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*An Austin, Texas, homeowner connects to the outdoors with a carefully designed and built screened porch.*

## The In-between Place

Screened-porch design requires consideration of location, orientation, architectural form and construction details. 58

# The In-between Place

Screened-porch Design Requires Consideration of Location, Orientation, Architectural Form and Details

By Gregory Thomas, AIA



As is often the challenge with screened porches, this Austin, Texas, porch is subject to the elements and weathering forces of nature, yet has a fine and enduring finish and desirable amenities much like an interior space.

**R**ESIDENTIAL SCREENED PORCHES are an in-between place. They reside at the transition between the protection of the indoors and full exposure of the outdoors. Neither fully interior nor exterior, screened porches can subtly blur the line between indoors and out.

As structures, screened porches can be challenging to design and build because they are subject to the elements and weathering forces of nature, yet they often are expected to have a

fine and enduring finish and desirable amenities much like an interior space. Porches should provide shelter from the heat of the summer sun, biting insects and chilling winter winds, but they also must welcome the warmth of the winter sun and cooling breezes in summer. With careful consideration of location, orientation, appropriate architectural form and details of construction, screened porches can provide just the right amount of shelter to allow one to relax and enjoy the sensory aspects of the outdoors.

## Location, Location

The art of locating a screened porch is a function of the intended goals for the porch combined with the realities of the place at hand. Although it may seem simple enough to build a screened room next to an interior space, many factors can influence the form and expression of the final design.

The existing layout of spaces in a house is always the starting point for locating a porch. This layout is a given, as is the home's relationship



JONATHAN JACKSON

to all of its surrounding environment, including the existing topography, compass orientation, adjacent structures, existing vegetation and proximity to roadways.

Goals for a new porch will necessarily interact with the factors inherent in the porch's surroundings. Ideally, the floor plan of a home will lend itself naturally to the addition of an attached screened porch. Likewise, the environment will cooperate: Cooling breezes will arrive at just the right side of a proposed porch, and the movement of the sun relative to the proposed loca-

tion will be such that its rays can be welcomed or avoided as desired. In practice, however, all the factors that weigh into locating an attached porch addition will likely not be ideal. Therefore, relevant factors must be assessed in relationship to the goals for the structure. As in everything, choices must be made to maximize desired outcomes and minimize undesirable ones.

As an example, a recent Austin, Texas, porch project had goals that were somewhat at odds with its location relative to its environment. The porch was intended to provide a relaxing spot from which to enjoy the backyard gardens of the property. Its proposed location on the north side of the existing house—just outside the kitchen—put it at a less than ideal location to take advantage of the prevailing southerly, cooling breezes in summer. Careful siting, however, allowed the southwest corner of the L-shaped addition to open to and catch these breezes; thus the porch could provide a relatively cool and pleasant environment.

It should be noted that goals with regard to the environment will vary with geographical location and may also vary during the course of the seasons. In Texas' climate, for instance, relatively mild winters allow for year-round use of a screened porch. During Texas winters, the sun is welcomed; otherwise, shade is prized. Southerly breezes are welcome year-round (in the winter, they are warming), but northwesterly arctic winds in winter call for protection.

### Orientation

The sun travels in predictable paths throughout the day and, in turn, the seasons. Given this predictability, a design can be achieved to bring in or protect from the sun, depending on the desired outcome. Sunlight early or late in the day is low, whatever the season, while the angles of the sun at midday vary dramatically during the course of the year. In latitudes away from the equator, winter sun comes in low at noon, whereas summer sun is nearly directly overhead. With attention to roof overhangs, the midday sun can be blocked or allowed in as desired. Morning and afternoon sun can be blocked, as well, with solid or movable means. The dependability of the sun's movement is relatively easy to accommodate with considerate design.

Unlike the sun, the wind is trickier. Prevailing breezes may have directionality and seasonality that are somewhat predictable. Using this information, one must work to encourage air movement when it is desirable and minimize it when it is not. A porch that is open on all sides will enjoy great air circulation but may not offer protection from undesirable winds. Undesirable winds can



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be blocked with walls or operable or seasonally removable windows or panels. (Storage of such panels must be considered.)

When certain parts of a porch must be blocked for privacy or protection from sun or wind, adequate ventilation must be ensured. The secret to

directing air movement in a screened porch setting is to work with the physics of air movement. The force of the wind creates natural pressures that can be harnessed to encourage or discourage natural ventilation: On the windward sides of buildings, positive pressure can be allowed



Given the existing house and location of the addition, its roof in effect is a “butterfly” in form. Drainage of this roof required the construction of a “cricket” at the backside of the butterfly. The resultant concentration of water is gathered at the fascia of the existing house with custom-designed rainwater-collection boxes.

to push air into a space; on the leeward sides of buildings, negative pressure can pull air through a space. Increasing openings on the windward side of a porch and limiting openings on the leeward side will create a Venturi effect, wherein the speed of airflow is increased because of constricted openings. Given the physics of wind movement, a screened-porch designer can do the following:

- Allow or deny the source of air movement—namely the wind—through the porch space
- Control the volume, direction and velocity of the given airflow (as much as possible)

In the Austin project, larger openings were provided on the south and east sides of the structure, and solid walls were concentrated on the north and west sides of the building. A window at the northwest corner of the outdoor living room

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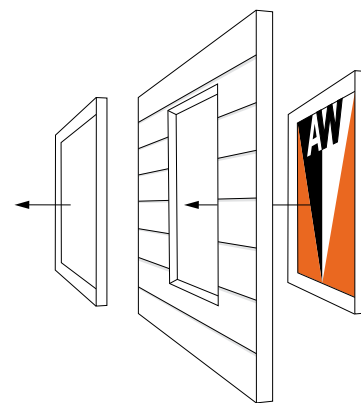
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The force of the wind creates natural pressures that can be harnessed to encourage or discourage natural ventilation. Larger openings were provided on the south and east sides of the structure, and solid walls were concentrated on the north and west sides of the building.



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The door and screened window at right allow the southwest corner of the L-shaped addition to open to and catch the prevailing southerly, cooling breezes in summer. Note the rainwater collector and rain chain in view.

was placed so a Venturi effect could be encouraged when desired. Opening the window (on the leeward side of the room during warm seasons) encourages negative pressure to pull the air through the space, and the constricted opening of the window will tend to accelerate breezes through the room. In winter months, the window is closed and, in concert with the solid walls on the north and west sides, cold northwesterly winds are limited through the screened porch.

### Architectural Form

A major factor in the design of an attached porch is the formal relationship of the new room to the existing structure. Whether the porch is a natural extension of the existing structure or a subsidiary mass, the roof forms will be critical to the success of the addition. Stylistically, roof shapes can be designed to work in harmony with an existing structure (a hipped roof addition on a hipped roof house, for example) or can be conceived to contrast. From a functional point of view, however, the more important issue is likely to be proper drainage of the addition. Water falling on the addition typically must be directed away from the existing structure.

In the Austin project, the homeowners are birdwatchers and wanted to elevate the north edge of the roof of the addition. Given the existing house and location of the addition, its roof in effect is a "butterfly" roof in form. Drainage of this roof required the construction of a "cricket" at the

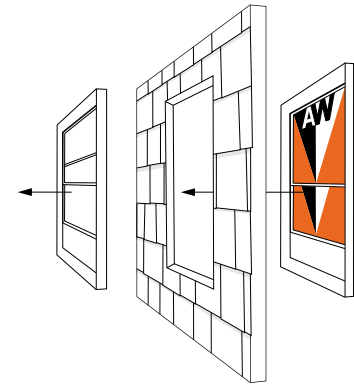
backside of the butterfly. The resultant concentration of water is gathered at the fascia of the existing house with custom-designed rainwater-collection boxes.

### Details

Because screened porches are, by definition, out in the elements, they are subject to the forces of weathering and must be detailed accordingly. This is a complex subject—much too deep to explore adequately here. Essentially, one must account for the following concerns: maintaining the integrity of the structural frame and the screening system, evacuating water (or melting snow) that enters the porch, and allowing for maintenance and cleaning of the porch. Generally, detailing must allow for air drying of the building parts. Clever, considered detailing with appropriate concern for the weathering processes can lead to a solution that is beautiful yet possible to maintain.

The design and detailing of screened porches can be a challenge. When properly oriented and designed to provide seasonal shelter from the weather, porches can be a delight for their users. However, competently assembling these structures will test the mettle of even a seasoned designer and builder, but meeting this sort of challenge is the fun part of what we do. Is it not? **EC**

*Gregory Thomas is senior project architect with CG&S Design-Build, Austin, Texas.*



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