(INFRA)STRUCTURAL OPPORTUNISM

Focusing on San Francisco as the site of operation, this series of projects map a productive relationship between structural geometries and urban space. They define an operative system that would a) negotiate between the disparate scales of the infrastructure and the city and b) think of the structure as an opportunity to exploit, celebrate and transform missed urban space. Describing an ethos and not a blueprint, the proposals are meant as 4 among many more that will revise the way that we conceptualize the role of design in the infrastructural domain.
Occupying a narrow right-of-way, flanked by two rows of mixed use buildings, the site is essentially an infill situation in an area that is pegged for greater density. The existing highway lofts into a double decker within the site, producing a narrower footprint while enlarging the potential vertical surface.

The scheme is like a glove pulled over the highway that both acts as a noise barrier and an energy-producing structural skin. The structure, a lattice of packed circles, takes advantage of the stacked traffic to harvest the wind produced by passing cars. Micro vertical-axis rotary turbines, lighting for the freeway, and noise absorbing materials are used as infill in the circles.

The turbines are estimated to generate enough electricity for the lighting of the freeway. In addition, the circles can be programmed with a lighting sequence to act as an electronic billboard using the wind energy.
The first site is the Transbay Commuter Bus Terminal, situated along an elevated bus loop that comes off I-80 right in the heart of downtown San Francisco. The existing Terminal is a perfunctory box that obscures this wonderfully bizarre loop and is a sorry excuse for a public space in the city.

The strategy here was not to redo the building but to think of the infrastructure as a landscape -- a public plaza that folds into a viaduct.
The structural paradigm is that of the folded plate, similar to solutions done by Nervi and Utzon. The initial concept came from a simple consideration of how to merge the pedestrian circulation beginning at ground level with the bus circulation on the elevated deck. Like expanded metal, the landscape is pulled up to become the structural piers that merge into the folded slab structure of the deck.

Circulation and structure are conflated, providing a continuous spatial experience, and opening the terminal back to the city as a public space.
The strategy here is almost counter-intuitive. Instead of trying to fill the fragments of the city block voided by the expanse of the freeway, it may in fact be more productive to think even bigger. The upper deck could be conceived as a singular plane unifying the freeway with the leftover space and producing a surface that we may then manipulate to allow for the on-off ramps.

The entire structure performs like a table with the ramps acting as a tripod to the giant canopy. Most of the stresses in the canopy are then a result of the large cantilevers which necessitate a stiff three-dimensional system to allow the entire canopy to act as a diaphragm. The lacelike structure allows the canopy to be stiff yet relatively light and porous while unifying the space below for markets and large events like San Francisco’s famed Halloween Block Party. From below, the canopy appears to float like a cloud overhead while presenting a surreal landscape to the commuters above and introducing a green roof to offset the asphalt surfaces.
The third site is located at the I-80 and 101 interchange, a post-industrial part of the city populated by big-box buildings like Costco, and Gold’s Gym.

The strategy is not to fill the void created by this interchange but to reinforce it by creating an urban attractor so strong that the void will be rejuvenated.

The shaping of the box beam generated a series of sloped floors that were then overtaken by a series of large sloped programs: a cineplex, a swimming pool, and an indoor ski training slope. Rising up as the supporting piers, the landscape below undulates with corresponding outdoor programs: outdoor theater, parking, and skate park.

The structural paradigm employed was the Box Beam, a typical highway solution which derives its structural and material efficiency from its hollowness. But it is precisely this hollowness that is architecturally inefficient. The project opportunistically mines this lost space while recognizing the need for a perforated skin to allow for inhabitation.
Structural Skin