

Building Envelope Construction

This playbook outlines the steps required to construct a high-performance building envelope. It emphasizes the importance of insulation and airtightness to reduce energy loss.

Step 1: **Design**

Develop the architectural plans with a focus on thermal performance. Ensure sufficient space for insulation, select high-grade materials, and define the critical details for airtightness.

Step 2: **Material Selection**

Choose insulation materials with high R-values and appropriate properties for the building's climate. Select additional barriers and sealants for moisture control and air sealing.

Step 3: **Structural Support**

Construct the building's structural frame according to the design, making sure to accommodate the insulation and sealing materials.

Step 4: **Insulation Installation**

Install the insulation in walls, roofs, and floors, ensuring there are no gaps or thermal bridges. Proper installation is key to maximizing the R-value of the materials.

Step 5: **Airtightness**

Seal all potential air leaks in the building envelope, such as around windows and doors, utility penetrations, at the roof and foundation connections, and with an airtight membrane or vapor barrier as designed.

Step 6: **Testing**

Conduct a blower door test to measure the airtightness of the building. Identify and seal any leaks found to ensure the building envelope performs to the expected standard.

Step 7: **Final Inspection**

Inspect the completed building envelope to verify proper installation of all materials and conformance with the design. Address any deficiencies before interior finishes are applied.

General Notes

Continuous Insulation

Ensure insulation is continuous across all assemblies and around all glazing to avoid thermal bridging.

Energy Codes

Check local energy codes for specific requirements on R-values and airtightness that may impact material choices and construction methods.