

March 30, 2021

Mr. Joesph Karaki  
Karaki WS  
4887 E. Las Palmas Ave., Ste 707  
Anaheim, CA 92807

**Subject: Gas Station & Convenience Store – Lighting Study, County of Riverside, CA  
Updated 3/30/2021**

Dear Mr. Karaki:

MD Acoustics, LLC (MD) has completed a lighting survey for the proposed Gas Station & Convenience Store Project located at 28771 Central Avenue (Hwy 74) in an unincorporated area of the County of Riverside within the Sphere of Influence of the City of Lake Elsinore, California. The Project proposes to develop the approximately 1.44-acre project site with a 3,516 square foot convenience market with 12 pump gas station. This letter report evaluates the existing light levels (foot-candles) to the preliminary lighting plan (prepared by LSI, 1/13/2021) and to the County's lighting general development standards (Title 8, Chapter 8.80). Appendix A contains lighting definitions.

**1.0 Assessment Overview**

MD conducted a site visit on 1/7/21 to evaluate the existing light conditions at the project site. MD utilized a LX1330B digital illuminance/light meter that can measure from 0 to 200,000 lux (0 to 18,580 foot-candles). The existing light conditions are compared to the preliminary photometric lighting plan as well as the requirements outlined by the County's Outdoor lighting code, Chapter 8.80.

Per the City of Lake Elsinore North Central Sphere Specific Plan Land Use Plan the site has a current land use classification of Business Professional. Land uses surrounding the site include vacant land to the west, a single-family residential use to and commercial uses to the north, multi-family residential uses to the south (across Highway 74), and single-family residential uses to the east (across Highway 74)

**2.0 County of Riverside Lighting Requirements**

Chapter 8.80 Outdoor Lighting outlines the following as it relates to minimum lighting requirements:

**8.80.050 - Standard.**

All outdoor luminaries in shall be located, adequately shielded, and directed such that no direct light falls outside the parcel of origin, or onto the public right-of-way. Outdoor luminaries shall not blink, flash or rotate.

**8.80.060 – Exemptions.**

The following outdoor luminaries shall be exempt from the provisions of this chapter when properly installed and in compliance with all county ordinances.

- A. Luminaries used or otherwise required by law enforcement or other emergency personnel.

- B. Luminaries used to illuminate publicly-owned property, including but not limited to, parks, recreation areas, schools, street, street signs and sidewalks.
- C. Luminaries used to illuminate authorized public and private monuments.
- D. Luminaries authorized by a provision of state or federal law as long as that lighting conforms to the requirements of the state or federal law.
- E. Luminaries used for holiday decorations.
- F. Luminaries producing light directly by the combustion of fossil fuels (such as kerosene lanterns, and gas lamps).
- G. Neon luminaries.
- H. Luminaries used to illuminate agricultural activities, operations or facilities as defined in Section 5 of Riverside County Ordinance No. 625.

**B. Security Lighting.** Security lighting triggered by motion or noise shall be allowed subject to all the provisions this chapter.

Therefore, the project at minimum must provide sufficient lighting to suffice the exterior requirement while providing adequate shielding still.

### **3.0 Evaluation and Findings**

Some land uses are considered more sensitive to light than others, such as hotels, residential neighborhoods, and nursing homes. Although light may be observed by humans at 0.1 foot-candles, it would not make a substantial difference, especially if lighting is already present within the area of introduction. For example, approximately 37.1 foot-candles would be generally acceptable for a reading area.

Thus, a significant impact would occur if sensitive land uses (such as residences) were exposed to a substantial increase in sources of light, if that level of light was not previously present. Similarly, mobile source lighting impacts would be significant if residential or other light sensitive uses are introduced to new light sources along roadways and driveways.

MD measured the lighting levels in foot-candles (in 50-foot increments) along the perimeter of the project site (see Exhibit A) which takes into account the light from vehicles along Highway 74 (Central Avenue) and existing street lights. The existing light levels measured between 0 to 0.9 foot-candles.

The project will utilize nighttime lighting for operational and security purposes (per the County's ordinance). The preliminary lighting plan (Exhibit B) shows that the project's lighting levels at the perimeter will range between 0 to 4.5 foot-candles at the project site's property line. By the time the light reaches into Central Avenue the foot-candle drops down to 0.2.

At the west boundary of the project site there is an area towards the north of the western property line where the level is 4.2 foot-candles. The level quickly drops to 0.2 foot-candles within 50-feet of the property line. Currently the land to the west is vacant and is zoned rural community (Estate Density Residential).

The nearest residences are located 250 feet to the project site's southern property line (across the street from Central Avenue). The foot-candle readings at the nearest residences would be 0.

The greatest potential lighting change will be along the west boundary towards the north and the southeastern perimeter where a 4.2 and 2.5 to 3 foot-candle increase will occur, respectively. Furthermore, the photometric design has been laid out to comply with the County's exterior light ordinance.

Glare would be kept to a minimum as the proposed project setback from Highway 74 and building materials (painted stucco or stone veneer) would not contribute to substantial amounts of daytime glare as the majority of the building front faces in a southern direction with the gas canopy blocking the line of sight to the setting sun.

### **3.0 Conclusions**

MD is pleased to provide this evaluation. If you have any questions regarding this analysis, please don't hesitate to call us at (805) 426-4477.

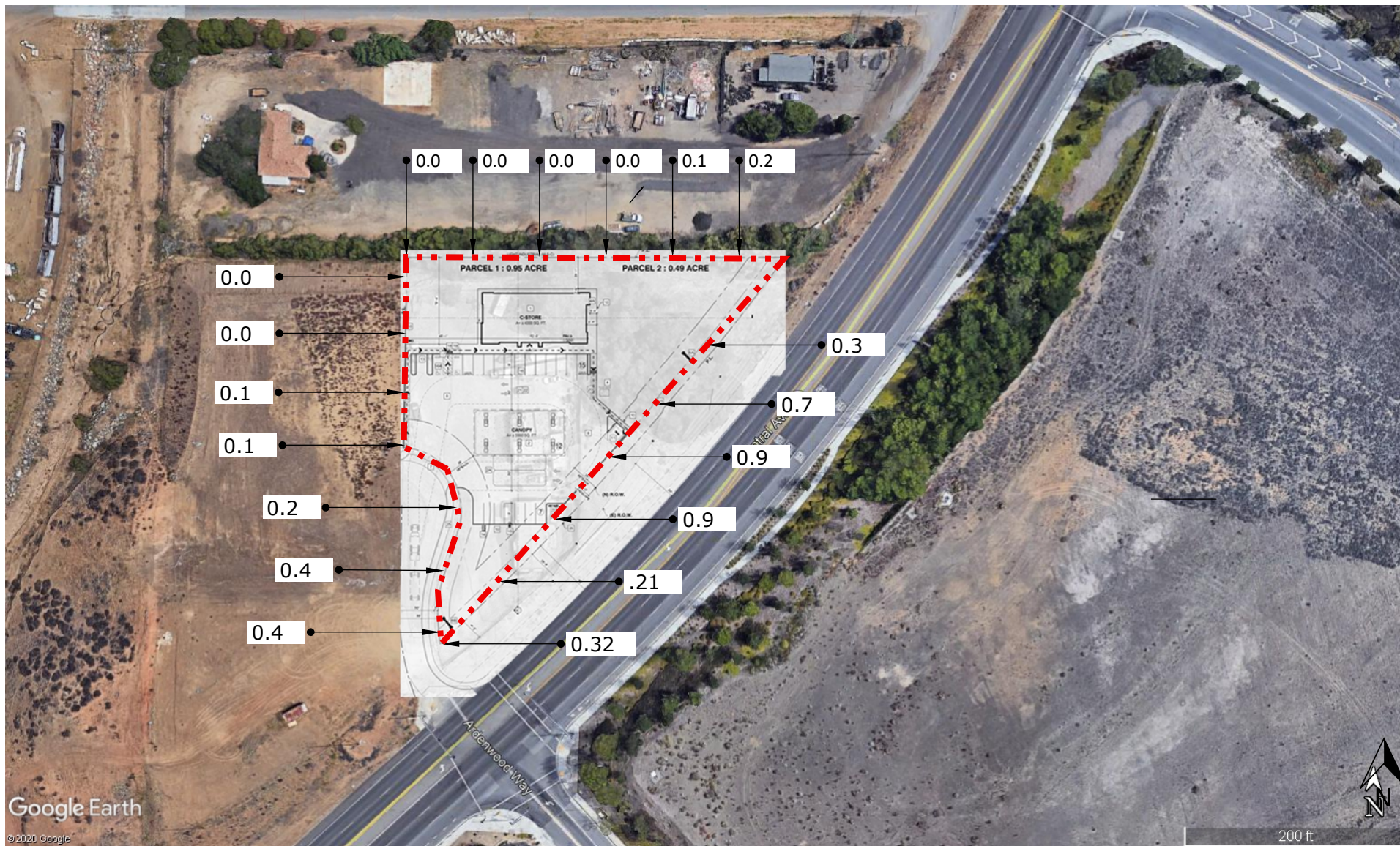
Sincerely,  
MD Acoustics, LLC

A handwritten signature in black ink that reads "Mike Dickerson". The signature is written in a cursive, slightly slanted style.

Mike Dickerson, INCE  
Principal

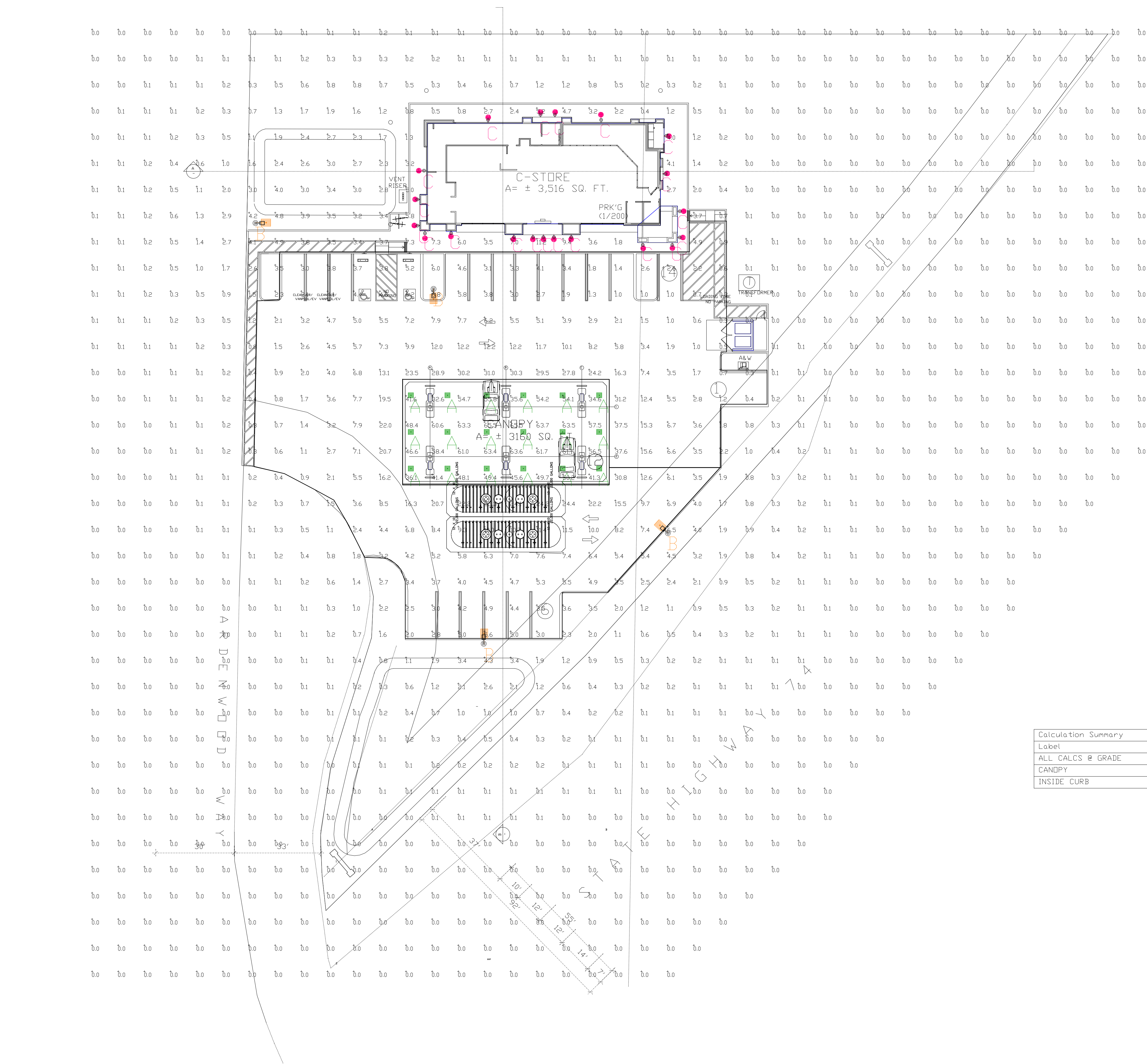


# Exhibit A



**EXISTING LIGHTING LEVELS - GAS STATION & CONVENIENCE STORE**  
**28771 CENTRAL AVE. (74 HWY) LAKE ELSINORE, CA 92532**  
 (MEASUREMENT UNITS = FOOT CANDLE)  
 FOR ILLUSTRATIVE PURPOSES ONLY







Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ALL CALCS @ GRADE	Illuminance	Fc	2.73	65.5	0.0	N.A.	N.A.
CANOPY	Illuminance	Fc	52.67	65.5	32.6	1.62	2.01
INSIDE CURB	Illuminance	Fc	7.65	37.6	0.3	25.50	125.33

Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine the applicability of the layout to existing or future field conditions.

This lighting plan represents illumination levels calculated from laboratory data taken under controlled conditions in accordance with The Illuminating Engineering Society (IES) approved methods. Actual performance of any manufacturer's luminaires may vary due to changes in electrical voltage, tolerance in lamps/LED's and other variable field conditions. Calculations do not include obstructions such as buildings, curbs, landscaping, or any other architectural elements unless noted. Fixture nomenclature noted does not include mounting hardware or poles. This drawing is for photometric evaluation purposes only and should not be used as a construction document or as a final document for ordering product.

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	LLD	UDF	LLF	Arr. Lum. Lumens	Arr. Watts
	18	A	SINGLE	SCV-LED-15L-SC-50-15' MH	1.000	1.000	1.000	14963	102
	4	B	SINGLE	SLM-LED-18L-SIL-FT-50-70CRI-SINGLE-20' POLE+2' BASE	1.000	1.000	1.000	19664	148.5
	20	C	SINGLE	AD-15L-40-GWT-12' MH	1.000	1.000	1.000	1388	10.9

Total Project Watts: 1  
Total Watts = 2647.998



76 STATION  
28771 CENTRAL AVE  
LAKE ELSINORE, CA

LIGHTING PROPOSAL  
LD-153095

BY:AHK  
DATE:1/13/21  
SCALE: 1"=20'

REV:  
SHEET 1  
OF 1  
20

**Appendix A**  
Glossary of Lighting Terms

## **Glossary of Terms**

**Foot-Candle** is a unit of illumination (now little used) equal to that given by a source of one candela at a distance of one foot (equivalent to one lumen per square foot or 10.764 lux).

**Lumen** is a measure of the total amount of visible light (to the human eye) from a lamp or light source. The higher the lumen rating the “brighter: the lamp will appear (Integral LED, 2015). This light, as low as 0.1 lumens is visible to the human eye, and the average household lightbulb (60 watts) emits approximately 800 lumens (at the source).

**Lux** is the SI unit of illuminance, equal to one lumen per square meter.