

ACCEPTANCE CRITERIA FOR ALTERNATIVE GYPSUM BOARD SUPPORTS (AGBSs)

AC271

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PREFACE

Evaluation reports issued by ICC Evaluation Service, Inc. (ICC-ES), are based upon performance features of the International family of codes and other widely adopted code families, including the Uniform Codes, the BOCA National Codes, and the SBCCI Standard Codes. Section 104.11 of the *International Building Code*® reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

Similar provisions are contained in the Uniform Codes, the National Codes, and the Standard Codes.

This acceptance criteria has been issued to provide all interested parties with guidelines for demonstrating compliance with performance features of the applicable code(s) referenced in the acceptance criteria. The criteria was developed and adopted following public hearings conducted by the ICC-ES Evaluation Committee, and is effective on the date shown above. All reports issued or reissued on or after the effective date must comply with this criteria, while reports issued prior to this date may be in compliance with this criteria or with the previous edition. If the criteria is an updated version from the previous edition, a solid vertical line (|) in the margin within the criteria indicates a technical change, addition, or deletion from the previous edition. A deletion indicator (→) is provided in the margin where a paragraph has been deleted if the deletion involved a technical change. This criteria may be further revised as the need dictates.

ICC-ES may consider alternate criteria, provided the report applicant submits valid data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria set forth in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise demonstrate compliance with the performance features of the codes, ICC-ES retains the right to refuse to issue or renew an evaluation report, if the product, material, or type or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

Acceptance criteria are developed for use solely by ICC-ES for purposes of issuing ICC-ES evaluation reports.

ACCEPTANCE CRITERIA FOR ALTERNATIVE GYPSUM BOARD SUPPORTS (AGBSs) (AC271)

1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for rigid polyvinyl chloride (PVC) foam plastic, high-density polyethylene (HDPE) or galvanized steel alternative gypsum board supports (AGBSs) to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under the 2006 International Building Code® (IBC) and the 2006 International Residential Code® (IRC). Bases of recognition are IBC Section 104.11, and IRC Section R104.11.

1.2 Scope: This acceptance criteria is applicable to rigid PVC foam plastic, HDPE or galvanized steel AGBSs used as alternatives to solid wood or metal framing for the attachment of the edges/ends of gypsum board, which are located between framing members in interior wood or steel framed wall assemblies. The galvanized steel AGBSs are permitted in nonload-bearing and load-bearing wall assemblies in all types of construction permitted by the applicable code. The PVC and HDPE AGBSs are permitted in nonload-bearing wall assemblies in buildings of Type V (IBC), and structures constructed in accordance with the IRC, and in other types of construction, when combustible interior nonload-bearing walls and partitions are allowed by the applicable code. Fire-resistance-rated wall assemblies incorporating the AGBSs shall comply with the requirements in Section 3.5 of this acceptance criteria. The AGBSs may be installed at gypsum board joints created at 90-degree or 120-degree corners with one side attached to the existing framing and the other side installed as a nailer for the attachment of the gypsum board. The use of AGBSs in braced wall panel locations, as described in IBC Section 2308.9 and IRC Section R602.10, shall not be permitted.

1.3 Codes and Referenced Standards:

1.3.1 Codes:

1.3.1.1 2006 International Building Code® (IBC), International Code Council.

1.3.1.2 2006 International Residential Code® (IRC), International Code Council.

1.3.2 Standards:

1.3.2.1 AISI NAS-01, North American Specification for the Design of Cold-formed Steel Structural Members, including 2004 Supplement, American Iron and Steel Institute.

1.3.2.2 ASTM A 879-06, Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface, ASTM International.

1.3.2.3 ASTM D 4216-06, Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly (Vinyl Chloride) (CPVC) Building Products Compounds, ASTM International.

1.3.2.4 ASTM D 1238-04c, Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer, ASTM International.

1.3.2.5 ASTM E 72-02, Standard Test Method of Conducting Strength Tests of Panels for Building Construction, ASTM International.

1.3.2.6 ASTM E 84-04, Test Method for Surface Burning Characteristics of Building Materials, ASTM International.

1.3.2.7 ASTM E119-00, Test Method for Fire Tests of Building Construction and Materials, ASTM International.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: Complete information concerning material specifications, thickness, size and the manufacturing process.

2.1.2 Installation Instructions: Installation details and limitations, including fastening methods and materials.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification of the product. Identification provisions shall include the evaluation report number and a unique identification number.

2.1.4 Field Preparation: A description of the methods of field-cutting, if applicable, and application.

2.2 Testing Laboratories: Testing laboratories shall comply with Section 2.0 of the ICC-ES Acceptance Criteria for Test Reports (AC85) and Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

2.3 Test Reports: Test reports shall comply with AC85. Test reports shall be in sufficient detail to identify specimen properties that affect performance as a gypsum board support. The testing laboratory shall verify and report specimen material, dimensions, weight, coating or any other physical properties of the product. The testing laboratory shall also report method of installation and provide a description of fasteners, including material, size, number and location.

2.4 Product Sampling: Sampling of the AGBSs for tests under this criteria shall comply with Section 3.2 of AC85.

3.0 TEST METHODS AND PERFORMANCE REQUIREMENTS

3.1 Materials:

3.1.1 The materials used in the manufacture of the rigid PVC foam plastic AGBSs shall comply with the values given in Table 1 of ASTM D 4216, which shall be used to establish the cell classification of the PVC. The material is expanded and extruded into straight, 90-degree and 120-degree profiles.

3.1.2 In the absence of a product specification, the critical physical properties of the HDPE AGBSs described in Sections 1.3.2.3 and 1.3.2.4 of this acceptance criteria shall be provided to ICC-ES. The quality control program shall verify continuing compliance with the stated properties. The material is molded into modified "T" profiles.

3.1.3 The materials used in the manufacture of steel AGBSs shall be minimum No. 24 gage [0.024 inch thick (0.61 mm)], cold-formed steel conforming to AISI NAS, galvanized in accordance with ASTM A 879, with a minimum coating designation of 40G on each surface; or

ACCEPTANCE CRITERIA FOR ALTERNATIVE GYPSUM BOARD SUPPORTS (AGBSs) (AC217)

have a protective coating with an equivalent corrosion resistance. The material shall be formed into straight-, channel-, or tee-shaped profiles.

3.2 Transverse Load: A minimum of three samples of each configuration of assembly incorporating the AGBSs shall be tested to show transverse load resistance, following the test method specified in Section 11 of ASTM E 72 (air bag method). The assemblies shall be installed in accordance with the manufacturer's published installation instructions and tested in both positive and negative directions. Minimum conditions of acceptance are that the assemblies shall resist a minimum uniformly distributed load of 15 lb/ft² (73 kg/m²). The wall assembly shall not exceed a deflection of L/120 while resisting a uniformly distributed load of 5 lb/ft² (24 kg/m²) at the maximum span between framing members.

3.3 Racking Load (Optional): In order to qualify for the details noted in Section 3.3.1 of this acceptance criteria, there must be submission of reports on load tests of assemblies incorporating the AGBSs described in this acceptance criteria, along with code-complying construction. Tests shall be conducted in accordance with Section 14 of ASTM E 72 and meet the requirements specified in Sections 3.3.2 and 3.3.3 of this acceptance criteria. The assemblies shall be constructed in accordance with the manufacturer's published installation instructions.

3.3.1 Assemblies incorporating AGBSs conforming to Section 3.1.3, with channel- and tee-shaped profiles used in corner applications, and with straight-shaped profile used in straight wall application where two or three gypsum boards are abutted against each other in the same vertical plane and interconnected with the supporting clips, may be recognized as equivalent to conventional blocked and unblocked gypsum board sheathed walls, and assigned the allowable shear values given in IBC Table 2306.4.5 including footnotes, provided that the construction of gypsum board wood framed wall assemblies are identical to the type 4 described in Table 2306.4.5 of the IBC, with the exception that fasteners are replaced with AGBSs recognized in this acceptance criteria, at corners with channel- or tee-shaped-profiles; or at abutting ends of gypsum boards aligned in the same plane with straight-shaped-profiles.

3.3.2 A minimum of two assemblies shall be tested for each variation in installation details. Variations include each combination described in IBC Table 2306.4.5, for type 4 material, such as gypsum board thickness [$\frac{1}{2}$ inch (12.7 mm) and/or $\frac{5}{8}$ inch (15.9 mm)]; blocked and unblocked construction; gypsum fastener spacing requirements [4 inches (102 mm), 6 inches (152 mm), 7 inches (178 mm), 8 inches (203 mm), 12 inches (305 mm), and 16 inches (406 mm) on center]; spacing of the alternative gypsum board supports; and spacing of the wall studs [16 inches (406 mm) or 24 inches (610 mm) on center]. Eight-foot-by-8-foot (2438 by 2438 mm) assemblies shall be tested with at least one board joint.

3.3.3 Conditions of Acceptance:

3.3.3.1 The lowest of the two ultimate test loads, reduced to pounds per foot (N/m) and divided by 2.8, shall be equal to or greater than the comparable shear values noted in IBC Table 2306.4.5.

3.3.3.2 The deflection at the load determined in Section 3.3.3.1 of this criteria shall not exceed $\frac{1}{8}$ inch (3.2 mm).

3.3.4 The evaluation report shall include a complete description of the assemblies, including all components and installation requirements; and shall also indicate that the applicable footnotes, noted in the tables described in Section 3.3.1 of this criteria, apply to the assemblies constructed with the AGBSs.

3.4 Surface Burning Characteristics: The materials from which the AGBSs are manufactured shall demonstrate a flame spread index of not more than 25, when testing is in accordance with ASTM E 84. **Exception:** AGBSs conforming to Section 3.1.3 of this acceptance criteria.

3.5 Fire-resistance-rated Assemblies: Assemblies incorporating the AGBSs may be recognized as fire-resistance-rated assemblies provided the assemblies meet the test requirements specified in ASTM E 119. The evaluation report shall include a complete description of the assemblies, including all components and installation requirements.

4.0 QUALITY CONTROL

4.1 Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted.

4.2 Third-party follow-up inspections are not required under this acceptance criteria.

5.0 EVALUATION REPORT RECOGNITION

5.1 The evaluation report shall include a complete description of the wall assemblies, including all components and installation requirements, and shall also indicate that the applicable footnotes noted in the tables described in Section 3.3.1 of this criteria, apply to the wall assemblies constructed with the AGBSs.

5.2 The evaluation report shall note that wood-framed shear walls sheathed with gypsum board, utilizing AGBSs and qualified under Section 3.3, if applicable, are recognized as equivalent to the conventional blocked and unblocked gypsum board sheathed walls which are described as type 4 for the "type of material" in Table 2306.4.5 of the IBC, provided that the construction of gypsum board sheathed wood framed wall assemblies are identical to the type 4 described in Table 2306.4.5 of the IBC, with the exception that fasteners are replaced with AGBSs at corners with channel- or tee-shaped profiles; or at abutting ends of gypsum boards aligned in the same plane with straight profiles.

5.3 Wall construction not specifically mentioned in the evaluation report shall conform to IBC Section 2306.4.5 and IRC Section R702, as applicable.

5.4 The evaluation report shall note the types of construction permitted with the wall assemblies containing the AGBSs and the submitted testing in accordance with Section 3.5 of the criteria.

5.5 The evaluation report shall note that AGBSs are limited to interior use only.

5.6 The evaluation report shall indicate that AGBSs used in horizontal ceiling diaphragm assemblies are beyond the scope of the evaluation report. ■