

# Residential Construction Details with the WarmWall<sup>cm</sup> System

## About Polyiso Insulation

Polyiso is a rigid foam insulation used in more than 70% of commercial roof construction and offers a continuous insulation solution for commercial and residential wall assemblies. As one of North America's most widely used and readily available building products, Polyiso is a cost-effective insulation option for reducing building energy use and improving the overall service-life of roofs and walls.

The benefits of using Polyiso include:

- High R-value per inch of thickness
- Excellent fire test performance
- Extensive building code approvals
- Cost-effective continuous insulation (ci) solution
- Compatible with most roof and wall systems
- Dimensional stability
- Compressive strength
- Moisture resistance
- Thinner walls and roofs with shorter fasteners
- Long service life
- Preferred insurance ratings
- Virtually no global warming potential
- Zero ozone depletion potential
- Recyclable through reuse
- Recycled content (amount varies by product)
- Regional materials (nationwide production network)
- QualityMark<sup>CM</sup> certified LTTR-values



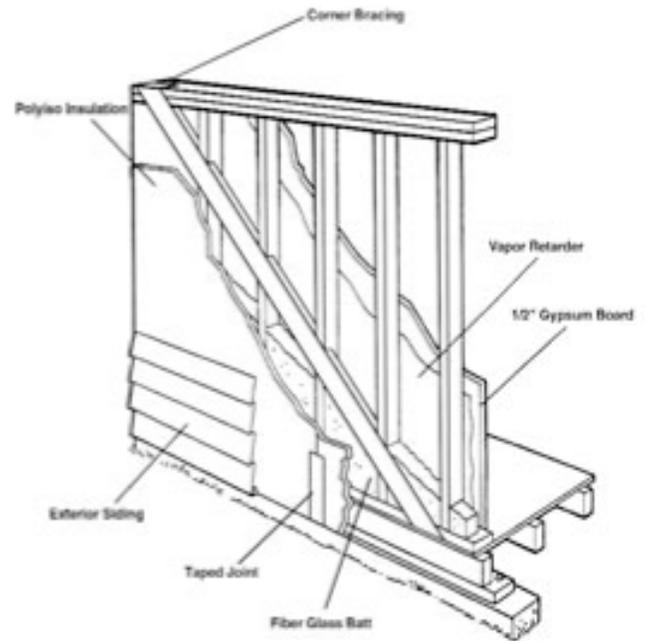
## The Superior Sheathing System.

The Polyisocyanurate Insulation Manufacturers Association (PIMA) features WarmWall<sup>cm</sup> - the Superior Sheathing

System. WarmWall<sup>cm</sup> is an innovative building concept utilizing foil faced polyiso insulation sheathing to provide a complete envelope of insulation on the exterior of a home. The WarmWall<sup>cm</sup> concept is extremely beneficial to both wood and steel framed construction, providing insulation over 100% of the exterior walls and increasing the overall thermal performance of a home.

## What is the WarmWall<sup>cm</sup> System?

- Proper corner bracing of framing;
- Insulates 100% of the exterior framed walls with foil faced polyiso insulation keeping energy loss to a minimum;<sup>1</sup>
- The exterior joints of the polyiso insulation sheathing are taped to prevent air infiltration;
- Conventional glass fiber batt insulation is placed between the wood or steel framing;
- In heating or mixed climates, a continuous vapor retarder is applied on the interior side of the studs;
- Gypsum board, minimum 1/2" thick, is applied to the interior; and
- Exterior finish is applied in accordance with the manufacturer's recommended application instructions, over the polyiso insulation sheathing.



The WarmWall<sup>cm</sup> System



Surround yourself with the best.

<sup>1</sup> Savings can vary. Find out why in the insulation sellers fact sheet on R-value. Higher R-values mean greater insulating power.

## Construction Details

- **Corner bracing**

Polyiso insulation sheathing is not a structural material. As such, wall systems with polyiso must have corner bracing to resist lateral loads resulting from wind forces on the home. Corner bracing is required by building codes; therefore, be sure to consult the local building code for specific wind load requirements since each home design presents different conditions. See the PIMA WarmWall<sup>cm</sup> Technical Bulletin on Corner Bracing for more details.

Special construction techniques are needed for homes in seismic regions. Consult the local building code for specific seismic related construction requirements.

- **Foil faced polyiso insulation**

The polyiso insulation sheathing is applied over 100% of the opaque wall area. The application instructions provided by the manufacturer of the polyiso insulation should be followed to ensure proper attachment of the sheathing to the framing prior to attaching the exterior finish.

- **Taping the polyiso insulation board joints**

The joints of the polyiso sheathing should be taped using aluminum foil tape with an acrylic adhesive. (DO NOT USE DUCT TAPE because the adhesive degrades with time, especially at high temperatures.) Caulking at the top and bottom plates and around openings should be considered for improved performance.

- **Penetrations**

Penetrations for plumbing, electrical, air conditioning, and other openings, such as dryer vents, should be caulked or sealed with a high quality silicone caulking or polyurethane foam sealant to ensure long term performance.

- **Glass fiber batt cavity insulation**

Cavity insulation must be carefully installed to ensure it is not compressed and to avoid uninsulated areas around plumbing or electrical wiring in the wall cavity.

- **Vapor retarder**

A proper vapor retarder such as 4 or 6 mil polyethylene is installed over the inside face of the studs. Good construction practice dictates that penetrations at electrical outlets should be sealed with silicone caulking. Any tears or rips in the vapor retarder should be repaired with polypropylene tape with an acrylic adhesive. Sealing the vapor retarder at the top and bottom plates with either silicon caulking or tape is also a component of good construction practice. Consult local building codes for vapor retarder requirements.

- **Gypsum board interior finish**

The gypsum board should be installed and finished per the manufacturer's application instructions. Care must be taken by the installation crew so that damage to the vapor retarder does not occur.

- **Exterior finish**

The exterior finish is installed over the polyiso insulation sheathing. The choices include wood or vinyl siding, fiber cement siding, stucco, stone veneer or brick. Each exterior finish requires specific application details. During application of the exterior finish, follow the manufacturer's application instructions and exercise caution to prevent damage to the polyiso sheathing. In some wood siding applications, wood furring strips may be used over the polyiso sheathing before application of the wood siding.

**NOTE:** If structural sheathing (such as OSB or plywood) or foil faced cardboard is used over 100% of the opaque wall area, it is critical to consider the use of the WarmWall<sup>cm</sup> system. The 1/2" or 7/16" OSB or plywood has an R-value of approximately 0.5. The use of 1 inch of polyiso insulation with an R-value of 7.2 delivers almost 15 times the insulation value of OSB or plywood and over 50 times the insulation value of foil faced cardboard. This increased R-value provided by polyiso sheathing insulates the framing, thereby greatly increasing the overall energy efficiency of the home.

## The WarmWall<sup>cm</sup> System Provides:

- **A wall system with a high R-value** - increasing the energy efficiency of the home and significantly reducing heat loss;
- **A reduction in air infiltration and exfiltration** - increasing the overall performance of the wall and reducing heat loss;
- **A reduction in the risk of water condensation/intrusion** - increasing thermal and structural performance and reducing builder call backs;
- **Insulation over the entire framing members** - reducing the loss of energy from the home;
- **Increased home builder confidence** - assurance that the builder is providing a quality product;
- **Increased home buyer/owner confidence** - assurance of a quality home with state-of-the-art energy efficient construction techniques.

Remember, normal good construction practices are essential in any building system. Always follow the manufacturers recommended application instructions.

### PIMA

For more than 30 years, PIMA (Polyisocyanurate Insulation Manufacturers Association) has served as the unified voice of the rigid polyiso industry proactively advocating for safe, cost-effective, sustainable and energy-efficient construction. PIMA's membership includes manufacturers of polyiso insulation and suppliers to the industry. The products of PIMA's members comprise the majority of the polyiso produced in North America.

PIMA produces technical bulletins to address frequently asked questions about polyiso insulation. These publications update and inform architects, specifiers, and contractors about and build consensus on the performance characteristics of polyiso insulation. Individual companies can provide specific information about their respective polyiso products.

For more information on polyisocyanurate insulation, visit [www.polyiso.org](http://www.polyiso.org)



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