



Green Infrastructure & Stormwater Management CASE STUDY

Los Angeles Zoo Parking Lot

Location: Los Angeles Zoo, Griffith Park, 5333 Zoo Drive, Los Angeles, CA

Client: Los Angeles Zoo

Design Firm(s): CDM, EHDD, Mia Lehrer

Landscape architect/Project contact: Deborah Deets, ASLA

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ASLA Chapter: Southern California



Project Specifications

Project Description: The 134-acre Los Angeles Zoo is located in the northeast corner of Griffith Park. The Zoo Project will renovate the Zoo's existing 33-acre main parking lot in two phases to provide additional infiltration, runoff reduction and pollutant loading control. As part of the Phase I implementation (Completed Dec 2010), improvements include managing and

reusing stormwater runoff through trash capture devices, porous pavement (e.g., Ecocrete porous concrete), and bioswales. During Phase I, planning and design for a range of additional BMPs and improvement alternatives (to be constructed in Phase II) will take place. These Phase II BMPs potentially include: stormwater collection (cistern) system for reuse to help meet irrigation demands at the site, detention pond, and sand filtration system to help potentially treat runoff directed from outside the parking lot area. The site includes the entire existing Zoo parking lot, bordered on three sides by Zoo Drive, and by the Zoo's front entrance plaza to the west.

Project Type:

Other (please specify)

A retrofit of an existing property

Design features: Bioretention facility, bioswale, cistern, porous pavers, and curb cuts.

This project was designed to meet the following specific requirements or mandates:

Local ordinance

Impervious area managed: greater than 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres

The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? Not applicable.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: <\$5,000,000 (Public funding: Regional, local - Proposition O funds)

Related Information:

Cost for Phase 1: \$4,650,096

Estimated overall costs (Phase 1 and 2):

- a) Construction Cost - \$11,129,490
- b) Land Purchase/Right-of-Way acquisition - (none)
- c) Pre-Design and Design (including environmental clearance, design project management) - \$1,743,773
- d) Construction and Post-Construction management - \$1,030,979
- e) Estimated annual O&M - \$55,000 (not part of budgeted costs)

Was a green vs. grey cost analysis performed? No

Cost impact of conserving green/open space to the overall costs of the site

design/development project: By using existing city owned parking lot, this project eliminated land acquisition costs.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Significantly reduced costs (10% or greater savings). Retrofitting existing parking lot eliminated need to acquire land and design/develop traditional infrastructure.

Number of jobs created: Not available

Job hours devoted to project: Not available

Planning and Design: Not available

Construction: Not available

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

The BMPs are designed to reduce the delivery of sediment, oil, grease, nutrients, pesticides, viruses, bacteria, and heavy metals to the nearby Los Angeles River. The City of Los Angeles, Bureau of Sanitation has determined the influent pollutant load to the Zoo parking lot BMPs and then calculated the resulting effluent load. The targeted pollutants are: trash, heavy metals (copper, lead, zinc), total coliform, fecal coliform, fecal enterococcus, oil & grease, and total suspended solids (TSS). The hand calculations were performed according to the phasing of the project. For Phase I, 10 acres of porous pavement and vegetated swales were considered, while Phase II considered 20 acres of runoff being treated by a detention pond and sand filter. In both cases, the calculations assume 15 inches of annual rainfall. See the concept report pp 29-31 for more information.

Community & economic benefits that have resulted from the project: Improved arrival and entrance experience for zoo visitors, better traffic flow, enhancement of cultural property

Additional Information

Links to images: Los Angeles River Watershed Prop O project summary:

<http://www.lapropo.org/sitefiles/lariver.htm>

Final concept report: http://www.lapropo.org/sitefiles/docs/Concept_Reports/LAZoo_CR.pdf

Bureau of Engineering Project Report:

<http://boe.lacity.org/uprs/report/ProjectInfoReport.cfm?k=3998&dmy=74916>