It is an obvious truism that structures should be constructed on good quality ground. Ground conditions of construction sites, however, have become worse in recent decades throughout the world. This situation is especially pronounced in Japan, where many construction projects are conducted on soft alluvial clay grounds, reclaimed grounds with dredged soils, highly organic soil grounds, and loose sandy grounds and so on. When any types of infrastructures are constructed large amounts of ground settlement and/or stability failure are likely to be encountered. Apart from clay or highly organic soil grounds, loose sand deposits under a water table cause serious problems of liquefaction under seismic conditions. Many soil improvement techniques have been developed in Japan. Here three of them are briefly presented.

**drainage technique**
Vertical drainage technique has been applied to soft soils to accelerate its consolidation process. The sand drain method and prefabricated drain method have been frequently applied for on land and marine construction project. In the Kansai International Airport Construction Project, more than one million sand piles were installed in the alluvial clay layer. The prefabricated drain has been used in combination with surcharge fill and vacuum consolidation. The horizontal drain method in combination of vacuum is developed for dewatering very soft dredged soil, in which the prefabricated drains are installed horizontally at intervals of around 0.5 to 1.5m.

**densification techniques**
Densification techniques have been applied to loose granular materials to increase the uniformity of sandy ground, to improve its stability or compressibility and/or to prevent liquefaction failure. The sand compaction pile (SCP) method is one of the most common techniques in Japan, while dynamic compaction technique, vibro-compaction techniques and vibro-tamper techniques are also frequently applied. In the SCP method, sand is fed into a ground through a casing pipe and is compacted by either vibration, dynamic impact or static excitation to construct a compacted sand pile in the ground. At present, the technique has also been applied to soft clay ground to assure stability and/or to reduce ground settlement.

**admixture techniques**
There are many kinds of soil stabilization techniques developed and available in Japan to improve various kinds of soil and purpose of improvement. Among these techniques, soil admixture
techniques using chemical stabilization agents are also frequently applied for improvement of clayey and sandy soils. Deep Mixing Method (DMM) is a kind of deep in-situ admixture stabilization technique using such hardening agents as quick lime, slaked lime, cement, or a combination of these agents. DMM was put into practice in Japan and Nordic countries in the middle of 1970’s to improve soft marine deposits. Two decades of practice have made the equipment improved, stabilizers changed, and the applications diversified. Lime is replaced with cement in Japan. At present, in Japan, the method with cement milk is widely applied to port construction works and the method with powdered cement is applied to works on land. Premix Method is admixture stabilization technique in which a small amount of stabilizing agent and a chemical additive are mixed with sandy soil. The method was originally developed for liquefaction remediation of reclaimed land, but recently has been also applied for backfill to reduce the earth pressure. Light-Weight Method is a technique to manufacture a new type of soil from recycling dredged clay or bulky wastes. In the method, the soil with relatively high water content is treated by stabilizing agent and also is mixed with air form or polystirol beads to create light weight soil material. Recently, a new soil improvement technique has been developed, named as Pneumatic Flow Mixing Method, in which dredged soft soil is mixed with small amount of stabilizing agent, usually cement, in a pipe during transports by compressed air and is deposited for sea reclamation. The method was successfully applied to construct a man-made island for Central Japan International Airport at Nagoya area in Japan, where the total of 12 million m$^3$ of dredged soil is stabilized by this method to construct a part of the airport island.