Exterior Walls

Examples – Exterior Walls

- Masonry veneer cavity walls
- Masonry veneer and metal framing walls
- Masonry veneer and wood framing walls
- Pre-cast concrete insulated panels
- Metal panel on concrete masonry walls
- Metal panel on metal framing walls

- NOTE: Other types of exterior wall construction may be acceptable if type meets or exceeds the above performance standards criteria. More stringent requirements shall be used when required by the current state building codes and fire prevention codes.

Standards – Exterior Walls

1. Exterior Insulation Finish System shall use impact resistant mesh – must resist breakdown from projectiles.
2. Moisture resistant – provide vapor retarder to inside of insulation.
3. Thermal resistant –As required by Arkansas Energy Code. Consider long-term performance.
4. Required Air Barrier System shall be one of the following:
   - Self-adhering sheets
   - Fluid applied membranes
   - Closed-cell polyurethane insulation
   - Building wrap
5. Air barrier transition tape required at masonry control joints.
6. Minimum maintenance – no routine applied maintenance.
7. Detail roof/wall intersection to provide a continuous air barrier system.

Guidelines – Exterior Walls:

- Economical – consider life cycle evaluation
- Preference given to non-combustible materials

Masonry Veneer Cavity Walls

Components

- Exterior finish
  - Exterior stone, clay, or concrete masonry units
- One-inch air cavity
- Cavity insulation
  - Rigid insulation or closed cell polyurethane insulation
- Air barrier system
- Back-up material
  - Concrete masonry units (normal weight)

Component – Air Cavity

- Two-inch air cavity recommended

Standards – Masonry Veneer Cavity Walls

1. Impact, moisture, and thermal resistant
2. Fire resistant
3. In-wall flashing – copper fabric laminate; elastomeric thermoplastic; sheet metal
4. Drain cavity with weep holes, 4'0" o.c.
5. Steel reinforcement to meet the requirements of the current state building code, including the seismic provisions where applicable.
6. Rebar shall be minimum grade 60.
7. Face brick veneer: grade SW
8. ~~8.~~ Concrete masonry: unit compressive strength to meet industry standard.
9. Insulation: extruded polystyrene board or spray polyurethane foam.
10. For exterior CMU veneer: provide water repellant.

Guidelines – Masonry Veneer Cavity Walls:

- Use mortar dropping control product to prevent blocking of weep holes
- For exterior CMU, provide normal weight (CMU)
- Water repellant
- Use of CMUs containing fly ash is optional

Masonry Veneer on Metal Framing Walls

Components

- Exterior finish
  - Exterior stone, clay, or concrete masonry units
- One-inch air cavity
- Cavity air infiltration barrier
  - Rigid insulation or closed cell extruded polyurethane insulation
  - Exterior sheathing
  - Air barrier membrane
- Batt/blanket insulation with faced membrane
- Back-up material
  - Cold formed steel framing system
- 5/8 inch gypsum wallboard

Component – Air Cavity
- Two-inch air cavity recommended

Standards – Masonry Veneer on Metal Framing Walls

1. Impact, moisture, and thermal resistant
2. In-wall flashing
3. Drain cavity with weep holes, 4'0" o.c.
4. Mill galvanized wall ties
5. Face brick veneer: grade SW
6. Concrete masonry veneer: unit compressive strength to meet industry standard. Provide color and water repellant.
7. Steel framing system
   - Light gauge steel studs (minimum 20 gauge) or as designed by structural engineer
   - Pre-engineered steel framing system as designed by structural engineer
8. Use fiberglass insulation with thermal resistance as required by Arkansas Energy Code.
9. Insulation shall be soybean oil-based polyurethane, open- cell, semi-rigid foam or equal.

Guidelines – Masonry Veneer Cavity Walls:
- Optional use of CMU's containing fly ash
- Maximize recycled content
- Water repellant
- The paper or foil vapor barrier of required insulation should be anchored to the face of the studs.

Pre-Cast Concrete - Insulated Sandwich

Components

- Exterior architectural concrete with smooth or exposed aggregate texture finish or thin brick facing
- Rigid cavity insulation
- Structural concrete backup
- Interior finish, if exposed to be smooth concrete or exposed aggregate concrete or a surface applied smooth or textured finish

Standards – Pre-Cast Concrete – Insulated Sandwich Walls

1. Impact, moisture, and thermal resistant
2. Low maintenance
3. Meet ASHRAE 90.1-2007 (or later) and current state energy code requirements.
4. Use extruded polystyrene or polyisocyanurate insulation.
5. Use fiber composite or plastic connectors – no metal connectors.
6. Concrete materials: Portland cement ASTM C-180, Type I or III
7. Concrete mix: 28 day compressive strength, 5,000 psi minimum
8. Minimum thermal resistance as required by Arkansas Energy Code.

Guidelines – Pre-Cast Concrete – Insulated Sandwich Walls:

- Fly ash, ASTM C-618, Class C or F, may be substituted for up to 20% of total cementitious materials.

Metal Panel on Metal Framing

Components

- Exterior finish
  - Exterior metal wall panel system
- Weather barrier
- Air barrier system (required)
- Batt insulation with vapor barrier
- Backup materials
  - Cold formed metal framing
- 5/8 inch gypsum wallboard

Standards – Metal Panel on Metal Framing

1. Metal wall panel: 26 gauge minimum thickness zinc-coated (galvanized) or aluminum-zinc alloy-coated sheet steel; fluoropolymer exterior finish with minimum 20 year finish warranty
2. Low maintenance
3. Moisture and thermal resistant
4. Weather barrier: composite, self-adhesive, rubberized-asphalt compound flashing product
5. Steel framing system:
   - Steel studs as designed by structural engineer
   - Pre-engineered steel framing system as designed by structural engineer
6. Provide ASTM C665, Type 1, faced mineral fiber insulation blankets
7. Interior surface: painted, 5/8 inch, gypsum wallboard. Use Type X where required.
8. Insulation could be soybean oil-based polyurethane, open-cell, semi-rigid foam or equal.
9. Minimum thermal resistance as required by Arkansas Energy Code.

Guidelines – Metal Panel on Metal Framing:

- Maximize recycled content

Masonry Veneer on Wood Framing Walls

Components

- Exterior finish
- Exterior stone, clay, or concrete masonry units
- One inch air cavity
- Cavity insulation extruded polystyrene sheathing
  - Closed cell
  - Rigid insulation
- Batt/blanket insulation with vapor barrier
- Backup materials
  - Wood frame system
  - Heavy timber system
- 5/8 inch abuse/moisture/mold resistant gypsum wallboard

Standards – Masonry Veneer on Wood Framing Walls

1. Impact, moisture, and thermal resistant
2. In-wall flashing
3. Drain cavity with weep holes, 4'0" o.c.
4. Mill galvanized wall ties
5. Face brick veneer: grade SW
6. Concrete masonry veneer: unit compressive strength as required to meet industry standard. Provide color and water repellant.
7. Wood frame systems or heavy timber systems:
   - Engineered in strict compliance with requirements of Arkansas State Fire Prevention Code and Building Code
   - All lumber used for wood framed wall systems shall be #2 grade, kiln dried Southern Pine; #2 grade, kiln dried, Spruce-Pine-Fir; or #2 grade, Hem-Fir or better.
8. Use fiberglass insulation with thermal resistance as required by Arkansas Energy Code. The paper or foil vapor barrier should be anchored to the face of the studs.
9. Insulation could be soybean oil-based polyurethane, open-cell, semi-rigid foam or equal.

Guidelines – Masonry Veneer on Wood Framing Walls:

- Optional use of CMU's containing fly ash
- Maximize recycled content