MASONRY URBANUS
MASONRY DETAILS FOR LOW-RISE URBAN HOUSING

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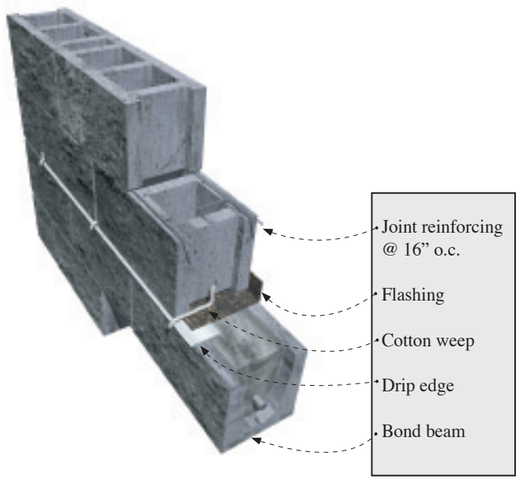
Window Head Details

Comments

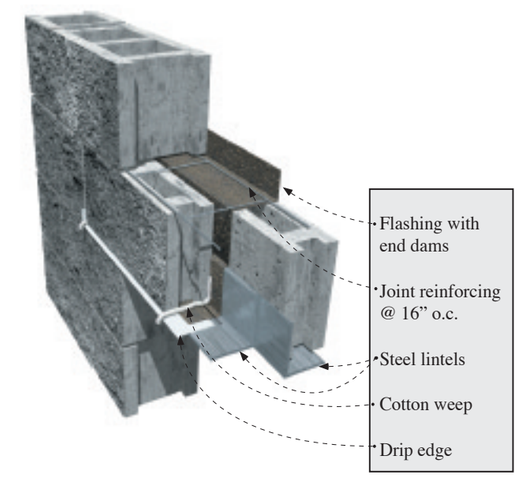
These two window head details show the relationship between the steel lintel, drip edge, flashing, end dams, and weep holes. The first option shows the use of a concrete masonry bond beam which is grouted solid and reinforced. The second detail shows two back to back steel lintels used for spanning the opening.

NOTE: ALL EXTERIOR CONCRETE MASONRY SHOULD INCORPORATE INTEGRAL WATER REPELLENT IN THE UNITS & MORTAR

Option One



Option Two



Composite Wall - Base Flashing

Comments

Option one shows a stair-stepped flashing detail with the exposed drip edge and weep holes. Option two shows a straight through wall flashing detail. The flashing must be set in mastic on top of the concrete foundation, or the flashing must be self adhesive. The flashing should be turned up on the inner side of the wall to direct water to the outside of the wall.

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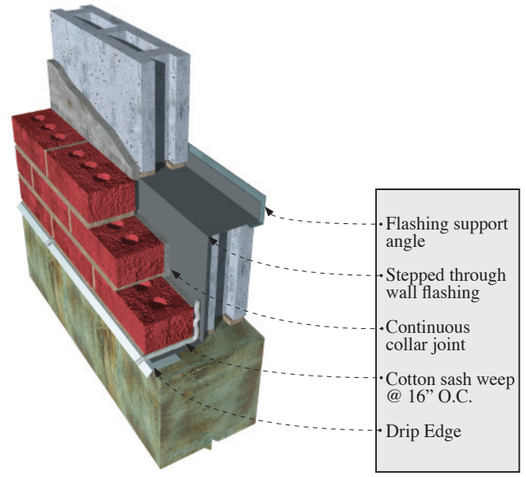
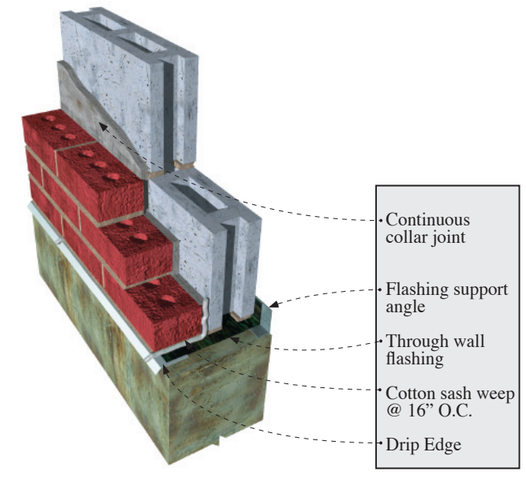
Option One



Option Two



Composite Wall - Windows

Comments

Here, loose steel lintels back-to-back create the above window span. Stepped flashing turned up on the inside, and folded to form an end dam protects the head condition from moisture. The sill detail also uses flashing, end dams and weep holes to keep moisture out of the wall. The use of a precast concrete or stone sill is highly suggested over using brick rowlock sills.

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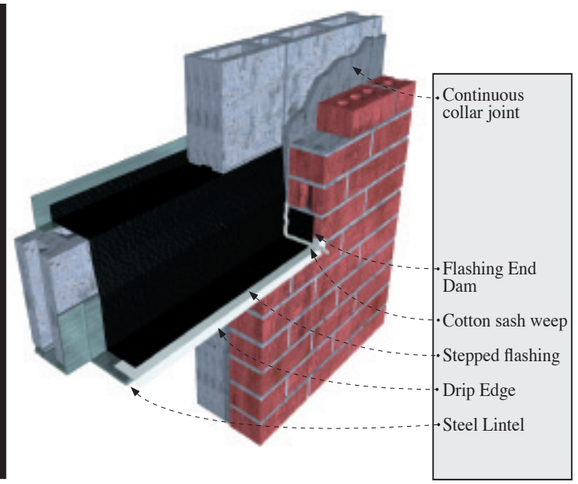
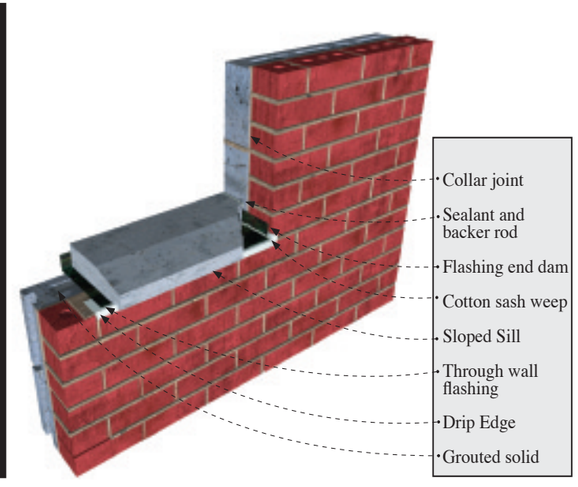
Window Head



Window Sill



Introduction

SCOPE OF THIS GUIDE

The current trend of urban renewal and infill has sparked a high volume of new low rise masonry residences. These structures come in many forms, but quite often they employ the use of load bearing concrete masonry walls supporting a wood floor system. These new buildings are largely derivative of the old load bearing masonry “brownstone” or “three flat” structures of old. This guide is intended to assist contractors and architects to give this old building type a modern approach to detailing.

FLOOR SYSTEM CONNECTIONS

When designing low-rise load bearing structures, the connection detail between the floor system and the wall system is critical for achieving a watertight structure. There are several ways to connect a wood floor system to a masonry load-bearing wall. Much of this guide will deal with which strategy should be utilized. Connection methods covered are:

- Joist Hangers
- Beam Pockets
- Ledger Beam

BRICK AND BLOCK COMPOSITE WALL DETAILS

Quite often, the front facade of these structures is composed of brick to give the building a more residential, more human scale. The preferred way to construct a brick and block wall is to separate the two wythes with an airspace, creating a cavity wall. Due to economic constraints, we see most designs using the composite wall design. The composite wall consists of an exterior wythe of brick directly mortared or parged to an inner wythe of cmu. The collar joint between the two wythes should be 100% solid as it is the only defense against water penetration. Details covered for this system are:

- Base Flashing
- Window Head
- Window Sill

COMMENTARY ON EXTERIOR CONCRETE MASONRY

All exterior concrete masonry should be treated with an integral water repellent (both units and mortar additive) , or a penetrant water repellent should be applied to the finished wall. Because 8 4” concrete masonry veneer will shrink over time, a 4” hot-dipped galvanized ladder type joint reinforcement should always be placed in bed joints spaced 16 inches vertically.

Type N mortar should be used for all veneer construction. Type S mortar may be required for some through wall/load bearing applications. Type S mortar tends to be less workable in the field and should only be specified when dictated by structural requirements. Sills, copings and chimney caps of solid masonry units, reinforced concrete, stone, or corrosion resistant metal should be used. Copings, sills and chimney caps should project beyond the face of the wall at least 1 inch and should have functional flashing and weep holes. In addition, all sills, copings and chimney caps should have a minimum slope of 1:4, be mechanically anchored to the wall, and should have properly sized, sealed, and located movement joints when necessary.

Flashing should be installed at locations shown on plans and in strict accordance with the details and industry standard flashing procedures. Functional, unpunctured flashing and weep holes are to be used at the base of wall above grade, above openings, at shelf angles, lintels, wall-roofing intersections, chimneys, bay windows, and below sills and copings. The flashing should be extended past the face of the wall. The flashing should have end dams at discontinuous ends, and properly sealed splices at laps.

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Joist Hanger Details

Comments

The use of a joist hanger system can greatly simplify the bearing detail. The floor system does not interrupt the continuity of the bearing wall. Installation is quicker and easier resulting in a more economical installation.

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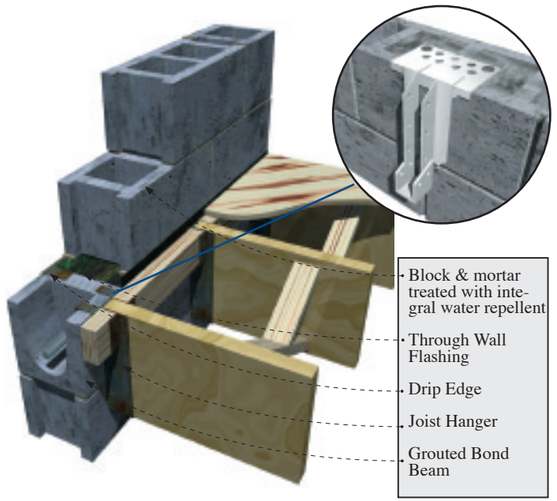
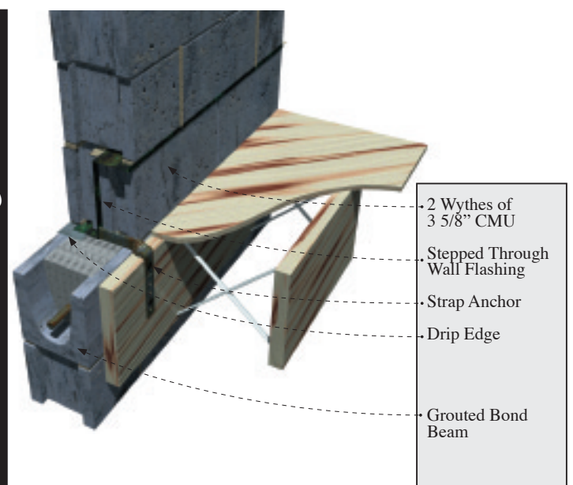
Bearing Detail



Non-Bearing Detail



Beam Pocket Details

Comments

The traditional beam pocket detail still can be effective, stepped flashing above the bearing line is critical to the performance of this system. Without the flashing, any water present in the wall has a clear path inside the building and has the potential to deteriorate the floor structure.

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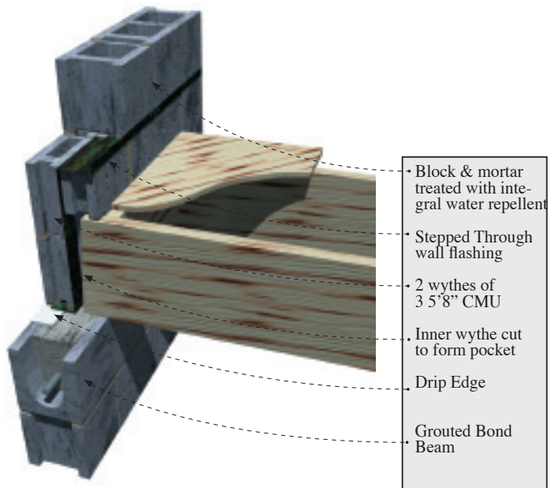
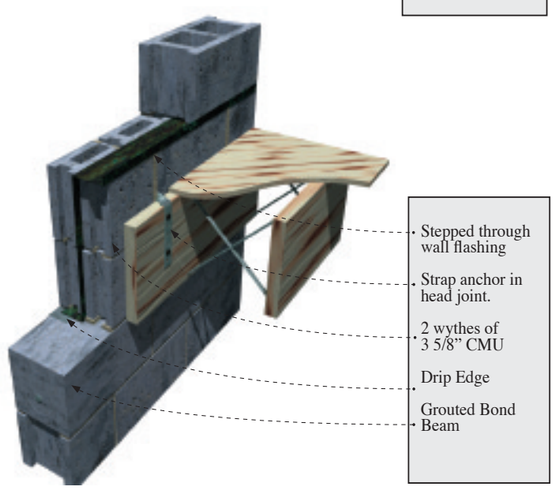
Bearing Detail



Non-Bearing Detail



Ledger Beam Details

Comments

The use of a ledger beam which is bolted to a bond beam is also a good option for this bearing condition. Through wall flashing is still required to maintain a watertight wall. Any water that penetrates the block with run down the inner cores of the block until it hits the flashing. The flashing and weep holes will allow the water to exit without damaging the structure.

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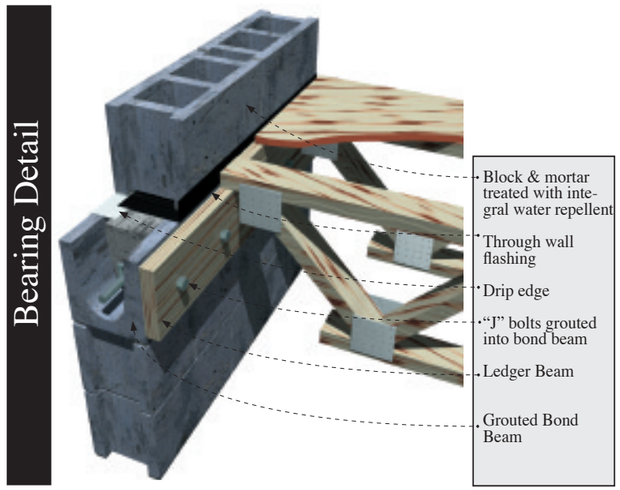
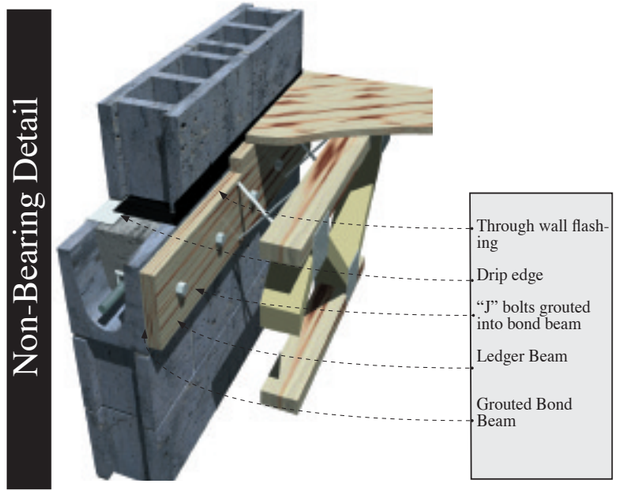
Bearing Detail



Non-Bearing Detail



Parapet & Window Sill

Comments

Below are details for a parapet condition and a window sill condition. The parapet is reinforced with #4 bars at 40 inches on center for resistance to wind loads. If a metal cap is used, it should extend down the face of the wall at least 3 inches with continuous sealant at the joint on both sides of the wall.
The sill detail shows the arrangement of flashing, end dam, weep holes and drip edge and how they all work together to form a watertight window sill.

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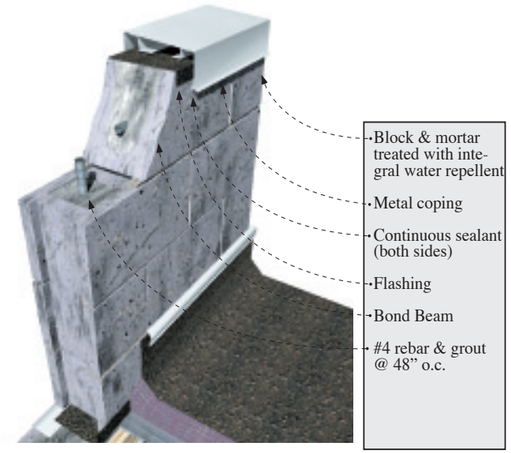
Parapet Detail



Sill Detail