

Question 3.3 : What other recent innovations have been implemented or should be implemented to improve the safety of OHTL workers?

Contribution 3.3 : Application of strand rebar cage method for pier foundations of OHTL towers

1. Background

In conventional rebar placement work for pier foundation, there is a risk of various accidents. For example, when the rebar was lowered into the borehole from the ground in order to assemble the rebar in the borehole, there may be a possibility of falling rebar. In order to avoid these accidents, the method of assembling the rebar cage on the ground has been adopted. However, this method requires a large construction site, which is difficult because many OHTL (overhead transmission line) towers are constructed in incline mountainous areas in Japan. Therefore, we decided to verify the effectiveness of the “Strand rebar cage” as a new rebar assembly method.

2. Our innovation ; Strand Rebar Cage Method

The strand rebar cage is a foldable rebar cage. It can be lifted by crane and easily installed by slowly extending. Strand rebar uses strand material for the longitudinal rebar. The strands are joined to the hoop rebar by connecting and rotating devices. This method can shorten the construction time. The expected conventional construction time is two and a half days, but this method can be conducted in half a day, i.e. an 80% reduction in the time required for rebar placement is assumed to be possible. This allows for a reduction in the work in the borehole, and the risk of falling objects can be reduced, so, safety can be improved.

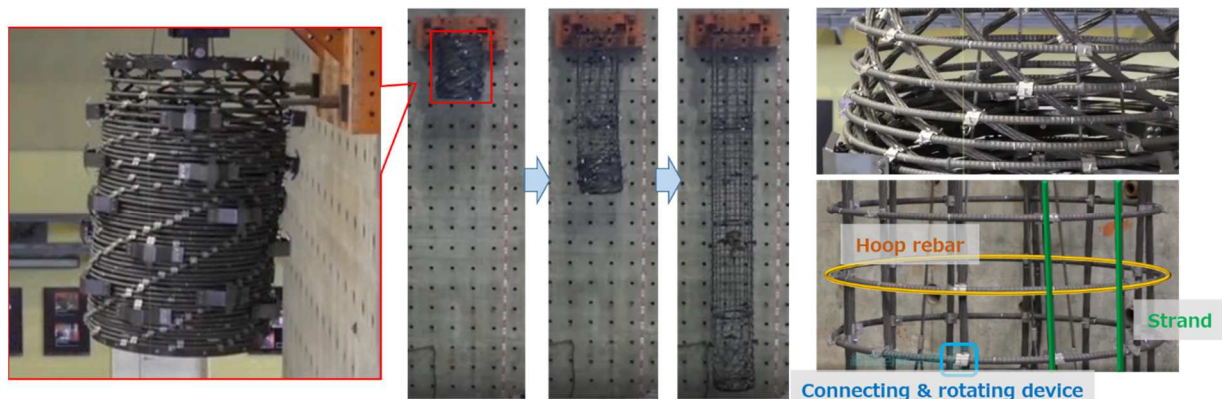


Fig. Strand rebar cage

3. The result of demonstration test and future plan

We conducted a demonstration test in spring this year using a short model with a depth of 4 m and identified some issues. For example, as one of the issues, we have to think about how to enter and exit the borehole. This is because workers need to join the cage, check the rebar installation, and place and compact of concrete during cementing after the rebar cage is installed. Basically, workers cannot ride on the hoop rebar of the strand rebar cage, so if a ladder can be installed, it will be possible to enter and exit the borehole.

The actual pier foundation is more than a depth of 20m, so we have to consider many things for safety. After solving these issues, we would like to install the strand rebar in an actual transmission line in the near future.