



Ground Improvement Specialists

## Controlled Modulus Columns

---

### Introduction

Controlled Modulus Columns (CMCs) are used to improve the soils characteristics of weak ground and to reduce imposed settlements caused by the proposed structure. CMCs are installed using a specially designed auger that displaces the insitu soils laterally, with virtually no vibration or spoil, and reduced risk of contamination.

The auger is screwed in to soils to the designed depth, this increase the density of the surrounding soil, and as such increases its strength and or



*CMC's installed for building slabs or rail/road embankments*



soil, and as such increases its strength and or bearing capacity. When the auger is extracted a column is developed by pressure grouting, at less than 5 bar, to improve the surrounding soils. The result is a composite ground improvement solution offering enhanced stiffness characteristics, allowing the CMCs and the surrounding soil to share the imposed loadings.

After installation CMCs are installed they are covered by a designed load transfer platform, between 0.4 and 0.8m thick, to efficiently transfer load from the structure to the CMC/Soil matrix.

CMCs were developed by Menard in 1994 and are now used in many countries around the world. Current practice is to install CMCs with a diameter of between 250 and 450mm.



*CMC's installed close to existing building foundations*

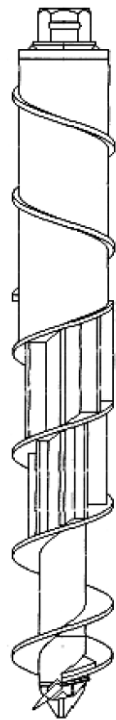
#### **Advantages:**

- **Minimal Spoil.**
- **High production outputs.**
- **Suitable for most soil types.**
- **Can deliver reduced settlements for high loads.**
- **Densification delivers concrete savings .**

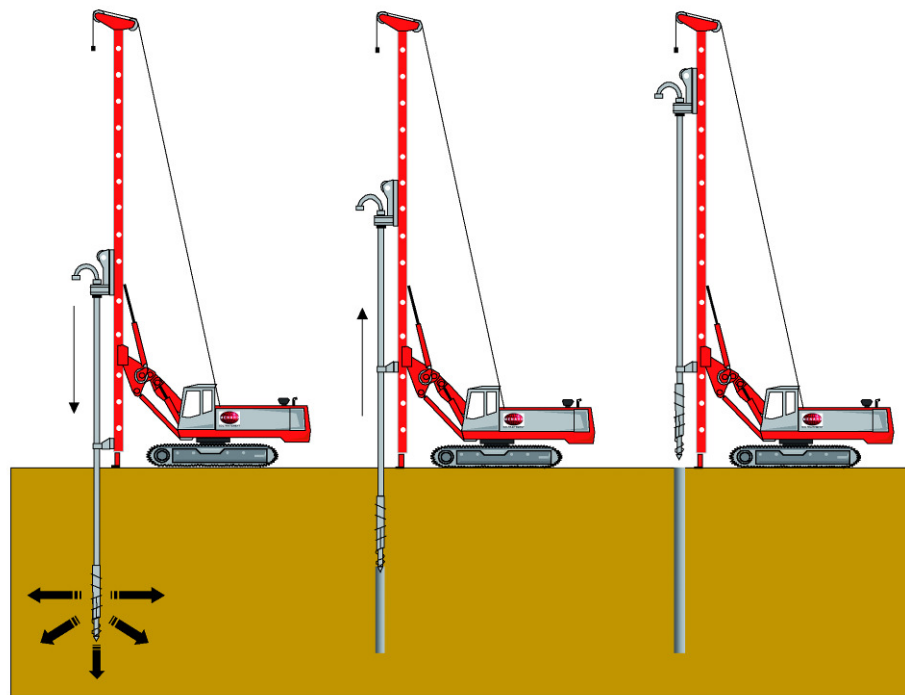
#### **Applications :**

- **Road & Rail Embankments**
- **Storage tanks & port facilities**
- **Bridge abutments & retaining walls**
- **Warehouse & industrial facilities**

## Controlled Modulus Columns



*Hollow stem  
Displacement  
Auger.*



*1. High torque and high static down thrust displaces the soil laterally using the specially designed auger.*

*2. During extraction a controlled modulus column is developed by grouting through the hollow stem in the auger.*

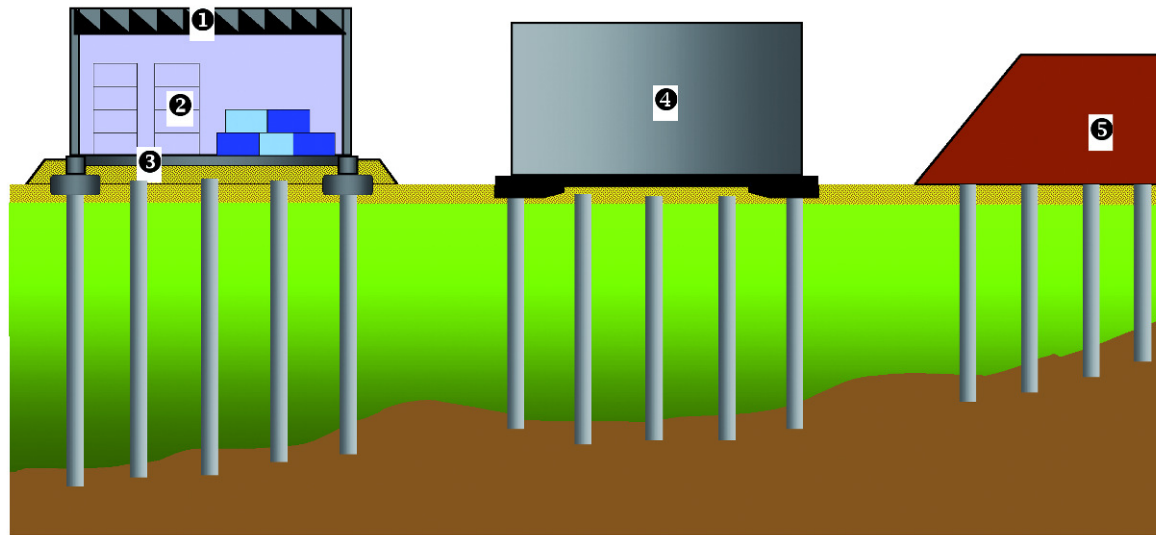
*3. The result is a 250-450mm diameter composite soil cement column delivering a ground improvement system.*

Auger.

cially designed auger.

through the hollow stem in  
the auger.

ing a ground improvement  
system.



1-3. Commercial Buildings, Ware-  
house, industrial facilities with  
slabs, shallow spread and strip  
foundations

4. Storage Tanks, Silos

5. Road and Rail embankments



[www.vibromenard.co.uk](http://www.vibromenard.co.uk)

