“POST-FRAME BUILDING SYSTEM” DEFINED

NIBA T & R Committee supports development of new standard

December 31, 2010, marked a milestone for the post-frame building industry. On that date, the American Society of Agricultural and Biological Engineers was informed of a new standard, ASABE S618 Post Frame Building System Nomenclature, that had been approved as an American National Standard by the American National Standards Institute. With 139 different definitions, this new standard establishes terminology to be used in the design, construction, marketing and regulation of post-frame buildings.

All standards are developed for a reason, and the primary purpose of this article is to document the series of events that led to the creation of ASABE S618 by members of the NFBA Technical and Research (T & R) Committee. This article will provide an overview of the development process and an ending with a brief explanation of the primary difference between post-frame, post-and-beam and timber-frame building systems.

A need becomes apparent

During the NFBA T & R Committee meeting held in conjunction with the Frame Building Expo in Nashville, Tenn., on February 26, 2009, it was moved that “we develop an ASABE standard on post-frame building systems nomenclature.” This motion unanimously passed and the development process began.

A series of events and activities involving and surrounding the T & R Committee during the previous 18 months led to the February 26 motion. The first of these was a discussion that took place on October 11, 2007, at a T & R Committee meeting in Utica, Ill. The T & R Committee reviewed the latest draft of Model Specification for Post-Frame Building Systems at this meeting. Frequently referred to as the model guide specification, this document was being developed in part to help expand the use of post-frame buildings by a greater number of nontraditional residential and commercial building designers. Those familiar with specifications of any sort realize proper terminology is critical to such documents. Not surprisingly, considerable discussion at the meeting centered on the definition of a post-frame building, how to categorize different building elements into sections within the model specification and how to title these sections. It was apparent at this meeting that various committee members had slightly different views on what should all be classified as a post-frame building.

On January 16, 2009, the Wood County Building Inspection Administrative Code was released in northeast Ohio. Although Section 406.1 of the WCBIAC is titled “Standards for Post Frame Construction,” it was drafted without assistance from NFBA. In many respects the document provides a perfect example of specifications that result when the technical expertise of the T & R committee is not brought into the code development process. What does the WCBIAC define as a post-frame building? How many important post-frame building design elements and factors, but it uses terminology that the large post-frame building community would consider nonstandard.

During 2008, T & R Committee member Kris Owens raised a concern about improper use of building terminology by people involved in code development work with the International Code Council. Specifically, many code officials were confusing post and beam buildings and post-frame buildings with post-frame buildings. In effect, this resulted in an unintended restriction placed on use of certain products in post-frame building design and was partially attributed to lack of a “post-frame building” definition in the model codes. In an attempt to address this shortcoming, a motion was passed during the February 26, 2009, T & R committee meeting in Nashville to submit to the ICC the definition of a post-frame building system that had been developed in part for the Model Specification for Post-Frame Building Systems. The passing of this motion was supported in large part by nonstandard post-frame building terminology used in the WCBIAC. It was immediately followed by the motion to develop an ASABE standard on post-frame building nomenclature.

Developing ASABE S618

There are hundreds of nongovernment organizations such as NFBA in the United States and others interested in joining the committee. T & R Committee meeting on October 22, 2009, was held to announce the results of their efforts. Much of the committee’s work over the past year was taken to make sure terminology was consistent with definitions appearing in other national standards such as the National Design Specifications for Wood Construction and/or with verbiage in existence for a particular building system.

ASABE S618 Overview

Without doubt, ASABE S618 is among the most complete and technically consistent documents in existence for a particular building system. Considerable time and effort was put into the 139 definitions appearing in the new standard. Extreme care was taken to make sure terminology was consistent with definitions appearing in other national standards such as the National Design Specifications for Wood Construction and/or with verbiage routinely published or otherwise well-

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ASABE SE-03 Standards Committee on April 28 and subsequently approved by the ASABE SE-03 Standards Committee on December 24, 2010, at which time it was forwarded to ANSI for approval as an American National Standard. Standards development work at ASABE is handled by Scott Cedarquist, Carla VanGilder, Ted Tees and Travis Tunemori. Their efforts should be recognized, particularly those of Carla VanGilder, who shepherded ASABE S618 through the development process.

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entrenched in the design community by other framing systems in history.

From a structural perspective, a post-frame building system is analogous to the typical low-rise metal building system. Conventional buildings of both types have two-dimensional (2-D) frames that are connected with purlins in the roof and girts in the walls. Diaphragm design procedures now used in the post-frame building industry have been used in the construction of buildings over a half-century ago in the low-rise metal building systems industry. The similarity between the building systems is reflected in the design of both systems, (4) building subsystems, (5) primary framing members, (6) secondary framing members, (7) purlin types, (8) foundation systems, (9) foundation types, (10) dimensions and (11) commentary.

Section 3 contains only two definitions, but they are the most important definitions and are repeated here.

**Post-frame building system:** A building characterized by primary structural frames of wood posts as columns and trusses or rafters as roof framing. Roof framing is attached to the posts, either directly or indirectly through girders. Posts are embedded in the soil and supported on isolated footings or are attached to the top of piers, concrete or masonry walls, or slab-on-grade. Secondary framing members, purlins in the roof, and girts in the walls, are attached to the primary framing members to provide lateral support and to transfer sheathing loads, both in-plane and out-of-plane, to the posts and roof framing.

**Pole-frame building system:** A post-frame building system that utilizes round poles. Commonly referred to as a pole building.

The definition of a post-frame building system is the most involved or complex definition appearing in these documents. Other definitions are as succinct as those given for a pole-frame building system.

Section 4 on building subsystems contains definitions for primary and secondary framing members, as well as definitions for specific elements of the post-frame building system. Some definitions are as follows: (1) purpose and scope, (2) normative references, (3) building systems, (4) building subsystems, (5) primary framing members, (6) secondary framing members, (7) purlin types, (8) foundation systems, (9) foundation types, (10) dimensions and (11) commentary.

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- **Primary framing members:** (covered in Section 5) are the main structural framing members in a building and include the posts, roof trusses/rafters and any girders that transfer load between roof trusses/rafters and posts. Post types defined in the document include solid-sawn, structural glued-laminated (glulam), mechanically-laminated (or melam), nail-laminated (or nailing), scrap-laminated (or scrap-lam), spliced, unspliced and poles. Posts also are defined by position as endwall, sidewall, corner and jamb. Truss types defined in the standard include light wood, metal plate connected wood, heavy timber, ganged, girder, parallel chord and roof. Special rafter types defined in ASAE S618 include rafter, fly, and stacked.

- **Secondary framing members:** (covered in Section 5) are the main structural framing members in a building and include the posts, roof trusses/rafters and any girders that transfer load between roof trusses/rafters and posts. Post types defined in the document include solid-sawn, structural glued-laminated (glulam), mechanically-laminated (or melam), nail-laminated (or nailing), scrap-laminated (or scrap-lam), spliced, unspliced and poles. Posts also are defined by position as endwall, sidewall, corner and jamb. Truss types defined in the standard include light wood, metal plate connected wood, heavy timber, ganged, girder, parallel chord and roof. Special rafter types defined in ASAE S618 include rafter, fly, and stacked.

- **Primary framing components:** (covered in Section 5) are the main structural framing members in a building and include the posts, roof trusses/rafters and any girders that transfer load between roof trusses/rafters and posts. Post types defined in the document include solid-sawn, structural glued-laminated (glulam), mechanically-laminated (or melam), nail-laminated (or nailing), scrap-laminated (or scrap-lam), spliced, unspliced and poles. Posts also are defined by position as endwall, sidewall, corner and jamb. Truss types defined in the standard include light wood, metal plate connected wood, heavy timber, ganged, girder, parallel chord and roof. Special rafter types defined in ASAE S618 include rafter, fly, and stacked.

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