

CENTRAL LABORATORIES FOR SCIENTIFIC AND INDUSTRIAL RESEARCH, HYDERABAD (DN.)

THE Central Laboratories for Scientific and Industrial Research, Hyderabad (Dn.), which was recently declared open by Shri Pandit Jawaharlal Nehru, Prime Minister of India, aims at furthering the work of the National Laboratories on a regional level and has the following functions: to help and encourage the development of Hyderabad State by organized scientific and industrial research through (a) exploration of the possibilities of industrial utilization of the indigenous raw materials of Hyderabad State; (b) devising methods for the expansion of existing industries, and formulating plans for the starting of new industries, by carrying out experimental work on a pilot plant scale in the laboratories.

The main purpose of the Laboratories is to carry out developmental research of an industrial nature covering the fundamental as well as applied aspects of each problem. Research problems taken up for investigation are initially put forward by Research Committees, Government Departments of Industries, or are brought up during discussion between the Director and research workers. The problem is discussed in detail in the Operational Research Unit and a decision taken regarding its importance and feasibility. Subsequently, information relating

to the availability of raw materials, demand for finished products, their market prices, etc., is collected and a Literature Note is prepared incorporating all the data available. This note is discussed anew by the Operational Research Unit and a detailed programme of work with a time target is drawn up. On successful completion of the laboratory investigation, the Pilot Plant Committee studies the chemical engineering aspects of the problem in its translation to the pilot plant stage, and prepares a non-technical note with approximate costings, for circulation among interested industries. Pilot plant experiments are then undertaken either in the Laboratories or by industries, and an industrial process is evolved on the basis of these trials. The Pilot Plant Schemes are also sent to the various specialized bodies of the Government of India, like the Indian Central Oilseeds Committee, the Council of Scientific and Industrial Research, the National Research Development Corporation and others.

In the selection of the research programme, every effort is made at all stages, to co-ordinate the work with that of the National Laboratories, and care is taken to avoid unnecessary duplication of effort.

VIBROFLOTATION

SAND, which is normally a poor foundation for large heavy buildings, can now be made to serve as a satisfactory base by a new process called "vibroflotation", which increases the relative density of the soil by compacting and compressing into a dense mass. The device consists of a tube which is vibrated by an internal electrically driven eccentric producing a 10-ton centrifugal force. This apparatus is attached to a follow-up pipe which houses the water mains and electric lines. In operation, the Vibroflot is suspended from a crane and guided by vertical wooden leads. Vibrating at full speed, it is lowered into the sand while a water jet at its tip forms a saturated mass of sand or temporary "quick-sand" condition, into which the vibrator rapidly sinks. The device pounds the sand surrounding it into a

tighter mass on all sides. Fresh sand is shoveled in from above to fill the extra space which is formed by compaction. The vibrator is withdrawn in 1-foot stages. Tightly compacted columns of sand, 8-10' in diameter, are formed, which are pounded in a pre-determined overlapping pattern with about 8' between centres. The pattern, resulting in a relative density of 70-100 per cent, greatly strengthens the compacted mass.

The technique has a promising future in the construction of earth dams, coffer-dams, levees, airports in sandy areas, and heavy industrial plants which contain vibrating equipment. Another special use is in water-retaining dams and underwater structures where vibroflotation concrete can create unusually tight structures. (By courtesy of USIS Engng Newsletter.)
