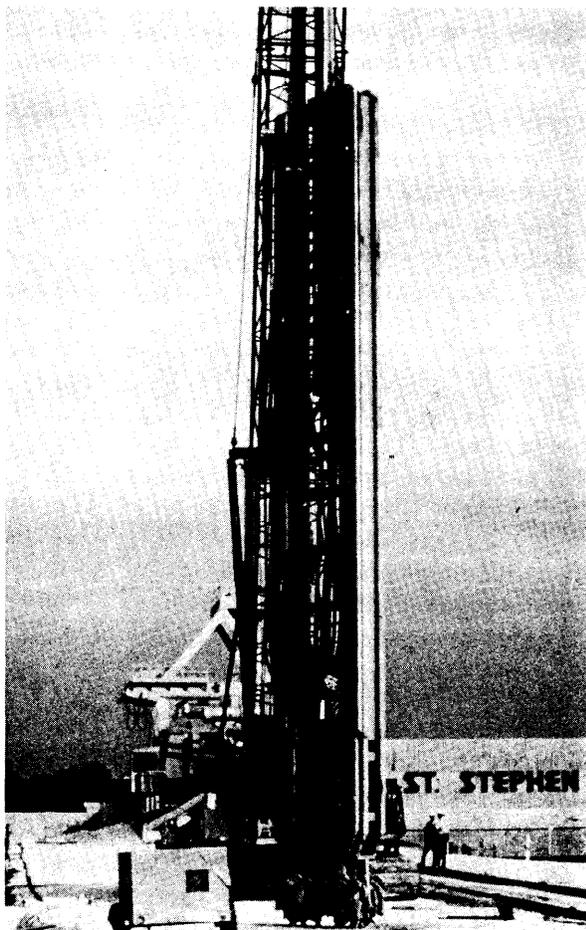




REMR TECHNICAL NOTE GT-SR-1.1  
 DRILLING MACHINE FOR EXCAVATION  
 FOR CONCRETE CUTOFF WALLS



PURPOSE: To describe a French drilling machine known as the Hydrofraise that can be used for excavation for concrete cutoff walls.

OWNER: Recosol, Inc.\*  
 ATTN: Bernard Tarralle,  
 Operations Manager  
 1700 North Moore St,  
 Suite 2200  
 Arlington, VA 22209  
 Tel 202-524-6503  
 TWX 824450 SOLINC

DESCRIPTION: The Hydrofraise is a drilling machine powered by three down-the-hole motors with reverse mud circulation (Figure 1). A heavy metal frame serving as a guide is fitted at its base with two cutter drums (Figure 2) carrying tungsten carbide-tipped cutters which rotate in opposite directions and break up the soil (or rock). A pump located just above the drums excavates the loosened soil which is carried to the surface by drilling mud. The mud with cuttings is continuously filtered and poured back into the trench. A heavy crawler crane supports and manipulates the machine. The hydraulic cutting device is designed to give the cutter drums a high torque at

low speeds of rotation. The guide frame is attached to the crane operating cable through a hydraulic feed cylinder which can be controlled to give a constant rate of advance or to maintain a constant weight on the cutter drums, the maximum being the weight of the machine, 16 to 20 tons.

ADVANTAGES: The Hydrofraise eliminates the need for chiselling. The absence of vibration and shock makes the system suitable for use in urban areas. A guide box (Figures 3 and 4) is used to position the Hydrofraise along the

---

\* Company formed by the merger of Reinforced Earth Company and Soletanche and Rodio, Inc.

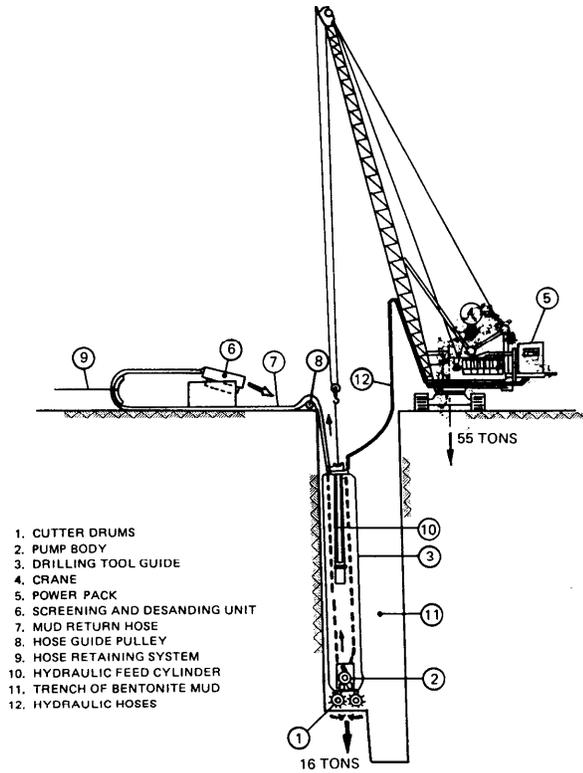


Figure 1. Schematic of Hydrofraise and support equipment.

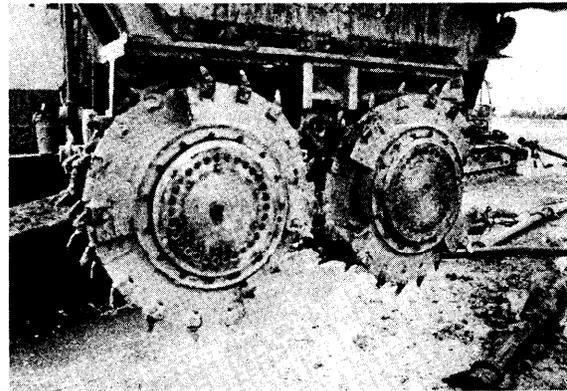


Figure 2. Close-up of cutter drums at base.

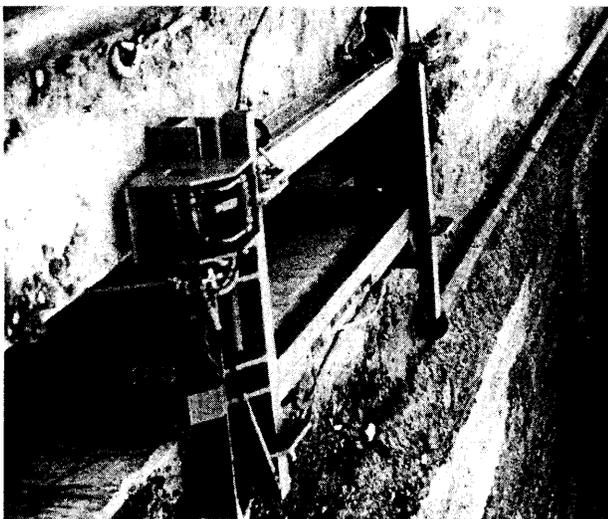


Figure 3. Guide box used to position Hydrofraise.

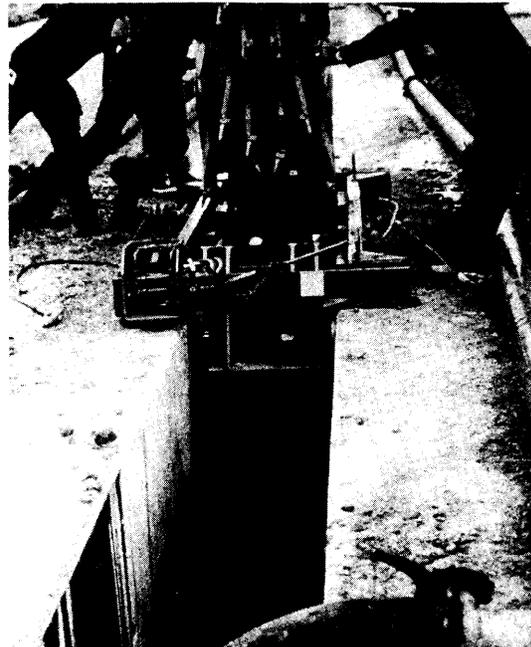


Figure 4. Lowering Hydrofraise into guide box.

guide walls, allowing the cutting tool to attack the concrete of primary panels when excavating for a secondary panel, thus eliminating the need for tube joints when building a concrete panel wall. Drilling mud is constantly screened and desanded during excavation; therefore, the steel reinforcement can be placed and concreting carried out as soon as the required depth has been reached.

FIELD PERFORMANCE: The Hydrofraise has been successfully used to excavate for a concrete cutoff wall at the Cooper River Rediversion Project, South Carolina, in the Corps of Engineers' Charleston District.

REFERENCES:

- a. Cooper River concrete cutoff design. T. Hightower. In: Proceedings, Corps of Engineers geotechnical meeting on slurry trench cutoffs, Eufaula, Alabama, October 1984, US Army Corps of Engineers, Washington, DC.
- b. Hydrofraise. Recosol, Inc., Paris, France.
- c. French drilling machine shows advantages in excavating for concrete cutoff wall. C. M. Hess. In: The REMR Bulletin, Vol 2, No. 2, June 1985, US Army Engineer Waterways Experiment Station, Vicksburg, MS.