

BUILDING ENVIRONMENT

An Adventure in Human Engineering, Architecture & Decisions in Design

A Series Proposal
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THE SHOW

Under the teeming streets of Tokyo is a place few could imagine. Fifty meters below the surface lies Geo-Site, a water processing plant designed to protect the city from annual flooding. The structure is over 6 kilometers long, contains five massive containment silos and 12 enormous 10 megawatt turbines that can pump over 200 tons of water per *second*. Between the pump system and the plant's terminus is a massive room of smooth concrete. This chamber alone is the awe inspiring size of two Houston Astrodomes. In addition to being a world unto itself, it is a popular *tourist* attraction because you have to see it to believe it.

Traditionally, we have defined "environment" solely in terms of the natural world. However, it has become increasingly clear that the environment is actually a Chinese puzzle of interlocking pieces both man-made and natural. All around us we can see the exciting and sometimes terrifying dramatic tension between the two. Yet, all too often, we don't take the time to *really* look at this amazing drama.

BUILDING ENVIRONMENT, a weekly one-hour show, will explore the many different structures that we engineer to utilize and inhabit. The show will take a unique and adventurous approach to both the idea of building and the nature of environment. Weekly expeditions will take us around the world: A mega cruise ship. A sewage treatment plant in California. An Alaskan fish cannery. The Google campus. Even the International Spacestation. In each place, we examine not only the specific engineering but also its impact on the environment around it. And, in each case, we explore the social and psychological as well as the physical components of the structure and the environment it creates.

Each episode will prove that unusual requirements met with amazing solutions make incredible places that surprise and inspire.

In addition, the show will sponsor a building competition each season. The public will get to submit green building projects for consideration. They will then get to vote for the best submission. Through financial sponsorship, the show will construct the season's winning structure. While we might track the construction over the season through brief segments or webisodes, one episode will be devoted to reviewing the construction process. The completed structure will then be donated to an appropriate charity, entity or group. Perhaps the first season's endeavor is a green medical clinic in rural Mali. Or a youth center in the Gaza Strip.

For the competition, the show will work in partnership with leading scientists and key organizations including government, non-profit and commercial, such as Global Green, U.S. Green Building Council, Northeast Sustainable Energy Association, National Renewable Energy Laboratory, International initiative for Sustainable Built Environment, Building Green and Soprema.

As you will see from the samples described below, the episodes will vary greatly, but all will be leavened with a degree of humor and loaded with a sense of discovery. It will be an adventure that invites serious thought, while exploring decisions in design and their impact on the world's environment.

All of these places have to be seen to be believed, but once you have, you will never look at buildings or the environments they create the same way again.

Geo-Site, Tokyo, Japan

Tokyo is an impressive city above ground, but one of the most incredible things about this city is its mind-bogglingly complex below ground. The G-Cans Project is a massive structure, begun 12 years ago, to prevent overflow of the major rivers and waterways spidering the city—a serious problem for Tokyo during the rainy and typhoon seasons. The underground waterway is the largest in the world and sports five 32m diameter, 65m deep concrete containment silos that are connected by 64 kilometers of tunnel sitting 50 meters beneath the surface. The whole system is powered by 14000 horsepower turbines that can pump 200 tons of water a second into the large outlying Edogawa river. The G-Cans project is also meant to be a tourist attraction and can be visited for free.



Ski Dubai, Dubai, United Arab Emirates

When one thinks of Dubai, the first images that might come to mind are sun and sand. Now add snow. Two feet of snow, topped with a daily layer of fresh powder. It might be 135 degrees Fahrenheit outdoors, but inside the 32,290 square-foot, \$275 million structure, visitors ski and snowboard. The heavily insulated facility also includes the world's largest indoor snow park, offering 9,842 square feet for sledding or bobsledding. But at \$275 million one has to wonder if it is not the height of human folly to bring snow to the desert, or for that matter to seek it there.



The Metropol Parasol, Seville, Spain

Metropol Parasol, a redevelopment project designed by J. Mayer H. for Plaza de la Encarnacion, is one of the most striking structures in Europe. The design is comprised of mushroom-like structures scattered about the site, linked together overhead like an amorphous “parasol.” Constructed almost entirely of recycled materials, the building includes an archeological site, a farmers market, an elevated plaza, multiple bars and restaurants underneath and inside the parasols, as well as a panorama terrace on the very top of the parasols.



Biofuel Refinery, Ohio, USA

This is a green refinery that uses manure to generate the energy needed to manufacture biofuel from corn and plants like switch grass. It is a completely closed system that emits no pollution. It is a masterpiece of human engineering not only because it works, but also because it helps clean up our environment in more ways than one. While still controversial politically and economically, biofuel manufacturing is helping to shape the future of energy consumption. This particular factory is the passion project of Sun Microsystems co-founder Vinod Khosla.



Angkor Wat, Angkor, Cambodia

The largest religious monument in the world, Angkor Wat is a temple at Angkor, Cambodia, built for king Suryavarman II in the early 12th century. The temple is the epitome of the high classical style of Khmer architecture. It is a structure more complex than the pyramids of Giza and unlike any other structure in the world. Archeologists could not believe it was built as early as it was. They had such little regard for the indigenous people that they thought it must have been built centuries before by an extinct population.



The Georgia Aquarium, Atlanta, Georgia, USA

With more than eight million gallons of fresh and marine water, 100,000 animals representing 500 species from around the globe and more than 550,000 square feet of total space, this is the world's largest aquarium. The aquarium's notable specimens include young whale sharks, who can grow to 60 feet in length, and four beluga whales. But like zoos, no matter how immense and magnificent, aquariums always highlight the complex relationship between human and wild life.



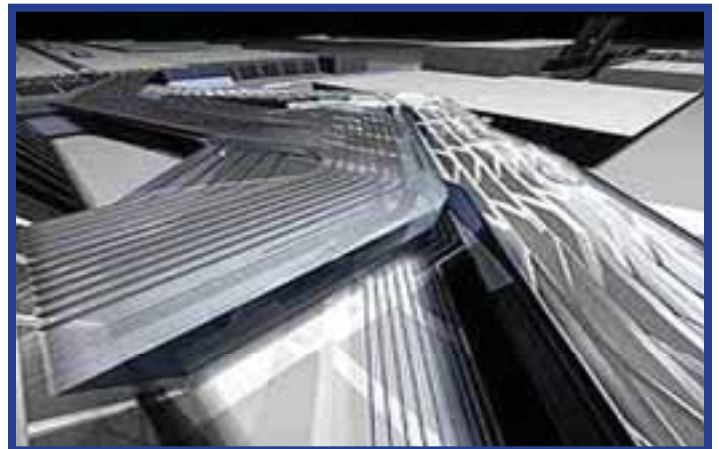
Philip Merrill Center, Chesapeake Bay, MD, U.S.A.

The center is the headquarters of the Chesapeake Bay Foundation, and it epitomizes the cutting edge of green architecture. One-third of its energy comes from geothermal heat pumps that utilize the earth's warmth and photo-voltaic building panels that convert sunlight into electricity. Rainfall collected on its roof is channeled to huge holding tanks for irrigation. Its many sunscreen-overhangs are made from recycled pickle barrels. And whole platoons of enforcement lawyers for the Environmental Protection Agency could not be more ecologically effective than its waterless composting toilets, bamboo flooring and timber cut from sustainably harvested wood.



BMW Central Building, Leipzig, Germany

The Central Building is the active nerve-centre or brain of the entire BMW factory complex. All threads of the building's activities gather together and branch out again from here. This planning strategy applies to the cycles and trajectories of people—workers and visitors—as well as for the cycle and progress of the production line, which traverses this central point, departing and returning again. The plant is situated on a 250 hectare site and represents a new concept in car production. The new production campus combines the construction process of the automobile with the everyday activities which surround such a large production plant, employing 5,500 production workers. Employees who are not intimately involved with the construction of cars are still involved as the production line is visible from offices, the staff restaurant and the reception areas of the central building.



Underground Bunker-City, United Kingdom

There is a subterranean bunker-city under a UK military base that is 240 acres in area and has 60 miles of underground roads. It was designed and built to house a Prime Minister and 4,000 bureaucrats in the event of a nuclear attack. This episode will explore the impulse, the design and the execution of this structure. And by the way it is for sale. Already two uses are being considered: a massive data store for City firms or the biggest wine cellar in Europe.



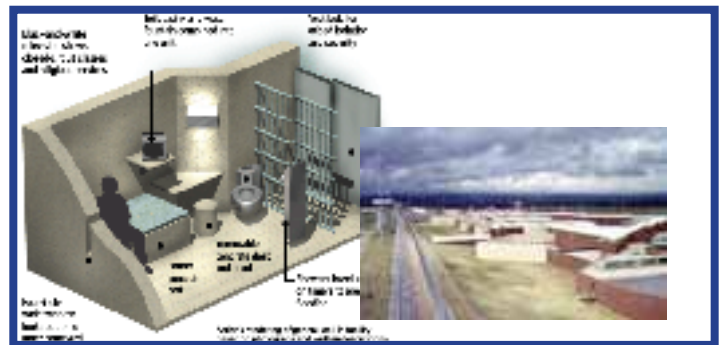
Rand Corp. Headquarters, Santa Monica, CA

This structure is the largest green building completed to date in the United States. At a cost of \$100 million, the 310,000-square-foot oval building was built on a recycled brown field (a site cleaned of pollutants), which housed the Pacific Electric Rail Yard in the 1920s. Among the many environmentally sensitive features are raised floors with air ducts running underneath to save energy costs, low-emission carpets, motion sensors to regulate light use, and using reclaimed municipal water for toilets and landscaping. A building like this is a prism through which we can glimpse the future.



Supermax, Florence, CO, U.S.A.

More than 2.1 million people are in jail in the U.S. at any one time; that is about one in 140 Americans, or as many people as live in Namibia, or nearly five Luxembourgs--and it is a number that continues to rise. The most secure prisons in the U.S. are the notorious supermax facilities, like the one in Florence, CO, which is known as the Alcatraz of the Rockies. Prisoners are locked in bland, spartan cells for nearly 23 hours a day. Built in 1994 at a cost of \$60 million, the prison is equipped with 1,400 remote controlled steel doors, motion detectors, pressure pads and gun towers with perfect sightlines across the complex. To their supporters, they are a just destination for the worst of the worst. To their critics, they are “machines” engineered to breed monsters.



Seagaia Water Park, Miyazaki, Japan

This is the biggest water park in the world. Its name means sea goddess. The water temperature is a perfect 73 degrees. In addition to an elaborate set of mega-slides, it has its own beach--even though the complex itself is only a stone's throw from the actual ocean. On entire side is a vast trompe l'oeil of the ocean extending to the horizon. The SeaGaia has its own flame-spitting volcano, crushed white marble “sand”, and it also boasts the world's largest retractable roof, providing a permanently blue sky. When the roof is closed, you still get blue sky and puffy white clouds, because they are painted on the ceiling. Every hour, the volcano erupts and the hi-tech wave machines start up, starting a few minutes of sanitized surfing. Needless to say, this is an extremely complex system of engineering that raises some very important social and environmental issues.

