

# Masonry Wall Construction

BUILDING TECHNOLOGY I





# MASONRY WALL CONSTRUCTION:



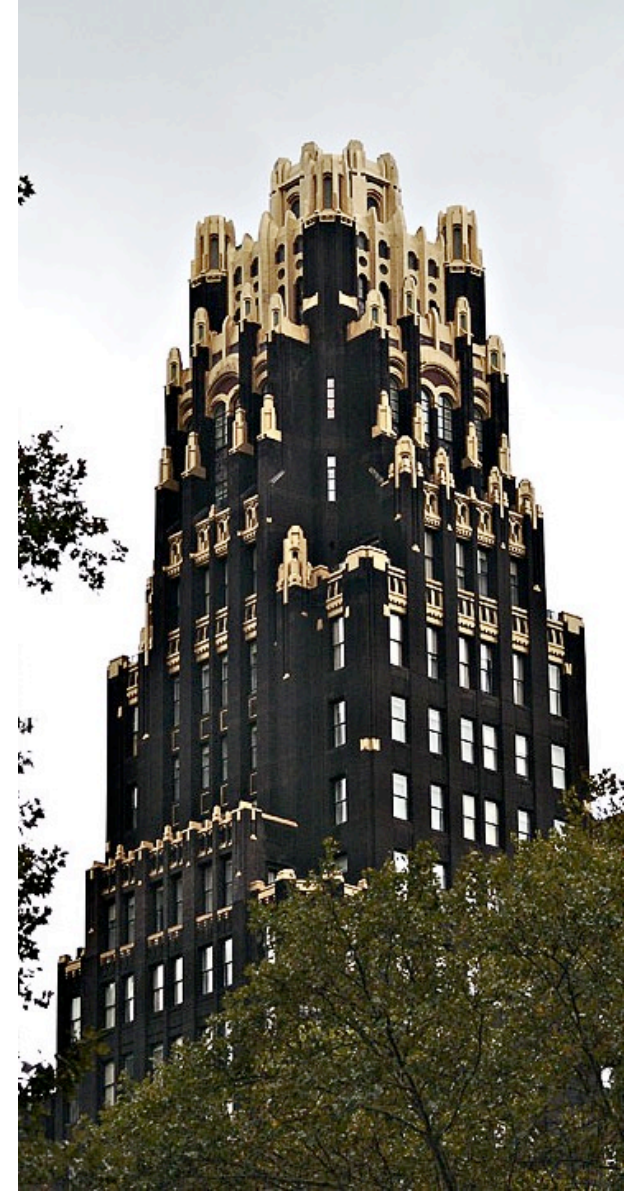


# MASONRY WALL CONSTRUCTION:





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# MASONRY WALL CONSTRUCTION: this week

## Objective:

To explore methods of construction of exterior masonry walls + their relationship to the primary structural system.

- Types of masonry walls
- Spanning systems for masonry bearing wall construction
- Detailing masonry walls
- Special considerations for masonry construction



# MASONRY WALL CONSTRUCTION: types of masonry walls

## TYPES of MASONRY WALLS:

- MASONRY LOAD BEARING WALLS
- REINFORCED MASONRY WALLS
- POSTTENSIONED MASONRY WALLS
- MASONRY CAVITY WALLS
- COMPOSITE CAVITY MASONRY WALLS



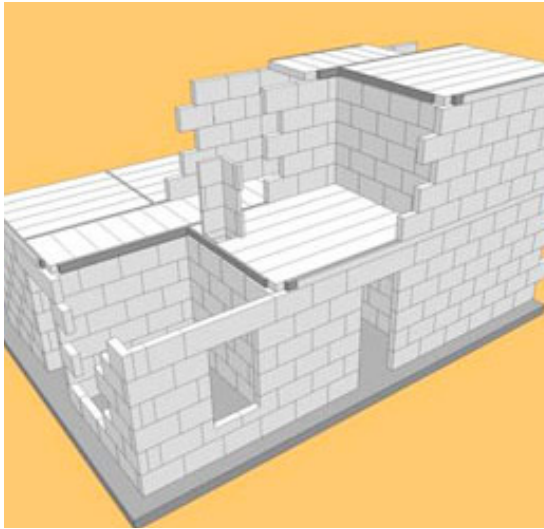


# MASONRY WALL CONST: load bearing masonry walls

## LOAD BEARING WALLS SERVE 2 FUNCTIONS:

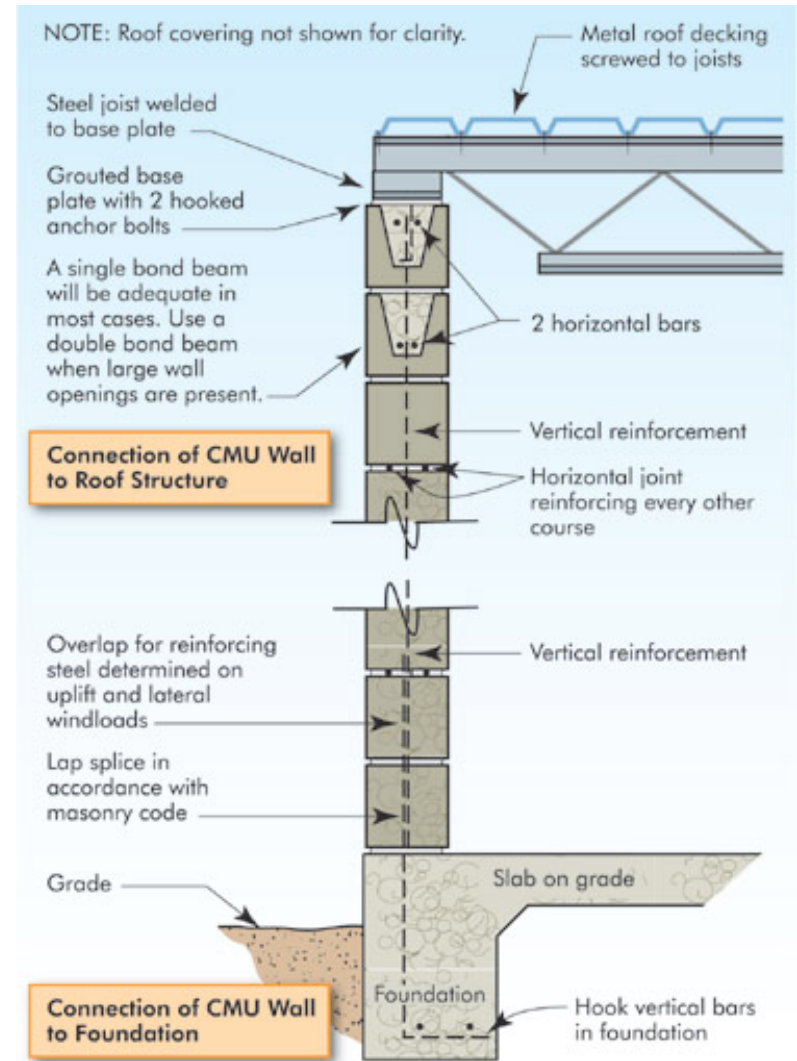
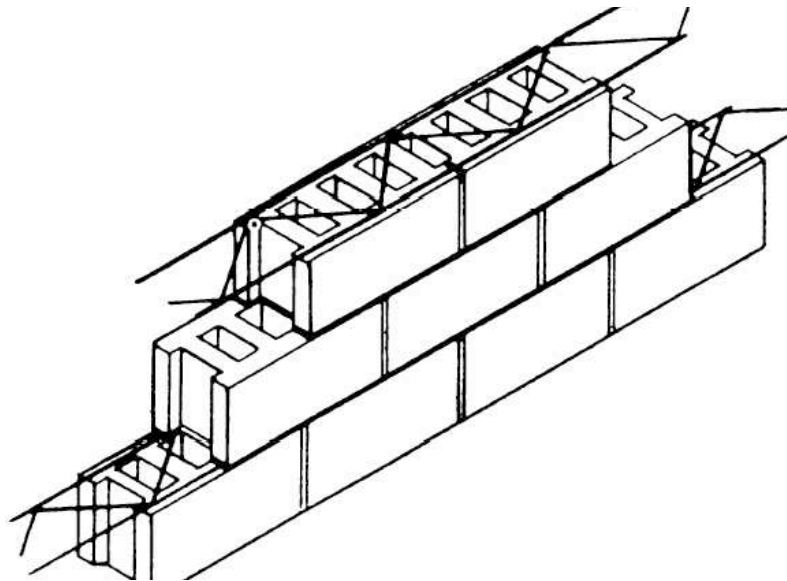
- Support the roof + floor structural systems
- Are the infill walls on the building exterior; and / or the interior partitions

Therefore they are economical to construct



# MASONRY WALL CONST: reinforced masonry walls

## LOAD BEARING WALLS with REINFORCING:

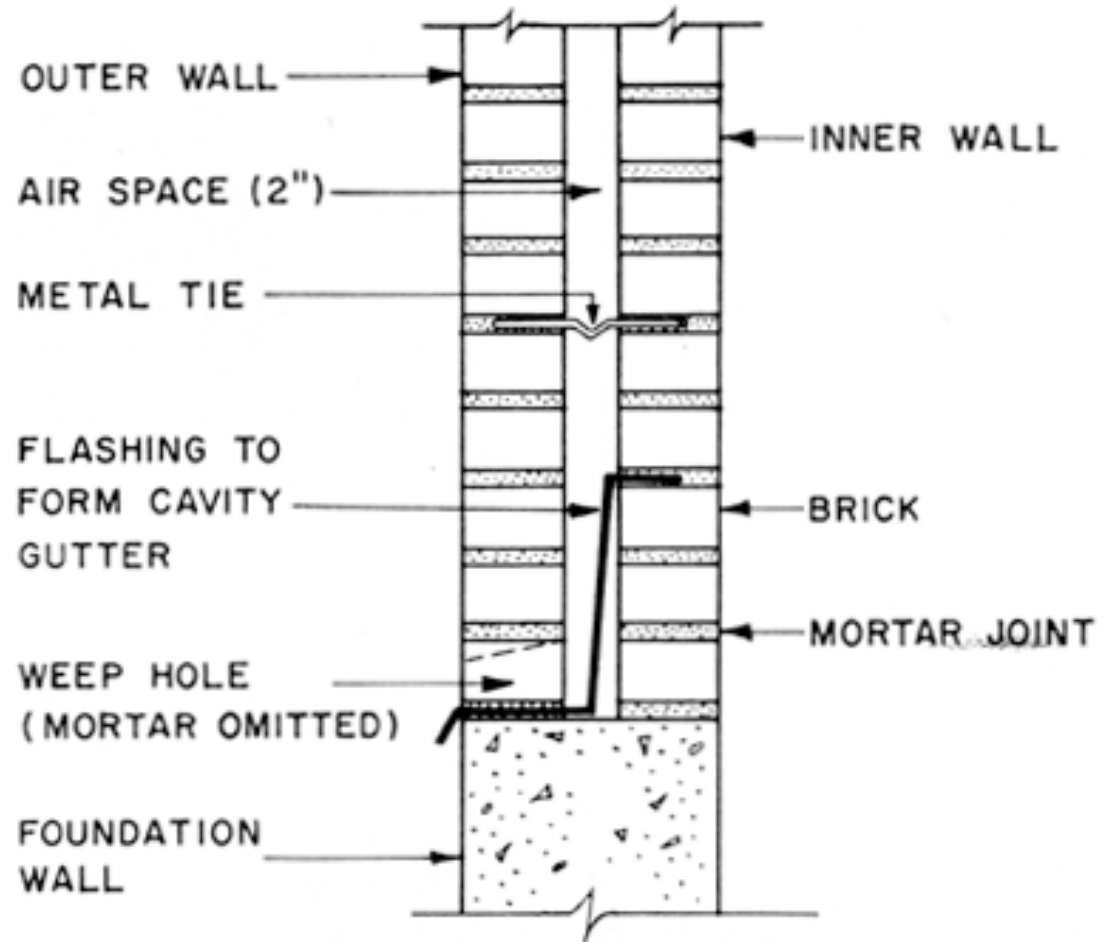




# MASONRY WALL CONST: cavity masonry walls

CAVITY MASONRY WALLS HAVE 2 PRIMARY FUNCTIONS:

1. Stop moisture penetration into building
2. Thermal separation + insulation



2 Wythe Brick / No insulation in cavity



# MASONRY WALL CONST:

cavity masonry walls

## CONSTRUCTING the CAVITY:

- Reinforcing spans the cavity
- Brick veneer is non structural
- Keep the cavity clear





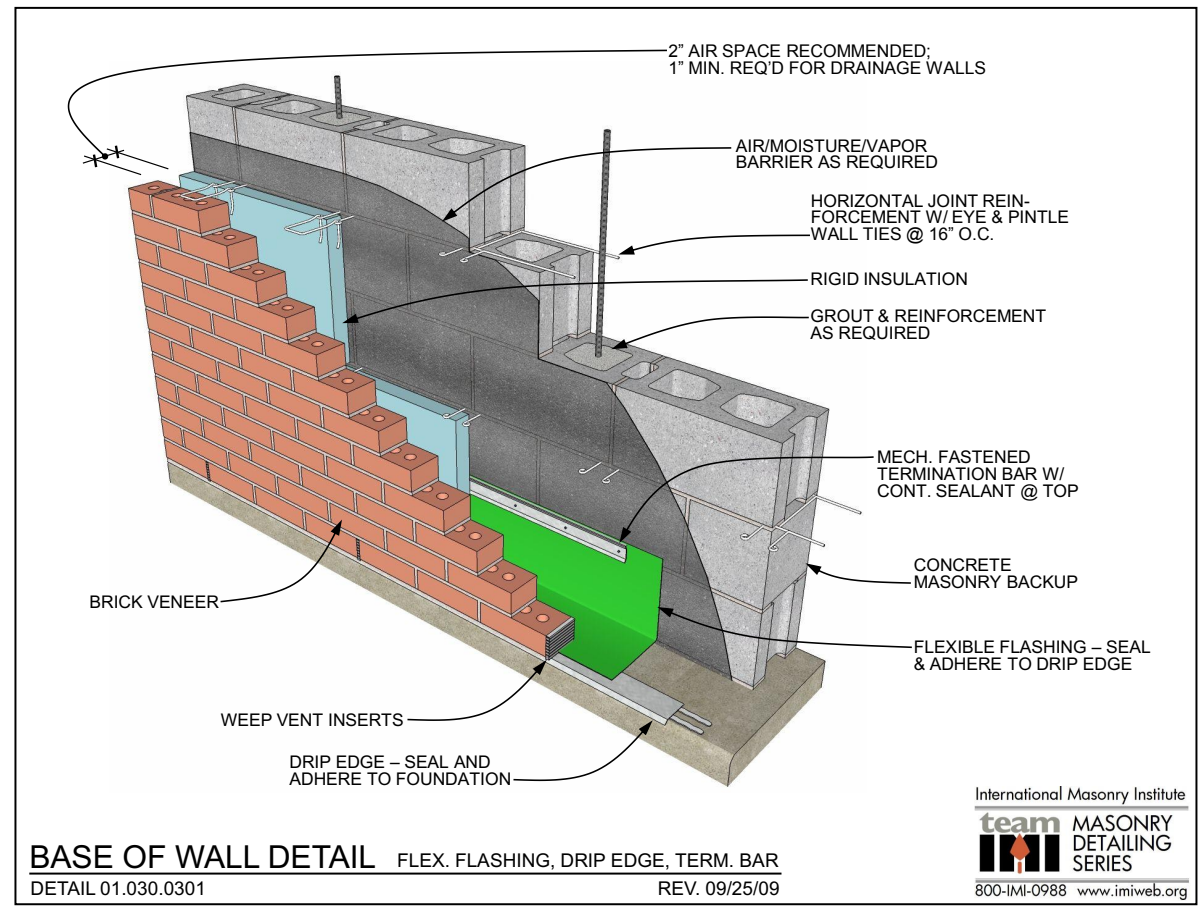
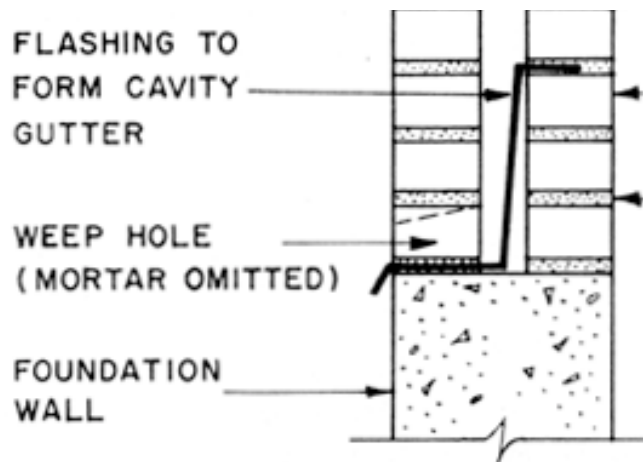
# MASONRY WALL CONST:

## cavity masonry walls

### CAVITY MASONRY WALLS HAVE 2 PRIMARY FUNCTIONS:

#### I. DRAINAGE in the CAVITY:

- Gravity
- Flashing
- Weep holes





# MASONRY WALL CONST:

## cavity masonry walls

### DRAINAGE in the CAVITY:

*“Two seemingly simple requirements for building enclosures bedevil engineers and architects almost endlessly:*

- \* keep water out*
- \* let water out if it gets in”*



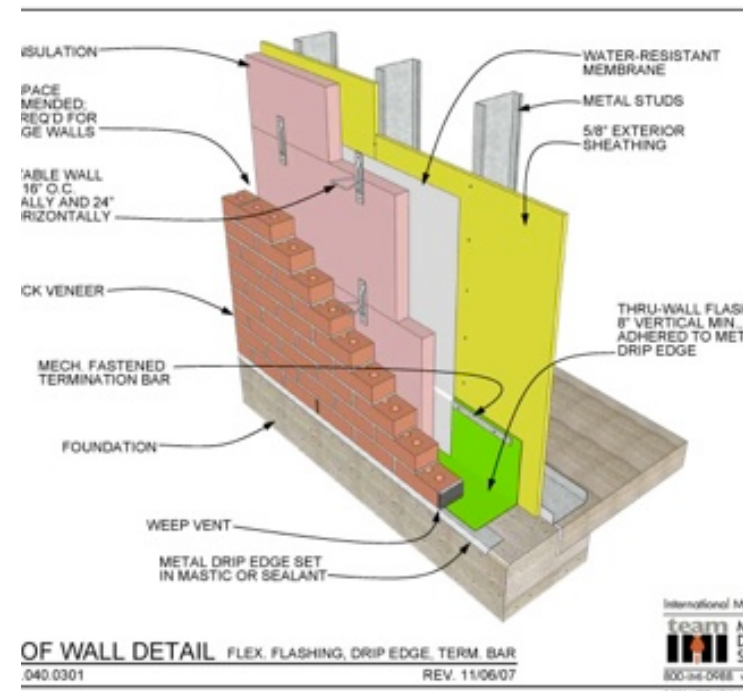
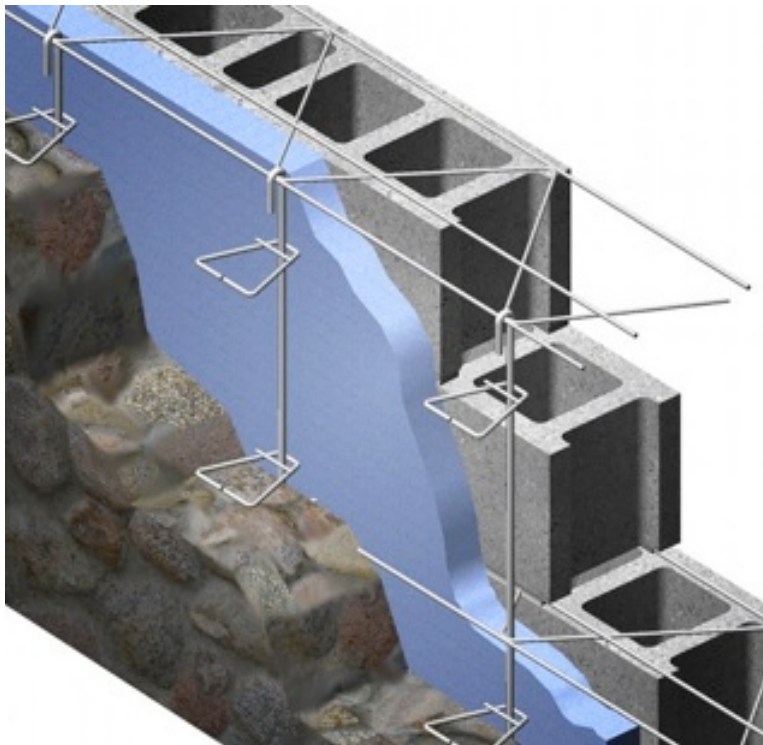


# MASONRY WALL CONST: cavity masonry walls

CAVITY MASONRY WALLS HAVE 2 PRIMARY FUNCTIONS:

## 2. THERMAL PERFORMANCE of the CAVITY:

- Air space between veneer + back up system
- Insert rigid insulation into cavity leaving 1" airspace

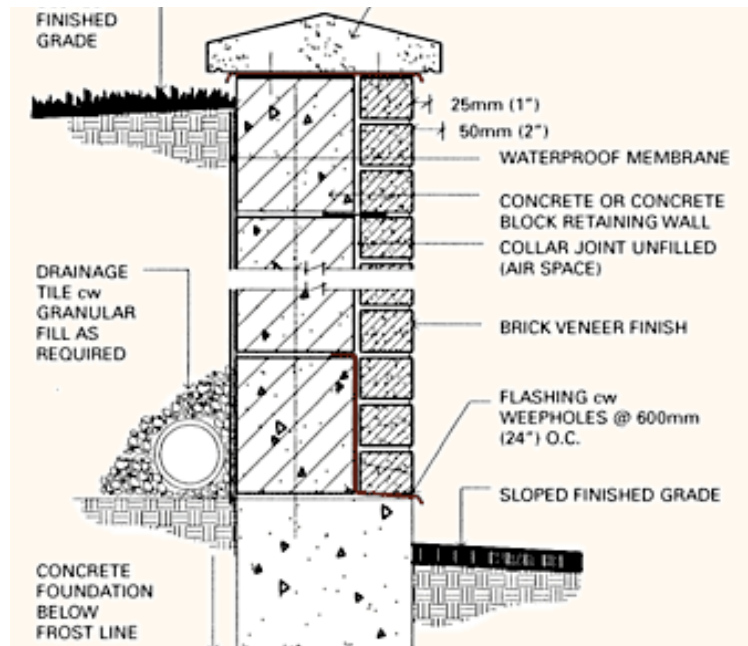




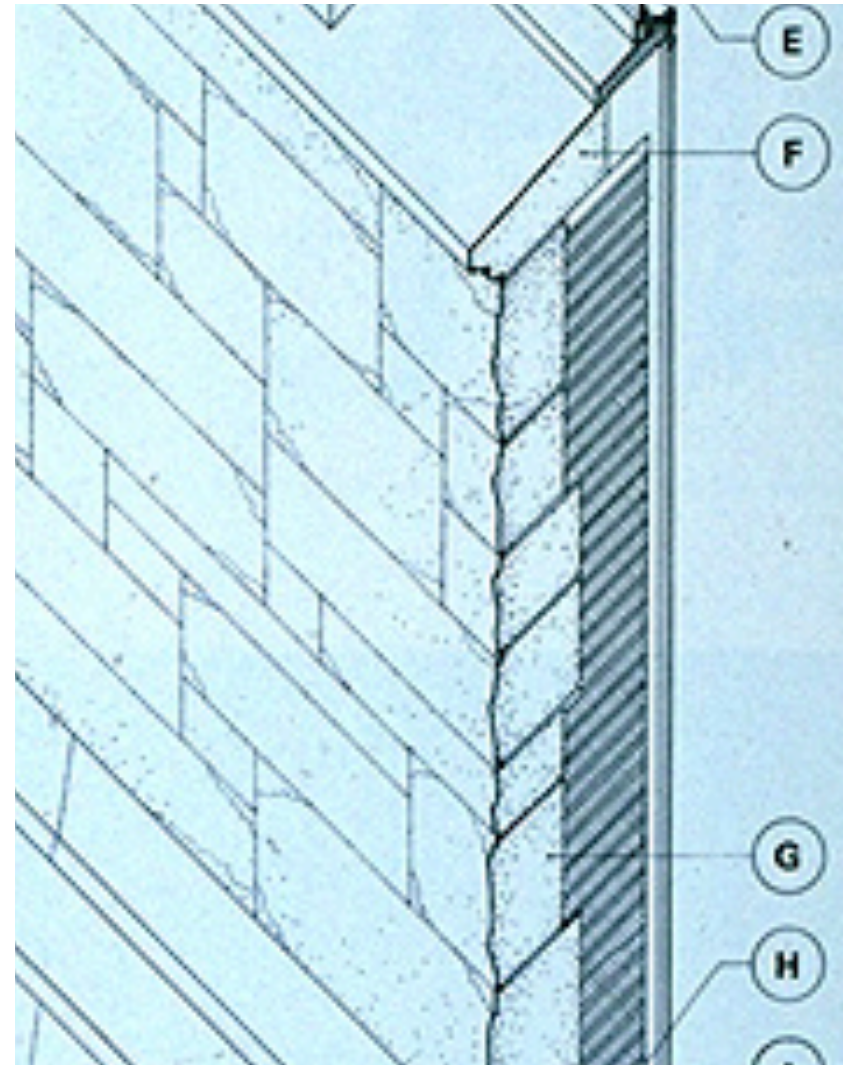
# MASONRY WALL CONST:

## composite masonry walls

- Walls of more than 1 wythe constructed of different facing + back up materials
- May be either load bearing or non load bearing



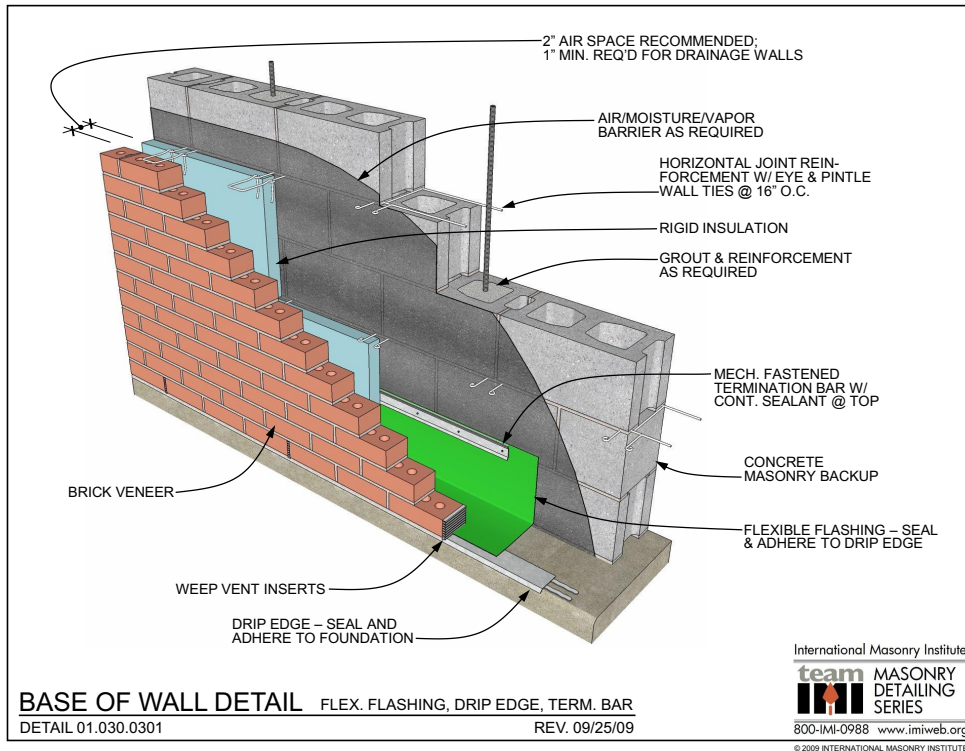
no  
cavity



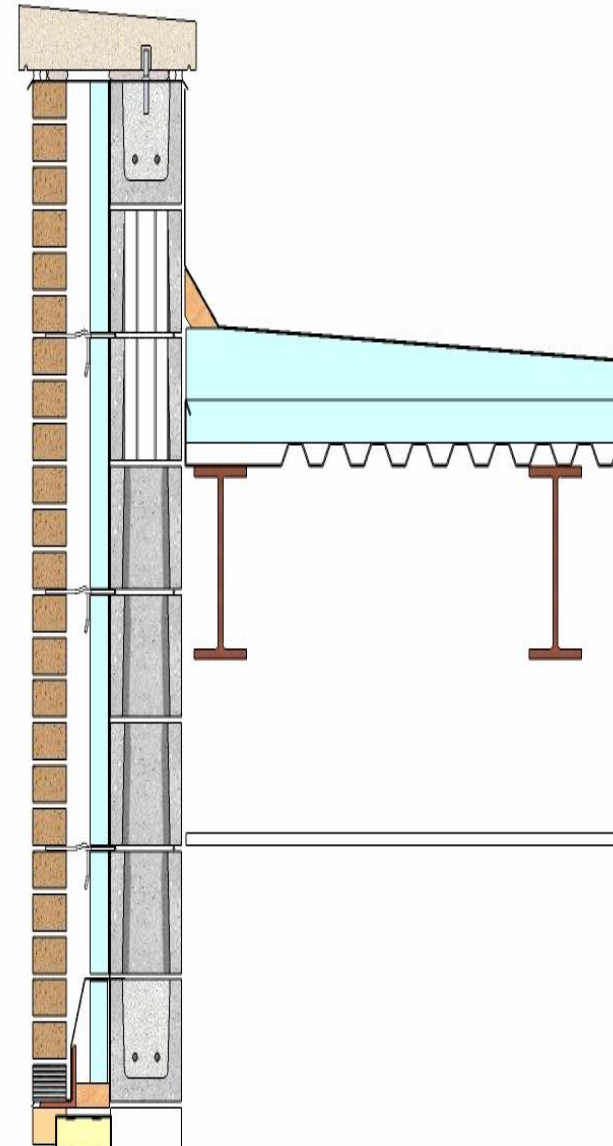
no  
cavity

# MASONRY WALL CONST:

- Inner wythe is structural element
- Outer wythe is non structural facing or veneer



## composite cavity masonry walls

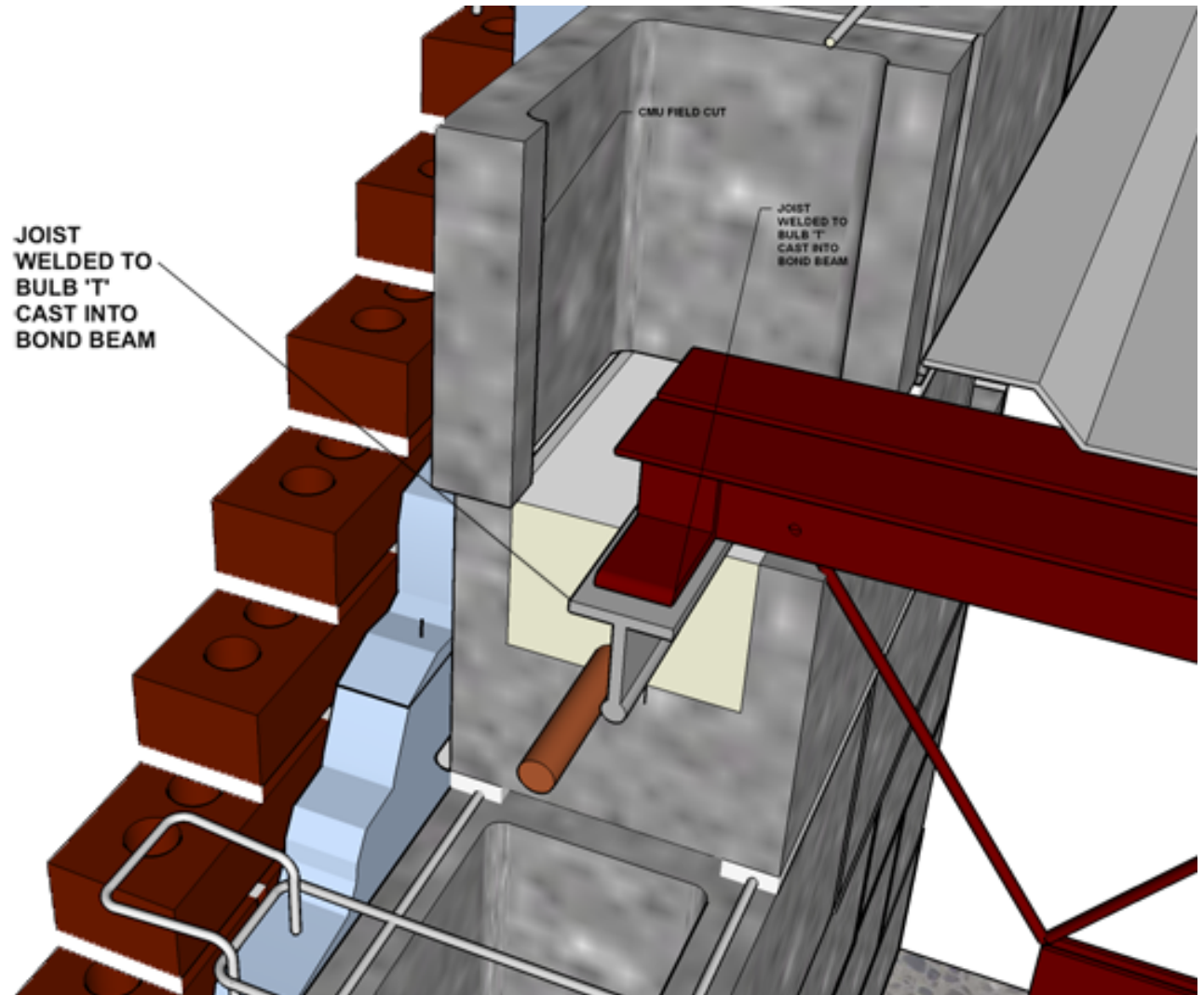


Wall Section: Reinforced Concrete Block Cavity Wall



# MASONRY WALL CONST:

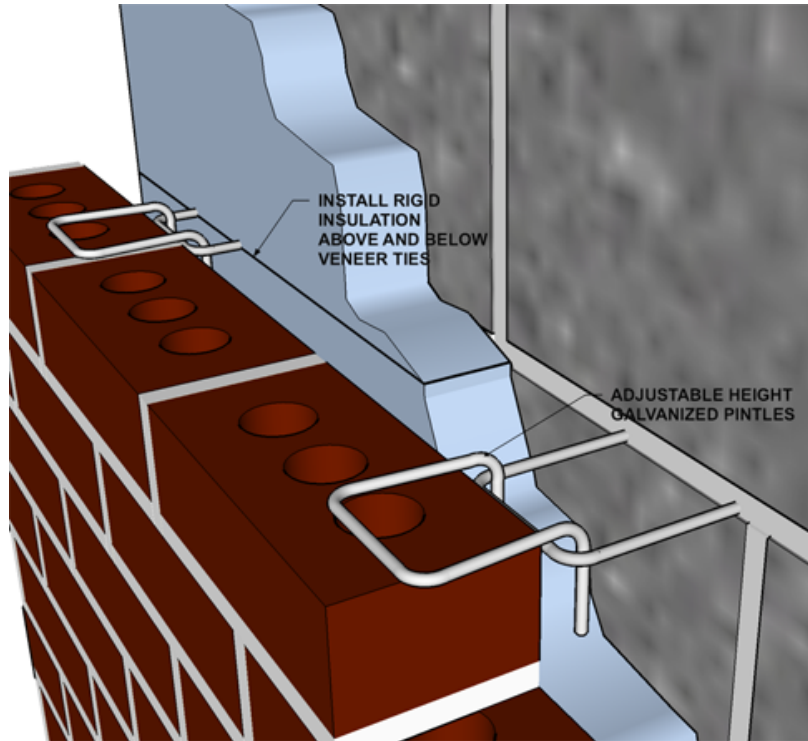
## composite cavity masonry walls



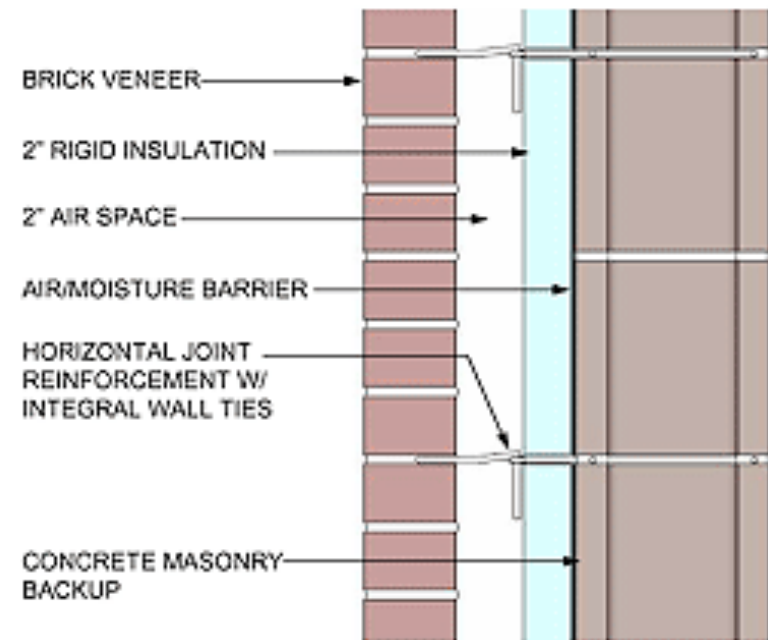
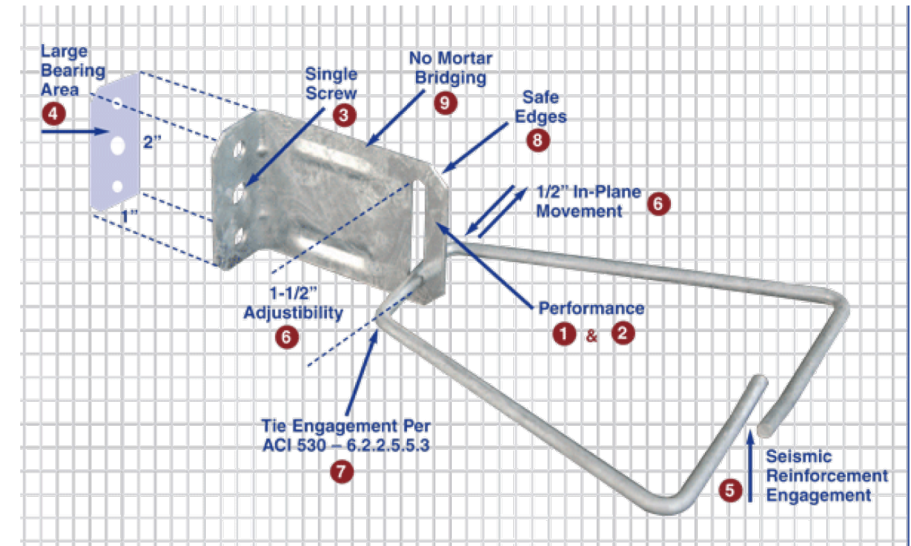
- Inner wythe is structural element: supports steel joists
- Outer wythe is non structural facing or veneer

# MASONRY WALL CONST:

## composite cavity masonry walls



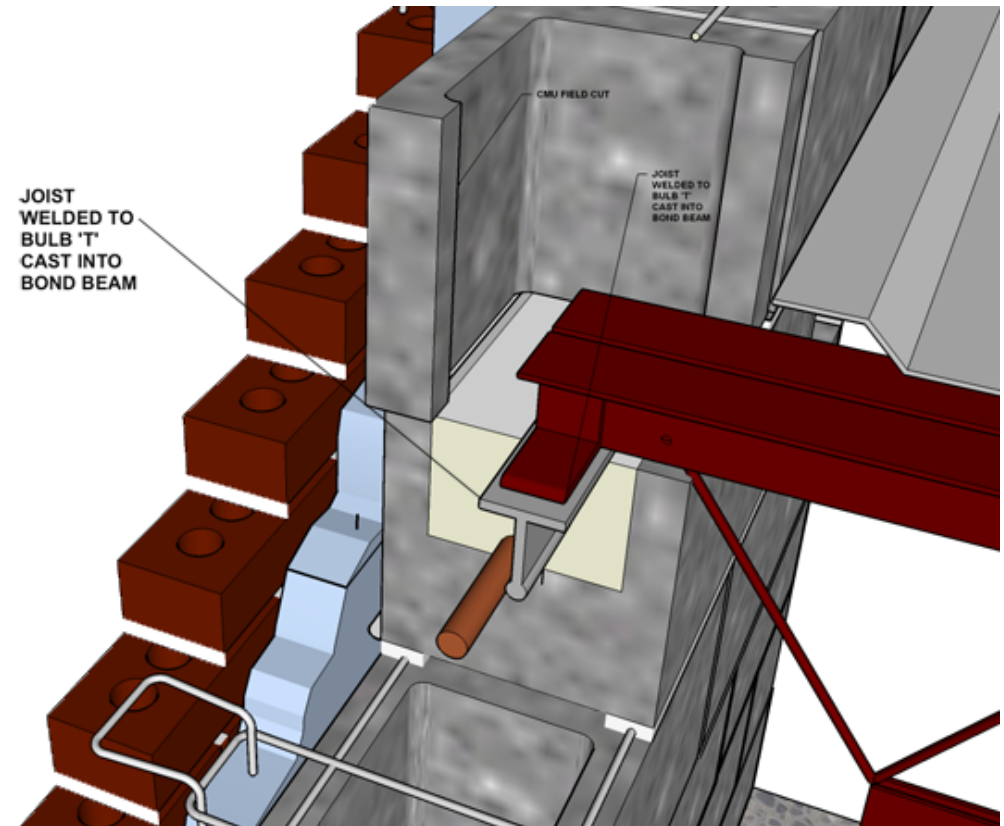
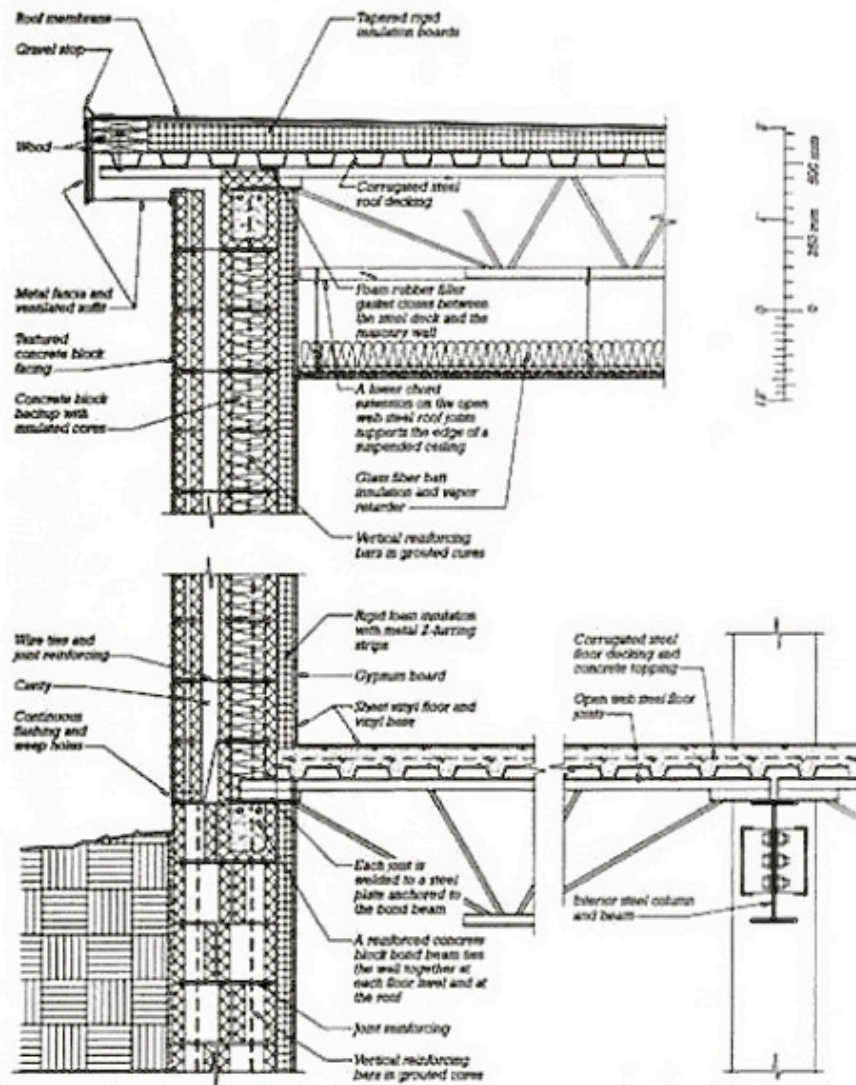
- Steel ties span across the cavity to structurally connect the inner CMU with the brick veneer
- Brick bears on itself down to a shelf angle of the foundation
- The ties provide lateral support against wind + seismic forces





# MASONRY WALL CONST:

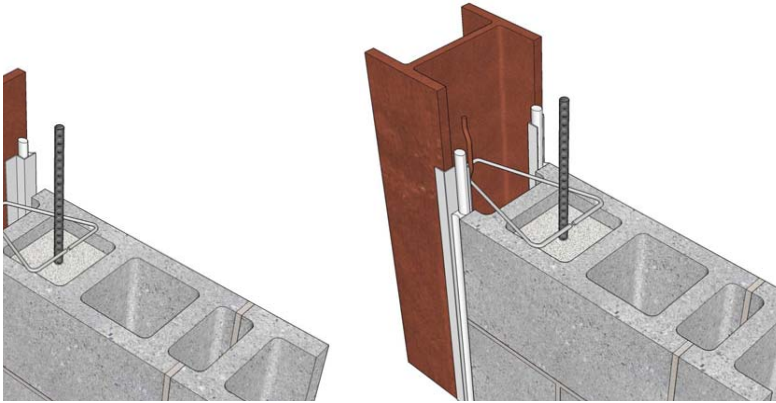
## composite cavity masonry walls



Inner wythe – the CMU block -- is the structural element of the masonry wall

## LOAD BEARING COMPOSITE CAVITY MASONRY WALL

# MASONRY WALL CONST: infill + veneer masonry wall



Steel frame with  
concrete block as  
infill masonry wall





# MASONRY WALL CONST: infill + veneer masonry wall

