

# SITE REPORT

## OZ ARCHITECTURE®

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<b>Project:</b>	GURA Garage & Gateway	<b>Project #:</b>	15038.00
<b>Date of Visit:</b>	10 January, 2007	<b>Date of Issue:</b>	January 15, 2007
<b>Location:</b>	Clear Creek Square Parking Structure	<b>File #:</b>	
<b>Reported By:</b>	Len Orme, Architect	<b>Weather/Temp:</b>	Clear, Dark, & Cold 22 Degrees F
<b>Present at Site:</b>	John Rossini, ACR Engineering	<b>CC:</b>	The Neenan Company NexCore Group

### LIGHTING STUDY ON TOP DECK OF CLEAR CREEK SQUARE MUNICIPAL PARKING STRUCTURE

Conducted by Len Orme of OZ Architecture and John Rossini of ACR Engineering

**PURPOSE:** The purpose of the study is to understand the current lighting level at the Clear Creek parking structure and to provide a known benchmark of data that will assist the Golden Urban Renewal Authority (GURA) Board of Directors to evaluate the proposed lighting design for the GURA parking garage associated with the Gateway Mixed Use Project. (aka Washington Square Mixed Use)

**DEFINITION: FOOTCANDLE:** The unit of measure for the density of light as it reaches a surface. One footcandle is equal to one lumen per square foot. Measured footcandles are sensitive to the distance from the source to the surface of measure (inverse square law) and the angle at which the light reaches the surface (cosine law).

[www.energy.state.or.us/bus/light/glossary.htm](http://www.energy.state.or.us/bus/light/glossary.htm) - Definition in context

**PROCESS/PROCEDURE:** A light meter capable of sensing from one to one hundred footcandles of light was held directly under all of the freestanding high pressure sodium light fixtures mounted on poles at approximately 18' above the deck. The readings directly under the fixtures ranged from 11 footcandles to 17.5 footcandles depending upon the age of the bulb. The fixtures are mounted directly at the perimeter of the structure as well as in the middle.

The perimeter fixtures have no real effect on the meter when measured at ground level on the sidewalk. However their light source is highly visible from sidewalk and street level. The meter read from zero to one footcandle at the sidewalk. The distance (per the above definition) is too far from the source to the ground to receive a measurable reading.

As expected, the readings taken further away from a source diminish rapidly. At a distance of 54' horizontally, the reading for a fixture with a new bulb ranges from 17.5 at the base to zero (0.0) at a point 54' away.

**AVERAGE LEVEL OF LIGHT:** 3.91 Footcandles at the top deck in full darkness.

## CONCLUSION & COMPARISON TO GURA GARAGE:

The GURA Garage top deck design is different than Clear Creek because all of the fixtures for GURA are located at the center one-third of the deck. The GURA fixture output is 8.3 footcandles, less intense than Clear Creek's 11.5 to 17 footcandles. The average at half of the GURA deck will be more uniform at about 4.0 footcandles and will diminish rapidly at the last 25% at the perimeter to about 1.8 footcandle; this design minimizes spillage onto the ground. From the same point on the near sidewalk at ground level, no GURA Garage roof top pole mounted fixtures will be visible. This gives the illusion of a dark parapet and much less ambient light at the street levels and adjacent windows of the Gateway project.

Both projects employ the same "box fixture" which concentrates all illumination in a finite "cut-off" pattern, downward to prevent glare in the horizontal plane.

According to John Rossini there have been no complaints regarding the top deck fixtures of Clear Creek Square Municipal Parking Structure. We do not foresee any complaints with GURA since its overall intensity is less and the design restricts the majority of light to the deck only and not into the street below.