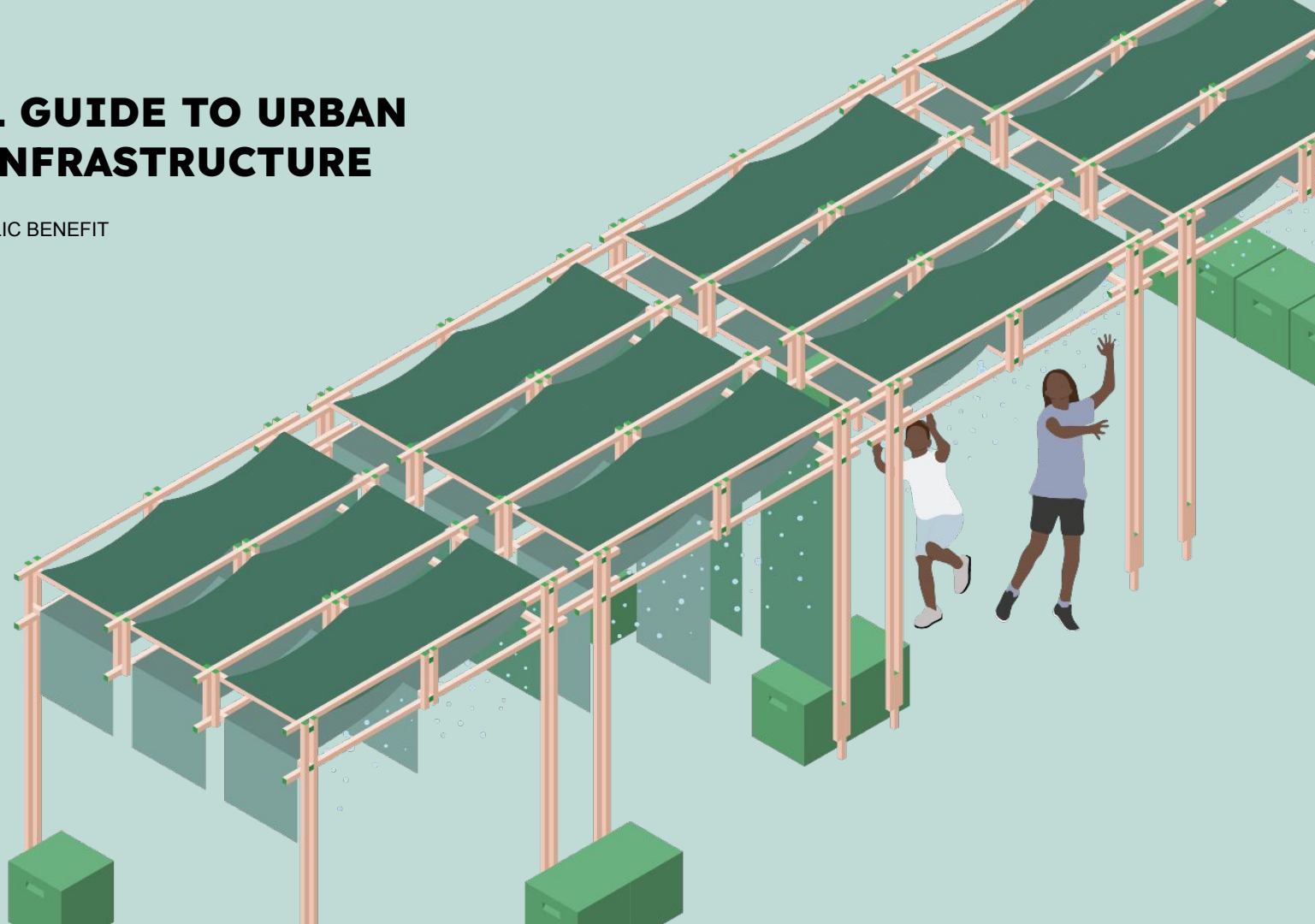
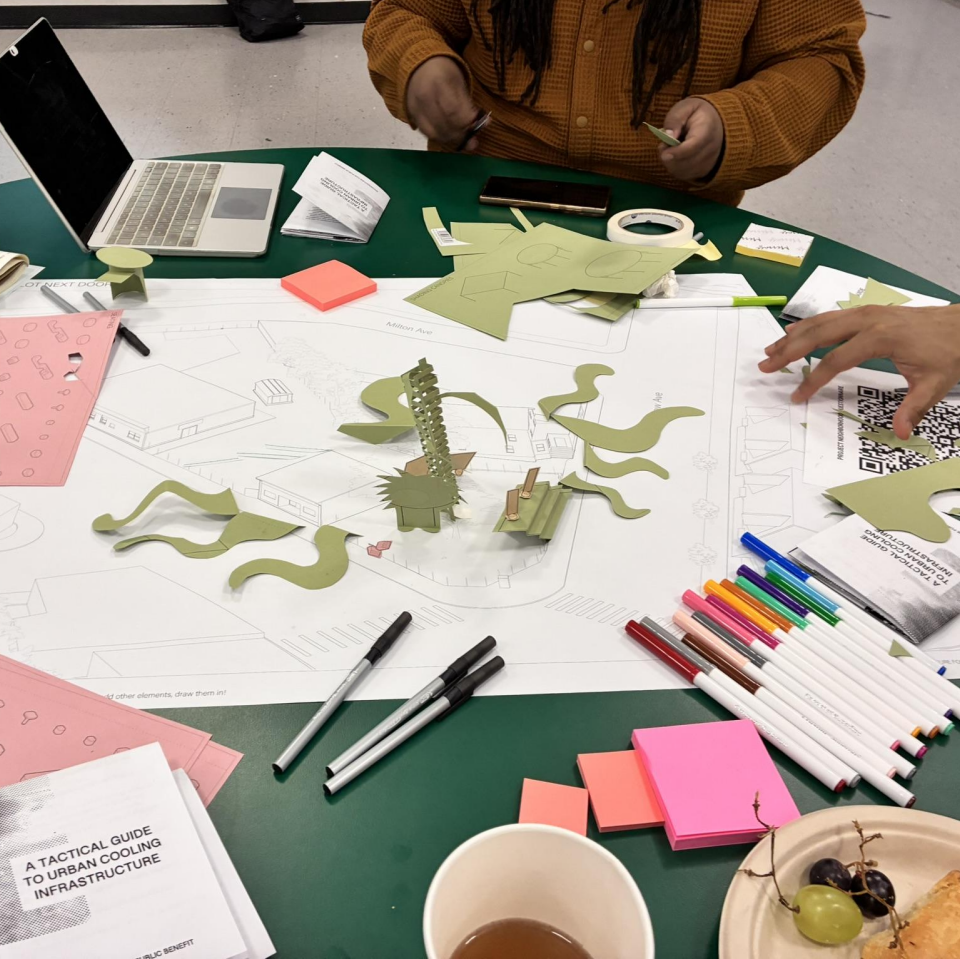


A TACTICAL GUIDE TO URBAN COOLING INFRASTRUCTURE

ARCHITECTURE FOR PUBLIC BENEFIT





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1. Site Conditions
2. Cooling Strategies
3. Design Process
4. Cooling Flowchart
5. Community Engagement
6. Case Study: Dorchester Weather

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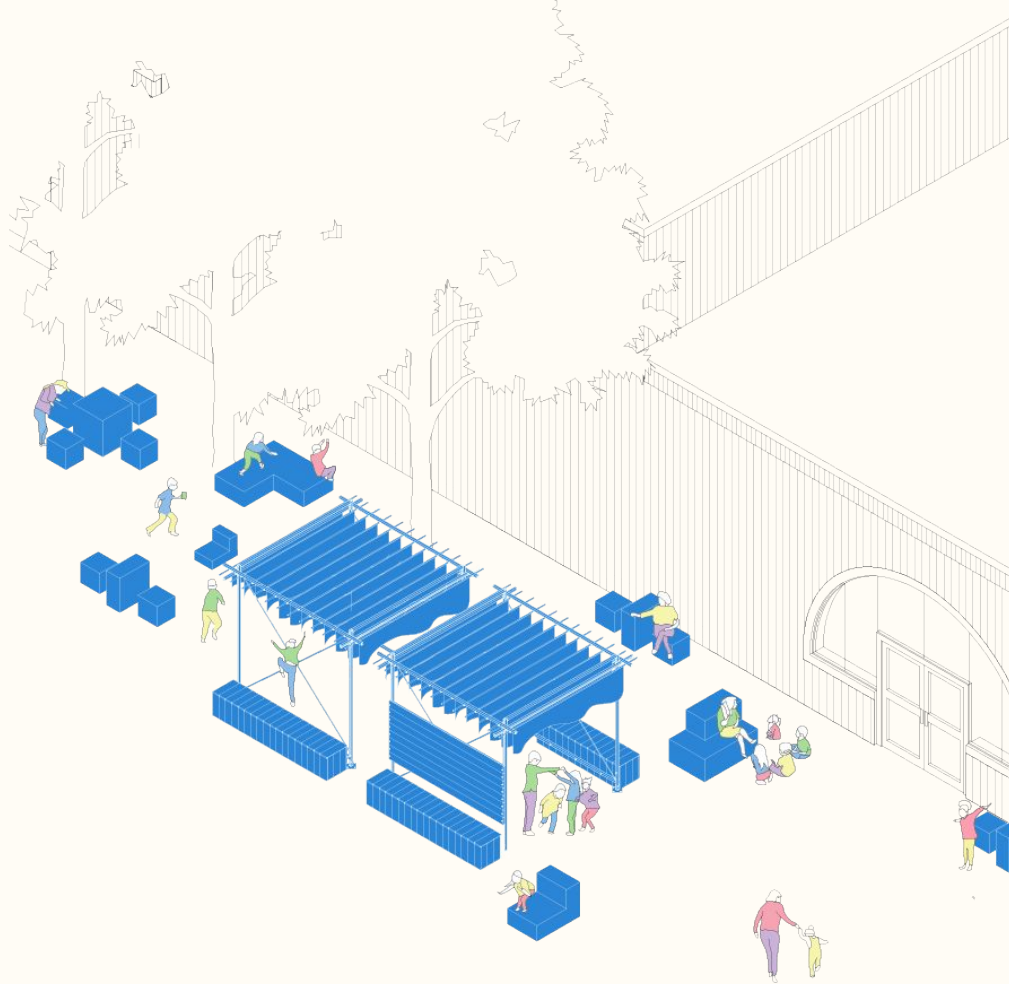
Resilient Cities Network, Z Zurich Foundation, and Zurich North America

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access digital toolkit at apbdesign.org

WHY CLIMATE RESILIENCE?

As summer temperatures continue to rise and urban heat islands experience the intensifying effects of the climate crisis, resilient cooling solutions are critical to ensuring cities remain livable and their residents safe. Urban areas with sparse tree canopies and large expanses of asphalt or other heat-retaining surfaces pose significant risks, disproportionately impacting low-income and underserved communities. This toolkit is designed to help community leaders, mission-driven nonprofits, and city governments implement equitable cooling strategies for those most affected by climate change. By addressing site-specific conditions and leveraging existing infrastructure, this guide provides practical solutions and inspiration for creating cooling interventions that activate and enhance urban spaces.





SITE

Every **site** comes with its own challenges and opportunities, shaping the design process in unique ways. Each site also has key factors to consider:



First, consider the **existing infrastructure**. Are there buildings that can provide support and shade? Is there readily available electricity and water supply? Is there proper drainage?



Next, take into consideration the **environmental conditions**. Is there existing tree coverage that can also serve as support? What are the weather patterns like at this site? How can the design best accommodate the sun's path?



Finally, it is important to plan for the **life of the project after its construction**. Who is maintaining it and when? Which materials will need to be stored and which will be securely installed? Permit requirements should also be taken into account when planning a project.

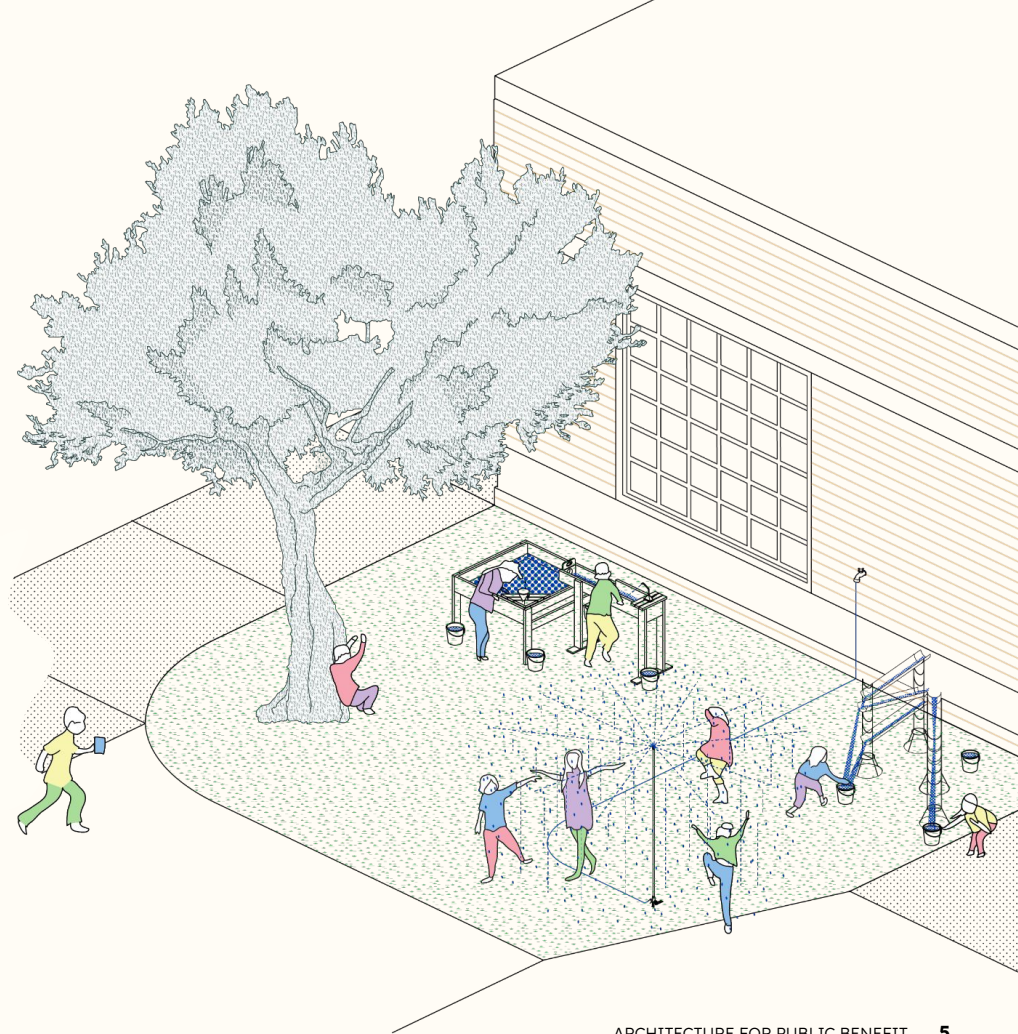
SITE

INFRASTRUCTURE

Water And Drainage: Assess the availability of water supply and the capacity for proper drainage to support features like cooling systems or vegetation.

Electricity: Verify access to electrical connections for lighting, cooling equipment like misting pumps and automated sprinklers, or other power needs like installation and maintenance.

Nearby Buildings: Evaluate the impact of adjacent structures, including shading, wind patterns, visual integration, and potential for structural support.



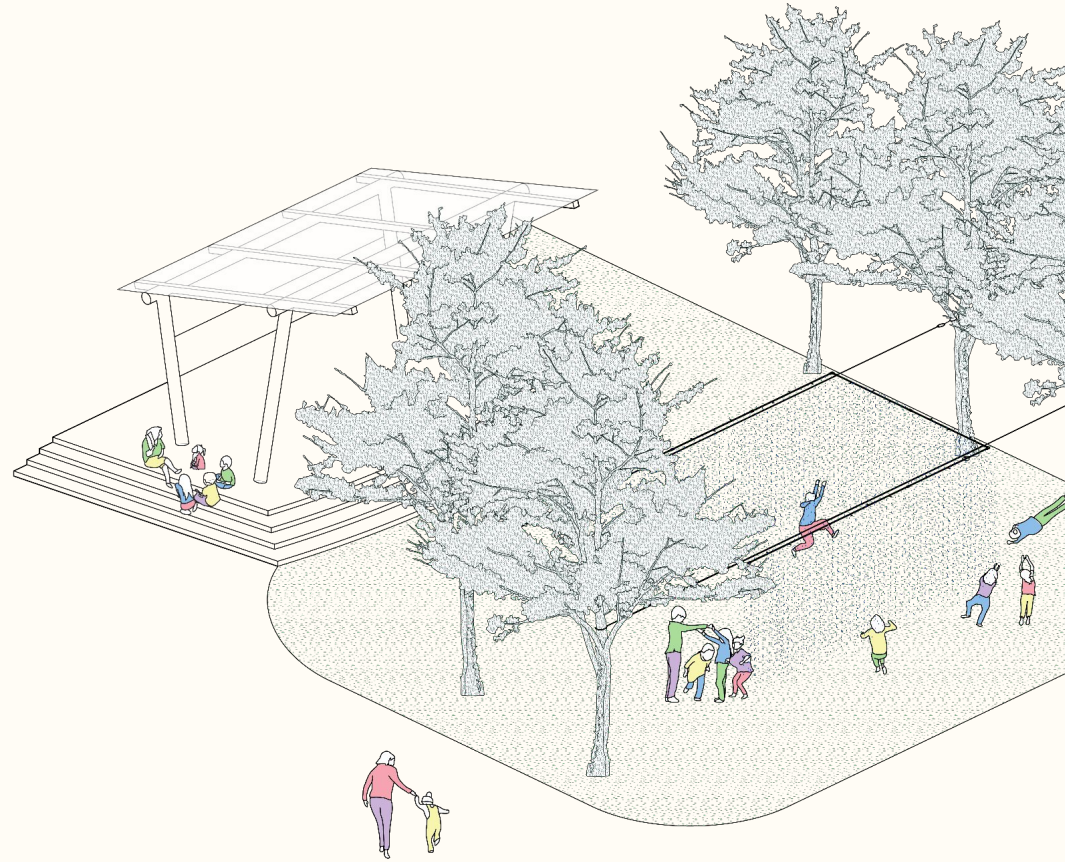
SITE

ENVIRONMENTAL

Tree Canopy: Evaluating natural shade cover and potential for structural support.

Topography: Understand the site's elevation and slopes to manage drainage and accessibility. Flat ground allows for the installation of larger systems and furniture - it also ensures the safety of children playing on site.

Weather Considerations: Consider how the space will perform across different weather conditions and adapt to seasonal variations; analyze the sun's path to design for optimal shading throughout the day.



SITE

LOGISTICAL

Operating Hours: Determine when the site will be in use to align design with peak demand and accessibility; assess whether non anchored materials will need storage or anchored ones need secure bolting.

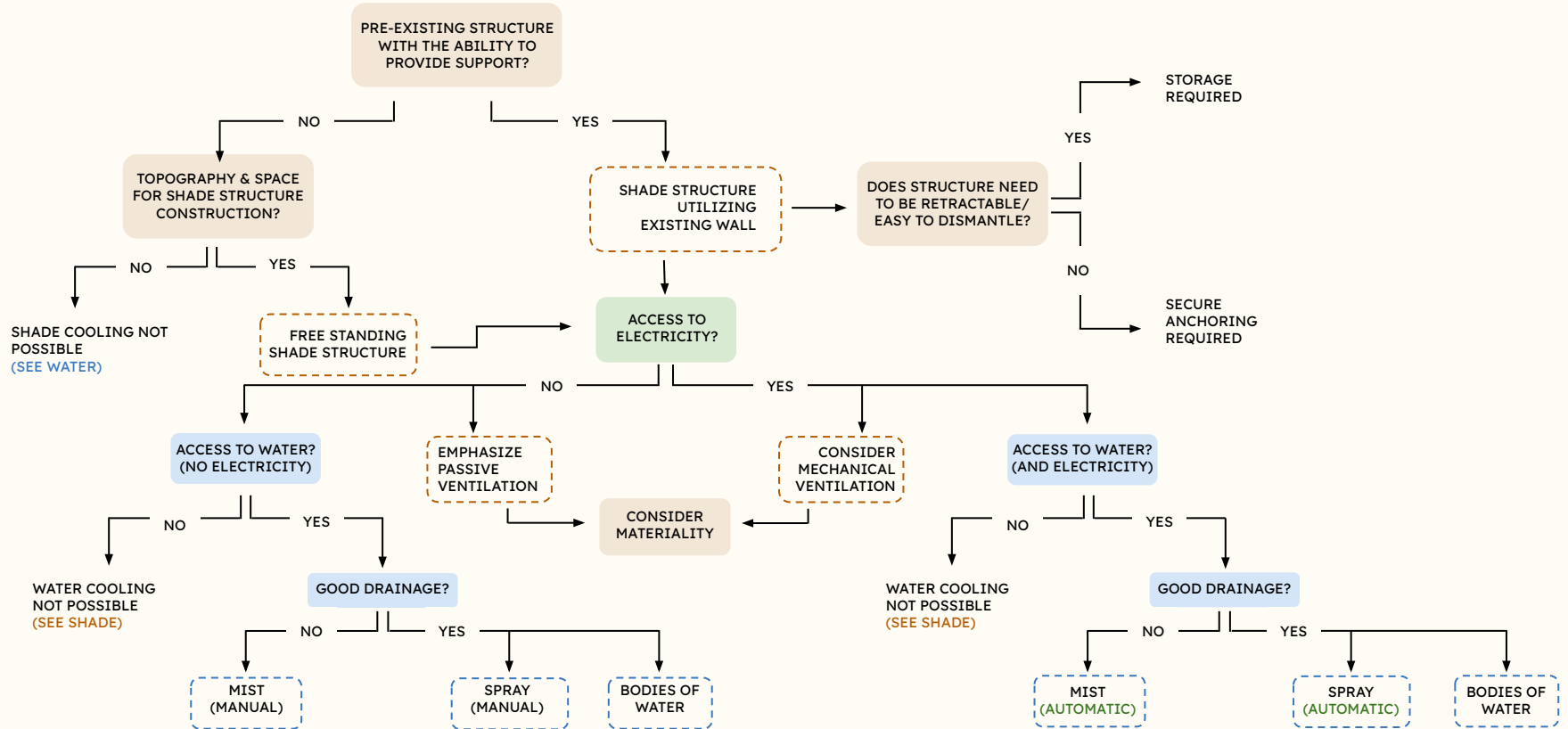
Maintenance: Plan for upkeep, including cleaning and repairs, to ensure the space remains functional over time.

Permitting: Identify and secure any necessary permits to comply with local regulations and avoid project delays.



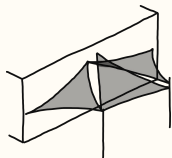
COOLING STRATEGIES

This diagram is a good place to start when considering your climate resilience approach and selecting an appropriate cooling strategy for each scenario.



COOLING STRATEGIES

SHADE



CONFIGURATION:

Shade structure can be either a wall or a canopy. Balance coverage with ventilation to maintain airflow.



MATERIALITY:

Select water-resistant and UV-stabilized materials. Choose materials with high albedo to reflect heat and reduce surface temperatures.



ANCHORING:

Ensure stability and select between retractable or fixed installations.



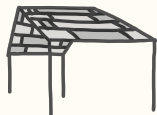
COOLING STRATEGIES

VENTILATION



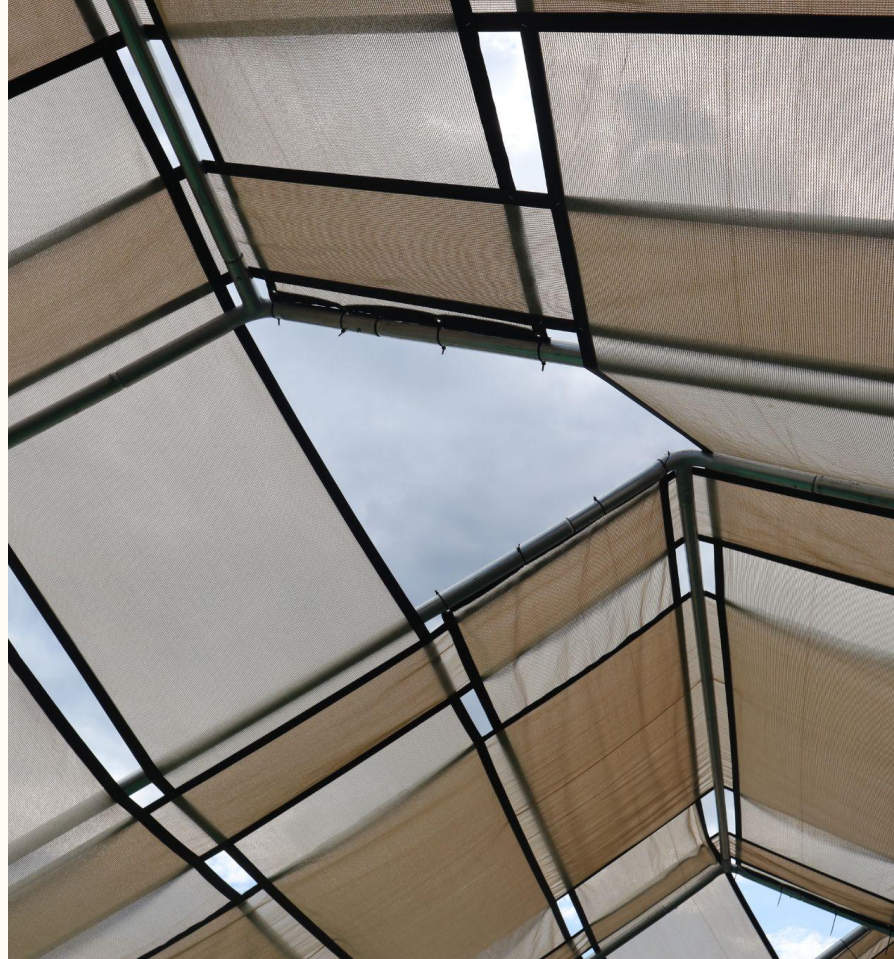
MECHANICAL VENTILATION

Energy-efficient systems with minimal noise and a small environmental footprint such as solar-powered, or misting fans.



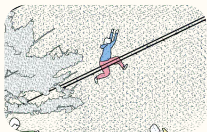
PASSIVE VENTILATION

Perforated walls or screens that channel breezes. Use natural materials with high porosity or strategically placed openings to optimize airflow.



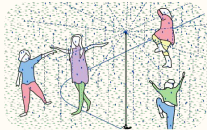
COOLING STRATEGIES

WATER



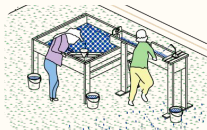
MISTING

Fine droplets of water. Misting systems use less water, allowing them to run longer without waste and providing easy drying and sites with low drainage capacity. A swift return to everyday activities.



SPRAY/ SPRINKLER

Offers effective and playful cooling with even distribution.



BODIES OF WATER

Passive cooling that does not require a continuous water source. Water tables, trays, and buckets offer a fun and interactive way to cool down.





CASE STUDY:

A PLACE TO PLAY

A PLACE TO PLAY

DORCHESTER WEATHER is a local theater ensemble that seeks to unite performance, education, and community care. They are committed to “using art as a vehicle for justice and community empowerment.” Dorchester Weather has been using this location, on the corner of Norfolk and Woodrow Ave, as an interdisciplinary space for public art and community events. Their work is that of reclamation, renaming this city-owned lot “The Lot Next Door.” Dorchester Weather is led by Jaroznie Harris, an artist, activist, and educator, dedicated to uniting theater, pedagogy, community care, and youth empowerment.



This project offered the opportunity to approach climate resilience from two sides: through physical cooling and community storytelling.



A PLACE TO PLAY DESIGN TIMELINE



PREDESIGN

Problem definition: Clearly articulate the program goals and design challenge, identifying the specific issue the project aims to address.

Identify Users: Engage with all stakeholders, including clients, funders, end-users, neighbors, and custodians, to understand their needs and perspectives.



DESIGN

Community Workshops: Facilitate participatory sessions to gather input, build consensus, and ensure the design reflects the priorities of the community.

Develop Solution: Synthesize insights from workshops and stakeholder feedback to create an inclusive, functional, and context-sensitive design solution.



CONSTRUCTION

Purchasing and Fabrication: Source high-quality, sustainable materials and fabricate components to meet project specifications.

Installation: Coordinate a seamless on-site installation process, ensuring safety, efficiency, and minimal disruption to the community.

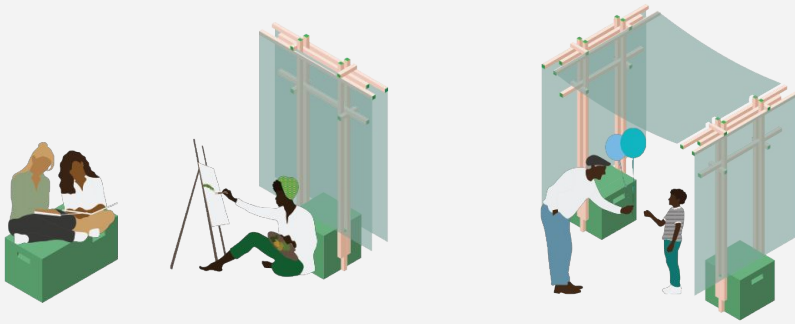


MAINTENANCE

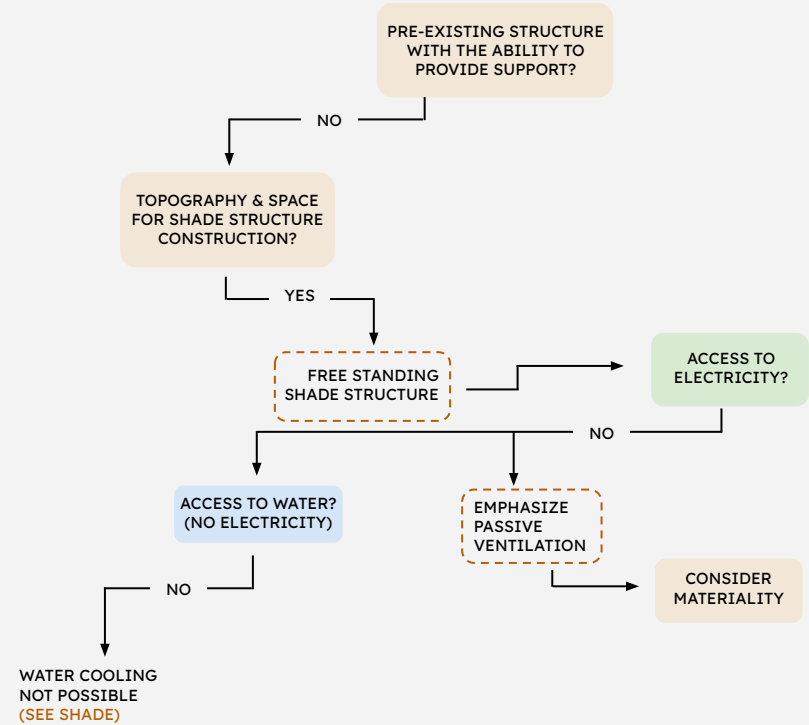
Post-Occupancy Evaluation: Conduct assessments to measure the project's impact on users and the environment, identifying areas for improvement.

Stewardship: Establish a long-term care plan, empowering stakeholders to maintain and sustain the project's functionality and value over time.

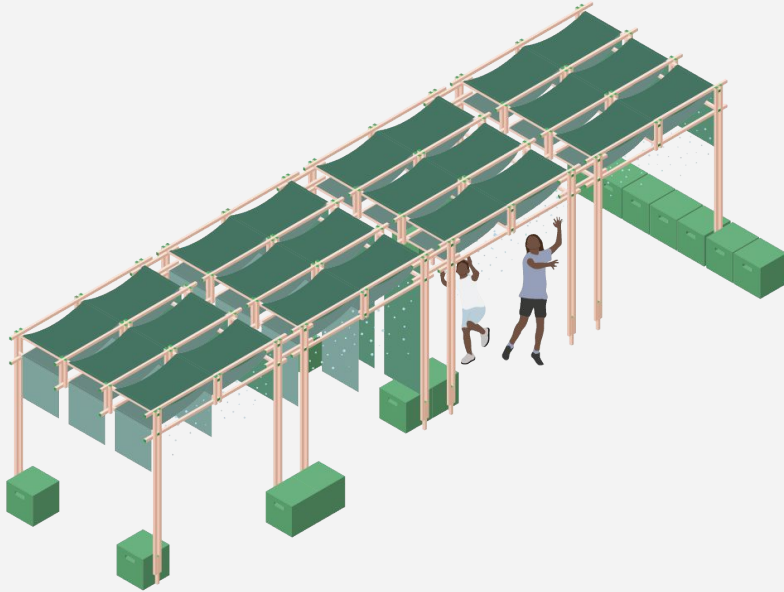
SHADE PROP



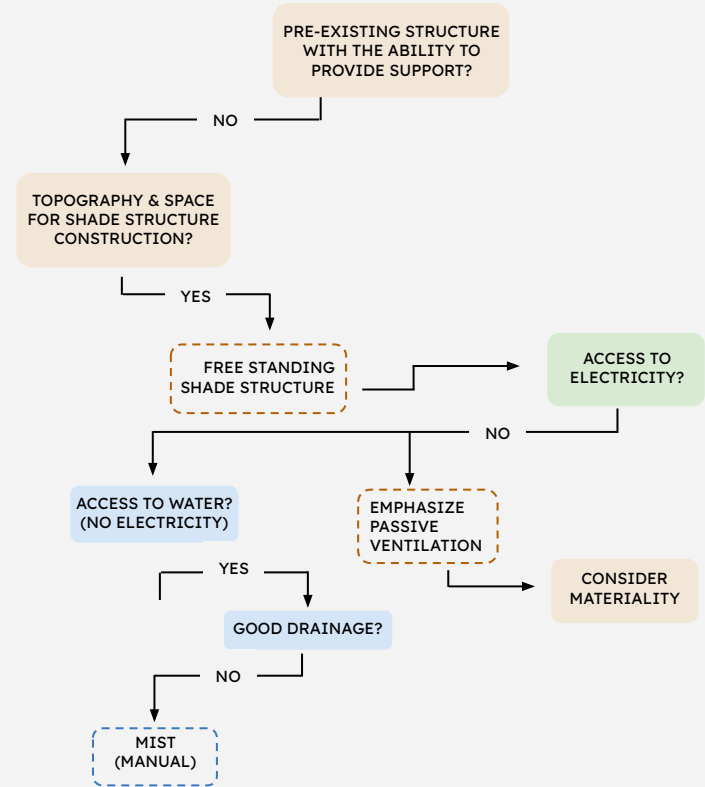
Mobile, versatile shade props. Various configurations possible depending on user need.



CANOPY



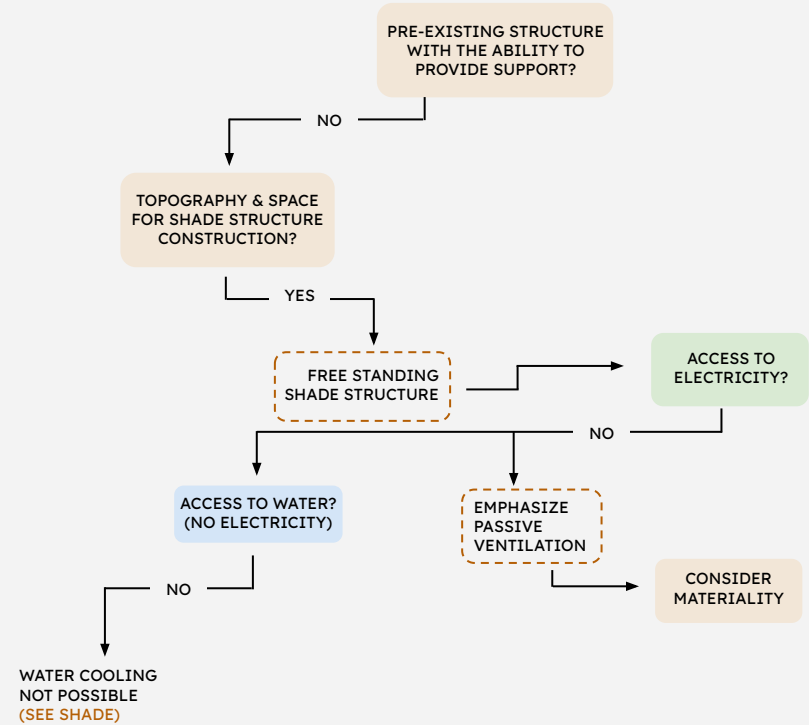
Large shade canopy next to building, giving it water access and misting capabilities. Shading and water work together with the “human carwash.”



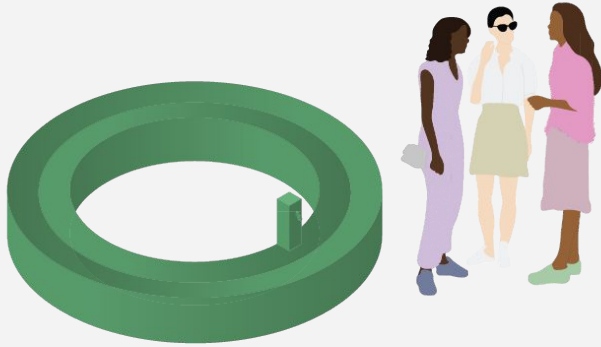
SHADE WALL



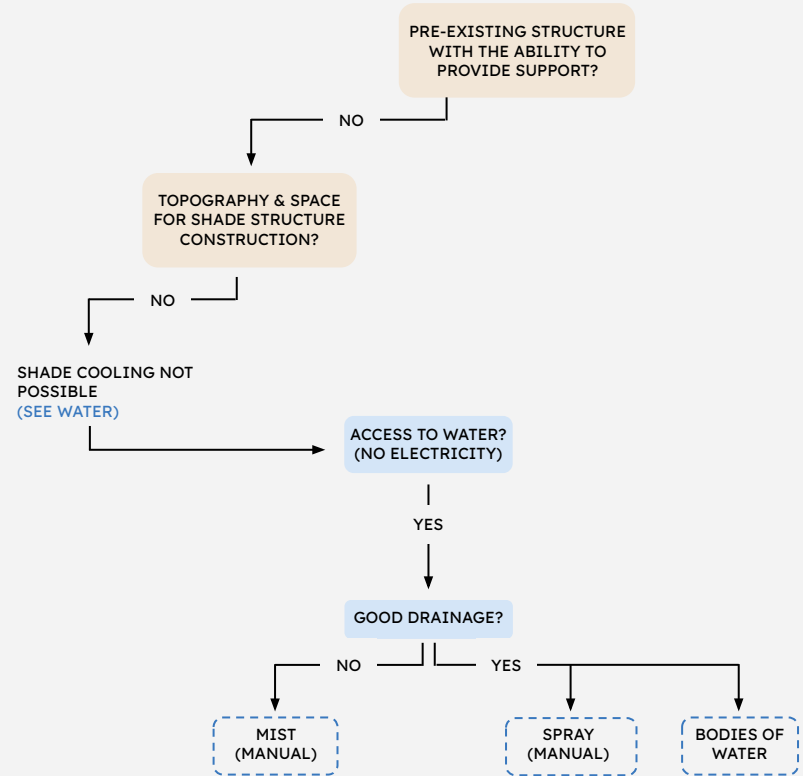
Large shade wall with tilting shade panels. Plenty of seating to encourage relaxation and community



FOUNTAIN

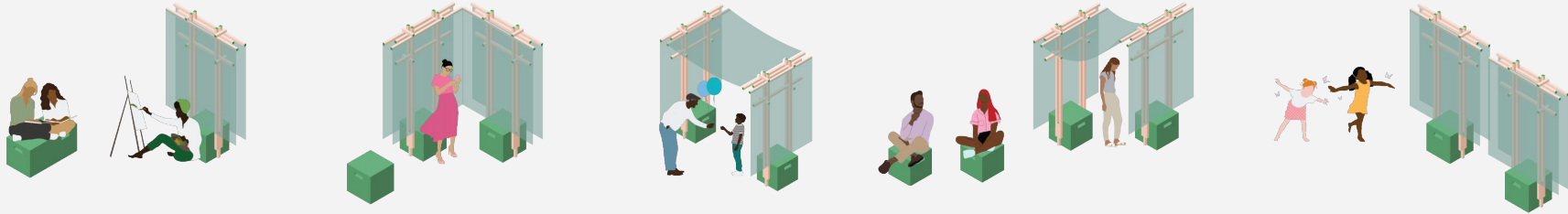


Concrete fountain that doubles as seating when the fountain is off. Water access from a nearby house.



CASE STUDY: A PLACE TO PLAY

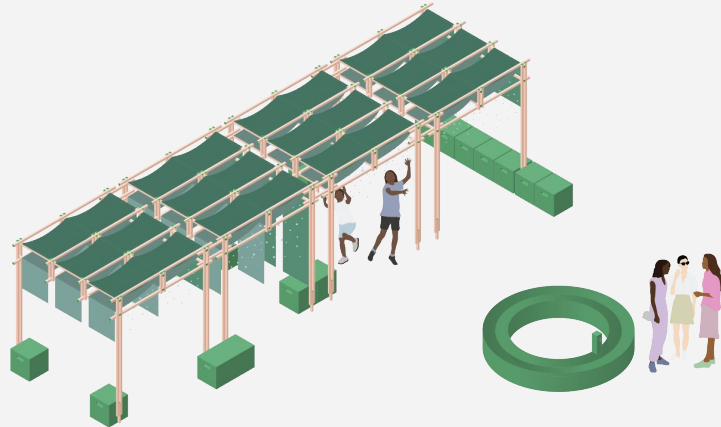
SHADE PROP



SHADE WALL



CANOPY AND FOUNTAIN



PROJECT PARTNERS



THE RESILIENT CITIES NETWORK (R-CITIES) is the world's leading urban resilience network. It brings together global knowledge, practice, partnerships, and funding to empower its members to build safe and equitable cities for all. At work in nearly 100 cities worldwide, the Resilient Cities Network supports on-the-ground projects and solutions to build climate resilient, circular and equitable cities. Through the Resilience for Communities program, R-Cities is supporting local leaders in Boston and Houston to break down silos, build trust and deliver bold, community-led resilience projects.



Z ZURICH FOUNDATION & ZURICH NORTH AMERICA

lead Urban Climate Resilience Program (UCRP), a global initiative to support urban communities impacted by climate change. UCRP supports resilience for communities in Boston, Houston and beyond. Zurich has 150 years of experience managing risk and supporting resilience for customers around the world. Reflecting its purpose to create a brighter future for everyone in the communities it operates in, Zurich aspires to be one of the most responsible and impactful businesses in the world.

PROJECT PARTNERS

YOUTHBUILD BOSTON is an organization that assists underserved young people with the essential social, vocational, and academic skills to thrive in the design and construction industry. YBB emphasizes building confidence, community, and active participation through its two training programs, one for high school students and one for recent graduates. Through these programs, Boston youth can earn certifications, build trade skills, explore architecture and design, and secure future job and apprenticeship opportunities.

DORCHESTER WEATHER a Boston-based theater ensemble that unites performance, education, and community care. They are committed to using art as a vehicle for justice and community empowerment. The ensemble has been activating the lots on the corner of Norfolk and Woodrow Ave as an interdisciplinary space for public art and community events. Their work is that of reclamation, renaming this city-owned lot *The Lot Next Door*. Dorchester Weather is led by Jaronzie Harris, an artist, activist, and educator, dedicated to combining theater, pedagogy, community care, and youth empowerment.

ARCHITECTURE FOR PUBLIC BENEFIT is a mission-driven practice committed to making good design accessible to all. We partner with nonprofits and community organizations to create environments that reflect the needs and aspirations of the people they serve. Guided by a collaborative process, we use design to advance equity, strengthen communities, and create spaces that foster belonging. In addition to architectural services, we love to create clear, easy-to-understand resources that build community agency and share design knowledge with a broad public.