ASABE is a professional and technical organization, of members worldwide, who are dedicated to advancement of engineering applicable to agricultural, food, and biological systems. ASABE Standards are consensus documents developed and adopted by the American Society of Agricultural and Biological Engineers to meet standardization needs within the scope of the Society; principally agricultural field equipment, farmstead equipment, structures, soil and water resource management, turf and landscape equipment, forest engineering, food and process engineering, electric power applications, plant and animal environment, and waste management.

NOTE: ASABE Standards, Engineering Practices, and Data are informational and advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. The ASABE assumes no responsibility for results attributable to the application of ASABE Standards, Engineering Practices, and Data. Conformity does not ensure compliance with applicable ordinances, laws and regulations. Prospective users are responsible for protecting themselves against liability for infringement of patents.

ASABE Standards, Engineering Practices, and Data initially approved prior to the society name change in July of 2005 are designated as "ASAE", regardless of the revision approval date. Newly developed Standards, Engineering Practices and Data approved after July of 2005 are designated as "ASABE".

Standards designated as "ANSI" are American National Standards as are all ISO adoptions published by ASABE. Adoption as an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by ASABE.

Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

CAUTION NOTICE: ASABE and ANSI standards may be revised or withdrawn at any time. Additionally, procedures of ASABE require that action be taken periodically to reaffirm, revise, or withdraw each standard.

Copyright American Society of Agricultural and Biological Engineers. All rights reserved.
Diaphragm Design of Metal-Clad, Wood-Frame Rectangular Buildings

1 Purpose and Scope

1.1 This Engineering Practice is a consensus document for the analysis and design of metal-clad wood-frame buildings using roof and ceiling diaphragms, alone or in combination. The roof (and ceiling) diaphragms, endwalls, intermediate shearwalls, and building frames are the main structural elements of a structural system used to efficiently resist the design lateral (wind, seismic) loads. This Engineering Practice gives acceptable methods for analyzing and designing the elements of the diaphragm system.

1.2 The provisions of this Engineering Practice are limited to the analysis of single-story buildings of rectangular shape.

2 Normative References

The following referenced documents are integral components in the application of this document. For dated references, only the edition cited applies unless noted. For undated references, the latest approved edition of the referenced document (including any amendments) applies.


ASAE EP486, Shallow Post and Pier Foundation Design

ASAE EP558, Load Tests for Metal-Clad, Wood Frame Diaphragms

AISI S310, North American Standard for the Design of Profiled Steel Diaphragm Panels

3 Definitions (see Figures 1 and 2)

3.1 diaphragm: A structural assembly of metal cladding, including the wood or wood product framing, metal cladding, fasteners and fastening patterns, capable of transferring in-plane shear forces through the cladding and framing members.

3.2 diaphragm design: Design of roof (and ceiling) diaphragm(s), sidewall posts, endwalls, shearwalls, component connections, chord splices, and foundation anchorages, for the purpose of transferring lateral (e.g., wind) loads to the foundation structure.