



# Memo

Date: Thursday, Oct. 26, 2017  
To: Metro Contract Review Board/Metro Council  
From: Gabriele Schuster, Metro Procurement Manager  
Heidi Rahn, Zoo Bond Program Director  
Subject: **Elephant Lands Construction Management by General Contractor Outcomes**

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## **PURPOSE & DESIRED OUTCOMES**

- **Purpose:** Acting as the Metro Contract Review Board, the Metro Council will hear the zoo bond program's evaluation report of using Construction Management by General Contractor (CM/GC) for the Elephant Lands project. This is to fulfill the State of Oregon requirement that upon completion of and final payment for any public improvement contract in excess of \$100,000 for which Metro did not use the competitive bidding process, Metro shall prepare and deliver to the local contract review board an evaluation of the public improvement contract. (<http://www.oregonlaws.org/ors/279C.355>)
- **Outcome:** The Metro Council will recognize the positive outcomes realized by using CM/GC for the Elephant Lands project. Metro will fulfill its state reporting requirements for using CM/GC.

## **TOPIC BACKGROUND & FRAMING**

Elephant Lands is the largest project the Oregon Zoo has ever developed and part of the \$125 million bond measure approved by voters in 2008 to enhance animal welfare, conservation education and sustainable infrastructure. The goal was to enhance the health and well-being of the elephants by encouraging activities and offering choices similar to what they would experience in their natural environment.

Metro, which owns the zoo, selected a general contractor through a competitive Request for Proposal process that resulted in a contract with Lease Crutcher Lewis for Construction Management by General Contractor services. The contract provided for preconstruction services and construction services. The CM/GC contract saved the zoo time and money that would not have been realized through a conventional low-bid procurement. The CM/GC worked with the zoo staff and design team from the beginning of schematic design through development of construction documents, providing budget assistance and solutions to unanticipated challenges throughout the process.

The state of Oregon requires that Metro provide an evaluation of CM/GC contracts. The attached report provides a narrative description of successes and challenges during the design, engineering and construction of the project. It also provides an objective assessment of the use of CM/GC contracting process as compared to the traditional low-bid process.

Elephant Lands maintained only five percent total change orders for the entire project due to the CM/GC working with the design team to fill in any gaps in the drawings prior to bid. The project team identified four distinct phases for the project, which allowed individual phases to be designed, permitted and competitively bid out to subcontracting firms early in the design process rather than waiting until the entire design was completed. The early bidding saved substantially on project costs by avoiding a very robust construction cost escalation market currently progressing at 4 percent per year.

Hiring the CM/GC early in the process gave an understanding of the Oregon Zoo's complex event schedule. The CM/GC and zoo team were able to modify certain sequences of work so visitor interactions and other revenue-generating events proceeded without construction interference, which helped the zoo maintain its visitor attraction factor and cash flow.

Keeping the elephants onsite for their health and well being was a mandatory requirement established by the zoo. The most beneficial aspect of phasing that saved money and time on the overall project was allowing the elephants into the first new habitat to test design features prior to the other habitats being constructed.

Using CM/GC on Elephant Lands proved to be good stewardship of the public's investment to make improvements at the Oregon Zoo, and helped to fulfill Metro's promises to voters.

cc: Jim Mitchell, Zoo Bond Construction Manager  
Scott Robinson, Metro Deputy Chief Operating Officer



Metro

**Oregon Zoo Elephant Lands Project  
Post-Construction CM/GC Evaluation  
Construction Management by General Contractor**

Evaluation of public improvement projects more than \$100,000 not contracted by competitive bidding  
(<http://www.oregonlaws.org/ors/279C.355>)

**Date:** September 21, 2017

Presented to the Metro Contract Review Board on Thursday, October 26, 2017

**Project Name:** Elephant Lands (Original project name: New Elephant Habitat Construction)

**Solicitation:** RFP 12-2015

**Project Description:** Provide services in a two-step process: preconstruction phase services and construction phase services to complete the New Elephant Habitat and related subprojects, including (but not limited to) related zoo infrastructure, a new perimeter service road, and rerouting the onsite zoo train.

**Owner:** Metro  
600 NE Grand Ave.  
Portland, OR 97232

**Project Mgr.:** Jim Mitchell, Construction Manager, Oregon Zoo

**Location:** Oregon Zoo  
4001 SW Canyon Road  
Portland, OR 97221

**Contractor:** Lease Crutcher Lewis  
600 SW 10<sup>th</sup> Ave, #310  
Portland, OR 97205

**Metro contract number:** 931085

**Actual project (CM/GC) cost:** \$48,306,866

**Contract start date:** 3-15-2012

**Substantial completion date:** 12-7-2015

**Date of last contract payment to CM/GC or credit to owner:** 8-25-2017

**Original project (CM/GC) estimated cost (from RFP):** \$35,000,000 to \$40,000,000

**Guaranteed Maximum Price:** \$45,801,784

# Oregon Zoo Elephant Lands Post-Construction CM/GC Evaluation

September 21, 2017



<b>Change Orders</b>	\$2,505,082
<b>Total cost</b>	\$48,306,866
<b>Difference between original estimated CM/GC cost and actual CM/GC cost:</b>	\$2,505,082
<b>Percentage of Change Orders against original budget:</b>	5%

## The number of project change orders issued by Metro:

- Number of Early Work Amendments and GMP Amendment: 4
- Change orders correcting contract language (\$0 change to scope of work): 1
- Number of Change Orders after GMP that changed scope of work: 18

## 1. Project Narrative

Elephant Lands is the largest project the Oregon Zoo has ever developed and part of the \$125 million bond measure approved by voters in 2008 to enhance animal welfare, conservation education and sustainable infrastructure. The goal was to enhance the health and well-being of the elephants by encouraging activities and offering choices similar to what they would experience in their natural environment.

The project design and construction team were challenged with keeping the elephants on site while building a new habitat and building in and around their existing habitat. The Oregon Zoo is open 364 days a year and serves more than 1.5 million visitors each year. Elephant Lands and associated projects construction activity covered approximately 35 percent of zoo grounds and had a duration of approximately three years.

Due to the unique nature of the construction, a large number of the components within the site and building were first constructed as mock-ups. Standard mock-ups included exterior wall systems, metal panels, and windows, while more elaborate systems included elephant drinkers (units that automatically provide constant drinking water for elephants), elephant feeder enclosures, pool shotcrete texture and sliding gate systems. The use of the temporary habitat allowed the keepers, designers and construction team to observe the animals using their habitat and make adjustments to the new areas of the habitat that were not yet under construction.

In order to ensure the greatest coordination and highest quality for such a large project, the team utilized Building Information Modeling (BIM) extensively for coordination of design and to inform ongoing design decisions. Lease Crutcher Lewis oversaw the development of the detailed 3D models, in close coordination with the design consultants. The design details were finalized in advance of procurement and construction, giving the Zoo and design team ample time to work through design considerations.

As part of the Elephant Lands project, the design and construction team were challenged with several projects and discoveries, including:

- Maintaining space for the elephants during construction



- Managing flow and experience for 4.5 million visitors during a three-year construction project
- Restoration and relocation of a 50-foot tall, 42-inch diameter totem pole
- Restoration and relocation of a 15-foot tall totem pole
- Salvage and transport for storage of a 50-foot-long by 16-foot-tall mosaic tile structure created in 1960 by Willard Martin
- Construction of a temporary large-group picnic area
- Managing numerous underground abandoned utilities and concrete exhibit moats
- Discovery and archeological recovery of human remains from a poor farm located at the site in the early 1900s.

**2. Procurement**

The Elephant Lands project General Contractor was selected through a competitive Request for Proposal process where applicants were evaluated on the following:

<u>Proposal Content</u>	<u>Percentage of Total Score</u>
<b>Project Work Plan/Approach, Section IV and VII.D</b>	<b>30%</b>
1. Demonstration of understanding of the project objectives	
2. Performance work plan and collaborative team approach	
<b>Project Staffing Experience, Section IV and VII.C</b>	<b>30%</b>
1. Staffing/Personnel assigned to project	
2. Experience with similar projects (scope and budget)	
<b>Cost/Budget, Section VII.E</b>	<b>20%</b>
1. Plan to manage costs within budget	
2. Fee for preconstruction services	
3. Hourly rates, fees and other expenses	
<b>Diversity, Section VII.F</b>	<b>10%</b>
1. Workforce Diversity	
2. Diversity in Contracting	
3. Diversity of Firm	
<b>Sustainable Business Practices, Section VII.G</b>	<b>10%</b>
1. Environmental Impact	
2. Support of local business and markets	
3. Employee compensation structure	
<b>Total</b>	<b>100%</b>

Ten well-qualified construction firms submitted proposals to manage construction of Elephant Lands. The proposals were evaluated by an evaluation committee that consisted of five zoo staff members and three external stakeholders. Nine of the proposing firms were local. The evaluation committee

completed the scoring phase and selected the top three firms for in-person interviews. The interviews were scored, and Lease Crutcher Lewis was selected to manage construction of Elephant Lands.

The contractor worked with the zoo staff and design team from the beginning of schematic design through development of construction documents. They provided budget assistance and solutions to unanticipated challenges throughout the process.

Upon completion of construction documents, the project was publicly advertised and subcontractors were invited to bid on the project. The contract Metro uses for CM/GC requires a minimum of three subcontractor bids on all bid packages. Prior to publishing the invitation to bid, the General Contractor performed extensive outreach to Minority, Women and Emerging Small Business (MWESB) firms.

The General Contractor mentored numerous minority and women individuals through apprenticeship and office intern programs. One minority subcontractor, R&R General Contractors, was mentored through the RFP response and interview process for Elephant Lands. R&R was subsequently selected to construct the zoo's temporary picnic area valued at approximately \$500,000, and through the bid process, R&R was awarded the train track relocation scope of work valued at \$1.2 million. Mentoring R&R proved to be successful in that they have responded to and have been awarded projects from other agencies through the RFP process on their own accord.

Elephant Lands succeeded in distributing more than \$4.5 million to the MWESB community and employed more than 600 trades people from the Portland, Oregon area. This represents an MWESB utilization rate of 9.7 percent of the eligible contract dollars (some specialized scopes of work that are not provided by MWESB firms were not included in the calculation).

The Oregon Zoo has used the CM/GC method of alternative procurement for three projects as part of the \$125 million Zoo Bond Program.

### 3. Cost Savings and Value Engineering

Prior to the Elephant Lands CM/GC being selected, the project's overall footprint was approximately eight acres, and the main building square footage exceeded 40,000 sq. ft. The CM/GC hired for the project analyzed the schematic design, site constraints, and budget, and concluded that the project as designed and the budget were not in alignment.

The team started a value engineering exercise to right-size the project to the budget by reducing the main building's square footage to 32,000 sq. ft. and reducing the site footprint to just over six acres. This process prevented a lot of unnecessary design time by redirecting the project to an affordable design early in the process. Had this procurement been a standard design/bid/build, the costs at bid would have exceeded the established budget. In that case, the project would have incurred a lengthy redesign delay and additional costs related to design and construction escalation. During the value-engineering exercises, the animals' needs were always the first priority. The design and construction team worked with the zoo to instead target other areas of the project for cost reductions.

**Elephant Lands maintained only five percent total change orders for the entire project due to the CM/GC working with the design team to fill in any gaps in the drawings prior to bid.**

#### 4. Construction Phasing

The project team identified four distinct phases for the project, which allowed individual phases to be designed, permitted and competitively bid out to subcontracting firms early in the design process rather than waiting until the entire design was completed. **The early bidding saved substantially on project costs by avoiding a very robust construction cost escalation market currently progressing at 4 percent per year.**

The phasing also decreased the construction schedule duration by completing two early phases prior to the main habitat and building construction that started in the third phase. The project had a total of four phases. The early phasing allowed the construction of a new service road that enabled contractor teams to access the area without navigating trucks and construction equipment through congested visitor areas.

Hiring the CM/GC early in the process gave an understanding of the Oregon Zoo's complex event schedule. **The CM/GC and zoo team were able to modify certain sequences of work so visitor interactions and other revenue-generating events proceeded without construction interference, which helped the zoo maintain its visitor attraction factor and cash flow.** Some examples of integrating the schedule with zoo activities include keeping the train in operation through the holiday ZooLights celebration and adjusting work around the concert lawn to maximize concert visitors during construction.

Keeping the elephants onsite for their health and well being was a mandatory requirement established by the zoo. **The most beneficial aspect of phasing that saved money and time on the overall project was allowing the elephants into the first new habitat to test design features prior to the other habitats being constructed.** The team monitored animal behavior and refined the drinker design twice to better function to the animals needs, and discovered that the structural design on one of the habitat shelters required changes to the calculations from a 7,000-pound force at a height of 7.5 feet to a 10,000-pound force at a height of 10 feet. The structural design changes occurred prior to material being ordered and the additional structures being erected.

#### 5. Competitive Bidding and Funding Source

The primary funding source for the Elephant Lands project is from general obligation bonds approved by voters as part of the Oregon Zoo's bond measure in 2008. The Oregon Zoo Foundation also contributed \$3.2 million to the project. The CM/GC alternative method of procurement has had no effect on the funding sources.

**This report is also be available on the Metro website:**

[oregonmetro.gov/how-metro-works/contract-opportunities/doing-business-metro](http://oregonmetro.gov/how-metro-works/contract-opportunities/doing-business-metro)

**For more information, please contact:**

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