

ICC-ES Evaluation Report


ESR-3207

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DIVISION: 09 00 00 — FINISHES Section: 09 53 00 — Acoustical Ceiling Suspension Assemblies DIVISION: 13 00 00 — SPECIAL CONSTRUCTION Section: 13 48 13 — Manufactured Sound and Vibration Control Components	REPORT HOLDER: KINETICS NOISE CONTROL	EVALUATION SUBJECT: KINETICS NOISE CONTROL WAVE HANGER	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012 and 2009 [International Building Code® \(IBC\)](#)

Properties evaluated:

- Fire-resistance-rated construction
- Structural

2.0 USES

The *WAVE* Hanger is a hanger used to support gypsum board ceilings in interior floor/ceiling assemblies of wood frame construction. *WAVE* Hangers may be used in fire-resistance-rated horizontal assemblies in accordance with IBC Section 712 when installed as described in Section 4.2.2.

3.0 DESCRIPTION

WAVE Hangers are formed gypsum board ceiling hangers made from heat-treated and plated spring-steel. *WAVE* Hangers are available in two models, *WAVE* 22 and *WAVE* 44. The *WAVE* 22 Hanger has a silver zinc coating and the *WAVE* 44 has a black phosphorous coating. These coatings are primarily used for model differentiation in the field. *WAVE* Hangers are formed from 1050 annealed spring-steel heat-treated to Rc 40-43 hardness specifications. The steel for the *WAVE* 22 is 0.030 inch (0.76 mm) thick and the steel for the *WAVE* 44 is 0.042 inch (1.07 mm) thick. A typical *WAVE* Hanger is shown in [Figure 4](#).

WAVE Hangers support standard $\frac{7}{8}$ -inch-tall (22.2 mm), No. 20 gage, drywall furring channels and flex approximately $\frac{1}{2}$ inch (12.7 mm) when under rated allowable design load. The hangers have a 0.22-inch-diameter (5.59 mm) hole at each end for the No. 10 by 1.5-inch-long (38.1 mm) Round Washer, Recex, Lo Root Lubricized screws that are provided by Kinetics Noise Control to attach the hangers to the underside of wood structural members of the floor/ceiling assemblies.

Seismic restraint plates manufactured from No. 18 gage galvanized sheet metal, $\frac{7}{16}$ inch (11.1 mm) wide and $2\frac{1}{4}$ inches (57 mm) long with a screw hole on each end, must be used to secure the drywall furring channels against lateral movement when *WAVE* Hangers are installed in buildings in Seismic Design Category B, C, D, E, or F locations.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The *WAVE* 22 and *WAVE* 44 Hangers are designed to carry 4 square feet (0.37 m²) and 8 square feet (0.74 m²), respectively, of ceiling consisting of two layers of $\frac{5}{8}$ -inch-thick (15.9 mm) gypsum board attached to No. 20 gage furring channels. The allowable tributary loads to be supported by the *WAVE* Hangers must not exceed 22 pounds (97.9 N) for the *WAVE* 22 Hanger and 44 pounds (196 N) for the *WAVE* 44 Hanger. The *WAVE* Hangers are for use in Seismic Design Category A, or for use in other seismic design categories when accompanied by the seismic restraint plates described in Section 3.0.

4.2 Installation:

4.2.1 General:

Drywall furring channels must be spaced across the ceiling at a maximum of 24 inches (610 mm) on center. The furring channels must not be fastened directly to the ceiling framing. To support the channels, *WAVE* Hangers must be spaced at maximum 48-inch (1220 mm) intervals and must be fastened to the bottom of ceiling framing using two screws, described in Section 3.0, for each hanger. *WAVE* 22 and *WAVE* 44 Hangers must be laid out to support the ceiling in such a way as not to exceed weight limits and spacing limits established above. *WAVE* 22 Hangers must carry the smaller areas of the ceiling, typically at the perimeter and corners, where tributary loads are 22 pounds or less. Channels around the perimeter of the ceiling must be installed at a maximum of 6 inches (152 mm) from ceiling edges; *WAVE* Hangers at these locations must be centered within 6 inches (152 mm) of the edges.

In Seismic Design Categories B, C, D, E, and F, restraint plates must be installed to prevent lateral movement of the channels relative to the hangers. Seismic restraint plates must be installed across the adjacent *WAVE* hanger and fastened directly to the channel on each side using No. 10 by $\frac{3}{4}$ -inch (19.1 mm), hex head, self-drilling screws as shown in [Figure 5](#). See the manufacturer's published installation instructions for plate spacing.

The gypsum board must be fastened to the furring channels in accordance with the requirements for the assemblies described in Section 4.2.2. The perimeter of the ceiling must be caulked with a nonhardening, resilient caulking in accordance with the manufacturer's published installation instructions.

4.2.2 One-hour Fire-resistance-rated Floor Construction: The assemblies shown in [Figures 1, 2, and 3](#), qualify as one-hour fire-resistance-rated floor/ceiling construction, provided the structural members are installed and loaded in accordance with the manufacturer's recommendations. Nominally $\frac{3}{4}$ -inch-thick tongue-and-groove structural panel subfloor must be installed perpendicular to framing, with ends staggered. The subfloor is glued with adhesive meeting APA Standard AFG-01 and is screwed to framing using No. 10 by $2\frac{1}{2}$ -inch-long (64 mm) wood screws installed at 6 inches (152 mm) on center at edges and 12 inches (305 mm) on center in the field. The subfloor may be fastened using 8d nails as an alternative to the screws. The insulation used in the fire assemblies must be 0.5 pcf (8 kg/m³) minimum density fiberglass, with a thickness between $3\frac{1}{4}$ inches (83 mm) and $6\frac{1}{4}$ inches (159 mm), stapled to the underside of the subfloor or laid across the top of the drywall furring channels.

The gypsum board used in the fire-resistance-rated assemblies must be National Gypsum Company's $\frac{5}{8}$ -inch-thick (15.9 mm) Fire-Shield Type C gypsum board installed in two layers. The base layer must be installed staggered with the long dimension perpendicular to and fastened along the furring channels with No. 6 by $1\frac{1}{4}$ -inch-long (31.8 mm), Type S, high and low thread, bugle-head drywall screws at 12 inches (305 mm) on center in the field and 8 inches (203 mm) on center at butted ends. The face layer must be installed with the long dimension perpendicular to the channels and must be staggered and off-set from the base layer by 12 inches (305 mm) in both directions. The face layer must be fastened through the base layer to the furring channels with No. 7 by 2-inch-long (51 mm), Type S, fine thread bugle-head drywall screws at 12 inches (305 mm) on center in the field. The butted ends of the face layer must be fastened using No. 10 by $1\frac{1}{2}$ -inch-long (38.1 mm), Type G, bugle-head drywall laminator steel screws set back $1\frac{1}{2}$ inches (38.1 mm) from the ends and installed at 8 inches (203 mm) on center. Joint compound must be applied to the face layer in two coats at joints, using drywall tape, and at screw heads in accordance with ASTM C840 or GA-216.

5.0 CONDITIONS OF USE:

The *WAVE* Hangers described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report, the manufacturer's published instructions and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, the more restrictive governs.
- 5.2 The *WAVE* hangers must be manufactured, identified, and installed in accordance with this report and the manufacturer's published installation instructions. A copy of the instructions must be available at the jobsite at all times during installation.
- 5.3 Fire-stopping and draft-stopping must be provided in accordance with the applicable code.
- 5.4 The gypsum board must not be fastened directly to the ceiling framing.

6.0 EVIDENCE SUBMITTED

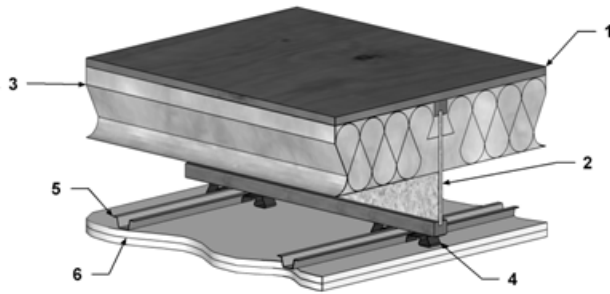
- 6.1 Reports of fire resistance testing in accordance with ASTM E119.
- 6.2 Reports of load capacity testing based on ASTM D1761.
- 6.3 Engineering calculations.
- 6.4 Quality control documentation.

7.0 IDENTIFICATION

- 7.1 The products described in this report are identified with the Kinetics name die-stamped on each piece along with the model number and lot number. The boxes of *WAVE* Hangers are identified with the evaluation report number (ESR-3207), the name of the report holder (Kinetics Noise Control) and the model number.
- 7.2 The report holder's contact information is the following:

KINETICS NOISE CONTROL
6300 IRELAN PLACE
DUBLIN, OHIO 43017
(614) 889-0480
www.kineticsnoise.com

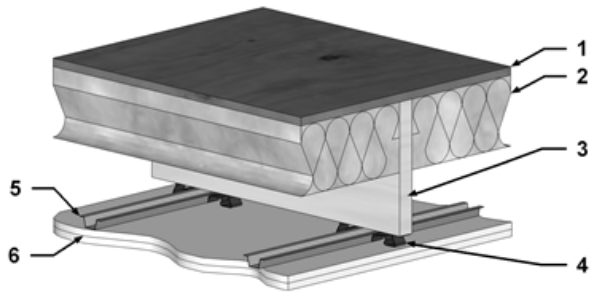
FIGURE 1—FIRE RESISTANCE ASSEMBLY NO. 1



1. Nom. 3/4-inch-thick tongue and groove subfloor *
2. Engineered wood I-joists
3. Glass fiber insulation *
4. WAVE Hangers by Kinetics Noise Control
5. 7/8-inch-tall, 20 gage drywall furring channels
6. Two layers of 5/8-inch-thick Fire-Shield Type C gypsum board *

* see Section 4.2.2 for specifications and installation details

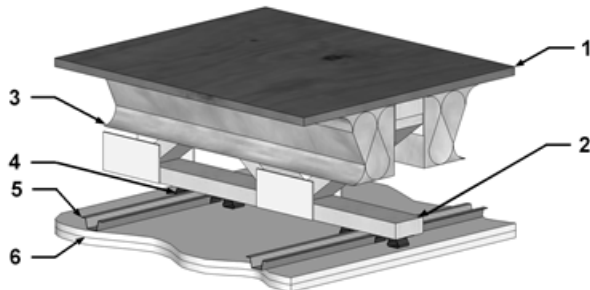
FIGURE 2—FIRE-RESISTANCE ASSEMBLY NO. 2



1. Nom. 3/4-inch-thick tongue and groove subfloor *
2. Glass fiber insulation *
3. Solid-sawn lumber
4. WAVE Hangers by Kinetics Noise Control
5. 7/8-inch-tall, 20 gage drywall furring channels
6. Two layers of 5/8-inch-thick Fire-Shield Type C gypsum board *

* see Section 4.2.2 for specifications and installation details

FIGURE 3—FIRE-RESISTANCE ASSEMBLY NO. 3



1. Nom. 3/4-inch-thick tongue and groove subfloor *
2. Nominally 2-by-4 open web wood trusses
3. Glass fiber insulation *
4. WAVE Hangers by Kinetics Noise Control
5. 7/8-inch-tall, 20 gage drywall furring channels
6. Two layers of 5/8-inch-thick Fire-Shield Type C gypsum board *

* see Section 4.2.2 for specifications and installation details

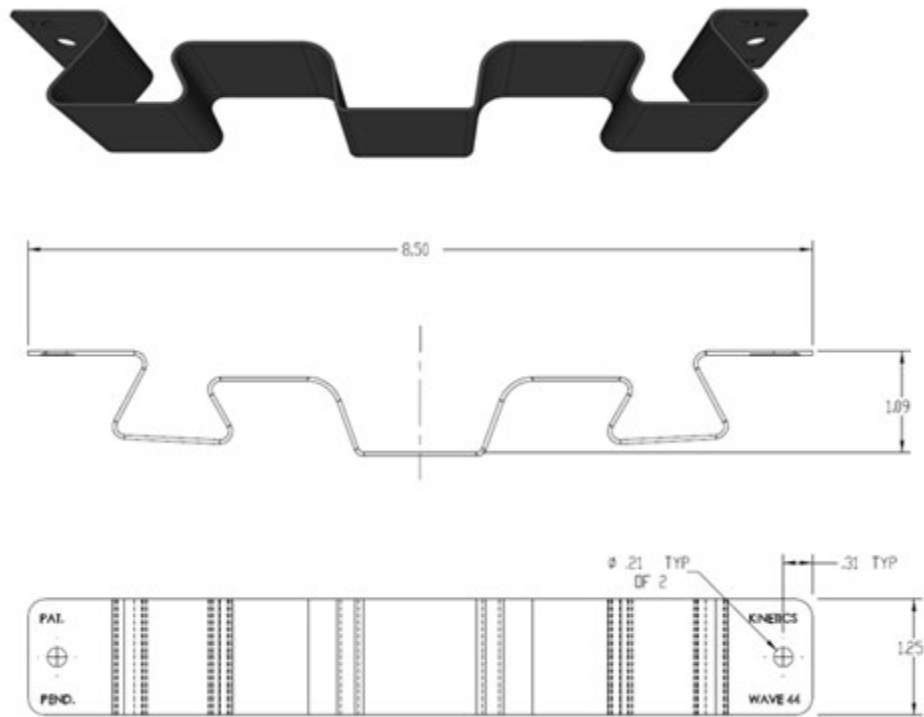


FIGURE 4—KINETICS NOISE CONTROL WAVE HANGER

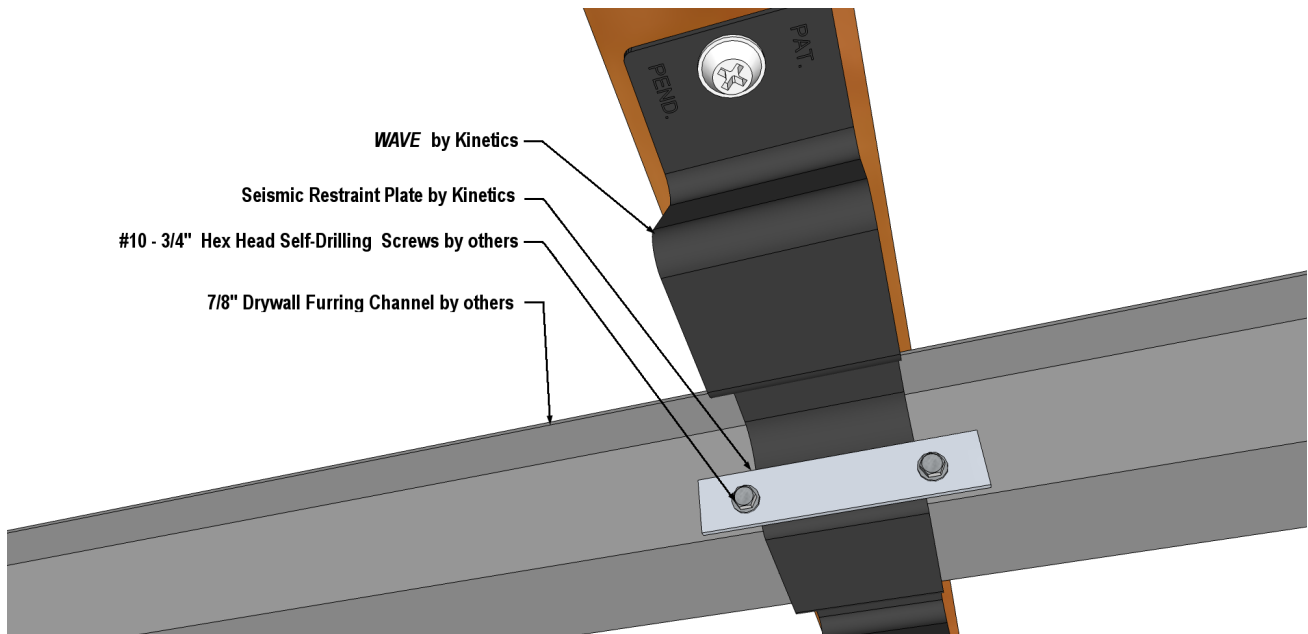


FIGURE 5—SEISMIC RESTRAINT PLATE