7 Mistakes Barndominium Builders Make on the Building Envelope (And How to Avoid Them)

Building a barndominium—part barn, part custom home—is a great way to combine rugged utility with modern comfort. But too many builders learn costly lessons the hard way. Here are five of the most common mistakes barndo builders make, and how to steer clear of them:

✅ Pro Tip:

Barndos are not traditional homes—and they shouldn't be insulated like one. Work with pros who understand metal buildings, hybrid insulation systems, and climate-specific building science.

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1. Using Batt Insulation in Metal Buildings

The Mistake: Standard fiberglass batts or rolled insulation provided by building manufacturer may be cheap, but they don't seal well in steel-framed buildings with large spans, thermal bridging, or curved roofs.

The Problem: Air leaks, moisture buildup, and poor R-values. Over time, you'll get condensation issues, musty smells, or even mold.

The Fix: Use spray foam for air sealing and moisture resistance.

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2. Ignoring the Slab

The Mistake: Skipping insulation under the concrete slab or around the perimeter.

The Problem: Cold floors in winter, heat gain in summer, and poor energy efficiency overall. Slabs become a giant heat sink.

The Fix: Spray foam before pouring the slab, especially if you're using radiant floor heating or live in a climate with large temperature swings.

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3. Skimping on Insulation

The Mistake:
Many barndos are metal structures, and builders assume the metal shell offers enough protection. Without proper insulation, interiors become ovens in summer and iceboxes in winter. Using minimal insulation in the roof, or just relying on radiant barrier foil.

How to Avoid It:
Use foam for maximum efficiency—it insulates, seals gaps, and even adds structural rigidity. Don't just insulate the roof—walls and floors matter too. Radiant barriers reflect heat but don't *block* it. With a big open roof, heat gain is extreme and hard to control.

The Fix: Apply closed-cell spray foam directly to the metal roof for insulation and air sealing in one step. Rigid foam above the roof deck is another option in certain designs.

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4. Not Air Sealing Penetrations and Gaps

The Mistake: Ignoring gaps around windows, doors, baseplates, wiring, or mechanicals.

The Problem: Even the best insulation won't work if air leaks are everywhere. You'll lose conditioned air fast—and bugs and dust will find their way in.

The Fix: Seal every penetration. Spray foam excels at this. Don't forget to seal between wall panels, ridge caps, and corners.

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5. Not installing foam closure strips or using butyl sealant tape in the metal install

The Mistake:
Metal buildings are tough, but not maintenance-free. Builders who don't plan for panel movement, rust prevention, or proper ventilation set their clients up for issues later.

How to Avoid It:
Choose quality fasteners, follow your manufacturer's guidelines on installation, and ensure every step in the process has been followed to the tee. Maintenance-friendly = money-saving in the long run.

6. Not working with the HVAC installer to ensure they understand the big picture

How to Avoid It

Talk to your HVAC contractor.
Make sure your system is:

- Properly sized for the new building with spray foam
- Set up for fresh air and moisture control aka. An ERV
- Optimized for comfort and longevity
- Ensure makeup air if using combustible appliances

Spray foam is powerful—but it's not plug-and-play. A quick conversation with your HVAC pro can prevent big problems down the road.

7. Proper Window Installation

🪟 How to Install Metal Flashing Around Barndominium Windows

Proper flashing is critical in a metal building to prevent water intrusion, especially around windows. Here's how to do it right:

🧰 Tools & Materials You'll Need:

- Pre-bent metal Z- or L-flashing (galvanized or color-matched)

- Butyl or silicone sealant (compatible with metal)
- Self-adhesive flashing tape
- Tin snips
- Caulking gun
- Drill or impact driver
- Screws or rivets (painted to match, if visible)
- Utility knife
- Straight edge

🔧 Step-by-Step Installation:

Step 1: Prep the Window Opening

- Check that the window is square and securely fastened.
- Clean all surfaces (no dust, oil, or debris).
- Install self-adhesive waterproof flashing tape:
    - Bottom first (sill pan or horizontal tape extending past the window edges).
    - Then up the sides.
    - Top flashing tape goes last (like shingles—always overlap downward).

Step 2: Install the Bottom Metal Flashing (Sill Flashing)

- Cut flashing to extend **at least 1” past each side** of the window.

- Create end dams by bending up small tabs on each end (optional but ideal for extra protection).
- Apply a bead of sealant underneath.
- Fasten the flashing downward and outward at a slight slope to drain water away from the window.

Step 3: Install Side Flashing (Jambs)

- Cut two pieces of metal flashing the height of the window, overlapping the bottom flashing by 1”.
- Apply sealant behind each strip.
- Fasten the side flashings tightly to the wall panels or trim, sealing any gaps.

Step 4: Install Top Flashing (Head Flashing or Drip Cap)

- Cut the top flashing to overhang the window by at least 1” on both ends.
- Slide it under the metal siding or trim if possible.
- Apply sealant underneath the flange.
- Fasten in place, ensuring the flashing sheds water *over* the side flashings, not behind them.

Step 5: Seal & Touch Up

- Apply sealant at all joints and where flashing meets window or metal siding.
- Avoid over-sealing joints that should weep water.
- Use color-matched sealant and fasteners if visibility matters.

✅ Pro Tips:

- **Never trap water.** Flashing should always allow gravity to shed water outward and downward.
- **Overlap like shingles.** Top layers go over bottom layers.
- **Use compatible sealants**—some silicones can corrode bare metal or void warranty

Final Tip: Plan It Like You'll Live There Forever

Even if you're building to sell or rent, take pride in the work and plan with longevity in mind. Cutting corners in the beginning usually costs more later. Build smart—build to last.
