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Portland's light-rail landscape

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MCHARG'S MESSAGE TODAY

A milestone declaration, 50 years later





ALL ALONG THE LINE

PORTLAND LANDSCAPE ARCHITECTS BUILD COMMUNITY...
AND A NEW LIGHT RAIL LINE.

BY BETSY ANDERSON, ASSOCIATE ASLA/PHOTOGRAPHY BY C. BRUCE FORSTER



OMSI/SE WATER STATION
Portland's newest bridge
and light rail line slip
between an opera house
and a museum on the
Willamette's eastern bank.

ON A HOT SEPTEMBER MORNING, Portland's Central Eastside shimmered with an unusual procession. Standing two, three, and four abreast, members of the Confederated Tribes of Grand Ronde emerged from the crowded riverbank of this industrial district turned stylish hipster haunt. In full regalia, tribal members stepped onto the city's newest bridge and began to cross the Willamette River, from east to west. Joining them was a new light rail train—advancing at the same rhythmic pace, its cars filled with state and local leaders hovering above the river in a place no one had been before.

This was the grand opening of Portland's latest stretch of light rail, the MAX Orange Line. The inaugural crossing of the first bridge built in this river city in four decades was broadcast liberally by local television crews. Portlanders are an enthusiastic bunch when it comes to urban infrastructure—especially transit—and the bridge, like any celebrity, has full Google coverage. A quick search for the opening will result in numerous video clips. As I am a Seattleite, this was my first glimpse of the splashy new addition to our southern neighbor's already healthy and envied public transportation network. Dedicated to transit, cyclists, and pedestrians, the bridge has received considerable attention not for its many attributes but for something it lacks—cars.

Called Tilikum Crossing, Bridge of the People, the lithe cable-stayed structure honors the Chinookan belief that crossing a river builds community. It is the linchpin of a 7.3-mile transit alignment that conveys this idea from Portland's city center to a mosaic of southeast neighborhoods and suburbs, including the town of Milwaukie in adjacent Clackamas County. Led by landscape architects on all sides and in all phases of the project, the Orange Line underscores the age-old Chinookan belief that connectivity and community are mutually dependent. In cultivating both, its designers propose a new paradigm for transit in American cities.





LEFT
Eight miles of new or replaced bike lanes trace the alignment.

RIGHT
At Oregon Health & Science University's South Waterfront Campus, the line crosses a restored industrial site, poised for redevelopment.



Tilikum means “people” in Chinook Wawa, a composite international dialect that the region’s first inhabitants used to communicate with other tribes, and later with fur traders, explorers, and missionaries. It is a fitting word to describe part of the Orange Line, a collaborative \$1.49 billion effort that engaged hundreds of landscape architects, architects, engineers, artists, and contractors, filling the desks and drafting tables of design and construction offices in the midst of the 2007–2009 recession. And these were just the consultants. Working alongside were counterparts from TriMet, the local public transit agency in charge of the new rail line (in transit circles called simply “the alignment”), and staff representing the jurisdictions through which the trains would pass.

The bridge, like the rest of the alignment, was 50 percent funded by the Federal Transit Administration’s New Starts program. The remaining project costs of \$745 million were covered by a mixture of state and local sources. Noting my surprise that federal transportation funding could support such placemaking gestures, TriMet’s Sean Batty, ASLA, explained that it was possible as long as the project could guarantee a favorable cost-to-transit-benefit ratio. Batty served as the agency’s overall conceptual design manager for the project. The Federal Transit Administration (FTA) awards funding based on criteria that measure a project’s mobility improvements, environmental

MAX ORANGE LINE



RIGHT
The Tilikum Crossing bridge knits the east and westside stations of the Orange Line together.

OPPOSITE, TOP
The South Waterfront station area layers streetcar, bus, light rail, car, pedestrian, and bicycle traffic.

OPPOSITE, BOTTOM
Vegetated trackway offers hardscape relief for people and stormwater alike.



benefits, operating efficiencies, and cost-effectiveness against a preinvestment baseline. Layering a shared transitway onto Tilikum Crossing exponentially increased the project's transit benefit. In lieu of buses stuck in traffic on existing crossings, a new light rail line, two unobstructed bus lines, and a city streetcar could now be factored into FTA calculations. The decision to omit cars was also a cost-saving measure, one bolstered by community members who didn't want their neighborhoods skewed by arterials and on-ramps. Instead, the 1,720-foot bridge makes one community from two sides of the river, elegantly joining the Oregon Health & Science University's South Waterfront Campus on the west bank with the Oregon Museum of Science and Industry (OMSI) to the east.

Though functionally and economically indispensable, the glamorous crossing is just one of many moving parts that contributed to a transportation effort nearly heroic in its complexity. I had a taste of the project's intricacies in a recent meeting. Seated around a conference table in TriMet's Portland offices were 11 landscape architects, including both public and private practitioners, who had a hand in shaping the alignment's loca-

tion, the design of its 10 stations, plantings and stormwater mitigation, bicycle and pedestrian routes, and wayfinding. The conversation quickly turned reflective—most in the room had contributed to earlier light rail efforts, and some could trace their involvement to the installation of the city's first MAX—or Metropolitan Area Express—line in 1986.

Only the third light rail line completed in the United States, following San Diego's (1981) and Buffalo's (1984), Portland's Blue Line connected the city to its eastern suburb of Gresham and was the direct result of community activism. After the



ABOVE
The project's
286 bioswales treat
34 acres of runoff.

defeat of the Mount Hood Freeway in 1974—which would have eviscerated neighborhoods in the southeast section of the city—Portland area residents pressed for light rail instead of bus transit along the crowded corridor. TriMet (then the Tri-County Metropolitan Transportation District of Oregon), originally established to operate a regional bus system, suddenly found itself at the leading edge of light rail planning. With the addition of each new section, the agency refined its approach. Today Portland's transit riders experience that evolution: hopping from the Blue to the Red, Yellow, Green, and Orange lines provides a strange sense of time travel. In this way the Orange Line is a retrospective of Portland transit projects, embodying what the agency has learned and revealing the increasing cloud of transit in this city.

“This not only represents a transect in the sense of physical space, but it is also a transect of readiness—readiness for things urban,” emphasizes TriMet's Batty. A ride on the Orange Line suggests that the transect was seamless, when in fact it came together in two parts. To meet the project's target 2015 completion, TriMet deployed two design teams, each working from opposite ends of the alignment toward the Willamette River, known as the “west segment” and “east segment” during planning and construction. The urban design of each segment was managed by TriMet landscape architects Elizabeth Higgins, Paige Schlupp, and Jeb Doran, ASLA, who oversaw every facet and phase of the project. In addition to light rail, this composite infrastructure included stormwater treatment, ecosystem restoration, reforestation, alternative energy gen-

OMSI/SE WATER STATION CONCEPT PLAN



eration, 25 public art installations, and miles of improved pedestrian and bicycle access.

Spliced into downtown Portland, the westernmost segment encompasses two stations and nearly a mile of track, stretching from the Yellow Line terminus, near Portland State University, to the foot of the new bridge. Led by TriMet's Higgins, the west segment team included Brian McCarter, FASLA, of ZGF Architects, in charge of

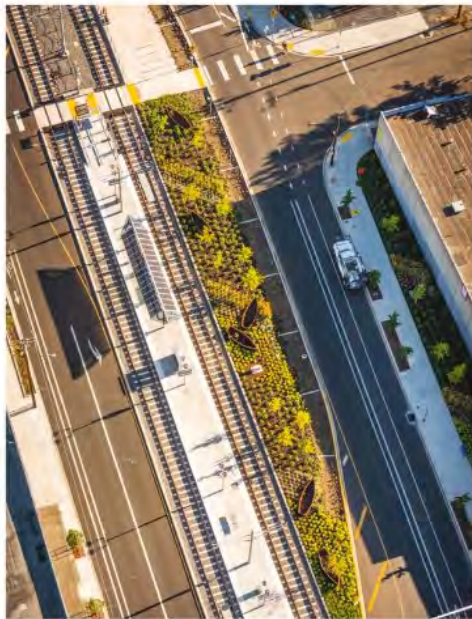
urban design and station architecture; and Marianne Zarkin, ASLA, whose firm, Marianne Zarkin Landscape Architects, was responsible for the planting and irrigation design.

The eastern segment begins on the Willamette's east bank, at the Oregon Museum of Science and Industry, where it bends south through a train track-laced swath of rail yards and former warehouses. From here the Orange Line stitches itself, mostly at grade, through a series of eight different neighborhoods before crossing the county line and culminating at a freshly built park-and-ride garage in Oak Grove. TriMet assigned two urban design leads, Schlupp and Doran, to wrangle the 6.1-mile segment, which includes eight stations and glides through a wildly diverse range of land uses and character. From a 110-acre rail yard

to single-family houses to a golf course, buried streams, and a former Goodwill outlet store, this transect exposes both the products and tailings of more than a century of urbanization.

"I call it a zipper," explains Carol Mayer-Reed, FASLA, "because it is zipping together two different kinds of fabric: neighborhoods and the industrial core that forms with the freight corridor." Mayer-Reed's multidisciplinary design studio, Mayer/Reed, steered the urban design for this eastern stretch, "hand in glove," as she puts it, with Mike Faha, FASLA, of GreenWorks, PC, whose planting design accentuates its liminal character.

The design of the stations was critical to the zipper concept: "People aren't used to walking through these neighborhoods, these industrial nodes, because...why would they?" Mayer-Reed asks. "All the development grows away from those areas, not toward them. Yet when you put light rail stations there, you're asking people to go places they've never gone before." This is why landscape architecture is so important to transit, she argues: "It really is a marketing effort. If you build a highway, someone will always show up to drive on it. For light rail we need to attract people on foot, and that's much harder to do." The idea of creating a place where people might like to spend time conflicts with the conventional notion of transit, which calls for moving things along as quickly as possible.



LEFT

The artist Bill Will's installation, *Passage*, refers to a stream that once flowed near SE 17th Avenue.

OPPOSITE

The 38 rowboats and wavelike plantings are intended to be dynamic when seen from a train or bike.



Rather than a conduit, the Orange Line stations are places to pause. Luminous columns tiled in handmade glass distinguish each station. On a brisk January afternoon, I found myself wanting to leap out at every stop just to compare, to touch them. This was a first in my many years' acquaintance with public transportation. "These finer details create a sense of place," says TriMet's Schlupp. "But they are transparent; they let the community's identity shine through."

Schlupp's comments echo a common refrain among design team members: the notion of a station as a place. This philosophy was forged through decades of transit experimentation, says Bob Hastings, agency architect for TriMet. "What we've learned over the years is the importance of including both elements of continuity and elements of distinction. Elements of distinction are really about the human interaction and about cultural identity—how you connect at a neighborhood level."

Hastings provided design review for the entire rail line, managed its rigorous sustainability program, and propelled the project's public involvement goals. These were inspired by the Possibilities Project, what Hastings calls "a guerrilla exercise" to engage future Orange Line neighbors in discussions about

design and community context. Led by the artist Tad Savinar, the grassroots effort also addressed project and budget challenges, development opportunities, and sustainable practices. This outreach took place in 2010 and early 2011, after the Orange Line's preliminary engineering phase but before final design. TriMet's landscape architects credit the process with galvanizing community design aspirations and reducing the project's environmental impacts. "Without a doubt, we would not have had a net-zero park-and-ride facility without the community pushing for it," says TriMet's Doran, who managed the Milwaukie and Clackamas County portion of the east segment. "The agency supported solar infrastructure but was not ready to insist that we spend the extra money for it."

The SE Park Avenue Park & Ride, in Oak Grove, is a punctuation mark for the line and for TriMet's community engagement process. By the time the garage design began, the agency



had built a strong enough relationship with nearby residents that it invited them to participate in design development and reviews with designers GBD Architects and PLACE Studio. The result is a structure whose low profile belies its 401 car and 102 bike parking spaces. Cradled in a scoop of hillside that collects and treats stormwater, the building is crisscrossed with a scheme of angled gutters that highlight the descent of the region's frequent rain. The rest of the facade is fringed with weathered steel spires that evoke the reeds that once grew along the neighborhood's long-buried creek. The overall effect is a bit chaotic but will be tempered as the building is

claimed by its site: Moss and streaks of rust already inscribe its ground line, and scrambling China blue vines and star jasmine subdue the steel piles. In time the concrete and cars will be cloaked in tall stands of Oregon white oak, Douglas fir, and western red cedar, consistent with the neighborhood's desire to build a forest.

The Orange Line vibrates with this promise of growth, whether of adjacent development opportunities or urban reforestation. "We considered the landscape aspect of this project in ecological terms," says GreenWorks's Faha. He compares the

SE TACOMA/JOHNSON CREEK STATION CONCEPT PLAN



planting design to restoration of an urban clear-cut: “What are the pioneer species needed in these industrialized areas to start an early repair? We thought long-term about the climax forest that was needed to stitch those neighborhoods and the light rail line together over time.” In other places creeks were daylighted, riparian verges restored, and at the SE Tacoma Street station (once a Goodwill megastore), waiting transit riders can zigzag along a graceful viewing platform to observe a recently unfettered stretch of Johnson Creek.

Community participation is evident in investments like these, as well as in the fastidious railing and paving details and big luxurious plantings throughout. In addition, each of the 10 stations features a site-specific art installation, ranging in scope and tactic from poetry stamped in concrete to enormous earth-cast wheels to the great white bridge itself, whose nighttime illumination keeps a finger on the pulse of the river, changing color to reflect a shift in water temperature or flow.

Though representative, and perhaps aspirational, these gestures are not always as transparent as TriMet claims. The designers only hint that allowing a neighborhood’s character to shine through might not be desirable in some areas. In fact, several Orange Line stations strive to reflect “place” in spots many would describe as placeless. This includes the nondescript terrain of abandoned big box stores, or swollen arterials—like SE 17th Avenue, which the project transformed into a mile-long sculpture garden of 38 rusted steel rowboats, commemorating another buried stream.

The stations sit less easily, however, in areas with a more appreciable identity—for instance in downtown Milwaukie, or especially in Portland’s historic Halprin District, where the Orange Line stops at Lincoln Street and SW 3rd Avenue. The Lincoln Street station is positioned as if it were a new measure in Lawrence Halprin’s Open Space Sequence, an inward-looking 1960s network of pedestrian corridors and parks—including Lovejoy Plaza and Pettygrove Park—sheltered by high-rise apartment and office buildings and towering shade trees. Here cues to Halprin’s legacy were carefully preserved by ZGF in original aggregate paving and the nodding profiles of replacement streetlights. But in a district marked by interior activity and discovery of what is hidden, the new train platform feels painfully exposed. This is owing to the loss of dozens of London plane trees, which once created a “forest” along Lincoln Street, according to Marianne Zarkin. The widening of the street for light rail and stormwater planters required the removal of the trees, while the configuration of underground utilities allowed the replacement of only a handful. “It was very, very difficult,” says Zarkin. (TriMet states that it replaced 45 of the 48 trees taken from the right-of-way.)

In all, the Orange Line spelled the demise of more than 800 trees, although 3,325 new specimens were incorporated into



TOP LEFT
ESA Vigil-Agrimis led an effort to restore salmon habitat at Johnson Creek.

TOP RIGHT
Lynn Basa's handcrafted glass mosaic evokes salmon returning to the creek.

INSET
Hundreds of new bike spaces were constructed, many in covered open-air shelters at the SE Tacoma/Johnson Creek station.

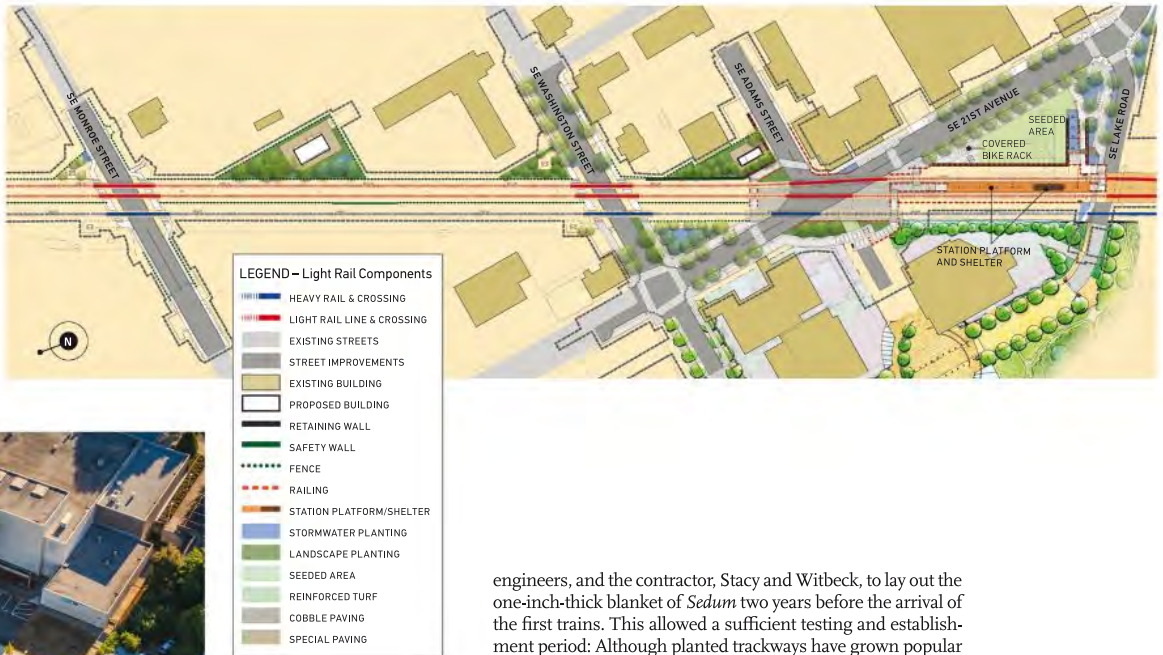


LEFT
The Milwaukie station negotiates a complex crossing adjacent to a freight rail line.

INSET
Though town leaders pushed for a more central location, the Milwaukie station seems to be spurring increased activity and development.



MILWAUKIE/MAIN STATION CONCEPT PLAN



planting plans that introduced more than nine acres of landscape to the urban corridor—more often than not into gray-field sites and along the back-sides of wizened industry. These humble working edges are thickened with ample buffers of young northwest conifers; underfoot are bold swaths of plants that read well from a train, including grasses and leathery natives like Oregon grape, salal, and kinnikinnick. The roofs of alignment bike facilities, signal communications buildings, and even a 200-foot section of track, are carpeted with a jewel-toned tangle of *Sedum*.

This vegetated trackway may be a dubious consolation for the Lincoln Street neighbors—the only station where it was used—but its installation highlights the synergy that has come to characterize Portland's transit-building team. To mitigate the nearly relentless concrete and absorb a modicum of stormwater, TriMet's designers persuaded the City of Portland, alignment

engineers, and the contractor, Stacy and Witbeck, to lay out the one-inch-thick blanket of *Sedum* two years before the arrival of the first trains. This allowed a sufficient testing and establishment period: Although planted trackways have grown popular in Europe, to date they've gained little traction in North America. A sympathetic regulatory environment made it all possible, according to TriMet's Hastings: "We had already tested ecoroofs as an industry," he explains. "We knew how they performed, we knew the materials, and we had a city that understood that we were essentially installing an ecoroof on the trackway."

The designers around the table with me point out that such consilience and willingness to experiment is the result of more than 30 years of working hard, together. "We now have a shared language with our team that transcends urban design and landscape architecture and includes engineering," says Jeramie Shane, ASLA, who served as project manager for Mayer/Reed. "It's symbiotic."

This expansive approach to infrastructure is visible in the 286 bioswales that trace the tracks, crammed with water-loving *Carex* and *Juncus*, and in lovingly detailed sound and retaining walls that integrate, rather than separate, the transit line and its communities. But it may be most strongly conveyed by the early assimilation of art into the rail line's design and construction. The light display on the bridge, otherwise prohibitive, was incorporated into the design at the preliminary engineering phase to ensure a cost-effective installation under the structure's design/build contract. TriMet's robust public art program serves as a model for public art in transit, largely



because it has artists on the payroll. “This is key to our success,” stresses Mary Priester, the program’s manager. “Transit is a unique environment, driven by engineering and practical considerations that art programs are not necessarily subject to.”

Like connective tissue, the Orange Line is capable of flexing, growing, and adapting over time. TriMet and consultant designers never viewed the alignment as an inert corridor, describing it instead as a living entity that both initiates and responds to change. “Are we trying to solve a transportation problem?” asks TriMet’s Batty. “No, we’re trying to solve an urban design problem, which we’re defining as landscape

architects: We’re trying to create positive human habitat. When you stop seeing these projects as infrastructure and start seeing them as our habitat, you have to start seeing the concept of succession in them. And that allows you to see how malleable the city is.

“We didn’t solve an engineering problem and then tell the public that we could only solve an engineering problem,” Batty says. “We solved for the urban design problem and budgeted for that,” he continues, to explain in part the project’s total bill, which came in more than \$40 million under budget. “People want good places, walkable places, good urban design. They



OPPOSITE

Railings feature Milwaukee's symbolic dogwood flower and aim to impart a small-town feeling.

RIGHT

A granite streambed was carved by Brian Goldbloom to convey stormwater.

INSET

Stormwater planters edge a future development site at the Milwaukee station.





LEFT

The SE Park Avenue Park & Ride varies the terrain of a major regional arterial.

OPPOSITE

The end of the line came with a much-needed gathering space for the Oak Grove neighborhood.

Project Credits

OWNER TRIMET, PORTLAND, OREGON. **EAST SIDE: 8 STATIONS** PRIME CONSULTANT DAVID EVANS AND ASSOCIATES, PORTLAND, OREGON. **URBAN DESIGN TASK LEAD** MAYER/REED, INC., PORTLAND, OREGON. **PLANTING AND IRRIGATION DESIGN; STORMWATER FACILITIES AND GREEN ROOFS** GREENWORKS, PC, PORTLAND, OREGON. **FLOODPLAIN RESTORATION DESIGN AT SE TACOMA/JOHNSON CREEK STATION AND WATERWAY CROSSINGS** ESA VIGIL-AGRIMIS, PORTLAND, OREGON. **STATION ARCHITECTURE AND KELLOGG BRIDGE DESIGN** WATERLEAF ARCHITECTURE, PORTLAND, OREGON. **SE PARK AVENUE PARK & RIDE DESIGN/BUILD TEAM** SKANSKA BUILDING USA, NEW YORK; GBD ARCHITECTS, PORTLAND, OREGON; PLACE STUDIO, PORTLAND, OREGON. **WEST SIDE: 2 STATIONS** PRIME CONSULTANT CH2M, PORTLAND, OREGON. **URBAN DESIGN TASK LEAD AND STATION ARCHITECTURE; STREETScape, GREEN INFRASTRUCTURE, MULTIMODAL DESIGN, HARBOR DRIVE BRIDGE ARCHITECTURE** ZGF ARCHITECTS LLP, PORTLAND, OREGON. **ACTIVE TRANSPORTATION DESIGN** ALTA PLANNING + DESIGN, PORTLAND, OREGON. **PLANTING AND IRRIGATION DESIGN** MARIANNE ZARKIN LANDSCAPE ARCHITECTS, PORTLAND, OREGON. **COLLABORATED WITH ZGF ON STATION ARCHITECTURE** LEEKA ARCHITECTURE & PLANNING, PORTLAND, OREGON. **OTHER KEY CONSULTANTS** STATION PAVING, PLAZAS, CUSTOM RAILINGS, FURNISHINGS AND SHELTERS DESIGN, BICYCLE AND PEDESTRIAN FACILITIES DESIGN; SIGNAGE/WAYFINDING DESIGN; JOHNSON CREEK AND HALPRIN DISTRICT INTERPRETIVE PANELS MAYER/REED, INC., PORTLAND, OREGON. **SYSTEMS BUILDING DESIGN** HENNEBERY EDDY ARCHITECTS, INC., PORTLAND, OREGON. **GREEN ROOF DESIGN FOR SYSTEMS BUILDINGS** LANGO HANSEN LANDSCAPE ARCHITECTS, PORTLAND, OREGON. **SUSTAINABILITY STRATEGIES** VIA ARCHITECTURE, SEATTLE. **GENERAL CONTRACTOR** STACY AND WITBECK, INC., PORTLAND, OREGON. **TILIKUM CROSSING BRIDGE DESIGN** DONALD MACDONALD ARCHITECTS, SAN FRANCISCO. **CONCEPTUAL AND PRELIMINARY ENGINEERING AND OWNER'S TECHNICAL RESOURCE** HNTB, PORTLAND, OREGON. **FINAL DESIGN AND ENGINEER OF RECORD** T.Y. LIN INTERNATIONAL GROUP, SAN FRANCISCO. **CONTRACTOR** KIEWIT INFRASTRUCTURE WEST COMPANY, OLYMPIA, WASHINGTON.

want infrastructure that is frugal and serves its purpose, but that has some dedication to aesthetic issues, including scale, appropriateness, and context—both historic and looking forward. They want projects that facilitate the future.”

“We have lived in this community for a long time,” adds Mayer-Reed, “and we see the results of every move we make.” ●

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