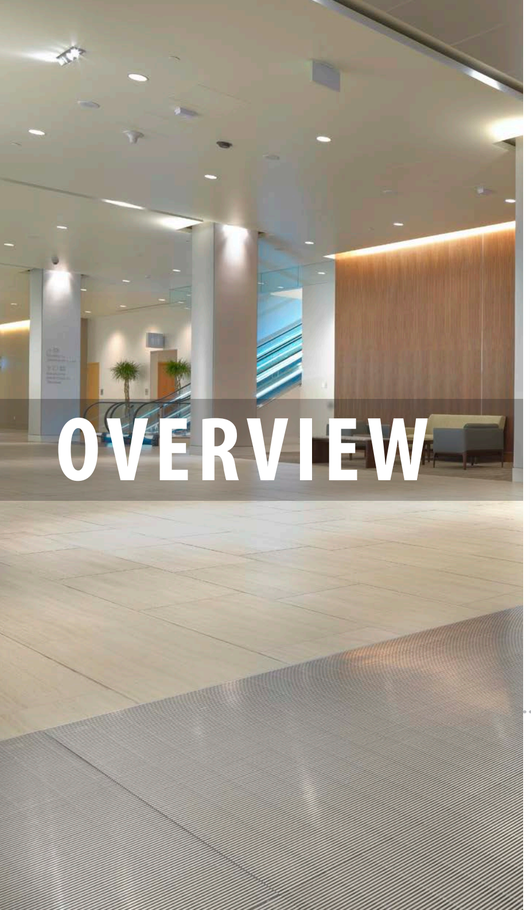
Construction Specialties®

DESIGNING AN EFFECTIVE ENTRANCE

Considerations & Design Recommendations



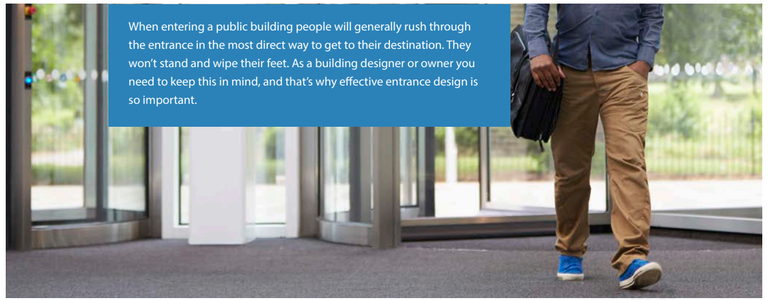
OVERVIEW

What is an effective entrance?

An effective entrance is one that performs two functions:

1. **Welcomes visitors**
2. **Protects the building & its occupants**

Now the first one is fairly obvious; the second one not so much. However if you stop and think about it, an entrance is the first line of defence for protecting a building from dirt, debris and the (not so) great British weather. High levels of (typically British) rainfall lead to an increased risk of slip accidents within public buildings.



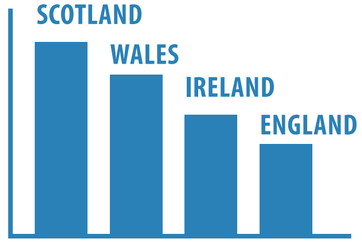
When entering a public building people will generally rush through the entrance in the most direct way to get to their destination. They won't stand and wipe their feet. As a building designer or owner you need to keep this in mind, and that's why effective entrance design is so important.

This guide will run through a series of topics, from liability to sustainability, and will present design considerations that contribute to an effective entrance.

Slip and trip accidents: *the facts*

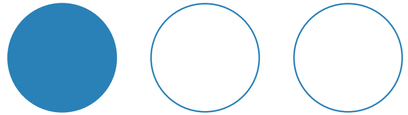
Rainfall

High levels of rainfall lead to an increased risk of slipping accidents within UK buildings. It is therefore essential that the proper measures are in place at the entrance to prevent accidents from happening.



Injuries

Slipping accidents account for 1 in 3 major injuries within the UK.



Accidents

50% of all reported accidents to members of the public are slipping accidents.

50%

Cost

It's estimated that slip and trip accidents cost the NHS nearly £133 million a year.

£133m

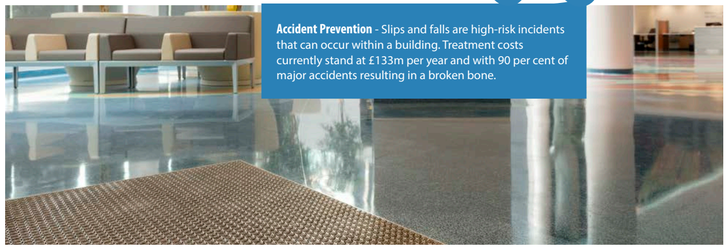
Statistics sourced from Health and Safety Executive (HSE) Online.

LIABILITY

How can I reduce my risk of liability?

If you are a building owner or professional designer, you know that injuries within your building are possible.

One of the most important decisions that can be made to reduce that risk, occurs at the front door of your facility. If you've designed an effective entrance, you've already taken steps to significantly reduce your liability.



Accident Prevention - Slips and falls are high-risk incidents that can occur within a building. Treatment costs currently stand at £133m per year and with 90 per cent of major accidents resulting in a broken bone.

Value Engineering - Too often, risk-reducing entrance matting systems are an afterthought in both the building's design and function. In the construction phase, they are often eliminated first to cut costs. When considering the average cost of a slip, trip or fall claim, is excluding an entrance matting system from your building really worth it?

If you're thinking about forgoing an entrance matting installation in favour of less expensive tactics, **consider these statistics:**

"Slip, trip, and fall injuries …were attributed to hazards such as liquid contamination on the floor, objects on the floor, or ice/ snow in parking areas."

"50% of all reported accidents to members of the public are slipping accidents. "

"90% of major accidents result in a broken bone"

ENTRANCE MATTING

Do you wipe your feet when you enter a public building?

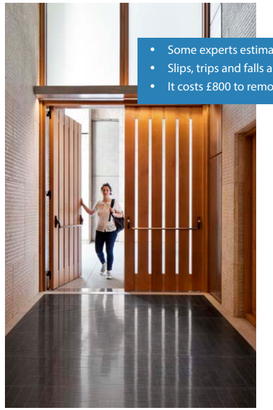
Did you know...

- In major cities like London, the daily atmospheric fallout of grit, grime and soot is estimated at 30 tonnes.
- It can cost £800 to remove 1kg of dirt from a building
- Footfall from 1500 people can remove 42% of the finish from a hard floor

Be honest... do you wipe your feet when you enter a shopping centre or your place of work?

Unlike at home, where people will often stop on a small mat provided in the entrance and wipe their feet meticulously, when entering a public building people will generally rush through the entrance in the most direct way to get to their destination.

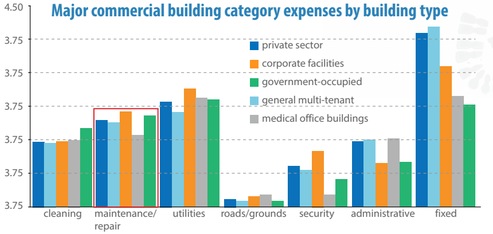
Building maintenance is a daily responsibility. Taking proactive measures like installing entrance matting, or any of the other tactics mentioned in this e-book, will ensure your building remains clean, which will not only keep the maintenance staff happy, but it will save them time and money as well. **Win Win!**



A large amount of dirt can be tracked into a building in a short period. Cleaning dirt from floors can add up over time. If you're thinking about forgoing an entrance flooring installation in favour of less expensive tactics, consider these statistics:

- Some experts estimate that "floor maintenance can account for as much as 80 percent of a facility's cleaning budget."
- Slips, trips and falls are the most reported injury by members of the public
- It costs £800 to remove 1kg of dirt.

A building owner can cut these cleaning costs in half by trapping the dirt at the front door with an entrance matting system.



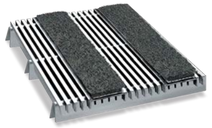
A building's first line of defence

Entrance mats are one of the main weapons in a building's arsenal against the onslaught of tracked in dirt and moisture. An effective entrance mat can actually help to prolong the surface finish of an adjacent floor finish, by simply removing dirt and abrasive materials from the soles of people's feet.

An Effective Entrance Mat should:
- be good at retaining water
- be quick drying
- be fungal and bacteria resistant
- cope with pushchairs and other rolling loads
- be regularly cleaned and kept in good condition

Positioning - Placing matting as close to the entrance as possible helps to reduce the chance of slip and trip accidents, and immediately tackles shoeborne dirt and water. If an entrance mat is positioned correctly, everyone that enters the building should step directly onto it.

Tread Inserts - A carpet insert will dry shoes better than a plain metal or rubber surface. Use the inserts that best reflect the weather conditions of the area's climate and provide the look you desire. Entrance flooring ensures that the public's shoes are wiped clean before crossing the threshold of a building.



Tread Inserts should scrape, brush and absorb dirt and moisture

The optimal length of entrance matting

We're often asked "How much entrance matting do I need for my building?"

BS 7953 suggests that entrance matting systems should be long enough to make contact with the full circumference of a wheelchair wheel. Using a 26" wheel as a reference, that's around 2 metres. BS 8300 Design of an accessible and inclusive built environment also suggests 2 metres.

> *"The entrance ooring system should scrape, wipe and retain, making contact with both feet of people entering the building and, in the case of wheeled tra c, with the circumference of the wheels..."*
>
> **BS 7953 -** Entrance Flooring Systems - Selection Installation and Maintenance

However, an independent study conducted by the Health and Safety Laboratory (an Agency of the H&S Executive) and the Entrance Flooring Systems Association suggests that entrance matting should be proportionate to the amount of traffic coming through the door. Their recommendations are as follows:

Low - <80 people per hour: **3 to 4 metres**
Medium - 400 people per hour: **6 to 7 metres**
High - 800+ people per hour: **8 to 10 metres**

A Zonal Approach: It's all well and good industry experts suggesting the optimal length of entrance matting required, but they don't have to try and fit it into their building! It isn't always possible to achieve the optimal length inside every building, which is why it is a good idea to look at a zonal approach and combining indoor and outdoor entrance matting to get you closer to the optimal number.

Traffic Direction

A zonal approach will remove dirt and moisture efficiently and effectively.

Zone 1 - Exterior

Zone 1 is all about scraping and removing the initial "surface" dirt, mud and moisture, and therefore requires a slightly tougher bristle than an internal carpet insert.

Zone 2 - Primary

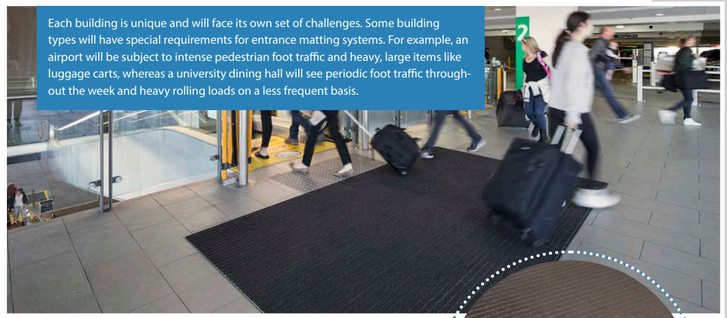
Zone 2 requires a slightly softer bristle, removing any left-over dirt and moisture, collecting it at the entrance for cleaning later on.

Zone 3 - Clean-off

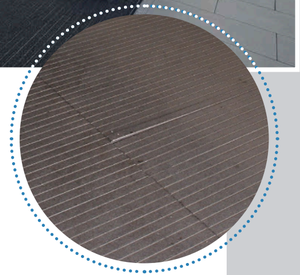
Zone 3 cleans and dries the soles of shoes or wheels, before they finally reach the internal floor coverings.

Consider the building & traffic type

The type of building makes a substantial difference in the type of entrance matting system to be used.



Each building is unique and will face its own set of challenges. Some building types will have special requirements for entrance matting systems. For example, an airport will be subject to intense pedestrian foot traffic and heavy, large items like luggage carts, whereas a university dining hall will see periodic foot traffic throughout the week and heavy rolling loads on a less frequent basis.



Rolling Loads - The photo on the right shows an aluminum-based system that was not designed for heavy loads, but was installed in an airport that encounters them every day. Damage occurred to the rails due to the rolling load capacity being incorrectly chosen, and because of this, the system ultimately had to be replaced.

Cost Effectiveness - Foot traffic and potential rolling loads are important factors in product selection, but cost is also another consideration. For example, a publicly-funded school may not have the budget for an all stainless-steel system. Understanding the products and materials used and reading the manufacturer's literature is a good way to make the right entrance matting selection for your facility.

Consider the building type, your budget and the daily amount of foot traffic before making a final selection for your entrance matting system. Remember to factor in how often your facility encounters large pieces of equipment and heavy rolling loads as well.

SHOPPING CENTRES

COMMERCIAL

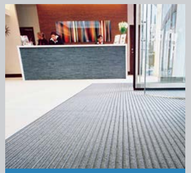
EDUCATION

LEISURE

RETAIL OUTLETS

HEALTHCARE

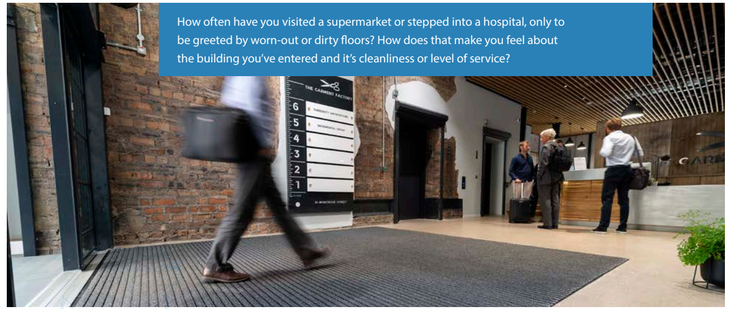
TRANSPORT



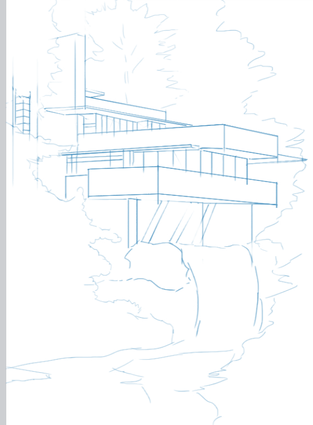
HOTELS

Aesthetics and the ever important first impression

The entrance to your building should be both functional and aesthetically pleasing. How many times have you visited a beautiful, high-end hotel or office building and noticed unsightly throw-down carpet mats at the front doot? Do they provide an image of luxury and grandeur?



How often have you visited a supermarket or stepped into a hospital, only to be greeted by worn-out or dirty floors? How does that make you feel about the building you've entered and it's cleanliness or level of service?

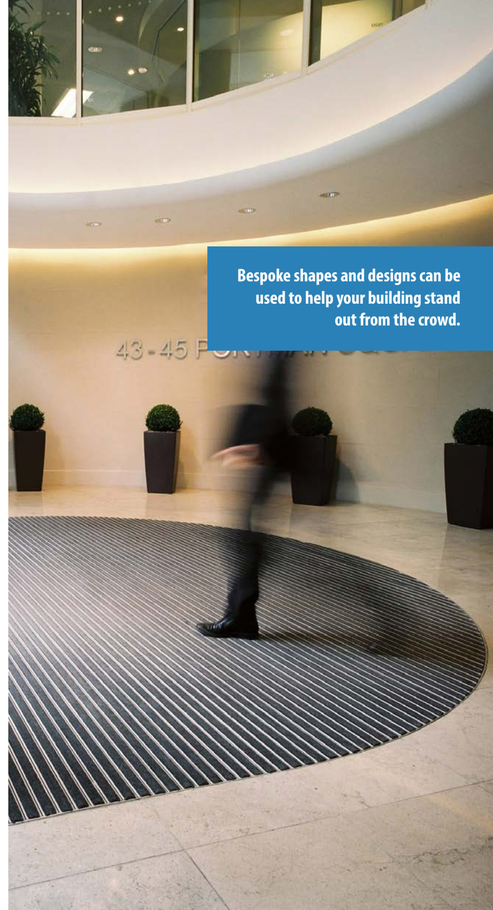


Visual Variety - Today's entrance matting products offer a wide variety of materials, styles and finishes that can make any entrance beautiful. There is a product for every building type that can achieve the designer or owner's desired aesthetic.

Form Follows Function - A quality entrance matting system with the right look and function doesn't have to cost a fortune. Be sure to ask for samples, and perform a side-by-side comparison of each product. These comparisons will help you make a well-informed decision to choose a product that is functional, cost-effective and beautiful. Frank Lloyd Wright said it best-- "Form follows function – that has been misunderstood. Form and function should be one, joined in a spiritual union."

BS 7953:1999 suggests, an entrance flooring system should have the following characteristics:

- ease of cleaning and maintenance
- retention of physical characteristics



Bespoke shapes and designs can be used to help your building stand out from the crowd.

Summary of legislation affecting entrance matting

BS 7953:1999 - ENTRANCE FLOORING SYSTEMS - SELECTION INSTALLATION AND MAINTENANCE

4. Functions

…The function of the entrance flooring system is to:

- ✓ reduce the incidence of slipping accidents by reducing the amount of soil and moisture tracked onto hard and resilient floors
- ✓ prolong the life of interior floors by reducing the ingress of abrasive soil
- ✓ reduce cleaning requirements of internal floors by reducing the ingress of soil into the interior floors/floor coverings

To fulfil these functions an entrance flooring system should have the following qualities:

- ✓ removal and retention of soil
- ✓ ease of cleaning and maintenance
- ✓ retention of physical characteristics

5. Materials

5.1 General

…The entrance flooring system should scrape, wipe and retain, making contact with both feet of people entering the building and, in the case of wheeled traffic, with the circumference of the wheels... This applies to all situations, internal or external, where people move from a soiled to a clean environment e.g. from a kitchen to a dining room or from a factory to an office.

6. Design considerations

6.1 Ease of access

…An entrance flooring system should not introduce any features which make access more difficult. Consideration should be given to users of wheelchairs, sticks or crutches. The system should be designed without abrupt changes in level which could result in tripping accidents or impede wheeled traffic.

6.2 Effective length

The objective with any entrance flooring system is to achieve the maximum number of footfalls within the space available… In any case consideration should be given to such factors as external and internal conditions, traffic levels, size of entrance, use of building and type of internal floor coverings.

BS 8300:2009+A1:2010 - DESIGN OF BUILDINGS AND THEIR APPROACHES TO MEET THE NEEDS OF DISABLED PEOPLE. CODE OF PRACTICE.

7.1.1 Entrance flooring system

At entrances to commercial buildings and buildings used by the general public, a suitable entrance flooring system to remove water and debris from the soles of shoes and wheelchair wheels should be provided, taking into account of the volume of pedestrian flow and the distance required to accommodate the circumference of a large wheelchair wheel (a minimum of 2000mm)...

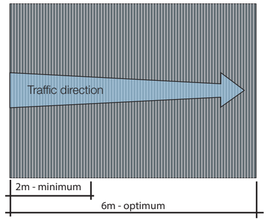
7.1.2 Reception area

…Floor surfaces within reception areas should be free from obstructions, have a firm, slip-resistant surface and allow easy manoeuvre of a wheelchair...

9.1.3 Floor surfaces

...The ingress of soil and surface moisture to buildings, or their transfer between adjacent internal areas, should be reduced to the lowest practicable level, e.g. through the use of appropriate entrance flooring systems, conforming to BS 7953.

Any matting should either have its surface level with the adjacent floor finish or, if surface laid, be of a type that has a rubber backing and chamfered edges. If, in exceptional circumstances other types of surface laid mats are used, they should be securely fixed to the floor at their edges and at any joints, to avoid the risk of tripping or slipping.



…Deep pile carpets and coir matting on the surface of the floor or within a mat well should not be used.

HEALTH BUILDING NOTE (HBN) 00-10 PART A - FLOORING

2.16 Floor surfaces at entrances should be slip/trip resistant in all weather conditions.
2.17 There should be no strips of unprotected floor between threshold and matting.
2.18 Entrance matting, suitable for pedestrian and trolley/wheelchair users, should be provided at entrances to reduce dirt being trafficked into the building.
2.19 There should be a regular programme that ensures matting is cleaned and maintained appropriately and regularly.
2.20 The way in which pedestrians use the entrance should determine how and where the matting should be positioned.

In addition, **HBN 00-09 Infection Control** recommends the use of entrance matting in all external entrances in order to make cleaning of hospital premises easier. The type of matting selected should be appropriate to expected through traffic and should be easy to clean.

Contributing to a sustainable building

Green Building Practices - According to the United States Green Building Council (USGBC) LEED® rating system, simply using entrance flooring systems reduces contaminants from entering a building. This provides better indoor air quality and reduces the number of chemicals needed for cleaning. LEED® also provides best practices for evaluating the sustainability of products, such as recycled content, sourcing regional materials, VOCs and avoiding chemicals of concern.

USGBC LEED

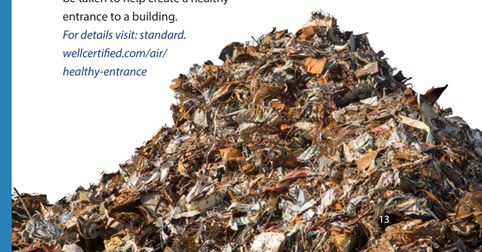
In USGBC LEED IEQ Credit 5, the architect/designer is encouraged to specify permanent entryway systems (grilles, grates, etc.) at least 3 metres (10ft) in length in primary direction of travel, to capture dirt, water and other particulates at regularly used exterior entrances.
For details visit: usgbc.org/credits/new-construction/v2009/eqc5

BREEAM POINTS

In the current UK BREEAM assessment for flooring the provision of an entrance matting system is not eligible for credits directly. However, due to its function, an efficient and hard-wearing entrance matting system will help to prevent premature wear of interior floor finishes, and reduce cleaning and maintenance costs. It may therefore contribute towards MAT 05 - Designing for durability and resilience.
For details visit: breeam.com/NC2018

WELL Building Standard

Similarly, the WELL Building Standard as part of its AIR Concept, aiming to promote clean air and reduce sources of interior air pollution, recommends the provision and regular maintenance of at least 3 metre long permanent entryway system or rollout mat as one of the measures that can be taken to help create a healthy entrance to a building.
For details visit: standard.wellcertified.com/air/healthy-entrance



DESIGN ELEMENTS

Self Closing Doors

Well designed entrances often have self closing doors, helping to keep inclement weather out, thereby protecting entrance mats and adjacent floor finishes, as well as reducing the amount of building heat loss.

It's also worth noting that under floor heating and heat curtains over doorways can often speed up the drying time of wet mats and floors, and can contribute to a well designed entrance.

Tip: Care must be taken to ensure automatic doors aren't too sensitive, being triggered by passers-by and potentially allowing rain to be blown-in on busy days.

Rotating Doors

Rotating doors force pedestrians to take several footsteps on the entrance matting within the door. This provides an opportunity to remove water from shoes on wet days, and reduces the amount of water tracked into the building.

Some rotating doors can be a problem for people carrying bags and deliveries, wheelchair users and people with mobility problems, so it is important to ensure that secondary doors are installed for alternative access.

Canopies

Canopies can play a key role in protecting building entrances from inclement weather, reducing the ingress of water.

When designing a good canopy you should consider:

The height
If it's too high, rain or snow may be blown under it towards the doors.

The size
It needs to extend far enough away from the building to provide an effective rain shadow for the entrance.

The orientation
It should provide effective shelter from prevailing winds.

Canopies have an important function, preventing water getting into the building. When making a design statement out of a canopy, remember that it still needs to perform its original function.

Construction Specialties®

Entrance matting systems are often overlooked within a building, but they can provide many benefits, including keeping your building clean, improving the daily experience of building users, reducing liability and making a memorable first impression.
We hope this eBook gives you a better understanding of what an entrance matting system is, and why it's important for your facility.

For more information regarding Construction Specialties Entrance Matting Systems, please visit our website at www.c-sgroup.co.uk or speak with a product expert at **+44 (0)1296 652810**.

CS PRODUCT RANGE

CS Acrovyn® Wall, Door and Corner Protection

CS Wallglaze® Performance Coatings

CS Pedisystems® Entrance Flooring Systems

CS Allway® Expansion Joint Covers

CS Supertrak® Plus Cubicle Curtain Track

CS Airfoil® Solar Shading

CS Explovent® Explosion Venting Systems

CS Louvres

for more information visit our website www.c-sgroup.co.uk