1. **Floor Assembly** - Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete.

2. **Curtain Wall Assembly** - The curtain wall assembly shall incorporate the following construction features:
   
   A. **Mullion Mounting Angles** - Min 8 in. (203 mm) wide by 3/4 in. (19 mm) thick extruded aluminum mounting brackets with one leg 2 in. (51 mm) high for support and attachment of mullion and with one leg at least 6 in. (152 mm) longer than the width of linear opening between floor assembly and mullion. Mounting bracket attached to top of floor with two min 1/2 in. (13 mm) diameter steel masonry anchors in conjunction with washer plates supplied with mounting bracket. Brackets may alternatively be made from steel.

   B. **Framing** - The one or two-piece rectangular tubing mullions (vertical members) and transoms (horizontal members) shall be min 2-1/2 in. (64 mm) wide by 5 in. (127 mm) deep and shall be formed from min 0.100 in. (2.5 mm) thick aluminum. Mullions spaced max 60 in. (1.52 m) OC and secured to mullion mounting brackets (Item 2A) at each floor level. Interior face of mullions to be max 4 in. (102 mm) from edge of floor assembly. Spandrel transoms to be spaced min 30 in. (0.76 m) OC. Sill of vision panel to be located min 6 in. (152 mm) above top surface of floor assembly.

   C. **Spandrel Panels** - The spandrel panels shall consist of one of the following types:

   1. **Glass Panels** - Min 1/4 in. (6 mm) thick transparent or opaque heat-strengthened glass or min 1 in. (25 mm) thick insulated glass units with two layers of nom 1/4 in. (6 mm) thick heat-strengthened glass separated by a min 1/2 in. (13 mm) air space. Each panel secured in position with aluminum pressure plates in conjunction with glazing gaskets and steel screws or with silicone structural glazing.

   2. **Aluminum Panels** - Min 1/8 in. (3 mm) thick aluminum panels with nom 1/4 in. (6 mm) thick edges. Each panel secured in position with aluminum pressure plates in conjunction with gaskets and steel screws.

   3. **Stone Panels** - Nom 1-3/16 in. (30 mm) thick polished granite spandrel panels with 1 in. (25 mm) thick gauged edges. Each panel secured in position with aluminum pressure plates in conjunction with gaskets and steel screws.

   4. **Aluminum Composite Panels** - Min 1/8 in. (3 mm) thick aluminum composite comprised of min 0.02 in. (0.5 mm) aluminum skin with LDPE or mineral-filled Fire Resistant core. Each panel secured in position with steel furring channels in conjunction with gaskets and steel screws.
D. Vision Panels - Nom 1/4 in. (6 mm) thick transparent heat-strengthened glass or nom 1 in. (25 mm) thick insulated glass units with two layers of nom 1/4 in. (6 mm) thick transparent heat-strengthened glass separated by a 1/2 in. (13 mm) air space. Each panel secured in position with aluminum pressure plates in conjunction with glazing gaskets and steel screws or with silicone structural glazing.

E. Accessories for Use in Perimeter-Fire-Containment Systems* - Quick Clip™ U-Brackets* - Brackets installed onto the interior face of mullions to secure spandrel insulation within framed openings by means of a staple that penetrates in the insulation and interlocks with the clip, with no screws required. Brackets to be installed at a minimum at the following locations: 2 in. (51 mm) from the bottom surface of sill transoms, flush with the bottom surface of floor slabs to engage with steel angles (Item 2F), and 2 in. (51 mm) from the top surface of the spandrel sill transoms. Brackets to be installed flush with the interior surface of the curtain wall framing. Brackets installed onto mullions in accordance with manufacturer’s installation instructions.

SPECIFIED TECHNOLOGIES INC - Quick Clip™ U-Bracket

F. Steel Angle - Min 1-1/2 by 1-1/2 in. (38 by 38 mm) by min 16 gauge (1.5 mm) galvanized steel "L-shaped" angles installed into the U-brackets with the horizontal leg flush with the bottom surface of the floor. Length of angle to be the width of the spandrel panel minus min 1/8 in. (3 mm) to max 5/8 in. (16 mm).

G. Curtain Wall Insulation* - Min. 2 in. (51 mm) thick mineral wool batt insulation unfaced or faced on one side with aluminum foil/scrim vapor retarder. Insulation batts to be installed as a continuous piece with one horizontal seam at the steel angle (Item 2F). Curtain wall insulation installed over the Quick Clip™ U-Brackets (Item 2E) flush with the interior face of the framing and held with Quick Clip™ impaling clips on both sides of the framing.

THERMAFIBER INC - FIRESPAN® 90

H. Curtain Wall Insulation* (Alternate, not shown) - As an alternate to Item 2G, nom 4 in. (102 mm) thick mineral wool batt insulation unfaced or faced on one side with aluminum foil/scrim vapor retarder. Insulation batts to be installed as a continuous piece with one horizontal seam at the steel angle (Item 2F). Curtain wall insulation installed over the Quick Clip™ U-Brackets (Item 2E) flush with the interior face of the framing and held with Quick Clip™ impaling clips on both sides of the framing.

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I. Curtain Wall Insulation* - Mullion Covers - Min 2 in. (51 mm) thick mineral wool batt insulation unfaced or faced on one side with aluminum foil/scrim vapor retarder. Mullion covers are to be min 12 in. (305 mm) wide, centered over mullions, and are secured to curtain wall insulation (Item 2G or 2H) with a min of six spiral fasteners (Item 2J) spaced max 8 in. (203 mm) OC. Mullion covers are tightly abutted to the bottom of the forming material (Item 3A).

THERMAFIBER INC - FIRESPAN® 90

J. Light Gauge Framing* - Spiral Fastener - Galv steel wire spiral fastener used to secure the Mullion covers (Item 2I) to the Curtain wall insulation (Item 2G or 2H). Spiral fasteners are to be min 3-3/4 in. (95 mm) long or 1-3/4 in. (44 mm) longer than the Mullion cover (Item 2I) Insulation thickness. Spiral fasteners are installed 2 in. (51 mm) from the edges of the Mullion covers or spaced max 8 in. (203 mm) on center on the Mullions covers.

K. Aluminum Sandwich Panel - (Optional, not shown) - Min 1/8 in. (3.2 mm) solid aluminum panel or aluminum composite panel installed on exterior surface of curtain wall insulation (Item 2G or 2H).

3. Safing System - Max separation between edge of floor assembly and interior face of framing members is 4 in. (102 mm). The safing system is designed to accommodate vertical shear movement up to a max of 5 percent of its installed width. The safing system shall incorporate the following construction features:

A. Forming Material* - Nom 4pcf (64 kg/m3) density mineral wool batt insulation. Batt sections cut to a min 4 in. (102 mm) width and stacked to a thickness which is min 25 percent greater than the width of the linear gap between the curtain wall insulation and the edge of the concrete floor slab. The forming material is compressed and inserted cut-edge-first into linear gap such that its top surface is flush with the top surface of the floor assembly. A max of one tightly-butted seam is permitted between mullions.

THERMAFIBER INC - SAF

B. Fill, Void or Cavity Material* - Min 1/8 in. (3 mm) wet thickness, min 1/16 in. (1.6 mm) dry thickness of fill material spray-applied over top of forming material and lapping min 1/2 in. (13 mm) onto the top surface of the floor and onto the curtain wall insulation (Item 2G or 2H) and Mullion covers (Item 2I). When SpecSeal Fast Tack Spray is used, wet and dry thickness of spray is min 5/64 in. (2 mm).

SPECIFIED TECHNOLOGIES INC - SpecSeal Safing Spray or SpecSeal Fast Tack Spray

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.