

the (ZE) way ZERO-EMISSIONS HIGHWAY SYSTEM

The highways that stretch across our planet, these majestic roads that divide up the landscape, are a great cause of concern for society in the present and the future. When the roads for modern cars were created, there was little thought to the consequences of these creations; other than, just getting there quicker. The highways of today are a safety hazard for our communities, and for all other creatures whose habitats, this asphalt guillotine, splits in two. The cars of today create pollution, but even if that is resolved, these roads have a great footprint on our space and nature's space. Our children cannot cross them to get to school; and thousands of animals die each day by our blade in which we sit so comfortably. The good news is, we have the solution for these problems, the ZE (Zero-Emissions) Highway System; unfortunately, we will not see it realized as long as gas guzzling cars and alternate power sources exist; or at least not until the government is ready to step up...

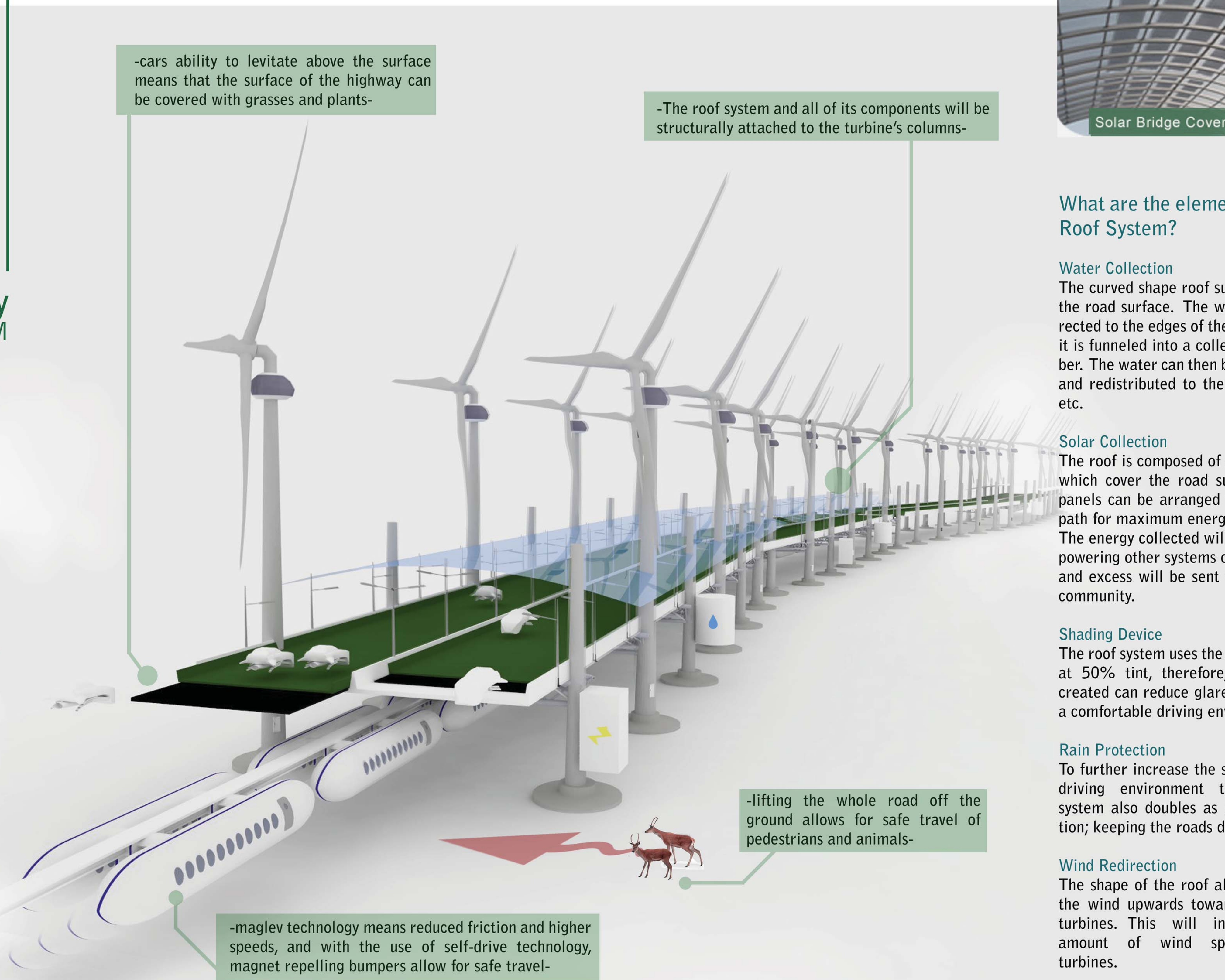
...In any case, as designers we have an obligation to society to explore the ideas that will improve on the old, and benefit the future. Our innovative idea is to design a highway system that not only has a zero emissions, but creates excess energy from the wind and solar power, collects invaluable rain water, and creates a safe environment for the drivers, the community, and animals. The way the ZE Highway System achieves this is by lifting the whole road off the ground and using the wind turbine structure as the primary source of structure for the highway system. This reduces materials for structure and reduces the footprint of the road by 98%. People and animals could now move from one side to the other safely ("Why did the chicken walk underneath the road?").

Transportation System

Personal Travel - While the ZE Highway System is adequate for today's cars, our proposal is to look at the future of personal transportation. Therefore, our design is capable of being converted for the future adaptations. The personal transportation we are talking about are maglev cars which are powered by a magnetic system imbedded within the road. Because these cars levitate they have many advantages; reduced friction and higher speeds, with the use of self-drive technology (much like what Google is working on currently) and magnet repelling bumpers allow for safe travel, the cars ability to levitate above the surface means that the surface of the highway can be covered with grasses and plants (watered properly by the water collection system), no noise or air pollution, and a new, more comfortable style of traveling. These cars of the future are not only 100% green, but equally safe.



Public Transportation - Maglev trains are already implemented in many new transit infrastructures all over the world. Our goal is to apply such a system in our highway proposal (there has been talk about redesigning American public transportation systems). Magnetic trains are efficient and smooth-riding vehicles. The future will demand a transportation system that is fast and prompt. Just like the personal transportation system we suggested, the magnetic trains also have no sort of pollution; noise and exhaust. The trains will be powered with the energy collected from the solar panels and wind turbines. To reduce the use of material the trains will ride on a single rail (the mono-rail) allowing trains to travel in both directions. The efficiency of these types of trains will reduce the need for airplane travel. Imagine the possibilities of a world linked by the ZE-way.



What are the elements of the Roof System?

Water Collection

The curved shape roof suspends over the road surface. The water is redirected to the edges of the roof where it is funneled into a collection chamber. The water can then be processed and redistributed to the community, etc.

Solar Collection

The roof is composed of solar panels which cover the road surface. The panels can be arranged to the solar path for maximum energy collection. The energy collected will be used for powering other systems of the design and excess will be sent out into the community.

Shading Device

The roof system uses the solar panels at 50% tint, therefore, the shade created can reduce glare and create a comfortable driving environment.

Rain Protection

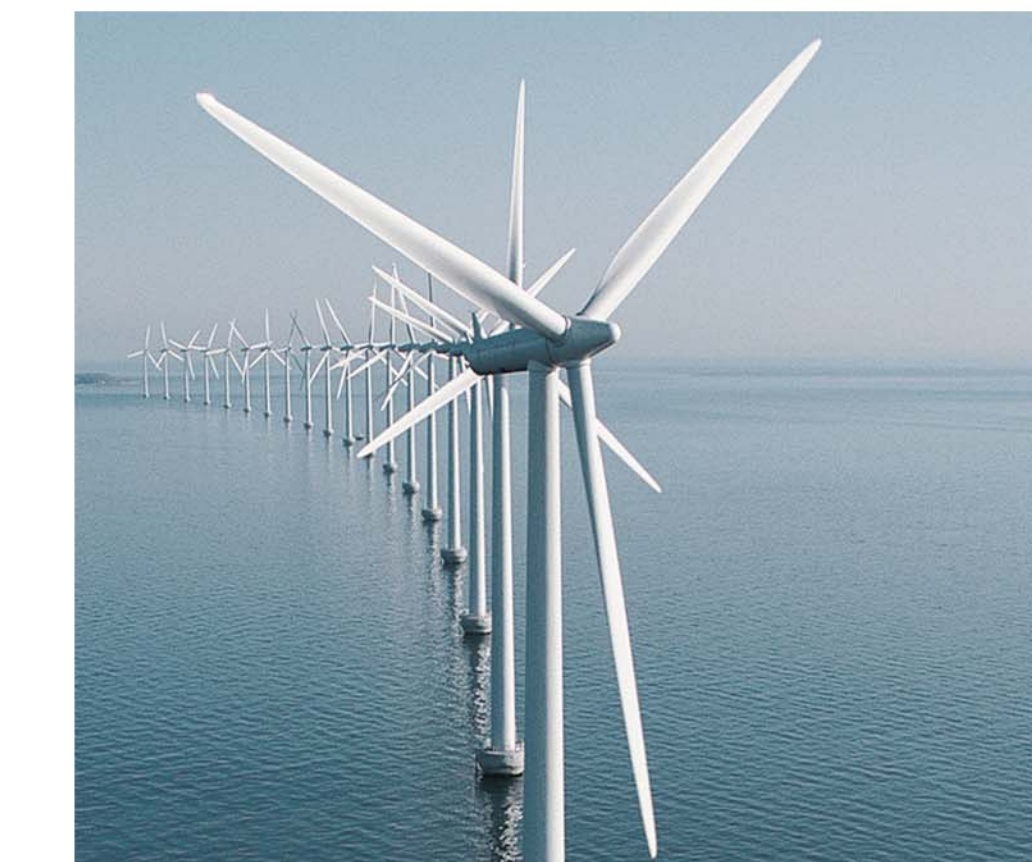
To further increase the safety of the driving environment the shading system also doubles as rain protection; keeping the roads dry.

Wind Redirection

The shape of the roof also redirects the wind upwards toward the wind turbines. This will increase the amount of wind spinning the turbines.

What does the Turbine System do?

One of the key features of our design is re-envisioning what the wind turbine could be. Because wind turbines need to be at high altitude to capture high speed winds, they have massive structural columns. Over 50 percent of column's height is to achieve this altitude; and could potentially have another purpose. Also since turbines are typically arranged in long expanses and aligned, a highway's edge is an ideal place for lining these turbines. If the turbines are aligned like this, the road can now be lifted and attached to the columns. This would free up the ground for whatever purpose (wildlife, local traffic, housing, shopping malls, etc...). In addition, the roof system and all of its components will also be structurally attached to the turbine's columns; further reducing the need for supplementary materials. Since the turbines will be spaced equidistant from each other, the entire highway system can be prefabricated and quickly assembled.



Current American Highway System Future Power Source of the World

