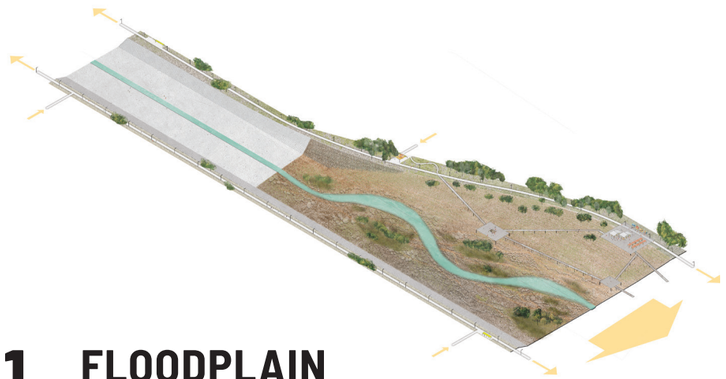
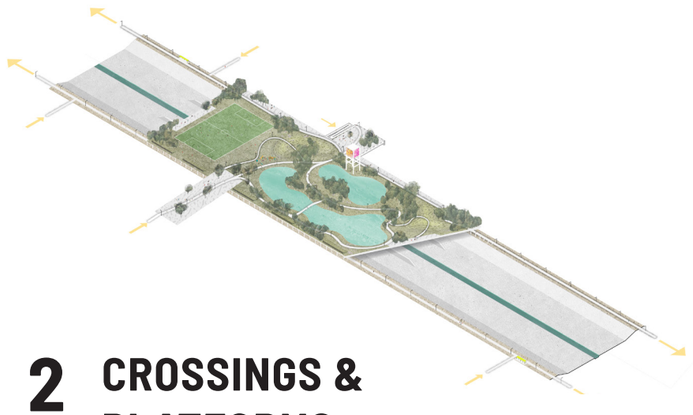
DRAFT

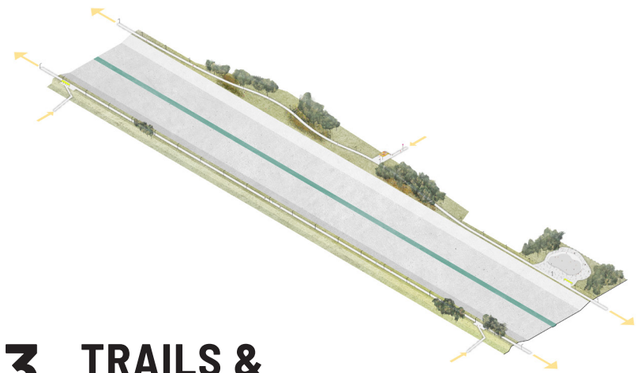
KIT OF PARTS: TRAPEZOIDAL CHANNEL



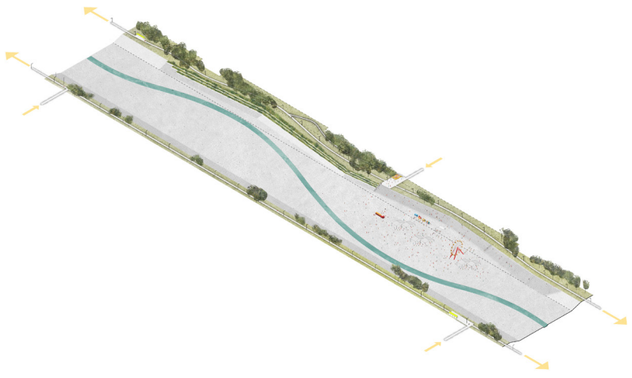
1 FLOODPLAIN RECLAMATION



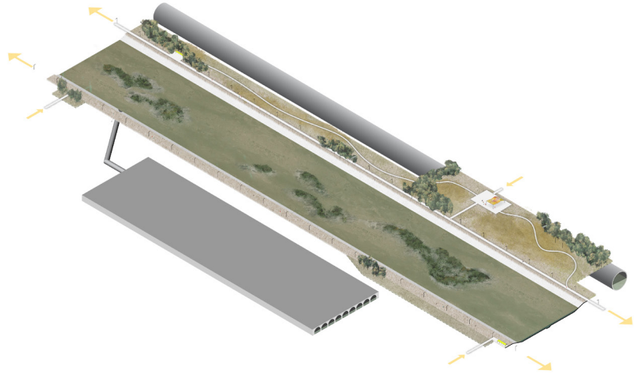
2 CROSSINGS & PLATFORMS



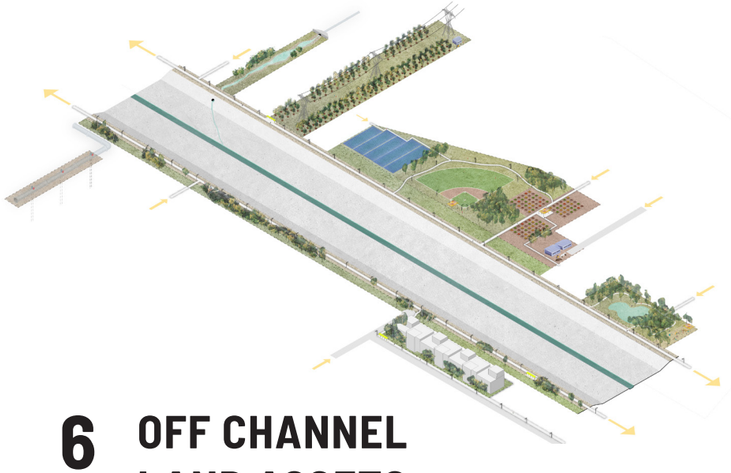
3 TRAILS & ACCESS GATEWAYS



4 CHANNEL MODIFICATIONS



5 DIVERSIONS



6 OFF CHANNEL LAND ASSETS

Source: OLIN, Gehry Partners, Geosyntec

FLOODPLAIN RECLAMATION

Floodplain reclamation is about creating space for the river within its historic floodplain through the strategic and opportunistic buyback of parcels or transitioning adjacent right of ways or public lands into areas that can be flooded.

Background

Historically, the LA River had a vast floodplain and the river would commonly shift its course after major floods. As the area's population grew, these floods increasingly caused damage to life and property, and people The LA River was being altered the river manipulated as early as the mid-19th-century, and likely long before that. Currently In 2019, the historic floodplain of the LA River is almost entirely urbanized.

Benefits

Reclaiming the floodplain will reconnect the hydrologic relationship between the river and its floodplain, which has the potential to reduce flood risk, enhance ecological function, create park space, and improve water quality among other benefits.

Considerations

Foodplain reclamation, if completed at large scales, can contribute to the overall flood risk reduction system, but it should be noted that reclamation of singular parcels or short channel lengths has the potential to increase flood risk in localized areas. Currently, there are a limited number of opportunities along the LA River for floodplain reclamation. Any floodplain modification requires hydraulic analysis to ensure flood risk is not increased.

COMPONENTS

- Wetland
- Naturalized Bank
- Braided Channel
- Field
- Recreation Field
- Storage (Surface: Reservoir, Lake, Pond)

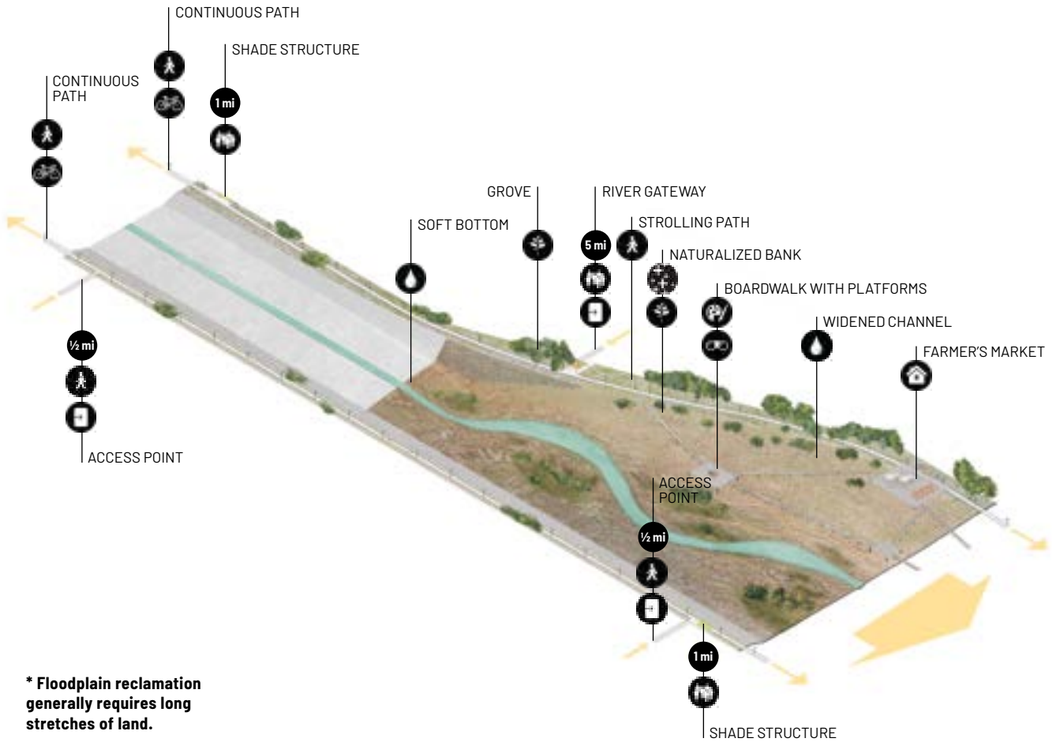


Figure 174. Trapezoidal channel cross section of floodplain reclamation.

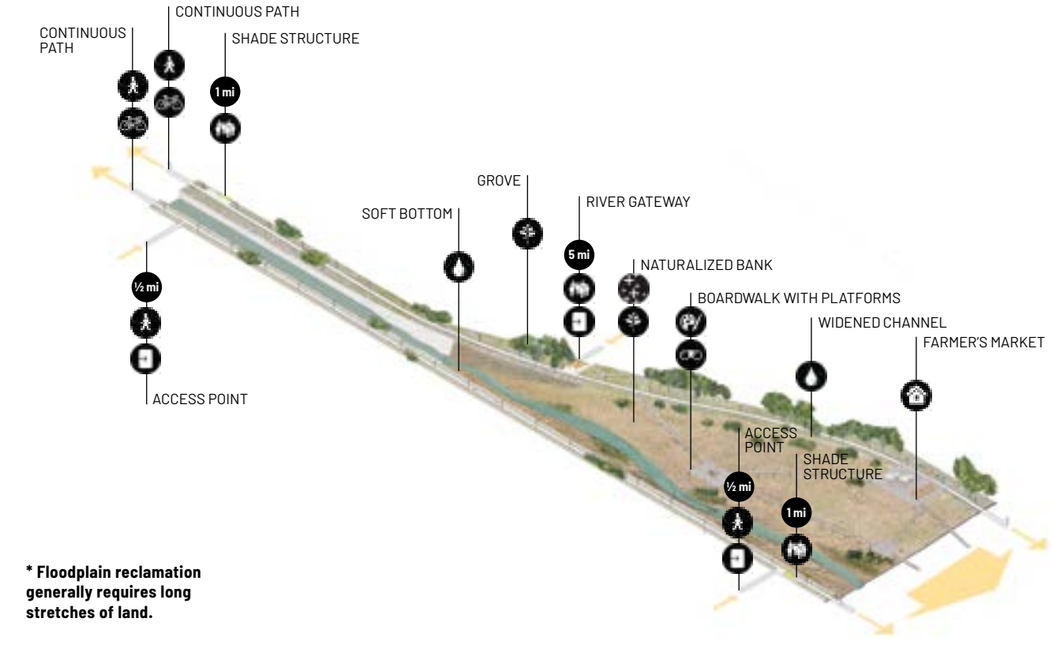


Figure 175. Box channel cross section of floodplain reclamation.

CROSSINGS AND PLATFORMS

Crossings and platforms are land bridges that cross the river channel intended to facilitate movement from one side of the river to the other.

Background

Given its width and length, the LA River channel can separate communities and be an obstacle for connectivity.

Benefits

Crossings can connect existing or proposed communities or assets on one side of the river with existing or proposed communities or assets on the other side of the river. In addition to providing connections, platforms can increase park space in areas with limited or nonexistent landside right-of-way. Platforms can also host a range of habitat typologies, including riparian and upland conditions and allow for wildlife migration.

Considerations

All crossings and platforms must be publicly owned and managed as publicly accessible open space. Private development, housing, and parking are not appropriate uses for platform areas.

COMPONENTS

- Pedestrian Bridge
- Bike Bridge
- Equestrian Bridge
- Multi-use Bridge
- Cantilever
- Platform

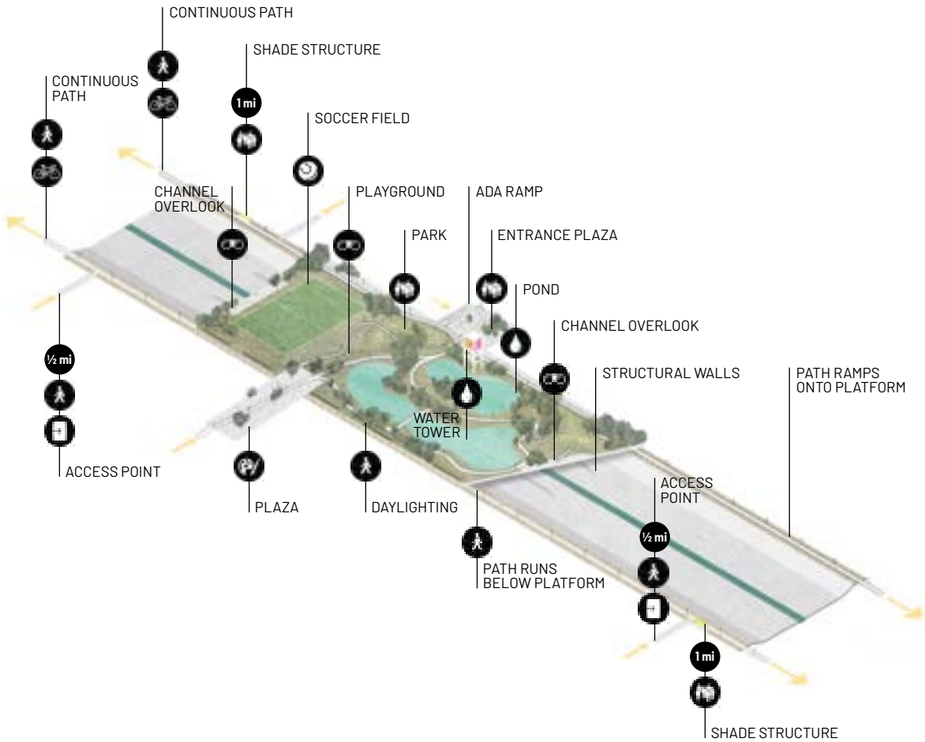


Figure 176. Trapezoidal channel cross section of a crossing and platform.

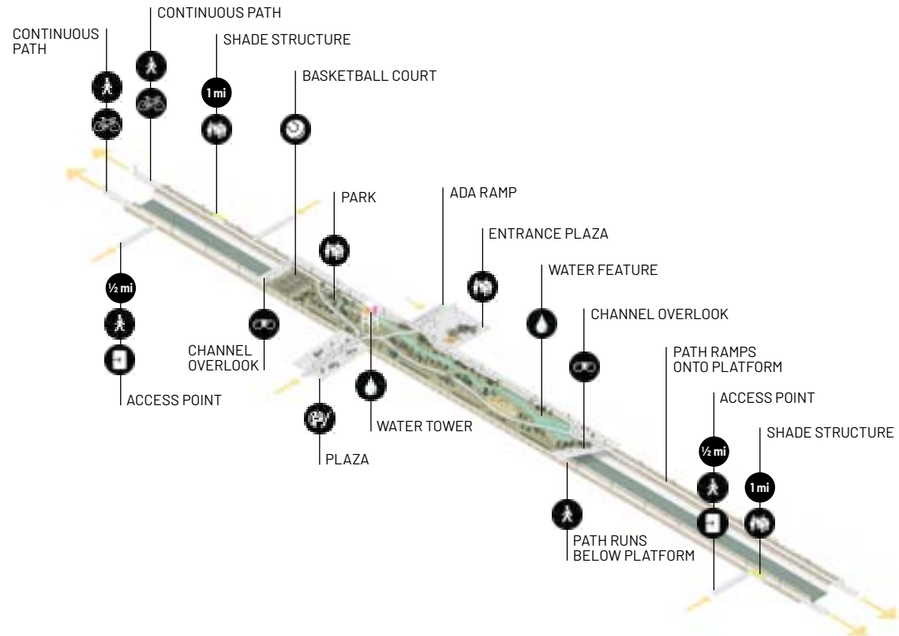


Figure 177. Box channel cross section of a crossing and platform.

TRAILS AND ACCESS GATEWAYS

Trails and access gateways are the most basic condition along the LA River and should include a continuous multi-use trail, easy to find and welcoming access gateways, and a series of amenities for public use.

Background

Today, ease and availability of access to trails along the LA River is highly variable. About 90 access points connect people to trails that serve 30 of the river's 51 miles. Yet, only one-third of these access points have signs and only 70% connect to sidewalks.

Benefits

Improving trails and access points along the LA River corridor is critical for successfully transforming the river into 51 miles of continuous open space that is universally accessible, safe, and comfortable for all. Trails and increased access can improve connectivity between communities along the river, connect people to parks, open space, and other amenities, and improve health outcomes through exercise, exposure to nature, and creating spaces for social gathering.

Considerations

The LA River trail and gateways should be designed to be universally accessible and inclusive for all users according the LA River Master Plan Design Guidelines. In some areas along the river, a limited right-of-way or the presence of adjacent infrastructure or private ownership pose challenges to completing the LA River trail or providing access between the river and adjacent communities.

COMPONENTS

- River Gateway
- Pedestrian Trail
- Bike Trail
- Equestrian Trail
- Equestrian Facility
- Multi-use Trail
- Pavilion
- Common Elements
- Light Tower / Water Tower
- Lookout
- Boardwalk
- Channel Access
- Vehicular Access
- Underpass and Overpass
- Vegetated Buffer
- Habitat Corridor
- Swale, Rain Garden, BMP

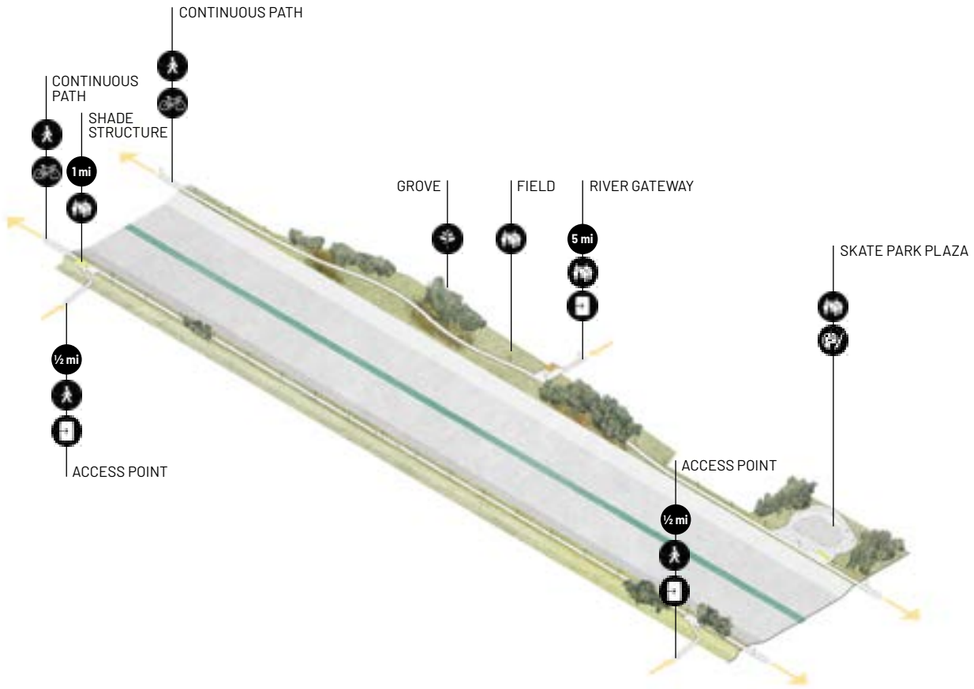


Figure 178. Trapezoidal channel cross section of a trail and gateway system.

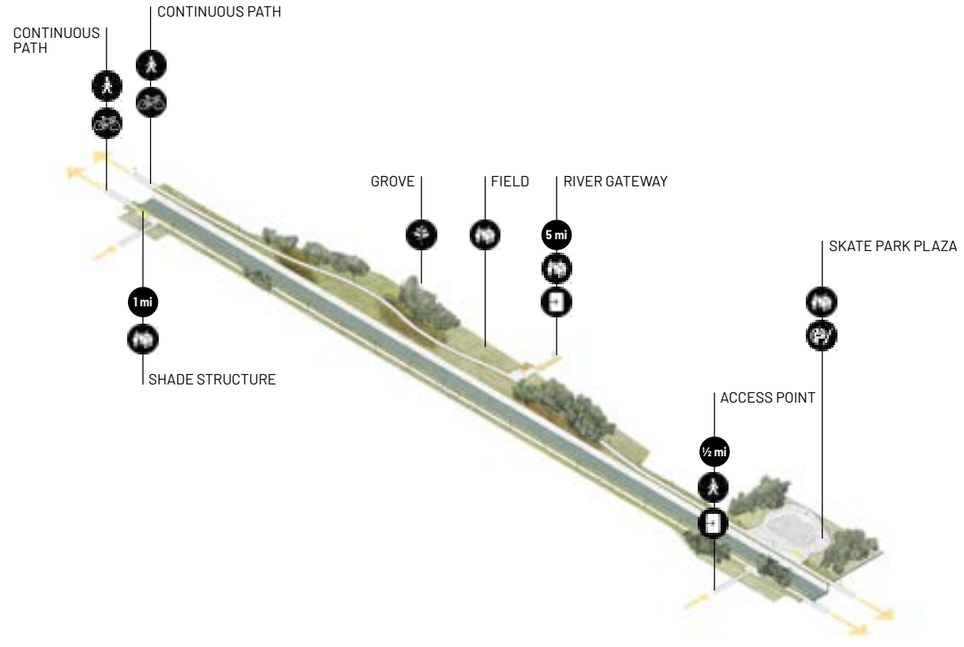


Figure 179. Box channel cross section of a trail and gateway system.

CHANNEL MODIFICATIONS

Channel modifications are adjustments made to the existing concrete channel that may include adding, removing, or changing the form of concrete. Channel modifications may be used to create terraced banks that create stairs, amphitheaters, or small planting trays.

Background

The existing LA River Channel is comprised of 13 different channel configurations which vary in shape, width, and depth. Some sections have a rectangular section with vertical sides, while others segments are trapezoidal with tapered sides. Historically modifications to the channel have primarily been made to increase the capacity of the channel.

Benefits

Depending on the channel modification implemented, the benefits of channel modification might include improved access and safety, making places for people and habitat, and improving channel capacity to reduce flood risk.

Considerations

Any channel modification requires hydraulic analysis to ensure flood risk is not increased.

COMPONENTS

- Terraced Bank
- Check Dam
- Deployable Barrier
- (Dam / Levee)
- Levee
- Armored Channel
- Storm Drain Daylighting
- Vertical Wall
- Reshape Low Flow
- Channel Smoothing
- Texturizing or Grooving
- Concrete Bottom
- Soft Bottom
- Sediment Removal / Vegetation Conversion
- Bridge Pier / Abutment Removal / Modification / Addition
- Access Ramp

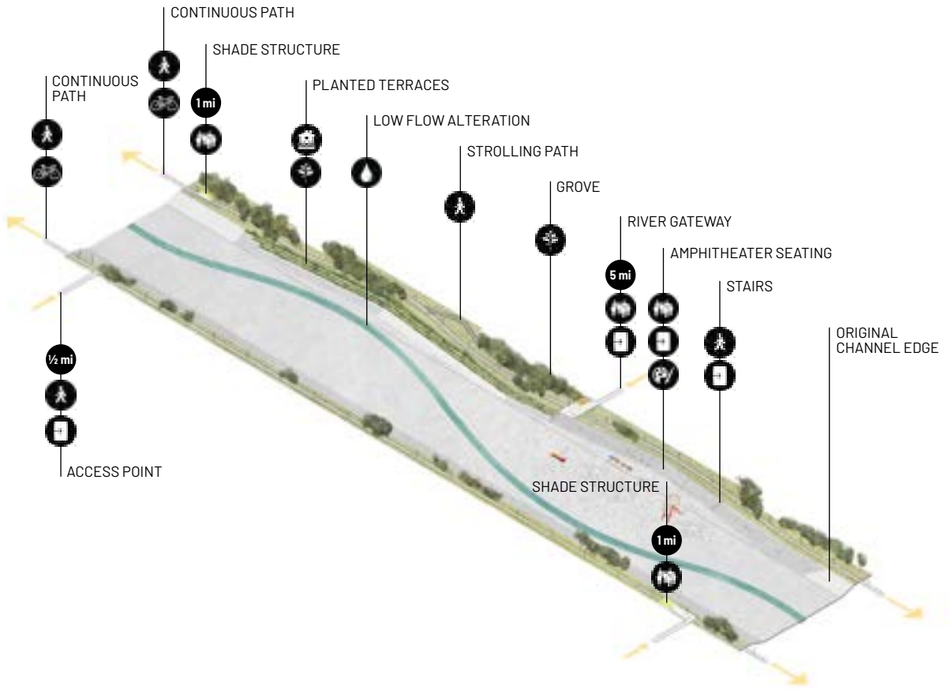


Figure 180. Trapezoidal channel cross section of channel modifications.

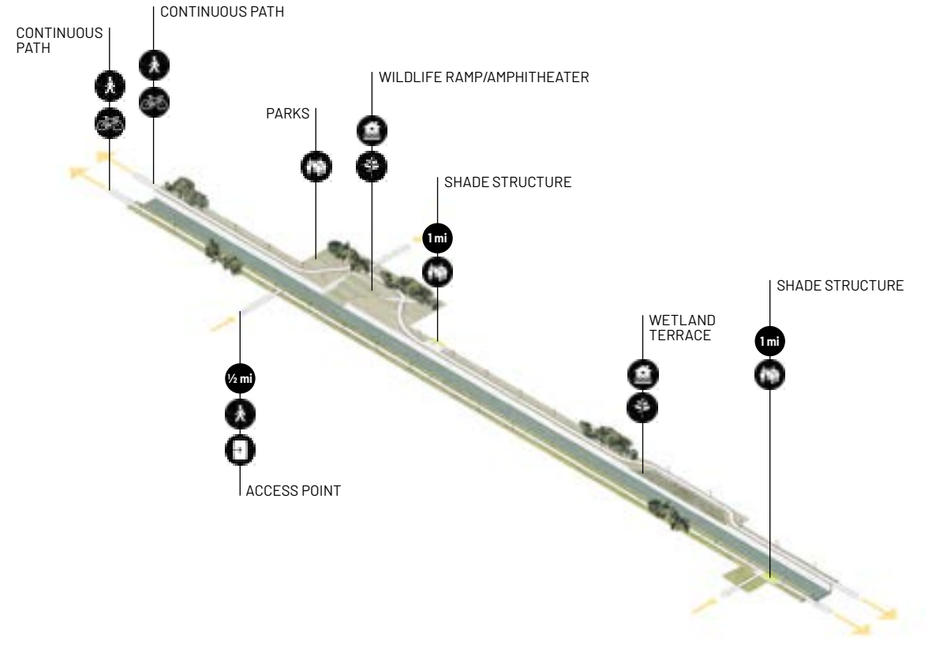


Figure 181. Box channel cross section of channel modifications.

DIVERSIONS

Diversions include elements such as tunnels, pipes, pumps, and weirs that remove wet or dry weather flows from the river to increase overall system capacity during larger storm events.

Background

Historically, water flow in the LA River has varied greatly based on seasonal rainfall and groundwater conditions, and diversions for flooding and irrigation were common. Today, water flows in the LA River are highly engineered with dams, reservoirs, and spreading grounds regulating wet weather events, while dry weather flows consist mostly of treated wastewater discharged from water reclamation plants.

Benefits

In addition to reducing flood risk and benefiting local water supply reliability, diversions can also provide opportunities for treatment and reuse of water for groundwater recharge, habitat features, or recreational opportunities during smaller storm events, or in the dry season when flows are reduced.

Considerations

Any modification to the LA River channel or its water flow requires hydraulic analysis to ensure flood risk is not increased and to consider the impacts of altering the flow rate on other uses of the water.

COMPONENTS

- Pump
- Diversion Pipe
- Diversion Channel
- Diversion Tunnel
- Overflow Weir
- Underground Gallery

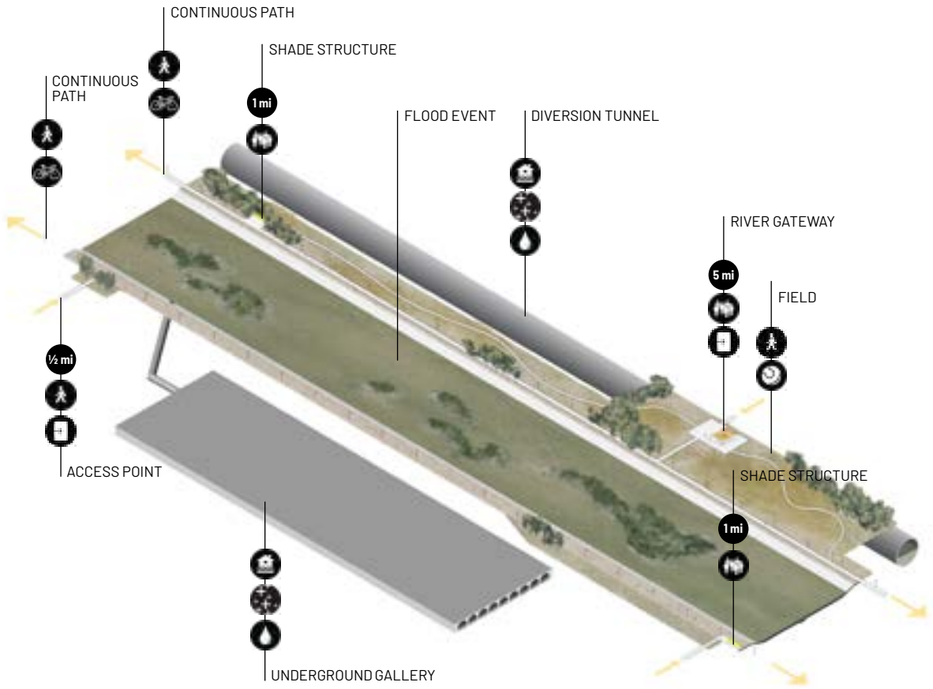


Figure 182. Trapezoidal channel cross section of a diversion system.

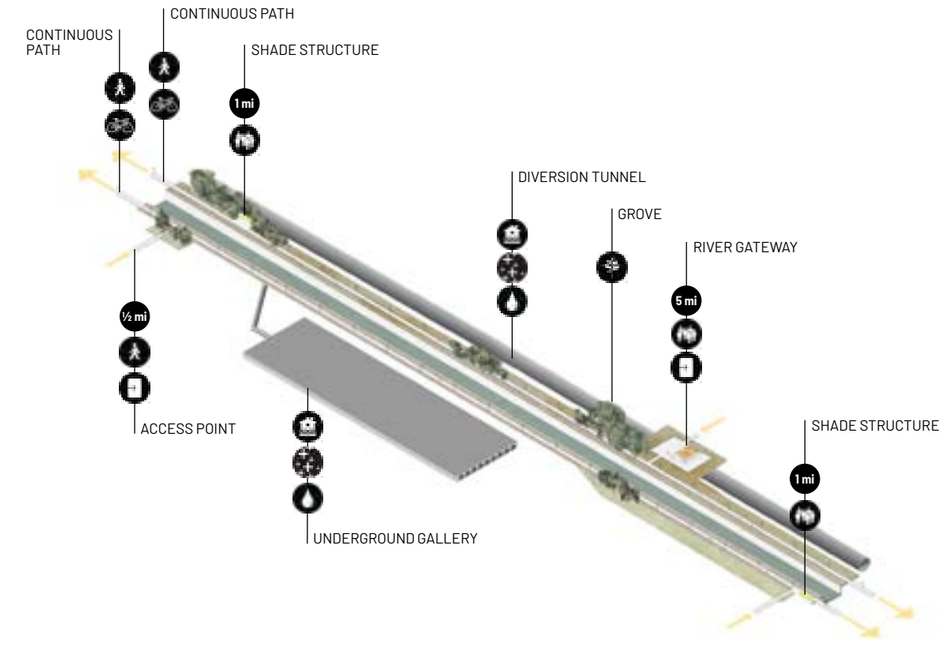


Figure 183. Box channel cross section of a diversion system.

OFF CHANNEL LAND ASSETS

Off channel land assets include vacant or otherwise underutilized land assets outside but adjacent or otherwise connected to the LA River right-of-way that are essential to support the success of the LA River Master Plan.

Background

Given some of the limitations of what can be located within the LA River channel and right-of-way, off channel land assets can be used for projects that are essential to the LA River Master Plan, but that cannot otherwise be located in the channel or adjacent right-of-way.

Benefits

Off channel land assets combined with in channel and right-of-way improvements can further ensure projects are multi-benefit, addressing multiple needs. Affordable housing, cultural centers, plant nurseries, water storage, water treatment facilities, groundwater recharge spreading grounds, injection well fields, and parks are just a few of the types of elements that can exist within this category.

Considerations

While some land assets adjacent to the LA River channel and right-of-way are owned by LA County or other public agencies and are vacant, most parcels are in use or otherwise privately owned.

COMPONENTS

- Urban Agriculture (Orchard, Farm, Nursery, Community Garden)
- Solar Power Generation & Storage
- Composting and Waste Management
- Natural Treatment System
- Wetland
- Recreation Field
- Storage (Surface: Reservoir, Lake, Pond)
- Storage (Subsurface: Reservoir, Cistern, Tank)
- Injection Well
- Mechanical Water Treatment Facility
- Purple Pipe Connection
- Gallery / Dry Well
- Spreading Ground
- Storm Drain Daylighting
- Affordable Housing
- Museum, Gallery, or Other Arts Installation or Institution

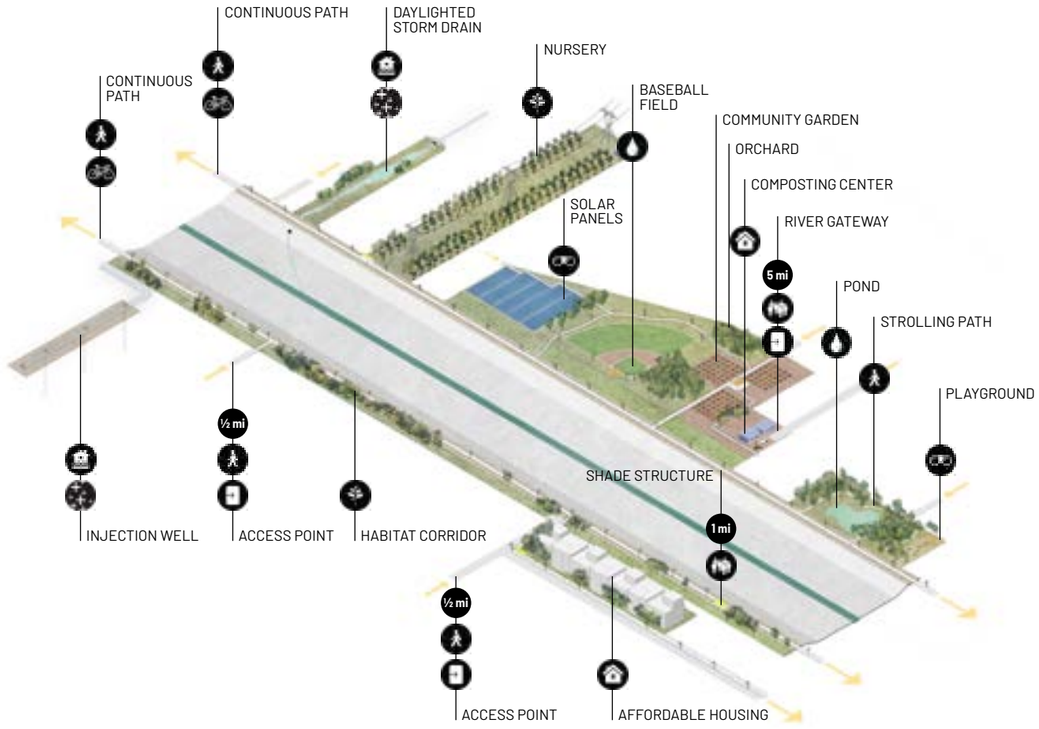


Figure 184. Trapezoidal channel cross section showing how off channel land assets can be used.

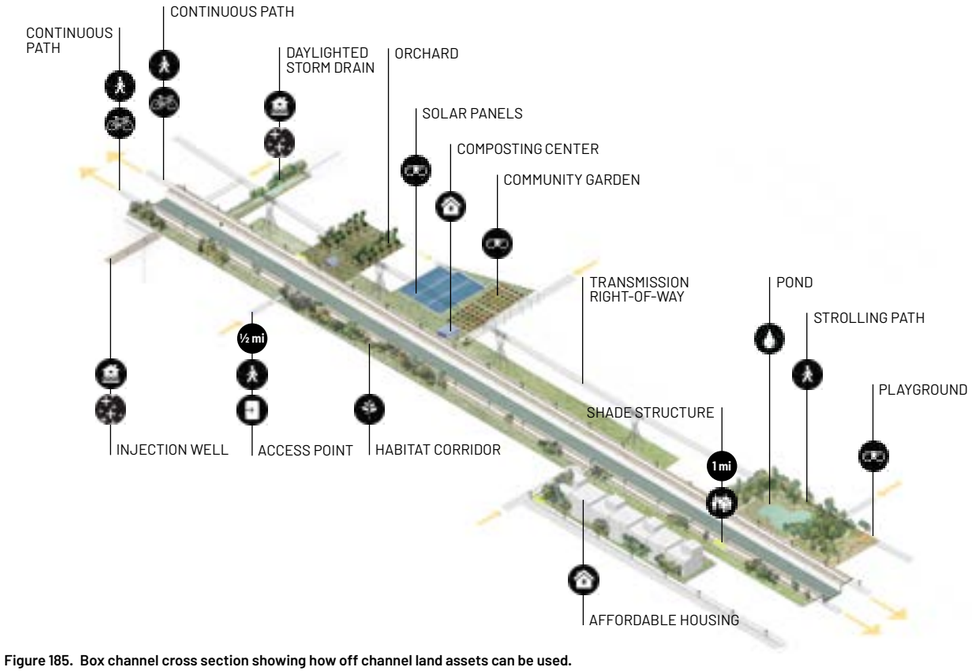


Figure 185. Box channel cross section showing how off channel land assets can be used.