

HR-510 REINFORCED EARTH AND STONE COLUMNS FOR WEAK SUBSOIL CONDITIONS CONCLUSIONS

Reinforced Earth is a French development that has been used in the United States for approximately ten years. Vibro-Replacement, more commonly referred to as stone columns, is an outgrowth of deep densification of cohesion less soils originally developed in Germany.

Reinforced Earth has applicability when wall height is greater than about twelve feet and deep-seated foundation failure is not a concern, Stone columns are applicable when soft, cohesive subsoil conditions are encountered and bearing capacity and shearing resistance must be increased. The conditions in Sioux City on Wesley Way can be summarized as: (1) restricted right of way, (2) fill height in excess of 25 feet creating unstable conditions, (3) adjacent structures that could not be removed, After analyzing alternatives, it was decided that Reinforced Earth walls constructed on top of stone columns were the most practical approach.

Iowa has limited experience in instrumentation. Instrumentation can be very important in helping to understand the behavior of materials in the field,

It also is beneficial in helping to spot potential problems and effect necessary changes before failure is encountered, Both Reinforced Earth and Vibro-Replacement are, an effective, practical means of solving weak foundation/restricted area problems, They both can work well in conjunction and can be constructed with no special problems. As more experience is gained in using these tools, even the minor problems that occurred on this project will eventually be foreseen and avoided,