

KUIC Technology Profile

Breakaway Casing Connection

Summary:

The present invention provides a system and mechanism for detaching a portion of a casing used in the construction of a drilled shaft, so that a remaining portion of the casing may be recovered.

Contact Information: Nathan Urbauer, J.D.

KU Innovation & Collaboration (785) 864-7871 nathan.urbauer@ku.edu

Benefits:

- Protective grout may be placed immediately after installation of the permanent casing.
- Simpler and less expensive way to achieve the benefits of belled shafts.
- Temporary casing with a breakaway connection may be used together with a less expensive form of permanent casing.

Overview:

Drilled shafts can be used to construct deep foundation units, which are capable of transferring loads from structures into deeper soil layers or to rock. Foundation units are typically constructed by drilling holes in the ground, placing steel reinforcement in the holes, and filling the holes with concrete. In most cases, the casing is not included in the structural design of the shaft and it is necessary only to keep the hole open during the drilling process until the reinforcing steel is placed in the hole and the hole is filled with concrete. It is preferable that the casing be pulled or removed from the hole so that it may be re-used, however, the casing often becomes stuck and cannot be retrieved. In addition to the lost expense in irretrievable materials, the presence of casing may also have an impact on the structural properties of the drilled shaft.

How it works:

A detachable portion of a casing is attached to the base of the primary portion of the casing using a breakable connection or other connection mechanism. The casing is installed or positioned by driving, rotating, and/or vibrating it into place. Soil is removed from inside the casing and the shaft is filled with concrete or reinforcing steel. Finally, a pulling force is applied to the top of the casing. If the pulling force does not exceed the strength of the connecting mechanism, both the primary portion and the detachable portion may be recovered. If the tension force required exceeds the strength of the connection joining the primary portion and the detachable portion, the connection will cause the primary portion of the casing to detach from the detachable portion. The primary portion of the casing is then pulled for reuse.

Patents: US [2010/0232887](#)

Inventor(s): Robert Parsons, M. Luke Schuler.

Tags: Construction