COMMERCIAL & RESIDENTIAL GARAGE DOOR DIVISION

DASMA TECHNICAL DATA SHEET

#1503

Door & Access Systems Manufacturers Association International

1300 Sumner Avenue
Cleveland, Ohio 44115-2851
Phone: 216-241-7333 • Fax: 216-241-0105
E-mail: dasma@dasma.com

Wind-Driven Rain and Sectional Garage Doors: Reasonable Expectations

Introduction

Exterior-facing sectional doors (aka garage doors) encounter rain, including wind-driven rain, on the face of the door, from which there are multiple paths for water to migrate to the edges of the door and potentially through to the building interior. Although sectional doors provide some protection against water infiltration, it is important to understand that they are not leak proof or watertight. This Technical Data Sheet addresses the issue of wind-driven rain and sectional garage doors, seeks to establish reasonable expectations regarding water infiltration, and offers recommendations to architects, dealers, and building owners regarding avoidance and mitigation.

Scope

Technical Data Sheet TDS 197 addresses water infiltration under the bottom of a sectional door. This Technical Data Sheet addresses water applied to the face of the door.

Expectations

Garage doors historically have been used to provide vehicle access to interior building spaces reserved for vehicle parking, storage and the like, not living spaces. Over time, market demands have resulted in garage doors being used as a means of access to living, gathering and entertainment spaces. These are two entirely different use cases, which often come with entirely different sets of expectations regarding water infiltration. A garage door designed for vehicle access cannot realistically perform as well as a properly sealed window or entry door to shield a living space from water. Standardized tests are available to assess the performance of windows and entry doors in this regard (e.g., ASTM E331, ASTM E1105, and AAMA 501.1). Building codes in the U.S. traditionally have not included requirements for water infiltration for sectional doors, due to the nature and purpose of the door. Unless otherwise specified by the door manufacturer, a garage door used in a living space application should be expected to resist water penetration only to the same extent as it does in a garage application.

The Issue

Rainwater can migrate through sectional garage doors in a variety of ways:

1. **The water clings to the exterior surface of the door and drips down when the door is opened.** When a door has water on its face and then is opened, the natural articulation and separation of the door sections enables some water to drip down to the inside space. This can and should be expected as a normal operating condition, and normally results in minimal water infiltration.
2. **The section interfaces of the closed door retain water**. Rain on the face of a garage door can, with some door designs, accumulate in the section interfaces of the closed door. Water that is retained in this fashion often runs or wicks its way to the ends of the door, bypassing the perimeter door seal and entering the interior space. This issue can result in a substantial amount of interior water.
3. **Strong wind drives rain through a closed door (sides, bottom, and between sections).** Unless the proper product is selected, and the proper mitigation and avoidance measures are taken, water infiltration from strong, driving wind can become a continuous stream in the interior space. See best practices below.

Best Practices

For Architects, Builders, and Building Owners – Some buildings, usually rural farm or utility buildings, include large sectional doors below sloped roofs with no gutters installed. The roof drainage onto the door can result in severe water infiltration. Roof overhangs, awnings, and rain-ledges should also be considered where practical, especially in west-facing applications. A weather or rain lip (a slope or notch in the concrete at the threshold, aka garage apron slope or recessed sill) is important for limiting water infiltration at the floor (see TDS 197). Consult with door dealers and manufacturers if a particular door look is desired to research product availability to ensure that water infiltration can be managed.

For Door Dealers – Work with the door manufacturer to specify the best door for an application sensitive to water infiltration. Specify sections that overlap the jambs one inch per side, if building conditions permit. Trolley arm and top bracket adjustments should be routinely performed. Adjustable jamb brackets should be considered. Some door manufacturers offer enhancements such as seals between sections. Perimeter garage door seals at the top, bottom, and sides can be effective to some degree, and some manufacturers offer enhanced, higher quality perimeter seal. An aluminum or rubber garage door threshold and enhanced bottom seal can be a great help.

Conclusion

The nature of sectional garage doors is to protect and provide large openings for access. As such, their ability to resist water infiltration is limited. Designers and users of sectional garage doors should not expect watertightness, especially in the event of wind-driven rain, but should have reasonable expectations for protection from the elements. Understanding the purpose and capabilities of these doors, as well as the best practices to limit water infiltration, should help all involved to successfully specify, install, and use sectional garage doors in challenging applications.