CEILING&WALL SYSTEMS

Between us, ideas become reality®

Armstrong World Industries
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September 1, 2009

SUBJECT: SLOPED CEILING INSTALLATION GUIDELINES

Installing an acoustical ceiling on an angle can provide the opportunity to enhance daylighting techniques, conserve energy and contribute to LEED Credit EQ-8.1.

The current building codes state that the main beams must be leveled to within ¼″ in 10' and does not address the sloped ceiling condition. While many jurisdictions readily accept the installation of a suspended ceiling at an angle, a strict interpretation of the code may rule out a sloped ceiling. **Sloped ceiling installations may require approval by the Authority Having Jurisdiction (AHJ).**

To support the AHJ approval process, Armstrong has conducted full scale seismic shake table testing to demonstrate the viability of this installation technique. Armstrong can provide the results of this testing to design professionals, code officials and building departments on a project specific basis in the form of a Seismic White Paper.

Shake table testing was preformed from horizontal to 15°. It is possible to install a ceiling at an angle steeper than 15° using these guidelines; however Armstrong does not have performance documentation available.

Since each sloped ceiling installation is unique, general detail drawings accompany these guidelines. Shop drawings are the responsibility of the Contractor. The Structural Engineer of record is responsible for verifying and approving the use of Armstrong components in these unique installations.

The following guidelines are in addition to the requirements set forth in ASTM C 636 and ASCE 7.

1. Install main beams parallel to the slope (up and down the incline). If beams, joists or trusses are running up the slope and do not have perlins between them, bridge the beams, joists, or trusses with a material capable of supporting ceiling system and attach hanger wires. ***DO NOT** install main beams perpendicular to the slope, as this method of installation may result in grid failure.

2. Hanger wire must be plumb.

3. The wall angles at the top and bottom should either be shimmed with angled blocking or re-bent to the correct angle at a local sheet metal shop. Armstrong's BERC & BERC2 clips are NOT compatible with moldings bent to an angle other than 90º. Installations using either of these clips must have the standard moldings shimmed to meet the plane of the ceiling.

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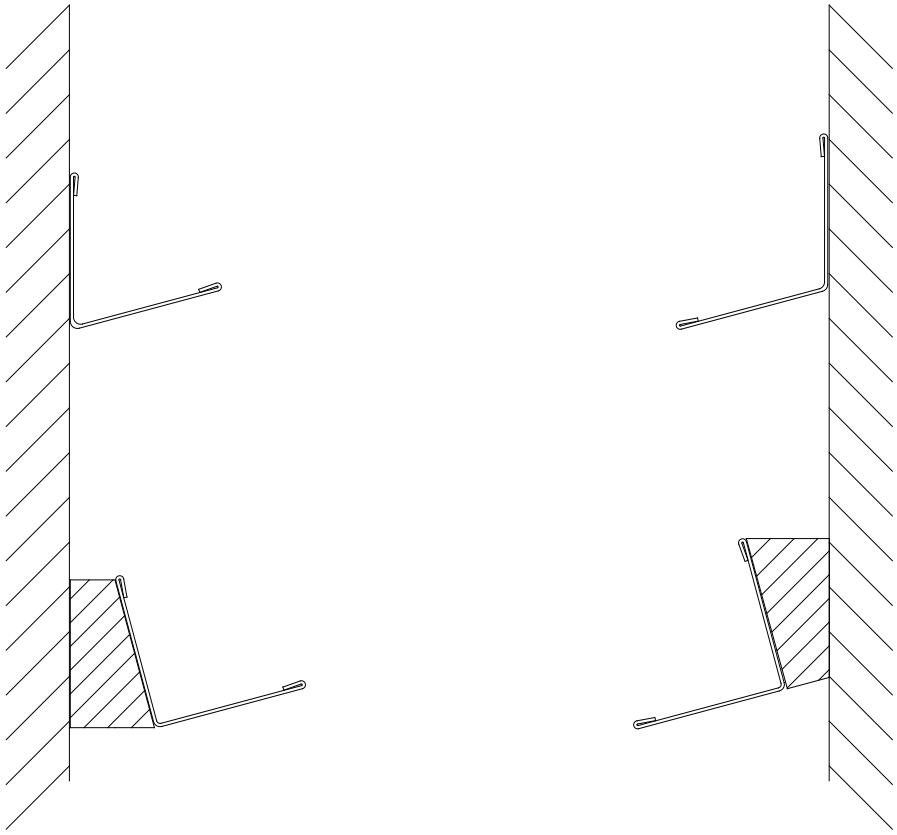
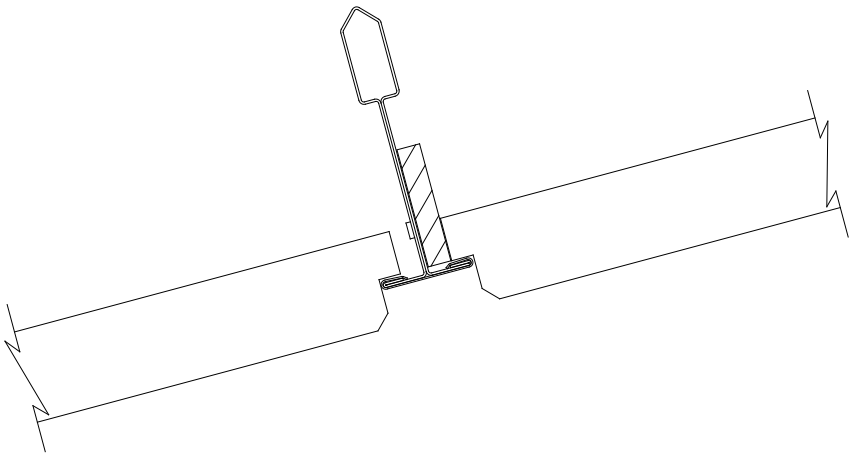


4. The panels will tend to slide downhill, especially on steeper angles. If needed, place shims between the panel edge and the web of the cross tee at the lower edge of each panel to center them in the grid openings.



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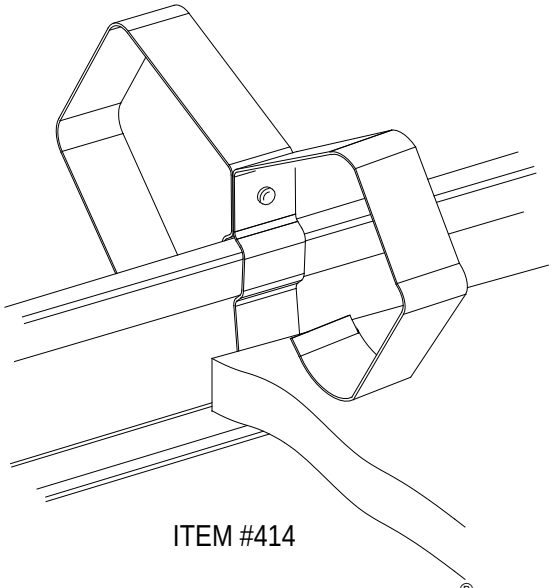
5. Hold down clips may be needed depending on the angle of the ceiling and the potential for seismic activity. When required, use the 414 Retention clip. The seismic testing was conducted with one of these clips on each panel.



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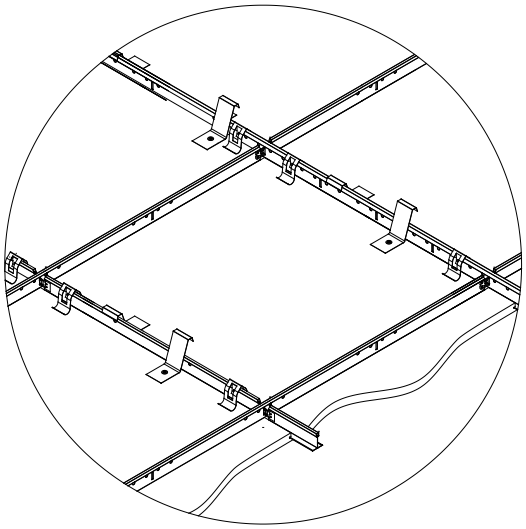

WOODWORKS VECTOR CLIP ARRANGEMENT

6. When installing Armstrong Ultima® or Optima® Vector® ceiling panels in a sloped installation the access kerf (double kerf) must be oriented toward the top of the slope.

   METALWORKS™ and WOODWORKS® Vector panels may be oriented with the access kerf (spring side on metal, double kerf on wood) to the sides or up the slope. The seismic hold down clips and security clips supplied with WOODWORKS vector panels must be installed regardless of seismic risk.

Armstrong does not recommend the installation of Armstrong Concealed edge tiles in a slope ceiling.

If you should have any questions regarding these guidelines, please contact ABP TechLine at Armstrong's Customer Focus Center, 877-276-7876 options 1, 2, 3.