TAIHEIYO

QUI CUTTER

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Taiheiyo Materials Corporation
ONODA QUI CUTTER is a material which can generate cracks to cut a pile head. The QUI CUTTER is previously set to the re-bar cage for a cast-in-place pile, and then concrete is cast for piles. The QUI CUTTER reacts with excess water in concrete, and its expansive stress gradually occurs and generates cracks for cutting the pile head. After occurrence of cracks, the pile head is removed with heavy machines such as cranes etc.

1. Features
   1) Low Pollution
      An occurrence of noise, vibration, dust etc. is restrained, so that environment for work is improved.
   2) High Workability
      The power of QUI CUTTER was increased in comparison with the previous QUI CUTTER, so that the number of QUI CUTTER to be set to re-bar cage can be reduced. Moreover, since a special metal fitting for setting QUI CUTTER is used, easy and precise setting is realized.
   3) Shortening Work Period
      The work period can be shortened because the removal work of the pile head is sufficiently carried out. At one job site in Japan, removal of 40 pile heads a day was realized by using QUI CUTTER.

Setting of QUI CUTTER

Occurrence of cracks

Removal of Pile-head

Completion of removal of pile-head
2. Kinds of QUI CUTTER and Attachments

(For cutting small diameter piles horizontally : max. φ 1200mm)

① QUI CUTTER NL (700mm x 55 mm x 10pcs, ② Metal fitting for NL = 30pcs, ③ Fitting band = 40pcs)

(For cutting big diameter piles horizontally : min. φ 1300mm)

④ QUI CUTTER E (550 mm x 95 mm x 10pcs, ⑤ Fitting band = 40pcs)

⑤ Single metal fitting for QUI CUTTER E (separate sale)

⑥ Double metal fitting for QUI CUTTER E (separate sale)

(For cracking cover concrete : min. φ 1000mm)

⑦ QUI CUTTER KL (700mm x 55mm x 10pcs, ⑧ Fitting band = 40pcs)

⑧ Insulator (separate sale)
3. Performance of QUI CUTTER

1) The expansive stress of QUI CUTTER takes place by reaction with water in solution of Bentnite or excess water in Concrete. QUI CUTTER is designed to occur and develop the expansive stress after the occurrence of the initial strength of the concrete.

2) The direction of cracks can be controlled by the oval shape of QUI CUTTER and by using metal fittings for QUI CUTTER NL or E.

3) QUI CUTTER KL for taking cover concrete is designed to generate cracks after horizontal cracks are taken place with QUI CUTTER NL or E.

4) QUI CUTTER NL and E hardly exert bad influence on the hardened concrete below the designed cracking line.

Expansive stress of QUI CUTTER (20°C)

- The timing of occurrence of cracks varies with application conditions etc.
4. Application

1) Large Cut of Pile-head Application Method (Horizontal cutting)

The Large Cut Pile-head Application Method is to generate cracks with QUI CUTTER NL or E in pile-head horizontally and to remove the cut pile-head with heavy machines such as a crane etc.

Setting of QUI CUTTER for double re-bar (φ 1200)

Hanging up of pile-head

Cutting surface
2) Medium Cut Pile-head Application Method (Horizontal cutting + taking cover concrete)

The Medium Cut Pile-head Application Method is to generate cracks vertically in cover concrete with QUI CUTTER KL after the pile-head is horizontally cut with QUI CUTTER NL or E and to remove the cover concrete and the pile-head left with heavy machines. Since cover concrete is removed previously, the hang-up removing work can be carried out easier.

* It varies with the height of pile-head.
3) Double Cut Application Method

The Double Cut Application Method is to carry out horizontal cutting and cracking of cover concrete at two places and to remove the pile-head left twice. This application method is effective for big piles of which the pile-head is more than 1 meter in length.
4) Vertical Cut Application Method (Medium Cut Pile-head Application Method + Vertical Cut)

Vertical Cut Application Method is to generate vertical cracks with QUI CUTTER E which is set vertically inside of the re-bar cage and to divide the pile-head 2 or 3 parts. According to dividing the pile-head, the burden to heavy machines for hanging up the divided pile-head is reduced. This application method is effective in case of the removal of big and heavy pile-heads.

- Note: The setting pattern and required number of QUI CUTTER E vary with site conditions.
5. Application Procedure

1) For horizontal cutting and for Large Cut Pile-head Application Method
   (1) The required materials and tools for setting QUI CUTTER should be prepared.
   QUI CUTTER for horizontal cutting should be set to the metal fittings.

   ![Before setting and After setting diagrams]

   (2) QUI CUTTER for horizontal cutting should be set to the re-bar cage.

   ![Re-bar cage setup image]

   (3) The setting level for QUI CUTTER should be decided, and the QUI CUTTER fitted to the re-bar cage should be slid to the level. Then, the slid QUI CUTTER should be set together with insulators to the main re-bar with the metal fittings and fitting wire. The setting level should be decided in consideration of the precision of setting re-bar cage and crack precision.

   - Crack precision = ±50mm from setting point
(4) The top of the insulators should be fitted to re-bars with fitting wire, and QUI CUTTER should be set to the main re-bar with the fitting bands. The points of the fitting bands should be cut.

« Setting pattern for QUI CUTTER for horizontal cutting »
(Refer to the Table 1 on number of QUI CUTTER)
2) Cracking of cover concrete: Medium Cut Pile-head Application Method
QUI CUTTER KL for cracking cover concrete should be set to insulators for main re-bars with fitting bands.
- The position for setting QUI CUTTER KL varies with site conditions etc.

3) Vertical Cracking: Vertical Cut Application Method
QUI CUTTER E for Vertical Cutting Application Method should be set to main re-bars adjusting the crack direction.
- The setting pattern for QUI CUTTER E in the Vertical Cut Application Method varied with site conditions.
6. Flow Chart of the Application for QUI CUTTER

Meeting for Pile-head Cutting
- Discuss the height of pile-head, how to cut the pile-head etc.
- The height of pile-head
  
  Large Cut Pile-head Application Method
  = min. 500mm
  Medium & Vertical Cut Pile-head Application
  Method = 500mm~1000mm

Selection of the method for Pile-head cutting
- The suitable pile-head cutting method should be decided according to the conditions of piles.

Set of QUI CUTTER
- The set of QUI CUTTER should be carried out only for the piles which are installed the day.

Insert of re-bar cage
- The hanger (refer to the photo) should be used for hanging the re-bar cage, and the cage should be inserted without giving any damage to QUI CUTTER.

Cast of concrete
- Do not give any damage to QUI CUTTER with a tremi pipe when concrete is cast.

Cutting
- The point of re-bar should not be bent.

Removal of pile-head
- When the pile-head is hung up for removal, pay enough attention to the safety.

Chiseling for finish
- Chiseling work should be carried out for adjusting the top of the pile to the designed level.
7. Tools for fitting QUI CUTTER
   - Tool for tightening fitting wire
   - Fitting wire (550mm)
   - Scale
   - Nipper
   - Chalk
   - Marker pen

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8. Caution for use

1) Do not use QUI CUTTER with other method or for other purpose than described in the brochure.

2) QUI CUTTER should be kept in a dry place and should be used up as soon as possible after the carton is opened.

3) The anti-moisture cover sheet for QUI CUTTER should be removed from QUI CUTTER just before the QUI CUTTER is used.

4) The broken QUI CUTTER should not be used.

5) When the powder of QUI CUTTER gets into eyes, rinse it off with clean water immediately and consult a doctor.
   
   In case the powder of QUI CUTTER comes in contact with skin, rinse it off with clean water because it may cause skin irritation.
   
   The main component of QUI CUTTER is calcium oxide.

6) Do not break the QUI CUTTER and do not put the powder into a glass, can, or other containers such as pipes together with water. It is very dangerous because the containers are broken with the expansive stress caused by the reaction of the powder and water and the pieces of the broken containers may scatter.

7) Since the deterioration of QUI CUTTER may occur if it is stored for a long time, use it as soon as possible.

8) When QUI CUTTER is disposed, react QUI CUTTER with a lot of water due to generating heat, then throw it away.
9. Safety Instruction

1) Do not use QUI CUTTER for other purpose than described in the brochure.

2) When the QUI CUTTER gets into eyes, rinse it off with a lot of clean water immediately and consult a doctor soonest possible. It should be informed to the doctor that the main component of QUI CUTTER is calcium oxide and it is an alkaline product (pH=12~13).

3) When the QUI CUTTER comes in contact with skin, rinse it off with clean water.

4) Do not break the QUI CUTTER and do not put the powder into a glass, can, or other containers such as pipes together with water. It is very dangerous because the containers are broken with the expansive stress caused by the reaction of the powder and water and the pieces of the broken containers may scatter.
## Required Number of QUI CUTTER (Pile Head around 1000mm)

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