

# THE POWER OF PLACE

## DESIGN STATEMENT

### PROBLEM:

Located at the mouth of the Calumet River in South Chicago, this project draws on the power of place and the intersection of issues relevant to reimagining and repurposing historic architectural remains in the public realm.

U.S. Steel closed the South Works site in 1992 after more than 100 years of steel production. Since then, an EPA-supervised cleanup was conducted and two large-scale mixed-use developments have been planned and abandoned. This 440-acre former industrial site continues to be plagued by issues of soil contamination. The largest remains of the steelworks, four, 40' high x 2000' long, walls that formed troughs for holding limestone and iron ore used in the largest blast furnaces in the world. Abandoned for more than 30 years, the site is an artificial man-made built up from slag during the steel production with gigantic walls used for storing and producing large amount of steel. For this reason, the amount of heavy metal elements and harmful chemical components causes extreme damage to the structure of the soil, making it too contaminated for safe habitation.

### OBJECTIVE:

Site remediation has also become a leading factor in all possibilities. Therefore, we proposed to design a Soil Remediation Center focusing on 'bioremediation' as a system to promote environmental way of cleaning future lands. Not only this site but most urban soil has encountered soil contamination, while the most common ways to manage such waste disposal are landfills, this project maybe the future of site cleaning.

### DESIGN SOLUTION:

Given the challenge of the site, the fragmented nature of the soil buildup would make it difficult to build a sturdy foundation. However, we see the opportunities that lie within the abandoned ore walls. In addition to housing the raw materials used in steel production, the original ore walls were used to hold the weight of the mill's massive crane system. Given that, it made sense to bring the wall back to its original purpose. The research center itself used the excellent load-bearing capacity of the wall to suspend itself on two sides of the wall. Ensure that the architecture does not cause secondary damage to the site due to the foundation. The steel beams mounted on top of the wall are attached with steel tension rods and cables to provide a support for the concrete slab and glass enclosure. The suspended roof, without interior columns, underfloor supply air duct and in-floor radiant heating are chosen as a system to created universal space that could be adapted to new uses. Additionally, the original ore wall running through the center of the building act as the center for all programs as well as visually separating the public from the private sector.

Exhibiting the process of site remediation to citizens is particularly important in this project. We tried to break the indifferent image of recycle factory that has been closed and not open to the outside world through architectural language. The openness of the structure and the walkway along the wall would provide observation space for visitors to witness the soil remediation process at work. This allows people to have a better and deeper understanding of nature, history, and sustainable development.



## THE POWER OF PLACE

South Works, E 87th St., Chicago, IL

The project draws on the power of place and the intersection of issues relevant to re-imagining historic architectural remains in the public realm. US Steel closed the South Works in 1992 after more than 100 years of steel production. What remains of one of the world's largest steel mills is a massive plot of contaminated land and 2000-foot-long ore walls.

Given the challenge of the site, but the opportunity it provides, a compelling engagement of an extraordinary existing structure with a long-span building is an exploration of this project. The entire structure of the design is extended from massive steel beams mounted onto the ore wall, eliminating the need to dig into contaminated soil, housing both a community space and a soil remediation center.

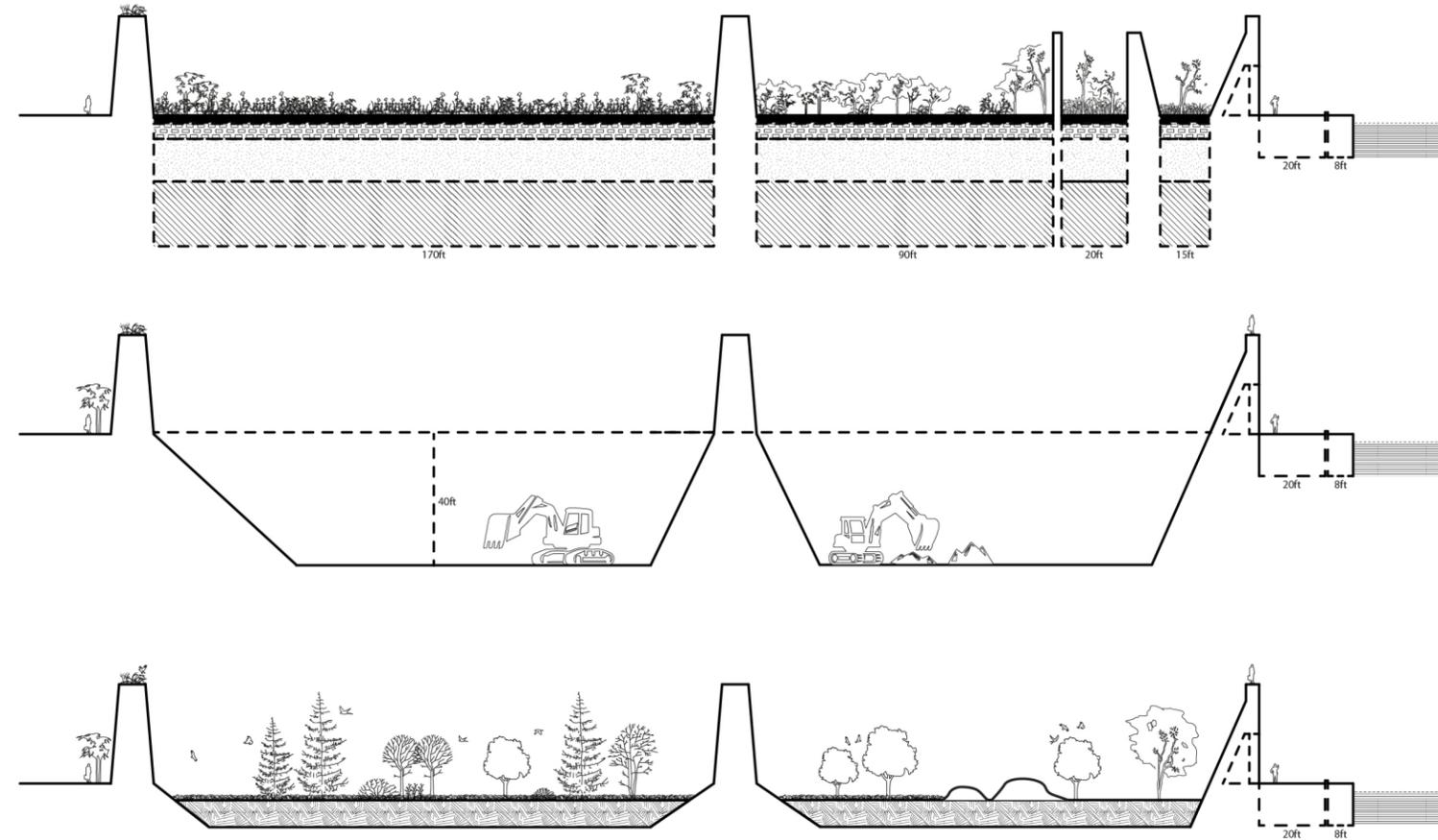
Before and after photographs of the South Works site, from 1970 and current situation after the plant closed.

Image sources. Left: Pullman State Historic Site. Right: Timothy A. Schuler, *gb&d Magazine*.

CHANGING COASTLINE OF SOUTH WORKS

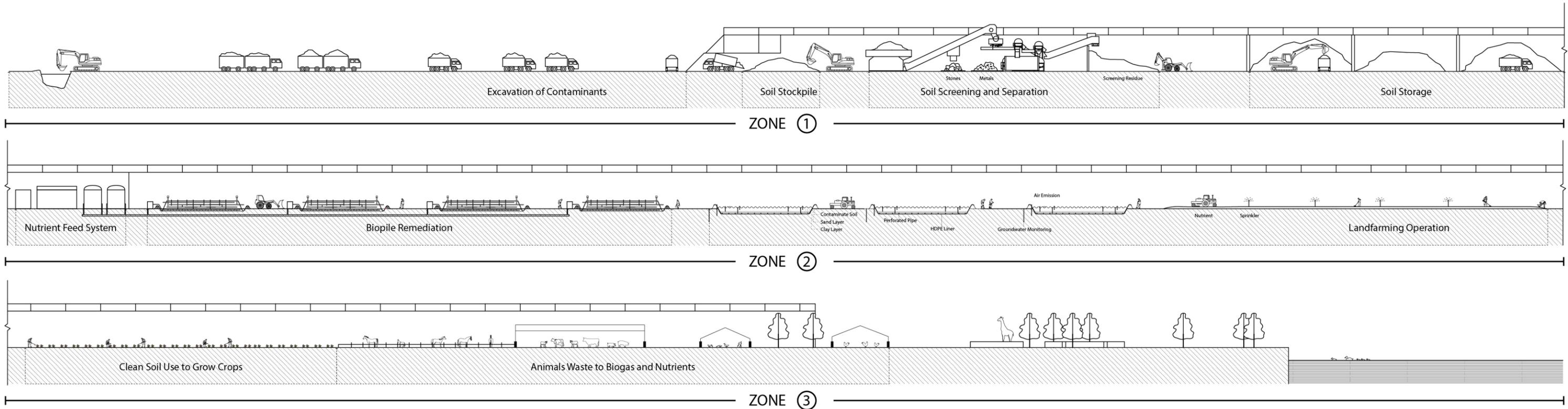


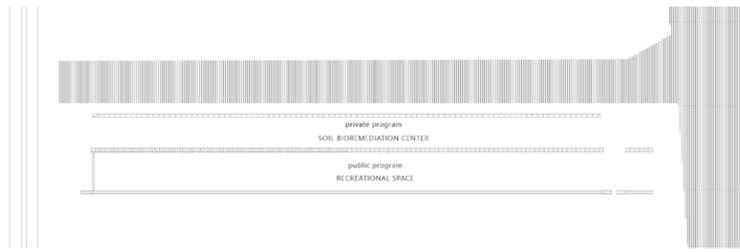
PROJECT PROPOSAL FOR SITE REMEDIATION



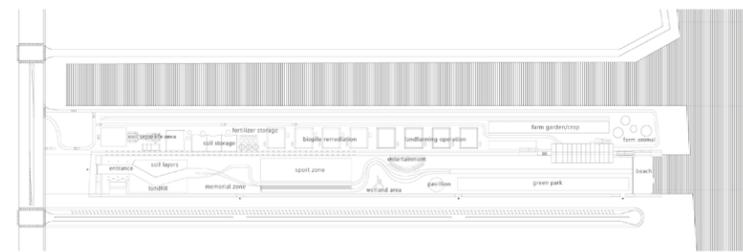
SOUTH WORKS DEEP GEOLOGICAL STUDY  
GENERALIZED GEOLOGIC COLUMN

KINDS OF ROCK	THICKNESS (FEET)	GROUP	EPOCH	
			STAGE	PERIOD
Concrete with slag aggregate	30	SOUTH WORKS ORE WALLS	ANTHROPOCENE	QUATERNARY
Soil clean cap dredged from Lake Peoria	2	LAKE PEORIA		
Remaining foundations, detritus of demolished structures: concrete, brick, metal	0 - 4	SOUTH WORKS STRUCTURES	HOLOCENE	SILURIAN
Iron and steel slag mixed with construction rubble, land fill	20 - 40	SOUTH WORKS SLAG		
Sand, high quartz content	0 - 400	RAVNIA SAND	PLEISTOCENE	SILURIAN
Glacial till, sand, gravel, silt, clay, peat, marl, loess	0 - 350	PLEISTOCENE DRIFT		
Dolomite limestone, reefy, cherty between beds, silty	0 - 300	SILURIAN DOLOMITE	CINCINNATIAN	ORDOVICIAN
Shale, dolomitic, greenish gray	0 - 120	MAKUOKETA SHALE		
Dolomite and limestone, variable thickness beds, shaly	0 - 210	GALENA-PLATEVILLE DOLOMITE	CHAMPLAINIAN	ORDOVICIAN

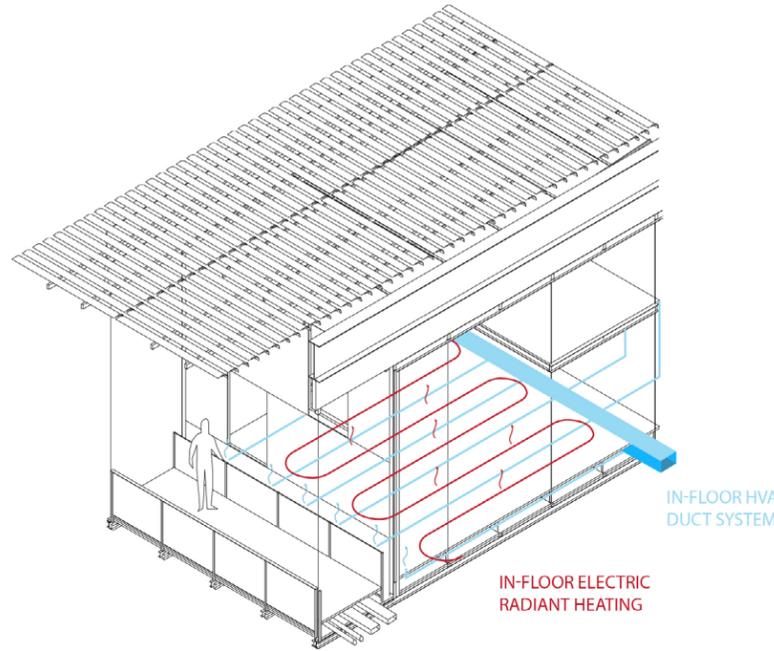
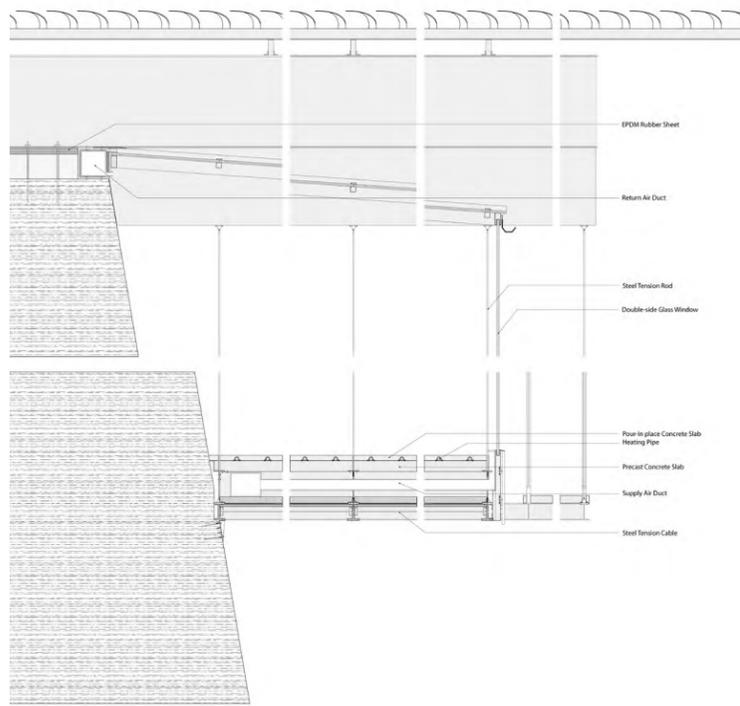




PRIVATE AND PUBLIC PROGRAM SEPARATE BY THE WALL



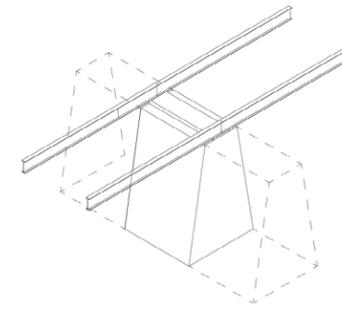
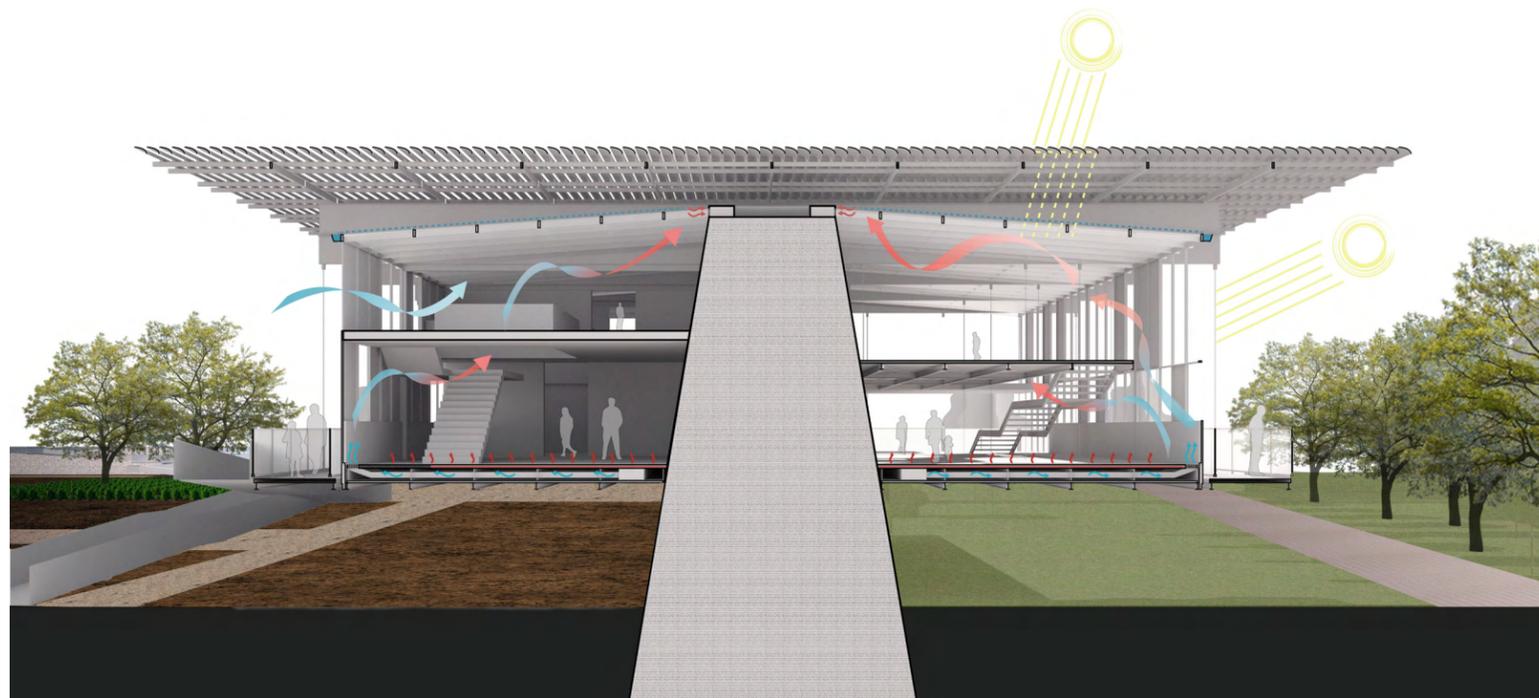
MAJOR PROGRAMS ZONING



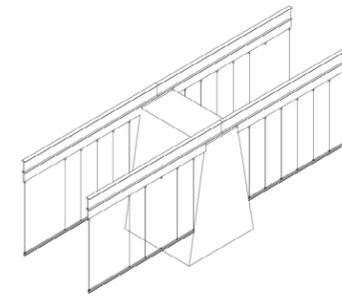
IN-FLOOR HVAC DUCT SYSTEM

IN-FLOOR ELECTRIC RADIANT HEATING

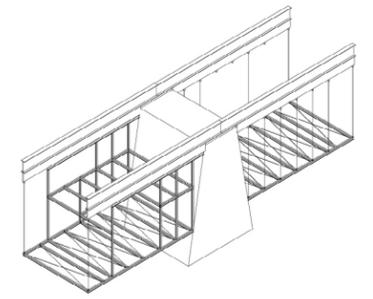
ELECTRICAL AND PLUMBING PIPES DELIVERED UNDER WALKWAY SYSTEM



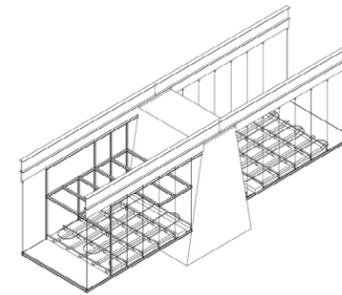
36" X 160 WIDE-FLANGE PLACED ON EPDM ABOVE THE WALL



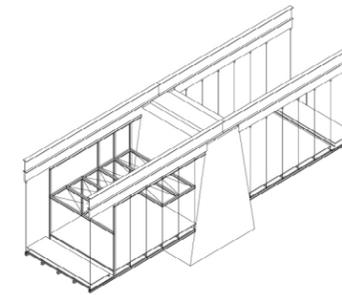
SECONDARY WIDE-FLANGE ATTACHED TO STEEL TENSION ROD



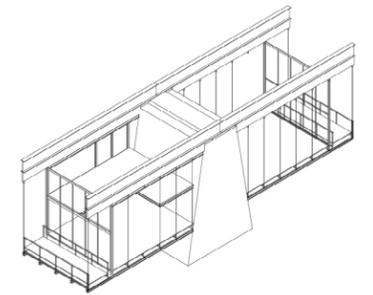
TENSION ROD ATTACHED TO SUPPORTING BEAMS AND COLUMNS



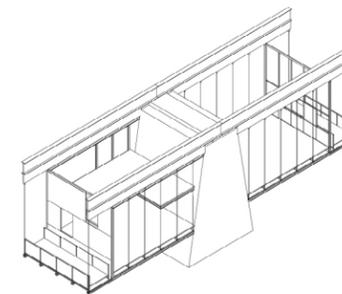
HEATING PIPE AND SUPPLY AIR DUCT INSTALLED THROUGH PERFORATED BEAMS



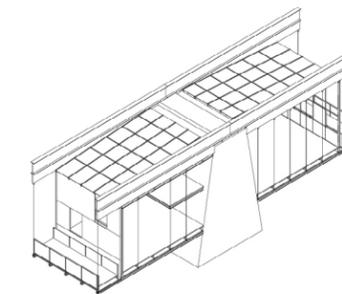
STEEL TENSION CABLE USE TO SUPPORT PRECAST CONCRETE SLAB



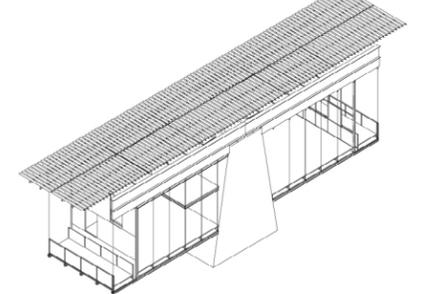
THIN LAYER OF POUR-IN PLACE CONCRETE SLAB SITS ON TOP OF PRECAST CONCRETE



FACADE FRAME AND WALKWAY RAILING INSTALLED



FIRST LAYER OF GLASS ROOF SLOPE TO ACCOMMODATE RAINWATER DRAINAGE



ROOFTOP LOUVERS ARE ANGLED TO PREVENT SUNHEAT DURING SUMMER TIME

