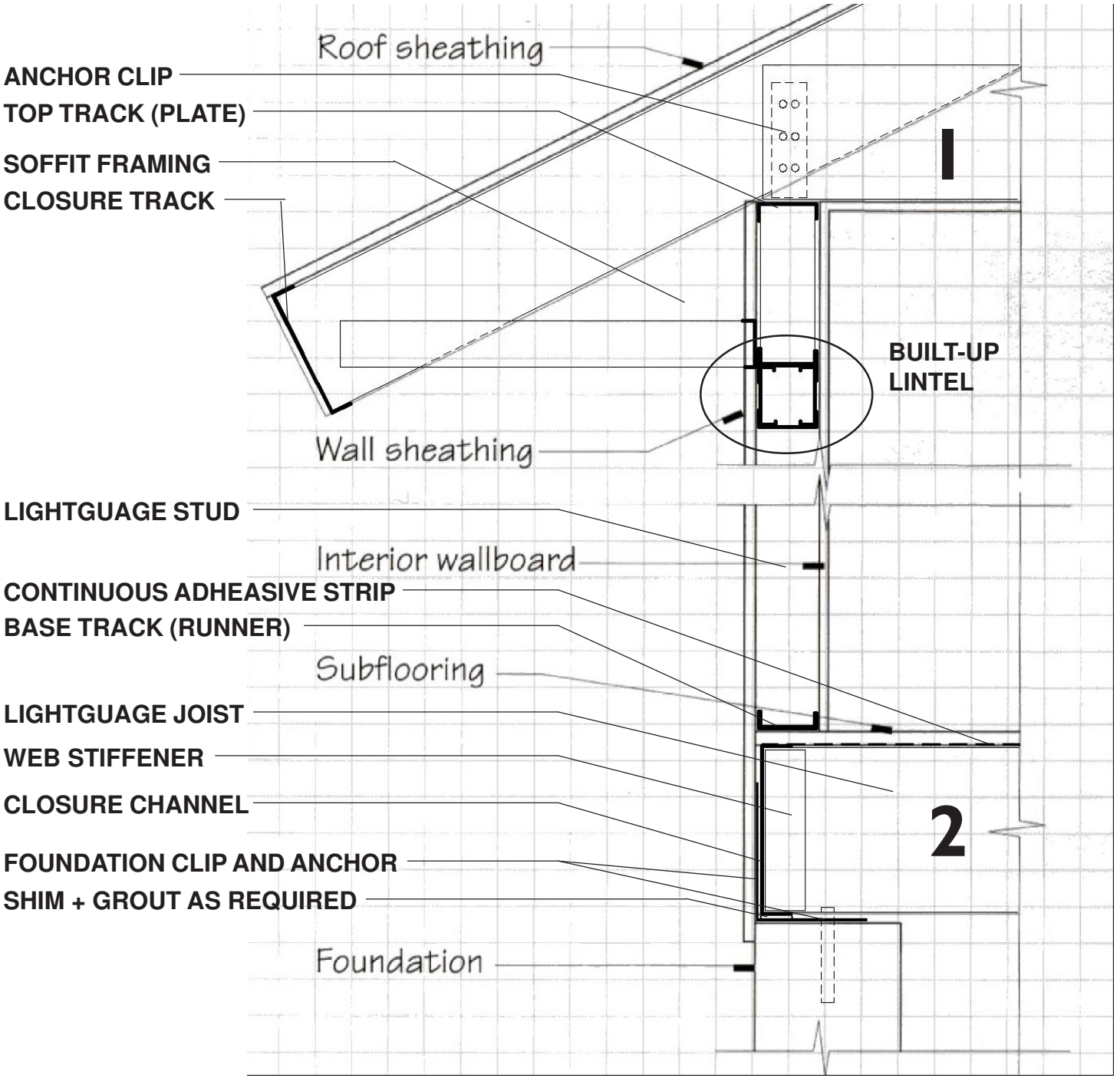

MASONRY

Order of the Day:

- Housekeeping: Return Work Sheet #8;
- Review: Work Sheet #8: LightGage Framing
- **Masonry Wall Assemblies**
- In-Class Work: Masonry Cavity Wall Detailing, Ex. 10.2
- Assignment: Masonry Cavity Wall Detailing, Ex. 10.3
  Reading for Next Week: Chapter 13 & 14

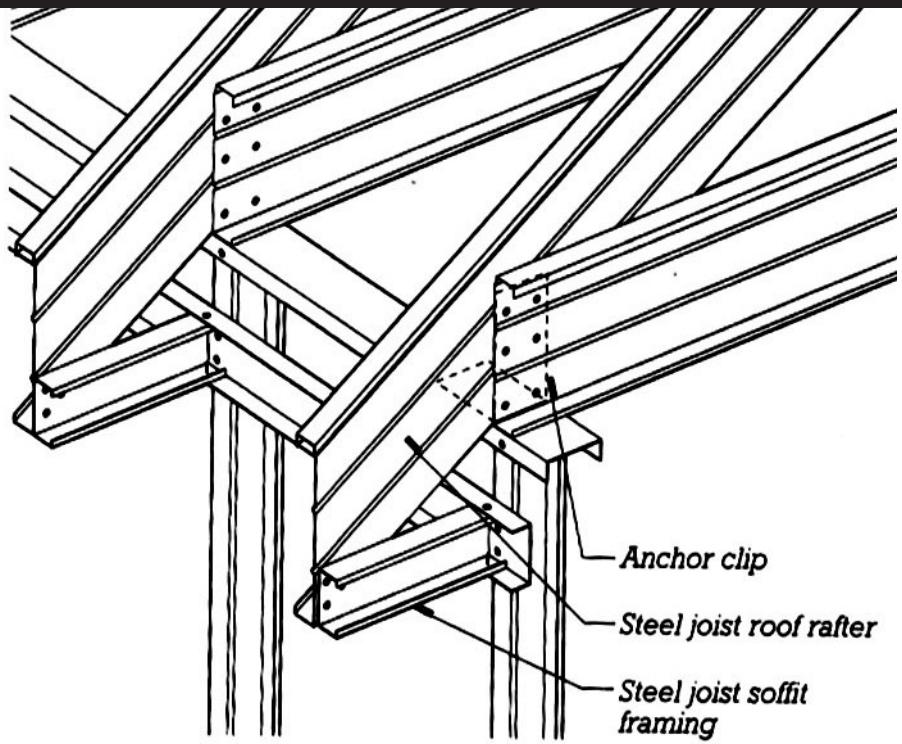
Next Week: Concrete!

Assignment #8: Light Gauge Steel Framing Details Ex. 12.1



Assignment #8:
Light Gauge Steel Framing Details
Ex. 12.1

1



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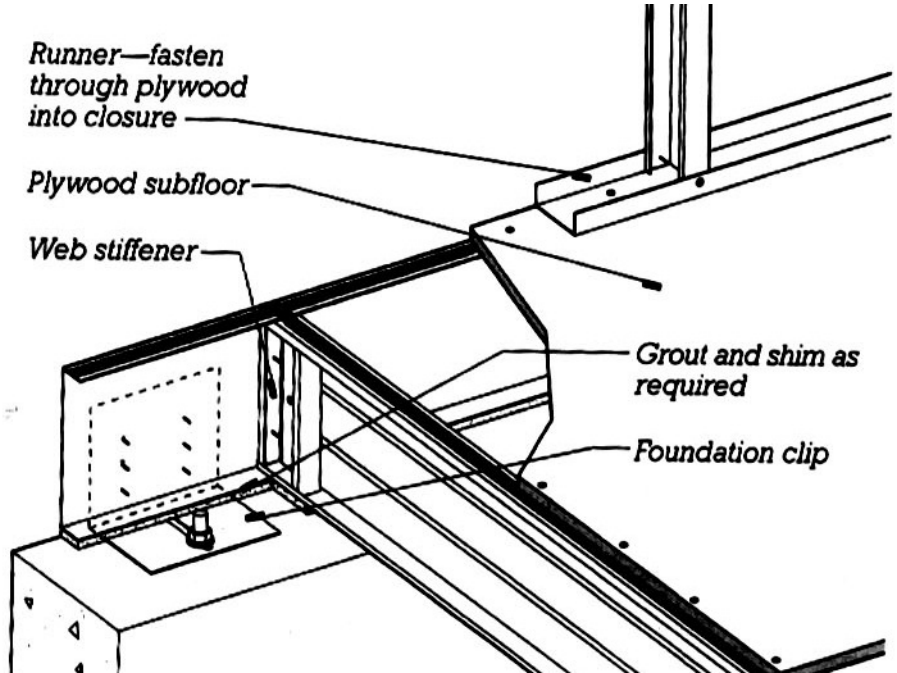


Architectural Technology V

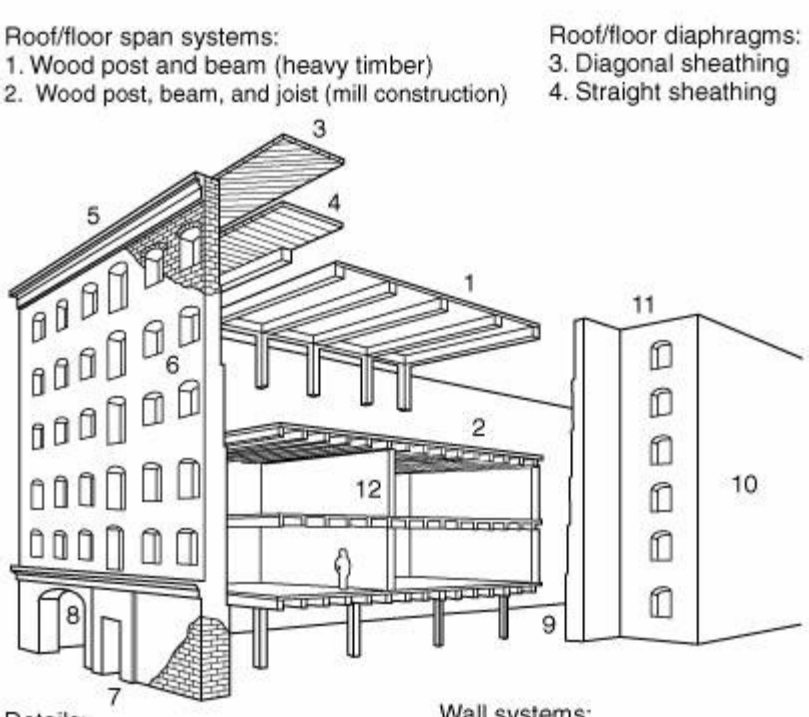
PLASTIC TIE SECURES ELECTRICAL CABLE

2x4 BLOCKING ATTACHED BY 1-1/4" SELF-TAPPING SCREWS


Once again:
MASONRY

Traditional Masonry Bearing Walls

Mill Building, Lowell, Massachusetts



Brick Wythe as “Veneer”

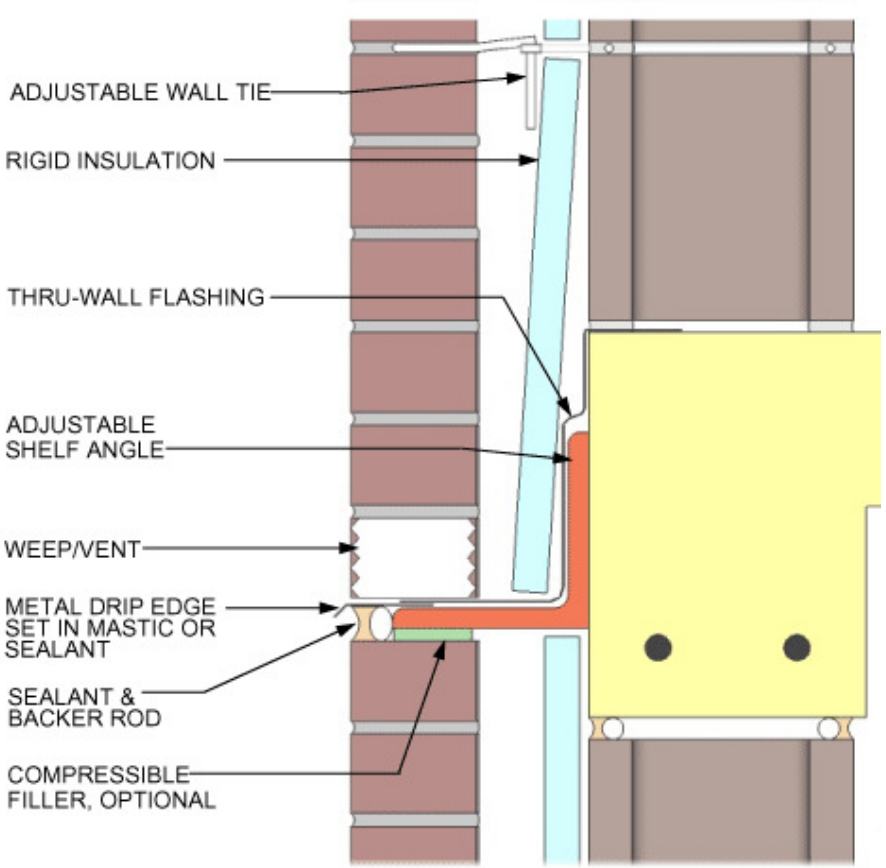
Fire-rated Masonry Enclosure

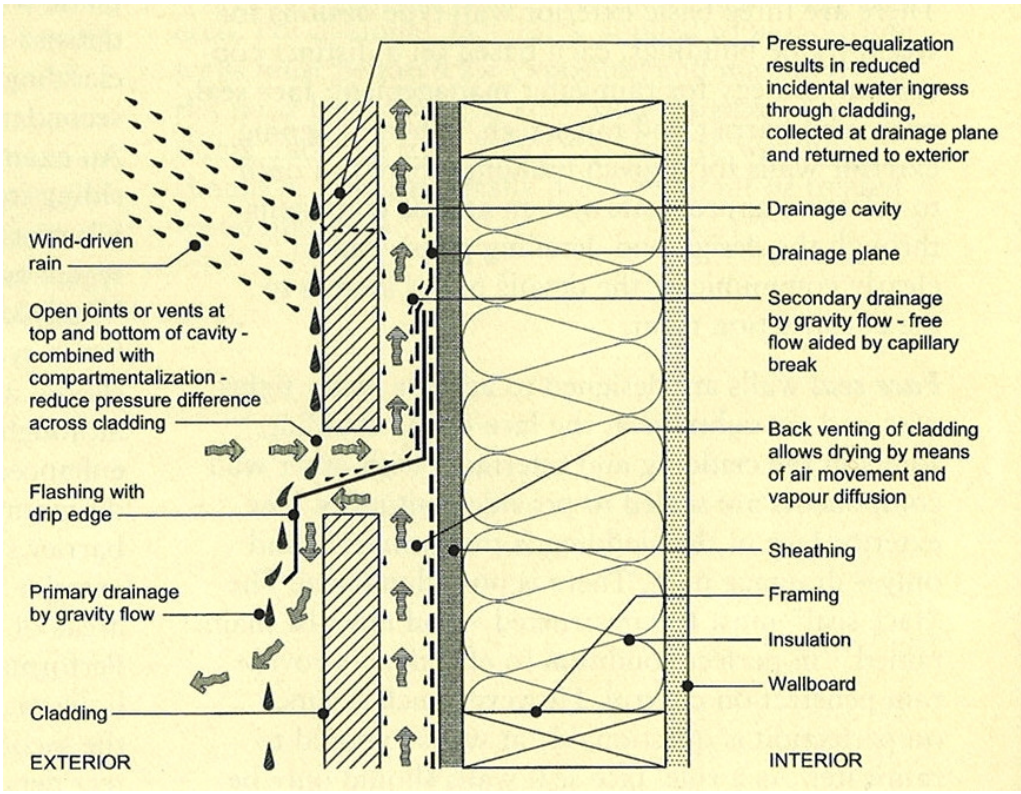
Masonry in high-traffic or high-maintenance areas

Architectural Technology V

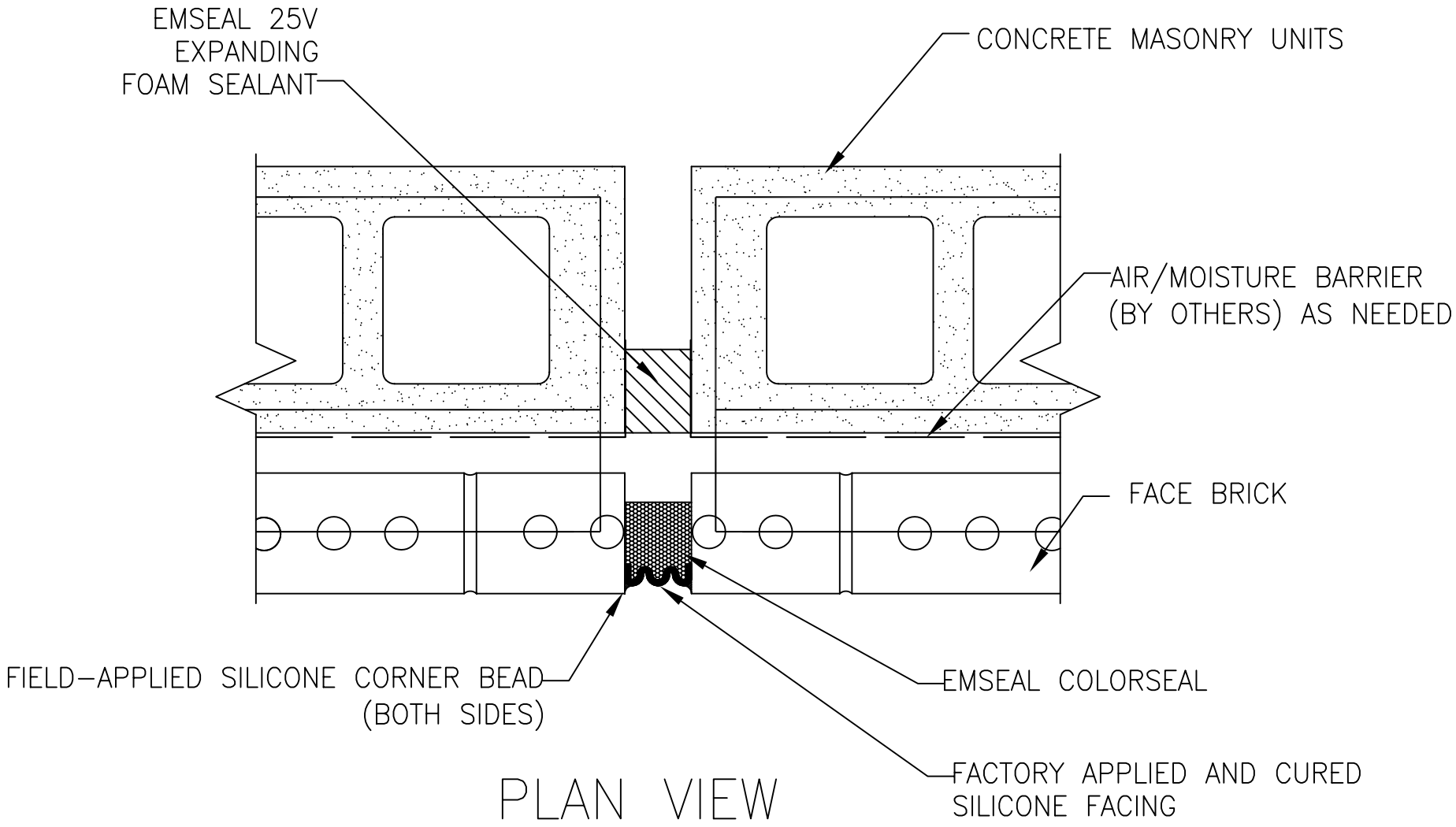
The Historical Tradition of Masonry

Masonry walls anticipated modern construction...



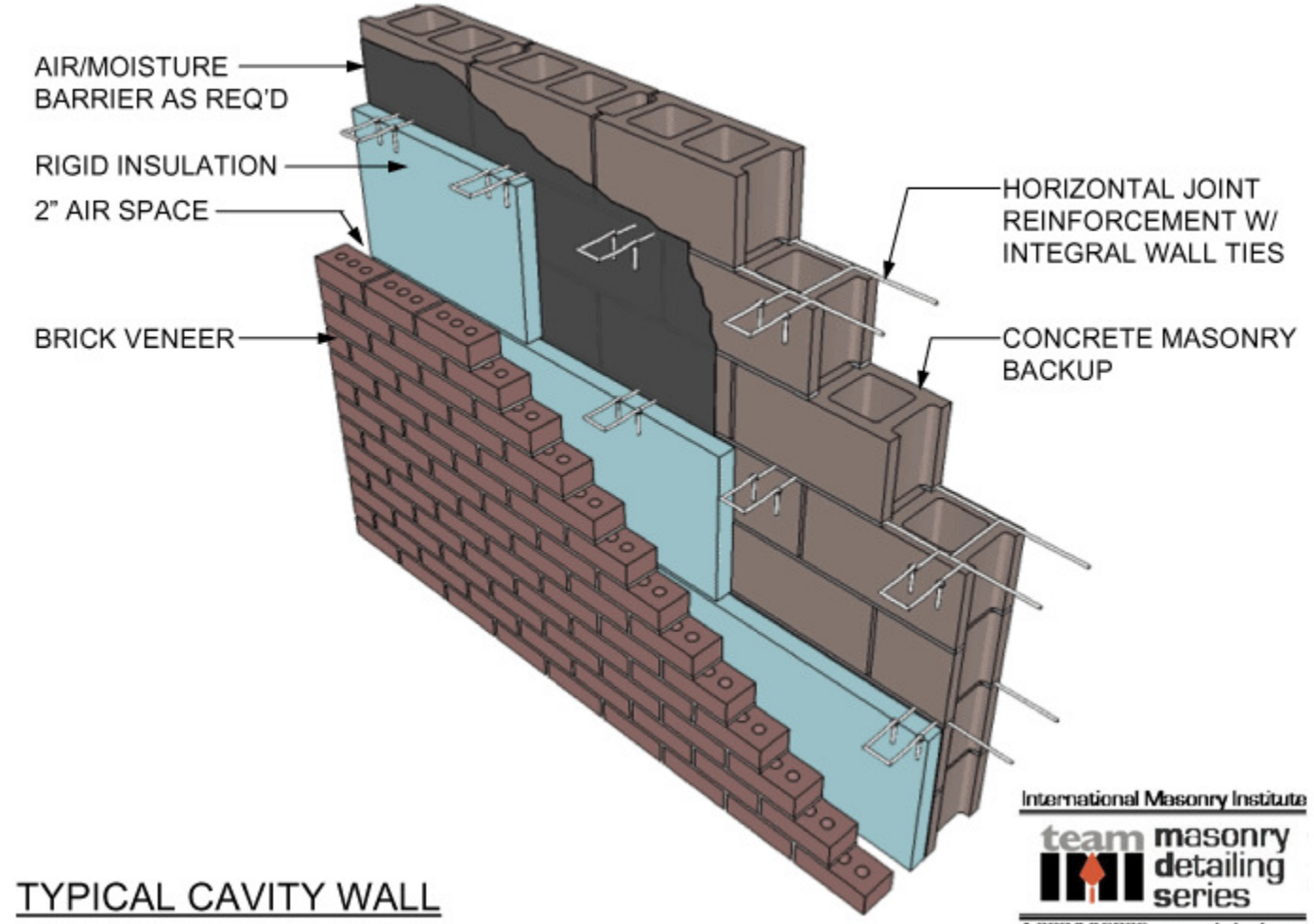


Masonry got there first…



The purpose of a Masonry wall:

To support and resist structural & dynamic loads...
To resist water penetration and the transfer of heat;
To resist failure due to its own thermal expansion and contraction.



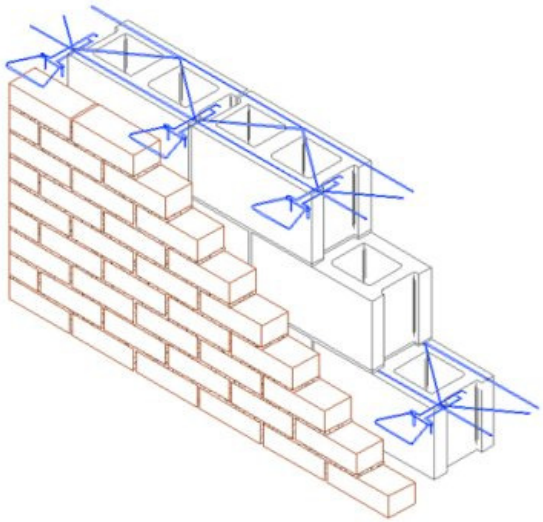
Masonry Wall Types:

Reinforced or unreinforced;
Homogenous (a single type of masonry unit)
or Composite (two or more types of units);
Solid or Cavity.

Masonry Wall Ties: (See Figure 10.1)

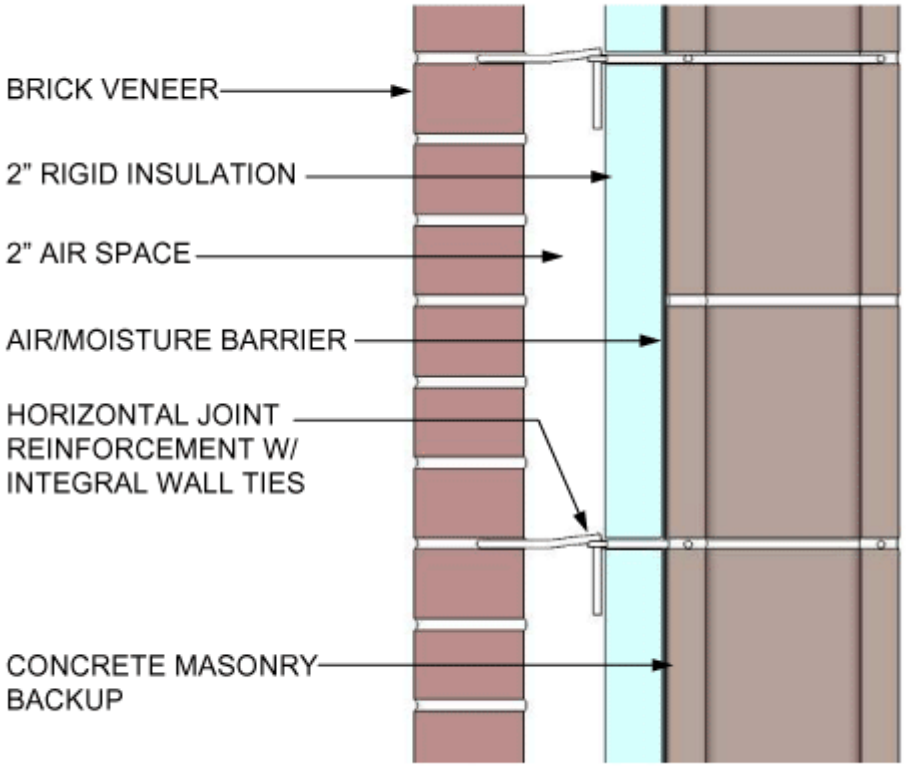
Corrugated, Z-Tie, Adjustable,
Adjustable Stone Tie, Two-Wire Ladder Tie,
Ladder Loop Tie, Three-Wire Truss Tie,
Dovetail Anchors for Concrete Back-up,
Steel Column Anchor

Corrugated tie...



Adjustable Ties
And Joint Reinforcing...

Cavity Wall "Classic"



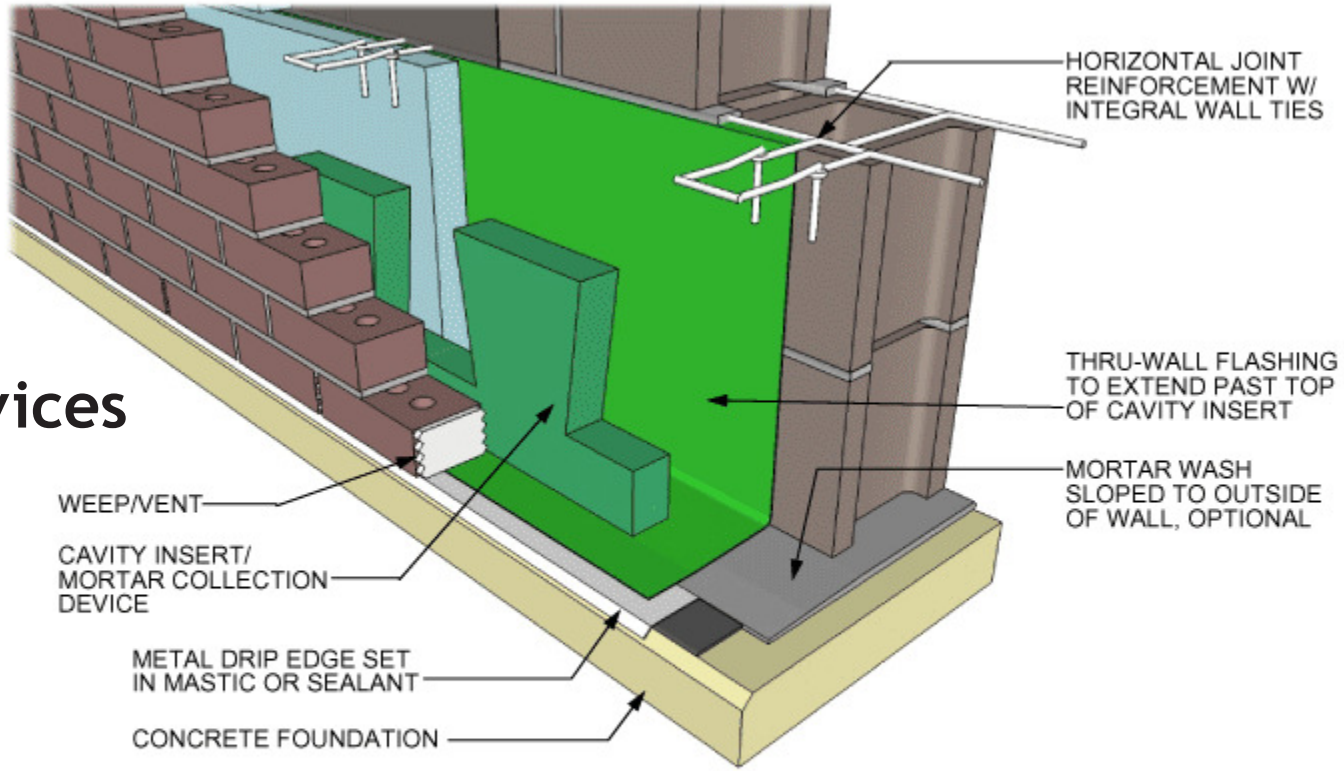
Looking down into the Cavity...

Other Components of a Cavity Wall

Reinforcement & Ties

Flashing

Mortar Control Devices

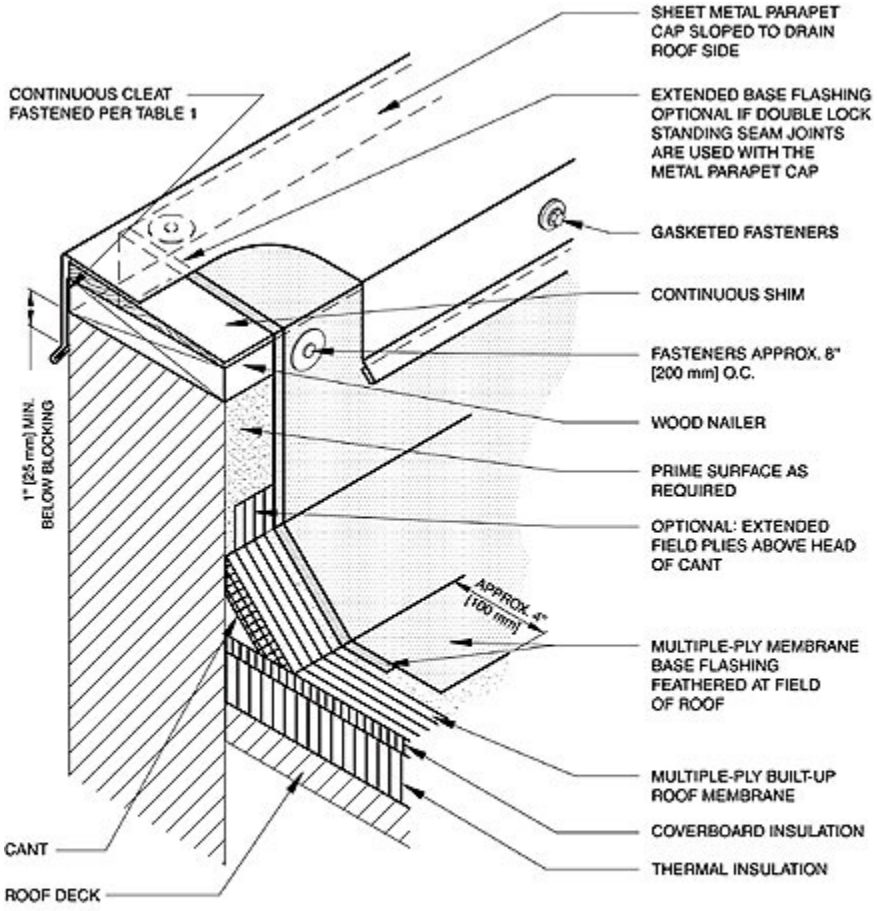


BASE FLASHING w/ CAVITY INSERT

DETAIL 04.02 REV. 02/13/07

International Masonry Institute
team masonry detailing series
1-800-IMI-0388 www.imiweb.org

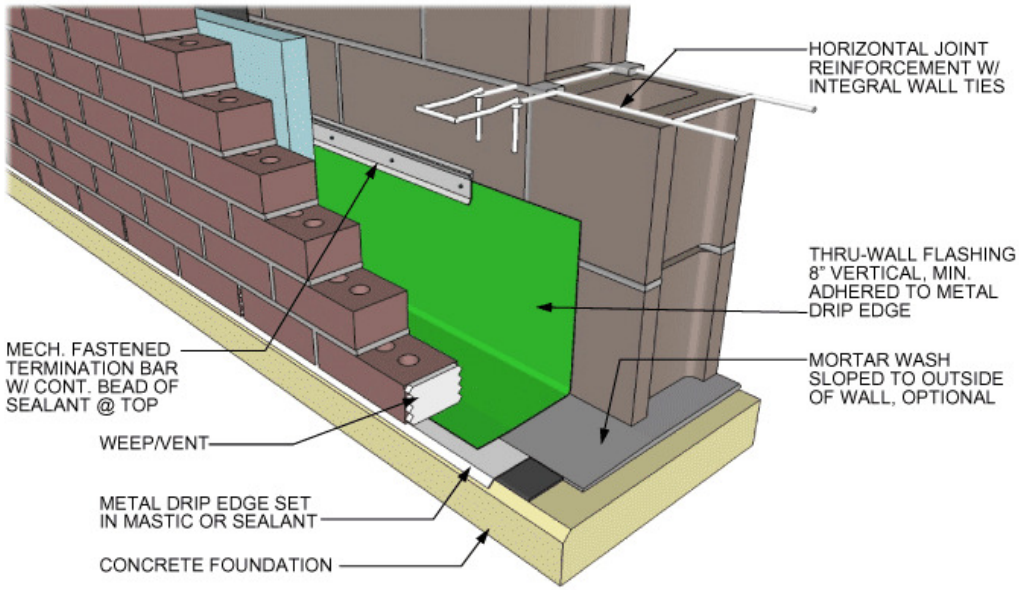
Flashing: External…



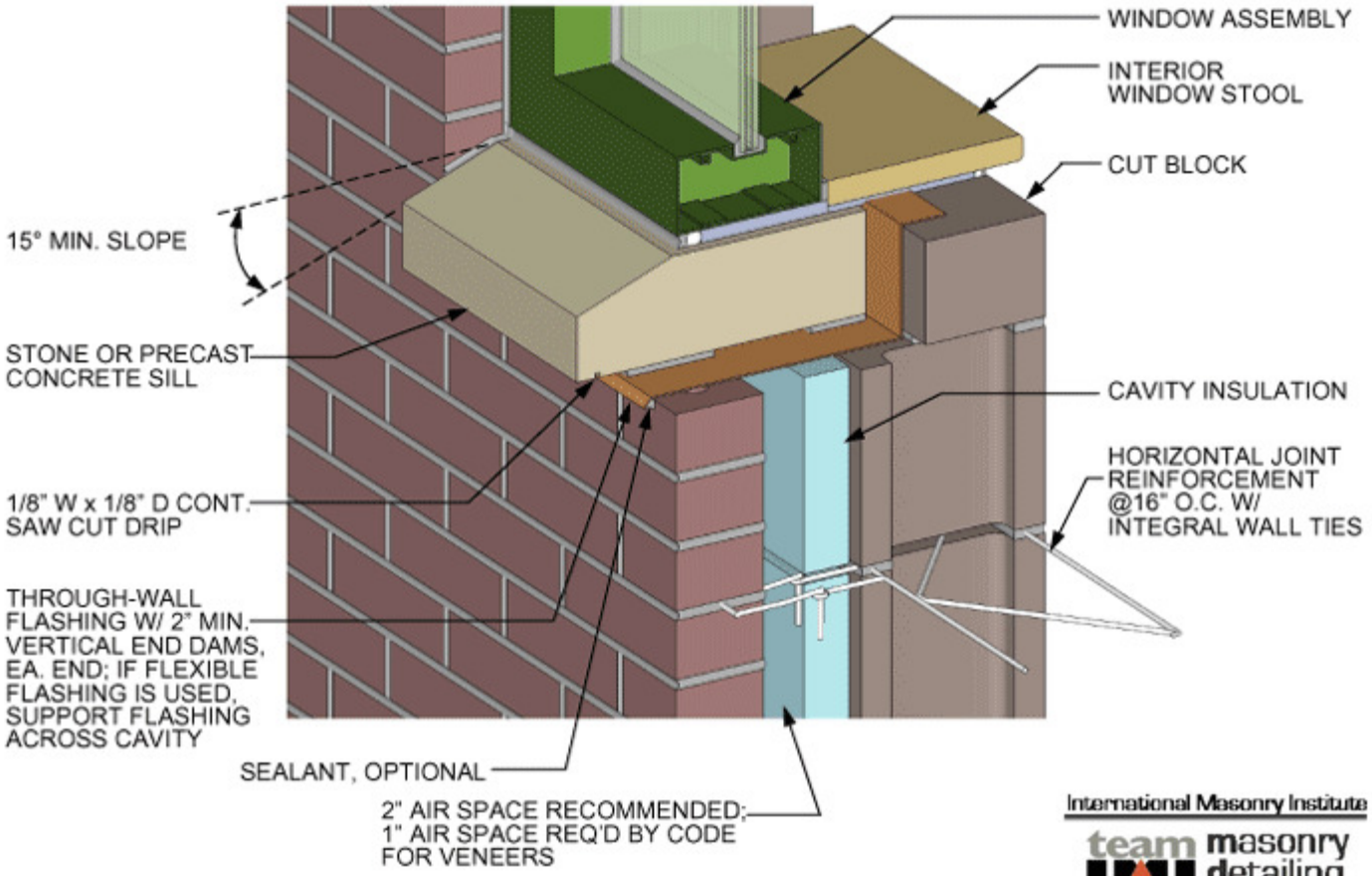
NOTES :

1. THIS DETAIL SHOULD BE USED ONLY WHEN THE ROOF DECK IS SUPPORTED BY THE WALL. DETAIL BUR-6 SHOULD BE USED FOR NON-WALL SUPPORTED DECK.
2. IN LIEU OF EXTENDED BASE FLASHING, INSTALL CONTINUOUS SHEET MEMBRANE LINER.
3. REFER TO THE SHEET METAL SECTION OF THE METAL ROOFING MANUAL FOR JOINERY AND SECUREMENT OPTIONS FOR SHEET METAL.
4. REFER TO INTRODUCTION FOR ADDITIONAL INFORMATION.

…and Internal



Window Flashing (Looking Down At Sill)



STONE SILL AT CAVITY WALL

DETAIL 13.01 REV. 02/14/07

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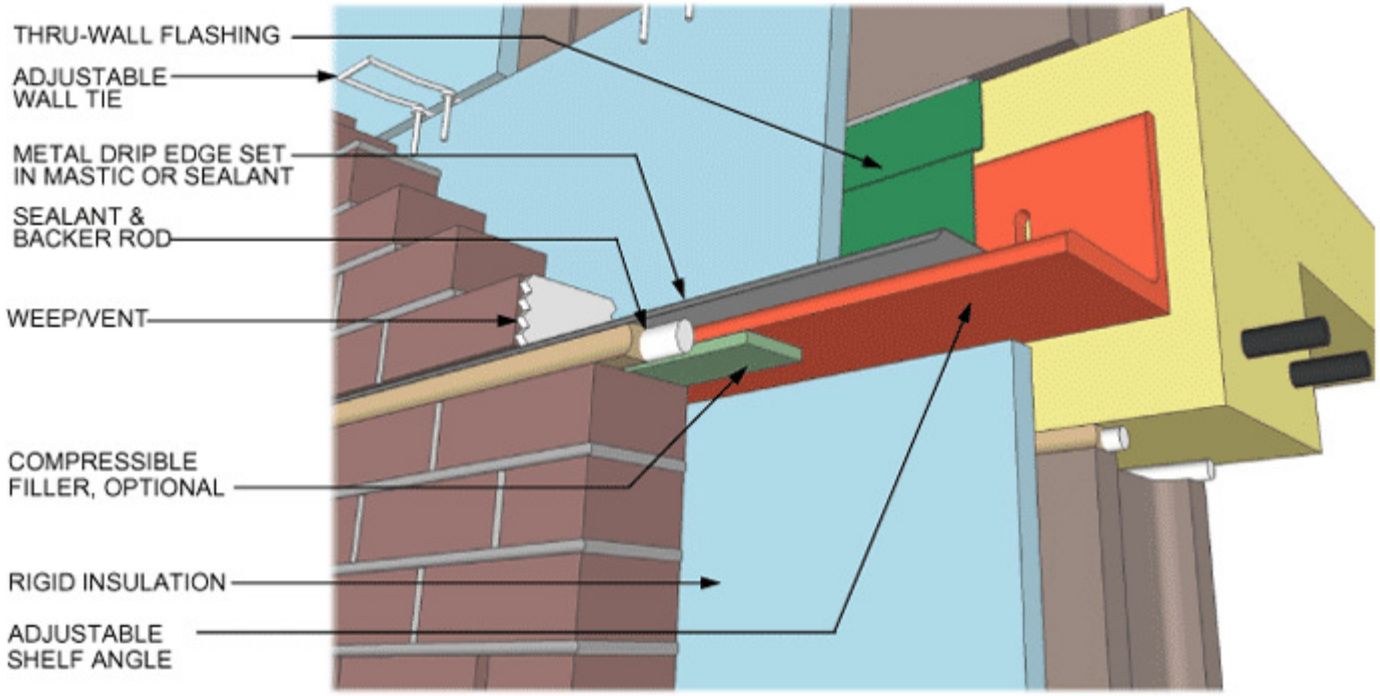
Window Flashing (Looking Up at Head)



SHELF ANGLE DETAIL
DETAIL 05.01 REV. 02/13/07

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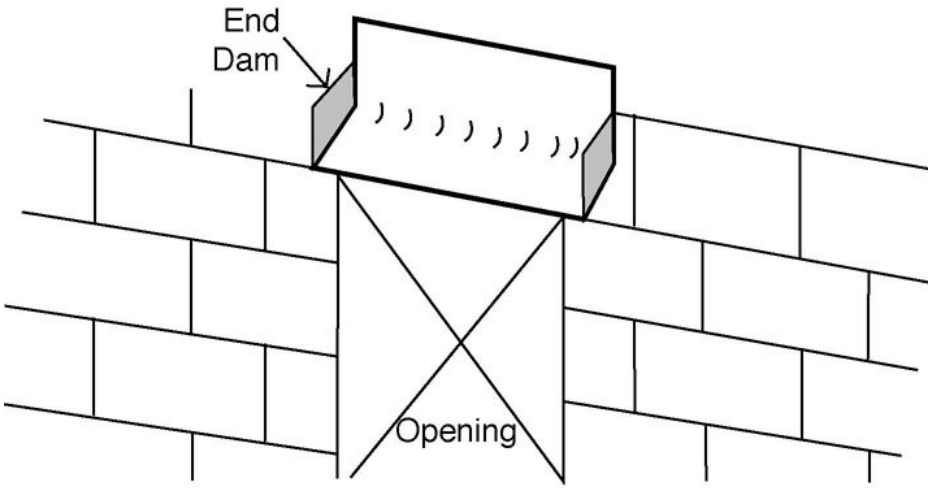
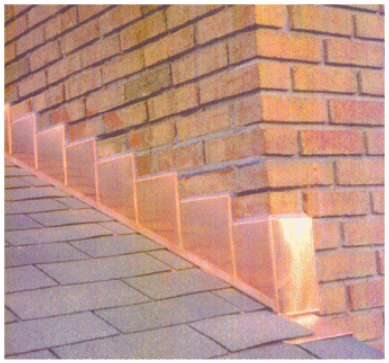
Turned-up Flashing at Jambs



Schematic (Above Lintel)

In Real Life (At flashing termination)

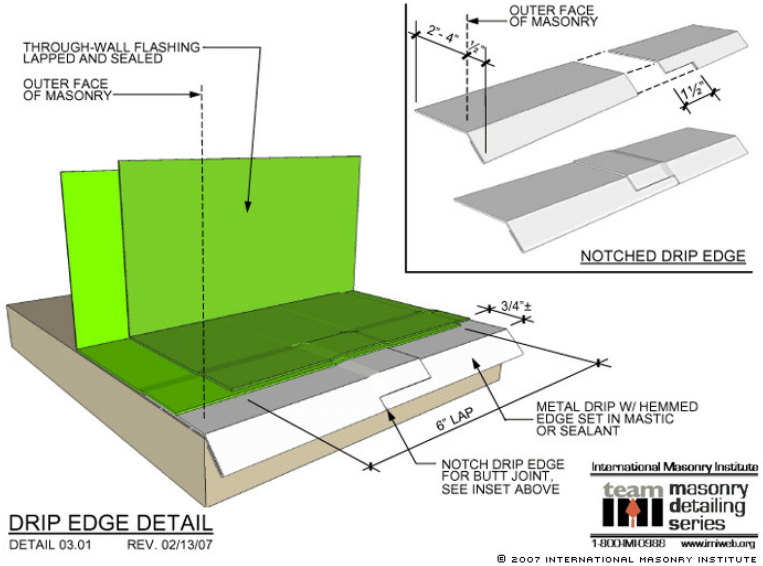
Flashing is a sheet-formed material made from sheet metal, plastic, elastomeric compounds, or composite materials such as rubberized fabric.



Copper Flashing

Elastomeric Flashing

Fabric Flashing



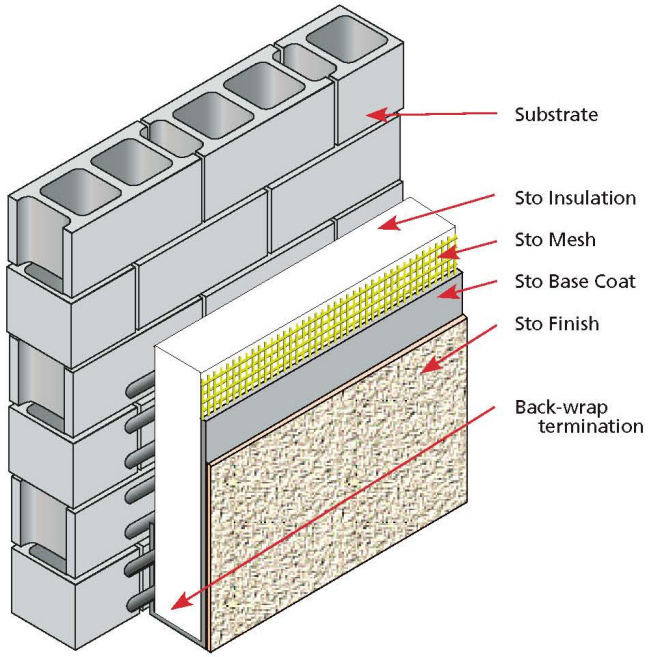
Flashing Drip edge:

When using UV-unstable membrane flashing, hold flashing back from exposed edge of metal drip edge approximately 3/4-inch so the flashing will not heat up and drool out of wall to stain the masonry and weaken the flashing.

Metal drip edge should be wide enough to accommodate project variances and to allow approximately 2-inch bonding surfaces with flashing. Metal drip edges are typically 2-inch to 4-inches wide.

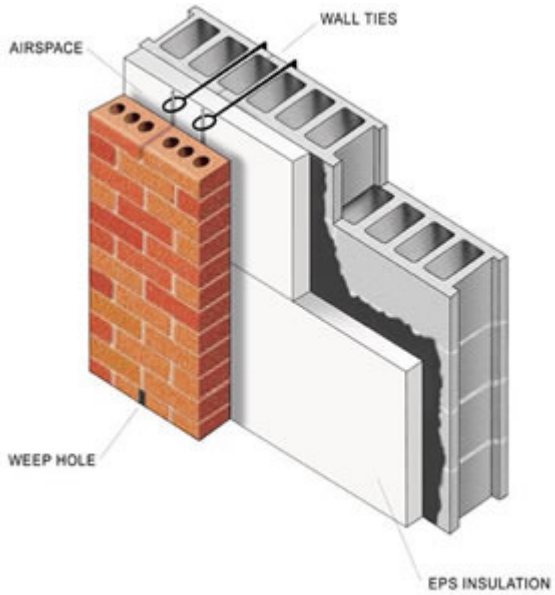
Three methods of insulating Masonry Walls:

Outside...

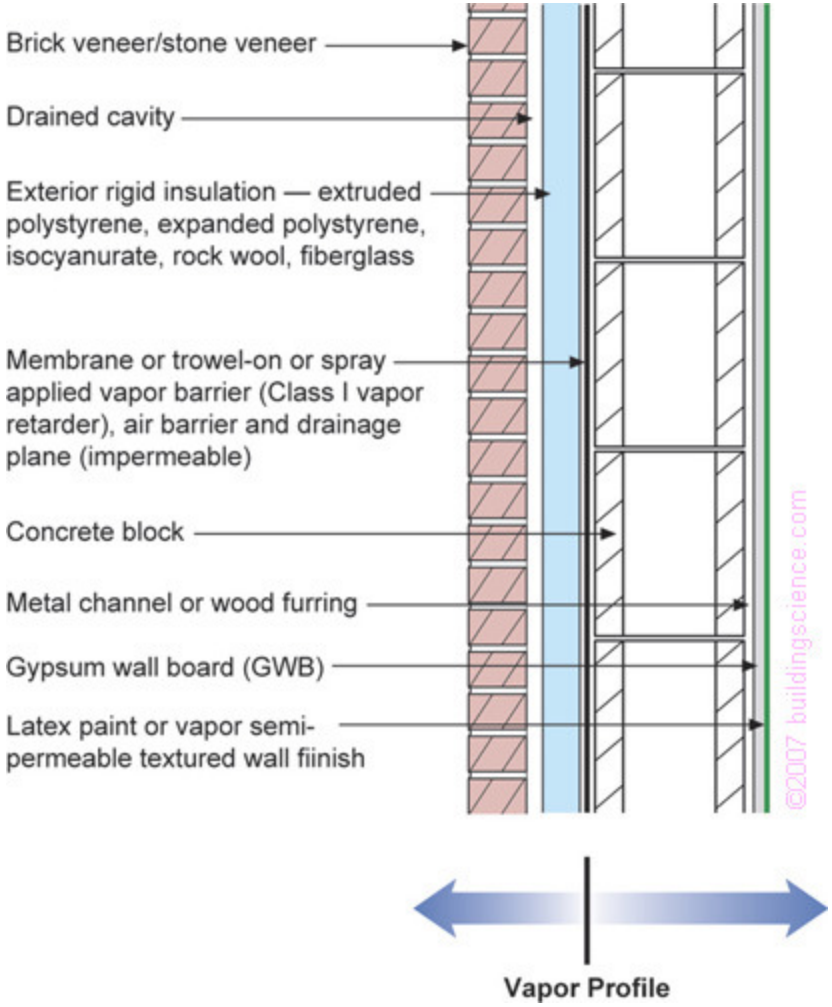


Inside...

Cavity



Introduction of Membrane Air Barrier



Self-applied Air Barrier

Insulation and Finish Masonry at Exterior

Cavity-Fill Insulation at Masonry Units

Foam Insert

Loose Vericulite (Perlite or Zonolite) Fill

Insulating the inside face of masonry walls

Thermal Break boarding; Studs for interior finish and additional insulation

Building Joints

Non-movement Joints... Examples?

Movement Joints

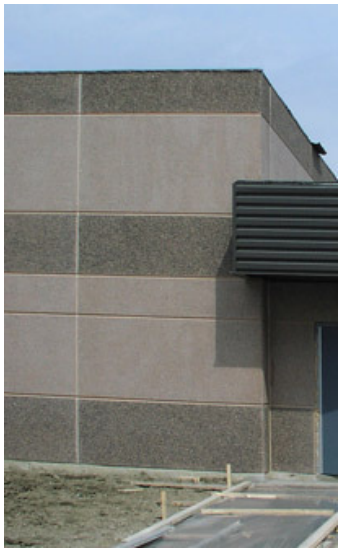
Working Construction Joints

Structure/Enclosure Joints

Surface Divider Joints
- Abutment Joints
- Control Joints
- Expansion Joints

Building Separation Joints
- Volume Change Joints
- Settlement Joints
- Seismic Separation Joints

Abutment/Control Joint



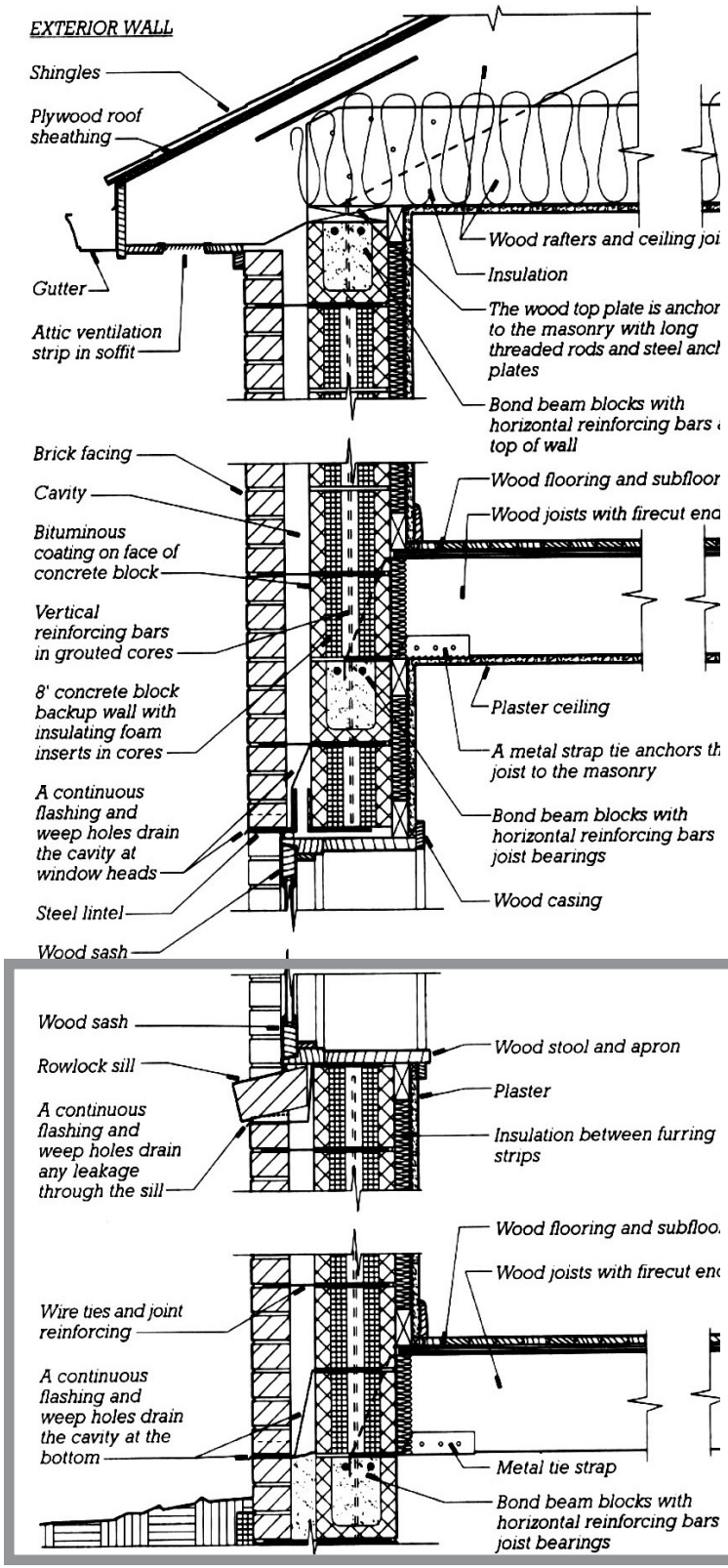
PVC Expansion Joint Cover

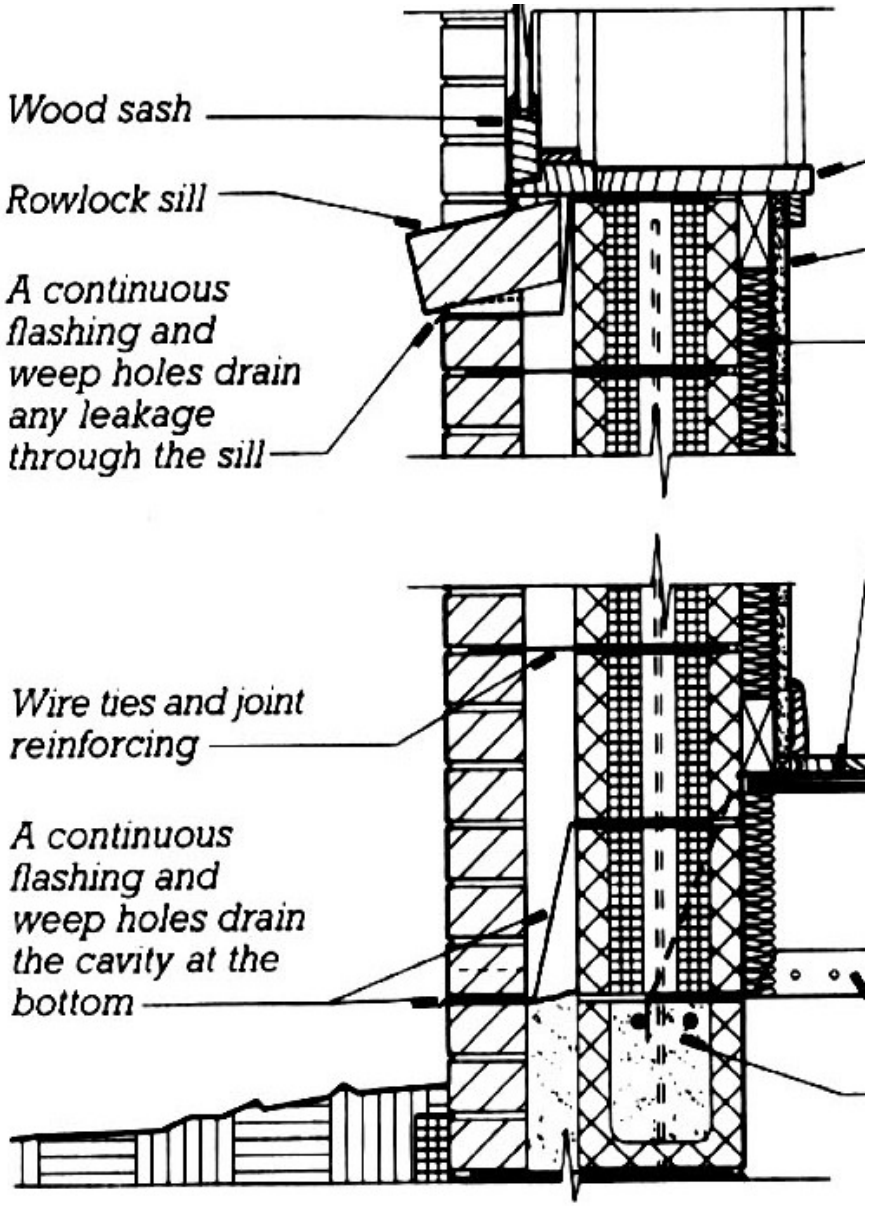
Spanning Systems for Masonry Bearing Construction

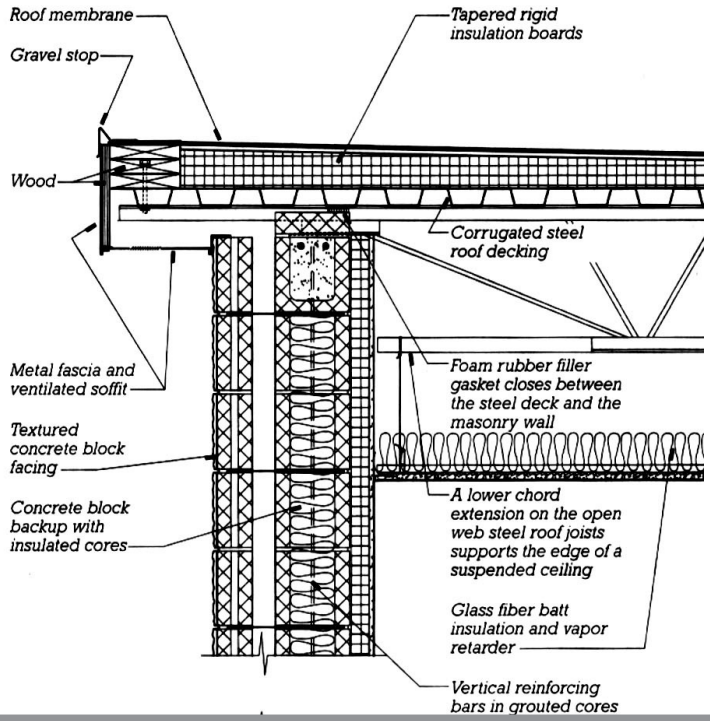
Ordinary, Joisted Construction / Heavy Timber Construction

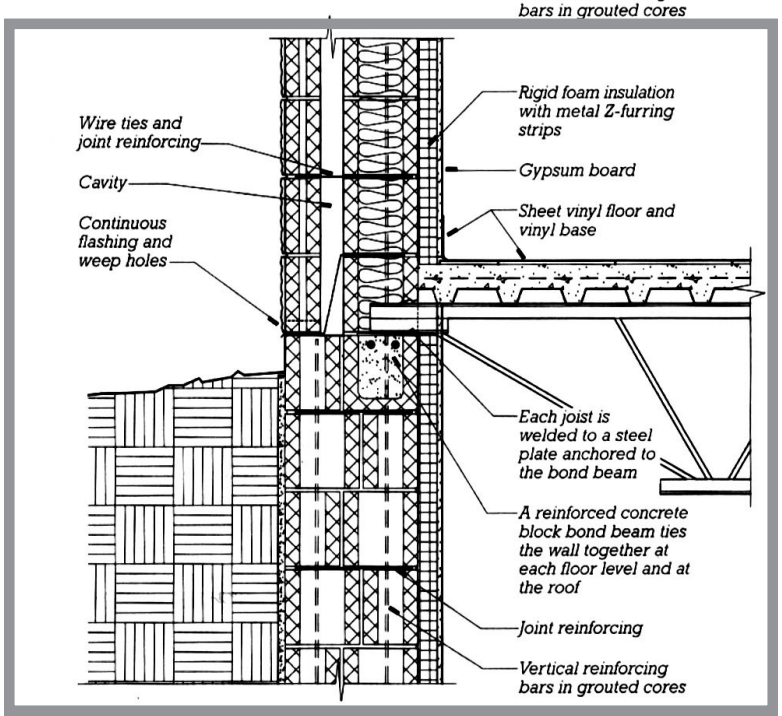
Steel Joist/Decking

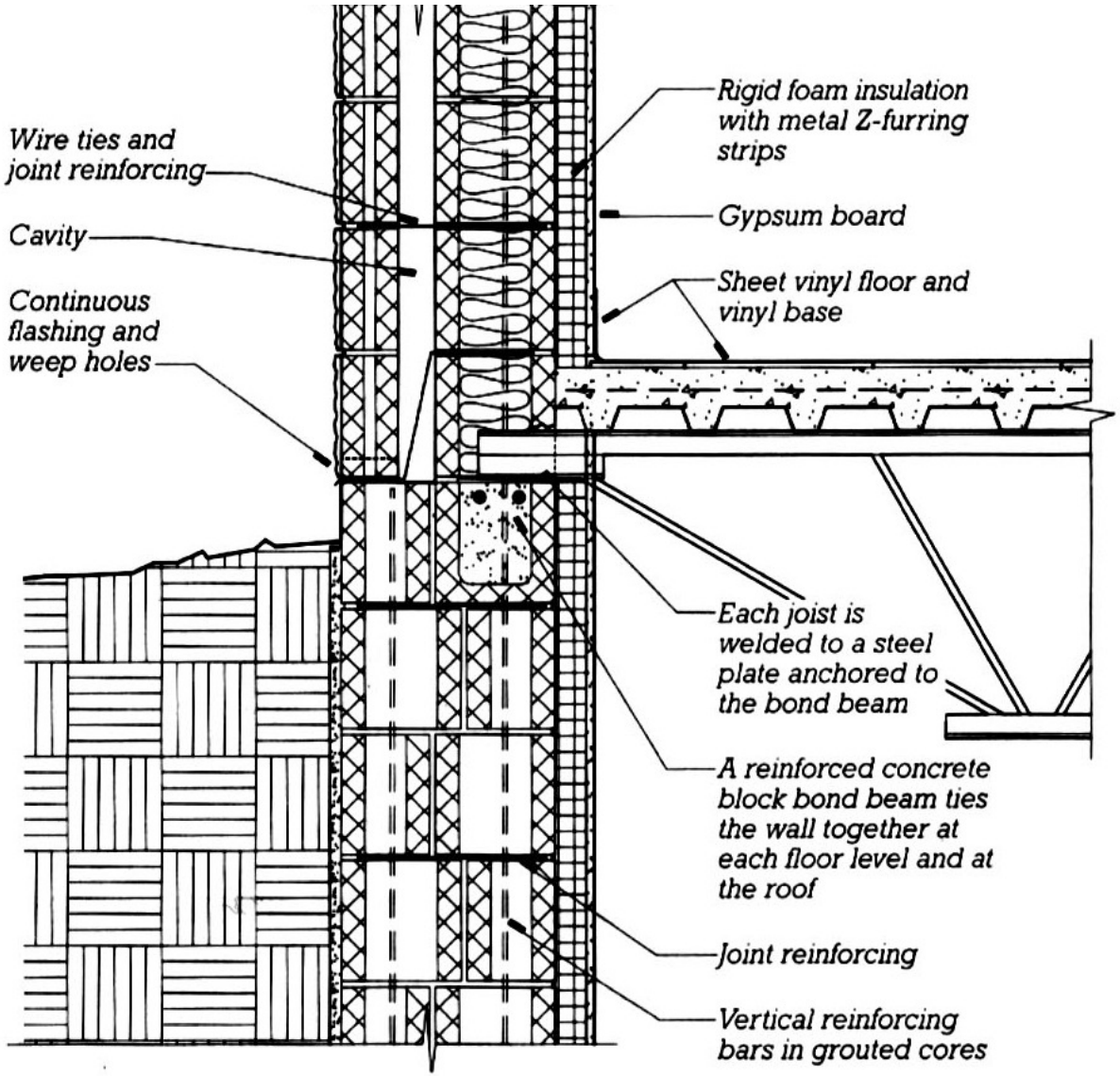
Concrete Decking


EXTERIOR WALL
Shingles
Plywood roof sheathing
Gutter
Attic ventilation strip in soffit
Wood rafters and ceiling joi
Insulation
The wood top plate is anchor to the masonry with long threaded rods and steel anch plates
Bond beam blocks with horizontal reinforcing bars top of wall
Brick facing
Cavity
Bituminous coating on face of concrete block
Vertical reinforcing bars in grouted cores
8' concrete block backup wall with insulating foam inserts in cores
A continuous flashing and weep holes drain the cavity at window heads
Steel lintel
Wood sash
Wood flooring and subfloor
Wood joists with firecut end
Plaster ceiling
A metal strap tie anchors th joist to the masonry
Bond beam blocks with horizontal reinforcing bars joist bearings
Wood casing
Wood sash
Rowlock sill
A continuous flashing and weep holes drain any leakage through the sill
Wood stool and apron
Plaster
Insulation between furring strips
Wood flooring and subfloo
Wood joists with firecut en
Wire ties and joint reinforcing
A continuous flashing and weep holes drain the cavity at the bottom
Metal tie strap
Bond beam blocks with horizontal reinforcing bars joist bearings


Wood sash
Rowlock sill
A continuous flashing and weep holes drain any leakage through the sill
Wire ties and joint reinforcing
A continuous flashing and weep holes drain the cavity at the bottom


Roof membrane
Gravel stop
Tapered rigid insulation boards
Wood
Corrugated steel roof decking
Metal fascia and ventilated soffit
Foam rubber filler gasket closes between the steel deck and the masonry wall
Textured concrete block facing
Concrete block backup with insulated cores
A lower chord extension on the open web steel roof joists supports the edge of a suspended ceiling
Glass fiber batt insulation and vapor retarder
Vertical reinforcing bars in grouted cores


Wire ties and joint reinforcing
Cavity
Continuous flashing and weep holes
Rigid foam insulation with metal Z-furring strips
Gypsum board
Sheet vinyl floor and vinyl base
Each joist is welded to a steel plate anchored to the bond beam
A reinforced concrete block bond beam ties the wall together at each floor level and at the roof
Joint reinforcing
Vertical reinforcing bars in grouted cores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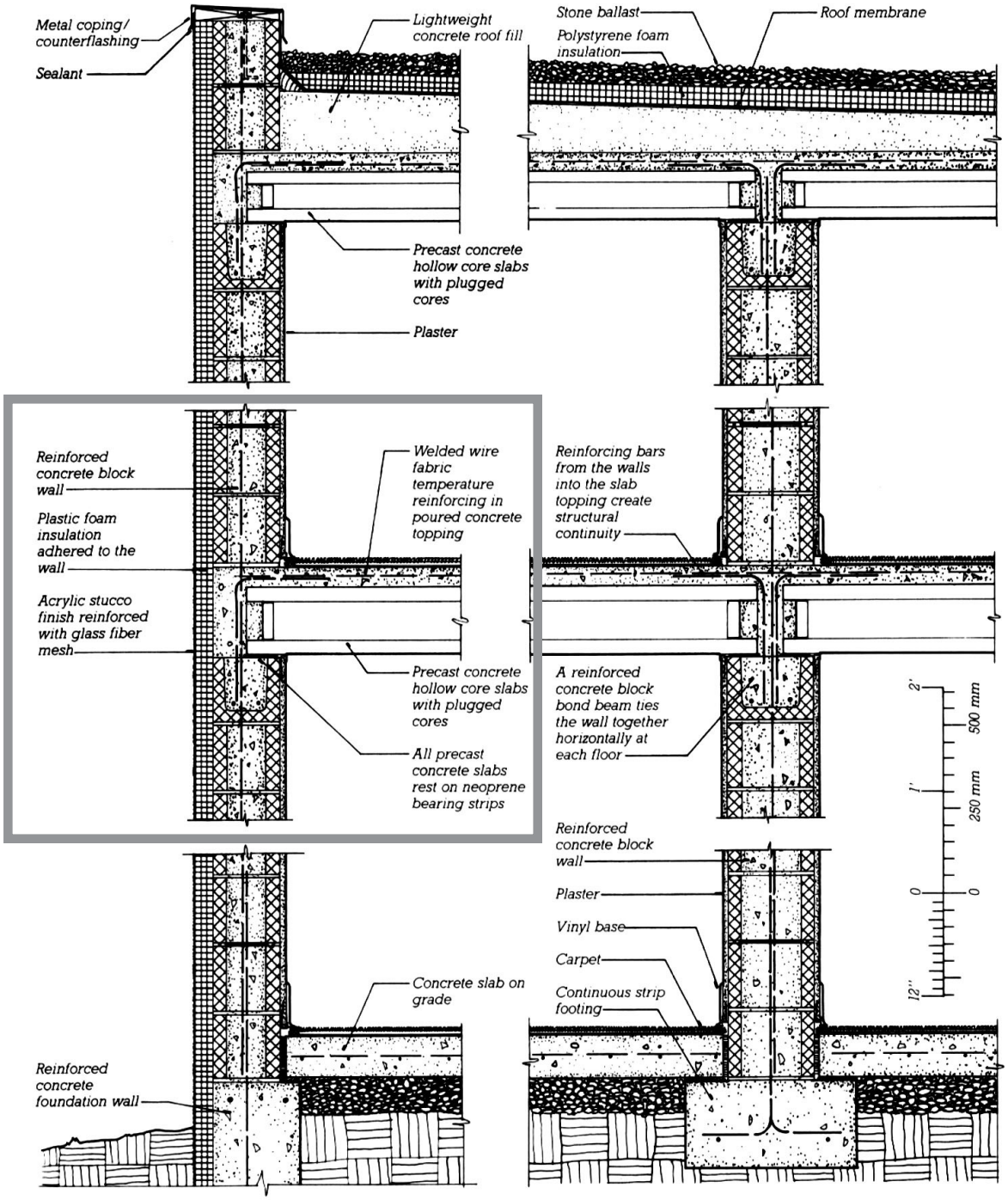
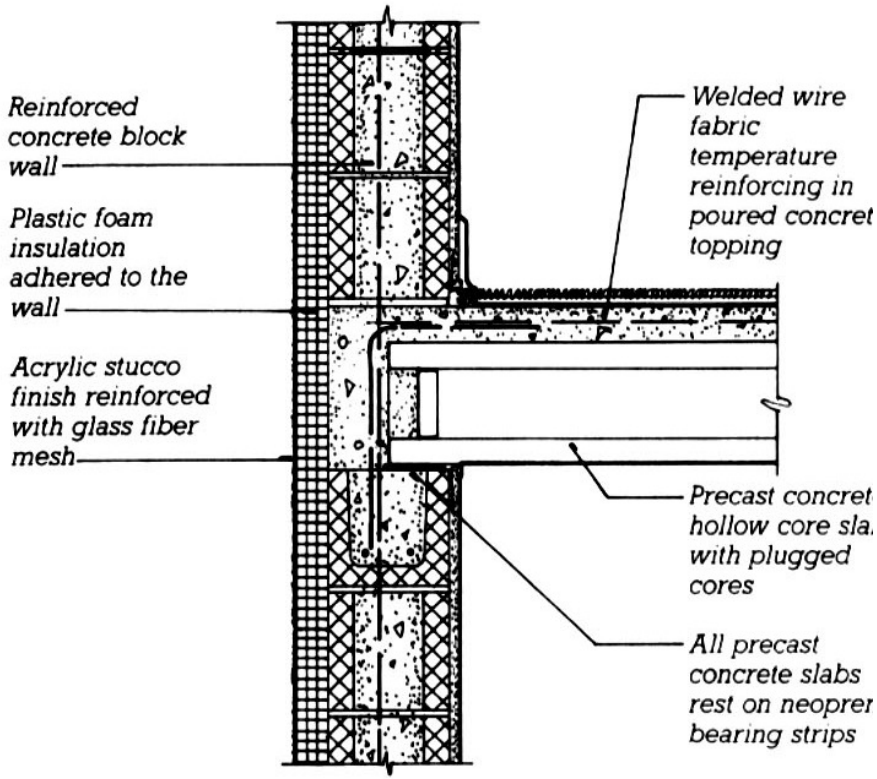

Metal coping/ counterflashing
Sealant
Lightweight concrete roof fill
Precast concrete hollow core slabs with plugged cores
Plaster
Stone ballast
Polystyrene foam insulation
Roof membrane
Reinforced concrete block wall
Plastic foam insulation adhered to the wall
Acrylic stucco finish reinforced with glass fiber mesh
Welded wire fabric temperature reinforcing in poured concrete topping
Precast concrete hollow core slabs with plugged cores
All precast concrete slabs rest on neoprene bearing strips
Reinforcing bars from the walls into the slab topping create structural continuity
A reinforced concrete block bond beam ties the wall together horizontally at each floor
Reinforced concrete block wall
Plaster
Vinyl base
Carpet
Continuous strip footing
Concrete slab on grade
Reinforced concrete foundation wall
2"
500 mm
1'
250 mm
0
0
12"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(One More Time:)

Special Considerations for Masonry Construction

Expansion/Contraction
Efflorescence
Mortar Joint Deterioration
Moisture Resistance
Cold and Hot Weather Construction

Architectural Technology V

Haberdasher's Hall, Michael Hopkins

200 Hammersmith Road, Hamilton Associates

Thames Valley Park, Sidell Gibson

Procession House, RHWL Architects

The Mound Stand, Michael Hopkins

School of Management, Louis Kan