

WIND-BLOWN SAND OR SNOW



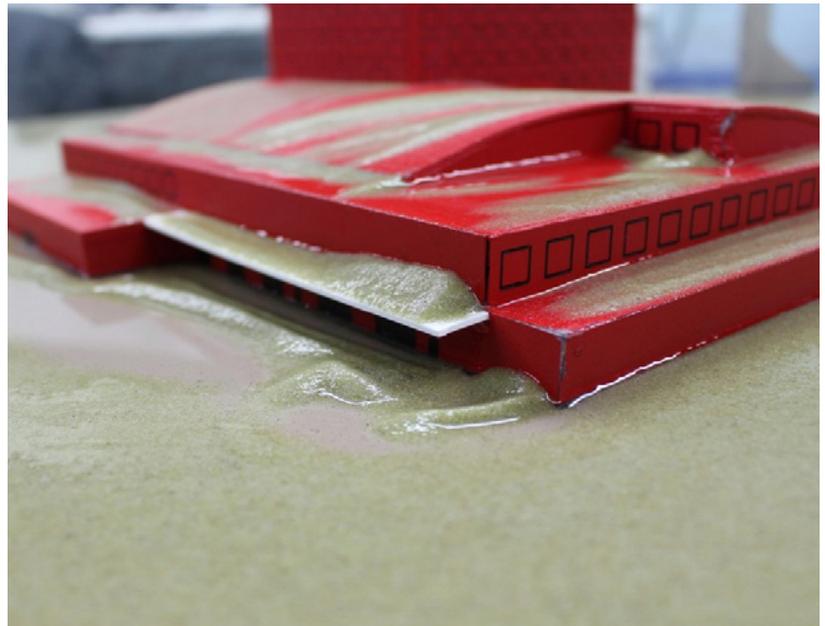
Improving safety, comfort, and operations by naturally channeling movement of sand and snow



However impressive a building or structure may be, a little sand or snow can ruin the effect in a hurry. Or become downright dangerous.

Wind-blown sand or snow can accumulate in undesirable locations, blocking access to egress paths, critical services or transport routes. Sand may imperceptibly infiltrate a building, accumulating in ways that cause inconvenience, risk or expense. Freely blowing sand may irritate patrons trying to enjoy outside spaces or, in harsher conditions, damage façade materials.

These problems and many other inconveniences and dangers can be minimized, or even avoided completely, with design that is responsive to the local climate. [Redefining possible.](#)



Our service

We show you how to make the wind work for you, instead of against you, in the eternal struggle with sand or snow. Whether you are designing a new facility or experiencing challenges with an existing one, we'll help you find a solution that is more resilient to the effects of wind-blown snow or sand. We offer three exceptional resources in one organization: long experience, high-performance computational models and physical testing. Combined with our service focus, these tools help us find an answer for you quickly and efficiently.

We use our understanding of local wind patterns and meteorology to predict how particles will be picked up, carried and dropped by the wind near your structure. (In terms of the physics we use, sand and snow behave in the same way.) These consulting services show the zones that are prone either to drifts or to scour. We also understand internal building airflows and can assess the risk that snow or sand will infiltrate the building envelope through doors, windows or mechanical systems.

We work with you to interpret these results in order to answer your questions. For example, if building operations are of concern, we can determine how frequently snow will drift and where it will likely melt in a reasonable time. Or we can recommend landscaping or design adjustments to improve conditions in critical locations. In general, we help you arrive at a design that reduces the likelihood of inconvenience, operational problems and safety problems.

[Redefining possible.](#)

RWDI is a valuable partner to clients seeking to...

Explore Innovations

- Design highways and railways that remain accessible during sand- or snowstorms
- Select durable façade technologies in areas that may be more susceptible to damage from local conditions

Create Opportunities

- Lower operating costs by proactively exploiting the wind to keep critical areas clear

Meet Challenges

- Address undesired accumulations by modifying the architecture or site plan to improve building performance
- Ensure winter access to critical fuel and municipal facilities in far northern communities
- Minimize damage to sensitive equipment from sand infiltration

Fulfill Expectations

- Provide a comfortable experience for resort patrons by keeping blowing sand away from outdoor amenity spaces
- Keep emergency exits clear to ensure safe egress for building occupants
- Minimize slipping hazards for pedestrians

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How we work

Our first step is always to understand the weather data and the surrounding context—the exposure. We look at where the wind is coming from, what speeds it reaches and where it's picking up the particles. Then we do a predictive assessment: How do we expect the winds to interact with this facility? How will particles get into the critical parts of the building or structure? How will they accumulate (or scour away) around it? Next, we evaluate the impact. We work with you to decide which accumulations could be a problem.

With that guidance, we work with appropriate parties—designers, architects, landscape architects, owners—to create a plan that will help mitigate the problems you've identified (for an existing building) or achieve better performance (for a new building in design). We might recommend changing the usage around the building. Or we might show how adding correctly designed landscaping or architectural features would help protect patrons. Often, a few strategically placed trees or shrubs can make all the difference. Other solutions could include adding berms or canopies or moving doors.



In developing our predictive assessment and recommendations for mitigation, we rely on several tools. One is an experience-based assessment, drawing on decades of results from projects of all shapes and sizes. For a more detailed review, we can do a computational fluid dynamics (CFD) model. This model integrates what we know about the weather conditions, the surrounding landscape and the important features of the structure. The results tell us in detail how particles of sand or snow will be picked up and dropped by the wind. Alternatively, these results can be confirmed by testing a scale model in a water tunnel. Each mitigation strategy can be tested using the CFD model or the physical model to confirm that it works to solve the problem before you implement it at full scale.