Lay-On Gable Frame Connection

Design Guide

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SBCA

SBCA has been the voice of the structural building components industry since 1983, providing educational programs and technical information, disseminating industry news, and facilitating networking opportunities for manufacturers of roof trusses, wall panels and floor trusses. **SBCA** endeavors to expand component manufacturers' market share and enhance the professionalism of the component manufacturing industry.

Introduction

- A lay-on gable frame is typically connected from the top during truss placement, but after sheathing is installed, this connection is no longer visible for the building inspector to verify.
- This creates a need for an alternate connection that is visible from below.
- The connection described in SRR 1505-02 is a simple, cost-effective, toe nail connection between the lay-on gable frames and supporting truss system that is visible after sheathing is installed.
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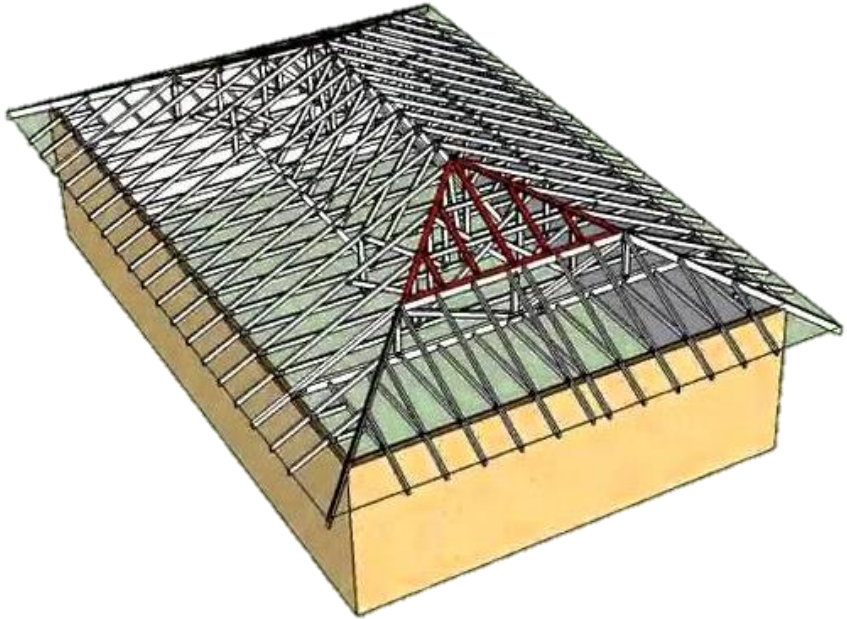


Introduction

- In designing the connection, assumptions were made with the intent for the connection to be applicable to a majority of situations encountered.
- It is the building designer’s responsibility to ensure that the assumptions listed are equal or conservative to project requirements.
- The following steps will assist the designer in verifying whether this connection is applicable for the project.

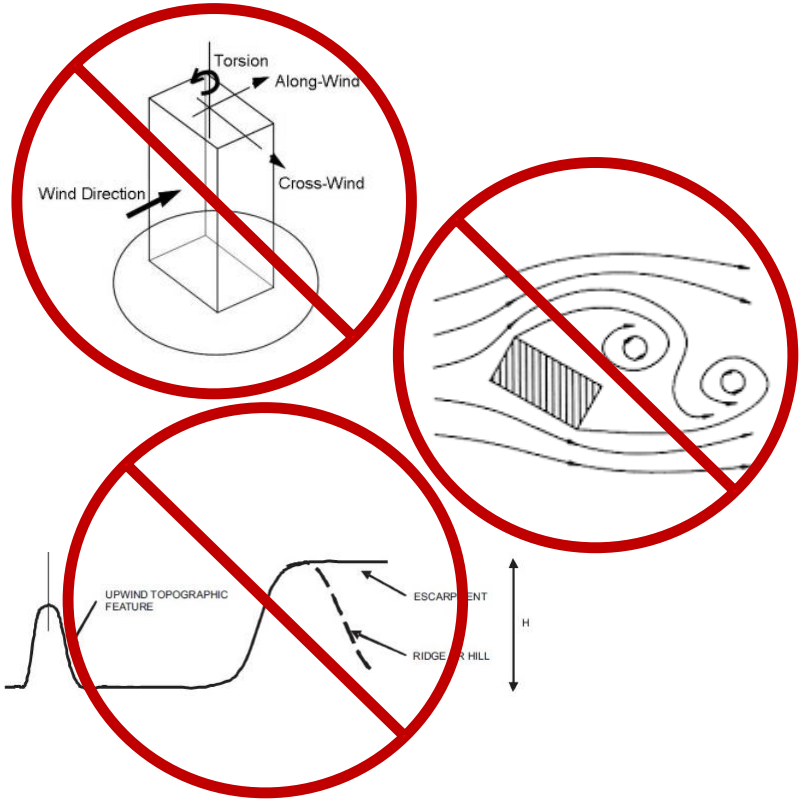
Step 1: Verify Loading

- ASCE 7-10 is referenced by *IBC* 2012 and 2015
- Project specific loading that does not exceed 5 psf dead load in total is acceptable

Description	Value Assumed
Code	*ASCE 7-10*
Controlling Load Combination (ASD)	0.6D + 0.6W
Dead Load	Asphalt Shingles 2 psf $^{3}/_{8}$" OSB Sheathing 1.1 psf Lay-On Gable Self-Weight 0.9 psf Total = 5 psf
Method	Components & Cladding – Method 1

Step 1: Verify Loading

- The project must meet the criteria for C&C determination of wind pressures including:
  - The building must not be subject to across wind loading, vortex shedding, galloping, or flutter
  - The site must not be subject to channeling effects or buffeting due to upwind obstructions



Step 2: Verify Project Dimensions

- The project should be a regular shape - i.e. a building without irregularities in spatial form per ASCE
  - See ASCE 7-10 Table 12.3-1 or 12.3-2 for criteria
- Mean roof height should be no more than 30’

Description	Value Assumed
Mean Roof Height	$h \leq 30'$
Building Shape	Regular Shaped Building
Roof Style	Hip Roof with $4/12 \leq \theta \leq 12/12$ $18° \leq \theta \leq 45°$

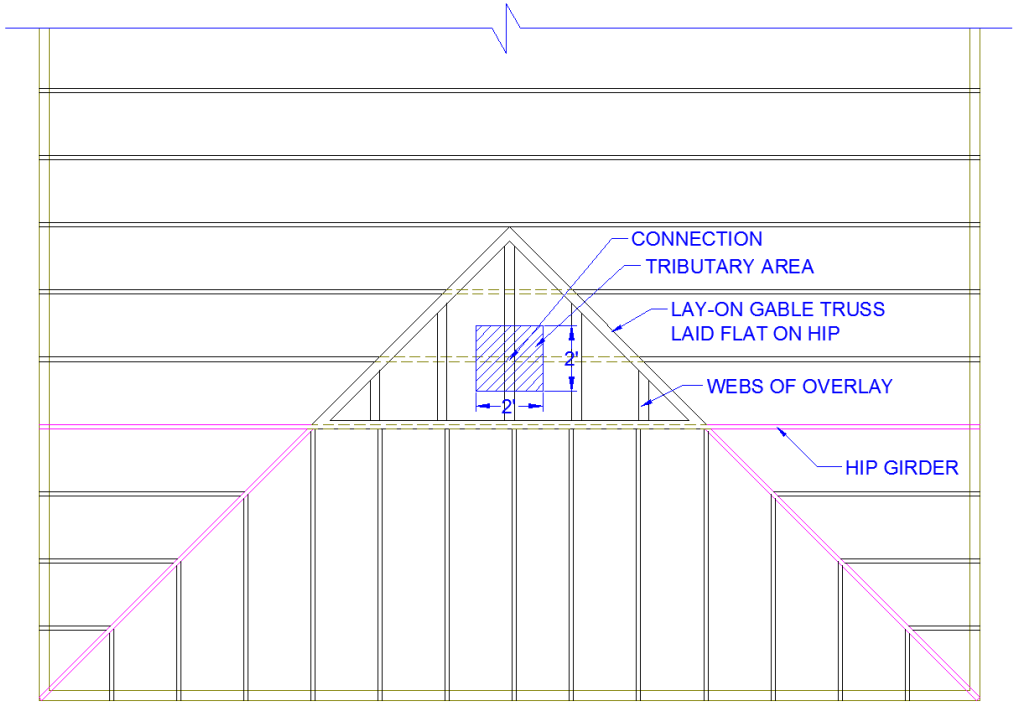
Step 3: Verify Project Attributes

- Values more conservative than those listed (e.g. lower wind speed, exposure category) are acceptable

Description	Value Assumed
Basic Wind Speed	≤130 mph
Occupancy Category	II
Enclosure Category	Enclosed
Importance Factor, I	1.00
Topographic Factor, K_{zt}	1.00
Exposure Category	C

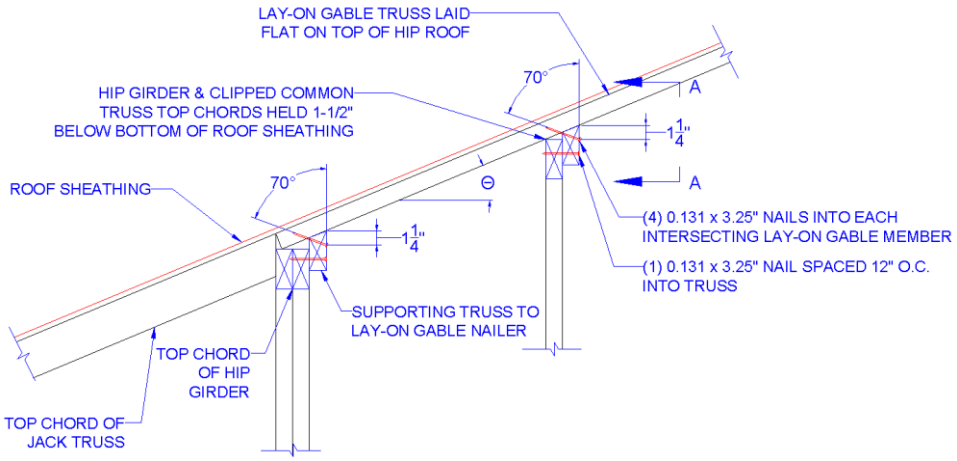
Step 4: Verify Connection Location

- Trusses and lay-on gable frame members may be spaced a maximum of 24" o.c.
- The connection location analyzed represents the largest tributary area on a typical layout
- Alternative locations are acceptable provided that the tributary area does not exceed that shown



Step 5: Verify Materials and Fasteners

- Framing material must be SPF (Specific Gravity = 0.42) or better
- Nails must be 10d (0.131 x 3.25”) or better
- Better materials and fasteners will increase the capacity of the connection and make the connection more conservative.



Step 5: Verify Materials and Fasteners

- Ensure fasteners meet spacing requirements:
  - Supporting truss
    - Edge distance = 4D (4x0.131” = 1/2”)
    - Row spacing = 5D (5x0.131” = 5/8”)
  - Lay-on gable
    - Edge distance = 1.5D (1.5x0.131” = 3/16”)
    - Row spacing = 1.5D (1.5x0.131” = 3/16”) and ½ spacing between rows (0.5x0.655” = 5/16”)