

Chapter 5:

Bridges

across the LA River

Introduction

Definition and Benefits

This chapter focuses on non-motorized bridges across the Los Angeles River and its tributaries for pedestrians, cyclists, and equestrians. Bridges for active transportation are also known as footbridges, pedestrian crossings, and multi-use bridges. They may vary in length and design, but the fundamental purpose is to connect two sides of the waterway, especially along greenway paths. At some locations, these bridges cross the River's main channel. At others, they cross a tributary which flows into the main channel, thus providing continuous movement along one side of the River.

(INSERT Figure 000 [Caption: Cyclist walking across Sunnynook Footbridge in Atwater Village] Credit: Andrew Pasillas)

(INSERT: Figure 17 [Caption: Simple bridge crossing over a drainage weir enables a continuous pathway connection on the south bank of the Los Angeles River Headwaters project, just south of De Soto Avenue. (Location: Canoga Park] Credit: Andrew Pasillas)

The following are some of the many benefits of bridges:

- **Mobility and Safety:** Footbridges can create a continuous, uninterrupted, and secure active transportation network along the River greenway. They also link adjacent neighborhoods and broader communities that have been historically disconnected.
- **Accessibility to Economic and Social Centers:** Bridges provide community members with access to important destinations such as transit stations, schools, parks, employment centers, and shopping districts.
- **Aesthetics:** By including artistic elements in construction designs, bridges can enhance user experience by improving the aesthetics of the River greenway or even become a destination in and of itself. Design and artistic elements can be created by local community members strengthening community identity and pride.
- **Health:** Many River-adjacent communities are heavily burdened with environmental hazards, and thus have much to gain from the physical and mental health benefits of safe and continuous River pathways, which include increased physical activity, active commuting, contact with nature, and community connectedness.

Importance: Current Conditions along the LA River

Historically, pedestrian bridges over the LA River have been geographically concentrated, are few in number (relative to the number of bridges for cars and trucks), and often were built with a focus on utility, not aesthetics. For example, there are no pedestrian bridges in the lower half of the River, south of the City of Los Angeles. The lack of connectivity for these 17 miles fails to leverage the value of the established pedestrian pathway along this portion of the River. Instead, the River is a barrier to community connectivity and accessibility.

(INSERT Figure 4 [Caption: View of the LA River bike path south of the City of LA showing the lack of access from one side of the waterway to the other.] Credit: Andrew Pasillas)

Only nine of the 80 bridges over the 32 miles of River within the City of Los Angeles are designed for pedestrians and cyclists rather than vehicles. These bridges bypass the River rather than provide public access to it. The pedestrian crossings that do exist, are decades old and are intended to be purely utilitarian pieces of infrastructure, evident through their structure and materials used. Some of these bridges are narrow and wooden, others have wrought iron fencing or metal truss crossings, and some are simple, bulky concrete structures raised over the channel.

(INSERT Figure 1 [Caption: This pedestrian bridge in Studio City has no access to the River] Credit: Andrew Pasillas)

(INSERT Figure 2 [Caption: Pedestrian crossing the Colfax Avenue footbridge in Studio City. This bridge does not provide access to the River.] Credit: Andrew Pasillas)

Current Plans

Interest in building bridges across and along the LA River has increased recently. It has resulted in a number of exciting plans and projects. The County's *Los Angeles River Master Plan* recommends that continuous bike paths and multi-use trails be placed along the River. The City's *Los Angeles River Revitalization Master Plan* (LARRMP) provides more specific direction on where to prioritize bridge development, including 1) at the end of local streets, 2) to connect to major destinations, 3) at tributary confluences, and 4) next to vehicle crossings where expanding existing facilities to accommodate active transportation users would be more costly than developing a new footbridge. LARRMP recognizes that bridges for cars and trucks will continue to be relied upon by non-motorized users and calls for pedestrian and bicycle amenities in these areas.

Strategically Prioritizing New Bridge Creation

While the benefits of bridges can be significant, they can also be costly and difficult to implement. Therefore, it is important for project proponents to strategically prioritize new

bridge investments. Compared to other greenway projects, pedestrian bridges are hard to modify or enhance once built. Therefore, avoiding the need for future changes is a priority. We offer the following questions to help prioritize and plan for new footbridges:

1. Why is a bridge needed in this particular location?
2. Who will be the beneficiaries of this bridge and what are their needs?
3. What will be the large-scale social benefits of this bridge (i.e. improves bicyclist/pedestrian safety, supports local economies by improving access to businesses, strengthens neighborhood connections, or provides access to key destinations)?

Learning from Case Studies

Several efforts are underway to build bridges along and across the LA River. In this chapter, we profile three such efforts: 1) Aliso Creek Confluence Bridge, 2) Jewel at the Bend bridge, and 3) La Kretz Crossing. Unlike most case studies in this Guide, every bridge story is of a current, ongoing effort rather than a completed project. The least complete project is presented first.

We feature these specific case studies for several reasons. First, because they are diverse and their best practices and lessons learned can be applied to future footbridge developments. Second, we were able to gather a great deal of primary and secondary source information in order to fully document projects. Since many existing bridge projects were completed a while ago, it was difficult to locate project managers and to learn about their enterprises. Finally, we wanted to highlight current efforts that are taking a more comprehensive approach to defining footbridge function—creating bridges that are destinations in and of themselves.

The Aliso Creek Confluence bridge case study is written as an abridged profile representing an example project that is small in scope, but has significant connection and mobility implications. The Jewel at the Bend bridge and La Kretz Crossing development projects are documented as full case studies. Both stories include their origins, goals, and timeline; project proponents and community collaborators; site selection and design; cost and funding; permitting and use agreements; as well as operations and maintenance. The chapter ends with guidance on how to pursue similar projects as well as a summary of best practices and lessons learned. The following summaries highlight notable elements of each project:

Aliso Creek Confluence Bridge

Form and Scale:	Utilitarian footbridge that will span approximately 60 feet across a River tributary—the Aliso Creek Confluence
Key Benefits:	Recreational loop connection, accessibility to a new two-acre park, enhanced mobility for pedestrians
Keywords:	Preliminary development, utilitarian needs, small scale and cost, confluence bridge

Lead Proponents: Trust for Public Land
Status: 50% of construction drawings completed

Jewel at the Bend Bridge

Form and Scale: Two-span curvilinear concrete bridge that will stretch approximately 320 feet across the River's main channel
Benefits Include: Pathway and park connections, improves commuting between local areas of employment, social gathering space, landmark
Keywords: Feasibility study, community-driven design
Lead Proponents: City of Glendale
Status: Preferred bridge design selected

La Kretz Crossing

Form and Scale: Highly aesthetic concrete and cable-stayed bridge with an in-channel pylon design that will span approximately 390 feet across the River's main channel
Benefits Include: Accommodation of multiple uses, safe connection to existing bike path and parks, enhanced community and River identity
Keywords: Cable-stayed design, equestrian crossing, permit coordination, private donor
Lead Proponent: River LA
Status: Anticipated completion in late 2017

(**INSERT** Figure 5 [Caption: Rendering of the La Kretz Crossing—an iconic bridge design that will offer improved mobility and connection, and demonstrate a new perspective on River revitalization] Credit: River LA)

Other bridge projects that are underway, but not featured here, include the proposed Taylor Yard Bikeway and Pedestrian Bridge along San Fernando Road, which will focus on aesthetics and include a recycled water line; the Glendale Bridge Improvement Project which proposes to restore a historic bridge for vehicles and build a new footbridge; and the planned pedestrian bridge crossing that will be part of LA River Bike Path from Lankershim Boulevard to Barham Boulevard.

Aliso Creek Confluence Bridge

The Los Angeles River & Aliso Creek Confluence Project, previously known as the Reseda River Loop, is a multi-phase project including development of the new two-acre Confluence Park (which broke ground in November 2015), a refurbished quarter-mile trail with native plants, shaded benches, storm water best management practices, a one-mile bike path along the south bank, and a pedestrian bridge (Aliso Creek Confluence bridge). The bridge addresses a common issue along the LA River corridor—the crossing of a tributary. The utilitarian footbridge will not only benefit River-adjacent communities, but also is an essential component for connecting the pathways and the new park to create a recreational loop. Although development of the Aliso Creek Confluence bridge is currently on hold due to funding issues and other constraints, the project proponent has established valuable partnerships to enable its future completion. The following paragraphs provide details regarding bridge development, including progress thus far and key milestones.

(INSERT: 5.2.1.1 [Caption: Schematic plan of the Los Angeles River & Aliso Creek Confluence Project] Credit: The Trust for Public Land and BlueGreen Consulting)

The Aliso Creek Confluence bridge, to be located slightly north of the confluence, was originally outlined as one of 240 potential LA River projects in the *Los Angeles River Revitalization Master Plan* (LARRMP). In 2009, the Los Angeles River Project Office (now known as LARiverWorks, within the Office of Mayor Eric Garcetti) identified it as an important demonstration project due to its potential impact on multiple communities and comprehensive nature—ultimately incorporating pathways, a park, and a bridge over a tributary. The Trust for Public Land (TPL) is the lead project proponent because of their history working on dozens of open space projects in the Greater LA area, including many along the River.

The importance of the bridge on its own is minimal, but it is the keystone of the Los Angeles River & Aliso Creek Confluence Project since it will increase access to and mobility options throughout the greenway. It will also benefit a range of local users, such as students, residents, and community gardeners.

(INSERT: 5.2.1.4 [Caption: Community gardeners along the Aliso Creek channel] Credit: Andrew Pasillas)

Building relationships and raising awareness among partners and stakeholders regarding the project, is a critical first step in developing clear leadership roles and project direction. Key stakeholders for the Los Angeles River & Aliso Creek Confluence Project include a range of public, private, and government representatives who have voiced their interest through one or more of the 13 public workshops conducted over six months in 2009. These meetings helped to define a specific project goal to increase usable open space for residents to walk, jog, bike, and explore. While the pedestrian bridge was recognized as a crucial component of the recreational loop, there was minimal in-depth discussion about bridge type, material, and cost in these early

meetings. TPL emphasized to stakeholders that bridge functionality would be the primary design consideration, but ensured it would not be an eyesore.

(INSERT: 5.2.1.2 [Caption: Schematic plan of Confluence Park. The brown line shows the approximate location of the bridge over Aliso Creek.] Credit: The Trust for Public Land and BlueGreen Consulting)

(INSERT: 5.2.1.3 [Caption: Current condition of Aliso Creek Confluence and the approximate areas where the bridge will be placed.] Credit: Andrew Pasillas)

The bridge design goal is straightforward: develop a pedestrian crossing based on existing models that is functional and simple in both structure and material. This goal does not abandon the idea that the bridge should be aesthetically pleasing, but the final design and form will be influenced by which entity is responsible for the long-term operations and maintenance of the completed bridge.

Compared to other River bridge projects, the Aliso Creek Confluence bridge will be relatively inexpensive. An early estimated cost is approximately \$600,000, which is still a large amount of money to be covered by one grant. Although TPL has pursued both public and private funding opportunities, they have not yet been successful in securing funding for the entire project. The footbridge will play an important role in River revitalization. However, its small size makes it difficult to fund as a stand-alone project. The organization and its partners continue to research potential grant opportunities.

In developing the Los Angeles River & Aliso Creek Confluence Project, TPL spent three years establishing use agreements with the LA County Flood Control District (LACFCD), the City of Los Angeles Department of Water and Power, and the City's Department of Recreation and Parks to develop the park as well as the right-of-way along the west side of Aliso Creek. Although the bridge will be located within this area, the use agreement does not include the bridge because typically, public agencies require funding to be in place before executing use agreements. Not only will funding need to be secured, but responsibility for bridge operation and maintenance will need to be established before the use agreement can be amended.

Identifying an entity to manage future footbridge operations and maintenance has been a significant challenge. While the City's Department of Recreation and Parks has agreed to operate and maintain the walking trail and park, they have not agreed to manage the footbridge because it is outside their usual scope of responsibility. Organizations such as the City's Department of Public Works already have a large bridge maintenance program with established standards and procedures. They could potentially take on management of the Aliso Creek Confluence bridge. However, they may not want to take on the extra burden, especially considering the proposed bridge's inability to accommodate maintenance vehicles. TPL continues to strategize on how to leverage the City's capacity and willingness to care for the bridge, while also considering other options.

As of December 2015, TPL began working with the City's Department of Recreation and Parks and LACFCD to consider a new use agreement for the walking path and bridge. Fifty percent of the construction drawings for the bridge have been completed and will be submitted to LACFCD for review. TPL has also held multiple meetings with project partners to discuss upcoming grant opportunities to cover the cost of developing the walking path, as well as engaged several potential donors regarding financing the bridge. TPL is working with an intern from the California State University at Northridge to quantify probable maintenance costs for this type of bridge. The goal is to present concrete data to entities that would consider maintaining the bridge. Moving forward, TPL will work with project partners to craft creative solutions to the challenges presented by this type of multi-agency project.

Jewel at the Bend Bridge

The Glendale Narrows Riverwalk (Riverwalk) runs along the Los Angeles River's north bank from the Bette Davis Picnic Area to Interstate 134, opposite Griffith Park. Once complete, the Riverwalk will provide about one mile of pedestrian and biking trails with parks, rest areas, scenic overlooks, an equestrian facility, interpretive signage, public art, and a bridge connecting the Riverwalk to Griffith Park and/or North Atwater.

Community meetings held in 2010 for the Riverwalk project initiated discussion about the entire project and more specifically the role of a bridge as part of the project's three phase approach. Phase I of the Riverwalk project was completed in 2012 and includes a mile of recreational trail, two parks, public art installations, and an equestrian facility. Phase II, which will be completed in spring 2016, consists of the design and construction of two parks (Flower Plaza Park and Confluence Park, where the Verdugo Wash meets the River, adjacent to Interstate 134). Phase III, which is the focus of this case study, includes preparing engineering studies for a future bridge across the River. This "Jewel at the Bend" would connect both sides of the River, adjacent greenways and communities, as well as local businesses and Griffith Park. It would also create new public space, elevated above the riverbed.

(INSERT: Figure 5.2.2.1 [Caption: The Jewel at the Bend may feature lighting and operate after dusk to allow for unrestricted active commuting.] Credit: City of Glendale)

Origins, Goals, and Timeline

Demand for the bridge component of the Riverwalk stemmed from the community's need for safe pedestrian access to and from Griffith Park. There are no pedestrian crossings for 3.25 miles between the bridges at Riverside Drive and Los Feliz Boulevard. Plus, both crossings are car-oriented and far from desirable pedestrian and cyclist crossing locations.

The City of Glendale wants to improve public health and sees the bridge as an opportunity to enable active transportation along the River corridor by connecting greenways. The southern part of Glendale is park-poor. Therefore, providing increased opportunities for recreation is important.

The stated goal of the Jewel at the Bend is to connect pedestrians and cyclists to parks (i.e. Bette Davis Picnic Area, Griffith Park, John Ferraro Athletic Fields, and the Riverwalk parks), recreational amenities, and trails along the River. It will provide increased access to the River from Glendale's downtown and The Walt Disney Company's Grand Central Creative Campus which houses nearly 7,000 employees.

Community engagement for Phase III included three workshops held from September through December 2014. Project consultants then utilized community input and worked

with City of Glendale staff to publish the *Glendale Narrows Bridge – Structural Design and Aesthetic Evaluation Study* (based on the Bridge Options Study, explained below) in February 2015. In March 2015, the Glendale City Council approved the study and directed staff to submit grant applications to support bridge construction. The City continues to seek grant funding.

Project Proponents and Community Collaborations

The Jewel at the Bend project is managed by the City of Glendale, which views it as an important piece of its effort to revitalize its riverfront. Key project partners include federal, state, county, and municipal agencies, as well as nonprofits, community organizations, and elected officials (listed in **Figure 5.2.2.3 below**).

(INSERT: Figure 5.2.2.3 [Caption: A wide range of stakeholders were identified to participate in the planning process.] Credit: City of Glendale).

To identify potential bridge locations, preferred design, and funding sources for the Jewel at the Bend, City staff hired Atkins North America, Inc., an international consulting firm with specialized design experience, to lead a Bridge Options Study during Phase III of the project. The study focused on methods of community engagement to drive bridge design decisions such as, hiring consultants to work with the community and showcase potential designs. The following sections discuss the community engagement and decision-making process outlined in the Bridge Options Study and enacted over several years.

Although the City could have conducted community outreach themselves, they hired an outreach specialist, Katherine Padilla & Associates (KPA) because they believed a third party consultant would receive more honest feedback from the public. KPA developed a *Joint Community/City Partnership*, a framework to conduct three workshops with established milestones. They kept the meetings focused, redirected off-topic concerns to the appropriate City staff, and created a graphic (shown in **Figure 5.2.2.4**) illustrating the community’s important role in the development process. KPA explained that they were trying to find the “Sweet Spot”—a balance between community interest and concerns, costs and funding opportunities, and technical considerations.

(INSERT: Figure 5.2.2.4 [Caption: Outlining the participation process helped the community visualize how their input contributes to the development.] Credit: City of Glendale)

(INSERT: Figure 5.2.2.5 [Caption: This Venn diagram demonstrates a simple way to illustrate to stakeholders how key factors influence project decisions and outcomes.] Credit: City of Glendale).

(INSERT: Figure 5.2.2.2 [Caption: Illustration presented at a June 2010 Open House. Presenters highlighted opportunities and constraints of the Riverwalk project area to community members.] Credit: City of Glendale)

KPA made a far-reaching effort to engage many local, regional, and national stakeholders in the outreach process. Pedestrians, cyclists, equestrians, park users, and other community members all participated. Equestrians were an especially important stakeholder because they use the area frequently and had strong views regarding the bridge’s location. KPA was diligent in their responses to the community and tried to accommodate all parties. Their outreach strategy played a crucial role in driving community buy-in to the bridge’s value, development, and location.

Site Selection and Design

Selecting the Jewel at the Bend’s location was a holistic, community-driven process. Three potential sites were presented and reviewed early in the outreach process. In depth discussions between the City, residents, and the design team followed. The group came to consensus in the second meeting of the series of three workshops.

(INSERT: Figure 5.2.2.6 [Caption: This image demonstrates potential bridge Location 1 (left), Location 2 (middle), and Location 3 (right) in proximity to Phase I (yellow line) and Phase II (green line).] Credit: City of Glendale)

The following table, adapted from a presentation given at Community Workshop #2, provides pros and cons identified by the community of the three possible bridge locations.

Potential Bridge Locations		
Location	Pros	Cons
1	<ul style="list-style-type: none"> • Only location capable of serving equestrian users • Provides access to both the bike path and Griffith Park 	<ul style="list-style-type: none"> • Could be an expensive alternative because it’s a longer bridge • Serving all three potential user groups would require a costlier, wider bridge • Concerns with parking and traffic and impacts on community character • Requires cooperation with the City of LA
2	<ul style="list-style-type: none"> • Provides the most direct connection to San Fernando Road and serves as a gateway to Ferraro Fields • Provides the most visible and accessible option • Provides easy access for pedestrians and has close proximity to bicycle routes 	<ul style="list-style-type: none"> • Does not connect directly to Griffith Park • Requires cooperation with the City of LA

	<ul style="list-style-type: none"> • Provides an ideal commute connection between neighborhoods and commercial centers, including the DreamWorks Animation studio • Close to street parking • Creates opportunity for a visually dramatic bridge 	
3	<ul style="list-style-type: none"> • Location is dynamic, visible from Interstate 134, and the shortest option • Connects three neighborhoods/cities • Spans both the River and Verdugo Wash • Requires minimal use agreements because it is outside of agency rights-of-way 	<ul style="list-style-type: none"> • Does not connect directly to Griffith Park • Limits pedestrian and cyclist visibility and accessibility
Information from: City of Glendale. (2014). <i>Workshop No. 2 Presentation</i> . Retrieved from http://www.glendaleca.gov/home/showdocument?id=19240		

Table XXX: Pros and cons of three potential bridge locations

Location 1 was originally preferred by equestrians since it was the only option that was capable of accommodating their needs. However, they changed their stance after recognizing that the proposed location had the potential to drive additional, unwanted traffic to the area. Based on this possible impact to their community, equestrian stakeholders agreed that other bridge locations should be pursued.

Location 3 was not clearly visible to passersby on foot or on bike which would impede the level of accessibility targeted for this project. Only those who were already aware of the site would likely use it.

Location 2 was selected as the best site because it would create an ideal commuting corridor providing the most direct connection to San Fernando Road and would serve as a gateway to and from Ferraro Fields. It also creates the opportunity for a visually dramatic bridge. As a result of evaluating this option, both residents and the City began to understand the potential significance and role the bridge could play within the community. In this unique location, the River shifts its course by 90 degrees. This led to the concept of the bridge being the “Jewel at the Bend”—a community landmark.

(INSERT Figure 5.2.2.7 [Caption: Preferred Jewel at the Bend bridge Location 2 (left). Project proponents agreed that another bridge over Verdugo Wash (right) would be needed to enable a continuous pathway on the east bank of the River.]) Credit: City of Glendale)

Historically, bridges over the River have been similar in design, with a focus on function. To inspire more creative ideas, the City committed to allowing the community to drive the process. Residents were told that they could create and plan for a bridge with an approximate budget of \$3 to \$25 million. But the City was clear: the amount of funding

that could be secured would ultimately dictate what would be built—they did not have the funds internally to cover the entire cost. To the City’s surprise, this did not deter residents. They wanted to create a truly unique place.

Potential bridge designs were introduced early in the outreach process at Community Workshop #1. Attendees reviewed different types of pedestrian bridges from around the country, including box girder, suspension, cable-stayed, arch, space truss, and stress ribbon..

Bridge Types



Figure XX: Bridge types presented at Workshop 1

The consultants and workshop attendees discussed each bridge’s use, size, construction material, and how each influences design. They also considered the connections to greenway paths on both sides of the River, traffic flow, and how structures function during the day and at night. The bridge design sub-consultant —Ty Lin International—created site specific renderings to illustrate what each bridge type might look like in the selected location. KPA then shared these renderings at the community outreach meetings.

Bridge Concepts

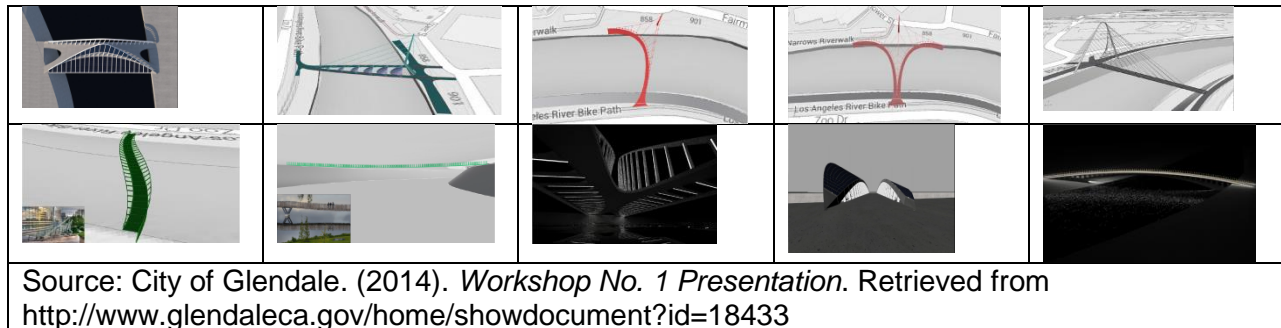


Figure XX: Bridge concepts presented at City of Glendale Workshop

Construction costs for the sample bridges ranged from \$5.5 million for a simple box girder to \$24.5 million for a more elaborate suspension bridge. Less intricate designs with a focus on function and the width to accommodate multiple uses proved to be most popular among the community.

The City credits their design team for creating such a successful community-led design process. They encouraged the City and stakeholders to consider the bridge not only as a means to get across the River, but also as a destination in and of itself. Ty Lin International’s staff asked, *what if the point of the bridge was to get to the middle of the River?* They could see that the bridge had hidden potential to be a prominent community landmark.

The consultants translated the community’s ideas and information exchanged through weekly to biweekly meetings with City staff into 10 imaginative, practical bridge concepts that could become an icon of River revitalization. During Community Workshop #2, the top four designs, with widths ranging from 12 to 20 feet, were chosen for the City to consider. The Garden Bridge Conceptual Design was the favorite and chosen to be further developed by Atkins North America, Inc. and Ty Lin International.

The consultants completed the draft *Glendale Narrows Bridge Structural Design and Aesthetic Evaluation Study* in February 2015, which was unanimously approved by the Glendale City Council at their regular council meeting the following month. They see the future bridge as a valuable community asset, especially in northern Glendale, a park-poor area that would have enhanced access to Griffith Park with the creation of the bridge.

The Garden Bridge Conceptual Design specifies that the bridge would be 25 feet above the riverbed, eight feet above the River’s retaining wall, and have a winding S-shape with shaded seating areas separate from the bike and pedestrian path. It would be five feet thick and the shade structures would be 14 to 16 feet tall. The next three favored bridge designs include a solar arch, a mesh haunch, and a simple concrete truss. Ultimately, the final bridge design may be a blend of aspects from these different concept renderings.

(INSERT: Figures 5.2.2.8 through 5.2.2.10 [Caption: Renderings of the Jewel at the Bend showing its placement across the River and potential usage at any time of day] Credit: City of Glendale)

Cost and Funding

The Bridge Options Study (Study), a comprehensive plan for the project, cost \$600,000. The City of Glendale covered the cost under Measure R, a half-cent sales tax in Los Angeles County to finance new transportation projects and programs, and to accelerate those already in the pipeline. While the Jewel at the Bend's construction costs, site plans, and architectural drawings are not currently funded, the Study provides a comprehensive plan reflecting community input. The City believes this will improve the likelihood of securing more funding.

The design consultant's honesty and straightforwardness with City staff about the true cost of materials and design features was crucial. Having a range of design options and costs allowed project proponents to cope with the uncertainty of funding. The City was also explicit with the community: they will develop one or a mix of the top four designs based on how much funding is secured within 10 years.

The construction of the proposed bridge will have an approximate cost of between \$3 and \$20 million, depending on its size and complexity. A \$3 million bridge would be as simple as a straight, functional concrete bridge. A full build out of the preferred Garden Bridge design would cost approximately \$20 million. The City has one dedicated staffer pursuing funding opportunities, which could take three to five years. To help facilitate the effort, they developed a public website which includes common supporting documents needed for grant applications.¹

For Fiscal Year 2015, the City applied for a Los Angeles County Metropolitan Transportation Authority (Metro) Active Transportation Facility grant and was awarded \$3.1 million for the bridge. The City hopes this grant will help demonstrate the viability of the project and increase their chances of securing other funding. It could take five to eight grants to fully fund the Garden Bridge design (if the amounts are similar to the \$3 million grant). However, if, for example, in five more years only \$5 million is available, a design for a \$5 million bridge will go into production.

The City also applied for, but unfortunately did not receive \$22.4 million from the U.S. Department of Transportation's TIGER (Transportation Investment Generating Economic Recovery²) Discretionary Grants program for the Jewel at the Bend and another proposed bridge over the Verdugo Wash. The latter was included in this proposal to emphasize the area's need to enable a continuous pathway on the east

¹ Grant Application Supporting Documents. (2015). Retrieved from: <http://www.glendaleca.gov/government/departments/public-works/projects/phase-iii-bridges-grant-supporting-information>

² TIGER Discretionary Grant. (2015). Retrieved from: <http://www.transportation.gov/tiger>

bank of the River as well as its ability to serve as a key connection corridor providing access to the southern-most end of the Riverwalk and to North Atwater in the City of LA. The competitive TIGER grant required a \$5,600,000 match in local funding and supports capital investments in surface transportation infrastructure that will have a significant impact on a national, regional, or metropolitan scale. The City included letters of support from national, state, and local politicians, in addition to numerous local River advocacy organizations.

(INSERT: Figure 5.2.2.11 [Caption: Proposed Verdugo Wash Bridge design, as exemplified from the perspective of the River] Credit: City of Glendale)

The City may apply for smaller TIGER grants in the future while simultaneously applying for other funding sources to fill in any funding gaps. They may be more competitive if they are not asking for such large amounts of funding from one source.

Permitting and Use Agreements

Project proponents have yet to secure project entitlements, permits, or use agreements because neither precise bridge connection points nor the design have been finalized. In the future, the City of Glendale anticipates the need to work closely with the City of LA since nearly 90% of the bridge will be within its jurisdiction. Initial discussions between the cities indicate that LA supports the project and will make their permitting processes as seamless as possible.

Operations and Maintenance

Once complete, the City of Glendale will be the primary owner of the Jewel at the Bend, even though a significant portion of it is within the City of LA's jurisdiction. A small city, like Glendale, would need to allocate considerable staff time and resources to create a bridge management program. The City of LA operates and maintains thousands of bridges and it may be relatively easy for them to also manage the Jewel at the Bend. Informal conversations between the cities indicate that LA may assume some or all of the responsibility (most likely, a 50/50 split). In the end, the project is being driven by Glendale and the bridge may ultimately be their responsibility to maintain.

Glendale is in the early stages of developing a holistic operation and maintenance program, including the future bridge's hours of operation. As a City asset, it would be subject to the same liability restrictions as public parks. This means that the bridge would be closed at sunset. This can have significant impacts on those using bicycle and pedestrian paths, including commuters. The City is considering this issue and may allow access after dusk in certain areas to maintain the transportation network.

La Kretz Crossing

The La Kretz Crossing, the region’s first bridge with a deck supported by cables, will connect users, including bicyclists, pedestrians, and equestrians, from North Atwater Park to Griffith Park. It will be the first philanthropically-funded bridge in the City of Los Angeles and has a distinct design, which will be visible from Interstate 5. The La Kretz Crossing will create a unique landmark highlighting Los Angeles River revitalization efforts. This case study is an example of a precedent-setting River greenway development bridge.

(INSERT Figure 5.2.3.1 [Caption: Rendering of the La Kretz Crossing looking north] Credit: River LA).

Origins, Goals, and Timeline

In 1998, dangerous crossing conditions and increasing community demand led the LA City Council to approve a study for the design and funding of an equestrian bridge. In 2007, the *Los Angeles River Revitalization Master Plan* (LARRMP) was adopted, which prioritized the development of bridges for non-motorized transportation to connect the River’s equestrian trails. The bridge’s site was named Potential Project 147: Los Feliz Equestrian/Non-Motorized Bridge, but is now known as the “La Kretz Crossing”.

(INSERT Figure 5.2.3.1-2 [Caption: Attachment to the Active Transportation Program grant application showing current hazardous conditions of the horse crossing area (outlined in red) and opportunity for safe crossing with the proposed new bridge (blue line).] Credit: River LA).

(INSERT Figure 5.2.3.1-3 [Caption: Current conditions of the River where the bridge is proposed.]

Morton La Kretz—a real estate developer, philanthropist, and LA native—is the primary funder who set the project in motion through his donation. He had been working with the nonprofit River LA³ for approximately a year to raise the River’s profile as a valuable asset. In October 2010, both La Kretz and River LA agreed that an iconic bridge in North Atwater was worthy of significant investment.

The La Kretz Crossing is a keystone project of River LA’s Greenway 2020 movement to complete a continuous 51-mile River-adjacent greenway and establish the River as a desirable destination by 2020.⁴ Current interest in River revitalization has made it easier to propose new and creative infrastructure projects, like a cable-stayed bridge.

The goals of the La Kretz Crossing, established with community input and guidance, are threefold: 1) to provide a safe and sustainable new River crossing for pedestrians,

³ River LA was previously called Los Angeles River Revitalization Corporation (LARRC).

⁴ Greenway 2020. (2015). Retrieved from <http://www.larivercorp.com/greenway2020>

cyclists, and equestrians, 2) to improve ecosystem and riparian health, and 3) to be aesthetically pleasing, blend into the natural atmosphere, and include a “wow” factor.

For Fiscal Year 2014-2015, River LA obtained a California Department of Transportation Active Transportation Program (ATP) grant.⁵ However, difficulties with construction contracts led River LA to request a funding allocation extension. A 12-month extension was granted: ATP funds would not be allocated until June 30, 2016. Building the La Kretz Crossing will take approximately 12-15 months after the construction bid is awarded and funds are allocated. Project proponents expect the bridge to be completed in late 2017.

(INSERT Figure 5.2.3.3 [Caption: Graphic included in Active Transportation Program grant application to demonstrate the potential of the bridge to connect existing and future bicycle facilities.] Credit: River LA)

Project Proponents and Community Collaborations

River LA, a nonprofit established in 2009, implements projects prioritized in LARRMP.⁶ The organization is the lead entity for the La Kretz Crossing project because it can manage the project more efficiently than the City of Los Angeles and does not need to comply with the City’s competitive bidding requirements. River LA has been discussing LARRMP projects with stakeholders for years. For the La Kretz Crossing, they will engage the community, secure funding, permits, and insurance, as well as manage construction. They will then formally “gift” the bridge to the City for them to own, operate, insure, and maintain in perpetuity.

In 2011, River LA developed and implemented a strategic *Outreach/Public Participation Plan*. They collaborated with their design team (a group of civil, structural, and bridge design, landscaping, and electrical and geotechnical experts) and key permitting agencies, such as the U.S. Army Corps of Engineers (USACE), various City departments, and the LA County’s Department of Public Works and Flood Control District. River LA representatives organized meetings, presented at public forums, and spoke with stakeholders at nearly 30 community gatherings, including a LA River Cooperation Committee meeting and a City Council District 4 meeting with equestrians. (Table XX displays stakeholders). They held smaller, more targeted meetings with some stakeholders, such as the USACE and various City of LA departments, to ensure that project requirements were understood and addressed.

Stakeholders
<ul style="list-style-type: none">• U.S. Army Corps of Engineers• State agencies: Department of Transportation (Caltrans), Department of Fish and Game, Santa Monica Mountains Conservancy/Mountains Recreation and Conservation

⁵ Caltrans Active Transportation Program (2016). Retrieved from: <http://www.dot.ca.gov/hq/LocalPrograms/atp/>

⁶ About Us. (2015). Retrieved from http://www.larivercorp.com/about_us

<p>Authority, State Water Resources Control Board/LA Regional Water Quality Control Board</p> <ul style="list-style-type: none"> • LA County Department of Public Works and Flood Control District • City of LA Department of Public Works, Bureau of Engineering, Bureau of Sanitation, and Department of Water and Power • LA Equestrian Center • Equine Advisory Committee • Friends of the LA River • Friends of Griffith Park • LA County Bicycle Coalition • LA Conservation Corps • Neighborhood Councils • North East Trees • The City Project • The River Project • Trust for Public Land • The Council for Watershed Health
<p>Information from: Caltrans Active Transportation Program Cycle 1 Application, May 21, 2014, River LA North Atwater Non-Motorized Multimodal Bridge Project "La Kretz Crossing"</p>

Table XXX: Key Project Stakeholders

Community support for this project was especially important because the bridge is primarily funded by one person and a cable-stayed bridge across the River has never been attempted. It was necessary to respond to and incorporate local feedback in the bridge to ensure that the project represented public interests, not just those of the private funder. The benefits of such a project were not obvious to all stakeholders and some were initially uncomfortable with the bridge’s high-profile design, placement, and/or large price tag. One adjacent property owner—a nonprofit called Taking the Reins—was concerned about the bridge’s placement and requested further details about the bridge’s precise location (see Figure XXX below).

(INSERT Figure 5.2.3.4 [Caption: Easement exhibit included in the Active Transportation Program grant application. Demonstrates Taking the Rein’s property in yellow and the matrix of property ownership in relation to the proposed bridge location.] Credit: River LA).

River LA listened to the community’s concerns and addressed them individually. Ultimately, stakeholder feedback influenced important bridge location and design decisions. For example, equestrian users pointed out that there were stables in the area that would be better served if the bridge was moved slightly downstream. Users also pointed out that the crossing would be safer if it had two separate tracks, one side for equestrians and the other for cyclists and pedestrians. Stakeholders recognized that constructing the bridge could inspire the development of additional pedestrian bridges, particularly between the Elysian Valley and Rio de Los Angeles Park.

(INSERT Figure 5.2.3.5 [Caption: Rendering aerial view of the bridge’s two-track design] Credit: River LA).

River LA is keeping stakeholders informed on project progress and setbacks, including standard project delays. Effective communication will ensure continued community support for the La Kretz Crossing.

Site Selection and Design

LARRMP identified the site of the La Kretz Crossing based on the adjacent community's need to cross the LA River, the desire to accommodate multiple user groups, and the goal to connect bike paths and parks. The project sits on or passes over land that is controlled by the USACE, LACFCD, the Los Angeles Department of Water and Power, and private property owners. The nearest bridge is 0.62 miles south, is car-oriented, provides little benefit to pedestrians and cyclists, and does not accommodate equestrian users. The La Kretz Crossing will connect Atwater Village in the City of LA and the newly expanded North Atwater Park on the River's east bank to 7.1 miles of River bikeway on the west bank. It will provide safe, year-round access to pedestrian, bicycling, and equestrian facilities, including a special tunnel for horses under Interstate 5 which connects the bike path to Griffith Park. The pre-fabricated cable-stayed bridge will stretch nearly 390 feet across the River, with a deck of approximately 325 feet by 36 feet.

(INSERT Figure 5.2.3.6 [Caption: Approximate location of proposed bridge (green line) and existing pathways (red line), including the hazardous in-channel crossing currently utilized by equestrians and the tunnel underneath Interstate 5 (yellow line).] Credit: Luskin Center for Innovation via Google Earth)

The primary donor decided on the bridge's design and requested that it accommodate multiple users. River LA presented Mr. La Kretz with a number of possible bridge types and evaluated them based on performance, functionality, and impact on the River. A split-deck cable-stayed bridge model was identified as the most fitting. It will create a new and unique River identity, minimally impact the waterway, and require less maintenance and renovation over time than other options.

(INSERT Figure 5.2.3.7 through 5.2.3.10 [Caption: Project site plans (with an alternative project name: Atwater Park Multi-modal Bridge) showing a range of perspectives and considerations.] Credit: River LA)

Satisfying all of the functional requirements, as well as designing a bridge that is aesthetically pleasing, blends into the natural atmosphere, and includes a "wow" factor required a design team of consultants including: Fuscoe Engineering, Inc. (civil design and survey), Mia Leherer + Associates (landscaping), Buro Happold Consulting Engineers (electrical, structural, and bridge design), and Leighton Consulting (geotechnical). Each performed an important role analyzing the physical setting and existing conditions. For example, a hydraulics and water surface assessment was prepared to determine the impacts on the River channel.

Cost and Funding

The La Kretz Crossing is unique because more than half (\$5 million) of the total project cost (\$9,038,332.80) was donated by philanthropist Morton La Kretz. To close the funding gap, organizers pursued a public-private partnership. The City and County collectively contributed \$1 million in funds and in-kind services (e.g. staff time, environmental, and real estate studies) and the California Transportation Commission provided \$3.66 million through their Active Transportation Program (ATP) which funds projects that increase the proportion of biking and walking trips made, improve safety and mobility of non-motorized travelers, reduce greenhouse gas emissions, and provide other benefits.

Most funders have strict donation or grant requirements that must be respected to maintain good relationships and achieve project goals. For example, the private donor for this project stipulated that releasing the final construction funds was dependent on the following.

1. Written commitment from the City to accept the bridge as a gift and to operate and maintain it as a public asset;
2. Substantial progress in obtaining permits from the USACE, the County, and the City; and
3. Competitively bidding the project to an experienced and cost-effective bridge manufacturer and general contractor.

The project would not have been possible without the flexibility and understanding of the primary donor in response to the inherent delays and unexpected costs that are typical of large capital projects. For example, the City was uncomfortable with the bridge's unique design and asked River LA to add additional shock absorbers. While this is not required to meet engineering standards, project proponents decided that instead of fighting the City, it was in their best interest to mitigate the City's concerns and add the seismic features. Other issues, such as unexpected soil conditions in the riverbed, required a more robust foundation and nearly doubled the initial cost estimate of the project.

In June 2015, due to construction delays, River LA requested a 12-month extension to use ATP funds for the project. The California Transportation Commission approved their request and final permitting of entitlements are being urgently reviewed.

Permitting and Use Agreements

The permit and approval process was difficult and delayed the project on numerous occasions. Table **XXX** below outlines the agencies and approvals involved. There was confusion over which agency had jurisdiction over each aspect of the project and River LA staff was often sent to speak with other confused agency representatives. River LA estimates that they could have saved 12 months or more had they been able to avoid these difficulties. The process is described in the following paragraphs.

Project Actions and Approvals Required for the La Kretz Crossing
<ul style="list-style-type: none"> • Caltrans: Encroachment and Transportation Permits for bridge transport and construction staging in the rights-of-ways; NEPA Categorical Exemption and Right of Way Certification (required after ATP award) • Department of Water and Power: Letter of Non-Objection • LA County Flood Control District: Easement acquisition, construction permit, and Flood Permit (required after environmental review) • City Department of Transportation: Traffic Control Plan review • City Department of Recreation and Parks: project and design review • City Department of Building and Safety: construction permit • USACE: NEPA Entitlement Requirement, Section 404 Permit, Section 408 approval for flood control structures, and project review and approval • California Department of Fish and Game: Streambed alteration agreement • State Water Resources Control Board/LA Regional Water Quality Control Board: project review, National Pollutant Discharge Elimination System (NPDES) General Construction Permit, and 401 Water Quality Certification

Table xxx: Relevant agencies and permit procedures for the La Kretz Crossing

Engineering approval and permitting for a precedent-setting bridge was challenging for two reasons. First, City engineers are comfortable with specific bridge designs, which primarily include concrete arch structures that meet certain vibration standards. Cable-stayed bridges function differently which made it difficult to convince City engineers that they were safe. Second, the maintenance needs of a cable-stayed bridge were unclear to City employees. River LA and their design team spent considerable time educating their partners on what type of maintenance would be required.

All development projects, including those along the LA River, must comply with environmental laws to identify and address potential adverse environmental impacts. In September 2013, the City of LA’s Bureau of Engineering (BOE) filed a Notice of Determination for a Mitigated Negative Declaration,⁷ a declaration that the initial study proved that no significant environmental effect will occur, under the California Environmental Quality Act (CEQA).⁸ In March 2013, USACE released a Draft Environmental Assessment in compliance with the National Environmental Policy Act (NEPA)⁹ and 17 months later, found that there were no significant impacts expected. USACE also required River LA to obtain Section 404 (Clean Water Act) and Section 408 (Rivers and Harbors Act) permits. See Table **XX** for more information.

USACE Permits	
Section 404 assesses and authorizes the impacts of discharging fill material into U.S. waters pursuant to the	This process, which takes about 2-3 months, assesses project impacts on aquatic/ecological features and the “high water mark” as well as potential mitigation strategies. After an ecological/wetland survey and delineation within prescribed project area, USACE determines an appropriate Section 408 Permit process for the project.

⁷ For more information, visit <http://resources.ca.gov/ceqa/guidelines/art6.html>

⁸ For more information on CEQA, visit <https://www.wildlife.ca.gov/Conservation/CEQA/Purpose>

⁹ For more information on NEPA, visit <http://www.epa.gov/nepa>

Clean Water Act	
Section 408 assesses and authorizes alteration of levees pursuant to the Rivers and Harbors Act	This process assesses project impacts on and potential mitigation of channel discharge conveyance. Depending on the degree of impact, the local USACE (LA District) assesses whether a project requires review and processing at the local level, which takes 6-8 months, or a more rigorous review at both the local and federal level, which takes 12-18 months. After 30% of completed design plans are submitted to USACE, the agency reviews and determines the most appropriate 408 Permit process, which takes about 8 weeks.
Information from: Caltrans Active Transportation Program Cycle 1 Application, May 21, 2014, River LA North Atwater Non-Motorized Multimodal Bridge Project "La Kretz Crossing"	

Table XXX: USACE Permit Actions

BOE requires a “B” Permit to review and monitor extensive public works improvements within the City of LA. This permit has three phases: estimate, design, and construct. Its fee covers the administrative costs of BOE and Bureau of Construction Administration (BCA), the agency responsible for ensuring that policies and procedures for contracts are equitably enforced during project review and monitoring. The City’s Department of Building and Safety (DBS) also requires a permit because the landing of the east end of the bridge is on private property which is under their jurisdiction. Altogether, the City estimated that obtaining these permits for the La Kretz Crossing cost a total of \$281,000.

Transferring bridge ownership from River LA to the City required City Council approval because the donation was more than \$5,000. BOE’s Real Estate Group worked with River LA to ensure the gift agreement was sound: this cost approximately \$15,000.

Operations and Maintenance

Upon completion of the La Kretz Crossing, the City will be the primary owner of the bridge. Responsibility for it will be shared among the departments of Public Works, Recreation and Parks, and Transportation.

Steel cable-stayed bridges have specific maintenance needs. While project proponents designed it to have minimal operations and maintenance requirements for the first 10 years, it will need cosmetic upkeep which will cost about \$1 million for the first decade of operation. For example, every five years, the cables need to be tuned and the timber deck needs to be refurbished. The bridge also needs to be repainted every 10 years. Using standard materials can minimize the time required to educate workers about infrastructure repairs.

To manage the cost of upkeep, River LA developed a creative 10-year maintenance strategy with the Los Angeles Conservation Corps (LACC) through one of its Young Adult Programs, the LA River Corps. LACC provides at-risk youth with job skills training and work experience with an emphasis on conservation and community service projects. LACC has a history of maintaining LA River parks, bike paths, and access

points. Working with LACC allows the City 10 years to secure funding before taking over bridge upkeep in perpetuity.

Current Status

The La Kretz Crossing was to be erected between January and August 2013, but due to the delays mentioned above, construction will start in the fall of 2016 and take approximately 12-16 months.

Guidance: Lessons Learned and Best Practices

This section presents important considerations for those interested in developing pedestrian bridges across the Los Angeles River or its tributaries. The key characteristics of the bridge projects featured in this chapter demonstrate the diversity of bridges that can be developed. While these case study projects are not yet fully implemented, this section provides a summary of lessons learned and best practices identified to date. The takeaways presented reflect the slow, but progressive nature of building bridges.

The three case studies have not yet been constructed and, therefore, in this section we present images of existing pedestrian bridges that cross the River or its tributaries.

(**INSERT**: Figure 0 [Caption: View of the Colfax Avenue pedestrian bridge in Studio City; east of the bridge (left) is a neighborhood, west of it (right) is a commercial corridor. (Location: Studio City)] Credit: Andrew Pasillas)

	Aliso Creek Confluence bridge	Jewel at the Bend Bridge	La Kretz Crossing
Summary	Demonstrates utility of a small scale footbridge over a tributary, enabling a continuous greenway; will create access to a new two-acre park and enhance mobility for all pedestrians; the bridge is in preliminary development	Exemplifies community-driven design for a precedent-setting bridge; project proponents proposed a range of design and location options to the community and they selected their top preferences; final outcome depends on funding but current plans are for a two-span curvilinear concrete bridge	First philanthropically-funded and cable-stayed bridge project in the region; design is aesthetically pleasing and accommodates multiple users including equestrians; will provide a connection to the existing bike path and parks and will enhance community and River identity
Project Lead (type)	The Trust for Public Land (nonprofit)	City of Glendale (local government)	River LA (nonprofit)
Location	Reseda neighborhood in the City of LA	City of Glendale and City of LA	Atwater Village neighborhood in the City of LA
Users	Pedestrians, cyclists, local and surrounding community	Pedestrians, cyclists, local and surrounding community	Pedestrians, cyclists, equestrians, local and surrounding community
Cost	~\$600,000	~\$3-20 million	\$9 million

Funding	TBD	Active Transportation Facility grant (\$3.1 million) from LA County Metropolitan Transportation Authority; Measure R funding (\$600,000 for Bridge Options Study) from the City of Glendale	Philanthropic donation (\$5 million); City of LA and LA County (collectively contributed \$1 million in funds and in-kind services), and Active Transportation Program grant (\$3.66 million) from the California Transportation Commission
Status	50% of the construction drawings are complete	Preferred bridge design selected	Bridge design and construction drawings complete and funded
Next steps	Continue to work with the County to identify project constraints and opportunities	Identify and secure funding	Initiate construction in 2016, with full build out expected in late 2017

Table XX: Summary of the three case studies and their key characteristics.

Summary of Challenges and Strategies to Overcome Them

Building creative, community-driven bridges over the LA River and its tributaries is a new idea. Inspired leaders have an opportunity to set a precedent and create their legacy through an exciting, new development. However, lead entities and their partners have to overcome unique challenges to build out projects while paving the way for others. The three featured case studies provide innovative solutions to challenges and identify some issues that remain opportunities for creative problem-solving.

Challenges and Solutions to Developing a Pedestrian Bridge		
Development Stage	Challenges	Solutions
Motivation	<ul style="list-style-type: none"> Lack of knowledge of opportunities, benefits, and processes to develop footbridges over the River and its tributaries 	<ul style="list-style-type: none"> Do a preliminary assessment of how the River separates communities and reduces mobility Educate community leaders and the public on the benefits and processes of developing bridges Provide examples of successful bridge projects
Community Engagement	<ul style="list-style-type: none"> Lack of knowledge of the opportunities and benefits of bridges Fear of increased traffic Responding to and incorporating feedback 	<ul style="list-style-type: none"> Develop an outreach strategy specific to the community Consultants can help lead or support outreach Educate locals on the benefits and setbacks of developing bridges

		<ul style="list-style-type: none"> • Manage community expectations • Provide genuine opportunities and set deadlines for community input
Timeline	<ul style="list-style-type: none"> • Developing an accurate project timeline and scope • Matching funder and agency timelines with project timeline • Managing delays 	<ul style="list-style-type: none"> • Develop a practical and flexible timeline considering uncertainties • Include extra time for project delays • Prioritize project issues • Be prepared for a long, slow process
Design	<ul style="list-style-type: none"> • Balancing user and maintenance needs as well as aesthetic form • Expanding of the vision of a bridge beyond only an opportunity to cross the River 	<ul style="list-style-type: none"> • Hire good design consultants • Develop innovative design options with a range of costs • Incorporate the community's design ideas into feasible options • Select construction materials with minimal maintenance requirements • Discuss maintenance requirements with the entity that will be responsible for it
Physical siting	<ul style="list-style-type: none"> • Identifying the best site • Identifying where to connect the bridge to existing bike paths, trails, and sidewalks • Managing jurisdictional issues 	<ul style="list-style-type: none"> • Consider site feasibility in relation to other bridges, local and regional needs, existing uses, and potential impacts • Identify existing user amenities • Identify agencies with jurisdiction and discuss project ideas with them early in the process
Permitting and Use Agreements	<ul style="list-style-type: none"> • Identifying agencies with jurisdiction • Agency push back on new standards and precedents • Managing adjacent property owners' concerns 	<ul style="list-style-type: none"> • Meet with agencies early in the process • Work to understand agency rules, policies, and limitations • Work with property owners to understand and mitigate their concerns
Cost	<ul style="list-style-type: none"> • Justifying high cost with perceived minimal benefits • Encountering unexpected costs • Responding to project delays 	<ul style="list-style-type: none"> • Be clear about project benefits • Solicit multiple cost estimates • Budget projects conservatively and prepare for unexpected costs and delays
Funding	<ul style="list-style-type: none"> • Identifying sources • Aligning funder expectations and project outcomes 	<ul style="list-style-type: none"> • Allow adequate time to research and apply for funding • Identify funding opportunities

		<p>when developing project goals</p> <ul style="list-style-type: none"> • Develop a concise narrative for applications • Select affordable design options • Communicate regularly and honestly with funders • Consider creative solutions to close funding gaps
Operation and Maintenance	<ul style="list-style-type: none"> • Identifying an entity to manage long-term upkeep • Creating operation standards that align with function and user needs 	<ul style="list-style-type: none"> • Consider agencies and community groups that have the capacity for and knowledge of bridge maintenance

Table XX: Potential challenges and solutions to footbridge development

Lead organizations have found many ways to address the challenges outlined above. Early stage planning, developing clear goals and priorities, collaboration and partnering, community outreach and engagement, and being patient and flexible are critical to success. The remainder of this section details lessons learned through the case studies examined earlier in this chapter.

How do I lay the foundation for a bridge project?

Motivation and Vision

Motivation to construct a pedestrian bridge generally stems from a direct need for improved accessibility and connectivity to and from River greenway paths and other destinations. Pedestrian bridges over the River and its tributaries—though few and far between—play a primary role in supporting River greenways as efficient, accessible, and connected transportation networks. The need can be highly localized, such as the Aliso Creek Confluence bridge, which will connect users on two sides of a tributary. Often shorter in length and less prominent than main channel crossings, bridges over tributaries and weirs are crucial to connecting transportation networks, but are often underappreciated. Bridges can also provide regional benefits and should be considered within the context of the *Los Angeles River Revitalization Master Plan* and the *Los Angeles River Master Plan*. For instance, the Jewel at the Bend bridge will meet the community’s demand for increased accessibility to parks in northern Glendale.

Footbridge projects demand significant investments of time, resources, and funding, and can have an uncertain implementation schedule. Creating an engaging vision that captures and frames the value of a pedestrian bridge is critical, especially in order to secure financial support. It is essential to have community and political buy-in: the purpose of the bridge must be portrayed beyond an extension of a pathway. It must clearly accommodate the needs of residents in a multitude of ways. For instance, the City of Glendale identified early, through its community engagement process, that their Jewel at the Bend could be more than just a way to cross the River. They worked with consultants and residents to develop the vision for it to be a destination in and of itself,

reflecting not just the community's values, but also providing a strong narrative to secure funding.

Leadership and Collaboration

Pedestrian bridges require a strong vision, medium- to long-term commitment, and resources. Community organizations or local governments must acknowledge their strengths and weaknesses when taking on a bridge development project. Usually, one group does not have all of the expertise necessary for success; reaching out to partners to fill knowledge gaps is critical. For example, when developing the Aliso Creek Confluence bridge, The Trust for Public Land managed the project based on their experience, but also depended on the expertise of staff at LARiverWorks.

Local municipalities, with institutional knowledge on how to build significant infrastructure projects, should lead or partner with community organizations and advocates. Nonprofit organizations can be more efficient and nimble than government agencies. For example, River LA secured funding, obtained permits and use agreements, and will oversee construction of La Kretz Crossing. As a private entity, River LA is not subject to the same competitive bidding requirements for construction as the City of LA. Once the bridge is complete, it will then become a City asset, like a public park, with strong insurance and liability protections. A gift agreement will formally transfer ownership from the donor (River LA) to the recipient (City of LA) and will establish specific guidelines for project roles, tasks, and accountability.

Community Engagement

Engaging the community is critical for all greenway projects. Bridge development, specifically, should be in areas with the most need and community demand for it. Residents and users likely know what amenities are needed and where. For example, the La Kretz Crossing was identified in the early 1990s as an opportune place for improved equestrian crossing, which eventually led to the development project. However, many River-adjacent communities are unaware of the benefits of bridges because there are no recent examples of development. Reaching out to stakeholders can help build and maintain support for a project. Some communities are receptive to increased neighborhood access resulting from a new bridge, but others may fear it could bring unwanted visitors. Community engagement is especially important for precedent-setting projects, like the La Kretz Crossing. River LA staff attended over 30 community meetings to discuss developing the first cable-stayed bridge in the region.

Outside consultants can help solicit community participation and feedback. For example, the City of Glendale attributes community buy-in to the Jewel at the Bend's value, location, and development to their consultant's thoughtful engagement process. Providing updates to the community, especially regarding standard and unexpected project delays is important to ensuring long-term support for project development.

Timeline and Construction

Establishing a realistic and flexible project implementation schedule is essential. Delays are inherent with large capital projects and can range from days to years. It is important to consider the compounding nature of delays. For example, the La Kretz Crossing project leads began meeting with stakeholders in March 2011 and expected the project to be complete in August 2013. However, numerous delays postponed projected completion to 2017.

Project construction timelines can vary based on the number of design features and phases, including architectural finishings such as handrails and lighting features as well as mobilization and site preparation. Each phase can take two to twelve weeks or longer depending on project specifics. The primary lesson is to be patient, yet persistent. Delays can also create opportunities to reevaluate expectations and resource use. Future high-profile bridge proposals should anticipate similar issues.

What are important design considerations?

The design of a pedestrian bridge is primarily influenced by its intended function, users, and budget. With regards to function, intended use should be examined and user groups should be engaged in the design process. Selecting a qualified design consultant is also important: they can be the key to integrating community desires into the design and ultimately, enable the project lead to implement a successful project. For instance, the City of Glendale and their outreach consultant developed a thoughtful and comprehensive strategy which allowed ample time for community concerns to take shape and be mitigated. The City's consultant not only provided engineering guidance, but also incorporated community feedback in a thoughtful and innovative manner. Communication between residents, City staff, and the consultant led to a shared vision and understanding of the value of the Jewel at the Bend Bridge.

Function

In determining the primary functions of a pedestrian bridge and how it is manifested in form, a series of questions are helpful to consider:

- What is the purpose of the pedestrian bridge?
- Who are the users and do they require specific accommodations?
- Are there River crossing opportunities nearby and who do they accommodate?
- What are the primary accessibility and connection goals?
- Would a bridge satisfy a local or regional need?

We recommend that project leaders work directly with partners and the community. River-adjacent communities are new to pedestrian bridge developments, and as such, need guidance to understand how functional demands affect bridge design, usage, and potential neighborhood impacts. Successful community engagement can yield creative, user-oriented bridge design ideas. For example, the City of Glendale's community

workshops changed perceptions about how the Jewel at the Bend should function to minimize unwanted traffic impacts on local streets: this directly impacted the design options. In the case of the La Kretz Crossing, stakeholder engagement ensured that functionality was not overlooked by the bridge's high-profile design. Both projects demonstrate a key outcome of defining the functionality of large, cross-channel pedestrian bridges and their potential to connect neighborhoods to economic centers and to serve as destinations in and of themselves.

(INSERT: Figure 9 [Caption: The City of LA recently improved the entrances to the Colfax footbridge to be compliant with the Americans with Disabilities Act. (Location: Studio City)] Credit: Andrew Pasillas)

(INSERT: Figure 5 [Caption: The Laurelgrove Avenue Bridge spans approximately 150 feet over the River channel and pathway, connecting a residential neighborhood to the north to a key retail and commercial corridor along Ventura Boulevard to the south. (Location: Studio City)] Credit: Andrew Pasillas)

(INSERT: Figure 6 [Caption: The southern connection point of the Laurelgrove Avenue footbridge terminates at street grade and provides quick direction to an access ramp to the Los Angeles River Greenway. (Location: Studio City,)] Credit: Andrew Pasillas)

Construction materials can impact operation and maintenance and should be considered during the design phase. For example, the use of steel cables for the La Kretz Crossing was strategic because they are already utilized in other infrastructure projects. As a result, maintenance precedents exist. Amenities and their placement, such as seating, lighting, and landscaping, should also be considered.

(INSERT: Figure 4 [Caption: Access to the Laurelgrove Avenue bridge is open and includes both signage and a bench (Location: Studio City)] Credit: Andrew Pasillas)

(INSERT: Figure 12 [Caption: The south entrance to the Variel Avenue footbridge features an Americans with Disabilities Act-compliant ramp and lighting. (Location: Canoga Park)] Credit: Andrew Pasillas)

Aesthetic Form

When establishing bridge aesthetics, leaders must consider function and funding. Some projects, like the Aliso Creek Confluence bridge, provide access within a limited budget. The design for this project prioritizes natural materials, like weathered steel and hardwood that are proven to withstand high use and require limited maintenance thereby reducing the bridge's cost. Higher-end designs with more components and features, require more material and are likely to result in higher overall costs.

(INSERT: Figure 8 [Caption: Colfax Avenue footbridge is a steel Warren through truss structure that incorporates a wood platform. The use of wood is appropriate because pedestrians are low impact. (Location: Studio City)] Credit: Andrew Pasillas)

(INSERT: Figure 16 [Caption: Ballona Creek pedestrian bridge at Westwood Boulevard. It is a through truss design that is wide and has lighting. (Location: City of Culver City)] Credit: Andrew Pasillas)

Ongoing community communication, input, and guidance must also influence decision-making. The City of Glendale told the community the budget was roughly \$3 to \$20 million dollars, depending on funding secured. Their approach and honesty about the budget was crucial to ensuring that the community-led design process would yield feasible options.

Aesthetic form can also be driven by funders, like Morton La Kretz's interest in a cable-stayed bridge. The final form of the La Kretz Crossing was also influenced by the community's demand that the high-profile design be mindful of the natural River landscape. In all three case studies, function and design were considered together and with input from stakeholders.

Physical siting

Physically siting a pedestrian bridge and its access points can impact its intended function and users. It is a decision process that should again be largely community driven. A range of potential locations should be studied and presented to the public, while considering the following:

- Proximity to other bridges that serve intended users
- Existing River access points and connections to pedestrian, cyclist, and equestrian routes as well as transit options
- Potential impacts on the surrounding neighborhood, community character, existing uses, and the environment
- Visibility and prominence of the pedestrian bridge
- Jurisdiction, permitting, and use agreements

Selecting a general site location for a pedestrian bridge should be directly linked to community and user needs. Taking inventory of what crossing opportunities are currently available, and how they enable local and regional mobility is an important first step. Once an area has been selected, existing River-adjacent amenities should be documented to identify areas that will most benefit from a new bridge. In some cases, guidance for the location is clear. For instance, the La Kretz Crossing is proposed next to parks and equestrian amenities. Similarly, the Jewel at the Bend will connect to parks as well as bike and pedestrian pathways on both banks of the River. It will also serve local businesses and commuters. The Aliso Creek Confluence bridge was sited to increase access to Confluence Park for users on both sides of the tributary.

There are a variety of challenges that can occur during the site selection process, such as settling jurisdictional confusion or acquiring multiple easements. Community opinion can also shift throughout the process. For example, equestrians originally wanted the

Jewel at the Bend to be located in order to accommodate their needs. However, after much discussion, they changed their minds because they realized that their preferred bridge location would bring unwanted traffic to the area. Ultimately, equestrians accepted that the bridge site selected would not serve their needs.

(**INSERT**: Figure 3 [Caption: Access to Sunnyslope Avenue bridge is hidden, there are no signs to make users aware of its presence, and bollards restrict accessibility for unauthorized use. [(Location: Sherman Oaks, Rye Street to Sunnyslope Avenue)] Credit: Andrew Pasillas)

(**INSERT**: Figure 13 [Caption: Recent enhancements to the Variel Avenue bridge improved the aesthetic appearance and functionality of its accessibility infrastructure. (Location: Canoga Park, Variel Avenue)] Credit: Andrew Pasillas)

Engineering considerations can also impact site selection. For example, the number and placement of features, like pylons, can trigger the need for agency approvals and lengthen the development process. We recommend considering a range of options, including designs that do not utilize in-channel pylons.

(**INSERT**: Figures 5.2.2.8 [Caption: Renderings of the Jewel at the Bend showing the placement of in-channel pylons] Credit: City of Glendale)

(**INSERT**: Figure 2 [Caption: Connection points are above the box-channel structure, leading to a pathway that connects directly to street ends and bypasses the existing maintenance right-of-ways. (Location: Sherman Oaks, Rye Street to Sunnyslope Avenue)] Credit: Andrew Pasillas)

What are important cost and funding considerations?

Because pedestrian bridges are large infrastructure projects, they are inherently expensive and their cost varies significantly based on design. For example, the Aliso Creek Confluence bridge will cost about \$600,000, the Jewel at the Bend will be between \$3 and \$20 million, and the La Kretz Crossing will be just over \$9 million. Pedestrian bridges with a range of amenities and engineering challenges can cost tens of millions of dollars.

Expected Expenses

Obtaining construction funding can be a long process, contingent upon the bridge type being proposed. Permitting can also have high costs. For example, an early cost estimate to obtain a “B” Permit and a Building and Safety Permit for the La Kretz Crossing was about \$281,000. While the majority of these expenses can be anticipated, the need for multiple project reviews by various agencies can negatively impact a budget. For example, the Aliso Creek Confluence bridge has been reviewed by four agencies, resulting in project delays and increased costs.

Early expenses can include feasibility studies to determine options for bridge types and connection points. It can also help to develop community and political support for a pedestrian bridge before construction funding has been obtained. Being comfortable with the shifting nature of the LA River planning environment, especially with regards to funding, is a must. We recommend developing a range of implementable bridge options at different cost scales to ensure that a project is ultimately completed. The City of Glendale utilized this approach for the Jewel at the Bend.

Unexpected Expenses

Unplanned expenses may arise at any stage of the development process. Pedestrian bridge projects, in particular, are likely to encounter issues that call for increased attention and review, since they often propose new approaches to established standards. For example, the La Kretz Crossing unexpectedly needed shock absorbers and a more robust foundation, nearly doubling the initial cost estimate.

Project delays will inevitably occur which can lead to increased costs. The approval and permitting process can be especially long and cumbersome. Creative projects involving numerous jurisdictions can cause confusion on which department to go to for approval. This type of confusion over the construction of La Kretz Crossing added at least 12 months to the project timeline. Project funders can also set strict timelines for submitting progress updates or spending funds. For example, River LA was unable to meet the deadline to use Active Transportation Program funds for the La Kretz Crossing. This forced the organization to request a 12-month extension, which they were fortunately granted. Delays and potential setbacks should be discussed openly with bridge financiers to ensure transparency.

Funding Sources

Funding for footbridges is largely dependent on function and form, and, in most circumstances, is a challenge to identify and obtain. “Seed money” for feasibility studies and other initial expenses can help bridge the gap between project ideas and implementation. It can also influence financial support from others. Project proponents were able to leverage Morton La Kretz’s donation for the La Kretz Crossing to secure public funding from numerous agencies.

Simple, utilitarian bridges, like the Aliso Creek Confluence bridge, can be expensive compared to other River improvement projects and difficult to fund due to their small size and perceived minimal impact. This issue requires persistent outreach and coordination with partners to create innovative solutions that accurately present the project as a valuable asset to River revitalization.

Multi-million dollar projects, like the Jewel at the Bend, can also face challenges in obtaining funding. Project proponents must have a strong narrative and justification in order to be competitive with other requests. It is unlikely that one funding source will cover the entire development of a project. And therefore, it is important to be creative

and to piecemeal sources together. Nonetheless, there are funding opportunities for pedestrian bridge development across the River and its tributaries through state and federal grants, propositions, bonds, and private donors. Being flexible and allowing for a period to seek and receive funding is a useful strategy, if time permits.

What are important planning and permitting considerations?

Pedestrian bridges are subject to a complicated and long negotiation process to obtain use agreements and entitlements. Project leads and partners, especially for smaller grassroots efforts, should communicate early and regularly, ask for guidance, and most importantly, conservatively budget for permitting. Interfacing with government agencies can be slow and challenging. Resubmittals and additional reviews can lead to delays and increased expenses.

For projects with new design concepts, expect planning and permitting processes to take longer than usual. Permitting agency engineers will likely question proposals they have never encountered. Holding conversations about these issues early will help key players become comfortable with your unique project. Similarly, plan to provide technical guidance to partners to help establish new standards and gain agency approval. Problem solving with partners can increase trust, understanding, and collaboration.

Early Conversations and Pre-Support Work

It is crucial that lead entities pushing a new footbridge, research site conditions and agency requirements. Early conversations with partners about what will be proposed are especially important during the pre-conceptual or conceptual design phase of footbridge projects. When possible, work within various River forums to promote ideas and seek feedback about where setbacks with ownership and permitting are likely to occur. Use these discussions as an opportunity to gauge future difficulties and to prioritize time and resources.

Establishing relationships with agencies responsible for permitting can lay the foundation for a productive bridge development process. For example, River LA held individual briefings with the U.S. Army Corps of Engineers and departments within the City of LA to explain La Kretz Crossing and work towards efficient permitting approvals.

Jurisdiction, Permitting, and Use Agreements

It is essential to identify who owns or has the rights to the properties that could be impacted by your project. Private and public properties require different permits and use agreements, agency jurisdiction may not be clear, and agencies have strict standards to protect their liability. For example, most River projects, including bridges, require a Flood Permit from the LA County Department of Public Works (LADPW).

Similarly, many of the easements within the River corridor restrict certain parcels to narrowly defined uses, which are administered by mutual agreement between easement holders and potential users. Most importantly, flood control easements (also called “drainage easements”) administered by LADPW cover the entire River corridor up to 25 feet beyond the top-of-bank. Any proposed development within this easement, regardless of underlying parcel ownership, must accommodate flood control and be considered by the LA County Board of Supervisors.

It is important to establish a legal understanding of how the proposed project site is composed. And to spend time upfront identifying responsible parties, fees, and processes in order to avoid surprises and delays.

What are important project maintenance considerations?

A challenging, yet essential component of pedestrian bridge projects is establishing an operation and maintenance program. In general, primary maintenance requirements ensure user safety and structural integrity. This includes scheduling inspections and repairs, providing prescriptive care, and maintaining a clean, safe environment for users. The operation of a pedestrian bridge requires the consideration of if, and when, access will be restricted. This requires a balance of management’s liability and creating an effective transportation network. For example, once implemented, the Jewel at the Bend will connect River greenway commuters to and from the City of Glendale. However, the City plans to close the bridge from sunset to sunrise, like other parks under its ownership, which would limit when commuters could travel. This issue is still unresolved and demonstrates a common concern that future pedestrian bridges, especially those that are destinations in and of themselves, must address.

(INSERT: Figure 1 [Caption: Signage for the approximately 130-foot bridge prohibiting trespassing and loitering, and restricting access from sunset to sunrise. (Bridge location: Sherman Oaks, Rye Street to Sunnyslope Avenue)] Credit: Andrew Pasillas)

Early conversations and consensus on who will operate and maintain the bridge can be useful to address multiple jurisdictional responsibilities (e.g. Jewel at the Bend) and to identify technical specifications that need to be incorporated into the bridge design. Project proponents should also be flexible and creative. In general, when searching for an entity to assume management, it is good practice to ask a lot of questions.

Identifying an agency with the capacity, experience, and resources can be an effective strategy. Project leads should work closely with the agency and ensure the program is sustainable over time. Coordinating this aspect up front can help prevent delays and constraints during other phases of the development process.

(INSERT: Figure 18 [Caption: Entrance to Sunnynook bridge is closed during the 2016 El Nino season; green HESCO Bastion barriers—essentially industrial size sandbags—temporarily increase flood control capacity.)

(INSERT: Figure 15 [Caption: Browns Canyon Wash pedestrian bridge is a simple steel structure with a concrete platform that does not accommodate maintenance vehicles. Signage also indicates it is intended only for pedestrian use, however, other users such as cyclists are not explicitly forbidden. (Location: Canoga Park)] Credit: Andrew Pasillas)

Finally, an innovative approach to an operation and maintenance program is to plan management transitions. For example, for the first 10 years of operations, the La Kretz Crossing will be operated and maintained by the LA County Conservation Corps, an organization dedicated to youth workforce development. Thereafter, the City of LA will manage the bridge. This will give the City time to secure resources to adequately take care of the bridge over the long-term.

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The Trust for Public Land

- Robin Mark, Project Manager
- Tori Kjer, PLA, Program Director

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Select Glossary

This list includes some of the key terms, agencies, and master plans that we refer to throughout the Guide, however, it is not comprehensive. A list of resources is also included at the end of each chapter.

Agencies and Other Organizations

- **City of Los Angeles Department of City Planning (DCP):** Responsible for the City’s general plan, including zoning, permitting, and other land use decisions.
- **City of Los Angeles Department of Public Works:** Responsible for the construction, renovation, and operation of City facilities and infrastructure, as well as environmental programs.
 - o **Bureau of Contract Administration (BCA):** Assures contracts are properly and equitably enforced.
 - o **Bureau of Sanitation (BOS):** Responsible for three main project areas: clean water, watershed protection, and solid resources. The Bureau aims to protect human health and the environment. Many of their projects focus on enhancing storm water capture, water quality, and watershed protection.
 - o **Bureau of Engineering (BOE):** Plans, designs, and constructs City infrastructure. BOE administers permits for construction on City property, such as the “B” Permit.
 - o **Bureau of Building and Safety (DBS):** Ensures safe building design and construction in the City. A permit from DBS is required for any construction on privately owned infrastructure in the City.
- **City of Los Angeles Department of Recreation and Parks (RAP):** Responsible for providing residents with safe and accessible park facilities and recreation opportunities. Also supports LA River revitalization efforts.
- **City of Los Angeles Department of Transportation (LADOT):** Responsible for transportation planning, design, construction, maintenance and operations in the City. LADOT’s Bicycle Program is responsible for maintaining all of the bike paths within the City, including the bike path along the River.
- **City of Los Angeles Department of Water and Power (LADWP):** The largest municipal water and power utility in the nation. LADWP co-authored a *Stormwater Capture Master Plan* to improve the City’s ability to harvest and harness its storm water. The plan includes projects along the LA River to better utilize the channel as a resource.
- **Friends of the Los Angeles River (FoLAR):** A nonprofit organization that seeks to protect and restore the LA River’s natural habitat and cultural heritage. Their programs include educational activities along the River and “clean-up” days.

- **Los Angeles Conservation Corps (LACC):** Provides at-risk young adults and youth with job skills training, education, and work experience. LACC emphasizes conservation and service projects to benefit the community. Their LA River Corps Program focuses on restoring and revitalizing sections of the LA River.
- **Los Angeles County Department of Public Works (LACDPW):** Responsible for six core service areas including water resources. LACDPW oversees flood control, water supply, water quality, and water conservation facilities.
- **Los Angeles County Flood Control District (LACFCD):** Established through the Los Angeles County Flood Control Act in 1915, LACFCD provides flood protection, water conservation, recreation, and aesthetic enhancement within its boundaries. Although part of the LACDPW, the District is governed as a separate entity: the County Board of Supervisors.
- **Los Angeles County Regional Park and Open Space District (RPOSD):** Housed within the Department of Parks and Recreation, the Open Space District was created after the passage of Proposition A, the Safe Neighborhood Parks Act. RPOSD is responsible for acquisition, restoration, and rehabilitation of property for parks, recreation, and natural lands.
- **River LA:** A nonprofit organization tasked with revitalizing the River corridor based on guidance from the *Los Angeles River Revitalization Master Plan* (LARRMP). River LA, previously known as the Los Angeles River Revitalization Corporation (LARRC) works independently and collaboratively with government agencies and other nonprofits to implement sustainable land development projects.
- **Mountains Recreation and Conservation Authority (MRCA):** A local government public entity dedicated to the preservation and management of local open space and parkland, watershed lands, trails, and wildlife habitat. MRCA works with other public agencies and nonprofits to acquire parkland, and plan and implement park improvement projects.
- **North East Trees:** A community-based, grassroots nonprofit that builds parks to create recreation opportunities and gateways to bike, pedestrian, and equestrian paths. Many of their projects are located along the River.
- **San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC):** Created in 1999 by the California legislature and housed within the California Resources Agency. RMC works to ensure the River (and other resources within their service area) is preserved and continues to provide recreational opportunities for the public.
- **The Trust for Public Land (TPL):** A national nonprofit that focuses on land conservation, creating parks and other open spaces for people and communities through on-the-ground projects and policy.

- **United States Environmental Protection Agency (EPA):** Responsible for administering the Clean Water Act, the EPA supports environmental projects. EPA state offices oversee environmental permits and project compliance.
- **United States Army Corp of Engineers (USACE):** The LA District focuses on both flood control and ecosystem restoration projects, often involving the River. USACE has permitting authority over large stretches of the River.
- **Village Gardeners of the Los Angeles River:** A volunteer-led nonprofit organization that engages community members to enhance the River greenway between Coldwater Canyon Avenue and Fulton Avenue, in Studio City and Sherman Oaks.
- **Watershed Conservation Authority (WCA):** Seeks to conserve and preserve open space through the improvement of access to parks and trails. Partnering with local and regional entities, WCA helps implement projects along the River.

Master Plans

- **Los Angeles River Master Plan (LARMP):** Approved in 1996 by the LA County Board of Supervisors. LARMP was developed by a committee of cities, agencies, and citizen groups coordinated by the National Park Service and the LA County Departments of Public Works, Recreation and Parks, and Regional Planning. The plan aims to provide a long-term vision for the River.
 - o **Los Angeles River Landscape Maintenance Manual:** Prepared in 2002 for the LA County Department of Public Works as a supplement to LARMP. Provides guidance for the design of amenities, such as plant palettes and outdoor furnishings. Includes information regarding basic standards of care for irrigation, weed management, graffiti, soil testing, etc.
 - o **Los Angeles River Master Plan Landscaping Guidelines and Plant Palettes:** Created as a supplement for the LARMP in 2004. This plan enhances the identity of the River through planning guidance regarding watershed management, native plant landscapes, public recreation, non-motorized transportation, and sustainable energy, and materials.
 - o **Los Angeles River Master Plan Sign Guidelines:** Published in 2003 as a supplement to LARMP, these guidelines outline standards for signage along the River.
- **Long Beach Riverlink:** Plan published in 2007, it crafts a vision for the west side of the City of Long Beach, suggesting projects that could connect the City and its communities to the River. While the plan is similar to LARRMP, it does not include reconfiguration of the existing flood control levees.
- **Los Angeles River Revitalization Master Plan (LARRMP):** Published in 2007 and developed by the City of LA in collaboration with nonprofits and community stakeholders. The plan provides a framework for transforming the 32 miles of the

River within the City into a community resource and amenity for all residents and visitors. The plan includes recommendations for short and long-term projects, policy and River governance.

- ***Urban Greening Master Plan for the Gateway Cities and Lower Los Angeles and San Gabriel Rivers:*** Currently in development and led by the Watershed Conservation Authority. The plan aims to enhance the lower half of the River by increasing community access, park space, and other recreational opportunities.

Terms

- **50% Construction Drawings:** A term used to designate when approximately 50% of the construction drawings for a project are finished. This is typically a major milestone in project development.
- **Best Management Practices (BMP):** A set of managerial practices and/or techniques which are deemed most acceptable, both effective and practical, in addressing water quality and soil conservation. Examples of storm water BMPs include permeable pavement, green infrastructure like infiltration trenches, and vegetated drainage channels.
- **Bioswale:** A landscaping element like a drain used to remove pollution from surface water runoff. They provide an alternative to storm sewers.
- **Brown Fields:** Previously contaminated land that is now abandoned or underused.
- **California Environmental Quality Act (CEQA):**¹⁰ Aimed at preventing environmental damage in California due to project implementation. CEQA guides the California Department of Fish and Wildlife regarding permit issuance and project approval. It seeks to encourage public participation, agency transparency, and environmental protections. Most River projects have to file a Negative Declaration (ND) or Environmental Impact Report (EIR) to be in compliance with CEQA.
- **Class I Bike Path:** A path separated from cars and typically streets for bicyclists and pedestrians to use. These paths are generally well marked and landscaped with limited cross-flow traffic.
- **Confluence:** The merging of two bodies of water. Usually referring to two rivers of approximately equal width, but also could apply to the meeting of a River and a tributary.
- **Contaminant Plume:** An area of polluted ground water.

¹⁰ CEQA and NEPA are similar however, CEQA is a California law and NEPA is a national law. One key difference is that CEQA requires an agency or organization address project impact avoidance, mitigation and/or offsets through an Environmental Impact Review: NEPA does not require this. For more information, see “NEPA and CEQA: Integrating State and Federal Environmental Reviews” available at: https://ceq.doe.gov/publications/NEPA_CEQA_Draft_Handbook_March_2013.pdf

- **Decomposed Granite:** A natural, permeable hardscape material. It is similar to granite but usually finer. It is made from weathered and eroded solid granite, which is a type of rock.
- **Easement:** A legal right to cross or use someone else's land for a specified purpose.
- **Environmental Impact Report (EIR):** A report required under CEQA for development projects in California. An EIR documents the potential environmental effects from a specified project and ways to avoid, mitigate, and/or offset them.
- **Equestrian:** A person who rides horses.
- **Erosion:** The gradual diminution of something due to natural agents like wind or rocks.
- **Green Infrastructure:** An approach to water management that uses natural processes, such as restoring a stream to its original hydrological flow, to improve water quality, and to manage water quantity.
- **Hardscaping:** The inanimate objects included in landscaping. Hardscaping consists of hard materials, such as concrete, stone, or metal.
- **Infiltration:** The flow of water into soil or another porous substance.
- **Los Angeles City "B" Permit:** Required by the Bureau of Engineering for extensive public works projects, such as construction of bridges, retaining walls, and installation of storm drains. The B Permit has three phases: estimate, design, and construct.
- **Measure R:** A half-cent sales tax in LA County to finance transportation projects. Measure R took effect in 2009. Environmental review, as required by CEQA, is necessary before approval of any Measure R project.
- **Memorandum of Understanding (MOU):** A formal agreement between two or more parties that is not legally binding.
- **National Environmental Protection Act (NEPA):**¹¹ A national law establishing environmental policies. NEPA was signed into law in 1970 and established the White House Council on Environmental Quality (CEQ) to ensure Federal agencies and decision makers meet obligations set out by NEPA.
- **Negative Declaration:** A document produced after initial review of the project implementation plan that state that the project will have no negative environmental impact.
- **Open space:** An area, such as a park, that is valued as a natural resource for recreation and/or other public benefits.

¹¹ CEQA and NEPA are similar however, CEQA is a California law and NEPA is a national law. One key difference is that CEQA requires an agency or organization address project impact avoidance, mitigation and/or offsets through an Environmental Impact Review: NEPA does not require this. For more information, see "NEPA and CEQA: Integrating State and Federal Environmental Reviews" available at: https://ceq.doe.gov/publications/NEPA_CEQA_Draft_Handbook_March_2013.pdf

- **Permeable Pavement:** A sustainable material that allows water to move through it. It can improve storm water capture and enhance water quality.
- **Pylons:** A structure that is used to support infrastructure, for example, in bridge construction.
- **Right of entry:** The legal right to enter an area that is owned by another entity or to take back ownership of an area.
- **Right-of-way:** The legal right to pass through an area that is owned by another entity.
- **Superfund Site:** Areas within the United States that have been identified under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as being contaminated with hazardous substances and pollutants and requiring clean up.
- **Sustainability:** **This Guide uses sustainability to describe sustainable products, which are products that protect public health and the environment over the entire life cycle of the product. Sustainable products provide environmental, social, and economic benefits.**
- **Tributary:** A river or stream that feeds into a larger river or lake.
- **United States Army Corps of Engineers (USACE) Section 408 Permit:** Section 408 authorizes the Secretary of the Army to allow alterations and modifications to USACE properties if those alterations do not negatively impact the public interest or project usefulness. The River is partially maintained by USACE, therefore, any changes to it will likely require a 408 Permit.
- **Use Agreement:** A formal agreement between parties regarding use of and access to a public area.

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