

DESCRIPTION OF BACK-LATTICE

Back-Lattice_{sm} is an integrated wall assembly located inward of the protected sheathing. It is a comprehensive, compact assembly that is unique, innovative, and patent pending. Back-Lattice provides a fire and thermally proven high-performance wall assembly where the thermally broken horizontal sub-girts are located inward of the protected sheathing and then back-spray insulated. This leaves what is called a naked panel exterior that only requires the final cladding.

Back-Lattice is so innovative in how it compactly places the primary wall performance components inward of the sheathing that it is referred to as “Back-Fusion for the Exterior Wall”_{sm}. It is so unique in how it locates the sub-girt framing with its thermal isolators inward such that the exterior sheathing is then attached to the horizontal back-furring instead of to the vertical studs. This patent-pending arrangement “Turns the Wall on its Side”_{sm}.

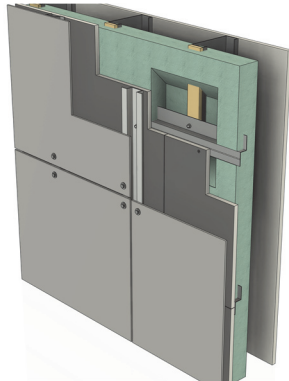


Figure 1: Exterior Cutaway in Dark Grey AWB

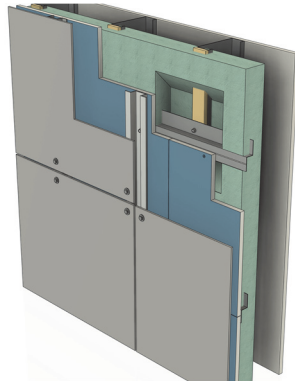


Figure 2: Exterior Cutaway in Blue AWB

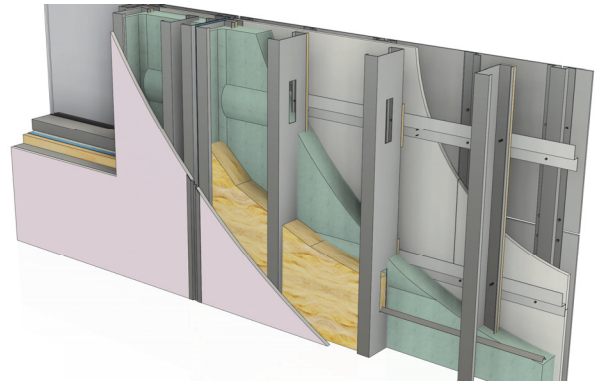


Figure 3: Interior Cutaway with Optional Mineral Wool for Additional Fire-Resistance or Super-Insulated without the Risk of Moisture Harboring

BACK-LATTICE SEVEN PRIMARY COMPONENTS

Seven primary components make up the Back-Lattice Wall Assembly Panel. With its naked exterior of only the air and water-protected sheathing the system only requires its final flashing and the application of the light-weight non-combustible rainscreen cladding systems. The interior only requires the 5/8" gypsum mold-resistant drywall in either one or two layers based on the fire-assembly rating.ⁱ

1. **AWB/VP:** Directly behind the rainscreen cladding, without the need for traditional exterior continuous insulation lies the protective membrane upon the sheathing. The air and water-resistive barrier membrane which is vapor-permeable (AWB/VP) may be either board-applied, fluid-applied or self-adhered to the fire-protective sheathing. By utilizing an AWB with an exposure rating of one-year, it allows for open-joint cladding and sufficient tolerance to allow for weather and construction schedules. Without the exterior outward insulation, the wall is called a “naked” assembly and possesses many advantages.
2. **SHEATHING:** The outward fire-protective layer of the Back-Lattice panel is the 5/8" glass-mat gypsum sheathing. This is either one or two layers based upon the wall’s fire-assembly rating. The sheathing is fastened to the sub-girt back-furring and applied either vertically or horizontally, but only horizontally if it is fire-rated.
3. **HORIZONTAL BACK-FURRING:** Located inward of the sheathing, the 1" deep Back-Lattice_{sm} brand back-furring of horizontal Z-Back_{tm}, horizontal edge J-Back_{tm}, and vertical edge L-Back_{tm} shapes form the sub-girt framing that is set upon thermal isolation pads and fasten to the vertical structural studs. Rather than long through-fasteners of traditional systems, Back-Lattice utilizes only one #12 short incremental fastener at each intersection which do not act as thermal breaks. The back-furring is made for Back-Lattice by ClarkDietrich and distributed by Trevdan Building Supplyⁱⁱ.
4. **THERMAL ISOLATORS:** In compliance with ASHRAE thermal breaks, Back-Lattice separates the sub-girt framing from the primary structural studs with 1/2" thick, R1.55 thermal isolation pads. Back-Lattice_{sm} brand T-Pad_{tm} high-density urethane, structural 560psi, are 1/2" thick x 2" wide, are located at each stud-to-furring intersection. For construction convenience, the isolation pads are available as either 8-foot-long strips that are set continuously atop the studs, or they are cross-scored strips that snap-break into individual 6" long pads. The T-Pads are made and distributed for Back-Lattice by Armatherm.
5. **VERTICAL STUDS:** The primary structural stud framing is held 1 1/2" inward of the sheathing. Engineered for wind, load-bearing and cladding loading the structural studs perform their traditional role but if proven acceptable, may be spaced out to 24"oc. The sheathing and its wind load requirements is attached to the back-furring, which then frees up the studs to be spaced solely by their structural requirements.

- ccSPF BACK-SPRAY:** Closed-cell, spray-urethane foam (ccSPF) of 3 5/8" thick, R-24 is back-sprayed to the sheathing while isolating the studs from the sheathing and encapsulating the back-furring and outward stud flanges. This becomes the combined continuous and total insulation, while also providing an additional air barrier and a Class II bi-directional vapor retarder for four-season protection. The newest generation of foam is Greenguard Gold certified, ABAA approved, building and energy code compliant, as well as environmentally progressive with HFO and <1GWP (Global Warming Potential).
- OPTIONAL MW:** To increase the fire-resistance and/or to super-insulate the wall to R-39 without the risks of moisture harboring, Back-Lattice includes R-15, unfaced 2# density mineral wool batts which are added to the remaining stud cavities.

ADVANTAGES OF BACK-LATTICE

- NAKED EXTERIOR & FEWER OUTWARD STEPS:** No exterior girts or mineral wool. The complete backup wall is contained inward of the protected sheathing. BackLattice has minimal exterior components to reduce cumbersome steps and reduces weather-dependency.
- SPEEDS CONSTRUCTION & BETTER QUALITY-CONTROL:** Back-Lattice speeds construction by being readily prefabricated and more weather independent. BackLattice improves quality control by facilitating more efficient supervision and testing prior to the installation of the cladding and without the outward continuous insulation being in the way.
- NET-ZERO ENERGY:** BackLattice may be super-insulated up to R39 without the added risk of moisture harboring, thus contributing towards an integrated Net-Zero Energy solution, Greenguard Gold Certification, ABAA, and LEED.
- CLADDING FREE OF STUDS:** BackLattice horizontal back-furring allows quick layout and fastening of the claddings, independent of the stud locations. This allows the stud-spacing to be based on the structural and not the cladding or sheathing's requirements.
- HIGHER LOAD OR LIGHTWEIGHT CLADDINGS:** BackLattice horizontal furring readily supports higher cladding weights such as thin-stone or terracotta due to its short fastener lengths. L/600 and L/360 is accomplished with the back-furring delivering the cladding and wind loads to the vertical studs. The BackLattice NFPA 285EEV with its naked exterior of no outward mineral wool, accommodates light-weight non-combustible rainscreen claddings.
- HIGH-PERFORMANCE & NO THRU-FASTENERS:** Back-Lattice has been 3D thermally analyzed to confirm Back-Lattice is a high-performance wall assembly is Climate Zones 1-7. BackLattice has no through fasteners. All fasteners are incremental which increases its total energy efficiency.
- LEED EPD/HPD'S:** Use of the BackLattice assembly is pre-organized with EPD and HPD's to yield up to almost ten points each towards LEED sustainable materials when also including the cladding, drywall and interior wall finishes.
- OPEN-SOURCED:** BackLattice is a system and not a product. BackLattice is open-sourced and accommodates, the designer's specifications, government standards, local and regional material preferences, as well as competitive multi-source bidding. Even the Back-Lattice branded products allow a self-sourced option.
- FIVE-YEAR SYSTEM WARRANTY:** In exchange for the Project Registration and per square foot of panel fee, Back-Lattice offers ISO 9001 certification, Design and submittal-phase customized guidance, Quality control validations, Long-term archiving, and Five-Year System Warranty.

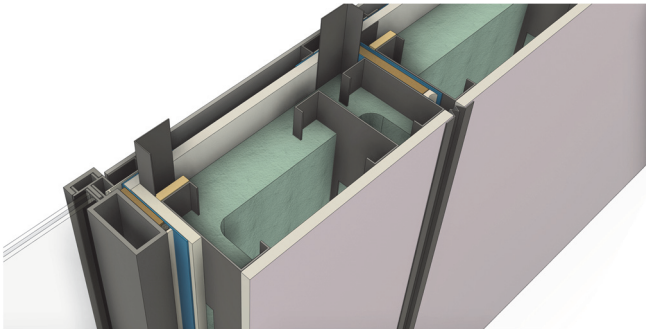


Figure 4: Cutaway of Window Jamb & Vertical Panel Joint with L-Back Vertical Edge Back-Furring and Exterior Sheathing at Jamb and Head.

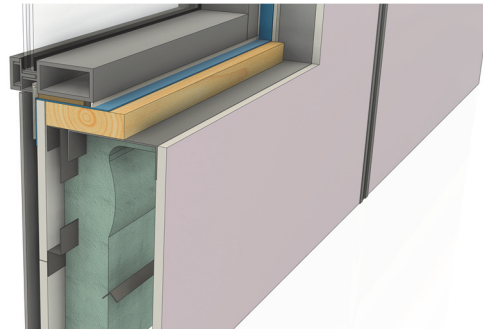


Figure 5: Cutaway of Windowsill with J-Back Edge Back-Furring and Fire-Retardant Wood or 3/4" Plywood at Sills Only.

ⁱ The exterior rainscreen cladding and the interior drywall are included in various Back-Lattice tested and NFPA 285EEV assemblies. The spray-foam requires either the drywall for its permanent thermal protection or a UL listed intumescent coating for its temporary protection.

ⁱⁱ Back-Lattice includes a nominal markup in the branded back-furring and thermal isolator distributor's price.