NFPA 285 Design Guide

NFPA 285 in the International Building Code
Section 2603.5.5 of the International Building Code (IBC), 2006, 2009, 2012 and 2015 editions, requires that exterior wall systems on buildings of any height, Types I, II, III, or IV construction, that incorporate foam plastic insulation, must meet the requirements of NFPA 285. Section 1403.5 of the 2012 and 2015 IBC requires that exterior walls on buildings of Types I through IV construction, that are greater than 40' in height above grade plane, and that contain a combustible water-resistant barrier, must also meet the requirements of NFPA 285. Refer to the 2015 IBC for certain exceptions that differ from the 2012 edition. The CavityComplete® CMU Wall System with Masonry Veneer contains both foam plastic insulation and a combustible water-resistant barrier, therefore it has been independently evaluated as a system and documented to comply with NFPA 285.

Designing to Comply
From building to building, wall system design details may vary from that which was actually tested. Alternate fire resistant details determined through engineering analysis is a method commonly used to accommodate project variations. The practice is accepted in the International Building Code® (IBC) via AC12, "Acceptance Criteria for Foam Plastic Insulation", Section 6.6. Common design variations approved via analysis include fire stopping details around wall openings. This design guide explains alternative details for the CavityComplete® CMU Wall System with Masonry Veneer that can be used to comply with NFPA 285. See Table 1.

CavityComplete® Wall System NFPA 285 Design Guide
Based on the results of NFPA 285 third party analysis, the CavityComplete® CMU configurations described in Table 1 are compliant with NFPA 285. The CavityComplete® CMU Wall System is a systemized and limited warrantied* wall assembly consisting of:

- Owens Corning® FOAMULAR® CW25 Extruded Polystyrene Insulation and Thermafiber® Safing
- Heckmann Building Products — #1300 Hook & Ladder Joint Reinforcement and Pintle Wire Ties
- Prosoco - R-Guard® Cat 5® vapor permeable air/water barrier and accessories
- Mortar Net Solutions™ — MortarNet®, WeepVent, TotalFlash® unitized flashing assembly, CompleteFlash™ 14” High Corner Boots and end dams

Note: NFPA 285 does not address other performance characteristics such as weatherability, durability, or structural considerations.

<table>
<thead>
<tr>
<th>Wall Component</th>
<th>Material Options</th>
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<tbody>
<tr>
<td>Base Wall System</td>
<td>* Minimum 8” concrete masonry unit (CMU)</td>
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<tr>
<td>Floorline Firestopping: Select one</td>
<td></td>
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<tr>
<td>If construction type requires a fire resistance rated floor or floor/ceiling assembly, then Section 715.4 of the IBC requires the installation of a perimeter fire containment joint, rated per ASTM E2307</td>
<td>* See Detail 1 for an example of a typical wall/floor intersection detail that is common in CMU construction and that would qualify as a perimeter fire containment joint. Other commonly used details may also qualify.</td>
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<tr>
<td>Air and Weather Resistive Barrier Layer over CMU</td>
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<tr>
<td>Install at recommended application rates and in strict accordance with installation instructions.</td>
<td>* Prosoco R-Guard® Cat 5®, fluid applied, permeable</td>
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<tr>
<td>Through Wall Flashing, Mortar Dropings Protection and Weep Holes:</td>
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<tr>
<td>• Mortar Net Solutions™ TotalFlash®, MortarNet®, and WeepVent®. See Detail 2.</td>
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<tr>
<td>Continuous Insulation:</td>
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<tr>
<td>• Owens Corning® FOAMULAR® CW25 Extruded Polystyrene (XPS) Rigid Foam Insulation, ASTM C578 Type IV, maximum 4” thick, one or more layers.</td>
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<tr>
<td>Air space between continuous insulation and masonry veneer, minimum 1”, maximum 2&quot;:</td>
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<tr>
<td>• Brick Veneer, standard nominal 4” thick, clay face brick.</td>
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<tr>
<td>• Limestone or natural stone veneer, minimum 2” thick.</td>
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<tr>
<td>• Cast artificial stone veneer, minimum 1-1/6” thick. Install with non-open joint such as shiplap, etc.</td>
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<tr>
<td>• Concrete Masonry Units, 4” thick minimum.</td>
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<tr>
<td>Window and Door Opening Details:</td>
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<tr>
<td>• Head Detail: Use either head detail 2 or 3.</td>
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<tr>
<td>• Jamb Detail: Use either jamb detail 4, 5 or 6.</td>
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</table>

TotalFlash® flashing preassembled unitized through wall flashing/drip edge assembly and CompleteFlash end dam over continuous steel brick ledge.

Thermafiber® Safing Insulation in jamb and sill with continuous steel lintel at head.
Detail 1: Perimeter Fire Containment Joint

Detail 2: Head with Steel Angle Cavity Closure

Detail 3: Head with Steel/Mineral Wool Sating Closure

Detail 4: Head with Wood Cavity Closure
CavityComplete® Concrete Masonry Unit (CMU) Wall System excludes the masonry veneer and concrete masonry units. A detailed list of the components is available at www.CavityComplete.com.

**Detail 5:** Jamb with Masonry Cavity Closure

- Air Space (1" Min. - 2" Max.)
- Owens Corning® FOAMULAR® CW25 XPS (Max. 5")
- Heckmann Building Products #1300 Hook & Ladder Joint Reinforcement @ 16" O.C. with Pintle Wire Tie
- Face Brick
- PROSOCO R-Guard® Cat-5® Air & Water Barrier
- CMU
- PROSOCO R-Guard® AirDam® Sealed Tied into Window or Door Assembly to Create Continuous Air & Water Barrier
- PROSOCO R-Guard® FastFlash® Wrapped into Rough Opening

**Detail 6:** Jamb with Mineral Wool Fire Safing Cavity Closure

- Air Space (1" Min. - 2" Max.)
- Face Brick
- Owens Corning® FOAMULAR® CW25 XPS (Max. 5")
- PROSOCO R-Guard® Cat-5® Air & Water Barrier
- CMU
- PROSOCO R-Guard® AirDam® Sealed Tied into Window or Door Assembly to Create Continuous Air & Water Barrier
- PROSOCO R-Guard® FastFlash® Wrapped into Rough Opening

**Detail 7:** Jamb with 2x Wood Cavity Closure

- Air Space (1" Min. - 2" Max.)
- Face Brick
- Heckmann Building Products #1300 Hook & Ladder Joint Reinforcement @ 16" O.C. with Pintle Wire Tie
- Owens Corning® FOAMULAR® CW25 XPS (Max. 5")
- PROSOCO R-Guard® Cat-5® Air & Water Barrier
- CMU
- PROSOCO R-Guard® AirDam® Sealed Tied into Window or Door Assembly to Create Continuous Air & Water Barrier
- PROSOCO R-Guard® FastFlash® Wrapped into Rough Opening
- Wood Blocking (Must be FRTW in Types I and II Construction)

**Detail 8:** CavityComplete™ CMU Wall Section

- Air Space (1" Min. - 2" Max.)
- Face Brick
- Owens Corning® FOAMULAR® CW25 XPS (Max. 5")
- Heckmann Building Products #1300 Hook & Ladder Joint Reinforcement @ 16" O.C. with Pintle Wire Tie
- PROSOCO R-Guard® Cat-5® Air & Water Barrier
- CMU
- PROSOCO R-Guard® AirDam® Sealed Tied into Window or Door Assembly to Create Continuous Air & Water Barrier
- PROSOCO R-Guard® FastFlash® Wrapped into Rough Opening

*See actual warranty for complete details, limitations and requirements.

**References**

3. Acceptance Criteria for Foam Plastic Insulation, AC12; International Code Council Evaluation Service; 5380 Workman Mill Road, Whittier, CA 90601

The CavityComplete® Concrete Masonry Unit (CMU) Wall System excludes the masonry veneer and concrete masonry units. A detailed list of the components is available at www.CavityComplete.com.