Chapter 7 – Single-Wythe CMU Systems

SINGLE-WYTHE CMU WALL: Window Head Detail

Legend

1. Typical Assembly:
   - Interior gypsum board
   - Steel stud-framed wall
   - Closed-cell spray foam (CCSPF) insulation between studs (optional) and min. 2 inches continuous CCSPF
   - Single-wythe CMU wall with water-repellent admixture at block and mortar
   - Clear water-repellent
2. Sealant over backer rod
3. Fluid-applied air barrier and WRB flashing membrane
4. Continuous air barrier sealant tied to continuous seal at window perimeter
5. Storefront window
6. Preservative treated wood blocking

Detail Discussion

The flashing membrane extends from the interior framing to the CMU rough opening. The flashing membrane and the continuous air barrier sealant joint provide air and water control layer continuity from the window to the CMU wall.

Blocking at the window perimeter provides a low-conductivity solution for mechanically attaching the window as required by the window manufacturer.

Water-Shedding Surface & Control Layers

Water-Shedding Surface

Control Layers:
- Water
- Air
- Vapor
- Thermal

Water-Shedding Surface and Control Layers of Detail 7-1
Chapter 7 – Single-Wythe CMU Systems

**SINGLE-WYTHE CMU WALL: Window Sill Detail**

**Legend**

1. Typical Assembly:
   - Interior gypsum board
   - Steel stud-framed wall
   - Closed-cell spray foam (CCSPF) insulation between studs (optional)
   - Min. 2 inches continuous CCSPF
   - Single-wythe CMU wall with water-repellent admixture at block and mortar
   - Clear water-repellent
2. Storefront window on minimum 1/4-inch thick intermittent shims
3. Sealant joint over backer rod (weep at quarter points)
4. Sloped precast sill with chamfered drip edge, with sealant over backer rod at precast joints
5. Continuous air barrier sealant tied to continuous seal at window perimeter
6. Continuous back dam angle at rough opening perimeter, minimum 1-inch tall, with window fastened through the back dam angle per window manufacturer recommendations
7. Preservative treated wood blocking

**Detail Discussion**

The slope at the precast sill encourages water to drain away from the window rough opening. A chamfer is shown in the underside of the precast sill to form a drip. This encourages water to shed from the sill before reaching the masonry veneer below.

Attachment of the window is shown through a structural back dam angle in lieu of down through the sill membrane. This minimizes the risk for water intrusion into the wall cavity below should water exist within the window rough opening. Intermittent shims below the window encourage drainage of the rough opening. Water that may exist within the rough opening can exit through weeps in the exterior sealant joint.

**Water-Shedding Surface & Control Layers**

- **Water-Shedding Surface**
- **Water**
- **Air**
- **Vapor**
- **Thermal**

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Chapter 7 – Single-Wythe CMU Systems

SINGLE-WYTHE CMU WALL: Window Jamb Detail

Legend

1. Typical Assembly:
   - Interior gypsum board
   - Steel stud-framed wall
   - Closed-cell spray foam (CCSPF) insulation between studs (optional) and min. 2 inches continuous CCSPF
   - Single-wythe CMU wall with water-repellent admixture at block and mortar
   - Clear water-repellent
2. Storefront window
3. Sealant joint over backer rod
4. Continuous air barrier sealant tied to continuous seal at window perimeter
5. Preservative treated wood blocking

Detail Discussion

The window is aligned with the rough opening blocking and insulation, rather than with the CMU wall, to provide better continuity of the thermal control layer. The continuous air barrier sealant joint, along with the flashing membrane, provide continuity of the air and water control layer.

Water-Shedding Surface & Control Layers

Water-Shedding Surface and Control Layers of Detail 7-3
Chapter 7 – Single-Wythe CMU Systems

**SINGLE-WYTHE CMU WALL: Base-of-Wall Detail**

**Legend**

1. Typical Assembly:
   - Interior gypsum board
   - Steel stud-framed wall
   - Closed-cell spray foam (CCSPF) insulation between studs (optional)
   - Single-wythe CMU wall with water-repellent admixture at block and mortar
   - Clear water-repellent
2. Rigid XPS insulation
3. Underslab vapor barrier
4. Rigid XPS underslab insulation
5. Hardscape sealant joint
6. Damp-proofing (optional)
7. Drainage composite or gravel backfill
8. Hardscape

**Detail Discussion**

The XPS insulation provides a thermal break between the concrete floor slab and the single-wythe CMU wall. This allows for thermal continuity between the underslab insulation and wall insulation.

**Water-Shedding Surface & Control Layers**

- Water-Shedding Surface
- Water
- Air
- Vapor
- Thermal

*Detail 7-4  Single-Wythe CMU Wall: Base-of-Wall Detail*
Chapter 7 – Single-Wythe CMU Systems

SINGLE-WYTHER CMU WALL: Roof Parapet Detail

Legend

1. Typical Assembly:
   - Interior gypsum board
   - Steel-framed wall
   - Closed-cell spray foam (CCSPF) insulation between studs, min. 2 inches continuous CCSPF
   - Single-wythe CMU wall with water-repellent admixture at block and mortar
   - Clear water-repellent
2. Inverted roof membrane assembly
3. Typical Parapet Assembly:
   - Inverted roof membrane
   - Single-wythe CMU wall with water-repellent admixture at block and mortar
   - Clear water-repellent
4. Standing-seam sheet-metal coping with gasketed washer fasteners
5. Preservative-treated wood blocking
6. High-temperature self-adhered membrane

Detail Discussion

The sheet-metal coping with hemmed drip edge sheds water away from the wall top and CMU wall face below. It is recommended that the sheet-metal coping counterflash the top course of block by a minimum of 3 inches.

The CCSPF extends tight up to the underside of the deck and around roof structure and anchor elements. This reduces the opportunity for warm, moisture-laden interior air to contact the deck and CMU wall where it’s coldest.

Water-Shedding Surface & Control Layers

- Water-Shedding Surface
- Water
- Air
- Vapor
- Thermal
**Legend**

1. Single-wythe CMU wall with water-repellent admixture
2. Preservative-treated wood blocking
3. Roof structure
4. Steel stud-framed wall
5. Sloped, preservative-treated wood blocking
6. Inverted roof membrane assembly
7. High-temperature self-adhered membrane
8. Sloped standing-seam sheet-metal coping with gasketed washer fasteners
9. Roof membrane termination
10. Continuous air barrier sealant, tied to continuous seal at window perimeter.
11. Storefront window
12. Closed-cell spray foam (CCSPF) insulation between studs
13. Interior gypsum board
Chapter 7 – Single-Wythe CMU Systems

SINGLE-WYTHE CMU WALL: Base-of-Wall 3D Detail

Legend

1. Concrete floor slab over XPS insulation and vapor barrier
2. Single-wythe CMU wall with water-repellent admixture
3. Damp-proofing
4. Drainage composite or gravel backfill
5. Hardscape, sloped away from structure
6. Hardscape sealant joint between hardscape and CMU wall
7. Steel stud-framed wall
8. Closed-cell spray foam (CCSPF) insulation between studs
9. Continuous air barrier sealant tied to continuous seal at window perimeter
10. Fluid-applied flashing membrane
11. Storefront window
12. Sloped precast concrete sill