CFCC Pre-tensioning Manual for Precast pre-stressed concrete beam

This manual shows the basic work sequence at the time of manufacturing Precast Prestressed concrete Beams which uses CFCC Tendons at pre-caster’s factories.
1. General pre-tensioning system
2. Parts list

- Sleeve Wedges
- Wedges for Steel strand
- Wedges for CFCC
- Joint coupler
- Braid Grip
- Sleeve for Steel strand
- CFCC
- Braid Grip
- Steel strand

Sleeve for CFCC
Wedges for CFCC
Joint coupler
Mesh sheet
Braid Grip
Wedges for Steel strand
3. Handling of pre-tensioning cables (CFCC)

(1) Spreading and cutting

① Pull out the cable slowly from bottom of the wooden reel.

② Measure and cut the cable.

Notice

Hold outside the reel during the spreading work, because it is the property to suddenly unwind.
Fasten the end of CFCC to a wooden reel with a string, at the time of the work end or the work intermission.
(2) Setting to the form

① Set the reinforcements (stirrups and bars) into the form.

② Insert the pre-stressing strands into the form.

TOKYO ROPE MFG.CO., LTD.
(3) Setting the anchoring devices

(3-1) Wrapping the buffer material

① Wrap the anchoring part of CFCC with the mesh sheets.

② Spray molybdenum on the inside of sleeve.

③ Insert the sleeve to CFCC.

Fix with the tape

Mesh sheet

Sleeve

155mm ~ 160mm

TOKYO ROPE MFG.CO.,LTD.
4. Insert the braid grip to CFCC, and cover the mesh sheet with the braid grip.

5. Draw the braid grip tightly in the direction of the arrow through your hand in order to eliminate the wrinkles, and then cut the braid grip.

Fix with the tape.
(3-2) Setting wedges and sleeve to CFCC

① Spray molybdenum on the outside of wedges.

② Set the wedges.

Notice
Do not set the wedges on any tape which fixed the mesh sheet and braid grips.

Notice
Be careful so that the end face of the wedges does not become uneven.

Warning
Do not become uneven the gaps between wedges.

Notice
Pando 19A made by Three-bond or its equivalent shall be used for the molybdenum.

TOKYO ROPE MFG.CO.,LTD.
③ Mark the point at 55mm (Set length) of the wedges.

④ Set the above unit into the Push Equipment.

⑤ Finish

Mark the point at 55mm (Set length)

60mm or under

Coupler

55mm
(Set length)

55mm

Unit

Push Equipment

55mm

© TOKYO ROPE MFG.CO.,LTD.
(4) Setting the tensioning devices

(4-1) Attaching the wedges and a coupler to steel strand.

Notice
Use CFCC and steel strand of same lay direction. (The prevention of cable untwisting.)
(4-2) Joining CFCC to steel strand while turning a coupler

Check!
(4-3) Setting up the tensioning devices

Before

After

Notice
Fix stopper of ram turning to jack body and ram for prevention of cable untwisting.

TOKYO ROPE MFG.CO.,LTD.
(8) Concrete placement and curing

① Concrete placement

② Concrete curing

Notice
The part of couplers must not be exceeded 50°C (122°F).
(9) Prestressing and disassembly of the couplers

Install the tensioning devices again after curing.

① Cut off the steel strand by the torch after curing.  
(Prestressing for the concrete beam)

② Remove the coupler.

③ Cut off CFCC.
(10) Removing the wedges from Sleeve

① Cut off surplus CFCC.

② Screw a sleeve into the collar.

③ Set sleeve with collar at device to release the wedges.

④ Push out the wedges.

⑤ Remove the wedges from CFCC for reuse.

TOKYO ROPE MFG.CO.,LTD.