

Infrastructure, America's De Facto Urban Design

ANYA DOMLESKY

SWA Group

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Infrastructure has functioned as America's de facto urban design plan for centuries. Specifically, transportation infrastructure networks, although much can be said of other infrastructures of water management, energy, communications, and solid waste. But the corridors that make up port, river, rail, and road systems have proven extremely durable as organizing features, even as they obsolesce as new, faster or cheaper forms of transportation are built out. Seaports were once the dominant hubs of merchant activity and passenger transportation. Then inland rivers began to be exploited and transformed to carry goods and raw materials in and out of the interior. The introduction and implementation of rail transportation transformed landlocked areas in the West. And most recently, the invention of the automobile, native to the US, ultimately came to dominate the American landscape through highly accessible, high speed routes and roads.

As transportation infrastructures like canals are superseded entirely, and others like ports radically shift to different regimes—from breakbulk to tankers to containerization—physical space is opened up. These spaces are highly varied in size, shape, location in section, and don't all become available at one time. However, with a long view of urban processes, these spaces have advantages not held by other sites that have been decommissioned, such as a factories. They are already part of larger linear networks, and due to efficiency, usually near urban centers. This allows these corridors with their attendant "spurs" (storage) and "burrs" (points) to be co-opted or co-used for active/alternative transportation, climate change adaptation measures, accessible public space, and recreation within already dense metro areas.

The current federal and societal attention to infrastructure in a broad sense post-pandemic, as a term that can encompass care, education, and other social aspects, as well as one that can still refer to traditional "hard" infrastructure, is novel. With this attention comes a reassessment of the large amounts of funding

the federal government has put into highways, bridges, and tunnels, traditionally the purview of engineers. This opens up a wider realm of agency for urban designers, architects, planners, and landscape architects to enter into this space. Questions of carbon, sustainability, livability, attractiveness, and social performance are forefront, rather than efficiency exclusively. Importantly, federal dollars are still being appropriated for the adaptation and transformation of infrastructure, rather than capital investments being left to private developers or local governments.

Our practice-based research project, provisionally called *Infrastructure Adaptation*, focuses on infrastructure as a unique inflection point of both urban design and urban process, with a significant opportunity to deviate from business as usual. The larger project contains a primer on how these four types of transportation corridors work, what their components are, their dimensions, their uses and disuse, their total extents, and how we might think about port, river, rail, and road infrastructure together as a network of corridors with "burrs and spurs." The work is articulated through synthetic drawing, component catalogs, GIS data analysis, 30 project case studies, as well as incorporating technical standards and previous scholarship from environmental history, urban design, and American history.



Figure 1. Boston's port infrastructure against its building footprints. Image credit SWA Group.

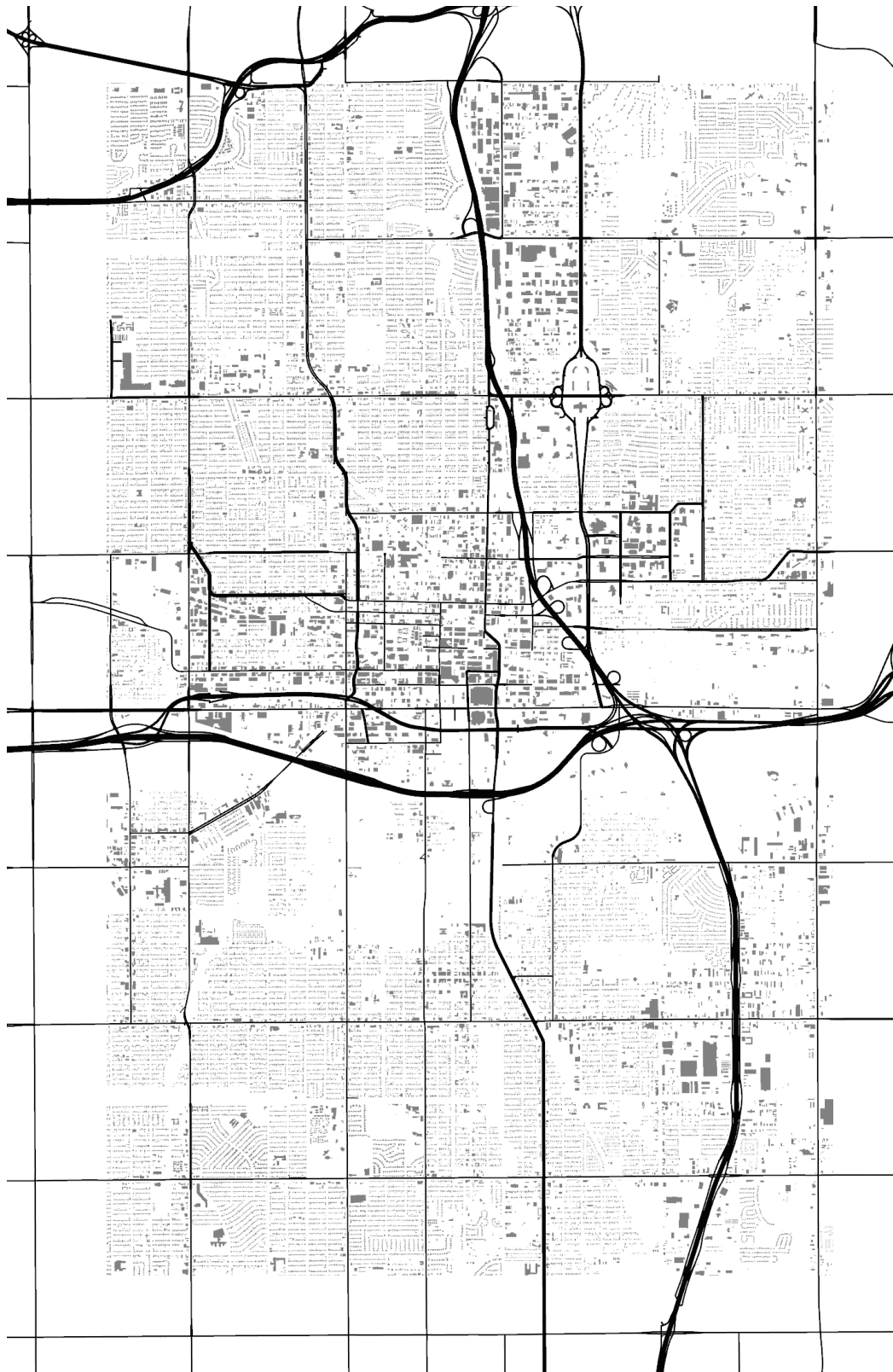


Figure 2. Oklahoma City's road infrastructure against its building footprints. Image credit SWA Group.



Figure 3. Denver's infrastructure zone around rail shown in gray. Image credit SWA Group.

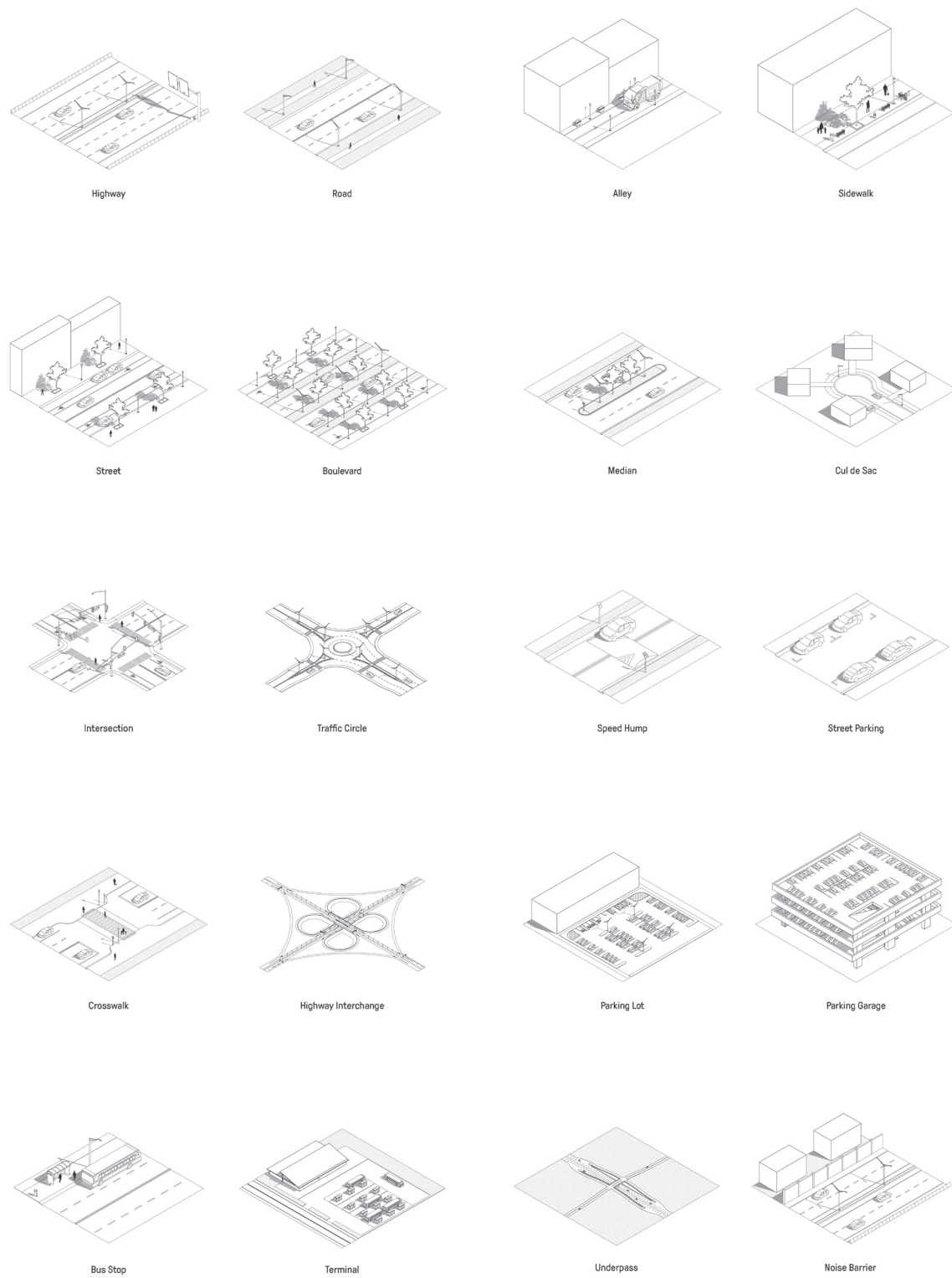


Figure 4. Components of road infrastructure provide spaces of opportunity. Image credit SWA Group.

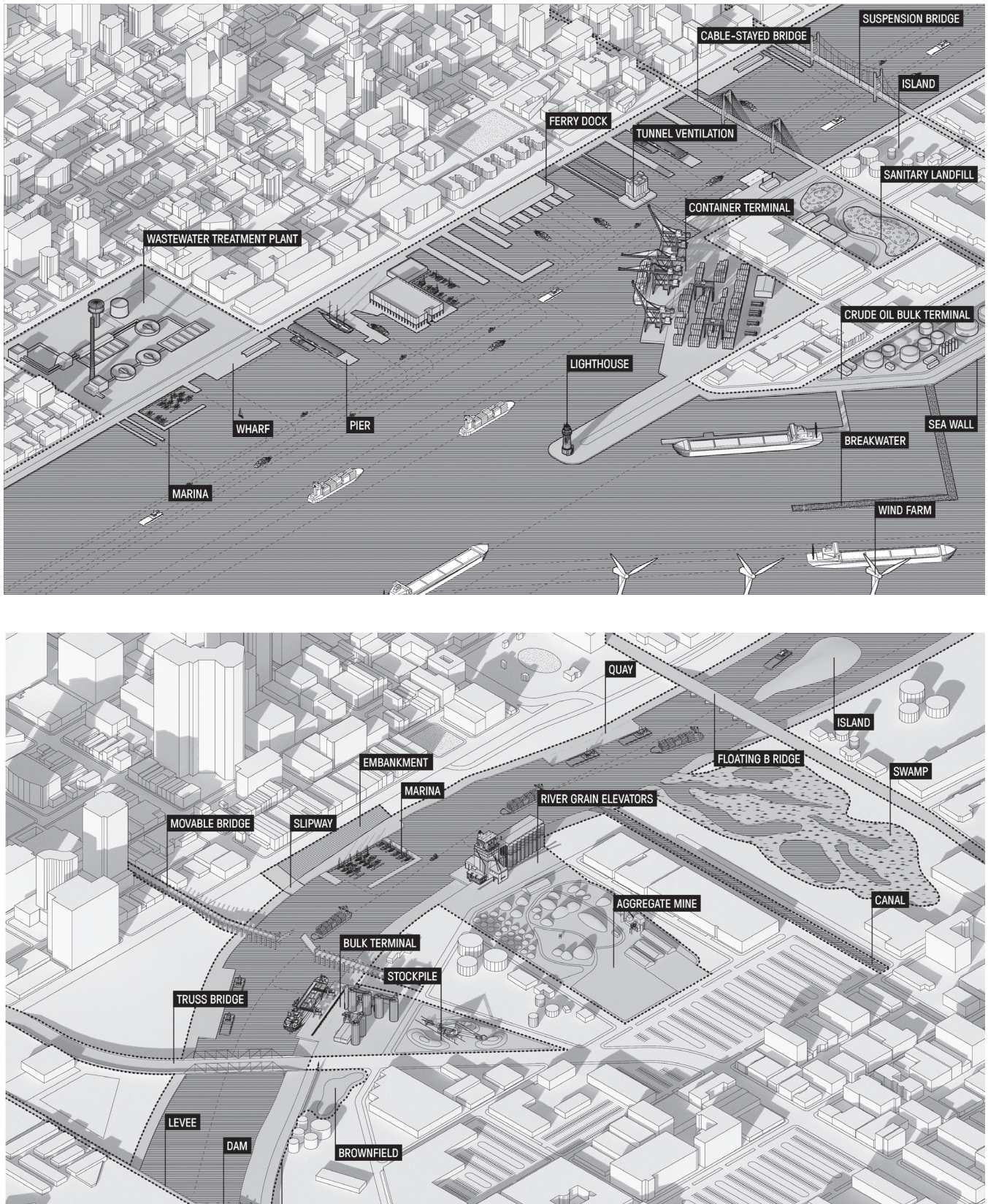


Figure 5. Synthetic corridors with infrastructure components, port, above; river, below. Image credit SWA Group.

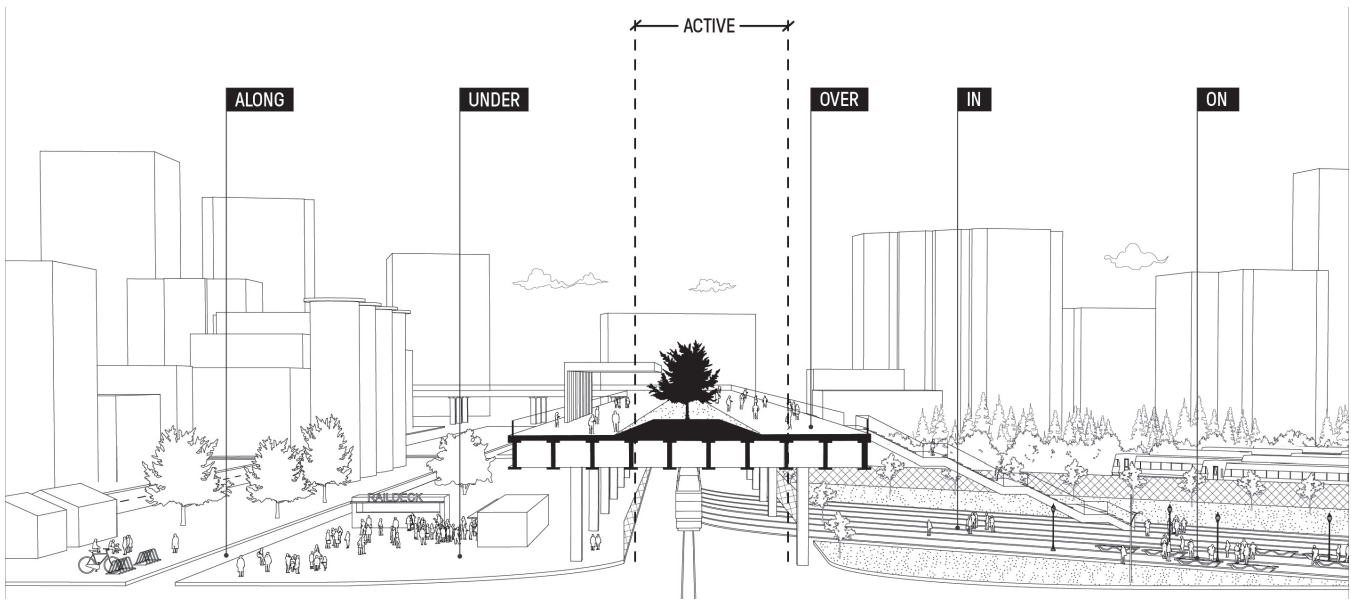


Figure 6. Rail infrastructure section showing the five opportunity areas for reuse within the transportation corridor. Image credit SWA Group.

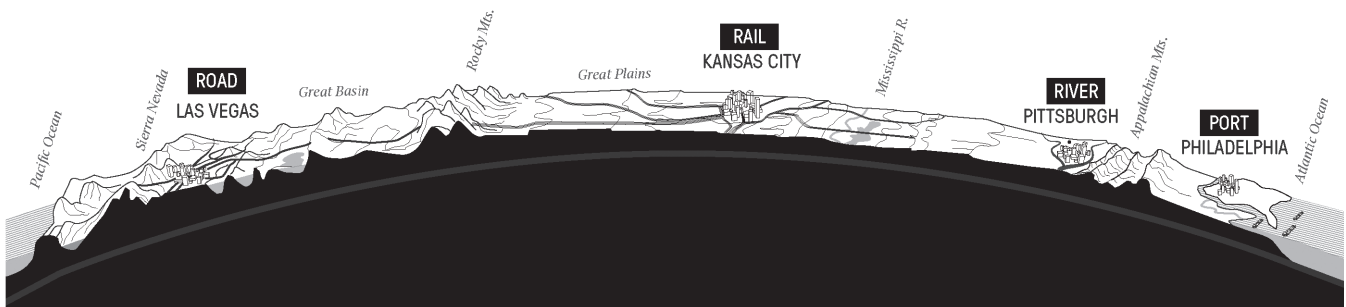


Figure 7. Exaggerated section through the continental U.S. showing the rough historical distribution of infrastructure from east to west. Image credit SWA Group.

In

The Goods Line

As cities evolve and redevelop, industrial infrastructure such as disused elevated rail lines are often decommissioned and left abandoned, creating physical barriers between neighborhoods. This infrastructure, which is typically expensive to remove, is now being considered as an urban opportunity across many cities. Instead of viewing them as a nuisance, they are being seen as an asset, creating connections between neighborhoods and allowing for a new vantage point to see the city.

In Sydney, starting in the mid-19th century, the city had a busy rail system that allowed for freight to efficiently pass through the city uninterrupted by passenger rail. It ran from Dulwich Hill

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to the city center of Sydney, primarily carrying wool, wheat, and meat. In the 1980s, the train traffic slowed, with the rail lines only sometimes being used by steam locomotives. Then when the Darling Harbor was set to be redeveloped, a large section was permanently closed. While some parts of this corridor were converted for light rail usage, most of infrastructure was left deserted and unused, in one of the densest areas of Sydney.

In response to this, the New South Wales Government started an initiative to look at new lives for the rail corridor and allowed for Sydney Harbor Foreshore Authority to commission a design project. The primary goal for the project was to create a pedestrian and bike corridor from the central train station in the Ultimo neighborhood of Sydney to Darling Harbor, linking Chinatown, the entertainment district, and the University of Technology, all areas which had been subject to redevelopment.

The design team, led by ASPECT Studios in collaboration with

AND
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CHROFI, envisioned the new corridor as a linear elevated park that used much of the existing rail infrastructure. The \$15 million-dollar project created a 500-meter-long non-linear path that served as a public campus for Sydney, connecting over 80,000 people to the harbor, without being interrupted by car traffic. The physical design of this civic ribbon consists of a series of platforms that can be used for a range of programmatic purposes, from outdoor entertainment, to physical recreation, to pop-up festivals. The permanent features include walkways, bike paths, ping pong tables, study pods, outdoor work areas, playgrounds, communal neighborhood tables, grass lawns, amphitheaters, ramps, exercise areas, a water play area and a sand pit. Furthermore, in designing the project, the team decided to preserve some of the original rail infrastructure including an underbridge, a lever frame, and portions of the rails themselves, which weave in and out of garden spaces. The team also used industrial materials for new portions of the project including gravel, steel, and timber.

FEATURE
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Figure 8. Case study draft. Image credit SWA Group.