

Federal Highway Green Program Guide- Canopy and Enclosures.

Not only will transportation be important to the both communities of El Paso, Texas and Cd. Juarez, Chihuahua, but also the innovations in transportation which might not always be a machine with wheels or a road way. But maybe also the actual transportation corridor it resides in will go through such innovation also.

So one day hopefully soon, the federal national highways will be opened up in some locations for the next evolutionary step in highway design and utilization.

There are two issues that relate to large urban traffic arteries that are being addressed in this guide.

1. Air and Noise nuisances along some points along the national highway system.
2. Utilizing some of the airspace around these highways for a productive secondary use.

There are many examples world wide and within the USA to make a claim that air pollution and noise can become or is a problem along some national highways within city limits of all large cities.

It may no longer be sufficient to screen these highways with 6 to 8 foot concrete screens to protect adjacent neighboring residents.

What is needed is a system of enclosure that may completely enclosed or partially but mostly enclosed a portion of this highway. There are different design issues that appeal to each city and each city has its unique geology, wind, and sunshine dynamics which those design issues will not be included here.

## **In California**

Around Los Angeles, CA, Harbor Freeway or interstate 110 may be one of those freeways that could use both a canopy for both car emissions capturing and noise capturing as well.

Where high density traffic is found that is both noisy when traffic is moving quickly and also slow during rush hours, a canopy would have the dual purpose of abating both emission and noise nuisances along nearby neighborhoods.

Emission capturing would occur throughout the day and remove carbon based fueled vehicles emissions. Such a system started in the 1960 would have made more sense and reduce pollution in urban areas through a much larger establish network of canopy

enclosures over large sections of the city highways. It still makes sense today where large density of traffic exists and vehicles are travelling at low speeds during rush hour.

The canopy would require a mostly enclosed area to capture these emissions but does not require a canopy that blocks natural sunlight. This would be a design issue left to local political discussion. While enclosing small portions of some urban corridors, it may also be possible to place on their roof top solar panels or/and urban wind turbines to generate electricity for neighboring office towers or neighborhoods. Also a horizontal wind turbine could capture the air flow movement of traffic within the canopy enclosure.

Usually, highways are not thought of as a design icon. That is, people don't view highways as architectural marvels but viewed more as practical infrastructure. It is the highways function that gives it high remarks and a good reputation. Most broad city highways are admired for their easy visibility and not their architecture landscape.

With this in mind, it would be expensive to place canopies over sections of city highways but there are a few locations that would improve both the pollution emissions produced, noise levels, and possibly generate electricity.

As long as there is no cost to emit emissions that creates smog and related emissions or no way to quantify noise emissions, then the canopy is very cost prohibitive.

As a society, more can be done, as national trends tend to bare this out, that the cost of emissions that create pollution should be recovered in future economic models. More should be done than simply tracking the flow of traffic and study issues that suppress or eliminate pollution emissions and noise emissions from these traffic arteries of large cities. Small sections of canopies can be built with the knowledge that high density areas will be largely covered over several decades.

It will be the small investments over time that will encourage real estate around these corridors with a canopy to experience positive pricing changes which might accelerate the needs for canopies over larger areas. This will shorten their time to construct large sections of canopies around high density city highways. The market will determine the annual growth of these canopies when pollution and noise cost to society is calculated in a new urban environment protection models versus real estate demand in these areas.

This technology can then be developed for even worse polluting cities of the world.

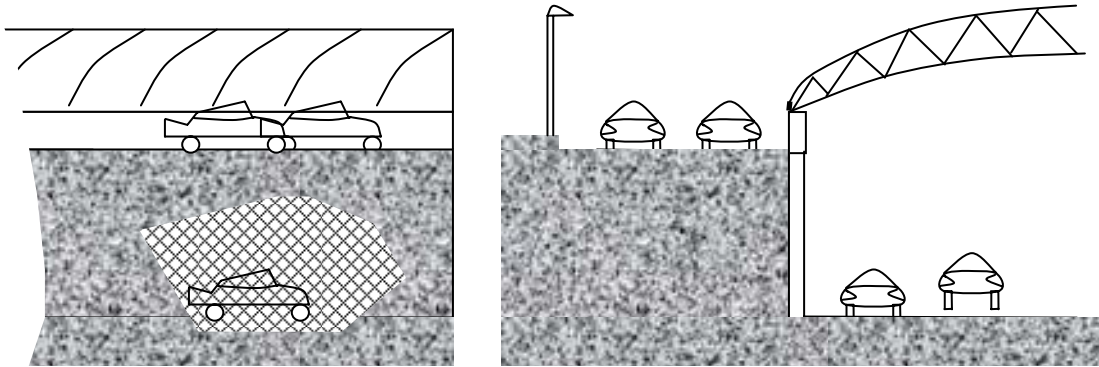
As mentioned before, Los Angeles area offers several locations to utilize a canopy to collected emissions and clean the air before releasing it back into the air envelop, reduce or eliminate road noise created by highway traffic, and use the top of canopies to create electricity.

## In Texas

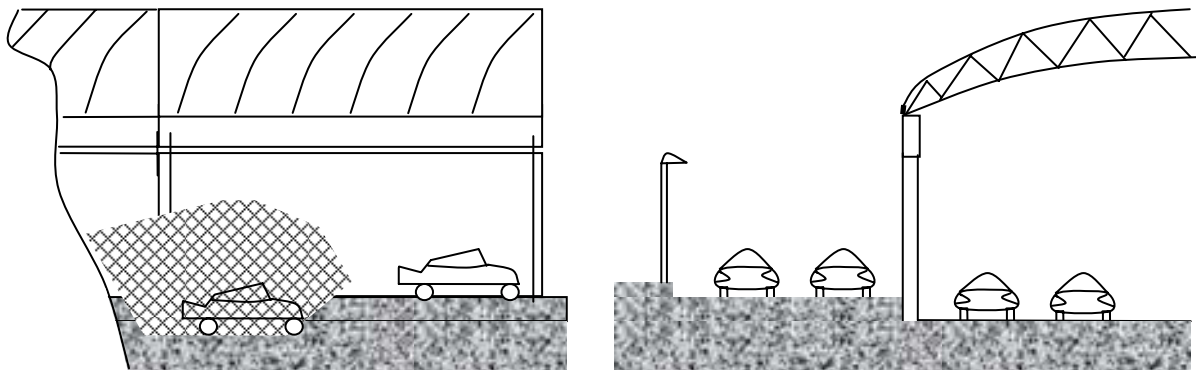
There is another example in Dallas, TX which would offer both emissions collection and noise reduction to the community as well as have large amounts of sunshine for solar panels atop the canopy.

This is either the area north of downtown along highway 75 or the toll road north of downtown. These two examples offer a useful attribute and an advantage in the construction of a canopy. Both highways were built where portions of the road way are below grade level in relationship to the street level.

Since a canopy would have to be built at a certain height to be safe, the profile of the structure has been dramatically reduced where the highway has been sunken into the earth in relationship to neighboring streets. This less imposing superstructure seen from the outside or street level may be no higher than some medium sized trees. This less imposing structure would be more appreciated in communities that have large sections along the highway that is residential and where the canopy cannot be seen.



Sunken Highway Roadway

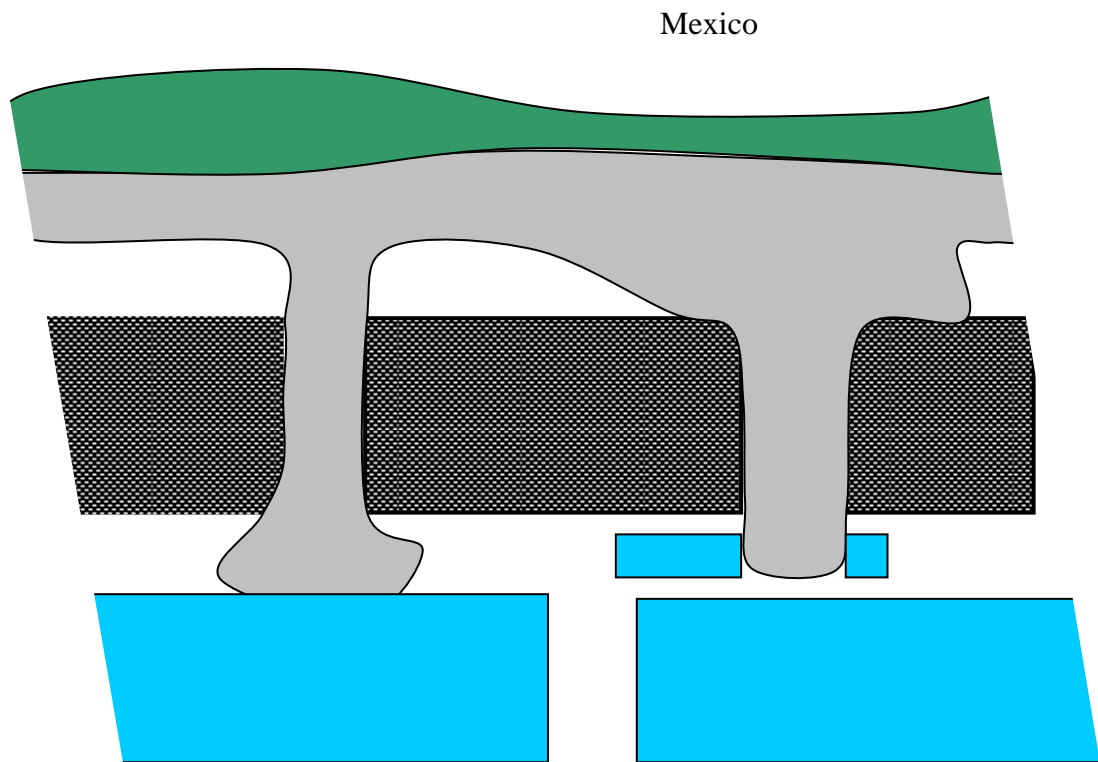


Highway close to street level

## El Paso, Texas

Where such canopy will eventually need to be developed is around the border highway that runs along the south side of the city along the US and Mexico border. As a River Uplift is developed, the canopy will serve to suppress noise, capture auto emissions, and generate electricity.

Below, the green area represents the river; the gray represents the River Uplift with two Spans and an Economic Extension (Right span). The black boxes represent the canopies between Spans. The blue area represents improvements or structures.



A River Uplift with canopy cover over the border freeway can one day offer both the quietness and remove emissions that will be needed to fully enjoy the outdoor environment that will take place in this area. It is another innovation of border commerce to occupy and turn the borderland in to a commercial asset.