

For use with: *Thermomass SYSTEM CIP*

Introduction

The Cast-in-Place (CIP) method of construction combines the specialization of precast construction and the on-site convenience of tilt-up construction. The Thermomass System CIP is a patented construction method, utilizing state-of-the-art technology in a single-pour, insulated concrete sandwich wall. The fiber-composite connectors incorporated in the Thermomass System CIP serve a dual purpose. During the construction of the wall, the connectors locate the insulation within the wall, allowing both concrete layers to be placed to the specified thickness. During service, the connectors may transfer lateral and gravity loads from the exterior concrete layer to the structural layer.

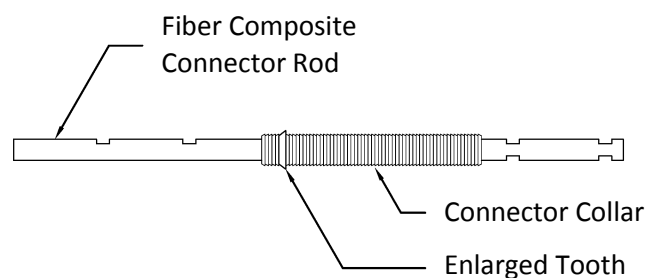


Figure 1 – Fiber composite rod connector for Thermomass SYSTEM CIP

System CIP

Each connector in the Thermomass System CIP comprises a connector rod and collar (Figure 1) with 2 retaining buttons (Figure 2). The collar on the connector has a series of inclined teeth, and the buttons have a central hole with six fingers. The fingers in the buttons act as detents that lock into the teeth on the collar producing a ratchet mechanism. Therefore, the buttons will slide onto the collar but cannot be removed without damaging the button or the collar. At one end of the collar, an enlarged tooth acts as a stop for the first button (Figure 1). This enlarged tooth sets the distance from the face of the form to the face of the insulation. In

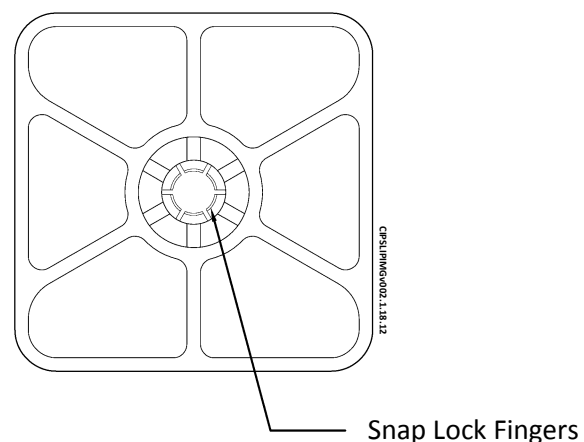


Figure 2 – Back side view of CIP retaining button

addition to the connectors, System CIP supplies pre-drilled insulation sheets, bi-directional adhesive tape for added strength (optional), and cut insulation (optional) and installation drawings (optional). The drawings show the locations of insulation sheets, connectors, and taped joints between sheets.

Note: Formwork consisting of at least one stationary wall and a base or platform of some sort is assumed to be in position prior to the installation of the Thermomass System CIP. The following assembly instructions are for the installation of the Thermomass System CIP system only.

Installation Procedure

1. If tape is needed, tape the individual sheets together per the drawings supplied before installation in the forms. Install the tape on at least one side of the insulation. Apply the tape only to clean, dry surfaces.
2. Install the Thermomass System CIP connectors:
 - a. Leading with the end of the collar with the enlarged tooth, insert the connector in a button. Press the button until it comes to rest with the enlarged tooth completely engaged inside the hole in the button. Use caution not to force the button over the enlarged tooth, as this will destroy the snap-lock fingers.

Note: (The button cannot be removed once they have been inserted except by cutting the button or destroying the insulation. Make sure the first button is inserted on the side with only one lock ring and that all rods are inserted into the same side of the insulation board.)

- b. Install the connectors in the pre-drilled holes in the insulation. Note that some projects require the use of several lengths of connectors. The drawings will show where specific connectors are to be located.
 - c. Place the insulation on a flat surface so that the rods and buttons support the insulation.

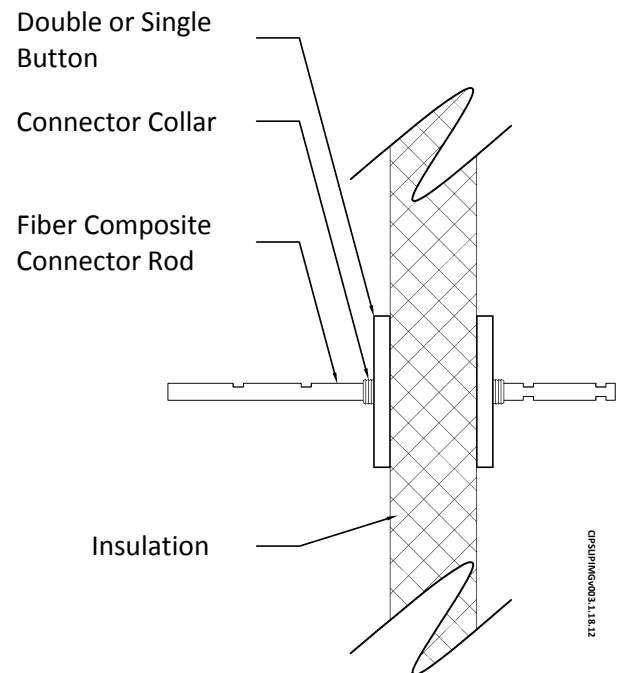


Figure 3 – Connector rod installed through insulation with snap lock buttons attached correctly

Install the final button on each connector by pressing the button down onto the collar until the insulation is slightly compressed. The buttons on each side of the insulation will now clamp the insulation in place (Figure 3).

- d. Continue this process for all of the connectors for a panel.
3. Once the insulation system assembly is completed, install the assembly in the form, using care to ensure that the connectors correctly position the insulation in the form. Using the notches on the fiber composite rods, tie sufficient connectors to the structural reinforcing bars to hold the insulation in place. Alternatively, the insulation system can be pre-wired to the reinforcing cage before installation in the form.
4. Place the reinforcing for the remaining concrete layer and tie to the connectors as needed. Close the form, again verifying that the insulation is properly located in the form.

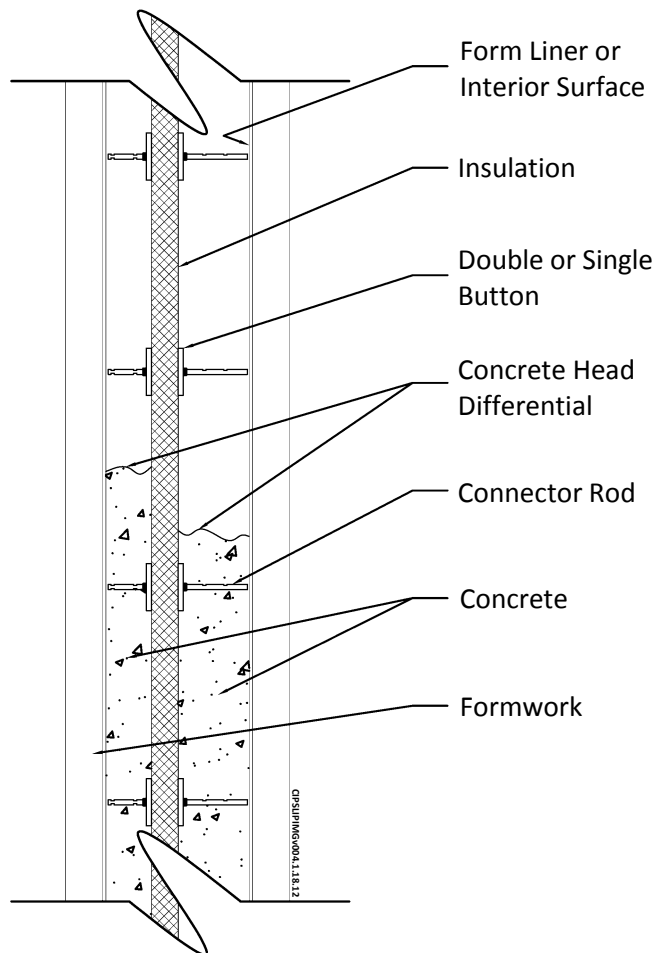


Figure 4 – Section through Thermomass CIP wall during concrete pouring process

5. During concrete placement, use accepted practice for concrete mix design and placement procedures for thin wall sections. If multiple walls intersect, start the concrete placement at the insulated walls. Ensure that the concrete is placed on both sides of the insulation with a maximum differential head of approximately one foot (Figure 2).
6. In installations with form-liners, maintain a positive differential head on the liner side to push the insulation and the connectors away from the liner.

Retaining Button Replacement

It is critical to the integrity and success of the Thermomass system that each retainer button and connector be securely placed and positioned in the form prior to placement of the concrete. Therefore, in the event a button is broken or dislodged, it must be replaced using the above procedure.

Note: These procedures focus on the installation of the Thermomass System CIP in the construction of cast-in-place insulated concrete sandwich walls. This document is not a construction specification. The information presented is based on the most recent, appropriate, industry standards and methods. The qualified designers, specifiers, suppliers, and contractors retained by the owner, must confirm all information.

If you have additional questions or concerns, please call (800) 232-1748 for:

Darryl E. Dixon
Director, Technical Services
ddixon@thermomass.com

-or-

Venkatesh Seshappa P.E. & S.E.
Structural Engineer
vseshappa@thermomass.com