International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 08 | Aug 2020 www.irjet.net p-ISSN: 2395-0072

Pre-tensioning and Post-Tensioning of Concrete Members

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Abstract - *In Present days the pre-tensioning and post-tensioning frameworks are prevalently utilized in the significant developments of a structure. The Pre-tensioning and Post-tensioning the two strategies are utilized under pre-focusing on process. In which has scarcely any edges over the standard non-pushed structures like more noteworthy range to profundity proportion, higher second and shear limit. These techniques are commonly received really taking shape of PSC supports, sleepers, Bridges, Slabs in structures, Concrete Pile, Repair and Rehabilitations, Nuclear Power Plant and so forth.*

Key Words: **Pre-tensioning, Post-tensioning, Pre-stressing**

1. INTRODUCTION

1.1 Pre-tensioning

In this technique, the solid is pre-worried with ligaments before it is setting in position. This strategy is created because of holding between the solid and steel ligaments. Pre-tensioning is favored when the basic component is little and simple to ship. In this technique, comparative pre-focused on individuals are readied. Pre-tensioning individuals are delivered in shape.

1.2 Post-tensioning

The option to pre-tensioning is post-tensioning. In a post-tensioned shaft, the ligaments are pushed and each end is tied down to the solid area after the solid has been projected and has achieved adequate solidarity to securely withstand the prestressing power.

1.3 Materials used in Pre-tensioning and Post-tensioning

- Concrete
- High Tensile Steel
- Tendons
- Anchorage Block and Guide
- Wedges

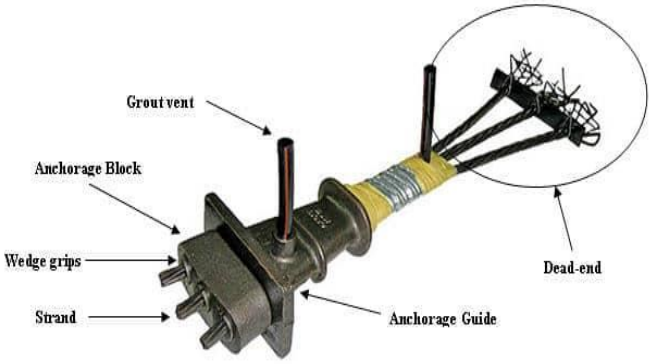

Fig -1: Components of Pre-stressed members

2. Methodology

2.1 Pre-tensiong

- In Pre-tensioning, ligaments are extended between outside safe havens before concrete is set using hydraulic jack.
- At the point when cement solidifies it bonds to steel.
- At the point when solid arrives at the necessary quality the ligaments are cut and the power in the ligaments is moved through bond from the steel to concrete.
- Ligaments utilized are fundamentally as different wire abandoned links.

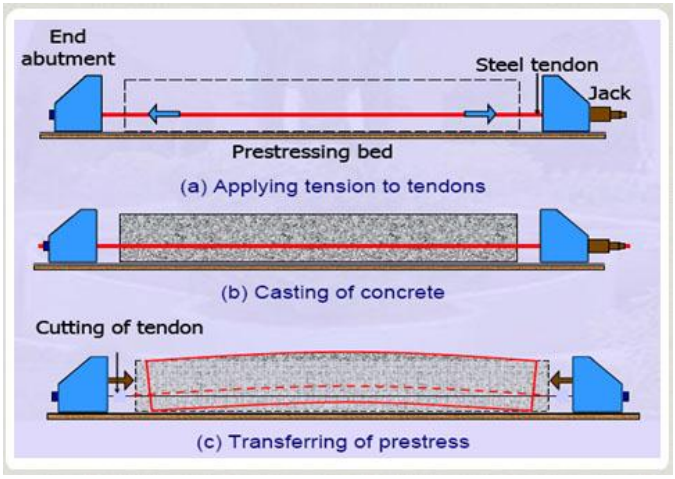

Fig -2: Pre-tensioning

2.2 Post-tensioning

- In Post-tensioning, Tendons are worried after cement has solidified.
- Jacking done against the solid part itself and ligament profile can be differed and can be made to follow second graph shape for more noteworthy viability.
- Empty conductors containing unstressed ligaments are set in the structures to the ideal profile before pouring cement.
- Ligament is checked by estimating both jacking weight and extension of steel and regularly grouted in their courses subsequent to focusing on utilizing concrete grouts.
- Grout bonds ligament and inward course divider and subsequently improves extreme quality.

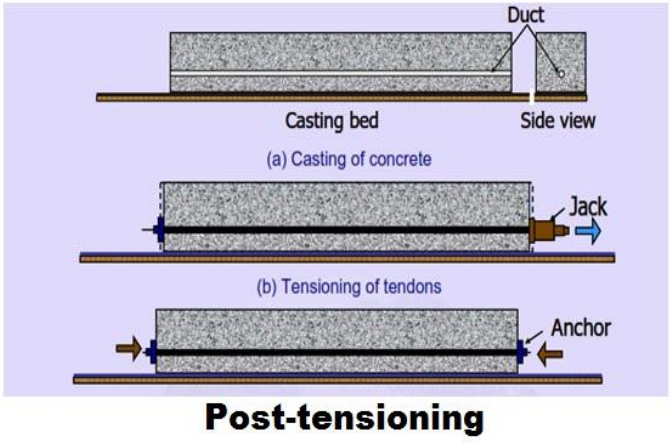

Fig -3: Post-tensioning

2.3 Advantages of Pre-stressed Concrete Member

- Pre-stressed on solid individuals takes into account a more drawn out range.
- Considering same profundity of solid part, a pre-stressed on solid part is stiffer than the strengthened solid part under working burdens.
- The utilization of higher quality concrete and high quality steel brings about littler cross-area.
- Pre-stressed in concrete improves the capacity of solid part to ingest sway stacks all the more effectively.
- It has great capacity to oppose continued working burdens when contrasted with strengthened cement.
- For longer range structure pre-stressed on concrete is more prudent than the strengthened cement.
- It has ability to totally recuperate from the impact of over-burdening.
- It has better weariness quality.
- Self load of the solid structure is decreased.

2.4 Disadvantages of Pre-stressed Concrete Members

- Use of pre-stressed on solid needs mastery and unique hardware.
- It requires quality control and review.
- It can be exorbitant for little scope in starting expense.

3. CONCLUSION

Among the sorts of cement's, for example, by and large typical concrete, strengthened concrete cement, pre-focused on concrete is the best concrete for acquiring a lot of solidarity in the significant developments of a structure and furthermore for getting more life expectancy of a structure.

ACKNOWLEDGEMENT

We would like to thank 'MIT College of Management' for their support and our guide 'Prof. Kundan Rathod' and 'Prof. Shankar Banerjee' for their guidance and encouragement throughout the research.

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