

**WeatherSolve<sup>TM</sup>**  
**Structures**



PRODUCTIVE ENVIRONMENTS FOR ALL WEATHERS



# Manage your environment



WeatherSolve Structures Inc. are specialist designers and manufacturers of industrial, recreational and agricultural environment control systems.

Dealing with environmental extremes from hurricanes and cyclones to the heat of Oman and the Canadian cold, WeatherSolve designs have been proven world-wide from Northern BC to New Zealand.

Today, WeatherSolve projects shelter thousands of acres around the world, many of them stockpiles with perimeter fences at heights of up to 30m (100ft).



## Best by test

WeatherSolve believes every control structure must meet 4 basic criteria. It must be:

- Durable in all weather conditions
- Effective
- Economical
- Easy to work with

### Durable

WeatherSolve is continually testing and developing systems to improve durability. As a result, many of our components are unique in the marketplace. This is because off-the-shelf items either don't exist or have not been designed to the level of strength we require.

Testing itself involves measuring absolute strength in critical situations as well as cyclic loading over hundreds of thousands of cycles. We also visit our structures after major wind storms as part of our maintenance program.

### Effective

WeatherSolve conducts ongoing research to determine optimum aerodynamics for each and every situation. This includes working with organizations such as the Midwest Research Institute Global and the Center for Study of Open Source Emissions. We take great pride in creating structures that do what they are supposed to do efficiently and effectively.

Structures can also be adapted to perform additional functions such as security, shade or visual barrier. Maximum effectiveness for each individual function is assured by WeatherSolve computer modeling programs.

### Economical

With three quarters of the cost devoted to poles and foundations, WeatherSolve lowers price without sacrificing strength by minimizing the number of poles. A pole that is four times as strong for example, costs only two to three times as much to build.

By using high quality components, WeatherSolve structures require little to no maintenance, saving you even more money!

### Easy to work with

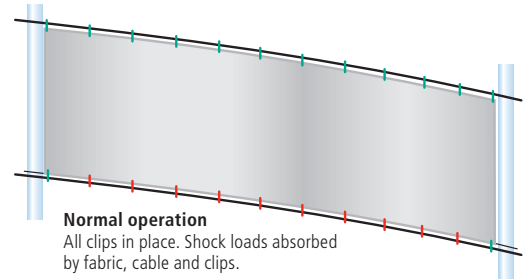
A structure needs to work in a manner that permits easy access around it. WeatherSolve systems allow large spans between poles and greater flexibility in pole placement. This provides many opportunities to position the structure in a way that does not impede plant operations.



### Overload Release System

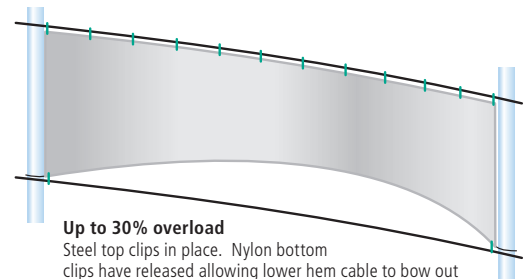
Because poles and foundations represent the most significant portion of structural cost, the WeatherSolve Release System provides added security in extreme storms.

Extensively tested in the 200 mph winds of Hurricane Andrew and many hurricanes since then, WeatherSolve structures allow fabric to be released from the bottom of panels and later re-clipped into place. Fabric always stays connected at the top of each panel so as never to become a safety hazard.



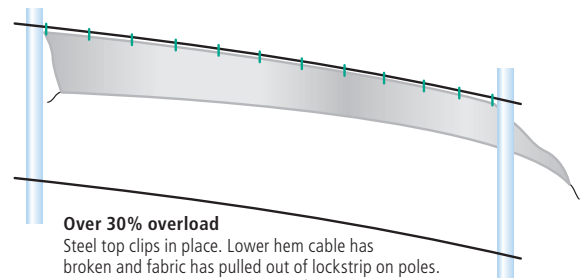
#### Normal operation

All clips in place. Shock loads absorbed by fabric, cable and clips.



#### Up to 30% overload

Steel top clips in place. Nylon bottom clips have released allowing lower hem cable to bow out and spill 30% of the load.



#### Over 30% overload

Steel top clips in place. Lower hem cable has broken and fabric has pulled out of lockstrip on poles. Some ripping may occur requiring fabric replacement.

Please remember that all systems are custom designed, this includes setting your release wind speeds to match your requirements.



# Industrial dust control

Slowing wind is the key objective in any dust control strategy as it is wind that causes and distributes dust.

Fugitive dust tends to come from two distinct sources:

## 1. Eroded dust

This is where particles are lifted off the ground or off the surface of a pile and blown away. The erosion process is extremely sensitive to wind speed. Utilizing windfences can effectively halve the speed, reducing dust distribution to 1/8th. Research has shown that  $Erosion \propto (wind\ speed)^3$ . This means a pile that was losing 2000lbs of dust monthly would lose less than 250lb.

## 2. Airborne dust

This is where particles fall from a conveyor or get kicked into the air by machinery. Utilizing a windfence to halve the wind speed can halve the area affected.

For optimum control of very small airborne particles, an agent is needed to stick particles together. Fog is the most efficient and environmentally clean way to do this. WeatherSolve works with leading manufacturers of fogging systems to create composite solutions involving fog and windfences together.

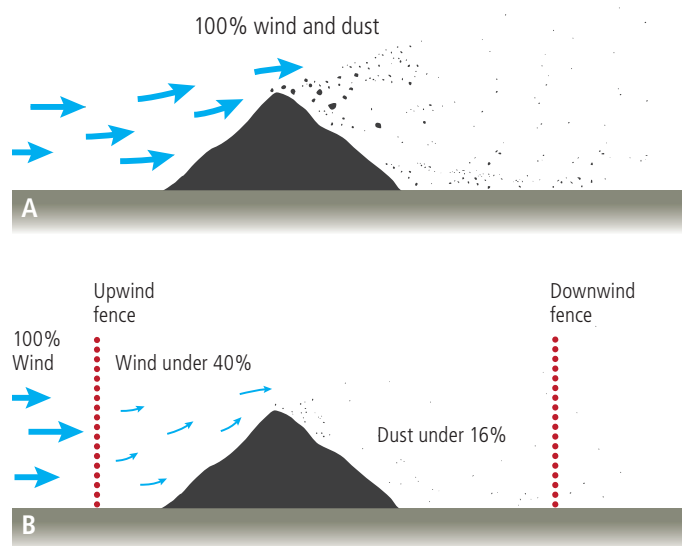


- ▲ Attaching fabric panels to a 28m (90ft) fence in Oman.
- ▶ Controlling fine sawdust with a 9m (30ft) canopy in New Zealand.
- ▼ An aerial view of windfence in Brazil 22m (72 ft) x 2800m (9186 ft).



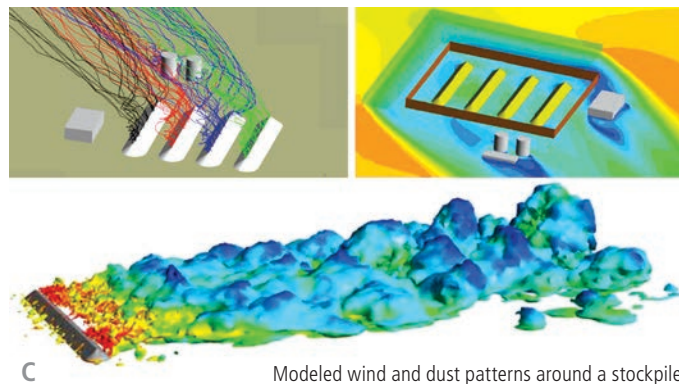


# A good windfence will reduce wind speeds to under 40% and fugitive dust to under 16%



A. Wind accelerates up the side of a pile eroding dust off the surface. Smaller particles rise in the air, larger ones bounce down the other side and along the ground. With a windfence in front of the pile, wind speed is reduced so only smaller particles erode. Some of these rise in the air, others bounce down along the ground.

B. With both downwind and upwind windfences, particles moving along the ground stop at the fence. Many airborne particles are filtered out by the fence. Others go through and some go over. Most going over drop in the sheltered area behind the fence.



C. Computational Fluid dynamics charts (CFD) provided by Midwest Research Institute Global. WeatherSolve Structures is proud to work with MRI Global using CFD modeling to help companies find optimal windfence configuration for their stockpiles.



Discharge tower cladding USA 9m (30 ft) x 75m (250 ft)



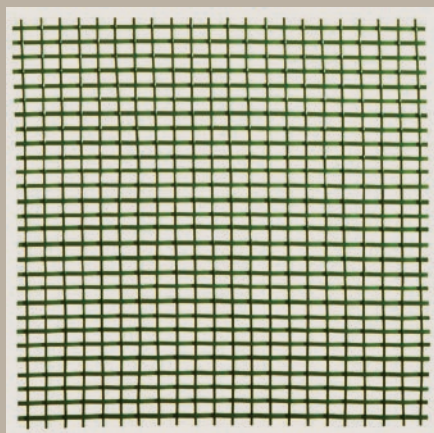
Cathedral style windfence USA 30m (90 ft) x 350m (1150 ft)

## Industrial Windfences are also used for:

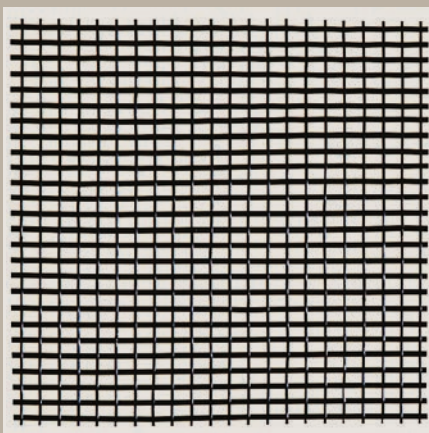
- erosion control
- reduction of wind loads on sensitive components
- debris and garbage handling areas
- control of waves and turbulence on ponds
- snow deflection and control
- fencing and privacy
- wind deflection for air cooling towers.

## About our fabrics

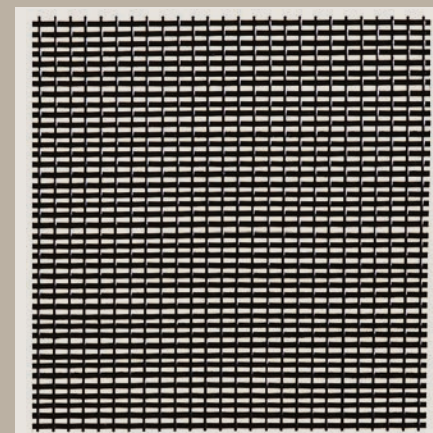
WeatherSolve Structures has its fabrics tested for aerodynamic porosity ( $\beta_e$ ).  $\beta_e$  is what the wind "sees" and is different to visual porosity. Fabric selection is an important part of the design process. Our professionals will provide recommendations to match the desired effects.



$\beta_e = 47\%$



$\beta_e = 40\%$



$\beta_e = 24\%$



# Other applications to meet every need

Worldwide experience and customized service allows WeatherSolve to address any specific site concern. As a progressive company, we always enjoy the challenge of evolving new techniques in order to arrive at the ultimate solution.

Recognized as a world leader in the design of porous fabric structures, WeatherSolve is called upon to help write industry codes and occasionally to investigate the failures of others' designs.



Ship unloader dump pocket.



Portable screen.



Sun screen.



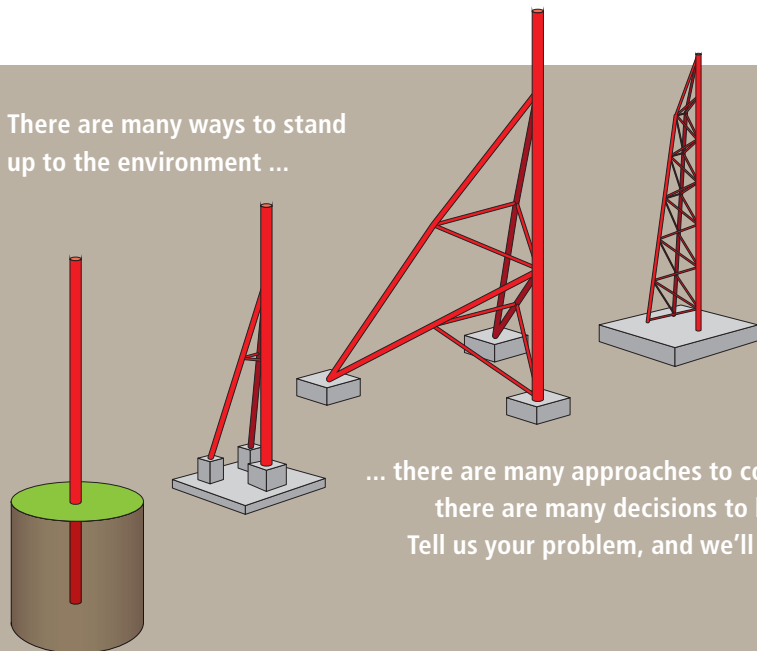
Painted screen.



Wind screen on floating breakwater.

- Dust Control
- Bird Control
- Windfences and Shelters
- Sun Shades and Canopies
- Structure Cladding
- Hail Protection
- Rain Shelters
- Truck Dumps

There are many ways to stand up to the environment ...



... there are many approaches to consider, and there are many decisions to be made. Tell us your problem, and we'll show you a solution!



WeatherSolve supplies cladding systems and expertise, we also supply poles or work with local resources to match the requirements of your site.



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15m (50ft) downwindfence in Richmond BC traps dust from wood chip pile.



2.5km x 20m fence around a steel pelletizing plant in Bahrain.





# WeatherSolv Structure

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