

Climate Justice in Architecture

Design centering both the environmental and social aspects of climate change.

Climate justice in architecture refers to engagement, advocacy, planning, and design that draw down emissions; build resilience and capacity; support human, cultural, and ecological health; and protect all communities in the era of climate change.

Committee on the Environment

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Rendering of future I-5 Rose Quarter Freeway Cap
Image Credit: created by ODOT and ZGF

I-5 Rose Quarter Independent Cover Assessment

This case study highlights an exemplary architecture project that prioritized both environmental and social aspects of climate change in its design process, community engagement approach, and final design. It aligns with many aspects of the AIA Climate Justice in Architecture Taxonomy across the building, neighborhood, regional, and global scales.

I-5 Rose Quarter Independent Cover Assessment

Portland, OR



Rendering of I-5 Rose Quarter Freeway Cap Streetscape
Image Credit: created by ODOT and ZGF

Summary

This project is a rare example of public transportation agencies responding to community advocacy around a proposed freeway expansion. The I-5 Rose Quarter Independent Cover Assessment was commissioned in response to the joint request from community-based organization Albina Vision Trust, the City of Portland, and the Metro Regional Government that the Oregon Department of Transportation convene a more robust community-centered engagement process as part of the environmental impact assessment for the proposed expansion of Interstate 5—a freeway that separates the central business district in Portland, Oregon, from Albina, a formerly majority Black neighborhood. Architecture firm ZGF saw their role as working with the community and public agencies to jointly answer the questions: “If we were to do something that truly was responsive to the community’s interests, what would the cost be? What would the schedule impact be?” The result is a proposal for capping the I-5 corridor that prioritizes neighborhood revitalization and cultural connections within the Portland Black community, alongside city-level goals for reducing single-car use and exposure to extreme heat and traffic-related air pollution.

Project overview

BUILDING PROGRAM TYPE(S):
Highway cover, Local streets, Future mixed-used development, Public open space

PROJECT TYPE:
Urban design

TOTAL FLOOR AREA:
Approximately 9 city blocks

TOTAL USERS:
Publicly accessible

SITE AREA:
7.97 acres

NUMBER OF FLOORS:
3

PROJECT CLIMATE ZONE:
ICC Climate Zone 4C

PROJECT SITE:
Previously developed land,
Historic structure or district

PROJECT SETTING:
Urban

YEAR OF SUBSTANTIAL COMPLETION:
2021

COST OF CONSTRUCTION (EXCLUDING FURNISHING):
TBD

THIRD PARTY RATING SYSTEM:
N/A

Project team

OWNER:
Oregon Department of Transportation

ARCHITECT:
ZGF

MEP ENGINEERS:
N/A

STRUCTURAL ENGINEER:
ARUP

CIVIL ENGINEER:
N/A

GENERAL CONTRACTOR:
N/A

“The environmental impact of this project needed to provide better outcomes than the status quo. The most important question for us was not whether or not a lane should be added to the freeway. It was ‘What is the environmental impact of reconstituting a neighborhood versus continuing to have this trench exist in the heart of the neighborhood’ ... One of the struggles was that there was no framework for accounting for historic, present or social impact in the ways that were important to us from the beginning.”
— Winta Yohannes, Albina Vision Trust



Aerial photo of construction of I-5
Image Credit: N/A

Design Process

In 2021, the Oregon Department of Transportation (ODOT) released a draft plan for updating the Interstate 5 (I-5) freeway corridor, which runs along one side of the central business district in Portland, Oregon. The original plan for capping the freeway was met with skepticism by many in Portland, because it did not go far enough in reconnecting the neighborhood on the far side of Interstate 5 with downtown—a pre-established goal set by the City of Portland. Instead, the design proposed expanding the width of the freeway by one auxiliary lane to reduce congestion—a proposal that would only lower traffic-related emissions by a fractional amount.

The construction of the freeway in the mid-1960s both materially damaged the economic vibrancy of the Albina neighborhood and physically separated residents and businesses in this historically Black neighborhood from downtown. While many Black residents were displaced after the freeway was built, a higher percentage of Black residents continue to call the neighborhood home compared with Portland as a whole. Today, 7.5% of neighborhood residents self-identify as Black, compared with 5.9% in Portland, 5.4% in Multnomah County, and 1.9% in Oregon. However, the neighborhood hosts a lower percentage of young children (2%) and youth (5.6%) than the regional average (4.4% children under five and 9.5% youth aged 10–18 in Portland; 4.8% children and 10.2% youth in Multnomah County). Once a vibrant hub of economic activity, the neighborhood has suffered economically over the past 60 years. The median household income is \$55,673, compared with

\$85,876 in Portland, \$83,668 in Multnomah County, \$76,632 in Oregon, and \$75,149 in the U.S. The poverty rate is correspondingly high: 25.6% compared with 12.2% in Portland, 12.2% in Multnomah County, 11.9% in Oregon, 12.5% in the U.S.

The economic, environmental health, and social damage caused by the original I-5 construction eroded the neighborhood’s trust in transportation agencies. In 2015, Albina Vision Trust convened a broad array of stakeholders to ask what would need to change in the neighborhood to make it whole again. Unlike many transportation design projects, designers were asked to think of wealth building as part of their scope of work. The designers identified the freeway as a key barrier that needed to be addressed to rebuild a resilient neighborhood. When ODOT proposed the freeway expansion plan in 2021, Albina Vision Trust was ready to respond, because the framing had already been developed through the design challenge.

Albina Vision Trust, in partnership with local public agencies, requested that ODOT convene a more robust, community-centered engagement process to refine the original freeway redesign and cap project, because the environmental impact assessment then underway did not account for the project’s social impact.

In response, architecture firm ZGF worked with the community and public agencies to convene an Independent Cover Assessment (ICA) consisting of 23 stakeholder advisory meetings and 3 multi-day working sessions—totaling 24 hours of direct discussion with 59 community collaborators and 5 public agencies. The design team supplemented their core expertise by hiring subconsultants, such as urban economists who helped identify opportunities for wealth creation and quantify their potential neighborhood impact. They also engaged a governance specialist to assess jurisdictional issues, since the freeway cap crosses multiple boundaries. That consultant helped them understand the governance implications of creating land over a public right-of-way and then transferring it to the community.

After this extensive community engagement process, ZGF forwarded several freeway cap scenarios to the governor and the Oregon Transportation Commission. The consensus scenario aimed to balance community priorities with their impact on the construction schedule.

“Every single professional [involved in the project] has been called to take a multidisciplinary approach, including to think about how their work interacts with the social sciences. We asked them to take a multidisciplinary approach to delivering justice.”
— Winta Yohannes, ED, Albina Vision Trust

Community-centered engagement and oversight

The ICA team partnered with neighborhood faith institutions and civic organizations to identify and recruit community collaborators who represented a range of ages and viewpoints and were respected within the community. Because of COVID, all meetings were held over Zoom. To ensure that every voice was heard, the group size was kept small, and a variety of engagement methods—such as live polls—were offered. The community engagement facilitator met three times over Zoom with a small cohort of community members, giving them enough time to learn about the project’s history and ODOT’s objectives before proposing an alternate design. Community meetings were facilitated by a longtime neighborhood resident who leveraged her relationships to connect community priorities with a range of urban planning ideas aimed at meeting local needs while addressing public agencies’ transportation and environmental goals.

Engagement started with a broad visioning exercise for the neighborhood’s future, then narrowed down to brainstorming how the freeway cap could support that vision. At each phase, the facilitator worked with community collaborators to refine the design to better reflect their feedback. Participants weighed trade-offs around cost, schedule, the amount and quality of land generated by the freeway cap, and ownership models for different design scenarios developed by the ICA team. They based their decisions, in part, on the time frame and scale of job creation and wealth generation embedded in each scenario.

The final vision for the freeway cap coalesced around three pillars: community health, community wealth, and community cohesion. The design stitches the street grid back together on both sides of the freeway; emphasizes active, pedestrian-friendly streets and intersections to encourage ground-level activity; and balances maximizing developable land with expediting construction. Community collaborators envisioned adding culturally tailored services to promote health and wellness; Black-controlled economic development institutions; permanently affordable rentals and homeownership opportunities; and expanded expressions of Black culture and history.

The design process concluded with a governance plan establishing next steps for community oversight of the freeway cap’s regulatory and construction process. It also created a framework for determining ownership and management of the developable land created by the cap.

Advocacy and regulatory considerations

To ensure the study led to action, Albina Vision Trust worked with its federal delegation and the governor’s office. They also maintained ongoing advocacy with local elected officials to keep stakeholders engaged with both the impact study and the negotiations over which highway cover scenario would move forward to the bidding stage.

After ZGF developed scenarios based on community input, ODOT, the governor’s office, and the City of Portland signed an intergovernmental agreement allowing technical staff from each agency to collaborate on resolving questions related to regulations, rights-of-way, ownership, and other details. The updated NEPA Environmental Impact Statement (EIS) found no significant impact for the proposed scenario, allowing the project to move forward to the development of a 30% construction package.

“When we’re asking architects to think about climate justice, [the political dynamics are] really important. Everybody here will tell you that the ICA process was highly politicized, and that the quality of work, both from a technical perspective and also the quality of the engagement was really important. Both the engagement process and the technical expertise had to withstand serious scrutiny.”
— Winta Yohannes, ED, Albina Vision Trust

Project financing

The U.S. Department of Transportation’s Reconnecting Community and Neighborhood Access and Equity Grant program provided key funding for the cap project, awarding \$450 million. Albina Vision Trust and the City of Portland raised an additional \$800,000 after stakeholders selected the final cap design in a process convened by the governor of Oregon. Additional funding that would pay for construction of the freeway cover portion of the project is included in a transportation package that has been proposed to the state legislature. Development of the land on the cap will be structured as a long-term land lease—a novel financing mechanism.

“The amazing thing for me as an engagement person working with the design team was that the design team followed the community’s input, which is very unusual. Usually design teams on these large capital projects ... let the community react after they’ve done some designing. They’re using their expertise to set the table. And then the community is really just reacting to the options that are put in front of them. I think what was very unique about this process is that we started [by] creating a process that allowed the community to create its own vision about what it wanted to see. And then ... given all the constraints and all of the issues and context that we had, we tried to design options that responded to the community’s vision. ... The whole design team made adjustments. All of our experts made adjustments to try to be responsive. And, I think where we ended up was a joint product that was created from the community, with the community leading and us processing, you know, responding to the community and then tweaking and responding to the community while we kept [the design] within the boundaries of the context of what we were charged to do.”
— Jeana Woolley, Community Engagement Lead, JM Woolley & Associates

Essential climate justice design components include:

- 1. Centering an honest conversation about the historic harms caused by the initial construction of the freeway:** Because current and former Albina neighborhood residents and business owners continue to experience lasting social, economic, and health harms from the construction of I-5 in the 1960s, directly addressing that legacy was an important first step in imagining a freeway cap that would reconnect Albina with Portland’s central business district.
- 2. Framing the design team’s role as facilitators of a community-led co-design process:** Rather than presenting themselves as experts, the design team worked closely with a skilled community engagement professional and Albina resident to create an environment of mutual learning and collaborative decision-making. This approach was essential to raising the project’s profile with local, state, and federal elected officials and funders.
- 3. Developing success metrics meaningful to both the Albina neighborhood and public agencies:** The freeway cap project requires coordination among multiple local, state, and federal agencies, as well as diverse interest groups. It was critical to acknowledge early on that success would be measured differently by different stakeholders over different time horizons. Developing the final set of metrics remains a work in progress.

AIA Climate Justice in Architecture Taxonomy

Climate change both creates new and amplifies existing environmental and social challenges across seven themes or categories: Social determinants of health, cultural connection to place, economic development without displacement, environmental justice, ecosystem health, climate change health and resilience, and decarbonization. The Climate Justice in Architecture Taxonomy addresses both the environmental and social dimensions of climate change, guiding teams to design architectural responses that impact these themes at three scales: Building occupants, the surrounding neighborhood, and regionally and globally. The taxonomy aligns and connects with the AIA Framework for Design Excellence, which represents the defining principles of design excellence in the 21st century. The framework is comprised of 10 principles and informs progress toward four outcomes: A zero-carbon, healthy, resilient, and equitable built environment.

The I-5 Rose Quarter Independent Cover Assessment addresses all three scales in the taxonomy, with particular emphasis on the neighborhood and regional/global scales.

Climate Justice Taxonomy	Impact of Design Features by Spatial Scale			Alignment with Framework for Design Excellence			
	Building	Neighborhood	Regional/Global				
 Social Determinants of Health				 Integration	 Equitable Communities	 Well-being	 Discovery
 Cultural Connection to Place				 Integration	 Equitable Communities	 Economy	
 Economic Development without Displacement				 Equitable Communities	 Economy	 Well-being	
 Environmental Justice				 Equitable Communities	 Ecosystems	 Change	
 Ecosystem Health				 Equitable Communities	 Ecosystems	 Change	
 Climate Change Health & Resilience				 Equitable Communities	 Ecosystems	 Economy	 Well-being
				 Change	 Discovery		
 Decarbonization				 Energy			

Overview of AIA Climate Justice in Architecture Taxonomy themes and spatial scales: I-5 Rose Quarter Independent Cover Assessment. Source: Biositu, LLC

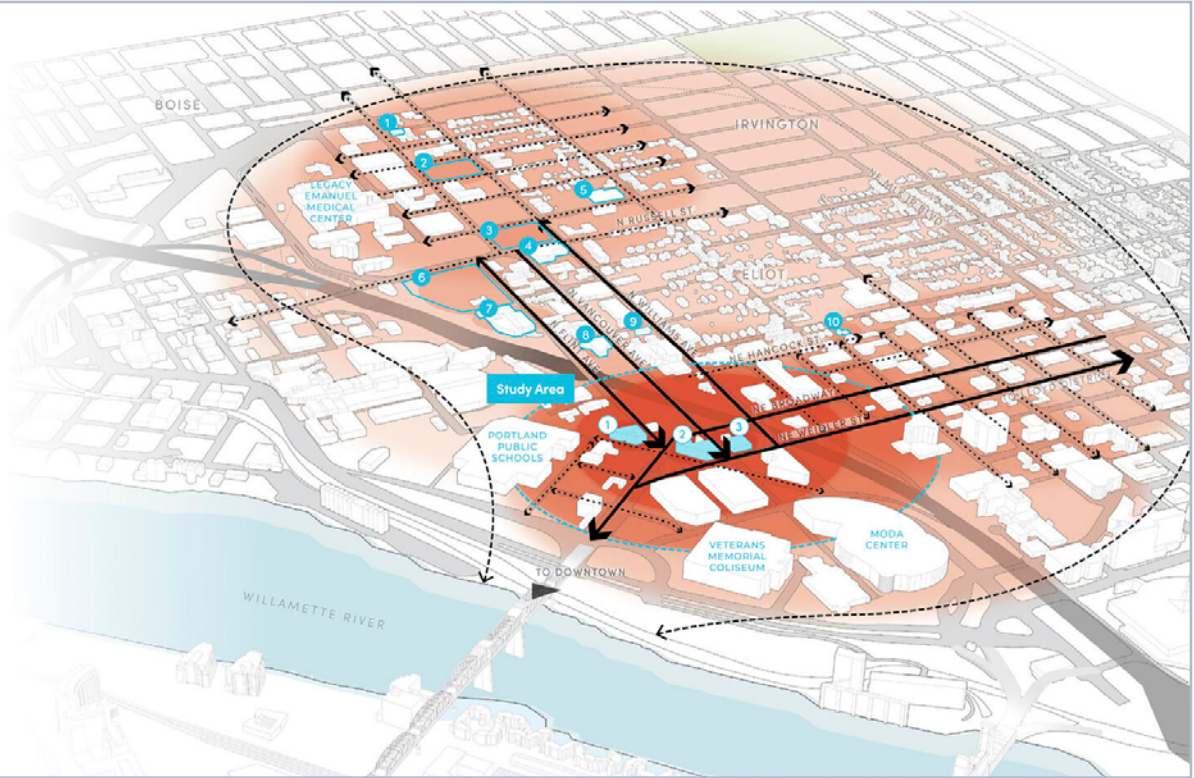
Context

Community Assets

- 1 Vancouver Ave First Baptist Church
- 2 Dawson Park
- 3 Williams & Russell Block (Formerly The Hill Block)
- 4 Urban League of Portland
- 5 Matt Dishman Community Center
- 6 Lillis Albina Park
- 7 Harriet Tubman Middle School
- 8 Meyer Memorial Trust
- 9 Billy Webb Elks Lodge
- 10 Dean's Barbershop & Beauty Salon

Historic Buildings

- 1 Paramount Apartments
- 2 Left Bank Building
- 3 Leftbank Annex



Context around the proposed I-5 Rose Quarter freeway cap
Image Credit: Created by ODOT and ZGF

estimated to experience depression and 21.3% report general poor mental health, compared with 27.4% depression and 18.8% poor mental health in Portland, 27% depression and 18.7% poor mental health in Multnomah County, and 19.5% depression and 16.6% poor mental health in the U.S.

Enhancing safety for pedestrians and cyclists on both sides of the freeway: Residents of the Albina neighborhood commute using public transit, walking, or cycling at a much higher rate than the regional and national average: 42.6%, compared with 17.5% in Portland, 15.6% in Multnomah County, 8% in Oregon, and 6.7% in the U.S. In addition to the dangers posed to pedestrians and cyclists by the I-5 freeway, one of the major thoroughfares running through the neighborhood—Broadway—has been designated by the City of Portland as high risk for driving crashes, pedestrian crashes, and cycling crashes, with its intersection at I-5 identified as one of the most dangerous intersections in the city. Creating wide, pedestrian-friendly sidewalks with space for terraces and other outdoor activities can reduce the risk of traffic-related injury and chronic disease by encouraging active modes of transportation in a safe urban environment.

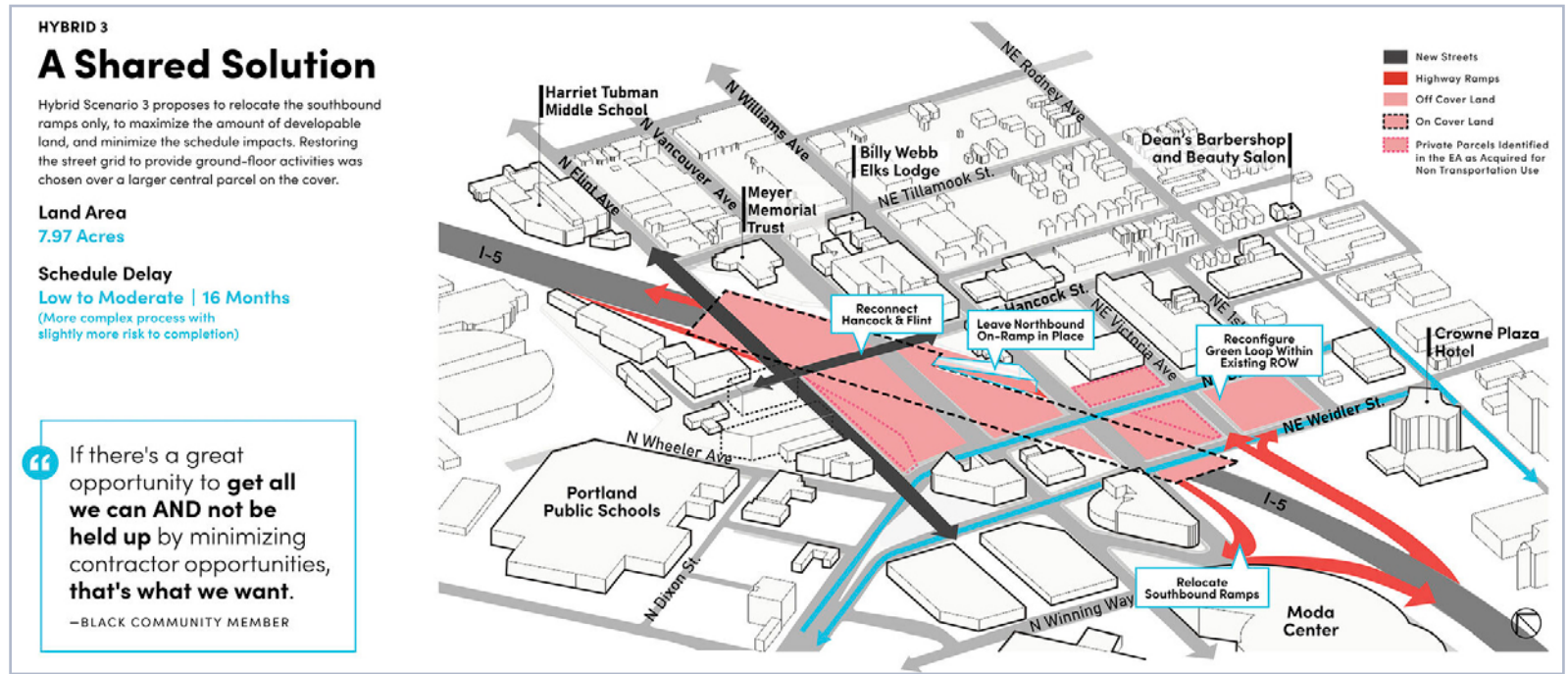
Balancing social, economic, and health objectives in the final design: The final consensus design balanced the short-term economic needs of local Black, Indigenous, and People of Color (BIPOC)-owned construction companies to bid on the construction project with design options that would have required additional engineering analysis, thereby slowing down the construction schedule.

Social determinants of health

Leveraging new real estate on the freeway cap to address gaps in social and health services: The plan calls for developing a cultural health and wellness center, along with a high-quality, culturally-appropriate childcare and child development center on the freeway cap. These facilities will increase access to primary care for physical and mental health needs and support for families with young children living in the neighborhood.

Increasing access to outdoor space and opportunities for physical activity: The I-5 freeway cap project builds on several assets in the Albina neighborhood, including Lillis Albina Park, which is within walking distance for all residents. Current adult residents report lower rates of two chronic diseases influenced by physical activity: high blood pressure (21.6% compared with 24.5% in Portland, 25.1% in Oregon, and 32.7% in the U.S.) and Type 2 diabetes (6.9% compared with 7.9% in Portland, 8.7% in Multnomah County, and 11.3% in the U.S.). Building a new outdoor community gathering space will enhance the health-promoting built environment. By fostering social connections and increasing access to nature, the space will also support mental health—a longstanding challenge in the area. Currently, 28.8% of neighborhood adults are

“The social justice aspect of [the project] was an outcome that had never been considered [before the community engagement] and that people were extremely supportive of. Being able to restore that cover, restore the fabric and then create a community on top of the cover. Not just have a big, giant, empty park. But to restore the street grid to be able to create extended community from either side and connect the two sides across the freeway. All of that was what we heard from all of the community members.”
— Jeana Wooley, Community Engagement Leader, JM Woolley & Associates



I-5 freeway cap design approved through the community engagement process
Image Credit: Created by ODOT and ZGF

Economic development without causing displacement

Developing economic opportunities that balance near-, medium-, and long-term benefits for residents and business owners: Adding eight acres of land adjacent to the historic Albina neighborhood presents an opportunity to accelerate economic development both on the cap and in the existing neighborhood, which will become more accessible from the central business district. The question of what will be built on the freeway cap is being guided in part by Albina Vision Trust’s community investment plan to ensure that long-time residents and business owners benefit from the new real estate and economic opportunities.

Prioritizing permanently affordable housing: While the neighborhood currently reports a lower percentage of owner-occupied residences (10.2% compared with 53.3% in Portland, 54.5% in Multnomah county, 63.2% in Oregon, and 64.8% in the U.S.), the percentage of homeowners who are Black is much higher in the Albina neighborhood than regional and national averages: 15.7% compared with 3.2% in Portland, 3.1% in Multnomah county, 0.9% in Oregon, and 8.1% in the U.S. The final design builds on that success by emphasizing the development of permanently affordable housing in the neighborhood—both rentals and home ownership—to promote economic development without pricing out existing residents and businesses.

Cultural connection to place

Showcasing the rich history of Black Portland with a cultural center: The final design calls for developing a Black cultural center on the freeway cap and installing historical markers and public art reflecting local Black culture throughout the district.

Reconnecting the neighborhood with historically significant Black cultural institutions: The freeway cover design reconnects the bulk of the historic Albina neighborhood with culturally significant institutions on the other side of I-5, including the Vancouver Avenue First Baptist Church, Dawson Park, and the Williams and Russell Block—Black Portland’s central commercial district prior to the construction of the freeway.

“I want Black culture to be the thread that runs through every fabric of this endeavor.”
— Black community member (Restorative Justice, n.d.)

Contributing to a citywide effort to revitalize and repopulate historic BIPOC neighborhoods: Despite the population displacement caused by the construction of the I-5 freeway, neighborhoods in north and northeast Portland have retained their strong cultural identity as community hubs for Black Portlanders. The neighborhoods continue to host the highest concentration of Black cultural institutions in the city. Many in the community wish to revitalize and repopulate the area.

“One of the important things that happened early and has been consistent [throughout the Community Investment planning process] is that [Albina Vision Trust] asked architects to think about wealth building as part of their job. We don’t expect them to be the economists on the team, but we do want them to think about how the built environment facilitates wealth building for communities or continues the wealth taking from communities, including from a climate perspective.”
— Winta Yohannes, ED, Albina Vision Trust

Targeting freeway cap development to create economic and wealth-building opportunities for Black Portlanders: The development plan calls for establishing a Black-controlled community development corporation, a community land trust, a job training and development center, and a food sovereignty center/market.

“The freeway cover is a new thing, so that allows us to look at eight acres of additional land and a new connected street pattern that hasn’t been there since the 1960’s.”

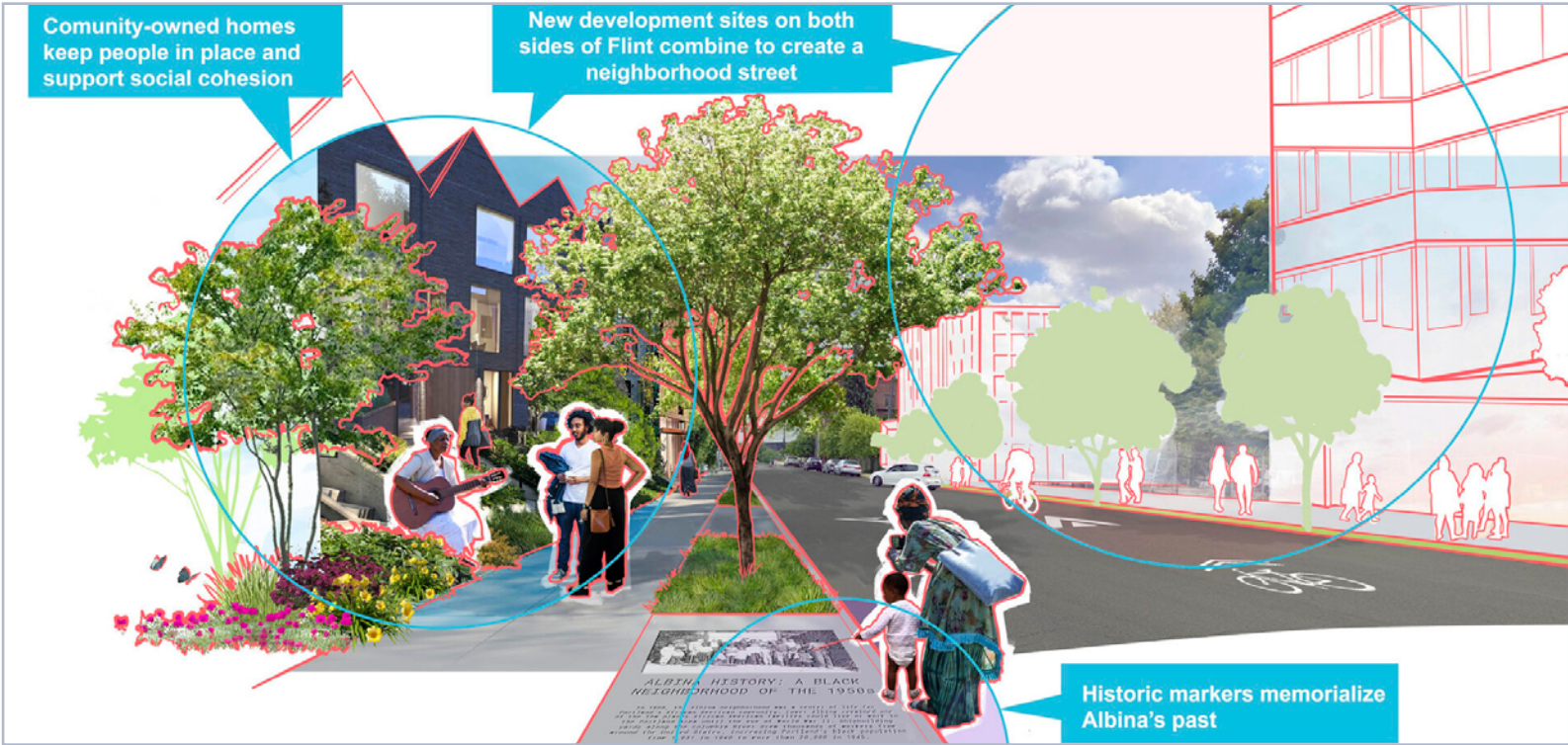
– Troy Doss, Bureau of Planning and Sustainability

Environmental justice

Recognizing the environmental injustices of the original freeway construction: The Lower Albina neighborhood was partially destroyed by the construction of Interstate 5 and subsequent urban renewal projects in the 1960s. Many residents—the majority of whom were Black—were forced to move out of the neighborhood, while those who remained were exposed to traffic-related air pollution from congested streets and the new freeway.

Collecting baseline environmental exposure metrics: At the community’s urging, the City of Portland is tracking the impact of traffic-related air pollution on at-risk populations living adjacent to the freeway. These baseline metrics will allow for post-construction assessments of the project’s environmental justice impacts.

Reorienting the original freeway expansion plan through community engagement: ODOT’s original plan focused on reducing freeway congestion, traffic-related injuries, and exposure to traffic-related air pollution, as well as increasing pedestrian connections between downtown and the historic Albina neighborhood. After engaging in the ICA community engagement project, the revised consensus plan set a goal of restorative justice, as defined by neighborhood residents and ex-residents.



Rendering of I-5 Rose Quarter Freeway Cap Streetscape
Image Credit: Created by ODOT and ZGF

“The consensus was that [the community] wanted to see [the urban] fabric restored. ... That was literally the most important thing. ... There was a lot of talk about how to make [the project] environmentally sound and ... sustainable. But, first and foremost, they wanted to see social justice goals served.”

– Jeana Wooley, Community Engagement Facilitator, JM Woolley & Associates

Ecosystem health

Balancing biodiversity, environmental exposures, and climate mitigation goals: Heat exposure is one of the key environmental health goals for the project, in part because the existing neighborhood’s exposure falls into the 95th percentile compared with the rest of Oregon. The project’s goal is to increase the overall tree canopy (which is currently estimated at only 22.5%) and reduce impervious surface (currently 80%). Because the freeway cap is a thin layer of concrete covering eight acres of the depressed freeway, the landscape architect faces challenges in extending the city’s tree canopy into the new district.

Climate change health & resilience

Reducing exposure to traffic-related air pollution: The highway cover reduces the concentration of traffic-related air pollution reaching the Albina neighborhood, which historically has experienced disproportionate exposure.

Balancing trade-offs between heat mitigation and construction timelines: The consensus weighs the structural costs of building a thicker freeway cap against the benefits of maximizing plantings to help mitigate Portland’s urban heat island effect.

Aligning success metrics with both neighborhood and city priorities: The City of Portland is working with Albina Vision Trust and other community partners to revise the climate equity metrics in the city’s comprehensive plan, aligning them with the goals and priorities of the neighborhood.

“In the community engagement meetings, we talked about how we would measure wealth building. For example, how many street frontages have we created that are on nice, walkable, low-traffic streets where businesses will thrive? Or how much land is on the highway cover versus off the highway cover? The difference matters because land off the cover could be owned by the community, so it had more wealth-building potential. Over the course of the engagement, the community told us what was important, we determined how to measure those things together, and then we reported how different design options performed according to what the community cared about.”

— Morgan Maiolie, Project Designer, ZGF

Decarbonization

Reducing local carbon emissions by lowering total vehicle miles traveled: The highway cover and street plan promote transit use and active transportation within the historic Albina neighborhood and between downtown and North Portland, supporting goals to lower vehicle miles traveled citywide.



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COTE Knowledge Community and AIA Staff.

Special thanks

Albina Vision Trust, ZGF, JM Woolley & Associates, Oregon Department of Transportation, interview participants

Additional information

I-5 Rose Quarter Improvement Project. <https://www.i5rosequarter.org>

(Restorative Justice, n.d.) ZGF, Restorative Justice on Portland’s Interstate 5: I-5 Rose Quarter Independent Cover Assessment. <https://www.zgf.com/work/4405-i-5-rose-quarter-independent-cover-assessment>

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