

PORTLAND POSTER SESSION

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MAX Light Rail Integration into the Community *Westside to Interstate MAX*

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MAX Light Rail in Portland, Oregon, has evolved from the first Banfield project and has become an important contributor to the community's character, a catalyst for future urban form that is carefully coordinated with the neighborhood's private and public stakeholders. TriMet's approach to light rail planning, design, building, and the system's operating have changed from a top-down mentality to a more grass roots, context sensitive search for solutions. The Westside MAX project's design was the beginning. It was a transforming process for TriMet, and the community, when the project became a process for neighborhood self-determination. Subsequent light rail projects will try to repeat this lesson. Interstate MAX is a community involvement process where design elements are refined and standardized to fit this challenging alignment, and MAX's art program has become a reflection of the neighborhood's character.

A brief and succinct overview of light rail in the Portland downtown and metropolitan region will be provided, starting with Portland's first light rail effort, the Banfield project, in which a revolution turned into a regional evolution. While Westside MAX transformed the agency's view about transit, the death of the huge North/South Project then signaled a low point and forced a retrenchment. This led to a kind of resurrection with the Airport MAX extension, which in turned helped kick off the creation of Interstate MAX. Several key examples of the growth of community involvement will illustrate how urban design, station design, civil and traffic engineering, construction methodology, business support, and the art program can all work together to support the neighborhood's and community's goals. Specific examples of transit design coordination will be provided to show how the system has evolved to become more efficient, cost effective, safer, easier to maintain, while at the same time becoming a catalyst for community development and an attractive and enjoyable experience for all.

In conclusion: the story continues. All participants have learned a great deal about depending on one another and honoring the each other's needs, goals, and concerns. What TriMet builds today has to be responsive to each community, because that success will directly influence what TriMet may create in the future—whether it's north to Vancouver, Washington, east to Clackamas, Oregon, and south to Milwaukie, Oregon; whether it's Washington County Commuter Rail, Lake Oswego Historic Trolley, or extending light rail service in downtown Portland. There's more to be done in providing an efficient, economical, and attractive system throughout the region.

INTRODUCTION

Portland's MAX light rail system has evolved from the first Banfield project to become an important contributor to the community's character and a catalyst for future urban form. The

Westside MAX transformed the light rail project into a process for neighborhood self-determination. Subsequent light rail projects tried to repeat this lesson, but it was not until Interstate MAX that the community involvement process truly transformed the region's transit and planning agencies.

EARLY INTENTIONS

Banfield MAX

Westside MAX was an evolution of design from the first Banfield project. The Banfield line's concept used light rail to bring commuters from Gresham and East County into downtown Portland. Important connections were established using the Southeast Burnside Avenue vehicular traffic corridor, the Gateway/I-205 transfer node, the Banfield freeway corridor, the Lloyd district commercial center, and the Downtown with cross connections to the Transit Mall. Weekly commuters quickly realized that LRT offered a convenient and relatively quick way to come downtown. Since this line was well served by TriMet bus routes the only park and ride lots were provided at Gateway, 122nd, and later in Gresham.

Westside MAX

The Westside alignment required some very difficult choices early in the project. The key decision was whether to travel at grade over the West Hills or to tunnel through them. Numerous public meetings were held using visual simulations to illustrate the differences between the two choices. The other key choice was whether to travel west down the Sunset Highway and then swing over to Hillsboro along a relatively established vehicular transit corridor, or to turn south towards Beaverton along Highway 217 and then follow the existing Burlington Northern railroad corridor westward towards Hillsboro. After much public discussion, the route selected was through the West Hills, down 217, and west to Hillsboro. The public interaction that led to these decisions made a significant impact on TriMet's methodology for transit design, and led to a public process that is unparalleled in the United States. In short, this is the story of how community input influenced TriMet's approach to transit design, which in turn helped shape a community and a region.

Westside Story

To understand the change in TriMet's approach to the LRT's alignment design, one can study the evolution of the project in the Goose Hollow neighborhood. It is a case study of an early-engineered alignment that needed to change in order to win popular approval and support from the business community. Heading west from the original Banfield MAX turn-back in downtown Portland, the Westside LRT alignment began between the downtown business core and Portland's West Hills. This is an historic neighborhood with housing stock that dates to the late 1800s. The neighborhood was not happy when the original alignment showed only two stations on the edges of the neighborhood. They insisted another station was necessary to serve the heart of the Goose Hollow neighborhood. They reasoned that it would serve several important neighborhood institutions: Lincoln High School, the prestigious and influential Multnomah Athletic Club (MAC), and the historic Zion Lutheran Church. This neighborhood includes

numerous influential, affluent, well-connected groups of citizens. The Goose Hollow Neighborhood Association is well organized and respected by the City of Portland. Its leader was a local activist, architect, and resident with over 20 years experience in city government. As such, the rest of the neighborhood group was savvy to the right of way and design review processes; they understood the local governmental bureaucracy, and how to apply political pressure. The group had learned in the 1960s how construction could negatively impact important civic monuments like the historic Vista Bridge. They feared that light rail would split the community both physically and psychologically.

Due to early and intense scrutiny during the selection of the tunnel alignment, the Goose Hollow neighborhood was galvanized to participate in the design of the LRT alignment in their neighborhood. The neighborhood is within a design zone requiring review by the city's Design Commission, and would require conditional use hearings for any portion of alignment outside the public right of way. Additionally, construction would be subject to the city's noise code, so the construction plan had to be reviewed in advance by the neighborhood association. TriMet also contacted private property and business owners at the 50% design stage. Through this effort individual property needs were accommodated and included in the construction contract. This input helped define the "Conduct of Construction" and "Public Information" plans.

Southwest 18th Avenue Case Study

Southwest (SW) 18th Avenue is an important historic street in the Goose Hollow neighborhood. Important civic institutions (such as PGE Park, Lincoln High School, Zion Lutheran Church, the MAC Club, and The Oregonian newspaper printing building) abut and use the road and sidewalks. SW 18th Avenue was the dividing line in Goose Hollow between the urban "flatlands" and the residential West Hills. It also was the connecting arterial to SW Jefferson Street and the freeway (US-26). Buildings along SW 18th tended to have fewer stories than on SW Morrison and SW Yamhill Streets, and commercial developments often presented their "backsides" to the street. The road itself was part of the old plank road connecting with SW Canyon Road, and Tanner Creek Sewer "stream" runs underneath part of the street. During construction, portions of the old trolley tracks were unearthed, and the original road and stream bed, nearly 30 ft deep in some places, were discovered.

The SW 18th Avenue alignment is a very narrow 80 ft in width. It's like trying to cram ten gallons of water in an 8-gallon bucket. The LRT would need to use two trackways; vehicular traffic would be on two through lanes, as well as left turn lanes, bike lanes, on-street parking, and sidewalks. The neighborhood heavily influenced the actual design of the avenue. Cobblestone was used in the trackway up to the Vista Bridge. On-street parking along the avenue was restored in limited areas, and three parking lots were built near the alignment (to replace parking taken off the street on a one-to-one basis). A 100-year-old tree was preserved. Existing trees were re-located and planted as well. Finally, the project placed all the overhead utilities underground.

As the final design touches were implemented, TriMet's design engineers were horrified by the neighborhood's demand for another station just a block and a half away from the Civic stadium station (now called PGE Park). This was the ultimate demand of the neighborhood association, which desired to maximize access to light rail. In the end, we reached a funding solution created by a public-private partnership with the MAC Club, the City and TriMet. This spirit of cooperative problem solving continued when a Mercedes dealership, which had been relocated before (ironically for an earlier transportation project) was converted into mixed-use

housing. At this location, a housing development sprung up on the south half of the block with the showpiece PGE Park station on the northern half. The light rail tracks diagonally bisected the block. Three other housing developments grew from other “left-over” pieces of property. Finally, Zion Lutheran Church (which was designed by the renowned Portland architect Pietro Belluschi, is on the National Historic Register, and has occupied its site for over 100 years) was outfitted with sound insulation for the beautiful stained glass windows.

Making a Place with Art

TriMet learned that it must acknowledge that sense of place and previous history is very important when doing a project like this. Public art became one way to connect and reflect community. Therefore artists were involved with the design team from the beginning of final engineering. Their charge was to listen to the hopes and goals of the community and reflect that back in their designs and artwork.

Lincoln High School Fence Case Study

The Fence related to both the neighborhood in its design (taken from window shapes found in Goose Hollow) and also its reflection of Lincoln High history (through bits of songs, ceramic silhouettes of hairstyles taken from old yearbooks, and reminders of momentous occasions in the school’s history). The neighborhood took a cue from the public art program and raised the money for a bronze statue of a goose at the SW 18th and SW Salmon station, a reminder of when the area was a farming community at the turn of the century.

Westside Corridor Conclusions

The Goose Hollow neighborhood had a tremendous impact on the design and construction of light rail in this area. The relationship wasn’t always smooth, but resulted in a better fit for light rail in this neighborhood.

This case provides important points to remember in planning:

- It is very important to cultivate a partnership between the project and the public.
- A team approach is necessary.
- Engineers, architects, artists, businesses, and community all have to be included in solving problems.
- Developing and nurturing long-term relationships helps the project run smoothly.
- Community memory or will should not be underestimated.
- Public art as a voice and context for the community can be a vital project element.

With the successes of the Westside project dancing in our heads, TriMet proposed the next big step—the first expansion from downtown Portland south to Milwaukie, Oregon, and north to the Columbia River.

South/North MAX

The proposed South/North project would have extended light rail from Downtown south to Milwaukie, and north along I-5 and to the Exposition Center. The 21-mi system would have created a springboard for expansion north to Vancouver, Washington. But when Washington voters defeated the local ballot measure to fund the initial efforts for light rail in southwest Washington, it made the North commuter extension less attractive to Oregon voters.

In the statewide vote of 1998 the huge, ambitious expansion failed to receive enough public and political support. The ballot measure, though supported in northeast and north Portland, did not have enough statewide votes to pass.

However, a new realization was born in the aftermath of South/North's defeat. In order to expand the system, transit supporters needed to craft projects that responded to a community's desire for transportation alternatives, and would support their urban renewal needs. The City of Portland, Metro, TriMet, the Portland Development Commission, and others would need to look for strategic partnerships that would mutually support each other's funding, community planning, and growth management realities.

There have been two ways TriMet has responded to this new understanding. The first was the extension of MAX to Portland International Airport. Light rail to the Portland International Airport has been part of regional and local master planning since the mid-1980s. The design of Interstate 205 (I-205) planned for a future bus-way in the median and a tunnel beneath the northbound lanes north of Rocky Butte. This expansion sidestepped the normal public approval process for funding by creating a unique public-private partnership. The project was organized to use only public agency and private development funds, rather than requiring a voter-approved tax or bond. Consequently, the alignment ran only through public right of way and private land owned by the development partners.

Airport MAX

The 5.5-mi Airport MAX Red Line operates between the Portland International Airport (PDX) and downtown Portland (with no transfers required). The Red Line runs every 15 min every day beginning at 5 a.m., with the last train leaving PDX at 11:30 p.m. The trip from PDX to downtown Portland costs \$1.55 and takes just 38 min. The extension is the result of an innovative public-private partnership between the Port of Portland, TriMet, the city of Portland, and a Bechtel Enterprises-led partnership with Trammel Crow Company, known as Cascade Station Development Company, LLC. As part of the project, Cascade Station Development Company will also develop Cascade Station, a 120-acre transit-oriented project featuring hospitality, retail, entertainment, and office space served by two light rail stations.

The Airport MAX Red Line was a specific response to a unique opportunity. The question remained: How could light rail be expanded where the community needed to be a full partner in funding and design? The answer would be a project far less expensive than South/North, which could use an existing public right-of-way, and which would help transform an old interstate highway, and greatly contribute to a community's desire for urban renewal and economic development.

Interstate MAX

Interstate MAX was the answer. Its funding partners and funding were a combination of TriMet's Capital Projects and Facilities Division in partnership with the City of Portland, the Portland Development Commission (PDC), Metro, FTA and the communities of North and Northeast Portland. The project's \$350 million budget requires no additional property taxes. The federal government will provide \$257.5 million, with local and regional funds making up the balance.

Local funding was committed in October 1999. The federal grant was signed in September 2000. The City of Portland is providing its \$30 million share of Interstate MAX funding through the Interstate Corridor Urban Renewal Area.

When the 5.8-mi Interstate MAX light rail project emerged as a transportation option for this corridor, the community wanted some changes from the original South/North alignment. Those changes included

- A lower cost project;
- No businesses or homes displaced;
- No increase in property taxes to pay for it;
- A route that better serves the neighborhoods;
- Ensuring people who live in the community will benefit by helping to build it; and
- A final project that helps to revitalize the community.

These principles meant that MAX construction must fit within the existing street area, maintain one lane of traffic in each direction, keep parking available to support businesses, make it bike and pedestrian friendly, and increase the number of trees on the avenue. Impacts must also be minimized and businesses must be supported through construction. The design process for Interstate MAX has exploded the myth of public involvement. Everything has changed to become a process that takes seriously the involvement of citizen stakeholders. No more "blow and go." The local community and TriMet mutually test each other and understand how light rail should serve its neighborhoods, businesses, and institutions. Unique and exciting aspects of the total effort included those detailed in the following sections.

Interstate MAX Stakeholders Even though North/Northeast Portland voters were the strongest supporters of the failed South/North project there were still plenty of doubters that MAX would be a welcome addition to Interstate Avenue. Through a process of public meetings, presentations to neighborhood associations, focus groups, canvassing of business owners, and review of options with the various special interest contingencies, a design emerged that was unique to Interstate Avenue.

Alignment Character The Rose Quarter is a hub of multimodal movement and a center for entertainment activities. Lower Albina/Mississippi is an area of various industrial businesses, and a rail shipping center. At the same time it is reclaiming its mixed-use heritage as a unique center of retail, entertainment, and urban housing. In upper Interstate Avenue many of the businesses along the old interstate highway were motels and restaurants that reflected the character of the 1950s. Kaiser Permanente's Interstate Medical Center campus grew out of a close proximity to Swan Island shipping and other industrial employers. The avenue is both a

north/south connector to Portland and Vancouver, and also gathers east/west connections to well-established neighborhoods and employment centers. The neighborhood of Kenton, on the northern edge of Portland, has a long history of residential, retail, and industrial use. Finally, the northern activities of Delta Park, Portland International Raceway, and the Expo Center experience periods of intense event activity. All of these areas have special needs that nevertheless needed to be carefully woven together by a common system.

Community Relations The programs created by the Community Relations team revolve around shared knowledge and understanding of the neighborhoods, businesses, schools, and other institutions. A broad database was created through formal surveys and countless personal interviews throughout the community. But it is equally important that the community members and leaders understand TriMet's methodology and purpose. TriMet representatives attended all the community and business association meetings, held regular public information forums, and called on other key community stakeholders. This resulted in an unprecedented sharing of knowledge for all parties, and ensured a very high level of trust and commitment to each other's goals.

Art Program The art program strives to establish a unique identity for each of the 10 stations along the new light rail line. Eighteen artists and writers have developed approximately 50 art elements that draw upon the history and culture of the individual station areas. The goal of the art treatment at each station is to establish a unique identity along the urban spine of the light rail line. Each station reveals layers of the urban landscape often overlooked, forgotten, or buried. Restoring those layers to public view enriches our appreciation of the character of the place and the complex forces that form our communities.

Design Decisions Stations were positioned to provide easy access to neighborhoods and support urban renewal planning. Each station, with the exception of the Interstate/Rose Quarter station, utilized a common set of materials and elements. However, since each station context was unique, the art program was utilized to reflect the individual character of each neighborhood and vicinity. The typical 100 ft right of way provided 10 ft sidewalk/planting areas, through travel and left-hand turn lanes with on-street parking. In transforming Interstate Avenue into a multimodal corridor, on-street parking was provided in order to maintain and enhance retail and commercial activity. The corridor's bike lanes are part of the regional bicycle route. Paved track was used in the Albina/Mississippi station area and all along Upper Interstate from Overlook to Kenton neighborhoods. Additionally a new joint use catenary support and street light pole was centered in the trackway throughout the Upper Interstate portion.

A mile-long elevated bridge connects Kenton to the Delta Park/Vanport station. Ballasted track extends north to the final station at the Expo Center.

The ten station areas have their own, special and unique character. The basic design concept was to provide a consistent and uniform light rail system that clearly belonged to the regional MAX system and yet could respond to local conditions and urban design opportunities. While regular street design and urban design strategies were employed, the art program was able to employ the broadest and most detailed strategies to create distinctive station areas.

Interstate/Rose Quarter station creates a transfer node between north/south and east/west travelers. Its platform includes glass canopy shelters that emulate the existing Rose Quarter station, although the paving will incorporate TriMet's new use of sand-set pavers. "The Silicon

Forest,” a metaphor for displacement and change, is the theme of the artwork at Interstate/Rose Quarter Station. Concrete tree rings inset into the platform symbolize the forest that was once abundant at this site. The experience of standing in the dappled light of a forest canopy is simulated by the filtering effect of green and blue glass discs attached to the glass shelter roof. Two groups of 18 ft to 24 ft illuminated metal trees serve as station landmarks. Referencing both the forest industry of yesterday and the high-tech industry of today, the trees generate their own electricity through solar panels that branch out of the upper boughs. Beneath them, passengers can sit on stainless steel “stump” benches around a glowing-red “virtual campfire.” Custom railing features branching tree limbs. The station artist is Brian Borrello.

Albina/Mississippi station provides access for the industrial employment center of Albina, and the emerging urban community along the Mississippi Avenue corridor. A center platform station, it utilizes the new Interstate MAX shelter and platform materials. The art program for the station is moved by its history of neglect, racism, and urban renewal; station artist Wayne Chabre developed a sculptural symbol for the indomitable spirit of the Albina/Mississippi community. At the north end of the station platform, a 12 ft high and 4 ft wide bronze vine bursts through the pavement and flowers with forms representing the local jazz scene and other arts and industries of the area. Cast-glass elements add color and light in a slow rhythm of various combinations. Additional art elements include a community map and two art benches.

The Upper Interstate Stations—Overlook, Prescott, Killingsworth, Portland, and Lombard—all utilize the new Interstate MAX shelter and platform materials. Typically the stations are a split platform arrangement in the middle of Interstate Avenue that facilitates left-turning traffic. Prescott is a center platform station with an adjacent bio-swale filtration pocket park and art features.

Two 9.5 ft by 2 ft square bronze light towers glow softly at each of the Overlook Park platforms, featuring colored glass “windows” printed with photos of community members and overlaid with images of nature. The concept for the towers was inspired by the station artist Fernanda D’Agostino’s research on the healing power of light and nature. Modeled after traditional roadside shrines found in Poland, they also make indirect reference to the local Polish community. Imagery for the towers and for a windscreen on the east platform will be developed through meetings with the surrounding neighborhood. Additional art elements include a community map.

The Prescott station features a rainwater filtration demonstration project with references to the nearby Swan Island shipyards. A 14 ft tall sculpture suggestive of a ghostly ship’s prow gathers rainwater and funnels it to a drain leading to a green space just east of the station. In the midst of the green space rises a Corten steel sculpture 8.5 ft by 16 ft modeled after a ship’s propeller. Several basins of basalt collect water to support bird life in the newly created habitat. A map of local streams that have either been filled in or buried in culverts is inlaid into the platform. The station’s artists are Brian Borrello and Valerie Otani.

Killingsworth station is characterized by a vibrant and colorful design inspired by the traditional arts of Africa, South America, and East India. Sparkling glass mosaic and handmade glass tiles add color to the shelter columns while triangular metal flags hang under the canopy. Geometric motifs found in South American textiles are laser cut into railing panels and custom benches reflect the influence of Ashanti tribal culture. Glass mosaic columns and custom benches at the nearby bus stops unify the transit area. Additional art includes a community map.

Artwork at this station was developed through a mentorship between a well-known textile artist and one of the three design team artists. Station artists are Adriene Cruz and Valerie Otani.

At the Portland station, a team of artists and writers drew on Native American culture and experience to develop artwork at the North Portland Boulevard Station. References to historic petroglyphs from the Columbia River Gorge appear on columns, custom benches, and railing panels. A traditional basketweave pattern is repeated in the pavement. Bronze sculptures look down from the shelter canopies and stand tall in a green space on Ainsworth Street. Inspired by trees that were removed from the Interstate MAX right of way, the Ainsworth sculptures integrate poetry written by students during poet Gail Tremblay's writing residency at Ockley Green Middle School. Station Artists are Lillian Pitt, Ken MacIntosh, and Rick Bartow, and the community map was created by Dawn Waldal and Elizabeth Woody.

The artist for the N. Lombard Transit Center has set up multiple workshops with neighborhood and community groups to engage the community in the development of imagery based on the theme of labor. The images will then be translated into brilliant glass mosaic tile that will appear in railing panels at the MAX platforms and trash cylinders at the bus stops. A colorful pattern of glass mosaic is wrapped around the shelter columns at both locations. Additional art includes a community map by Victor Moldonado, and the station artist is Linda Haworth.

Kenton station also utilizes the new Interstate MAX shelter and platform materials. The station's side platforms are positioned to the north side of Interstate Avenue, which will allow future redevelopment to directly coordinate with light rail. Neighborhood and connector streets, like Denver Avenue, were reconfigured to improve traffic safety and pedestrian access. Several "pocket parks" were thus created, thereby enhancing the pedestrian experience and creating on-street parking near the commercial hub of downtown Kenton. The most notable addition is the creation of Paul Bunyan Plaza, which is a combination of hardscape pedestrian areas and landscape backdrop. The artwork at the Kenton /North Denver Avenue Station reflects Kenton's rich history, with an emphasis on the cattle industry. Metal cutouts in the railing feature cowboys and cattle in diminishing perspective. Steel bands etched with an architectural motif wrap the shelter's columns. Custom benches highlight scenes from Kenton's past in mosaic tile. The community map features artifacts of daily life in Kenton imbedded in resin and surrounded by mosaic.

Salvaged architectural elements from the Portland Union Stockyard are featured at a nearby pocket park and sculptures inspired by Babe the Blue Ox offer seating across from the landmark statue of Paul Bunyan. The station artist is Tina Hoggatt, the community map was created by Mary Tapogna, and the seating sculpture is the work of Brian Borrello.

DeltaPark/Vanport and Expo stations both have a large park and ride component that will attract Washington commuters, and patrons of Portland International Raceway and the Expo Center's events. Located near wetland areas, and on the site of historic vanished city of Vanport, the stations emphasize environmental and cultural themes. The Delta Park/Vanport station will create two bio-swale planting areas that will filter both bridge and parking lot storm water. Both are side platforms that utilize the new Interstate MAX shelter and other materials.

The Delta Park/Vanport Transit Center features an integration of engineering, design, and art that provides an experience of nature while acknowledging the past. Michael Creger is using artifacts from the Chinook culture, the historic city of Vanport, and the Portland International Raceway to cast a bronze railing at the platform representing the three main chapters in the life of the area. Vintage prints of the life in Vanport are reproduced in enamel on steel and hung on the electrical cabinet. A mosaic paving insert depicts a map of the present (Delta Park) superimposed over a map of the past (Vanport). Roof-shaped sculptures below the platform emerges from the

landscape recalling the disastrous flood of 1948. Down in the lower parking area the water quality pond features arcs of Corten steel and a glowing monolith suggesting the constantly changing relationship between man and nature in this historic wetland. The station artist is Linda Wysong.

Traditional Japanese timber gates mark the entrance to the Expo Center Station near the site of the assembly center where Japanese Americans were held in 1942 while the internment camps were hastily being constructed. Newspaper articles from the time are etched in metal and wrapped around the base of the timbers. Metal tags such as those worn by internees are strung across the gates representing each of the 3800 people incarcerated at the center. Seating is in the shape of the suitcases and trunks they used to store their belongings. A floor plan of the assembly center is inset into the platform paving. The station artist is Valerie Otani.

BUSINESS SUPPORT PROGRAM

One of the main concerns with any street reconstruction is the impact on businesses. TriMet is committed to minimizing construction impacts to local businesses along Interstate Avenue. This includes maintaining access to businesses, helping businesses by providing technical assistance, and marketing and advertising support.

TriMet supports Interstate Avenue businesses by:

- Maintaining at least one lane of traffic in each direction, and access to businesses and parking.
- Posting “Open for Business” signs along with directional signs to help customers access businesses.
- Creating a “Doing Business on Interstate Avenue” directory to make it easy for people to patronize companies.
- Working in partnership with PDC, U.S. Small Business Administration, Enterprise Foundation, Cascadia Revolving Fund, and Albina Community Bank to offer a low-interest loan and technical assistance program for small businesses on Interstate Ave.

As part of the “Interstate Ave. is Open for Business!” campaign, TriMet rolled out the Lunch Bus. The innovative program picks up employees from various partner agencies or neighborhood groups, give them a tour of the project, and then stops for lunch at an Interstate Avenue restaurant.

The Lunch Bus is a great way to inform people about the project while bringing customers to support the local restaurants.

By March 2002, the Lunch Bus had generated over \$4,000 for Interstate restaurants including Playa Azul, Swan Garden, Dixon’s Rib Pit, Nite Hawk, Paul Bunyan’s Deli and Espresso, and U&I Restaurant.

THE STORY CONTINUES

What TriMet builds today will directly influence what TriMet is allowed to create in the future—whether north to Vancouver, east to Clackamas, through downtown Portland, or south to Milwaukie.

**Environmental and Sustainable Elements in
Light Rail Transit Design and Construction**
The GREEN Line—From High Tech to No Tech

SIMON COOPER

SEAN BATTY

Tri-County Metropolitan Transportation District of Oregon

The goal of the Tri-County Metropolitan Transportation District of Oregon (TriMet) is to be an environmental leader. TriMet aims to go beyond merely complying with environmental regulations by continually improving its environmental performance, preventing pollution, and reducing its impact on the environment. This policy was applied to the Interstate MAX project in Portland, Oregon, with excellent results. The final project was tangibly more “sustainable,” allowing for the future implementation of additional sustainable elements, incurred no loss of system functionality, and was within the project budget and schedule constraints. The goals were accomplished by making extensive use of recycled materials and reused materials, by planting trees, and by using innovative storm water management techniques to clean storm water runoff. These sustainable project elements range from the very simple (“low tech”) to the quite complex (“high tech”).

It is concluded that

- Agency environmental philosophy begins at the top.
- Recycled elements and recycling often represent practical and cost effective solutions.
- Storm water elements are driven by City and Federal requirements and, in the case of Interstate MAX, required careful interpretation and application.
- Sustainable elements run the gamut from high tech to low tech, with the traditional precepts of “reduce, reuse, recycle” falling somewhere in the middle. Sustainability, in some cases, improves the bottom line over the life cycle of the system.

INTRODUCTION

TriMet is the first transit agency in the United States to utilize recycled materials extensively in a rail project. The Interstate MAX light rail alignment is an approximately 5.6-mi extension of the Portland area’s regional light rail system from the centrally located Rose Quarter arena north to the edge of Portland (and Oregon State University), at the Expo Center. Recycled materials were used in response to internal agency policy, community desires for more sustainable construction, and, in part, due to regulatory requirements. The use of recycled materials and other sustainable elements were conscious responses to favorable engineering cost-benefit analysis that address the entire life cycle of the project.

These sustainability efforts save the agency money, streamline its operations, and make the project friendlier to the environment. For example, TriMet saved more than \$500,000 in direct construction costs by focusing on opportunities to utilize recycled products.

Specific sustainable elements can be organized in a continuum of complexity. Sustainability proponents often focus on technologically complex elements; however, significant sustainability gains can be made by incorporating elements that are very low tech. For example, TriMet is tripling the number of street trees installed along the alignment, a “no-tech” project element. These trees will improve the environment by reducing air pollution, providing shade, and retaining storm water.

The Lower Albina and Upper Interstate reaches of Interstate MAX reduced the storm water impact of approximately 2.9 acres of impervious area through the use of a ballast trackway. This pervious track section reduces the amount of runoff from paved surfaces. This specific technology is definitely low tech.

The project also treats storm water runoff from 36 acres of industrial area that flows directly into the Willamette River. This runoff is treated through a specialized storm water treatment vault that could be considered to be in the mid-range of the technology continuum.

The future for light rail transit (LRT) may include the installation of regenerative braking energy storage capacitors—certainly a high tech solution. These capacitors act as batteries that store the energy that the trains generate when braking, and release it to the power grid for use by other trains.

Sustainability Somewhat Defined

The terms sustainability, “green,” and environmentally friendly, have all been used to describe environmental initiatives. The current term of art is sustainability. What is sustainability? As stated by Oregon’s former governor John Kitzhaber, the necessarily broad definition of sustainability is using, developing, and protecting resources at a rate and in a manner that enables people to meet their current needs and also provides that future generations can meet their own needs. Sustainability requires simultaneously meeting environmental, economic, and community needs.

In economic terms, the goal is to live on environmental interest, not on environmental capital.

Project Mandates

The sustainability of Interstate MAX is the result of two major factors. First is TriMet’s commitment to being an environmental leader. TriMet’s philosophy goes beyond simple compliance with environmental regulations to actively working on improving environmental performance, preventing pollution, and reducing the impact of TriMet’s activities on the environment. This philosophy is largely attributable to TriMet’s leadership. TriMet’s General Manager Fred Hansen served as deputy administrator of the Environmental Protection Agency for 4 years, and he was the director of the Oregon Department of Environmental Quality (DEQ) for more than 10 years.

GREEN Environmental Policy

Through Mr. Hansen’s leadership, TriMet has created a GREEN philosophy, described below.

Goal TriMet’s goal is to be an environmental leader. TriMet is committed to not just being in compliance with environmental regulations, but to going beyond compliance by continually improving our environmental performance, preventing pollution, and reducing our impact on the environment.

Reduce, Reuse, and Recycle TriMet seeks to alleviate its negative impacts on the environment by reducing waste, reusing materials, and recycling waste, as well as by showing a preference for products made of recycled materials.

Educate TriMet educates employees to be environmentally responsible and achieve environmental goals. Furthermore, TriMet educates the public on the benefits of transit and how riding transit reduces pollution and helps meet the region’s land use goals. TriMet also educates our business partners on the benefits of transit and employer commute options.

Efficiently Use Resources TriMet implements conservation measures that consume less energy including fuel, electricity, and time.

Nature TriMet seeks to conserve natural resources by working toward a long-term goal of sustainability using The Oregon Natural Step framework as guidance (www.ortns.org). TriMet works to minimize significant environmental impacts as identified in its environmental management system by setting and reviewing environmental objectives and targets.

The Natural Step was started in the 1980s by a Swedish medical doctor and cancer researcher Karl-Henrik Robert because he was concerned about rapidly increasing cancer rates for children. From his research, it had become clear to him that this increase in cancer was connected to environmental factors, not lifestyle. In talking with a fellow scientist, Dr. Robert was frustrated that there was endless debate that wasn’t going anywhere. He felt something had to be done, so he began a consensus process in which he sent out a paper for comment from fellow researchers about conditions for planetary sustainability.

The Natural Step is a creative new approach for addressing environmental challenges based on consensus and systems thinking. Its purpose is to develop and share a common framework comprised of easily understood, scientifically based principles that can serve as a compass to guide society toward a just and sustainable future.

The second factor behind the sustainable elements of Interstate MAX is local and federal rules. A primary example is the City of Portland’s Storm Water Manual, driven by Federal Clean Water Act requirements and specifically the National Pollutant Discharge Elimination System (NPDES) permitting system. The program was expanded in 1987 to target “non-point” source pollution, including pollution from diffuse sources, such as storm water runoff from urban and agricultural areas. (In Oregon, the Oregon DEQ enforces NPDES regulations.)

The City’s NPDES permit requires a storm water management plan (i.e., storm water manual and regulations) to reduce pollution in surface runoff to the maximum extent practicable.

Yet another example is the generally high bar set by the City of Portland with regard to construction waste recycling. Portland City Council created the Office of Sustainable Development in the fall of 2000 to research and promote environmental, social, and economic health in Portland.

Criteria, Elements, Costs, and Benefits—Sustainability as a Balancing Act

Achieving sustainability will require the balance of several factors: economics, environmental needs, and community social needs. Elements that balance the needs of all three factors are sustainable. In business, this increasingly popular notion of three integrated sustainability goals is sometimes referred to as the “triple bottom line:” increasing profits, improving the environment, and improving people’s lives.

The CEO of Electrolux once stated, “I’m convinced that we are seeing the birth of a new perspective of the world where ecology and economics are two sides of the same coin” (Sweden-based Electrolux adopted the The Next Step sustainability framework after it lost a multi-million-dollar deal because it did not offer a refrigeration system without chlorofluorocarbons).

In its final state, sustainability will always make economic sense. However, in the transition from now until this sustainable future, some sustainable elements will not survive cost-benefit analysis. Favorable cost-benefit analysis does not even strictly parallel the low to high technology continuum, nor are the results of cost-benefit analysis constant from place to place or project to project. Unfortunately, there are few “silver bullets” in sustainability. The way to decide which sustainable elements do make sense is through good old fashioned engineering analysis, keeping in mind three concepts: 1) make sure that life-cycle costs are included in the analysis; 2) account for all costs, even externalized costs; and 3) realize that balance, not maximization of one variable, is the goal.

In most basic terms, sustainability is just another project criteria to be balanced against all the others.

Project Specific Examples of Sustainable Elements

Reusing and Recycling Materials

The City of Portland is a leader in recycling policy. It currently requires building projects with a permit value of \$50,000 or more to separate and recycle certain materials from the job site. City construction specifications for improvements to streets and sidewalks within the City right of way do not set specific performance standards but require projects to “recycle, reuse, or salvage whenever practical.” TriMet’s internal philosophy was compatible with the City’s and the two agencies worked together to use recycled materials for use in roadway and sidewalk construction.

Recycled Concrete and Asphalt—Low Tech TriMet’s contractor sorted demolished concrete and asphalt from other materials at the project site and then transported it to a crushing plant operated by Pacific Cascade Resources. The material was graded and mixed with some standard aggregate base to produce a material that met the engineering criteria for base rock suitable for roads, sidewalks, and concrete paved track slab. In all, 80,000 cubic yards of material was reused, saving TriMet \$100,000 on the purchase of materials and on disposal fees.

Recycled Bollards—Moderate Tech Interstate MAX is the first project to make use of bollards and chain made from recycled plastic in paved track portions of the trackway. At the time of design, no bollards meeting TriMet’s recycling goals and criteria were available, so the contractor was asked to fabricate them. The result was bollards made from recycled plastic, 20%

cheaper than steel, saving \$100,000 in material costs. The use of plastic bollards also eliminated the need for grounding, yet another direct cost savings. Because LRT design criteria requires all conductive materials within 15 ft of the trackway to be electrically grounded, removing the grounding requirement saved an additional \$150,000.

Recycled Plastic Track Ties—Moderate Tech The paved track portion of Interstate MAX uses 6,000 ties spaced every 6 ft, to maintain alignment, gauge, and grade, until the concrete track slab was poured. On previous light rail projects steel ties were used. Interstate MAX used ties made from recycled polyethylene automobile gas tanks. These ties have the added advantage of not affecting the signal system, unlike steel ties. Not having to shield the signal system from the steel ties offer yet another cost savings.

Storm Water Management

The design basis for the Interstate MAX project's storm water system is the City of Portland's Storm Water Management Manual. Project staff and engineers from the City's Bureau of Environmental Services formed a design task force to implement the City code. The team faced the challenge of applying rules intended for a typical city block development to a linear project 5.6 mi long, crossing 12 separate drainage basins, seven of which drain into the Columbia Slough, and five of which drain into the Willamette River. The task was also complicated because Interstate sewer system was in large part combined (sanitary and storm), with only the lower sections (those in Lower Albina, close to the Willamette River) being separated. The city's rules dictated that the project treat (i.e., clean) the storm water using one of a number of approved best management practices. The joint agency team weighed the factors and decided to install treatment manholes on key storm pipes, thereby treat a large percentage of storm water in the Lower Albina section of the project. When all of the project's total impervious area was calculated along Interstate Avenue, there was a net reduction. Although the road was widened to add the track, approximately 1.3 mi were constructed as open ballasted track. The replacement of asphalt paved roadway with ballasted track removed a 28-ft strip of impervious surface area.

Storm Water Treatment Manholes—Moderate Tech The team selected Continuous Deflection System water treatment manholes for the project. The manhole utilized a unique (high tech) deflection screen that reportedly removes 95% of solid pollutants.

This was one of several techniques that were approved by the City; however, it had some key advantages favored by the project:

1. **Hydraulics advantages.** This system did not require any head drop (differential between pipe inlet and pipe outlet) through the treatment structure. This meant money was focused on treatment structures and not on laying extra pipe chasing grade downstream to tie back into the sewer system.
2. **High flow effectiveness.** The manholes tolerated a wide range of flows. The first flush and flows were treated and the high flows were diverted without resuspending the captured pollutants.
3. **Ease of maintenance.** The City's bureaus were charged with maintenance, and with limited resources this was important. This is a good example of considering the life-cycle cost of a potential project element in selecting a particular design or facility.

Storm Water Infiltration—Moderate Tech Interstate MAX provided three retention facilities to mitigate the increase in impervious area in the upper reaches of the project. This served to decrease overall detention requirements in these reaches of the project. In addition, these facilities provide water quality benefits not strictly required. These facilities will infiltrate paved track drainage. Road drainage was not infiltrated because the City of Portland prohibits the use of sumps to handle storm water along main automobile transportation arterials like Interstate Avenue because of concerns about vehicle hydrocarbons and the risk of hazardous material. As the paved track way is dedicated to light rail vehicles (LRVs), it presents no such risk.

Water Quality Pond—Moderate Tech Interstate MAX constructed two significant, traditional planted water treatment facilities at the Delta Park–Vanport Station and at the adjacent park and ride. The TriMet–City of Portland storm water team wanted the project to provide a more natural treatment facility that would showcase how water quality treatment can be incorporated aesthetically into design (in contrast to the more common practice of hiding a well-engineered but ugly facility in the corner of the parking area). The resulting facility integrates engineering and design to provide an attractive natural appearance while the artwork recalls the history of the area. Roof-shaped sculptures below the platform emerge from the landscape recalling the disastrous flood of 1948. Down in the lower parking area, the water quality pond features arcs of Cor-ten steel and a glowing monolith made of stone, steel, and acrylic.

Landscaping

Tree Plantings—No Tech Trees provide valuable storm water retention, reduce air pollution, and provide cooling shade. Interstate MAX will plant over 1300 trees, tripling the number that previously existed along the LRT alignment.

Groundcovers—No Tech Use of groundcover plants in lieu of “tree lawns” in sidewalk planting areas reduces storm water runoff, irrigation water needs, and requirements for future petrochemical fertilizer and pesticides. In addition, this will eliminate the need for frequent mowing typically performed with gasoline burning equipment. When mature, these plantings will provide full ground coverage and total interception of rainfall to limit impact erosion.

Irrigation Systems—Moderate Tech Irrigation and plantings are designed based on an “irrigate-to-establish only” philosophy. Irrigation systems are a cost effective way to establish drought tolerant plantings in the Portland area. However, the irrigation systems will be decommissioned after two growing seasons. This approach netted some savings on the initial cost of these systems, and more savings will accrue when irrigation water is no longer necessary.

Certified Organic Soil Amendments—Low Tech TriMet is currently investigating use of soil amendments that are certified organic. Organic certification is better known as it relates to food production. Certified organic means less petrochemical use in production and less residual environmental chemicals. Typically, petrochemical based fertilizers and soil amendments are installed by landscaping contractors.

Light Rail Vehicle Propulsion

Storage Capacitors—High Tech The future for Portland LRT may include the installation of regenerative braking energy storage capacitors. These capacitors act as batteries that store the energy that operating trains generate when braking, and then release it to the power grid for use by other trains. Currently, all TriMet LRVs have regenerative braking capacity. That capacity is only realized as useable energy for propulsion in certain areas and when certain conditions occur on the system. The ability to store this energy for future use is the next step in fully capturing the potential of regenerative braking.

SUMMARY OF CONCLUSIONS

TriMet's policy of sustainability is based on the following conclusions:

- Agency Environmental philosophy begins at the top.
- Recycling and reuse often present practical and cost effective ways to improve sustainability, but there are no "silver bullets."
 - Sustainability can be treated as another variable in traditional engineering and cost-benefit analysis, as long as lifecycle costs are considered, and project lifecycle is long enough to recoup investments in more sustainable elements.
 - Elements that lead to system sustainability run the gamut from high tech to low tech with the traditional precepts of reduce, reuse, recycle falling somewhere in the middle.
 - Sustainability, in some cases, improves the bottom line over the lifecycle of the system.

INTERNET RESOURCES

1. The Oregon Natural Step: <http://www.ortns.org>. Accessed Feb. 28, 2003.
2. The Alliance for Sustainability: <http://www.mtn.org/iasa/tssystemconditions.html>. Accessed March 4, 2003.
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Special Problems for Real Property Acquisition Valuations *Billboards and Parking Lots*

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The construction of light rail alignments more often than not requires real property acquisitions. From time to time light rail projects impact income-producing properties such as paid parking lots and billboards. This raises the issue of the appropriateness of including “lost business revenue” and the “income approach” to valuation as part of an appraisal. The author suggests that it is a best practice to begin a project’s acquisition process with these properties because they require more time and energy. This extra time allows the real property personnel to gather information and develop creative ways to minimize the impact of the income approach when good reason exists to believe that it would likely be the ultimate method used to determine value.

A fact scenario based on real property acquisition files involved in the Interstate MAX project will be utilized as backdrop to discussing the legal analysis involved in determining the relevance of the income approach to appraising paid parking lots and billboards taken under a government’s eminent domain authority.

Where property generates rental income it would very likely be admissible in a condemnation action. Therefore, it is important to determine the appropriateness of including this in the appraisal at an early stage of the project and identify ways to minimize its impact.

INTRODUCTION

At the beginning of project planning, no one really knows the cost of the real property upon which the alignment will run. The simplest method is to determine an average per square foot value for the area based on market data and multiply this times the estimated square footage of the projects footprint. This process is fine and appropriate where the majority of property to be acquired is vacant land with no development potential. However, for light rail projects in developed areas, where people live, work, and enjoy their free time, this method may prove problematic for income-producing properties.

The owners of these income-producing properties will typically demand payment of their anticipated lost business revenues or profits, making negotiations contentious and lengthy. It is a best practice to begin the acquisition process with these potentially problematic acquisitions, thus allowing the agency a better opportunity to gather information and develop creative solutions to minimize the acquisition costs. When the issue is paying business losses, government is resistant because of the highly speculative nature of business profits; thus the issue is more likely to be resolved with a condemnation judgment.

Moreover, the cost of litigating condemnation proceedings themselves can be substantial. For the government, the situation is further complicated by the fact that many state condemnation statutes award the citizen their attorney fees and costs if the fair market value

determined in the condemnation suit is higher than the government's highest offer, even if it is by only \$1.00, or if the government's offer shows a lack of good faith (*I*). Therefore, it is important to understand when business losses are a proper basis for providing "just compensation."

This paper will look at acquisitions involving parking lots and billboards that took place as part of the Interstate MAX Light Rail Project in Portland, Oregon, as examples of dealing with these problematic acquisitions. We will begin with a brief overview of the Interstate MAX Light Rail Project and a description of the acquisitions. Next, we will look at the current state of the law respecting the acquisition of income-producing properties, particularly billboards and parking lots. This paper does not look at these properties as "special use" or "unique" properties, which is a different legal analysis. Finally, I will describe Tri-County Metropolitan's (TriMet's) acquisition process and discuss ways to minimize the impacts of the income approach to value for both parking lots and billboards.

INTERSTATE MAX LIGHT RAIL PROJECT

The Interstate MAX Light Rail Project is a 5.8-mi alignment going north and begins at the home of the Portland Trail Blazers, the Rose Garden, which is also adjacent to two other major event venues: the Portland Convention Center and the Memorial Coliseum. The alignment terminates at the Portland Exposition Center, which is frequented annually by more than 500,000 visitors for trade shows and other events.

It was a compromise project following the 1998 defeat of a bond measure proposed to fund a larger 25-mi project alignment. The scaled-down project was conceived and approved by the community within one year after defeat of the bond measure. Construction began in early 2001. It was financed in part with tax-increment financing generated by the creation of an urban renewal zone and federal funds under the Federal Transit Administration's New Starts Program.

The project runs along Interstate Avenue, which was the interstate connection between Oregon and Washington prior to the construction of Interstate 5. The new alignment connects with the existing system near the Rose Garden. Interstate Avenue is primarily a business area, industrial at the southern portion; and more retail in the center with single family units squeezed in between the major cross streets.

The area, one of the most diverse in the metropolitan area, has the highest concentration of African-Americans in the metropolitan area. Historically the city's record of having projects displace that population has not been good. TriMet and the City of Portland, recognizing the communities' sensitivities on the issue, made the commitment that there would be no displacements as a result of the project. Therefore, TriMet, instead of approving a condemnation resolution covering the entire project area, authorized condemnations for only particular properties where negotiations with the property owner were not progressing sufficiently to meet the project's accelerated schedule.

The design of the alignment required moving the curb line back in order to accommodate on-street parking, bicycle lanes, through traffic lanes, turning lanes, and the trackway. It also required widening the sidewalks in station areas to a pedestrian friendly 10 ft from the original average width of 6 ft. Such adjustments required obtaining "slivers" of property measuring between 2 and 11 ft in width along much of the alignment. These adjustments were also necessary to provide for truck turning movements and to accommodate safe pedestrian space at

street intersections. Few structures were impacted by the acquisitions; the corner of one building was severed and rebuilt, but most often the project only required moving the back of sidewalks closer to the buildings. The construction did, however, require the acquisition of property upon which billboards were located. A paid parking lot was also impacted. The parking lot and billboards were two of our most problematic acquisitions.

The parking lot is located at the project's northern terminus, the Expo Center, which is owned by the Metro Regional Government (Metro). The acquisition consisted of acquiring fee title to over 100,000 ft² for a station platform, which eliminated between 110 and 212 parking spaces; the exact number of spaces was a hotly contested issue in the negotiations. The project also required the creation of a 300 space park and ride lot immediately adjacent to the station platform. Despite TriMet's efforts to acquire fee title to this area, Metro would only grant a long-term easement or lease. Because Metro is a government entity, TriMet has limited condemnation authority over them (2, 3).

Three separate billboard locations were substantially impacted by the project. The City of Portland has an ordinance that restricts the erection of new billboards within the city limits (4). The ordinance does not apply to billboards erected prior to a certain date; these billboards are "grandfathered," so long as they are not changed or modified (5). Only one of the billboards was impacted by the project in such a way that its existence was threatened.

In the case of these particular acquisitions, the values of these properties to their owners were alleged to be their income-producing ability, which raised the issue of compensating property owners for business losses—something that is generally not recoverable in condemnation. Nevertheless, the U.S. Constitution requires that these property owners be compensated for the value of what they lose. For parking lot and billboard acquisitions, the real question is what are the property owners losing? A look at the current legal background for these acquisitions gives us some guidance on this issue.

Just Compensation and Lost Business Revenue

The Fifth Amendment to the U. S. Constitution grants the government the right to take private property. Specifically, it requires that private property not be taken for public purposes, *except* upon payment of just compensation. Just compensation is normally interpreted to mean the "fair market value" or "market value" for the property taken (6). Jurisdictions differ as to the precise definition of either term (they are generally interchangeable), but the essence of the various definitions is the value that knowledgeable sellers and buyers would attribute to the property. The *Uniform Standards of Professional Appraisal Practice* (USPAP) states it this way:

The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeable, and assuming the price is not affected by undue stimulus. (7)

The notion of just compensation, simply put, is to reimburse the owner for the property interest taken by the government, and to place them in as good a position as they had been prior to the taking (8, 9).

Fair market value is usually based on the property's "highest and best use." Highest and best use refers to the use of the property that will most likely produce "the highest market value,

greatest financial return, or the most profit” (10). The highest and best use determination requires considering whether a reasonable probability exists that in the near future the property would be put to that use and the effect the prospective use will have on the market value at the time of the taking. Fair market value is generally based on the value attributable to the property itself, not the business conducted on the property (11). Whatever the highest and best use, there are various appraisal methods used to determine fair market value.

There are three principal methods used to determine the fair market value of property taken by eminent domain: 1) “market data approach,” 2) “income approach,” and 3) “cost approach” (12). The market data approach is the most popular. This method is based on an analysis of comparable sales in the area. The cost approach looks at the replacement or reproduction cost to acquire the land and build a structure similar to the one at issue, with an appropriate reduction given for any depreciation. Our focus is the income approach, which establishes fair market value based on capitalized net income.

Jurisdictions differ on the proper use of one method over the others, but the consensus suggests that all are relevant so long as sufficient evidence supports their usage (13). Unique factual circumstances typically determine which approach is more appropriate than another, but a jury ultimately makes the determination if the parties fail to agree (14). However, the use of the income approach is a relevant basis for valuation only when the property at issue generates revenue, particularly rental revenue. This is an important distinction between *rental revenue* and *business profits* generated from the business conducted on the property. In condemnation proceedings, the former is compensable, the latter is not.

In Oregon, as in most jurisdictions, the general rule is that evidence of profit derived from a business conducted on property “is too speculative, uncertain and remote” to be considered as a basis for determining fair market value in condemnation proceedings (15, 16). One exception to this rule, however, is when the earnings depend chiefly upon the “location, soil, or character of the property itself.” In that case, the rental value of commercial property can be considered “profit derived from the land itself” and, therefore, admissible as determinant of value in conjunction with the income approach (17–19).

To the extent that a taking eliminates rental income produced by income-producing parking lots or billboards, the owners of these properties will likely seek to recover their business losses as part of the fair market value determination. We now turn to a brief review of case law on this issue.

Paid Parking Lots

Parking in major metropolitan areas is a thriving industry. With the limitations on surface parking in many areas (20), and regular increases in the number of cars on the road, parking can be a major source of revenue for parking lot owners and other businesses that incorporate paid parking into their business model. In the City of Portland alone, with a population of just over 500,000, the average monthly parking fee in the downtown area is around \$145.00. Daily parking fees average in the area of \$10.00 per day. For special events, parking rates can surge as high as \$15.00 at parking lots in the area of the Rose Garden, home of the Portland Trail Blazers professional basketball team. More importantly, the cost of operating these parking facilities is nominal given the limited labor and maintenance costs involved. Historically the demand for parking does not decrease, even with increased investments in transportation infrastructure. When condemning this type of property, the government should anticipate a claim that the

business or a portion thereof has been taken. The question is whether that is an appropriate basis to determine fair market value given the particular facts of the acquisition.

Cases in jurisdictions across the United States have found such evidence at least relevant to market value, if not determinative (21). One court has held that there must be an exception to the general rule against admitting evidence of business profits to show the value of land in the situation “where the business is inextricably related to and connected with the land where it is located, so that an appropriation of the land means an appropriation of the business” (22). One clear reason for this conclusion is that, for income-producing property like paid parking lots, the prospective earning power is evidenced by past earnings, which would be a foremost factor between a buyer and seller (23, 24). One of the earliest cases addressing this exception in valuing parking lots is *Trenton v. Lenzer* (25).

Lenzer arose when the City of Trenton adopted an ordinance creating a parking authority to determine the feasibility of creating off-street parking facilities to address the City’s parking problems. As part of the process, it identified a private parking lot for condemnation to create a public parking lot. The lot owner argued that the acquisition was not only a taking of real property, but in effect the taking of their “parking yard business.” Acknowledging that when land acquisitions result in the loss of the owner’s business located thereon, an owner of property is *not* entitled to compensation for the value of the business, the New Jersey Supreme Court explained that the fair market value is, nevertheless, measured by the price which a hypothetical seller and buyer would agree. Although the compensation for the parking lot was not an issue for the court, the court writes,

The property being taken under the terms of R.S. 40:60—25.1, N.J.S.A., is land which has been operated profitably by the appellants for many years as a parking lot. Its fair market value . . . would be fixed after due weighing of all the factors which customarily enter into [a willing seller and buyer’s] purchase and sale negotiations. A foremost factor in the sale of the parking lot would be its prospective earning power evidenced in considerable part by past earnings.

The Supreme Court of Missouri considered the issue a few years later in *Municipal Court Facilities v. Kordes* and provided a more forceful statement in favor of considering business losses (26). There they stated the issue very succinctly:

Are business profits derived from land used as a parking lot and operated by the owner of the land properly capitalized to determine fair market value even though such land can be used for other purposes and in spite of comparable rules of land in the area?

In *Kordes* the properties at issue were being used as surface parking lots, and were being condemned to build a new courthouse. At trial, a jury awarded \$651,000.00 for a 38,000 ft² parcel and \$256,000.00 for a 15,840 ft² parcel (27). The lot owner submitted and the trial court allowed the valuation evidence based on capitalized income from parking fees, over the objection of the government. On appeal, the government argued that the trial court erred in permitting the property owner to use “capitalized business profits” as evidence of fair market value, citing the speculative and conjectural nature of business profits. Affirming the trial court’s judgment, the Missouri Supreme Court held that “the operation of the public parking lot was

related to and connected with the land such that appropriation of the entire property appropriated the business,” and therefore the trial court properly admitted the evidence (citations omitted, emphasis added). The issue was raised again in *Land Clearance Redevelopment Authority v. Kansas University and Endowment Association* (28).

In *Land Clearance Redevelopment*, the government appealed a \$2,000,000.00 award for condemnation of a multi-story parking garage containing 325 spaces and consisting of 15,620 ft². At the time of the taking, the lessee, who had 40 years left on a 99-year lease, stood in the shoes of the owner. At trial the government’s valuation based on comparable sales reflected a value of \$1,000,000.00. The garage operator’s evidence reflected a value as high as \$2,775,000.00 based on income figures from the previous fifteen years, projected out for the remaining 40 years of the lease.

The court considered the issue of whether clear and reliable evidence of future profit of the lot owner is admissible if there is evidence of comparable land sales. Finding in the affirmative, they write:

Any reasonably sophisticated buyer would have looked at PSI’s use and business profits in capitalizing or researching a present value to put on the land in the form of an offer to purchasers. Here there was a taking of the whole property and with it the whole business which was interrelated with the property of operating a private downtown parking garage, the highest and best.

These cases provide compelling precedent and support for the use of the income approach when determining fair market value of paid parking lots.

Billboards

The outdoor advertising sign industry, commonly called billboards, has had difficult times since the 1950s and 1960s when they were seen as a nuisance and an eyesore on the burgeoning national highway system. So much so that the Federal Highway Beautification Act was passed at the insistence of then-First Lady Lady Bird Johnson, wife of former President Lyndon B. Johnson (29).

Billboards remain under fire in cities throughout the United States. Because of the restrictions on the erection of new billboards in the City of Portland, all the billboard locations in the Portland area are prized possessions, and the major sign owners are very protective of their franchise.

Billboards can pose a real threat to a project real property budget if they are substantially impacted by construction. Billboard locations have been called “unique”(30). Unlike buildings which may be reshaped to fit new boundary lines, this may not always be the case with a billboard. Negative attitudes towards billboards have made it difficult to relocate them when public works projects require their removal: “[I]nvoluntary termination of a nonconforming ‘grandfathered’ status by government compulsion has given rise to a compensable taking of private property” (31). Because billboards are in the business of leasing space for advertising, they are often valued in condemnation cases based on an income approach, as opposed to being valued as personalty. So the debate is typically whether to value the structures at their replacement cost, or based on their revenue.

The Uniform Relocation Assistance and Real Property Acquisition Act (Uniform Act, 32) requires that any acquisition by a federal agency acquire an equal interest in “all buildings, structure or other improvements” located on the real property (33). Just compensation for that part of the acquisition must treat the building, structure, or other improvement as part of the real property (34). The problem is this, if billboards are anything other than personal property—which is what most states assert—then, under the Uniform Act, the owner or tenant must be compensated (35).

The Uniform Act gives a sign owner the option as a “displaced person” to either receive relocation benefits, or seek compensation for acquisition of the sign. The problem is that in some situations relocation, whether on the same parcel or within the same general area may not be an option, thus forcing the condemning authority to pay fair market value for the signs.

Like in the City of Portland, many local jurisdictions have outlawed or have placed serious restrictions on the erection of new billboards, making those that remain nonconforming uses of the property, permitted to remain so long as the use does not change. While many of these ordinances have survived First Amendment challenges, and are considered valid, content-neutral aesthetic and safety restrictions on speech, this does not mean the government has no obligation to compensate sign owners under the Fifth Amendment when a light rail project necessitates their removal (36, 37). Several jurisdictions have looked at this issue and resolved that, when a billboard cannot be relocated, the sign owner is entitled to fair market value of the sign. From the government’s perspective, compensation to the sign owner should be limited to the replacement cost of the structure. The Uniform Act, however, arguably eliminates that option. The case of *State of Washington v. Obie Outdoor Advertising, Inc.* considered the issue (38).

State of Washington v. Obie Outdoor Advertising, Inc. considered whether a sign owner was entitled to just compensation for their billboard beyond the mere value of the sign structure when the ability to relocate the sign was an issue. The case arose when the State of Washington brought an eminent domain action to acquire the advertising company’s leasehold interest in a parcel of land that contained two billboards. At trial, the state only presented evidence of the billboard structures’ value. The advertiser provided valuation evidence based on rental income from the billboard. They further presented evidence that state law prevented the relocation of the sign. The Washington Court of Appeals rejected the state’s argument that the only relevant evidence was reproduction costs. They write,

[In the cases cited by the state] [i]t was held that to capitalize the income over the unexpired term of the ground lease would amount to a windfall to the sign company, since the sign company would in all probability relocate the sign. That rationale is not applicable to this case.

Accordingly, they found that the trial court properly granted a new trial because the instructions eliminated the jury’s consideration of the advertiser’s income-approach evidence. A Florida court found a similar result.

A Florida Court of Appeals found it erroneous to limit the valuation of a billboard to replacement cost (39). In *National Advertising*, the sign owner held a leasehold interest in property being condemned by the State Department of Transportation (DOT) on which it erected a billboard. At trial, the state DOT submitted evidence of replacement value for the billboard at \$38,400.00. The state’s appraiser acknowledged in his testimony that the sign could not be

relocated anywhere in the county because of the county sign ordinances. The sign owner's appraiser testified that he valued the leasehold as improved by the billboard. He explained that the market approach for valuing billboards was known as the "gross income multiplier" method, which is a form of income approach. Applying this process and noting the lease term was extendable through 2006, the appraiser found a value of \$81,000.

The trial court entered judgment solely for the value of the billboard structures. On appeal the Florida Court of Appeals held that, because the state DOT relied solely on replacement value of the billboard, it failed to meet its burden of producing evidence that it had provided full compensation for the value of the leasehold and reversed the trial court (40). Thus it is important to distinguish the value of the sign from the value of the leasehold, which generates income (41).

Given the distinction between compensation for the structures as opposed to compensation for the "leasehold" interest in the real property, there is a compelling argument for valuing billboards on the income approach. However, as shown, the application of the income approach has one important limitation: if the billboard can be relocated, "fair market value" is not the standard for compensation and the income approach becomes a nonissue.

Regardless of whether a billboard is considered personal property or a fixture, the underlying leasehold right is the property interest at issue in a condemnation suit (42, 43). The importance of the issue is seen by the range of values that may present themselves. For example, one court had the range for the fair market value for a billboard between \$5,200.00 and \$115,740.00 (44).

Income Approach Problem

Given the weight of authority supporting use of the income approach to valuing parking lots and billboards in appropriate cases, it is important to take steps at an early stage in the project to minimize that likelihood of its use and its impact. In both our cases, our problem was solved in large measure through intergovernmental cooperation.

Paid Parking Lots

TriMet resolved our acquisition of the parking lot through negotiations with Metro without resort to any formal dispute resolution process. Through negotiations and discussions that lasted over two years, the parties were able to minimize the impact of the appraiser's analysis under the income approach—which we acknowledged had some bearing on the issue. In a memorandum of understanding, TriMet and Metro agreed to perform a joint appraisal, although TriMet secured a separate appraisal as required by FTA regulations because of the high cost of the acquisition. The appraisers were given assumptions that to which the parties had agreed. First, the parties agreed to develop the "annual gross revenue" figure based solely on the number of days on which the Expo Center parking lot was filled to "capacity." Second, the parties agreed to give no consideration or adjustment for "churning," the word used to describe the process of selling a parking space several times during the day. These limiting factors resulted in the appraisal only determining the value of the fee based on the income approach; the park and ride value was ultimately based on the market approach.

The Expo Center acquisition was one of the first acquisition processes to begin and one of the last to be completed. Although the two-year negotiation period was unusually long, it did

not substantially interfere with the project schedule because Metro granted TriMet construction easements and permits, which allowed the work on the property to proceed pending resolution of the compensation issue. If the acquisition activities for this parcel had begun later or took much longer, there would no doubt have been substantial delays to the project, especially if the construction easements and permits were not granted.

Billboards

For the billboard, the agency settled the matter after filing a condemnation suit. The crucial issue for the agency was whether the sign could in fact be relocated on the parcel. We were successful in ensuring the sign could be relocated on the site. The initial offer to the sign owner was for the replacement value of the structure given our understanding and expectation that the structures could be relocated on the same site. The sign owner argued that the structures could not be relocated on the site nor elsewhere in the area because of the city code. The project's resident engineers and project managers worked closely with the sign company providing them detailed drawings of this portion of the project. After a series of meetings and discussions that included TriMet, the sign owner and the City, the parties were able to confirm that the City would not apply its ordinance in such a way as to prevent the sign owner from rebuilding its billboard on site.

TriMet never saw any evidence of the signs annual net revenue. In this particular case, the sign owner was also the real property owner, thus there was no apparent term to cut off the damages. The expectation was that an income approach analysis of the sign could yield substantial damages. Lucky, the sign owner was more interested in maintaining the location than recovering a hefty condemnation judgment.

CONCLUSION

Problematic acquisitions, particularly those that involve income-producing property like parking lots and billboards, require more time to allow for creative problem-solving in order to minimize the possibility of paying property owners for their business losses. For parking lots it is important to start conversations early to help gather information that will help shrink the net revenue figure as much as possible. In the case of billboards, it is important to find ways to ensure the sign structure can be relocated. In both cases, our results turned on invaluable intergovernmental cooperation.

ACKNOWLEDGMENT

The author acknowledges the contributions of his law clerk, Cindy Matsushita, a 2003 graduate of the Northwestern School of Law of Lewis & Clark College in Portland, Oregon, for her invaluable research on this project.

NOTES

1. See e.g., ORS 35.346.
2. ORS 267.225.
3. *City of Keizer v. Lake Labish Water Control District*, --- P.3d ----, 2002 WL 31873575 (Or App Dec. 26, 2002), reinforces the fact that exercise of condemnation authority by a statutorily created agency like TriMet must be applied strictly in according with the statute. Id. at 4-5.
4. See City of Portland Code Title 32 (2003) generally, Portland City Code § 32.32.020 in particular.
5. Portland City Code § 32.36.020 (2003).
6. See *United States v. Miller*, 317 US 369, 374, 63 S Ct 276 (1942) (explaining that the more concise way to think of the concept is “market value fairly determined”).
7. *Uniform Standards of Professional Appraisal Practice*, The Appraisal Foundation (2003), glossary reference.
8. *San Diego Transit Development Board v. Cushman*, 53 Cal App 4th 918, 925, 62 Cal Rptr 2d 121 (CA App Dist 1997).
9. *New Jersey Transit Corporation v. Cat In the Hat, LLC*, 803 A2d 114 (New Jersey 2002) (explaining that the goal in condemnation cases is determining fair market value so the government can make citizens whole).
10. *Commission of Transportation v. Towpath Associates*, 767 A2d 1169, 1177 (Conn 2001); *Uniform Appraisal Standards for Federal Land Acquisitions* (Fifth Edition 2000), p. 17.
11. See *Kimball Laundry Co. v. United States*, 338 US 1, 5, 69 S Ct 1434 (1949).
12. See *State v. 3M National Advertising Company, Inc.*, 653 A2d 1092, 1094 (NH 1995).
13. See *Denver Urban Renewal Authority v. Berglund–Cherne Company*, 568 P2d 478, 481 (Colo 1977) (explaining that appraisers utilize all three approaches to test the validity of their conclusion as to the fair value of property to be condemned).
14. See also *Cat In The Hat*, supra at 121 (explaining that it is proper to consider all factors affecting value that willing buyers and sellers would consider).
15. See *State v. Cerruti*, 188 Or 103, 107, 214 P2d 346 (Or 1950).
16. *Board of Public Building v. GMT Corporation*, 580 SE 2d 519, 525 (Mo 1979).
17. *Denver Urban Renewal Agency v. Berglund–Cherne Company*, 193 Colo 562, 567, 568 P2d 478 (Colo 1977) (Citations omitted.).
18. *Land Clearance Authority v. Kansas University And Endowment*, 796 SW 2d 495, 499 (quoting that the capitalization of income method is utilized to value income-producing property when there is a complete taking).
19. *State By and Through State Highway Commission v. Nunes*, 233 Or. 547, 379 P.2d 579 (1963).
20. For example, Portland City Code §33.450.300 prohibits surface parking lots on the portion of a site within 500 ft of a light rail alignment to encourage transit use.
21. *City of Cincinnati v. Banks*, 757 NE 2d 1205, 1215 (Ohio App 1 Dist 2001).
22. *Land Clearance Development Authority v. Kansas University And Endowment Association*, 797 SW 2d 495, 498 (Mo App WD 1990).
23. *City of Trenton v. Lenzer*, 109 A 2d 409, 416 (N.J 1954).
24. *State v. Cerruti*, 188 Or 103, 108, 214 P 2d 346, 349 (Or 1950) (“The profits derived from the use of the property itself may be shown, whenever such profits would be an indication of value”).
25. *Trenton v. Lenzer*, 109 A 2d 409 (NJ 1954).

26. *Municipal Court Facilities v. Kordes*, 43 SW 2d 124 (Mo. 1968).
27. The second parcel was shown to have an annual income of \$20,000.00.
28. *Land Clearance Redevelopment Authority v. Kansas University And Endowment Association*, 797 SW 2d 495 (Mo App WD 1990).
29. Sackman, J., V.B. Russel, P. Rohan, M. Reskin, T.P. Brigham, and G. Kanner *Nichols on Eminent Domain §23.03 (Mathew Bender & Co. Inc. 1999)*.
30. See *City of Scottsdale v. Eller Outdoor Advertising Company of Arizona, Inc.*, 579 P2d 590, 597. The Eller court has noted that billboard locations as opposed to billboards are unique. They write depending upon the viewable distance in either direction, the amount of traffic passing the location, and the type of viewing public, a location of a particular billboard may have a value over and above its nuts and bolts value. In this sense, in the billboard industry, it is virtually impossible to separate location from structure. *Id.*
31. *National Advertising Company v. State of Florida*, 611 So 2d 566, 570 (Fla App 1 Dist 1992).
32. This paper will not take a comprehensive look at payment obligations under the Uniform Act.
33. 42 USC § 4652(a).
34. 42 USC § 4652 (b)(i).
35. See also *Lamar Corporation v. State Hwy. Commission* 684 So 2d 601, 604 (Florida 1996) (“The sign is clearly a structure under any ordinary meaning of that term”).
36. See *Outdoor Systems, Inc. v. City of Mesa*, 997 F2d 604, 610 (9th Cir 1993) (explaining the analytical framework for anti-billboard ordinances).
37. *Red Roof Inns, Inc. v. City of Ridgeland*, 797 So. 2d 898, 900 (Miss 2001) (explaining that a zoning ordinance requiring removal of nonconforming billboards is a proper exercise of police power and does not constitute unconstitutional taking requiring payment of compensation).
38. *State of Washington v. Obie Outdoor Advertising, Inc.*, 516 P2d 233 (WA App 1973).
39. *National Advertising Company v. State of Florida*, 611 So 2d 566 (Fla App 1 Dist 1992).
40. The court noted that the sign owner sought a variance to relocate the sign on the remaining property, but was denied, thus losing the grandfathered status, and the sign was ultimately removed.
41. See *National Advertising, Id.* (explaining that it is appropriate to use whichever appraisal approach that maximizes the billboard’s value).
42. See *In re Acquisition of Billboards Leases and Easements*, 517 NW 2d 872, 873 (Mich App 1994) (holding that income capitalization was admissible in determining fair market value for leaseholds with billboards erected on the property).
43. *Arkansas State Hwy Comm’n v. Cash*, 590 SW 2d 676 (Ark App 1979).
44. See *State v. Waller*, 395 So 2d 37, 43 (Ala 1981).

**Federal Davis-Bacon Prevailing Wage Law and
Light Rail Construction**
Streamlining Implementation and Playing by the Rules

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Throughout its history in light rail construction, TriMet has strived to streamline and simplify the application of complex prevailing wage requirements that tend to intimidate contractors. The agency's goals have included fairly interpreting prevailing wage laws and regulations and applying practical methods to disseminate understandable information, so that all stakeholders can comprehend these requirements, thereby making compliance and enforcement easier through hands-on resources and techniques.

Implementing practical instructions for stakeholders to understand and comply with the Davis-Bacon Act is achieved by building and sharing knowledge from national, regional, district and local sources, as well as from prior experience. This information can then be developed and packaged in a manner that will be most useful to various stakeholders, keeping them in compliance and on track.

Every light rail project presents unique situations and problems related to federal prevailing wage requirements. Resolution of such issues can provide important lessons learned on future projects. Through understanding the parameters of the Davis-Bacon Act, issues of contractor compliance and agency enforcement will be dealt with in an expedient and decisive manner. Applying methods that enable understanding the complexities of prevailing wage requirements is an opportunity for establishing continuing partnering techniques. Contractors learning the process today can grow to be mentors of subcontractors tomorrow.

FEDERAL PREVAILING WAGE HISTORY

Whatever you may think of prevailing wage law, it remains the current law that affects all publicly funded on-site light rail construction labor. This law affects thousands of men and women employed in construction of light rail projects each year. Keeping informed is essential. Because there are gray areas in the law that are subject to interpretation, compliance is sometimes difficult, and it pays to keep educated and abreast of procedures, trends, and changes. The contracting agency and contractors alike need to be aware of precedents, and how rulings and interpretations of the applicable laws may affect them on current and future light rail projects.

Davis-Bacon Act

Enacted in 1931, the Davis-Bacon Act (DBA), 40 U.S.C. § 276a, is named for its sponsors, Senator James Davis and Representative Robert Bacon (*I*). The law was enacted as a result of

the Depression and the fear that labor surpluses could allow contractors from outside communities to bring in low-wage labor and underbid local wage levels to win competitively-bid federal construction projects away from local firms. Because award was based on the lowest responsible bid, competition focused on wages and had the effect of depressing them.

The DBA applies to contracts in excess of \$2,000, to which the United States or the District of Columbia is a party, for construction, alteration, or repair, including painting and decorating, of public buildings or public works. It also applies to federally funded and federally assisted construction projects, in which a public agency other than the federal government (or the District of Columbia) is a party to the construction contract.

TriMet has traditionally received federal funds, in the form of grants, for its light rail construction projects. As a result of this federal funding, TriMet's light rail construction projects are generally governed by the DBA, and therefore subject to DBA prevailing wage requirements. (2).

Copeland “Anti-Kickback” Act

The Copeland “Anti-Kickback Act,” 18 U.S.C. § 874, was originally enacted in 1934 and amended in 1948. This Act makes it a Federal crime to “induce . . . any person employed in the construction, prosecution, completion or repair of any public building, public work, or building or work financed in whole or in part by loans or grants from the United States, to give up any part of the compensation to which he is entitled under his contract of employment.”

The Department of Labor's regulations implementing the Copeland Act require every employer (contractor or subcontractor) on a covered project to submit weekly, certified payroll reports (CPR) to the contracting agency. Through review of CPRs, the contracting agency is able to monitor contractor and subcontractor compliance with prevailing wage requirements.

Federal and State Prevailing Wage Requirements

The general requirement of the DBA is that contractors and subcontractors on covered projects must pay workers employed directly upon the site of work not less than the locally prevailing wages and fringe benefits paid on projects of a similar character. The Secretary of Labor determines what rates are locally prevailing in the community and publishes the rates for public contracts governed by the DBA in periodically issued “wage determinations.”

Many states have adopted “Little Davis-Bacon Acts,” which are generally modeled after DBA, and require payment of prevailing wages on state-funded construction projects. A majority of states have these laws. Coverage, provisions, and implementation may differ from the DBA, and from one state to another. For example, the Oregon “Little Davis-Bacon Act,” ORS 279.348 *et seq.*, applies to publicly funded projects of \$25,000 or more, compared with the Federal Davis-Bacon threshold of \$2,000.

LIGHT RAIL CONSTRUCTION AND PREVAILING WAGE

Throughout its history in light rail construction, TriMet has strived to streamline and simplify the application of complex prevailing wage requirements that tend to intimidate contractors. The sheer number and variety of subcontractors on a light rail construction project makes this a

critical feature of the project in its entirety. Failure to comply with federal regulations, such as prevailing wage, may jeopardize the budget and opening date of a light rail endeavor. TriMet believes this risk can be avoided through planning, clear understanding, training, mentoring, and partnering with contractors, and enforcement of the applicable regulations. In addition, understanding the DBA is critical to contractors because the act may increase project and contractor costs.

Multiple layers of laws, rules, regulations, and requirements govern federally funded or federally assisted light rail construction. The DBA and its implementing regulations set forth the federal prevailing wage laws which have been and will continue to play a key role in all federally funded light rail transit projects. Federally funded light rail construction infuses the community with an enormous amount of construction jobs and dollars that positively impact the local economy. Prevailing wage evens the playing field in bidding for contracts, ideally reflects local wages for experienced workers, and provides a training ground for apprentice workers. Large contractors have the opportunity to hone their expertise in dealing with prevailing wage issues. Small contractors have a unique opportunity to participate in building large public works projects, such as LRT. The experience they gain from participating in one federally funded or federally assisted construction project may benefit them on future projects, and enable them to grow their businesses so that they can continue to participate in rail expansion projects.

Some of TriMet's goals relating to prevailing wage requirements have been the following:

1. To embrace the benefits of federal prevailing wage in light rail transit construction by:
 - Leveling the playing field for contractors to bid public works projects, and
 - Conveying to participants that payment of prevailing wage is *mandated by law*, while helping them to understand the complexities of compliance, including the need to consider the impact to their bottom line in accurately bidding a project (sometimes learned through experience and correcting past mistakes).
2. To fairly interpret complex laws and regulations by:
 - Spotting and resolving issues with the aid of contemporaneous contractor documentation (for example, reviewing trucker logs and truck tickets to monitor prevailing wage paid to truckers for on-site work in excess of the de minimis threshold); and
 - Avoiding getting bogged down in uncertainty, and finding an accurate decision path for tough issues.
3. To apply practical methods and disseminate understandable information, so that all stakeholders can comprehend prevailing wage requirements, thereby making compliance and enforcement easier through hands-on resources and techniques (such as printed guidelines, checklists and other resources). See [Table 1](#).

TABLE 1 Standard Resources for Prevailing Wage—TriMet

Document	Description	Used By
Process Chart	Flow chart of procedures	Contracting Agency, Contractor
Davis-Bacon Information Guidelines	Single topic procedure guidelines or general information	Contractor/Subcontractor
Davis-Bacon Contractor Checklist and Reference	General guidelines for contractors—a reference sheet	Contractors, subcontractors
Labor Compliance Manual	Contract document on labor requirements	Contractors, subcontractors
Wage Determination	Specific wage determination for a contract	Contracting Agency, Contractor, subcontractors
Sample Certified Payroll Form	WH-347—US Dept. of Labor (DOL) form and Statement of Compliance	Contractors, subcontractors
Project Rate Sheet	Single sheet of trades and rates used on a project—as described by DOL – HUD “Making Bacon”	Contracting Agency, Contractor, Subcontractor [does not replace full wage determination]
Federal Poster	Resource on Davis-Bacon posted on site with wage rates	Employees of all contractors/subcontractors
Trucking Log Form	Resource to document on site activity more accurately	Trucking employees of all contractors/subcontractors who perform work on site

Using a Prevailing Wage Information Base

TriMet has assembled a base of information concerning prevailing wage by building knowledge from national, regional, and local sources. In the information age, a contracting agency such as TriMet has many resources that it can use to keep current and refine its internal processes for monitoring prevailing wage compliance by contractors and subcontractors. TriMet’s objective is to disseminate this information to project participants in a streamlined, straightforward manner.

Examples of sources for readily available information include:

- U.S. Department of Labor (DOL) (1, 3–6);
- U.S. Department of Housing and Urban Development (HUD) (7);
- Local DOL representative; and
- Periodically scheduled DOL conferences addressing DBA and prevailing wage.

Compliance Training—Streamlining and Removing Barriers

Training and dissemination of information regarding prevailing wage requirements begins in the contract document itself, with accurate prevailing wage language and wage rates, and continues throughout the course of the light rail project. **Figure 1** illustrates the types of contracting methods and variations in application of DBA.

By compiling relevant, practical data that can be easily understood and passed on, the agency’s oversight role is more easily accomplished. TriMet’s goal is to develop and package the information in a manner that will be most useful to various stakeholders, keeping them in compliance and on track.

The importance of communicating accurate data cannot be stressed enough. TriMet views training as a mentoring opportunity, in which the agency educates contractors, so they, in turn, can train their subcontractors. The preconstruction meeting offers a great first opportunity for contractors and subcontractors to obtain a package of relevant “how-to” prevailing wage data from the contracting agency.

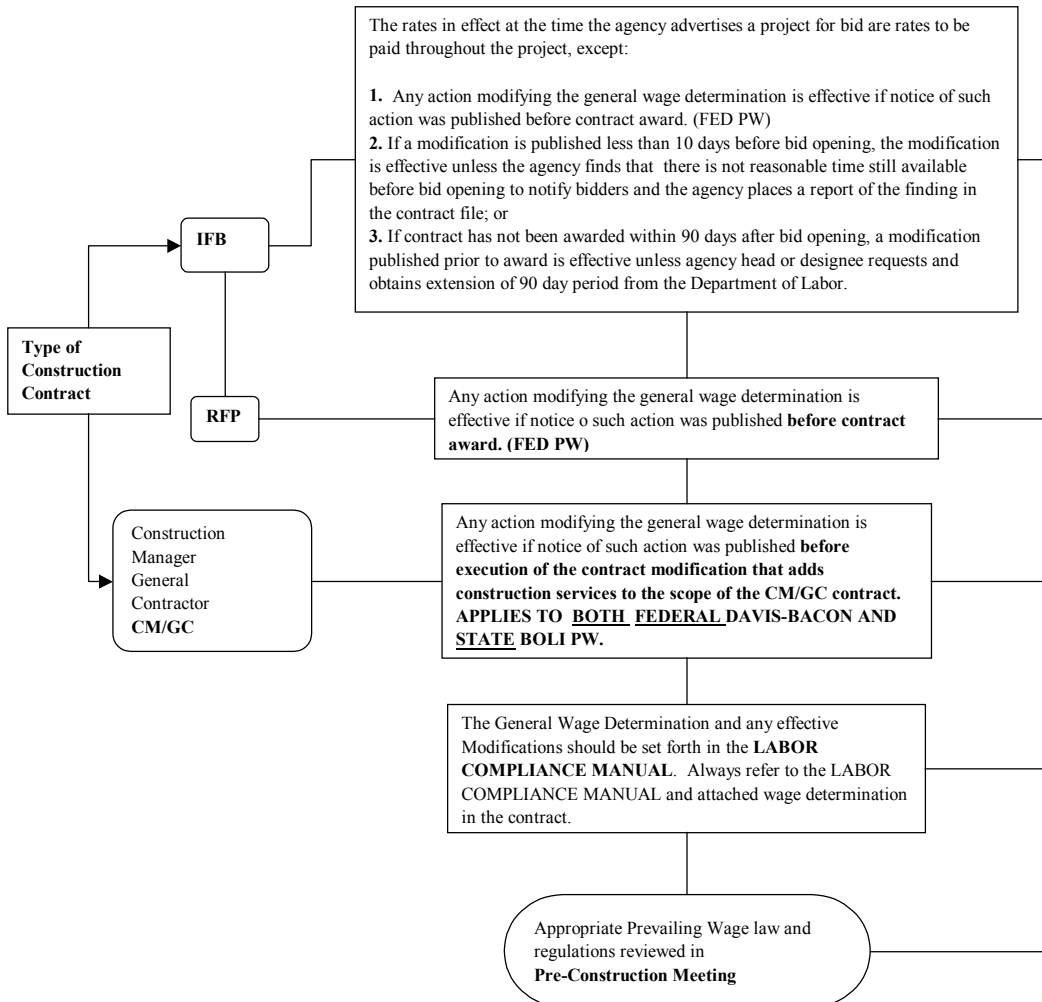


FIGURE 1 Prevailing wage requirements—type of contract.

TriMet has developed a package of resource tools for distribution at the pre-construction meeting, including the following:

- Labor Compliance Manual (specific to each contract);
- Wage Determination (specific to each contract);
- Federal poster;
- Sample Certified Payroll Form (WH-347);
- Statement of Compliance—Certification;
- DBA Information Guideline on Completing a Payroll;
- Contractor’s Checklist and Common Errors; and
- Truck Log Ticket Sample Form.

See Table 1 for a description of each item.

TriMet has found that when contract-specific documents, such as the wage determination, are combined with resource materials such as these, they serve as a useful aid and continuing resource for the contractor and subcontractors involved. This package also provides key contacts for responding to questions as they come up during the course of construction.

Completing the Certified Payroll Report

Contractors and subcontractors may view completion of the CPRs as a daunting exercise, but with guidance from the contracting agency, the process can be streamlined and simplified.

The public agency can assist contractors by providing detailed instructions on how to complete a CPR. Such instructions can be particularly helpful for emerging businesses or contractors that have limited or no prior experience with prevailing wage projects. The necessary information is readily available through the DOL (7).

Subcontractors are instructed to send all weekly CPRs to the prime contractor, who then forwards the documentation to TriMet’s project manager and contracts compliance specialist for detailed review. When corrections or clarifications are needed, the contracts compliance specialist advises the project manager, who then informs the prime contractor. It is the prime contractor’s responsibility to take action to resolve prevailing wage issues at the subcontractor level. TriMet’s process keeps all necessary parties involved and informed. The process is illustrated in [Figure 2](#).

Certified Payroll Compliance Can Affect the Contractor’s Bottom Line

Certified payroll information must coincide with the contract wage determination. The federal wage determination may contain many worker classifications and descriptions that vary between state, union, and type of construction. This can lead to confusion and frustration among contractors, particularly those with limited or no experience on public works projects.

A contractor’s misunderstanding of CPR requirements can become a dollar issue. For example, contractors often employ workers to perform more than a single type of work on a project. In such a case, the worker is considered to have a “split classification.” DBA permits the contractor to pay the worker the wage rates specified for each classification only if the contractor maintains accurate time records showing the amount of time spent in each

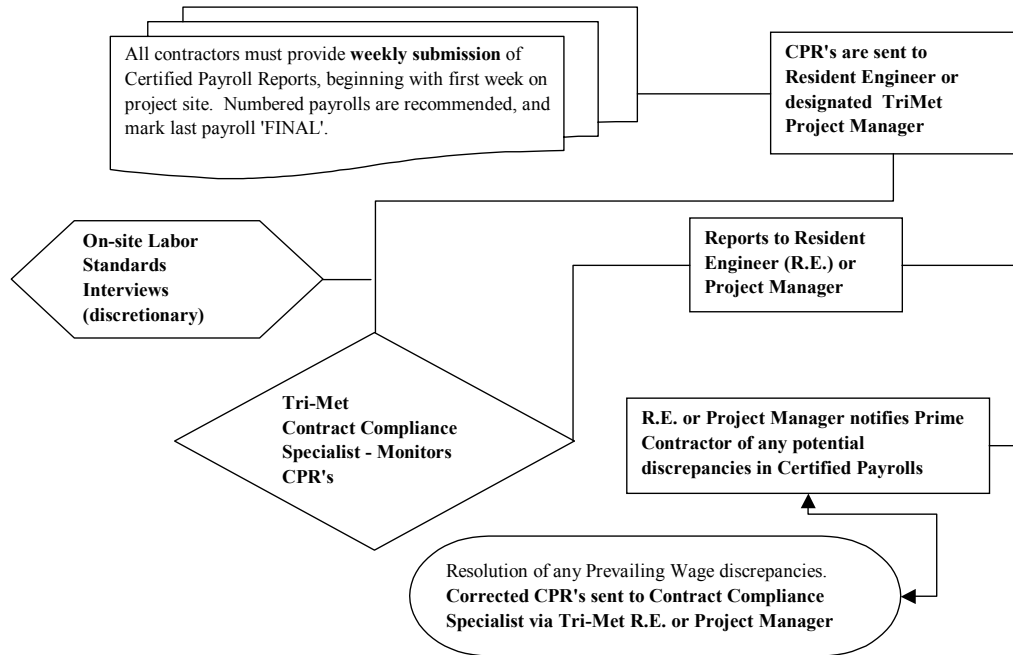


FIGURE 2 Certified payroll report monitoring process.

classification of work. If the contractor does not maintain such records, then the contractor is required to pay such employees the highest wage rate of all the classifications of work performed. As a result, it is to the contractor’s benefit to keep accurate records and report all classifications of work performed on the CPR.

Skilled Workers—The Builders

Figures 3 through 6 depict a small variety of the worker classifications employed on TriMet’s Interstate MAX light rail project. Workers in many other classifications participated and are participating in the construction of this light rail line, and the variety of work covers a vast array of skills.

COMPLIANCE WITH TOUGH ISSUES IN LIGHT RAIL CONSTRUCTION

Trucking

One of the most difficult prevailing wage issues that TriMet has encountered on the Interstate MAX light rail project is defining the circumstances under which truck drivers employed to haul dirt and other materials to and from the project are entitled to payment of prevailing wage.



FIGURE 5 Interstate MAX light rail construction workers hoisting steel beam.



FIGURE 6 Interstate MAX light rail construction worker grinding string with profile grinder at Ruby Junction Maintenance Facility Expansion Project.

In December 2000, DOL published its “Final Rule” refining the definition of the term “construction” for DBA compliance purposes. [Final Rule concerning Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (65 Fed. Reg. 80268, Dec. 20, 2000)]. The Final Rule changed the regulatory definition of “construction” to provide that:

the off-site transportation of materials, supplies, tools, etc., is not covered unless such transportation occurs between the construction work site and a dedicated facility located “adjacent or virtually adjacent” to the construction site. [65 Fed. Reg. at 80268.]

This language became critical on the Interstate MAX project, as discussed below.

On the Interstate MAX project, TriMet developed an overall contracting plan which broke the project into its major elements, identified overall objectives and critical factors for success, analyzed contracting options, and concluded with a recommended plan. As a result of the contracting plan, civil work for the Interstate Avenue alignment was broken down into two separate contracts, Line Section 10 A/B (LS 10 A/B) and Line Section 10 C (LS 10 C). The LS 10 A/B and LS 10 C contracts were awarded to two separate general contractors, and utilized two separate contracting methods: Construction Manager/General Contractor (CM/GC) and Design/Build.

LS 10 A/B extends from the south side of the Rose Garden to north of North Argyle Street, just south of the Columbia Slough. LS 10 C is generally located from Argyle Street to the Exposition Center near Marine Drive, and includes construction of a 4,000-ft span linking Kenton to Portland International Raceway.

As it turned out, both the LS 10 A/B CM/GC and the LS 10 C Design/Builder awarded excavation subcontracts to a single subcontractor. That subcontractor determined that it could save money on both subcontracts by hauling material required to be removed from LS 10 A/B, to LS 10 C, where fill was needed. The question arose whether the truck drivers employed by the subcontractor on LS 10 A/B were entitled to be paid prevailing wage when they were hauling material to LS 10 C. This inquiry involves the following difficult questions:

- Are LS 10 A/B and LS 10 C a single “site of work” for prevailing wage purposes, even though they are defined by two separate contracts?
- If they are not a single site of work, then is LS 10 A/B a “dedicated facility” located “adjacent or virtually adjacent” to LS 10 C, so that the off-site transportation of dirt from LS 10 A/B to LS 10 C is covered by prevailing wage requirements?

These are the kinds of questions that remain unresolved under the current state of the federal prevailing wage laws, and TriMet continues to grapple with them.

The other major issue involving truck drivers on the Interstate MAX project was capable of resolution. That issue involves the extent to which material delivery truck drivers are entitled to be compensated at prevailing wage rates for time spent waiting on site to be loaded or unloaded.

This issue is clarified in the Final Rule, which provides that material delivery truck drivers are not entitled to payment of prevailing wage for time spent off-site. DOL has chosen to use a “rule of reason,” and “will not apply the Act’s prevailing wage requirements with respect

to the amount of time spent on-site, unless it is more than ‘de minimis.’” [65 Fed. Reg. at 80276.] The Final Rule states:

Pursuant to this policy, the Department does not assert coverage for material delivery truck drivers who come onto the site of the work for only a few minutes at a time merely to drop off construction materials. [65 Fed. Reg. at 80276.]

Applying advice received from our local DOL representatives, TriMet determined that prevailing wage would be paid to employee truck drivers who spent in excess of 20% of their workday or work week on the site of the work. We worked to verify the amount of hours spent on site by reviewing trucker logs and truck tickets, and performing labor interviews with truck drivers.

One of the greatest lessons learned is that the public agency should require its contractors and subcontractors who employ material delivery truck drivers to generate contemporaneous documentation. As the Interstate MAX project went forward, the general contractor on LS 10 A/B developed the “truck log” form, shown in Figure 3, that it required truck driver employees to complete while on the job. The truck log details when and for how long each employee truck driver was on site each day. Through accurate completion of this paperwork, compliance with prevailing wage requirements in this difficult area can be made substantially easier.

Which Wage Determination Applies?

As part of its responsibilities on a federally funded or federally assisted construction contract, the contracting agency is required to include in the construction contract the “wage determination” applicable to the work being performed. DOL issues wage determinations applicable to four basic categories of construction work: building, residential, highway, and heavy. In Oregon, the heavy and highway rates are usually combined into a single wage determination.

TriMet’s light rail projects have traditionally included elements of heavy construction (civil construction work on the general alignment) as well as building construction (construction of substations and signal/communication buildings). Thus, the question often arises whether TriMet is required to include both the heavy/highway and the building wage determination in its contracts.

As a rule of thumb, it is not necessary to include both wage determinations if, for example, the building work is “incidental” to the heavy construction work. DOL generally considers anything less than 20% of the contract value to be “incidental.” However, in determining what is incidental, DOL takes into account the size of the contract. Thus, building work that is 15% of a \$1 million contract may be “incidental,” while building work that is 15% of a \$1 billion contract may be more than that. Where complexities arise, it is a good idea for the contracting agency to contact the DOL’s Wage and Hour division for assistance in determining what wage determinations to include in the contract.

Are Acts Preparatory to Construction Covered by Prevailing Wage Requirements?

TriMet’s contracts for light rail construction often require the contractor to perform tasks preparatory to construction, such as demolition and survey-related work. As a general rule, such work, with the exception of professional surveying, is subject to DBA prevailing wage

requirements, so long as it will be followed by additional work that will result in the construction, alteration, or repair of a public building or public work at that site ([48 C.F.R. § 37.301]).

Warranty Work

If a construction contract is covered by DBA, on-site warranty work required under the construction contract is likewise covered by DBA. This is important for project managers to keep in mind at the conclusion of a project.

GETTING CONTRACTORS INVOLVED

It is no secret that prevailing wage requirements do not hold high favor among various sectors of the contracting community. How can contractors become more comfortable with these requirements? The bottom line is: GET INVOLVED!

DOL's Wage and Hour Division determines regional prevailing wages through a survey process. The Wage and Hour Division administers the DBA and collects data from surveys on wages and fringe benefits. In the past, the General Accounting Office (GAO) has raised concerns that data from these surveys, in the form of wage determinations, may not accurately reflect wages for the local region. GAO has assessed the extent to which DOL is addressing weaknesses in its determination process (8).

In the March 31, 1997, issue of Engineering News Record, author William Krizan states, "it is hard to say whether labor costs on federally funded projects are higher than they should be, or lower." He summarizes the position of the Office of the Inspector General (OIG) as follows:

The main problem with the survey process as a whole is the strictly voluntary nature of the submissions by contractors, says OIG. It recommends that the Labor Dept. select contractors for the survey using statistical or other independent means and that wage data be collected on site directly from contractors' records. That also would eliminate the need for third-part reporting, says OIG. If mail surveys are used, they should be verified through statistical sampling. Wage and Hour does not believe that using statistical or independent means to select survey participants is necessary to ensure accuracy (John R. Fraser, 1997). Since the study, the division has implemented new procedures for verifying data and will address other accuracy problems as part of an "ongoing reengineering initiative." (9)

What is DOL's position about these and similar concerns? They stress the importance of participating. They state that "[a]ccurate and comprehensive wage determinations are dependent upon interested party participation in the survey process" (emphasis added).

The U.S. Department of Labor Davis-Bacon Resource Book illustrates the current process:

- When a survey is started, the interested parties and identified contractors are contacted by a letter requesting their participation through the submission of wage data

- Contractors are identified initially from construction information provided on reports from F.W. Dodge (a provider of project news, plans, specifications and analysis services for construction companies in the United States and Canada);
- Wage and fringe benefit data are collected from construction contractors and other interested parties on WD-10 survey forms including an electronic version (3);
- Wage data submissions are verified as to area, time frame, construction type, and timeliness, and data are then compiled and analyzed; and
- Third party verification, contractor verification, and on-site verification are conducted (10).

At a DOL Davis-Bacon conference in November 2002, it was disclosed that a goal has been set to complete wage surveys every three years in all 50 states. All construction types will be surveyed, and the process is expected to take from 4 to 8 months to complete once initiated. DOL is making this survey plan available to interested parties through the Wage and Hour Division's website (3). The survey form, entitled "Report of Construction Contractor's Wage Rates" or "WD-10" may now be filed electronically (11).

MONITORING AND ENFORCEMENT

Enforcement is actually part of the partnering process. When contractors do not comply, measures must be used to give the requirements "teeth." Under Reorganization Plan No. 14 of 1950, the federal government has delegated authority to the contracting agency to investigate and enforce DBA compliance. This is usually done through payroll monitoring, documentation, and requesting and obtaining clarification or revisions to CPRs, including wage restitution to employees owed back wages.

Labor Compliance On-Site Interviews

On-site interviews are commonly conducted on large-scale prevailing wage projects. The contracting agency can use this tool to verify that the CPRs accurately reflect worker classification and payment. Ideally, the interviews should confirm the data reported in the CPRs.

This tip is offered: conduct on-site labor interviews with construction workers on Friday mornings when feasible, because most workers receive their paychecks on Fridays, so they may have their pay stub handy for easy reference.

Enforcement Options

DOL is a good resource in difficult cases, but more often than not, the contracting agency and the prime contractor can resolve issues of enforcement.

The prime contractor is responsible for disseminating information on prevailing wage to all subcontractors. The prime contractor is ultimately responsible for payment of DBA wages, including subcontractor violations if back wages are owed to employees and the subcontractor is unable to pay. Willful violations and falsified statements of compliance on the certified payroll report can subject the wrongdoer to criminal prosecution. For each false statement on a payroll, penalties of \$1,000 and/or one year in prison may be imposed. In some circumstances, the

violations can cause contractors to become ineligible for future participation in DBA contracts (debarred) for up to three years.

Available enforcement mechanisms include

- Withholding of contract funds or setoffs;
- Cancellation of contract (termination for default);
- Referral to DOL for investigation, hearing, or lawsuit; and
- Debarment (by DOL).

Again, coming to the table together to resolve difficult prevailing wage issues is far preferable to jeopardizing the timeline on a big-budget light rail project, although all reasonable options may be considered.

PARTNERING

In TriMet's experience, it pays to partner with contractors and subcontractors on prevailing wage issues. The contracting agency should use regulations, precedents, and experience to act firmly and quickly when a contractor is out of compliance. Delays in relaying information to the prime contractor, and from the prime contractor to the subcontractor, can slow the process down. This could result in continuing non-compliance, turning an initially manageable problem into an unmanageable one.

The public contracting agency should work with the contractors and subcontractors so that they realize the advantages to responding in a timely manner. The ultimate alternative could be the necessity to withhold payment – not a desirable choice on a light rail project where schedule delays can critically affect deadlines and opening dates. Providing resources to contractors and subcontractors gives them an understanding of requirements and consequences, and at the same time justifies a reasonable response time.

Applying prevailing wage requirements on a case-by-case basis is an opportunity for establishing partnering techniques that may also be built upon in the future. Most contractors and subcontractors are very willing to learn how to respond to DBA requirements in an expedient and professional manner. It is essential on a large-scale construction project such as light rail to develop a good working relationship regarding these requirements. Welcoming inquiries and questions provides a more relaxed approach to solving problems, and is well worth the time and effort. Telephone, mail, and meeting in person are all good ways to get to know the people who are involved in building the rail system. Many contractors and subcontractors may be working on future extensions of the light rail system, so it pays to educate them about federal requirements and correct documentation processes.

Contractors who become adept in these practices today can grow to be mentors of subcontractors tomorrow.

SUMMARY

Every light rail project presents unique situations and problems related to federal prevailing wage requirements. Resolution of such issues can provide important lessons learned on future projects, not only locally, but also nationally.

Key points to always keep in mind on prevailing wage issues are the following:

- Educating yourself: contracting agencies and contractors alike need to keep informed, and expand their knowledge base on DBA to resolve tough issues. Sharing information and resources helps everyone.
- Interpreting the law: Federal requirements may be argued from more than one point of view. How will this impact the light rail project?
- Making a case: Document, document, document. Anecdotal versions of what occurred, or reliance on memory alone, are in most cases insufficient. Do interviews, including field interviews.
- Setting a precedent: Experiences with similar cases and issues are good to document and keep on hand in a casebook or DBA file, for future light rail expansion projects. Don't expect *everything* to go smoothly on future projects. Remember that prevailing wage issues may be very complex. Some of the same issues may crop up. Being prepared will save time and money.

Through understanding the parameters of Davis-Bacon, issues of contractor compliance and agency enforcement can be dealt with in an expedient and decisive manner. This will benefit the contractor, the contracting agency and most importantly, the thousands of employees who build our light rail systems.

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PORTLAND POSTER SESSION

From the Ballot Ashes *Rebirth of Interstate MAX*

LEAH ROBBINS

Tri-County Metropolitan Transportation District of Oregon

For transit properties that have had success planning and building light rail projects, there is the potential to disconnect the critical link between community value and project planning, and yet expect continued success. However, the Tri-County Metropolitan Transportation District of Oregon (Tri-Met) managed to take a failing project from the dregs of a failed local (regional) funding election and in its place create a project of value to the community it serves and the local and federal funding partners.

A review of the demise and resurgence of a light rail project is supported by interviews with key participants in planning, financing, communications, and engineering. Public transit projects must be good public policy as well. They must make technical sense, but more importantly have credibility with the community it serves and be fiscally responsible from inception to implementation.

The Interstate Metropolitan Area Express succeeded by fostering and maintaining a collaborative team from design through construction; aligning and maintaining project priorities; and focusing on value for the public and the transit system.

INTRODUCTION

The Interstate Metropolitan Area Express (MAX) Project literally arose from the ashes of the South/North Project after its narrow defeat in the November 1998 regional funding election. The South/North Project was quite dead, technically and politically. Months later, however, a community based effort brought a new project proposal to light that held three priorities paramount: serve north and northeast Portland with reliable transit; build a quality project with lower costs than the South/North proposal; and require no displacements along the alignment.

This paper attempts to detail the transition from what had been South/North Project to Interstate MAX from the perspectives of planning, engineering, financing, and communications staff involved with both projects. Interstate MAX construction is currently 75% complete overall—four months ahead of schedule and under budget. Service is scheduled to begin September 2004.

But it didn't start that way.

South/North Project

The South/North Transit Corridor was identified as the priority corridor for high capacity transit improvements through Metro's Region 2040 Growth Concept. Planning began in 1993 and culminated in the Locally Preferred Strategy selection of a light rail project from the Clackamas Regional Center to Rose Quarter Transit Center.

South/North included a new bridge over the Willamette River to carry light rail and pedestrians, reconstruction of the existing transit mall in downtown Portland to add light rail, and reconstruction of the Rose Quarter Transit Center. The planned alignment traveled through southeast Portland, creating exclusive right-of-way by acquiring properties adjacent to existing roadways, McLoughlin Boulevard in particular.

The South/North project, managed by Metro from the project inception until November 1998, included a complete public process with a Citizens Advisory Committee and a series of Public Open Houses to receive public comment on project specifics. Project staff worked diligently to incorporate comments into preliminary designs. And yet, public support waned with each public vote on funding measures.

The final blow came in November 1998 when a regional election to confirm local match funding failed by a 52-48 margin.

Not Dead Yet

Anyone who enjoys Monty Python's brand of callow humor can see the connection between South/North and the knight in "The Holy Grail" who continues to fight and doesn't give up although he loses limb after limb. After the 1998 election South/North, and the Knight, was officially dead. At the time, City Commissioner Charlie Hales stated that the project was "Dead, dead, dead." Project architect Michael Fisher described the weeks after the election as a grieving process. Dick Feeney likened it to yet another Monty Python scene, in "The Meaning of Life" where an old woman succumbing to the plague calls out, "I'm not dead yet!"

REBIRTH OF PROJECT AS INTERSTATE MAX

An analysis by Davis & Hibbitts, Inc., of voting trends in the 1998 election showed that support for light rail was strong in Multnomah County, but failed within Clackamas and Washington Counties. A difficult fact was that the project failed in the Clackamas County precincts through which the alignment ran. Support within precincts located along the North alignment was very strong in favor of light rail. A significant factor in the election results, however, was the effect of the lowest turnout in a general election, and the especially low turnout of younger voters more inclined to have voted in favor.

Leadership Strategy

The election analysis and public opinion survey provided the basis for what could be good public policy. People were interested in a regional network, with connections to Vancouver, that would provide transit to destinations and increase options for people dependent on transit. An alliance of business and public leaders developed a general proposal that met the key policy priorities.

While concerned about impacts and costs, the North/Northeast business and residential community and leaders wanted light rail in their neighborhood, a fact seen from the precinct-voting trend. Transit ridership is very high in north and northeast Portland. The Nos. 4, 5, 8, and 72 bus lines that serve the area are among the highest ridership in the entire TriMet system. Business leaders were also excited about potential revitalization along the Interstate corridor.

Funding Without New Taxes

Given the failure of the regional funding measure, the funding priority of a new project was to use local dollars to match available federal funding. There was absolutely no support for new taxes to create the local match, so a strategy had to be developed to find a source for the funds.

Discussion of possible funding partners and sources began when the business and residential community brought through a proposal to go to North Interstate. Metro had a potential \$55 million in regional funds, TriMet \$25 million, and the City of Portland pledged \$30 million. The discussion was tied back into the technical aspects of the developing project. The question of how much the region could afford was tied back to the technical process of how to determine a project that could be built for that affordable price.

During the Intermodal Surface Transportation Efficiency Act (ISTEA) authorization period in 1995, Congress added TriMet to the list of large interrelated projects. The ISTEA statute was amended in the middle of its authorization period within the Appropriations Act. The amendment required the secretary to forward a project in Portland along the South/North corridor through to a Full Funding Grant Agreement. This provided motivation to continue forward to create a project that could work for the region.

Community Resolve

In December 1998 and January 1999, Metro held a series of listening posts to allow people to voice their opinions regarding the future of transit and transportation in the Portland Metropolitan Region and the South/North corridor. With no specific project on the table, Metro, the City of Portland, and TriMet wanted to bring people together just to listen. The slate was clean and the potential was open to hear what transportation options the public supported. Public comment paralleled the findings from the voting analysis in that the majority (75%) were supportive of light rail but had reservations about specific elements of the South/North project, such as:

- Build in segments;
- Too high a cost;
- Light rail necessary to achieve land use goals, economic development or redevelopment; and
- Build rail but use multiple transportation modes (e.g., expanded bus service, streetcar, high occupancy vehicle lanes, and car and van pools).

Additionally, those who supported building light rail suggested alignment variations that either use existing structures, or in other ways could reduce overall project costs:

- Use the eastside connector/Hawthorne Bridge;
- Go to North Portland;
- Use I-205 [existing right-of-way (ROW) for transit];
- Avoid the transit mall; and
- Go to Clark County.

Project Goals

Through the community process, the project goals were defined as follows:

1. No displacements;
2. Reflect community values; and
3. Fiscal responsiveness.

Displacements

North and Northeast Portland were physically separated during the construction of the Interstate 5 freeway system. A section of residential neighborhood two blocks by 3.5 mi was removed through the eminent domain process to build the highway. Construction of Emanuel Hospital, in the Elliot Neighborhood, followed a decade later and removed more established neighborhood housing and businesses. The community wounds have never completely healed, and people were very concerned that a new federally funded project may have similar negative impacts. To eliminate displacements, the Project would need to utilize existing rights-of-way to the maximum extent feasible.

Two typical design cross-sections were developed that fit double-track LRT, through traffic lanes and left turns, bike lanes, and sidewalks within both an existing 80 ft and 100 ft ROW. Operationally, this changed Interstate Avenue from a four-lane arterial to a two-lane (one in each direction) with dedicated turn lanes at signalized intersections.

With minor exceptions, no additional ROW was required to fit Interstate MAX within the existing ROW. In the Lower Albina area, additional ROW was required at the entrance to the Union Pacific Railroad (UPRR) Albina Yard and near the Tillamook intersection where Interstate MAX tied into the construction of the Lower Albina Overcrossing, a new grade separated crossing of the UPRR main line. During final design, minor acquisitions were required at some corners to meet Americans with Disabilities Act guidelines at curb ramps.

Design to Reflect Community Values

The City of Portland's strong neighborhood structure enabled communities to be integrally involved in the new visioning. Three design review open houses were held in January 1999. Each session covered different issues: schools, neighborhoods, parks, traffic, station areas, and economic development. Key recommendations from the community included

- Preserve existing trees wherever feasible;
- Maintain on-street parking along Interstate Avenue;
- Maintain access to properties along Interstate with signalized left turns and permit U-turns at key intersections; and
- Provide safe pedestrian crossings at regular intervals.

As design progressed from conceptual engineering to preliminary engineering and then final design, these recommendations became firm design elements.

Public involvement stressed themes of maintaining community "ownership" of station areas. Each station went through a process to reflect and celebrate their adjacent community. While the structural and architectural elements of each station were standard, the selected artist

for each station worked with the community to develop a theme that represented elements of each neighborhood's physical, social, and environmental history. The artist team created elements at each station that could be individualized by each station artist, including community maps, paving block outs, and benches. At a number of stations the shelter columns were part of the artists' treatment.

Track Treatment The initial assumption of ballast track was not fully accepted by the community. Through the Lower Albina Industrial Area ballast track was an acceptable treatment. However, the community resolved that paved track treatment was imperative for the section of Interstate between Fremont and Argyle. The concrete trackway met two objectives for the community: higher standard of treatment for the more residential and commercial area of Interstate, and ability for emergency access around stalled traffic. Other savings had to be found to offset the additional \$2 million for the 2.7 mi of paved track treatment. This process serves as an example of the close commitment to match community objectives with project cost restrictions.

Commitment to Existing Uses Interstate Avenue travels through industrial, residential, and commercial districts. The community strongly valued the existing uses, and pressed the Project staff to assure that these uses would be maintained and strengthened with the addition of light rail.

The Lower Albina Industrial Area especially was concerned, as their businesses depend on access to and from Interstate Avenue for large trucks. This proved to be an area of intense technical analysis that included study of existing and proposed access and circulation for trucks, and allowance for future growth of the UPRR Albina Intermodal Yard. More than any area on Interstate, the Lower Albina area required concurrence that the single through auto lane would be sufficient for the peak demands for auto and truck access. The result of the Lower Albina Traffic Study was that a dual right-turn lane for SB Interstate would be required at Russell Street to provide adequate storage for UPRR Intermodal trucks during UPRR main line train moves across Russell Street. Additional ROW was required to build the double right turn. A successful negotiation between UPRR, the City of Portland, and TriMet provided benefit to both through-traffic access on Interstate and UPRR Intermodal traffic.

Residents along and directly adjacent to Interstate Avenue required sufficient access to existing properties. Maintenance of existing on-street parking was critical for properties with no existing off-street parking. On-street parking again was critical for existing business nodes, including areas near Skidmore, Killingsworth, Portland, Lombard, and Kenton.

The project team balanced the needs of businesses and residents with the transportation goals for light rail, autos, and bikes. The resulting reconstructed Interstate Avenue is tailored specifically for the needs of the adjacent community. The design team remained flexible to accommodate existing and future patterns of development, without sacrificing the goal of a successful transportation system.

Project Building with Local Community The activist community challenged the project to maintain a credible, active community involvement plan. The Community Involvement Compact, signed by TriMet in October 1999, set commitments to coordinated and collaborative outreach by TriMet for all aspects of the Interstate MAX activities from design through construction. For the first time, TriMet began a project with an explicit commitment to

environmental justice ranging from specific environmental issues, to jobs and economic responsiveness to the community.

TriMet set a high goal on the Interstate MAX project for utilization of Disadvantaged Business Enterprises, minority- and women-owned business enterprises. Sixteen percent of all contracts was the project's goal. Utilization of alternative contracting methods including design/build and construction manager/general contractor enabled this goal to be met.

Fiscal Responsiveness

The Interstate MAX budget was \$350 million and included all provisions for civil, track, and systems construction, additional light rail vehicles, and maintenance facility expansion. To meet the cost goals, the community engaged in discussion about what level of amenities was required to meet their objectives while maintaining cost control. The Interstate MAX line was not conceived to be "cheap" but to live within the \$350 million budget and still provide the quality product expected by the community was the goal.

There was a clear break in process between the 1998 funding election and the reinvigoration of a new potential project. This break allowed staff to discard gathered assumptions and potential myths created about costs on the alignment. One of those myths was that an alignment adjacent to the freeway would result in a fast travel time and lower construction costs. However, the alignment that resulted from those assumptions required numerous grade separations with expensive walls and structures.

From an engineering perspective, the use of existing ROW and grade separations would prove to be the primary cost savings. The initial assumption that rebuilding an existing street was too expensive was not exactly a myth, but with hard consideration of design and operation requirements the costs of road reconstruction were brought under control.

Initial assumptions and recommendations for cost-saving measures included

- Tie and ballast track construction;
- Standard materials for stations; and
- Combined catenary and street lighting poles.

As discussion of design and construction continued, there was clear motivation from the project team and the community to design a project that would not destroy existing businesses with a long construction schedule and destructive construction methods. This led to the focus on using an overlay approach for the reconstructed roadway. By reducing excavation and full depth pavement construction the project saved time and money, but the community saved even more with speed of construction and easier traffic control during construction.

Station elements were standardized to use the same materials for shelters, handrails, surface finishes (e.g. concrete pavers), and so forth. Standardization was stressed for cost control, but this priority could not overshadow the responsibility to have high quality materials that reflect an investment in the community.

The focus on cost savings carried through the project from its inception through to final construction completion. As design progressed and new elements were introduced, the design team continually weighed the balance of new additional costs with required additional savings.

CONCLUSIONS

Public transit projects must be good public policy as well. They must make technical sense, but—more importantly—have credibility with the community it serves, and be fiscally responsible from inception to implementation.

Interstate MAX succeeded by fostering and maintaining a collaborative team from design through construction; aligning and maintaining project priorities; and focusing on value for the public and the transit system.

