested, per policy contained in Title 450, General Manual, Part 401, Subpart B, "Conservation Practice Standards."

D. New products should be used on an evaluation basis. The manufacturer or supplier should be willing to provide the product and be present during installation to ensure recommended procedures are followed. Upon completion of the practice installation or construction project, the new material must be evaluated. The evaluation period should generally be 1 year, unless a longer period is deemed necessary. The evaluation should include such factors as material quality control, ease of installation, records from any periodic inspections conducted during the evaluation period, problems encountered, and assessment of future use. A brief evaluation report must be prepared after the completion of the evaluation period.

E. The SCE must forward copies of any completed evaluation reports to the Director, Conservation Engineering Division. The SCE should include a recommendation on each new material used (i.e., discontinue use, research further, or include in specifications or conservation practice standards). The

evaluation reports will be made available to others within NRCS and to agency partners and used to determine if a new material has a potential for future inclusion into a conservation practice standard or national material specification.

543.3 New Material Specification Preparation

A. The designer is responsible for preparing project-specific material specifications if there are no applicable material specifications in 210-NEH, Part 642. The designer must ensure that the material specifications are coordinated with the materials used in the design.

B. Performance specifications are preferred. A performance specification states requirements in terms of the required results and provides criteria for verifying compliance, but it does not state methods for achieving results. It defines the functional requirements for the product, the environment in which it must operate, and the interface and interchangeability requirements. Avoid brand-name descriptions.