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FORMAL TECHNICAL OPINION (FTO) 13

Issued: June 1999 Revised: March 2009
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Subject: Fire Separation between Dwelling Units and Attached Private Garages

Reference: N.J.A.C. 5:23-3.14, Building Subcode, Section 406.3.2; N.J.A.C. 5:23-3.21, One- and Two-Family Dwelling Subcode, Sections R302.5 & R302.6

The Department of Community Affairs has been made aware of inconsistent enforcement of the requirements for fire separation when private garages are located beneath living space in single-family home construction. This formal technical opinion is intended to deal with these misinterpretations and problems. The text that follows provides examples of construction practices that meet the intent of the code requirements and should be considered as acceptable methods of providing a one-hour, fire-resistance-rated assembly when there is living space above an attached, private garage in homes in Group R-3 or R-5. (All lumber dimensions are nominal.)

The wall between the garage and the house shall be provided with one layer of 5/8-inch thick, Type X gypsum wallboard on the garage side of the wall. The wallboard shall be applied at right angles to each side of the stud and with 1 1/4-inch drywall screws or nails at 12 inches on center. The joints of the gypsum wallboard shall be separated by at least one stud bay on opposite sides of the wall. The joints of the wallboard shall be taped and provided with one coat of spackle minimum. It is permissible to install insulation in this wall. This wall is required to be continuous to the underside of the ceiling membrane above. Membrane penetrations shall be as permitted in Section 714.4.2 of the Building Subcode, except that a metallic or fire-resistance-rated electrical panelboard of any size may penetrate the membrane, provided there are no gaps or open spaces greater than 1/8 inch at the edge of the panelboard box employing a flush-type cover.

The language above is from the Gypsum Association Fire-Resistance Design Manual and provides a one-hour fire-resistance rating. This differs from the listed assembly by requiring the 5/8-inch, Type X gypsum wallboard on the garage side only. The protection needs to be provided from the garage side; there is no need to specify the type and thickness of gypsum on the house side.

The floor-ceiling assembly shall consist of two layers of 5/8-inch thick, Type X gypsum wallboard. The base layer shall be applied at right angles to the joists with 1 1/4-inch minimum drywall screws or nails at 24 inches on center. The face layer shall be applied at right angles to the joists with 1 7/8-inch minimum drywall screws or nails at 12 inches on center. The face layer joints shall be offset from the base layer joints by a minimum of one joist bay. The joints of the face layer shall be taped and provided with a minimum of one layer of spackle. Insulation may be installed in this floor-ceiling

assembly. There are no restrictions on the installation of utilities above the ceiling membrane. There are no restrictions on the type of flooring to be used as the top membrane; if unusable space is located above a portion of the assembly, then no top membrane is required. Protection for any penetrations in the upper membrane of the assembly (i.e., heating and air-conditioning registers) is not required. Membrane penetrations of the bottom membrane shall be as permitted in Section 714.5.2 of the Building Subcode.

The language above is from the Gypsum Association Fire-Resistance Design Manual and provides a one-hour fire-resistance rating. The Gypsum Association Manual states that the bottom membrane provides the one-hour fire-resistance rating for the structural members; therefore, there is no need to specify the material for the upper portion of the assembly.

The exterior load-bearing wall is required to be provided with one layer of 5/8-inch thick, Type X gypsum wallboard applied at right angles to the studs and secured with a minimum of 1 1/4-inch drywall screws or nails at 12 inches on center. The joints of the wallboard shall be taped and provided with a minimum of one coat of spackle. Insulation may be installed in this wall. This wall is required to be continuous to the underside of the ceiling membrane above. Through penetrations or membrane penetrations shall be as permitted in Sections 714.4.1 or 714.4.2, respectively, of the Building Subcode, except that a metallic or fire-resistance-rated electrical panelboard of any size may penetrate the membrane, provided there are no gaps or open spaces greater than 1/8 inch at the edge of the panelboard box employing a flush-type cover.

The requirement stated above provides compliance with Section 704.1 of the Building Subcode, which requires structural elements that are supporting rated assemblies to have a rating of at least that of the assembly it is supporting. The load-bearing exterior wall of a garage is required to be rated for one hour. The language in the text is from the same Gypsum Association assembly discussed above.

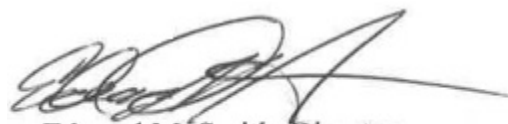
Any joints between the floor-ceiling assembly and the walls need only be provided with tape and spackle.

If there is a girder supporting the floor-ceiling assembly and the girder consists of a minimum of three 2-inch by 10-inch members, there is no additional protection required for the girder. If the girder is smaller than three 2-inch by 10-inch members, it must be encased in a minimum of two layers of 1/2-inch thick, Type X gypsum wallboard; the same applies to engineered lumber with dimensions smaller than three 2-inch by 10-inch members. However, steel construction of any dimension must be encased. The base layer is required to be secured with a minimum of a 1-inch screw at 12 inches on center and the face layer is required to be secured with a minimum of a 1 5/8-inch screw at 12 inches on center. The face layer shall be provided with tape and one layer of spackle minimum. No additional protection is required for the column or wall supporting the girder.

The requirement stated above (that this member be provided with some level of fire-resistance rating) is based on the text of Section 704.1 of the Building Subcode addressed above. The text that exempts the “three 2-inch by 10-inch members” from any protection

is based on Section 2304.11.1.2 of the Building Subcode. This section of the code deals with "Heavy Timber Construction" (Type IV construction). It is logical to equate a triple 2 inch by 10 inch to the nominal 6 inch by 10 inch, which is required for a girder in Type IV construction. If the girder is not the size of a triple 2 inch by 10 inch specified, the specifications to obtain the rating of the girder from the Gypsum Association Fire-Resistance Design Manual are used.

The door between the garage and adjacent interior space shall be a minimum of 1 3/8-inch solid core wood, or 1 3/8-inch solid or honeycomb steel. There is no requirement for this door to be provided with a labeled jamb or with a door closer.



Edward M. Smith, Director
Division of Codes and Standards

PURSUANT TO THE AUTHORITY OF N.J.S.A. 52:27D ET SEQ., AS AMENDED, THIS FORMAL TECHNICAL OPINION IS CONSIDERED TO BE BINDING UPON ALL CODE OFFICIALS.