

## TWIA Residential Property Characteristic Definitions

**Roof Shape:** [Gable, Hip, Mixed]

*Gable* roofs terminate in vertical surfaces that have a triangular outline formed by opposite slopes.

*Hip* Roofs do not have any vertical surfaces; all of the faces of the roof slope down toward the tops of the walls.

*Mixed* roof shapes have a combination of gable, hip, or other roof features.

**Roof Cover Type:** [Asphalt Shingle, Concrete or Clay Tile, Metal Panel, Built-up, Other/Unknown]

*Asphalt Shingles* consist of a fiberglass mat that is coated with asphalt (bitumen) and surfaced with ceramic coated mineral granules.

*Concrete or Clay Tile* Roofs are manufactured products that are available in a variety of profiles (shapes) and colors. Common shapes are Mission (semicircular, or half-barrel shaped); S-shape; and Flat tiles. Clay tile roofs are often seen with the familiar brownish-orange terracotta color.

*Metal Panel* roofs consist of metal sheets with some profile to aid in lapping with adjacent panels and providing stiffness.

*Built-up* roofs are applied on low-slope roofs and consist of layers of asphalt-saturated fabrics and are surfaced with gravel or cap sheets with embedded mineral granules.

**Roof Slope:** [X:12]

Roofs are constructed with slopes to aid in shedding water. The *Roof Slope* is a measure of the steepness or angle of the incline of the roof surface. Roof slopes are commonly designated by the number of units of vertical rise per the units or horizontal run. For example, a roof slope designated as "5:12" will have an increase of height of 5 inches over 12 inches (or one foot) of horizontal extent. The input value desired is simply the rise portion of this designation. In the case of the example with a roof slope of 5:12, enter the number 5.

**Roof Cover Age:** [X years]

Enter the *Age* in years of the roof cover. This value may often differ from the age of the structure itself, since roof covers are replaced due to age-related deterioration or damage.

**Length:** [X feet]

*Length* is the longest plan dimension of the structure. For structures that are not rectangular in plan, enter the longest out-to-out dimension. For example, consider an L-shaped building. The length is the dimension from the outside corner at the intersection of the two wings to the end of the longer wing.

**Width:** [X feet]

For structures that are rectangular in plan, *Width* is the shorter out-to-out dimension. For structures that are not rectangular in plan, enter the largest width of any of the wings.

**Eave Height [X feet]**

The *Eave Height* is the distance of the lowest portion of the roof above the ground. The wall (or top plate) height and the eave height are usually similar.

**Structure Primary Axis: [X degrees]**

The orientation of the structure's *Primary Axis* is the angle that the length of the building makes with a line that runs in the north-south direction. Angles increase in a clockwise manner. For example, if the primary axis is in the east-west direction, the correct entry in this field would be either 90 degrees or 270 degrees.

**Terrain Exposure: [B, C, D]**

*Terrain Exposure* is defined by ASCE 7:

Surface Roughness B: Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.

Surface Roughness C: Open terrain with scattered obstructions having heights generally less than 30 ft (9.1 m). This category includes flat open country and grasslands.

Surface Roughness D: Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats, and unbroken ice.

Exposure B: For buildings with a mean roof height of less than or equal to 30 ft (9.1 m), Exposure B shall apply where the ground surface roughness, as defined by Surface Roughness B, prevails in the upwind direction for a distance greater than 1,500 ft (457 m). For buildings with a mean roof height greater than 30 ft (9.1 m), Exposure B shall apply where Surface Roughness B prevails in the upwind direction for a distance greater than 2,600 ft (792 m) or 20 times the height of the building, whichever is greater.

Exposure C: Exposure C shall apply for all cases where Exposures B or D do not apply.

Exposure D: Exposure D shall apply where the ground surface roughness, as defined by Surface Roughness D, prevails in the upwind direction for a distance greater than 5,000 ft (1,524 m) or 20 times the building height, whichever is greater. Exposure D shall also apply where the ground surface roughness immediately upwind of the site is B or C, and the site is within a distance of 600 ft (183 m) or 20 times the building height, whichever is greater, from an Exposure D condition as defined in the previous sentence.

**Overhead Garage Door: [Yes, No, Unknown]**

This field is used to simply record whether or not the structure has an *Overhead Garage Door*. Overhead garage doors roll, fold, or retract upward upon opening.

**Direction of Garage Door: [X degrees]**

This field records the *Direction* that the garage door faces, relative to north, with angles increasing in a clockwise manner. The direction is perpendicular to the surface of the garage door. For example, if a garage door is on a wall that faces east, then the correct entry would be 90 degrees. For regularly-shaped buildings, the garage door axis will either be the same as the primary axis, or different by 90, 180, or 270 degrees.

**Garage Door Panel Width: [Single, Double, Unknown]**

This field records whether the *Width* of a garage door is sufficient to allow one or two vehicles to pass.

**Garage Attached: [Yes, No, Unknown]**

*Attached* garages are enclosed areas covered by the same roof as the main building, including cases where an enclosed garage is at the ground level of an elevated building (e.g., a beach house).

**Percent Window Area: [0-25%, 25-50%, 50-75%, >75%, Unknown]**

This field represents the *Percent* of total wall area that consists of glass, including doors.

**Elevation of Lowest Horizontal Structural Member: [X feet]**

According to FEMA, "In an elevated building, the lowest beam, joist, or other horizontal member that supports the building is the *Lowest Horizontal Structural Member*. Grade beams installed to support vertical foundation members where they enter the ground are not considered lowest horizontal members." This feature is a surveyed quantity that should appear on a flood certificate.