

THIN-WALL™ TRUSTED SOLUTION FOR PRECAST INSULATED SANDWICH WALLS

A patented system (US Patent 8,312,683) for designing and producing precast insulated sandwich wall panels, THIN-WALL™ by Owens Corning featuring the Nu-Tie shear connector, is a structural load bearing insulated precast building envelope system that enables composite action between concrete wythes without thermal breaks from connectors.

- Enables a smart and energy efficient building envelope with edge-to-edge EPS or XPS insulation with 2" to 6" of insulation.
- Can be produced efficiently and using less concrete than most traditional structural wall panels.¹
- Creates a high strength building envelope with virtually limitless design aesthetic flexibility.

SYSTEM BENEFITS

Less Materials Used

- Less concrete is used due to the composite action between the interior and exterior wythes. The result is an efficient structural use of materials and a thinner cross section of wall panel.
- With less concrete, precast sandwich wall panels are light weight, low cost, easy to transport and erect.

High Strength & Flexibility

- The strength of the GFRP truss connector, also known as the Nu-Tie, is nearly twice that of conventional Grade 60 ksi reinforcing bars.²
- Low modulus of elasticity of the connector ensures that panel thermal bowing, caused by exterior/interior temperature differential, is minimized.³
- The Nu-Tie is thermally non-conductive and cannot create a short in the insulation.

Design Flexibility/Aesthetics

- Thin brick, reveals, form liner patterns, smooth and heavy textures and different colors allow nearly limitless exterior design opportunities while providing an often a smooth interior finish surface.
- Made from an ASTM D7957 GFRP bar, the Nu-Tie shear connector is the strongest and most robust shear connector on the market.
- Design method is per PCI 150-24 Specification for the Design of Precast Concrete Insulated Wall Panels.
- Design limits and safety factors of the ACI 440.11 code are used for implementation. Nu-Tie is the only shear connector that uses consensus ASTM material standards and ACI codes.
- Supporting test data such as fire tests and other validating reports are available to licensees.

Efficient Material

- Enables an energy efficient building with edge-to-edge XPS or EPS insulation without thermal shorts from connectors. No thermal shorts and greater R-values via thicker insulation mean a lower cost to operate and maintain the building envelope.
- Insulation thicknesses from 2 inches to 6 inches — greater R-values.
- Light weight panels are easily transported and erected.
- Less construction time is needed compared with site-built masonry saving labor hours and resources.¹

Production of Insulated Wall Panels

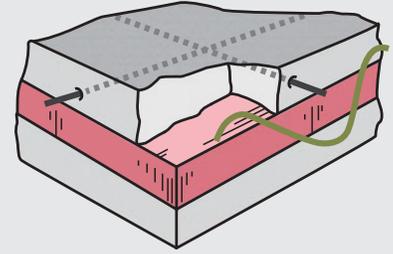
- Allows the precast producer to fabricate their own insulation from the supplier of their choosing.
- Labor efficiencies are maximized at the casting bed.
- Robust connector helps reduce possibility of production errors.
 - Color coded by insulation thickness.
 - Proper 2" embedment ensured when ends of truss rest on insulation.
 - No angle or alignment of connector or assembly at the bed.
 - Large 6" +/- placement tolerance on position across width of bed.

For Architects

THIN-WALL™ by OCIS panel system uses a proprietary glass fiber reinforced polymer (GFRP) shear connector to achieve composite action between the exterior and interior concrete wythes, resulting in greater structural efficiency and less concrete needed.

Thermal Design

- A non-composite precast concrete wall which depends on the interior wythe for structural capacity with the exterior wythe simply being a veneer.
- With a THIN-WALL™ insulated wall panel, both wythes work in conjunction to share in resisting the loads. The exterior could be clad with ½" thin brick facing integrally precast with the panel or other architectural features such as reveals or forma lines. The only limitation is your creativity.



For Engineers

Design of the THIN-WALL™ is by the precast producer and/or their engineering consultants using our proven proprietary spreadsheets based on degree of composite action and validating reports available to the licensed producer. Other design tools such as LecWall and ErikssonWall include modules that incorporate the Nu-Tie shear connector. Spring constants for the modern “beam spring” design model are available for each Nu-Tie variation.

THIN-WALL™ is a partially composite action beam spring truss where we use the following percentages for design:

- 100% composite action for “Nominal Flexural Strength”
- 75% composite action for “Flexural Cracking Checks”
- 25% composite action for “Deflection Analysis”

ASTM and ACI consensus standards, the use of the PCI design method and the availability of production lot certs for Nu-Ties for the designer of a safe implementation.

Precasters

As a method for efficient production of the insulated wall panels, THIN-WALL™ involves sourcing an insulation of your choice. With the aid of a “foam former”, Nu-Tie connectors are installed in the polystyrene foam (XPS or EPS) prior to placement at the casting bed. This keeps a larger crew more productive at the point that maximizes efficiencies.

Implementation issues have been thought out and are inherent to the system and Nu-Tie to ensure proper embedment and orientation of the connector without the need to prep the face of the insulation.

Applications

As an innovative way to produce precast insulated sandwich wall panels, THIN-WALL™ systems can be used in a wide variety of residential and commercial applications with virtually limitless design opportunities.



INFRASTRUCTURE SOLUTIONS

Owens Corning Infrastructure Solutions, LLC

One Owens Corning Parkway

Toledo, OH 43659 USA

Ph: 1-855-OC-Rebar

www.owenscorning.com/thin-wall

¹ Based on engineering analysis and third-party design calculations showing performance advantages over comparable systems.

² Comparison based on engineering calculations and structural design examples provided in “Comparison of Connector Types,” using Owens Corning performance data (beam spring constants) applied to applicable consensus design standards, including ACI 440 and PCI 150. Results reflect engineering analysis rather than product-only performance.

³ Based on structural engineering calculations and design examples included in technical paper “Comparison of Connector Types” showing that when composite reaches 100%, the system achieves strength equivalent to a 10” solid concrete wall.

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