

THE HONG KONG
POLYTECHNIC UNIVERSITY

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Erection of Bamboo Scaffolds

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INBAR

6 Knots in bamboo scaffolds

Knots in bamboo scaffolds are primarily hand-made fastenings with plastic strips between bamboo members which are made on site for easily erection and dismantle.

6.1 Common knots

Three main types of knots are illustrated in Figure 6.1 as follows:

a. Basic knot

It is a simple knot commonly used in connecting two bamboo members with plastic strips. The knots should be tight and secure with 5 round turns to form a tight fastening. It is commonly used in connecting a standard or a post with a ledger, and also a bracing with a ledger.



b. Restrained knot

It is a basic knot restrained by another plastic strip or a bunch of galvanized wires for improved strength and stiffness.



Figure 6.1 Knots in bamboo scaffolds

c. **Reinforced knot**

Similar to a restrained knot, it is an extended basic knot restrained by plastic strips or wires covering most parts of the intersection. It is often applied to heavy-duty members such as wind braces, and rakers.



Figure 6.1 Knots in bamboo scaffolds (continued)

6.2 Tightening sequence of a lap in parallel members

The tightening sequence is illustrated in Figure 6.2.

Step 1

Place the plastic strip in position.



Step 2

Tighten the plastic strip after two round turns.



Step 3

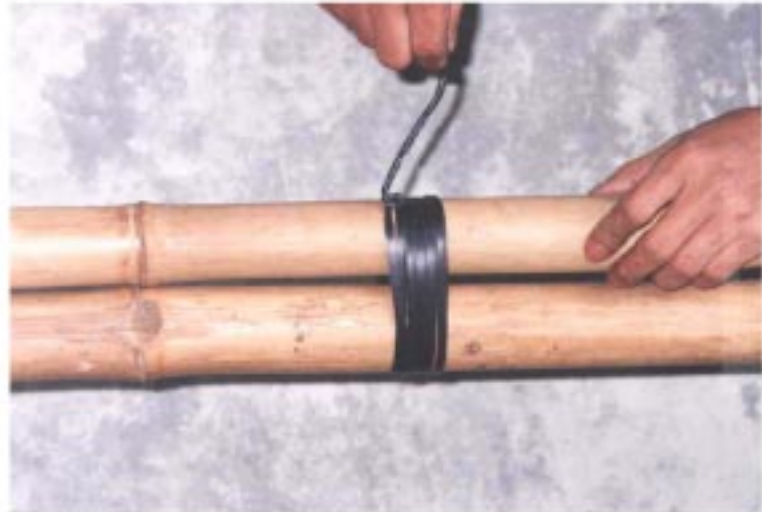
Tighten the plastic strips again after 5 round turns.



Figure 6.2 Tightening sequence of a lap in parallel members

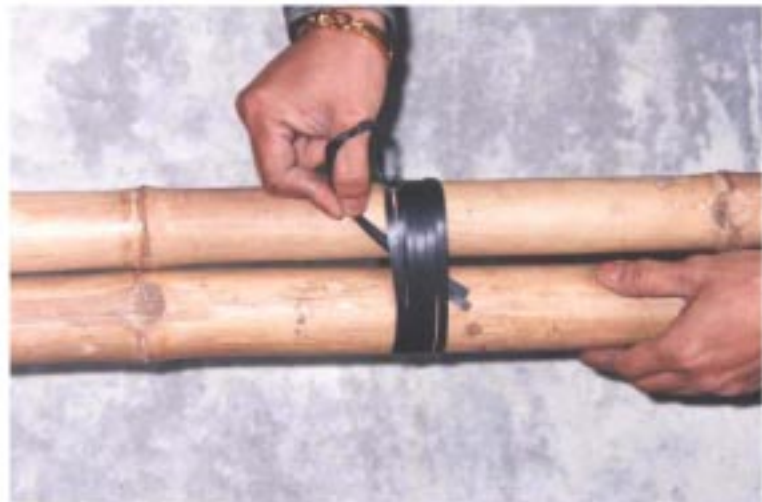
Step 4

The ends of the plastic strips are then crossed and twisted together to form a twisted end.



Step 5

The twisted end is passed through the fastening twice to give one round turn for anchorage.



Step 6

A fastening with plastic strips of 5 round turns with proper anchorage is thus completed.



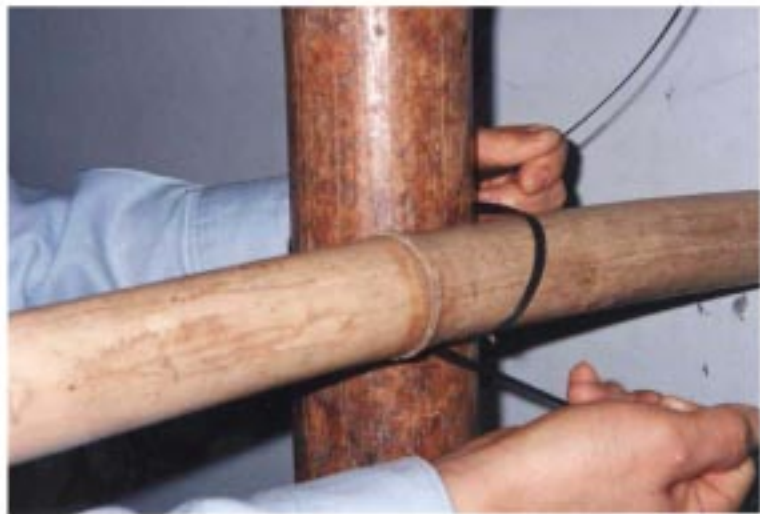
Figure 6.2 Tightening sequence of a lap in parallel members (continued)

6.3 Tightening sequence of a joint between orthogonal members

The tightening sequence is illustrated in Figure 6.3.

Step 1

Place the plastic strip in position.



Step 2

Tighten the plastic strip after two round turns.



Step 3

Tighten the plastic strips again after 5 round turns.



Figure 6.3 Tightening sequence of a joint between orthogonal members

Step 4

The ends of the plastic strips are then crossed and twisted together to form a twisted end.



Step 5

The twisted end is passed through the fastening twice to give one round turn for anchorage.



Step 6

A fastening with plastic strips of 5 round turns with proper anchorage is thus completed.



Figure 6.3 Tightening sequence of a joint between orthogonal members (continued)

6.4 Tightening sequence of a restrained knot between inclined members

The tightening sequence is illustrated in Figure 6.4.

Step 1

After the basic fastening is formed between inclined members, place another plastic strip across the fastening.



Step 2

Tighten the basic fastening after 3 to 5 round turns of the plastic strip. The ends of the plastic strips are then crossed and twisted together to form a twisted end.



Step 3

The twisted end is passed through the fastening twice to give one round turn for anchorage. A fastening with plastic strips of 5 round turns with proper anchorage is thus completed.



Figure 6.4 Tightening sequence of a restrained knot between inclined members