



Bulletin No. 2017-03

First Release:

November 15, 2017

Prepared by:

Remington Brown
Senior Engineering Director

Applicable Standards:

FORTIFIED Home™–Hurricane
FORTIFIED for Safer Living™

Applicable Designation Level:

Low-Slope Roof Guidelines in Mobile and Baldwin Counties, Alabama

Abstract

This bulletin is intended to provide design guidance for residential roof systems installed over wood roof decks with a roof slope less than 2/12 (10 degrees). Low-slope roof systems must meet the required design pressures for the site and the locations on the building. Roofing manufacturers' tested uplift design pressures must have a factor of safety of 2:1; roof system design pressures listed in an ICC Evaluation Service Report, Florida Product Approval, or Miami-Dade Notice of Acceptance (NOA) have the 2:1 factor of safety already applied. These reports can be used to validate compliance with the project site-specific design pressure requirements. The report documents can be difficult to navigate; the roofing manufacturer technical services department is the best resource to help identify the correct system for the project.

Typical Residential Low-Slope Systems

Built-up roof (BUR) systems are composed of multiple layers of reinforcing membranes held together with hot bitumen, solvent-based adhesives, torch welding and self-adhered plies that create a finished membrane. The number of plies in a cross section is the number of membrane layers on a roof. The term "two-ply" denotes a two-layer membrane construction. When installed directly over the wood deck, the base sheet (also known as an anchor sheet) can either be mechanically fastened or attached with an adhesive foam or be a self-adhered product.

Modified bitumen roof systems are a form of BUR system that uses multiple layers of reinforcing membranes with a granulated or uncoated finish cap sheet that includes added modifiers to give plastic or rubber-like properties. Modified bitumen roof systems usually consist of two- or three-ply systems.



Roof System

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Single-ply roofing membranes are flexible sheets of compounded synthetic materials that are generally mechanically attached or fully adhered to rigid insulation or a cover board. There are two categories of single-ply membranes: thermoplastic membranes such as TPO (thermoplastic olefin), PVC (polyvinyl chloride), and KEE (ketone ethylene ester), and thermoset membranes such as EPDM (ethylene propylene diene monomer).

Example for Mobile and Baldwin Counties

Low-slope roofs must be installed to meet design pressures for the site location *and* for the location on the roof. **Figure 1** (below) shows three roof “zones.” **Use 4 ft for dimension “a.”** The Corner Zone (Zone 3) is the roof zone that has the highest pressure (see **Table 1**) and is a 4-ft x 4-ft area in each of the four corners of the roof. The End Zone (Zone 2) is a 4-ft wide strip around the perimeter of the roof and the Interior Zone is the rest of the roof (anything not in Zones 2 or 3).

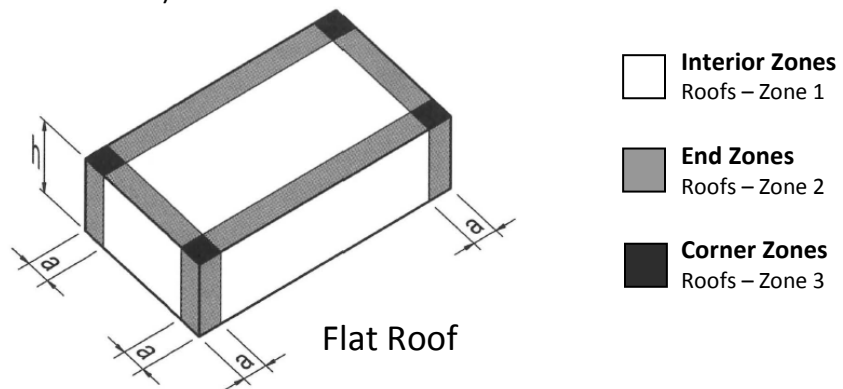


Figure 1. Flat Roof Zones

In Mobile and Baldwin counties, use **Table 1** to determine the roof uplift pressure you need for an approved roof system. Note that the ASCE 7-10 wind speed in Mobile and Baldwin counties does not exceed 160 mph in any location.

Table 1. Roof Uplift Pressures: 160 mph, 30 ft Max Roof Height

160 mph (ASCE 7-10)	Zone 1 (interior)	Zone 2 (end)	Zone 3 (corner)
Exposure B (residential neighborhood)	-28 psf	-47 psf	-70 psf
Exposure C (open area)	-39 psf	-66 psf	-98 psf
Exposure D (on water)	-47 psf	-78 psf	-116 psf



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Basic Procedure for Selecting a Roof Assembly

1. From **Table 1**, determine uplift pressure required for Zone 1 (field), Zone 2 (perimeter), and Zone 3 (corners).
2. Select a roofing system manufacturer and a method of application (self-adhered, mechanically fastened, hot mopped, single-ply, etc.).
3. There are many variables associated with flat roof systems; make sure you select a system that's appropriate for the roof deck. Most residential flat roof assemblies are applied over a wood deck without insulation; make sure the system you choose is compatible.
4. Select a roof assembly from the manufacturer that has an approval for a design pressure greater than or equal to the uplift pressures determined in step 1.
 - **NOTE:** It would be best to select a system rated for the corner (Zone 3) uplift pressures and use it for the entire roof. **For a home located in a residential neighborhood (Exposure B) in Mobile or Baldwin county, look for a roof assembly system that has an approval indicating a design uplift pressure of 70 psf. The ICC Evaluation Service Report, Florida Product Approval, and Miami-Dade Notice of Acceptance (NOA) already have the required 2:1 factor of safety incorporated in the listed design pressures.**

Installation

1. Re-fasten the wood deck as required by FORTIFIED or the roofing approval if it's more restrictive.
2. Apply base/anchor sheet, intermediate plies, cap sheet, and roof coating as required by the system approval. **Do not substitute materials; use the components and fasteners as listed in the system approval.**
3. Follow roof manufacturers' installation guidelines for edge details, parapet details, skylight curb details, pitch transitions, wall connections where roofs meet upper stories, and penetrations for vent stacks or hardware mounts.



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Documentation Requirements

The **Roofing Compliance Form** must indicate the manufacturer and system type of the roof assembly.

The product approval indicating the design pressure rating for the installed system must be provided to the Evaluator.

Photos indicating the attachment of the base/anchor sheet in compliance with the roofing system approval must be provided.