

## **MECHANICS AND FORM OF RAMMED EARTH CONSTRUCTION**

### ABSTRACT

Rammed earth has been used in many regions of the world for centuries, but it is generally regarded as an untried building technology in the United States. Due to its low embodied energy of the material and diminished transportation costs, rammed earth can offer an economical and sustainable alternative to concrete. Moreover, existing formwork techniques used for concrete can be adapted for rammed earth construction. Despite its clear environmental advantages and similarity to present construction practices, rammed earth has yet to be investigated satisfactorily as a viable building technique for New England. This project will use laboratory and field research funded by the BSA to investigate rammed earth as a potential construction element in contemporary architectural practice. The goal of the project is to address both the technical and aesthetic merits of rammed earth.

The project is divided into three phases. The first phase will review literature to assess the present state of knowledge about rammed earth including contemporary examples in other regions of the United States. In the second phase we will fabricate wall sections to obtain technical data for a range of mixtures of earth, including those containing various types of post consumer waste and construction debris. The focus of this research will be on New England climate and soil compositions. In the final phase we we will construct a rammed earth wall to serve as a field test in which fabrication strategies and designs can be investigated at full scale and evaluated for their technical and aesthetic qualities. By designing and building rammed earth wall sections, we will take the first step toward increasing professional and public awareness of rammed earth as a viable alternative to concrete in the built environment of New England.