

GROUND STABILIZATION BY 'WET' METHOD

METHOD STATEMENT

PLANT & EQUIPMENT

The technique involves the use of a Pennine vibroflot, comprising a hydraulic powered eccentric weight assembly enclosed in heavy tubular steel casing. The vibroflot is suspended from a crawler crane. The basic length of the vibroflot assembly is 8 metres although extension tubes may be added to increase the vibroflot length as the depth of treatment dictates. The vibroflot diameter is 310mm and is powered by a 130 kW portable diesel power pack and thus generates high centrifugal forces in the horizontal plane at a frequency of 50 cycles per second in most cases. The nose of the vibroflot is tapered to aid penetration of the ground whilst vertical fins prevent the vibroflot rotating during penetration. Water is used as the jetting medium to assist the penetration of the vibroflot to the required depths.

WET STONE COLUMNS TECHNIQUE

The vibroflot, suspended from the crane, is lowered into the ground and penetrates with the combined action of water jetting from tip and vibration from the vibroflot.

After reaching the required depth, the water jetting volume is reduced until a small upward flow around the annulus of the vibroflot is observed. At this point, a small quantity of stone aggregate (normally 20 to 40 mm single size) is introduced and the vibroflot is slightly lifted and lowered until the stone charge is fully compacted at the tip of the vibroflot. This action is repeated in 0.3m to 0.5m lifts until the stone column is formed to the surface.

STONE COLUMNS

Compact stone columns are constructed to effect stabilisation of the treated ground. Typically, stone column diameters are in the order of 600-800mm. The column diameter will naturally vary with the technique and soils conditions, but generally the weaker the soils, the larger the diameter of the stone column.

The stone columns are normally constructed directly beneath the main foundations, usually in single or multiple rows beneath strip foundations and in groups beneath pad foundations. Area or floor slab treatment is normally carried out in grid spacing. The spacings and arrangements of the stone columns are dependent on the soils conditions and the loads carried by the foundations.