

Appendix F

Lighting Study



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The Bloc Sign Supplemental Use District Lighting Study

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The Bloc Sign Supplemental Use District Lighting Study

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1. INTRODUCTION

This lighting study of The Bloc Sign Supplemental Use District (SUD) Lighting Study (Study) is prepared by Francis Krahe & Associates Inc. to analyze the potential lighting impacts to adjacent sensitive use properties from illuminated signs that would be authorized by the proposed SUD at The Bloc Development. NREA-TRC 700, LLC (Applicant), proposes to construct 466 residential units within a new high-rise tower and signs authorized by the proposed The Bloc Sign Supplemental Use District (case number CPC-2018-6388-SN) (Project) located within a 186,674-square-foot (4.285-acre) site known as The Bloc located at 700 South Flower Street, 700 West 7th Street, and 711 and 775 South Hope Street (Project Site) in the Central City Community Plan (Community Plan) area of the City of Los Angeles (City). The Project Site comprises an entire City block, bounded by Flower Street and Hope Street on the east-west axis and 7th Street and 8th Street on the north-south axis, that is currently developed with hotel and commercial uses and associated parking, signage and a portal to the 7th Street/Metro Central rail station. The existing commercial uses consist of office, theater, retail, restaurant/bar, gym/fitness and medical office uses.

The Project proposes the development of 466 residential units in a new tower within and above the existing podium building located in the southern half of the Project Site (Residential Development Area). The Project Site's existing hotel and commercial uses would be retained, with the exception of approximately 24,342 square feet of existing commercial (theater and retail) uses that would be changed to residential uses (including a new residential lobby). The residential uses would comprise a total of approximately 495,016 square feet of floor area, consisting of the conversion of approximately 24,342 square feet of existing commercial uses within the podium building and the net increase of 470,674 square feet in the new 53-story tower. From the ground level, the new tower will extend through, and 41 stories above, the 12-story podium. The two existing basement levels below the podium building would be retained. Upon completion of the Project, the Project Site would include a total of 1,894,988 square feet of floor area with a floor area ratio (FAR) of 10.15:1. The Project Site would include a total of 1,948 vehicular parking spaces located within eight above ground parking levels and one basement parking level. The Project would also add 214 bicycle parking spaces (192 long-term and 22 short-term).

The Project's proposed SUD would authorize the replacement of certain existing signs and the addition of new signs on existing and proposed development within the Project Site as identified in detail in the Conceptual Sign Plan for the The Bloc Sign Supplemental Use District (the Conceptual Sign Plan, attached herein as Appendix A).

This Study reviews the parameters that affect light trespass and glare (each as defined below), reviews the applicable lighting metrics and regulations pertaining to artificial lighting, examines the existing lighting conditions within and surrounding the Project Site, and evaluates the illuminated signs within the Conceptual Sign Plan to identify the Project's potential lighting environmental impacts.

The methods of analysis utilized for this Study are based upon the recommended practices established by the Illuminating Engineering Society of North America (IESNA) for the practice of illumination engineering design and application, and the actual measurements of light sources and illuminated surfaces. IESNA reference publications include: American National Standards Institute (ANSI)/Illuminating Engineering Society (IES) OL-IM-01 Lighting Fundamentals, Metrics

and Calculations; ANSI/IES OL-IM-02 Lighting Design, Engineering, and Specifications; ANSI/IES OL-IM-03 Lighting Design Criteria and Illumination Recommendations; and ANSI/IES OL-IM-04 Lighting Equipment Testing Procedures and Measurements. The ANSI/IES Standards replace the IESNA 10th Edition Handbook, which superseded the 9th Edition IESNA Handbook and various Recommended Practice (RP) References published by IESNA prior to 2011.

2. SUMMARY OF LIGHT TRESPASS AND GLARE

This Study evaluates potential environmental impacts from the Project's new illuminated signs and digital kiosks that would be authorized by the proposed SUD, and are identified within the Conceptual Sign Plan included as Appendix A (Project Signs). Project Signs evaluated in this Study include the Digital Display Signs, Identification Signs, and Digital Kiosks described below in Section 3 and illustrated in Appendix A. Environmental impacts from the Project Signs are evaluated with respect to light trespass and glare. These two technical terms are defined by the IESNA as follows:

- **Light Trespass** is the artificial light produced on a property that falls on an adjacent property. Light trespass is measured in terms of illuminance (foot-candles or metric units lux), and can be measured at any point and in any direction. Where light trespass is evaluated the illuminance is measured perpendicular to the source of light, toward the source of light, at the property line, or the location where light would cause an issue, such as a residential window or balcony. Project Signs light trespass is evaluated at night.
- **Glare** occurs when either the luminance is too high or the range of brightness in a visual field is too large. A bright light source, such as a flood light or street light, viewed against a dark sky may be uncomfortable to look at, and may create a temporary sensation of blindness, which is referred to as disability glare. Glare is evaluated by measuring the luminance (footlamberts or metric units candelas/square meter) at the source of light, such as a digital sign, in comparison to the surrounding adjacent luminance. Contrast ratios define the extent of glare within the visual field at any observer position. The contrast ratio is determined by the variation of luminance within the field of view. "High," "Medium," and "Low" contrast ratios are the comparison of peak measured luminance to the average luminance within a visual field: contrast ratios greater than 30:1 are "High"; contrast ratios between 30:1 to 10:1 are "Medium"; and contrast ratios below 10:1 are "Low." Contrast ratios greater than 30:1 are generally uncomfortable for the human eye to perceive. Project Signs glare is evaluated during the day and night.

2.1 Light Trespass

Regarding light trespass, this Study analyzes the proposed Project's compliance with the City of Los Angeles Municipal Code (LAMC). The LAMC regulates the amount of light trespass from illuminated signs at residentially zoned properties. The Project must comply with the following light trespass illumination requirement pursuant to LAMC Section 14.4.4 E:

- No sign shall be arranged and illuminated in a manner that will produce a light intensity of greater than three footcandles above ambient lighting, as measured at the property line of the nearest residentially zoned property.

As discussed below, this Study measured the light that would emanate from the Project Signs

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and demonstrates that light trespass illuminance from the Project Signs at adjacent residential properties would be below the threshold of 3.0 fc as required by LAMC Section 14.4.4 E.

2.2 Glare

This Study demonstrates that the Project Signs will not create glare, i.e., will not create a new high contrast condition visible at adjacent residential properties or at adjacent roadways. This Study analyzed the contrast ratio, which compares the maximum Project Signs luminance to the existing average luminance measured at monitoring sites adjacent to the Project Site, and determined that contrast ratio will be less than 30:1 at each of these sites. Contrast ratios less than 30:1 indicate there is no glare from the Project Signs. Therefore, the Project will not create a new glare condition at adjacent sensitive use or residential properties.

The glare visible to drivers at roadways is evaluated with respect to the standards identified by the California Vehicle Code, which defines maximum permissible luminance within drivers' field of view during the day and during periods of low sun intensity such as overcast sky conditions, twilight, or at night. This Study confirms that the Project Signs would not exceed the maximum luminance defined by the California Vehicle Code during the day, or during periods of low sun intensity such as overcast sky conditions, or twilight, or at night.

The Project has been designed to include the following lighting or sign features for Project Signs, which are included as requirements in the proposed regulations for the SUD:

- No sign shall be arranged and illuminated in a manner that will produce a light intensity of greater than three footcandles above ambient lighting, as measured at the property line of the nearest residentially zoned property (LAMC Section 14.4.4 E)
- Project Signs will not exceed the nighttime luminance of 200 cd/m² at night from sunset until sunrise.
- Project Signs will not exceed the daytime luminance of 6000 candelas per square meter (cd/m²) for all signs during the day, from 45 minutes after sunrise until 45 minutes prior to sunset.
- Project Signs luminance shall transition smoothly from daytime luminance to nighttime luminance and vice versa over a period of no less than 45 minutes.
- Illuminated signs that have the capacity to exceed the maximum luminance permitted at night (200 cd/m²) will include an electronic control system to reduce sign luminance to the maximum nighttime brightness (200 cd/m²) at any time when ambient sunlight is less than 100 footcandles (fc).
- For internally illuminated signs, the maximum allowed lighting power shall not exceed the product of the illuminated sign area and 12 watts per square foot.

3. PROJECT DESCRIPTION

The Conceptual Sign Plan includes a total of eighteen (18) signs which will add visual interest, create a sense of place and help identify the Project Site's buildings and uses. Nine (9) of these

signs are digital display signs (Digital Display). Three (3) of the signs are non-digital wall signs (Wall Signs) and will have externally mounted light fixtures. Portions of some of the signs and/or externally mounted light fixtures will extend beyond the property line.

Six (6) of the signs are non-digital but illuminated identification signs (Identification Signs). Three (3) of these Identification Signs are located on the top of the proposed new residential tower on facades facing 7th Street, Flower Street, and 8th Street, respectively. The other three (3) of these Identification Signs are located at the top of the existing office tower, on facades facing 8th and Hope Streets, and the existing hotel tower, on the façade facing 7th Street, respectively.

All of the Digital Display Signs will contain off-site messaging.

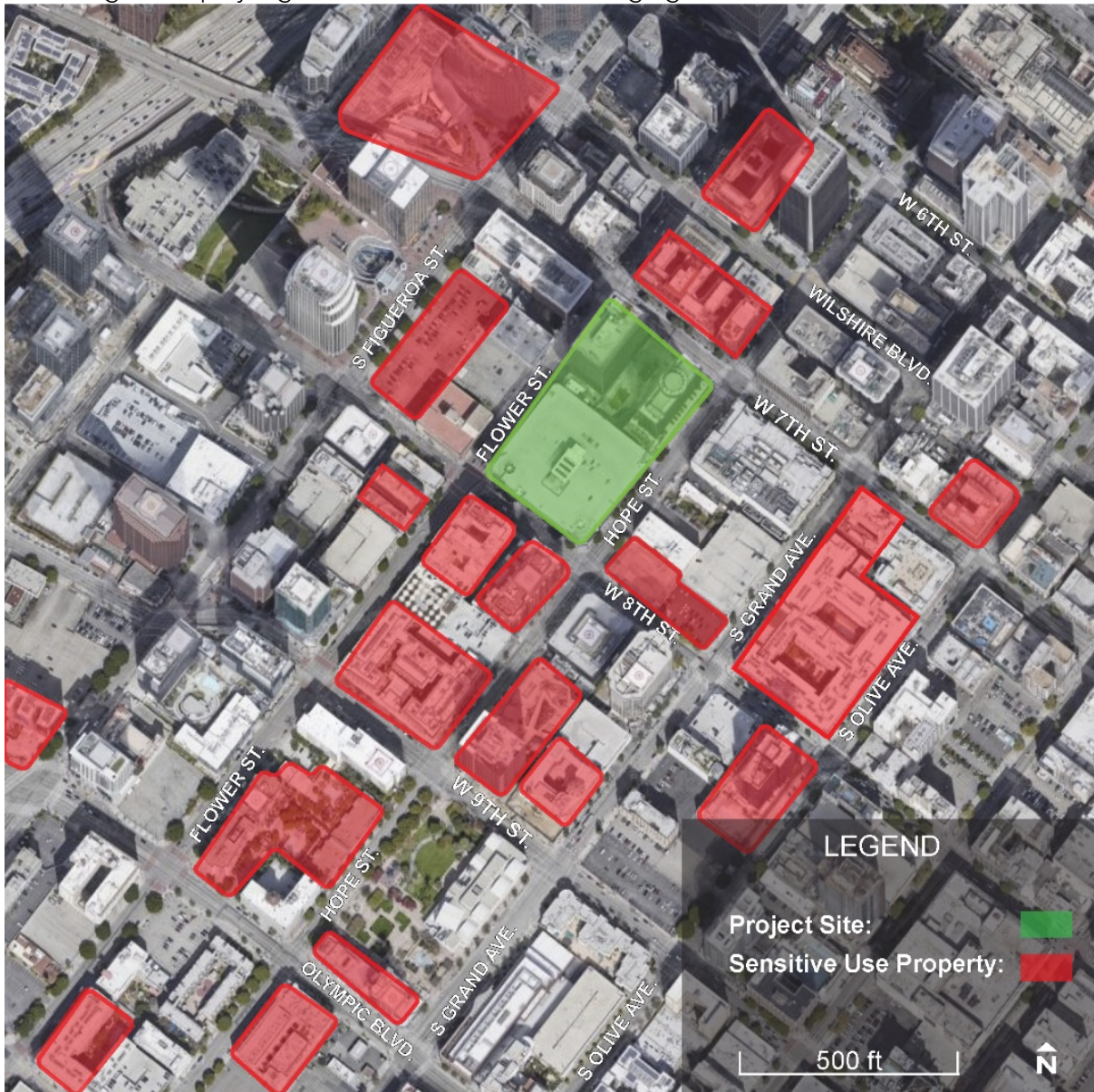


Figure 1: Project Site and Adjacent Sensitive Use Properties

The Conceptual Sign Plan also includes eight (8) Digital Kiosks (numbered as kiosks K1 through K3 and W1 through W5) which are considered signs under the City Zoning Code and are included

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in the lighting analysis.

The Project Signs will operate at a maximum luminance of 6000 cd/m² during the day and 200 cd/m² at night with a smooth transition from day maximum luminance to night maximum luminance beginning 45 minutes prior to sunset and concluding at sunset, and from night maximum luminance to day maximum luminance 45 minutes prior to sunrise and concluding at sunrise. Illuminated signs that have the capacity to exceed the maximum luminance permitted at night (200 cd/m²) will include an electronic control system to reduce sign luminance to the maximum nighttime brightness (200 cd/m²) at any time when ambient sunlight is less than 100 footcandles (fc).

4. LIGHTING GLOSSARY

Discussions of lighting issues include precise definitions, descriptions or terminology of the specific lighting technical parameters. The following glossary summarizes explanations of the technical lighting terms utilized in this Study and the related practice standards. The following technical terms are used in this Study.

Brightness:	The magnitude of sensation that results from viewing surfaces from which light comes to the eye. This sensation is determined partly by the measurable luminance of the source and partly by the conditions of observation (Context), such as the state of adaptation of the eye. For example, very bright lamps at night appear dim during the day, because the eye adapts to the higher brightness of daylight.
BUG Rating:	A luminaire classification system established in <i>IES TM15-11</i> , BUG Ratings Addendum that provides for uniform assessment of the directional characteristics of illumination for exterior area lighting. BUG is an acronym composed of Backlight, Uplight, and Glare. BUG ratings are based on a zonal lumen calculations for secondary solid angles defined in <i>IES TM15-11</i> .
Candela:	Measure of light energy from a source at a specific standard angle and distance. Candela (cd) is a convenient measure to evaluate output of light from a lamp or light fixture in terms of both the intensity of light and the direction of travel of the light energy away from the source.
Contrast:	Calculated evaluation of high, medium and low contrast of visible light sources or surfaces within the Property by a ratio of luminance. Contrast is the ratio of one surface luminance to a second surface luminance or to the field of view. Contrast exceeding 30 to 1 are usually deemed uncomfortable; 10 to 1 are clearly visible; and less than 3 to 1 appear to be equal.
Electronic Control System:	Integrated hardware and software system which provides sign lighting control functionality for time of day scheduling, response to ambient light, and direct user control with full range of dimming from 0% to 100% full light output, full color, or all white.
Fully Shielded:	A lighting fixture constructed in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the Luminaire, is projected below the horizontal as determined by photometric test or certified by the manufacturer. Any structural part of the light fixture providing this shielding must be permanently affixed. In other words, no light shines above the horizontal from any part of the fixture.
Glare:	Glare is visual discomfort experienced from high luminance or high range of luminance. For exterior environments at night, glare occurs when the range of luminance in a visual field is too large. The light energy incident at a point is measured by a scale of footcandles or lux, and is described in the technical term Illuminance. This incident light is not visible to the eye

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until it is reflected from a surface, such as pavement, wall, dust in the atmosphere or the surface of a light bulb. The visible brightness of a surface is measured in footlamberts (or metric equivalent candelas per square meter) and is described by the term Luminance.

The human eye processes brightness variations across a very broad spectrum of intensities. The range of brightness generated by direct noon sun versus a moonlight evening is over 5000 to 1. Human eyes are capable of accommodating to this range of intensities given adequate time to adjust. However, the eye cannot process brightness ratios of more than 30 to 1 within a view without discomfort. See IESNA 10th Edition Handbook, Section 4.10.1, Discomfort Glare and Section 10.9.2 Calculating Glare.

For the purpose of this analysis, brightness of light sources may be described subjectively by the following criteria:

High Contrast Conditions: View of light fixture emitting surface, such as a lens, reflector, or lamp, where brightness contrast ratio exceeds 30 to 1 (source Luminance to background Luminance ratio in footlamberts).

Medium Contrast Conditions: Brightly lighted surfaces where contrast ratio exceeds 10 to 1, but is less than 30 to 1 (source Luminance to background Luminance ratio in footlamberts).

Low Contrast Conditions: Illuminated surfaces where contrast ratio exceeds 3 to 1, but less than 10 to 1 (source Luminance to background Luminance ratio in footlamberts).

Illuminance:

Illuminance is the means of evaluating the density of Luminous Flux. Illuminance indicates the amount of Luminous Flux from a light source falling on a given area. Illuminance is measured in footcandles (fc) which is the lumens per square foot, or Lux (lumens per square meter). Illuminance need not necessarily be related to a real surface since it may be measured at any point within a space. Illuminance is determined from the Luminous intensity of the light source. Illuminance of a point source decreases with the square of the distance from the light source (see Inverse Square Law definition).

For the purposes of this analysis, illuminance may be described subjectively by the following criteria:

High Illuminance: Illuminance greater than the maximum permitted by the LAMC, and greater than 3.0 footcandles.

Medium Illuminance: Illuminance less than 3.0 footcandles and greater than 1.0 footcandle.

Low Illuminance: Illuminance less than 1.0 footcandles

Horizontal Illuminance: Illuminance incident upon a horizontal plane. The orientation of the illuminance meter or calculation point will be 180° from Nadir.

Vertical Illuminance: Illuminance incident upon a vertical plane. The orientation of the illuminance meter or calculation point will be 90° from Nadir.

Inverse Square Law: In physics, an inverse-square law is any physical law stating that a specified physical quantity or intensity is inversely proportional to the square of the distance from the source of that physical quantity. The fundamental cause for this relationship can be understood as geometric dilution corresponding to point-source radiation into three-dimensional space (see Figure 2). The divergence of a vector field which is the resultant of radial inverse-square law fields with respect to one or more sources is everywhere proportional to the strength of the local sources, and hence zero outside sources. Newton's law of universal gravitation follows an inverse-square law, as do the effects of electric, magnetic, light, sound, and radiation phenomena. Thus, Illuminance decreases with the square of the distance from the light source.

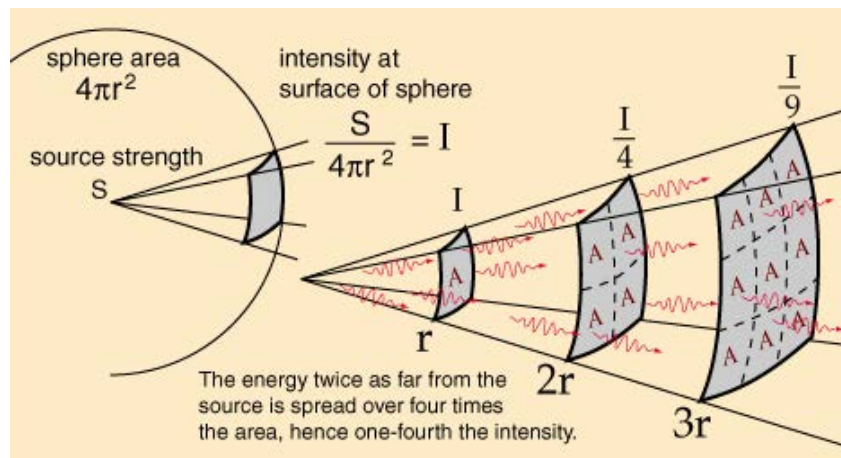


Figure 2: Inverse square law diagram (hyperphysics.phy-astr.gsu.edu)

Output Direction: Luminaires for general lighting are classified in accordance with the percentages of total luminaire output emitted above and below horizontal. The light distribution curves may take many forms within the limits of upward and downward distribution, depending upon the type of light and the design of the luminaire.

Lighting Array: An installation of multiple light sources or lamps where the distance between each lamp or light source within the Lighting Array is less than 5 feet on center in any direction from any other source.

Light Source: Device which emits light energy from an electric power source.

Light Trespass: Electric light from subject property incident onto adjacent properties, measured in footcandles or lux, usually analyzed by measurement at or near the adjacent property line.

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Lighting Zone (LZ): Defined by IESNA and summarized on pages 10 and 11 in the LP-11-20 Environmental Considerations for Outdoor Lighting and adopted by CALGreen.

Lighting Zone LZ3: Outdoor areas of human activity where the vision of human residents and users is adapted to moderately high light levels. Lighting is generally desired for safety, security and/or convenience.

Luminaire: A complete lighting unit consisting of a light source together with the parts designed to distribute the light, to position and protect the light source, and to connect the light source to the power supply. Also referred to as a Light Fixture.

Luminance: Luminance is a measure of emissive or reflected light from a specific surface in a specific direction over a standard area. Luminance is measured in footlamberts (fL) ($1/\pi$ Candela per square foot) or cd/m^2 (Candela per square meter). $1\text{fL} = 3.43 \text{cd}/\text{m}^2$.

Whereas Illuminance indicates the amount of Luminous Flux falling on a given surface, Luminance describes the brightness of an illuminated or luminous surface. Luminance is defined as the ratio of luminous intensity of a surface (Candela) to the projected area of this surface (m^2 or ft^2).

Luminous Flux: Mean value of total Candelas produced by a light source. Luminous Flux describes the total amount of light emitted by a light source. The unit for measuring Luminous Flux is Lumen (lm).

This radiation could basically be measured or expressed in watts. This does not, however, describe the optical effect of a light source adequately, since the varying spectral sensitivity of the eye is not taken into account. To include the spectral sensitivity of the eye the Luminous Flux is measured in lumen. Radiant Flux or 1 W emitted at the peak of the spectral sensitivity (in the photopic range at 555 nanometers produces a Luminous Flux of 683 lumen). The unit of lumen does not define direction.

Monitoring Sites: Monitoring Sites are locations selected for observation and field lighting measurements to evaluate the views to the Project Site from adjacent sensitive use properties and to determine the extent and intensity of existing light sources within and surrounding the Project Site. The Monitoring Sites are within the public right of way and may be adjacent to sensitive use sites. These locations are representative of the view to the Project from the vicinity of the sensitive sites surrounding the Project Site to the north, south, east and west. Figure 5 below illustrates the Monitoring Site locations.

Skyglow: Skyglow is the description of luminous atmospheric background and results from both natural and human made conditions. Natural causes of skyglow include sunlight reflected from the surface of the earth and moon, sunlight illuminating the upper atmosphere, and visible illumination from other interplanetary sources. Human made causes of skyglow include

electric light that is emitted directly upward into the sky (Uplight), or reflected off of the ground.

5. REVIEW OF LIGHTING REGULATIONS AND REFERENCE STANDARDS

Exterior lighting is regulated throughout California by local municipal codes and the state energy and building codes. Pertinent lighting sections are summarized and discussed for the City of Los Angeles Municipal Code (LAMC), the California Vehicle Code, the California Green Building Standards Code (CalGreen), and the California Energy Code (CEC). Reference standards include model lighting ordinances provided by the Illuminating Engineering Society of North America (IESNA) and the International Dark Sky Organization. Various aspects of these reference standards are included in local regulations to improve the outcomes of any approved project and avoid future disputes or legal challenges to proposed lighted signs. The lighting standards summarized below balance the requirements of property owners for sufficient brightness and flexibility for the use of the signs, with minimizing the off-site negative effects of light trespass and glare.

5.1 Los Angeles Municipal Code

The LAMC regulates lighting with respect to light trespass (i.e., the spillover of light onto adjacent light-sensitive properties). The City also enforces the building code requirements of the Los Angeles Building Code, and applicable requirements of the California Building Code, CALGreen, and the CEC.

The LAMC applies to the Project (to the extent not superseded by the SUD Ordinance for the proposed SUD). Applicable LAMC regulations include the following sections pertaining to sign illumination:

Chapter 1, Article 4.4, Sec. 14.4.4 E: "Sign Illumination Limitations. No sign shall be arranged and illuminated in a manner that will produce a light intensity of greater than three foot candles above ambient lighting, as measured at the property line of the nearest residentially zoned property."

This Study utilizes the LAMC Section 14.4.4 E regulations to analyze potential light trespass and glare impacts from the Project Signs.

5.2 California Code of Regulations, Title 24 (California Building Standards Code)

Title 24 of the California Code of Regulations (CCR), also known as the California Building Standards Code, includes the California Building Code, CALGreen and the CEC, among others. CALGreen Section 5.106.8 and CEC Section 140.7 limits light trespass and glare at any new sign, building property line or center line of adjacent transportation right of way according to the outdoor lighting zones established by the CEC. However, the CEC provides exceptions for signs that comply with the energy use and lighting controls requirements within CEC Sections 130.3 and 140.8.

The Project has been designed to include energy use and lighting control systems that comply with CEC Sections 130.3 and 140.8 and that are included as requirements in the proposed

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regulations for the SUD. Specifically, the proposed SUD complies with the following requirements:

- All outdoor Project Signs shall be controlled with a photocontrol in addition to an automatic time-switch control, or an astronomical time-switch control.
- All outdoor signs that are illuminated at night and for more than 1 hour during daylight hours shall be controlled with a dimmer that provides the ability to automatically reduce Project Signs power by a minimum of 65 percent during nighttime hours.
- For internally illuminated Project Signs, the maximum allowed lighting power shall not exceed the product of the illuminated sign area and 12 watts per square foot.

Each of the above requirements is satisfied by the electronic control system which is included as a proposed regulation in the Conceptual Sign Plan, and Section 2.2 which defines the requirements of the SUD. Therefore, compliance with the proposed SUD will satisfy CEC Sections 130.3 and 140.8 and therefore will satisfy the exceptions to CEC Section 140.7(a). Accordingly, the Project Signs are not subject to the light trespass and glare requirement of CALGreen Section 5.106.8, and this Study does not further analyze the Project Signs light trespass or glare with respect to the CALGreen and CEC requirements for outdoor lighting.

5.3 California Vehicle Code, Division 11. Rules of the Road

Chapter 2, Article 3 of the California Vehicle Code (CVC) Division 11 Rules of the Road stipulates limits to the location of light sources that may cause glare and impair the vision of drivers. CVC Section 21466.5. provides in relevant part:

“No person shall place or maintain or display, upon or in view of any highway, any light of any color of such brilliance as to impair the vision of drivers upon the highway. A light source shall be considered vision impairing when its brilliance exceeds the values listed below.

The brightness reading of an objectionable light source shall be measured with a 11/2-degree photoelectric brightness meter placed at the driver’s point of view. The maximum measured brightness of the light source within 10 degrees from the driver’s normal line of sight shall not be more than 1,000 times the minimum measured brightness in the driver’s field of view, except that when the minimum measured brightness in the field of view is 10 foot-lamberts or less, the measured brightness of the light source in foot-lambert shall not exceed 500 plus 100 times the angle, in degrees, between the driver’s line of sight and the light source.”

This Study analyzes the standard set forth in CVC Section 21466.5 as it applies to the Project Signs on drivers within adjacent streets.

5.4 IESNA Recommended Practices

The Illuminating Engineering Society of North America (IESNA) recommends illumination standards for a wide range of building and development types. These recommendations are widely recognized and accepted as best practices and are therefore a consistent predictor of the type and direction of illumination for any given building type. For all areas not governed by the regulatory building code, municipal code or specifically defined requirements, the IESNA standards are used as the basis for establishing the amount and direction of light recommended for the Project.

The IESNA Standards define Outdoor Lighting Zones relative to a range of human activity versus natural habitat. LP-11-20, Environmental Considerations for Outdoor Lighting pages 11 &12, included in Appendix C of this Study, establishes the Zone designation for a range of existing lighting conditions, from low or no existing lighting to high light levels in urban areas. These lighting zone definitions are referenced by the CEC as noted above in relation to allowable energy use for outdoor lighting. In addition, the IESNA standards define recommended light trespass limits in RP-8-18 Table 4-2, included in the Appendix D hereto, relative to the Outdoor Lighting Zones. The recommended light trespass illuminance limits define the maximum light trespass values in Lux and footcandles at the location where trespass is under review.

The existing conditions surrounding the Project Site are best described as Lighting Zone 3. IESNA RP-8-18 Table 4-2, lists a Pre-curfew 8 Lux (0.7 footcandles) maximum at the location where trespass is under review for Zone 3.

The IESNA recommendations listed above are not a regulatory requirement and are overridden by the applicable LAMC requirements for light trespass.

6. SIGNIFICANCE THRESHOLD

Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 California Code of Regulations, Sections 15000–15387) provides a set of sample questions to evaluate impacts with regard to aesthetics, including light and glare. The City of Los Angeles uses the Appendix G “questions” as its significance thresholds. The question that pertains to light trespass and glare is as follows:

Would the project:

Create a new source of substantial light and glare which would adversely affect day or nighttime views in the area?

In the context of this question from the CEQA Guidelines, the determination of significance in this Study takes into account the following factors:

The change in ambient nighttime levels as a result of Project lighting sources; and

The extent to which light from the Project would spill off the Project Site and affect adjacent residential properties.

Specifically, the Project Signs would create a significant impact with regard to artificial light or glare if:

Light trespass illuminance from the Project Signs exceeds 3.0 fc at the property line of a residential property (LAMC Chapter 1, Article 4.4, Sec. 14.4.4 E: “Sign Illumination Limitations”), and therefore adversely changes the ambient light level at residential properties.

Or, the Project Signs create glare with new high contrast conditions, with luminance greater than 200 cd/m² at night and contrast ratio greater than 30:1, visible from a field of view from a residential property.

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Or, the Project creates glare effects on drivers of motor vehicles by exceeding the maximum luminance standards established by Section 21466.5 of the California Vehicle Code, where maximum brightness of the Project Sign within 10 degrees from the driver's normal field of view is greater than 1,000 times the minimum measured brightness in the driver's field of view, or when the minimum measured brightness in the field of view is 10 footlamberts or less, the measured brightness of the light source in footlambert exceeds 500 plus 100 times the angle, in degrees, between the driver's field of view and the light source.¹

7. METHODOLOGY

7.1 Existing Conditions Procedures

Existing conditions lighting observations were conducted following recommended practice procedures defined by the IESNA in RP-33-00 Lighting for Outdoor Environments, TM10-00 Addressing Obtrusive Light (Urban Sky Glow and Light trespass) in Conjunction with Roadway Lighting, and TM11-00 Light trespass: Research, Results and Recommendations. Field illuminance and luminance measurements were conducted to accurately document all existing incident and visible light at each Monitoring Site location. Incident



Figure 3: Minolta LS-100 meter

light can be understood as a vector of luminous flux moving through space. As the vector (light) is incident upon a surface, the intensity of the resulting illuminance will vary depending upon the relative orientation of the vector to the surface. The greatest illuminance will result when the surface and vector are perpendicular. The least illuminance will result when the surface and vector are parallel. In the field conditions, where there are multiple sources of light originating from varied positions, illuminance measurements are recorded horizontally with the photosensor facing up at 3 feet above grade, and vertically with the photosensor facing the Project as per IESNA standards. These measurements document the total horizontal illuminance received at a Monitoring Site as well as the direction and intensity of light converging on the Monitoring Site from the direction of the Project Site. Since most of the Monitoring Sites are located at distances from the Project Site greater than 50 feet, as noted in Section 7 below, the vertical illuminance represents a plane perpendicular to the light sources. Under these conditions, there is little difference between the vertical and perpendicular plane, and the vertical plane analysis that is conducted in this Study would be equal to or greater than the measured luminance from a precisely perpendicular plane analysis. Therefore, this Study utilizes a vertical illuminance

¹ The driver's field of view from the center of the roadway plus 10 degrees.

analysis. The existing Illuminance is measured with a Minolta Illuminance meter.

The existing luminance is measured from a Monitoring Site to light sources and surfaces within the field of view toward the Project Site from that Monitoring Site. This existing conditions luminance data is measured with a Minolta LS-100 Luminance meter with procedures consistent with best practices for field measurement of luminance as per IESNA standards. The LS-100 Luminance meter utilized by Francis Krahe & Associates, Inc. reports luminance data in either candelas per square meter (cd/m^2) or footlamberts (fL). All existing luminance data measured and reported in this Study are recorded as cd/m^2 .

7.2 Analysis

This analysis of the Project Signs include evaluation of the light trespass at the nearest adjacent residential properties from the Project Signs, and an evaluation of light from the Project Signs visible at residential properties or at adjacent roadway locations to determine whether the Project Signs would introduce a new source of glare. This Study presents a conservative analysis with respect to light trespass and glare. The Project Signs are evaluated with a sign configuration at the maximum permissible light intensity within the limits defined by the Conceptual Sign Plan and the proposed regulations of the SUD as discussed in Section 1.2 above. This Study evaluates the proposed Project Signs as identified in the Conceptual Sign Plan in Appendix A.

a. Light Trespass Analysis

Light trespass illuminance is calculated at the location where lighting is under review through the illumination modeling software program AGI32. This software utilizes the 3-dimensional architectural computer model, including Project Sign locations, orientation, dimensions, and luminous specifications (as defined herein within Appendix A) to generate an accurate prediction of future illuminance from the Project Signs at adjacent sensitive use properties. Light trespass illuminance is evaluated with respect to horizontal and vertical illuminance at the locations where lighting is under review.

Light trespass is the artificial light produced from the Project Signs that falls on an adjacent property. Light trespass is measured in terms of illuminance (footcandles or metric units lux), and can be measured at any point and in any direction. Where light trespass is evaluated, the illuminance is measured perpendicular to the source of light, toward the source of light, at the property line, or the location where light would cause an issue, such as a residential window or balcony.

Light trespass illuminance from Project Signs is evaluated in this Study relative to LAMC Chapter 1, Article 4.4, Sec. 14.4.4 E, which defines a maximum illuminance of 3.0 fc at the nearest residential use or other sensitive use property. Therefore, the threshold for this analysis will be 3.0 fc maximum. Light trespass is analyzed by calculations of the illuminance (footcandles or fc) from the Project Signs at the adjacent residential use property line. The calculations simulate light meters at a vertical surface extending from grade to the height of the tallest residential use property or the height of the Project Sign, whichever is greater. The vertical calculation planes for the Project Signs light trespass analysis are located as illustrated in Figure 4. Light trespass illuminance is evaluated within vertical planes at each adjacent property line location extending from grade to a maximum building elevation above grade (for this Project 720 feet above grade

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which is above the maximum proposed building height and is an elevation point above the maximum height of the highest Project Sign location, as shown in the Conceptual Sign Plan).

The Project Signs analyzed are as defined in and as illustrated in the Conceptual Sign Plan (Appendix A). All Project Signs are analyzed operating simultaneously at maximum luminance of 200 cd/m², all white, at night. The Project Signs will not operate in an all white mode in practice. However, this analysis with all Project Signs operating in all white mode presents a conservative (maximum) evaluation of the Project Signs' potential for offsite light trespass illuminance. Table 3 below summarizes the Project Signs light trespass illuminance calculation data at the vertical plane locations illustrated in Figure 4.

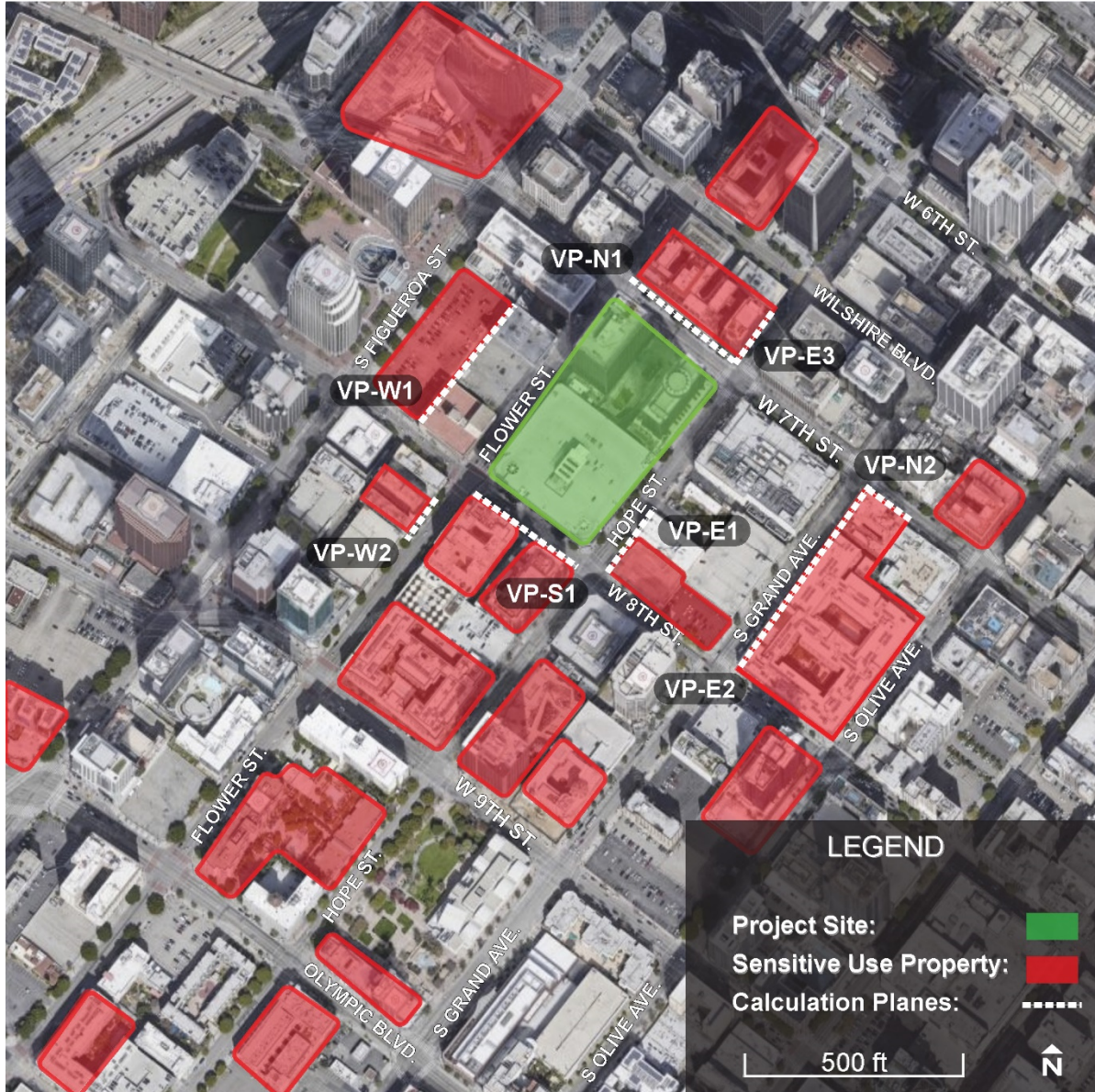


Figure 4: Vertical Calculation Plane Locations

b. Glare Analysis

Glare from the Project Signs² is evaluated at night at nearby sensitive use properties and for drivers on adjacent streets. The glare from Project Signs is determined by the contrast ratio, which equals the maximum sign luminance divided by the measured average existing luminance within the visual field at the Monitoring Sites to the Project as identified in the field survey of existing conditions (see Section 7 below). Contrast ratios greater than 30:1 are considered “High” and potential glare conditions.

Light from the Project Signs that may impact drivers is analyzed with respect to compliance with the California Vehicle Code requirements for both night and day conditions at adjacent roadways. According to CVC Section 21466.5, the Project Signs would have a significant impact with regard to artificial light or glare if:

- The maximum measured brightness of a light source within 10 degrees from a driver’s normal line of sight exceeds 1,000 times the minimum measured brightness in the driver’s field of view when the minimum values in the field of view are 10 footlamberts (fL) or more.
- Or, when the minimum luminance in the driver’s field of view is less than 10 footlamberts (fL) the source brightness exceeds 500 fL plus 100 times the angle, in degrees, between the driver’s line of sight and the light source.

The analysis of glare that may impact drivers includes evaluation of all view angles from the driver’s line of sight to the Project Signs, to determine the visibility of the Project Signs, and evaluates the maximum luminance permitted by the California Vehicle Code at any angle of view.

8. EXISTING CONDITIONS

This lighting technical report represents a conservative evaluation of the potential for the Project Signs to produce offsite light trespass illuminance and or glare at adjacent sensitive use locations. In order to analyze the light from the Project Signs, the existing lighting conditions at the adjacent sensitive use locations must be identified and summarized. This Study includes measurements of the existing lighting conditions including measurements of existing illuminance and luminance. As summarized in detail below, the existing lighting conditions within and surrounding the Project Site consist of illuminated signs and building lighting within the Project Site, and exterior lighting for streets and building mounted lighting at adjacent residential and commercial properties.

8.1 Monitoring Sites

Monitoring Sites are utilized to describe and evaluate the existing lighting conditions at and surrounding the Project Site to determine the maximum potential impacts that may result from light or glare onto adjacent sensitive sites surrounding the Project Site. The Monitoring Site locations are representative of the view to the Project Site from the vicinity of residential properties surrounding the Project Site to the north, south, east, and west. All Monitoring Site locations are within 1000 feet of the Project Site and have views of the Project Site. Monitoring

² Luminance and or glare is not cumulative. Therefore, this Lighting Study evaluates the potential glare impact from the proposed Project Signs and not existing signs.

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Sites may also be existing residential properties, or may be located adjacent to existing residential properties. The following criteria were used to select potential Monitoring Site locations:

Project Light Visibility – Monitoring sites are analyzed at locations that provide direct view of the areas of greatest light intensity from the Project Signs.

Proximity – Monitoring sites at the least distance to the Project Signs are analyzed. These locations are selected because light intensity decreases exponentially with distance (see Inverse Square Law, Section 3 above). Locations at a greater distance will experience less light intensity than nearby locations.

Figure 5 shows the Project Site, Monitoring Site locations, and the properties surrounding the Project Site. The Project Site is shaded green; shaded red indicates existing residential use, residential zoning, or future residential use properties. Monitoring Site locations were selected

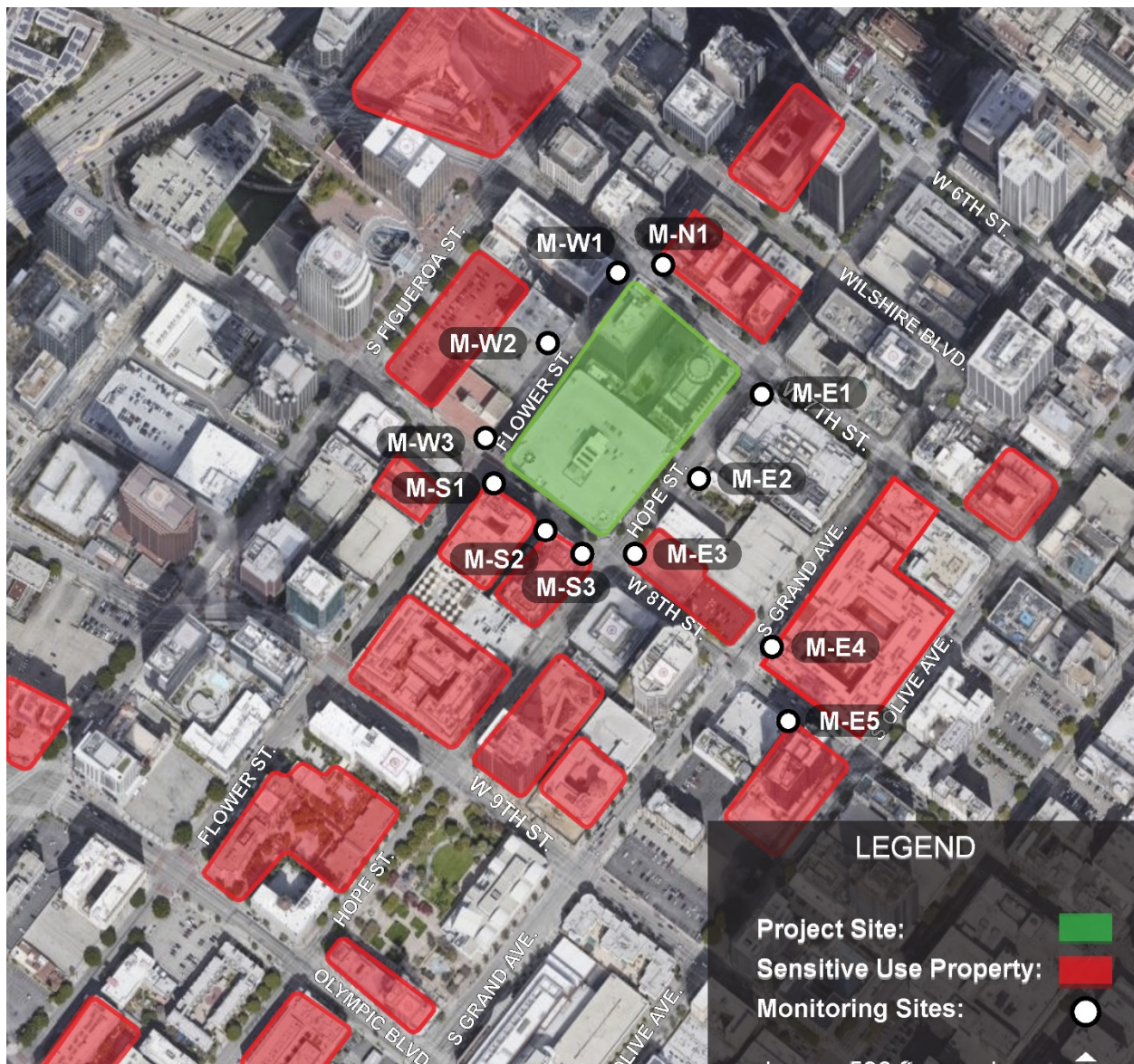


Figure 5: Monitoring Site Locations

for observation and field lighting measurements to evaluate the views to the Project Signs from adjacent residential properties to determine the extent and intensity of existing light sources within and surrounding the Project Site. The Monitoring Sites are within the public right of way, and adjacent to or closer than the nearest residential use properties surrounding the Project Site.

These Monitoring Sites are used to determine the extent of existing lighting conditions and to evaluate the Project Sign light trespass and glare impacts.

Monitoring Site M-E1: Monitoring Site M-E1 is located at the southeast corner of 7th St. and Hope St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-E2: Monitoring Site M-E2 is located mid-block at the east side of Hope St. between 7th and 8th St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-E3: Monitoring Site M-E3 is located at the northeast corner of Hope St. and 8th St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-E4: Monitoring Site M-E4 is located at the east side of S. Grand Ave. approximately 20 feet north of 8th St. adjacent to the 8th and Grand Apartments residential property, east of the Project Site property to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 490 feet.

Monitoring Site M-E5: Monitoring Site M-E5 is located adjacent to the Aterier Apartments residential property at 801 S Olive St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 750 feet.

Monitoring Site M-S1: Monitoring Site M-S1 is located adjacent to 800 Flower St at the intersection of Flower St. and 8th St., south of the Project Site property line, to evaluate the Project Site south elevations. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-S2: Monitoring Site M-S2 is located at mid-block on the south side of 8th St. between Flower St. and Hope St.. south of the Project Site property line, to evaluate the Project Site south elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-S3: Monitoring Site M-S3 is located adjacent to 801 S. Hope St. at the 8th & Hope Apartments residential property, south of the Project Site property

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line, to evaluate the Project Site south elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-W1: Monitoring Site M-W1 is located at the southwest corner of the 7th St. and Flower St. intersection, adjacent to 800 W. 7th St., west of the Project Site property line, to evaluate the Project Site west elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-W2: Monitoring Site M-W2 is located mid-block at the west side of Flower St. between 7th and 8th St., west of the Project Site property line, to evaluate the Project Site west elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-W3: Monitoring Site M-W3 is located at the northwest corner of the 8th St. and Flower St. intersection, adjacent to the 753 S. Flower St. Garage, west of the Project Site property line, to evaluate the Project Site west elevation. The distance to the Project Site property line is approximately 75 feet.

Monitoring Site M-N1: Monitoring Site M-N1 is located at the northeast corner of 7th St. and Flower St. intersection, adjacent to the Roosevelt Lofts residential property, north of the Project Site property line, to evaluate the Project Site north elevation. The distance to the Project Site property line is approximately 75 feet.

8.2 Monitoring Site Criteria

As established in Section 7.1, the following factors were used to assess the existing conditions at each Monitoring Site:

Table 1: Existing Conditions Lighting Criteria at Monitoring Sites

Criteria	Metric	Procedure
Light Trespass - Illuminance	Measured illuminance (footcandle) at each Monitoring Site	Horizontal and vertical illuminance measurements at each Monitoring Site with Minolta illuminance meter.
Glare - Luminance Contrast Ratio	Measured luminance (cd/m^2) at each Monitoring Site within field of view to the Project Site from the Monitoring Site; Observed existing conditions	Luminance measurements at each Monitoring Site with Minolta luminance meter. Observed conditions with respect to the view to the Project Site from the Monitoring Site in terms of visibility of the Project Site, light sources, lighted surfaces, and illuminated signs.

8.3 Monitoring Site Data

The observations and measurement of existing lighting conditions within and surrounding the Project Site are summarized below in relation to the evaluation factors established in Section 5, Significance Threshold. The existing lighting within the Project Site includes a wide range of lighting for safety, security, and use of the property. The Project Site includes existing commercial and hotel buildings with existing lighting and illuminated signs. Lighting within the Project Site

and within adjacent commercial properties and roadway lighting on the adjacent right of way contribute to the ambient lighting conditions at all Monitoring Sites.

Illuminance: Table 2 summarizes the measured existing Illuminance at the Monitoring Sites.

The evaluation of the measured existing illuminance at the Monitoring sites compares the measured illuminance to the maximum illuminance permitted by the LAMC (3.0 footcandles) and designates all measured illuminance greater than 3.0 fc as high illuminance. Measured illuminance less than 3.0 fc and greater than 1.0 fc is designated as medium illuminance. Measured illuminance less than 1.0 fc is designated as low illuminance.

Measured horizontal illuminance greater than 3.0 fc was recorded at Monitoring Sites M-S1, M-S3, and M-W1, which is high illuminance, greater than the LAMC maximum permitted illuminance. The highest horizontal illuminance was recorded at Monitoring Site M-S1 at 4.68 fc. Measured horizontal illuminance less than 3.0 fc and above 1.0 fc which is medium illuminance, was measured at Monitoring Sites M-E1, M-E3, M-E5, M-S2, M-W2, M-W3, and M-N1. Measured horizontal illuminance less than 1.0 fc was recorded at Monitoring Sites M-E2 at 0.51 fc and M-E4 at 0.54 fc and is evaluated as low illuminance.

Table 2: Measured Existing Illuminance (fc) at Monitoring Sites

Monitoring Site	Existing Illuminance (fc)		Evaluation
	Horizontal	Vertical	
M-E1	2.93	1.97	Medium Horizontal Illuminance, Medium Vertical Illuminance
M-E2	0.51	0.73	Low Horizontal Illuminance, Low Vertical Illuminance
M-E3	1.54	1.39	Medium Horizontal Illuminance, Medium Vertical Illuminance
M-E4	0.54	0.27	Low Horizontal Illuminance, Low Vertical Illuminance
M-E5	1.98	1.29	Medium Horizontal Illuminance, Medium Vertical Illuminance
M-S1	4.68	2.49	High Horizontal Illuminance, Medium Vertical Illuminance
M-S2	2.48	0.88	Medium Horizontal Illuminance, Low Vertical Illuminance
M-S3	3.08	1.76	High Horizontal Illuminance, Medium Vertical Illuminance
M-W1	3.71	4.46	High Horizontal Illuminance, High Vertical Illuminance
M-W2	2.15	1.85	Medium Horizontal Illuminance, Medium Vertical Illuminance
M-W3	2.47	1.85	Medium Horizontal Illuminance, Medium Vertical Illuminance
M-N1	2.78	3.94	Medium Horizontal Illuminance, High Vertical Illuminance

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Measured vertical illuminance greater than 3.0 fc was recorded at Monitoring Sites M-W1, and M-N1, which is high illuminance. The highest vertical illuminance was recorded at Monitoring Site M-W1 at 4.46 fc. Measured vertical illuminance less than 3.0 fc and greater than 1.0 fc, which is medium illuminance, was measured at M-E1, M-E3, M-E5, M-S1, M-S3, M-W2, and M-W3. Measured vertical illuminance less than 1.0 fc was recorded at Monitoring Sites M-E2, M-E4, and M-S2. The lowest vertical illuminance was recorded at Monitoring Site M-E4 at 0.27 fc.

Contrast/Glare: Table 3 summarizes the measured existing luminance at each Monitoring Site within the visual field to the Project Site. The measurements include existing illuminated signs and other light sources or objects within the view. Table 3 also summarizes the calculated contrast ratio of the existing conditions, and a qualitative evaluation of the existing luminance.

Table 3: Measured Existing Luminance (cd/m²) at Monitoring Sites

Monitoring Site	Existing Luminance (cd/m ²)		Contrast Ratio (Max / Average)	Evaluation
	Average	Maximum		
M-E1	286.2	2902.0	10	Medium Contrast Ratio
M-E2	581.7	9453.0	16	Medium Contrast Ratio
M-E3	287.5	4893.0	17	Medium Contrast Ratio
M-E4	236.8	4740.0	20	Medium Contrast Ratio
M-E5	109.6	1911.0	17	Medium Contrast Ratio
M-S1	146.9	1944.0	13	Medium Contrast Ratio
M-S2	394.0	8324.0	21	Medium Contrast Ratio
M-S3	431.3	4466.0	10	Medium Contrast Ratio
M-W1	347.3	3934.0	11	Medium Contrast Ratio
M-W2	93.4	1147.0	12	Medium Contrast Ratio
M-W3	245.8	2508.0	10	Medium Contrast Ratio
M-N1	303.9	3239.0	11	Medium Contrast Ratio

The evaluation of High, Medium and Low Contrast describes the perception of how bright a visible object appears in comparison to the surrounding objects within any given field of view. The "luminance ratio" is the ratio of the highest Measured Luminance as compared to the Luminance within the field of view visible at an observer position. This ratio is referred to as "contrast", and is determined by the variation of luminance. "High," "Medium," and "Low"

contrast are terms used to describe effect of the contrast ratios (the ratio of peak measured luminance to the average within a field of view) of greater than 30:1, between 10:1 and 30:1, and below 10:1, respectively. Luminance contrast ratios above 30:1 are generally uncomfortable for the human eye to perceive. High Contrast indicates a potential glare condition.

The observations at each Monitoring Site include prominent lighted surfaces or lighting sources visible within the field of view to the Project Site from the Monitoring Sites, and the visibility of the Project Site within the visual field. The Monitoring Sites represent a wide range of light conditions from areas with low brightness to high brightness areas with many bright visible surfaces and light sources. The measured luminance recorded at the Monitoring Sites within the view to the Project Site includes prominent, high brightness light sources and illuminated surfaces, such as streetlights, illuminated signs, and exterior building lighting, as well as lower brightness surfaces such as un-illuminated walls.

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a. Monitoring Site M-E1:

Monitoring Site M-E1 is located at the southeast corner of 7th St. and Hope St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-E1 to the Project Site include illuminated tenant signs, streetlights, traffic lights, and retail / restaurant lighting within the Project Site.



Figure 7: M-E1 Day view February 18, 2021, 12:27 PM



Figure 6: M-E1 Night view March 30, 2021 7:54 PM

b. Monitoring Site M-E2:

Monitoring Site M-E2 is located mid-block at the east side of Hope St. between 7th and 8th St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-E2 to the Project Site include streetlights, retail storefront lighting, and façade lighting within the Project Site.



Figure 8: M-E2: Day view February 19, 2021, 12:25 PM



Figure 9: M-E2 Night view March 30, 2021, 8:11PM

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c. Monitoring Site M-E3:

Monitoring Site M-E3 is located at the northeast corner of Hope St. and 8th St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-E3 to the Project Site include streetlights, traffic lights and garage lighting within the Project Site.



Figure 10: M-E3 Day view February 18, 2021, 12:24PM



Figure 11: M-E3 Night view March 30, 2021, 8:21PM

d. Monitoring Site M-E4:

Monitoring Site M-E4 is located at the east side of S. Grand Ave. approximately 20 feet north of 8th St. adjacent to the 8th and Grand Apartments residential property, east of the Project Site property to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 490 feet. Prominent light sources visible within the field of view from M-E4 to the Project Site are streetlights, traffic lights and lighting from the garage lighting from the west side of S. Grand Ave.



Figure 12: M-E4 Day view February 18, 2021, 12:22PM



Figure 13: M-E4 Night view March 30, 2021, 8:36PM

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e. Monitoring Site M-E5

Monitoring Site M-E5 is located adjacent to the Aterier Apartments residential property at 801 S Olive St., east of the Project Site property line, to evaluate the Project Site east elevation. The distance to the Project Site property line is approximately 750 feet. Prominent light sources visible within the field of view from M-E5 to the Project Site include streetlights, traffic lights, façade and retail storefront lighting.



Figure 14: M-E5 Day view February 18, 2021, 12:21PM



Figure 15: M-E5 Night view March 30, 2021, 8:47PM

f. Monitoring Site M-S1:

Monitoring Site M-S1 is located adjacent to 800 Flower St at the intersection of Flower St. and 8th St., south of the Project Site property line, to evaluate the Project Site south elevations. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-S1 to the Project Site include streetlights, traffic lights and garage lighting within the Project Site.



Figure 16: M-S1 Day view February 18, 2021, 12:15PM



Figure 17: M-S1 Night view March 30, 2021, 9:00PM

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g. Monitoring Site M-S2:

Monitoring Site M-S2 is located at mid-block on the south side of 8th St. between Flower St. and Hope St., south of the Project Site property line, to evaluate the Project Site south elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-S2 to the Project Site include streetlights, parking garage exit ramp lighting, and façade lighting within the Project Site.



Figure 18: M-S2 Day view February 18, 2021, 12:16PM



Figure 19: M-S2 Night view March 30, 2021, 9:08PM

h. Monitoring Site M-S3:

Monitoring Site M-S3 is located adjacent to 801 S. Hope St. at the 8th & Hope Apartments residential property, south of the Project Site property line, to evaluate the Project Site south elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-S3 to the Project Site include illuminated signs, streetlights, traffic lights and garage lighting within the Project Site, and illuminated building façade in the distance.



Figure 20: M-S3 Day view February 18, 2021, 12:17PM



Figure 21: M-S3 Night view March 30, 2021, 9:17PM

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i. Monitoring Site M-W1:

Monitoring Site M-W1 is located at the southwest corner of the 7th St. and Flower St. intersection, adjacent to 800 W. 7th St., west of the Project Site property line, to evaluate the Project Site west elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-W1 to the Project Site include illuminated signs, streetlights, traffic lights and lighting from retail storefronts within the Project Site.



Figure 22: M-W1 Day view February 18, 2021, 12:33PM



Figure 23: M-W1 Night view April 15, 2021, 8:29PM

j. Monitoring Site M-W2:

P Monitoring Site M-W2 is located mid-block at the west side of Flower St. between 7th and 8th St., west of the Project Site property line, to evaluate the Project Site west elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-W2 to the Project Site include streetlights, and retail storefront lighting within the Project Site.



Figure 24: M-W2 Day view February 18, 2021, 12:09PM



Figure 25: M-W2 Night view April 15, 2021, 8:41PM

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k. Monitoring Site M-W3:

Monitoring Site M-W3 is located at the northwest corner of the 8th St. and Flower St. intersection, adjacent to the 753 S. Flower St. Garage, west of the Project Site property line, to evaluate the Project Site west elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-W3 to the Project Site include streetlights, traffic lights and garage lighting within the Project Site.



Figure 26: M-W3 Day view February 18, 2021, 12:13PM



Figure 27: M-W3 Night view April 15, 2021, 8:06PM

I. Monitoring Site M-N1:

Monitoring Site M-N1 is located at the northeast corner of 7th St. and Flower St. intersection, adjacent to the Roosevelt Lofts residential property, north of the Project Site property line, to evaluate the Project Site north elevation. The distance to the Project Site property line is approximately 75 feet. Prominent light sources visible within the field of view from M-N1 to the Project Site include illuminated signs, streetlights, traffic lights and retail lighting within the Project Site.



Figure 28: M-N1 Day view February 18, 2021, 12:31PM



Figure 29: M-W3 Night view April 15, 2021, 8:19PM

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9. LIGHTING ANALYSIS

The Project would introduce new Project Signs as described in Section 3 and depicted in Appendix A.

The following criteria are used to evaluate the Project Signs impacts with respect to light trespass and glare:

Project Signs light trespass illuminance must not exceed 3.0 fc at the property lines of adjacent residential properties or adjacent sensitive sites.

Project Sign luminance visible from residential properties must be less than high contrast conditions, i.e., less than 30 to 1 contrast ratios.

Project luminance visible within 10 degrees from the driver's normal field of view must be less 500 fL and or less than 1,000 times the minimum measured brightness in the driver's field of view, except that when the minimum measured brightness in the field of view is 10 footlamberts or less, the measured brightness of the light source in footlambert shall not exceed 500 plus 100 times the angle, in degrees, between the driver's field of view and the light source.

9.1 Light Trespass Analysis

Project light trespass illuminance from Project Signs is evaluated by way of the calculated illuminance (fc) as per the methodology defined in Section 6, at the vertical and horizontal calculation plane locations where lighting is under review. As noted above, this Study evaluates the light trespass illuminance from Project Signs with respect to the regulations defined by LAMC at adjacent residential use properties. This Study analyzes the proposed Project Signs as described in Appendix A, which defines the Project Sign locations, dimensions, and orientation.

The evaluation of illuminance as High, Medium, and Low describes the relative amount of light trespass at a residential property at night. Illuminance greater than 3.0 fc, the maximum sign illuminance permitted by LAMC is evaluated as "High". Illuminance greater than 1.0 fc but less than 3.0 fc is evaluated as "Medium". Illuminance less than 1.0 fc is evaluated as "Low".

The Project Signs that are illuminated will operate at maximum luminance of 6000 cd/m² during the day and 200 cd/m² at night with a smooth transition from day maximum luminance to night maximum luminance beginning 45 minutes prior to sunset and concluding at sunset, and from night maximum luminance to day maximum luminance 45 minutes prior to sunrise and concluding at sunrise.

The Project Sign light trespass analysis evaluates the illuminance (fc) from the Project Signs leaving the Project site toward adjacent residential use or other sensitive use properties as described in Figure 4 above with respect to the maximum light trespass threshold of 3.0 fc. Project Signs are analyzed in this Study conservatively with all Project Signs operating at maximum nighttime luminance as noted above, all white. The Project Signs will not operate at all white in practice, however, all white would produce the maximum light trespass and therefore is assumed to represent a conservative analysis. The information in the Conceptual Sign Plan (Appendix A) and as described in Section 3 (Project Description) was utilized to calculate Project Signs light trespass illuminance in this Study, with the calculation results presented in Table 4 below.

Complete Project Signs illuminance calculated data is presented in Appendix E.

The Project Signs maximum calculated vertical illuminance in Table 4 varies from a minimum of 0.00 fc at vertical plane VP-N2 to a maximum of 3.00 fc at vertical plane VPE1 and VP-S1. All calculated light trespass illuminance from Project Signs is less than or equal to the maximum 3.0 fc threshold established by the LAMC.

Table 4: Project Signs Trespass Illuminance (fc)

Vertical Plane	Illuminance (fc)			LAMC Analysis threshold (3.0 fc)
	Max	Min	Avg	
VP-E1	3.00	0.00	0.30	Less than threshold
VP-E2	0.10	0.00	0.06	Less than threshold
VP-E3	0.10	0.00	0.00	Less than threshold
VP-N1	1.70	0.00	0.30	Less than threshold
VP-N2	0.00	0.00	0.00	Less than threshold
VP-S1	3.00	0.10	0.22	Less than threshold
VP-W1	0.20	0.00	0.09	Less than threshold
VP-W2	0.10	0.00	0.04	Less than threshold

The light trespass illuminance from Project Signs is less than or equal to the LAMC threshold of 3.0 fc, and will therefore not create an impact at the Monitoring Sites or at residential use properties adjacent to the Project site. Light degrades rapidly with distance as described above by the Inverse Square Law. Therefore, residential properties more distant from the Project Site than the Monitoring Sites will receive substantially less light trespass than the Monitoring Sites. Therefore, there is no light trespass impact from the Project Signs at any residential use properties.

9.2 Glare Analysis at Residential Properties

The evaluation of High, Medium and Low Contrast describes the perception of how bright a visible object appears in comparison to the surrounding objects within any given field of view. The "luminance ratio" is the ratio of the maximum Sign Luminance as compared to the Average Luminance within the field of view visible at an observer position. This ratio is referred to as "contrast", and is determined by the variation of luminance. "High," "Medium," and "Low" contrast are terms used to describe effect of the contrast ratios (the ratio of maximum luminance

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to the average within a field of view) of greater than 30:1, between 10:1 and 30:1, and below 10:1, respectively. Luminance contrast ratios above 30:1 are generally uncomfortable for the human eye to perceive. High Contrast, greater than a 30:1 Contrast Ratio, indicate a potential glare condition.

The existing lighting conditions at night within and surrounding the Project Site and visible within the field of view from the Monitoring Sites were evaluated on March 30, 2021. Measurements of the existing luminance at night within the field of view from the Monitoring Sites are summarized in Section 7.3 Table 3 above.

Potential glare from the Project Signs is evaluated by calculating the Contrast Ratio, which is the ratio of the maximum Sign Luminance compared to the existing measured Average Luminance in Table 3. Table 5 summarizes the measured average luminance at each Monitoring Site (from Table 3) along with a calculation of the comparison of the proposed Project Signs maximum night time luminance to the existing measured average luminance to determine the Contrast Ratio.

Table 5: Project Signs Contrast Ratio

Monitoring Site	Existing Measured Luminance		Project Lighting Luminance		Evaluation
	Average	Maximum	Max	Contrast Ratio	
M-E1	286.2	2902.0	200	0.7	Low Contrast Ratio, No Glare Impact
M-E2	581.7	9453.0	200	0.3	Low Contrast Ratio, No Glare Impact
M-E3	287.5	4893.0	200	0.7	Low Contrast Ratio, No Glare Impact
M-E4	236.8	4740.0	200	0.8	Low Contrast Ratio, No Glare Impact
M-E5	109.6	1911.0	200	1.8	Low Contrast Ratio, No Glare Impact
M-S1	146.9	1944.0	200	1.4	Low Contrast Ratio, No Glare Impact
M-S2	394.0	8324.0	200	0.5	Low Contrast Ratio, No Glare Impact
M-S3	431.3	4466.0	200	0.5	Low Contrast Ratio, No Glare Impact
M-W1	347.3	3934.0	200	0.6	Low Contrast Ratio, No Glare Impact
M-W2	93.4	1147.0	200	2.1	Low Contrast Ratio, No Glare Impact
M-W3	245.8	2508.0	200	0.8	Low Contrast Ratio, No Glare Impact
M-N1	303.9	3239.0	200	0.7	Low Contrast Ratio, No Glare Impact

The lowest existing measured average luminance in Table 3 is Monitoring site M-W2, which is is

less than 100 cd/m^2 , and the maximum Project Sign night time luminance results in a Contrast Ratio of 2.1:1, which is also very low contrast and will not produce glare. The existing measured luminance at Monitoring Sites ME-1, ME-3, ME-4, ME-5, MS-1, and M-W3 are greater than 100 cd/m^2 and less than 300 cd/m^2 , and the maximum Project Sign night time luminance results in a Contrast Ratio greater than 0.66:1 but less than 1.5:1 at these Monitoring Sites, which is low contrast and will not produce glare. The measurements of existing average luminance at Monitoring Sites M-E2, MS-2, MS-3, MW-1, and MN-2 are greater than 300 cd/m^2 , and the maximum Project Sign night time luminance results in a Contrast Ratio of 0.66:1 or less, which implies very low contrast and no glare. The maximum Project Sign night time luminance of 200 cd/m^2 results in low Contrast Ratios for all Monitoring Sites, from a minimum of 0.3:1, to a maximum of 2.1:1. Therefore, the proposed Project Sign maximum night time luminance at 200 cd/m^2 will not create a new source of glare at the Monitoring Sites or at surrounding residential properties adjacent to the Project Site. Light degrades rapidly with distance as described above by the Inverse Square Law. Therefore, residential properties more distant from the Project Site than the Monitoring Sites will receive substantially less light than the Monitoring Sites. Therefore, there is no glare impact from the Project Signs at any residential use properties.

9.3 Glare Analysis for Roadways, California Vehicle Code

The lighting impact to driver's visibility from the Project Signs is evaluated by way of the methodology defined in Section 7 above at the center line of the drivers field of view and at angles wider than the center line of the drivers field of view. Bright sources within the drivers field of view, from the centerline of the roadway to angles up to 90 degrees from the center line of the roadway, may create glare if the light source is brighter than the limits established by the California Vehicle Code as noted in Section 5.2 above. As summarized below, the results of this Study demonstrate the maximum Project Sign luminance is less than the limits established by the California Vehicle Code for excessive luminance, or glare, during night, twilight (after sunset, and before sunrise), and during the day. Accordingly, the Project Signs meet the California Vehicle Code standard for roadways approaching the Project Site from all directions.

The roadway glare analysis evaluates the maximum Project Sign luminance during night, twilight, and day with respect to the most stringent requirements of the California Vehicle Code to determine if the Project introduces a source of distracting glare to drivers. The maximum Project luminance at night and during twilight includes the Project Signs operating at the maximum night luminance of 200 cd/m^2 , all white. The maximum Project Sign luminance during the day includes the Project Signs operating at the maximum daytime luminance of 6000 cd/m^2 , all white.

The most stringent condition identified within the California Vehicle Code Section 21466.5, states: "except that when the minimum measured brightness in the field of view is 10 footlamberts or less, the measured brightness of the light source in footlamberts (fL) shall not exceed 500 plus 100 times the angle, in roadway degrees, between the driver's field of view and the light source." Thus, a conservative evaluation, occurs where the Project Signs are visible within the centerline of the driver's field of view, the angle noted above within the field of view is 0, the surrounding surface luminance is less than 10 fL, and therefore the maximum allowable luminance is 500 fL. Therefore, the most conservative condition at night or at twilight evaluates the Project Signs maximum luminance against a maximum luminance threshold of 500 fL.

The Bloc Sign Supplemental Use District Lighting Study

a. Night

A measured brightness within the driver's field of view of less than 10 fL may occur at night. The maximum Project Sign luminance during night is 200 cd/m². Calculating the equivalent maximum luminance by converting to english units from metric units: 200 cd/m² equals 58.4 fL. Because the Project Signs are proposed to be subject to a regulatory limit (through the proposed SUD) of a maximum night time luminance of 200 cd/m², or 58.4 fL, the Project Sign maximum luminance will not exceed 58.4 fL, which is 11.7 % of the 500 fL maximum, the most conservative limit stipulated by the California Vehicle Code for conditions where the minimum brightness in the driver's field of view is less than 10 fL. Therefore, at night the Project Signs within the drivers field of view will not exceed the 500 fL threshold and will not introduce a new source of glare as defined by the California Vehicle Code Section 21466.5.

For Project Signs located beyond the driver's 10 degree field of view the maximum luminance is permitted to increase under the California Vehicle Code. For example, light sources located 15 degrees from the centerline of the driver's field of view would be limited to a maximum of 1,000 fL (500 fL plus 100 times the angle (5 degrees) = 1,000 fL). The maximum Project Sign luminance is 200 cd/m² or 58.4 fL at night, or less than approximately 5.8% of the maximum allowed by the California Vehicle code for those Project Sign locations at 15 degrees from the center of the driver's field of view. Therefore, at night the Project Signs beyond the drivers 10 degree field of view will not exceed the 1000 fL threshold and will not introduce a new source of glare as defined by the California Vehicle Code Section 21466.5.

b. Twilight

The Project Signs are also evaluated during twilight (the transition period from day to night, from sunset to 45 minutes after sunset, and night to day, from 45 minutes before sunrise to sunrise). Sunlight increases gradually from the minimum brightness at sunrise to maximum brightness at mid-day, and then decreases gradually to the minimum brightness at sunset. Therefore, the minimum ambient sunlight occurs after sunset or before sunrise. However, in order to analyze the most conservative, low level sunlight conditions, this analysis adjusts the time frame for the minimum ambient luminance condition of 10 fL to sunset and at sunrise, extending the duration of minimum sunlight. At sunset the ambient sunlight will be greater than the minimum values after sunset during twilight, and at sunrise the luminance will be greater than the minimum during the time preceding sunrise. At sunset or sunrise, the minimum luminance values within the driver's field of view will be above the minimum night time values (10fL) due to the light from the setting or rising sun. However, to maintain a conservative analysis, this evaluation assumes the minimum luminance within the driver's field of view will be less than 10 fL from sunset until sunrise. Therefore, the maximum luminance during twilight will remain at 500 fL during twilight. The maximum luminance permitted by the California Vehicle Code of 500 fL, which converting to metric units, equals 1579 cd/m², which is far greater than the proposed 200 cd/m² maximum Project Sign luminance

The Project Signs are designed to operate at 200 cd/m² (87.6 fL) maximum luminance, from sunset to sunrise. At 45 minutes prior to sunset the Project Signs are specified to begin transition from the maximum daytime luminance of 6,000 cd/m² to the maximum nighttime luminance of 200 candelas/m². This transition must be completed no later than sunset to avoid potential high contrast, glare conditions. Similarly, the Project Signs are specified to transition from the night

maximum luminance of 200 cd/m² to the day maximum luminance of 6,000 cd/m², beginning no earlier than sunrise. Therefore, the Project Signs will not exceed a maximum luminance of 200 cd/m² from sunset to sunrise, which converts to a maximum of 87.6fL, less than the maximum permitted luminance of 500 fL. Thus, the Project Signs will not exceed the threshold of 500 fL, and will therefore not introduce a new source of glare, during twilight.

c. Day

The evaluation of the Project Signs during the day (45 minutes after sunrise until 45 minutes before sunset) compares the daytime, ambient brightness to the maximum sign brightness stipulated by the California Vehicle Code during full sun conditions and overcast sky conditions. The California Vehicle Code, Section 21466.5 referenced above permits the Project Signs to "generate light intensity levels greater than 1,000 times the minimum measured brightness in the driver's field of view, except when the minimum values are less than 10 (fL)."

During the day (45 minutes after sunrise until 45 minutes before sunset) sunlight with clear sky conditions or light overcast conditions provides sufficient illuminance to generate surface brightness greater than 10 fL and up to 1200 fL on the least reflective surfaces, such as roadway pavement. Utilizing the value of 10 fL as the minimum within the driver's field of view, the maximum allowable brightness would be 1,000 times 10 fL, or 10,000 fL. Because the Project Signs are proposed to be subject to a regulatory limit (through the proposed SUD) of a maximum luminance of 6,000 cd/m² (1,751 fL) during the daytime hours of operation, Project Signs will not exceed 6,000 cd/m² (1,751 fL) during the day, and Project Signs will therefore operate at less than 18% of the maximum luminance stipulated by the California Vehicle Code. Therefore, the Project Signs will not create a new source of glare during day time hours of operation with clear sky or light overcast conditions.

Severe storms, heavy cloud cover, or other atmospheric conditions may occur during the day, which may cause the minimum brightness within the driver's field of view to be less than 10 fL. The Project Signs are proposed to include an electronic control system to reduce the sign luminance from 6,000 cd/m² (1,751 fL) to 200 candelas/m² (58.4 fL) maximum when the ambient sun light falls to illuminance values similar to night, less than 100 fc. During the day, when storms, cloud cover, or other low ambient sunlight conditions occur and when the ambient sunlight is less than 100 fc, the Project Signs will transition from the daytime 6,000 cd/m² (1,751 fL) to 200 candelas/m² (58.4 fL) maximum, and thereby ensure that the sign brightness remains less than the maximum brightness stipulated by the California Vehicle Code. Therefore, the Project Signs will not create a new source of glare during day time periods with storm or severe overcast weather conditions and will not exceed 58.4 fL, or 5.8% of the 500 fL maximum allowed by the California Vehicle Code during overcast conditions.

The Project Signs are designed to not exceed 200 candelas/m² (58.4 fL) luminance at night, twilight, or during overcast sky conditions, and Project Signs will not exceed 6,000 cd/m² (1,751 fL) during the day. The Project Sign luminance is thus less than the California Vehicle Code standard, including 18% of the maximum allowable luminance identified as the threshold for glare during the day, therefore the Project Signs will not create a new source of glare.

The Bloc Sign Supplemental Use District Lighting Study

10. CONCLUSIONS

This Study confirms the light resulting from Project Signs will not exceed the significance thresholds defined by the LAMC of 3.0 fc at residential properties and less than 30 to 1 contrast ratio, Therefore there is no impact from the Project Signs at surrounding residential properties adjacent to the Project. Light intensity degrades exponentially with distance. Therefore, residential properties which are more distant than the Monitoring Sites will receive substantially less light from the Project Signs. Therefore, there is no impact from the Project Signs at residential or sensitive use properties. In addition, the light from Project Signs will not exceed the maximum defined by the California Vehicle Code and there is no impact from the Project Signs with respect to driver's glare.

APPENDIX A: CONCEPTUAL SIGN PLAN

Conceptual Sign Plan for The Bloc Sign Supplemental Use District

February 5, 2024

Case No.: CPC-2018-6388-SN

Applicant/Owner:
NREA-TRC 700, LLC
700 S. Flower Street, Suite 450
Los Angeles, CA 90017
Attn: Dan Cote

Site address: 700 S. Flower Street, 711 S. Hope Street, 700 W. 7th Street

Site Boundary: The block is bounded by 7th Street to the north, Flower Street to the west, 8th Street to the south and Hope Street to the east.

Zone: C2-4D

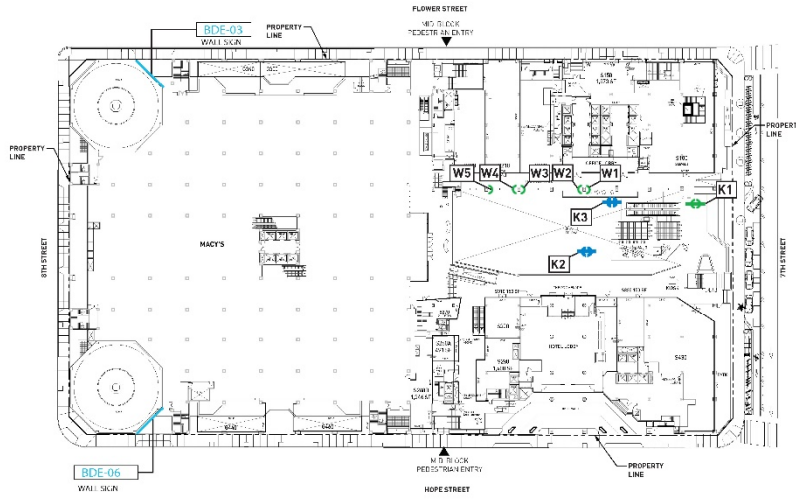
Lot Area: 186,674 SF



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The Bloc Sign Supplemental Use District Lighting Study

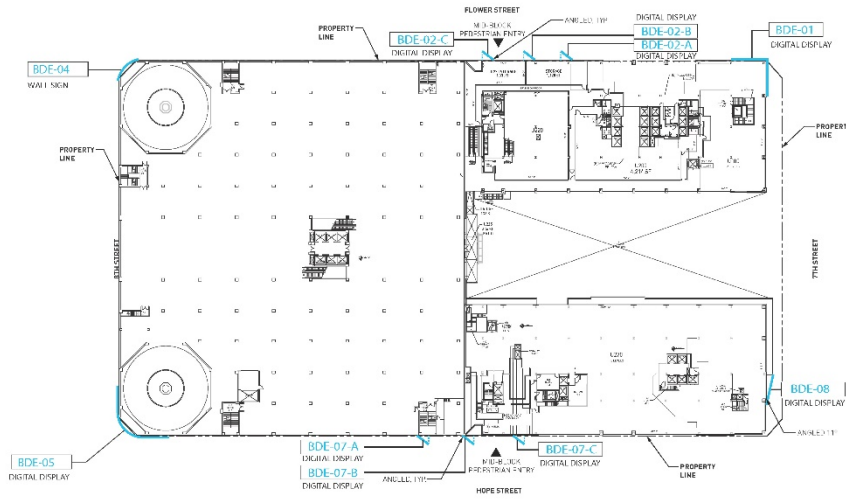


STREET LEVEL

FLOOR MOUNTED DIGITAL KIOSK - PLAZA LEVEL

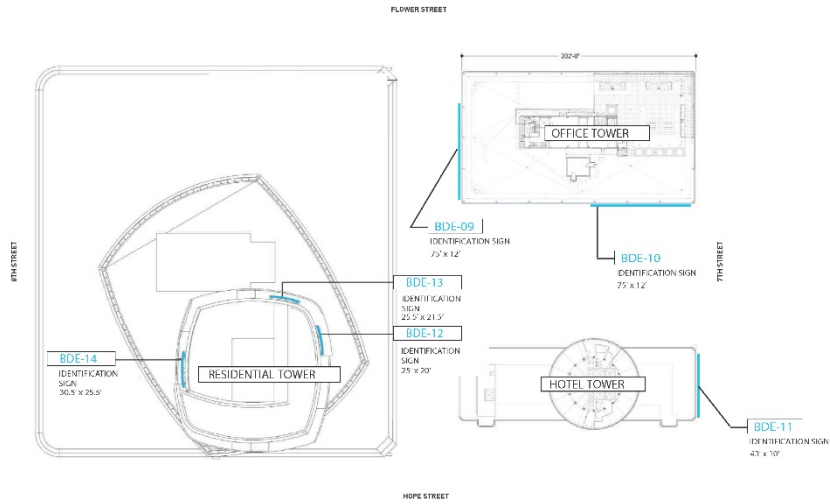
WALL MOUNTED DIGITAL KIOSK - STREET LEVEL

FLOOR MOUNTED DIGITAL KIOSK - STREET LEVEL

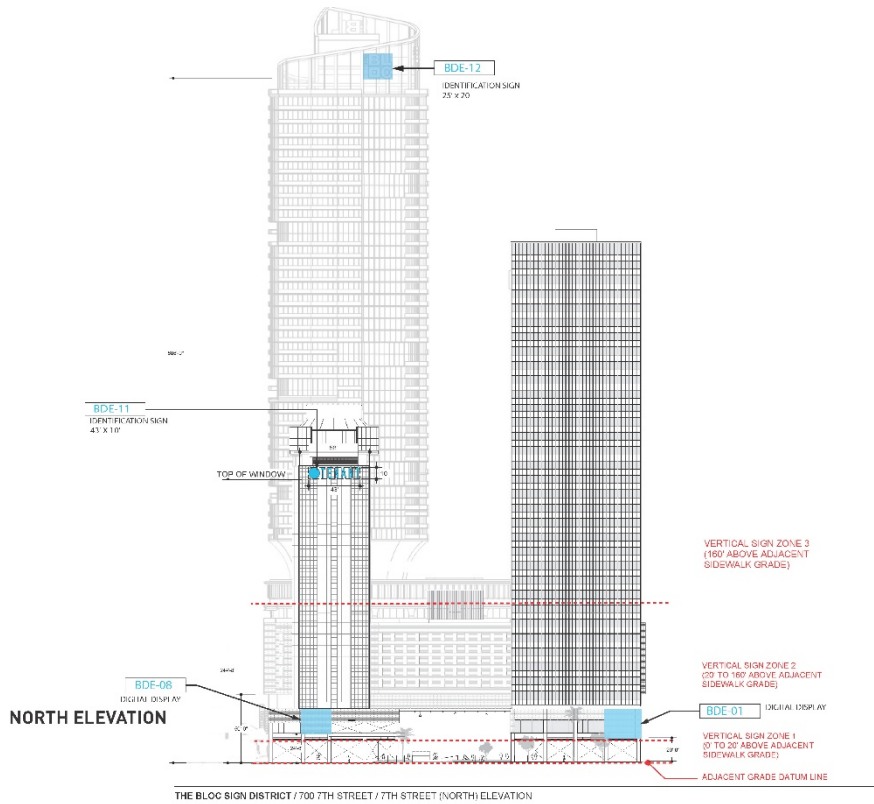


SECOND LEVEL





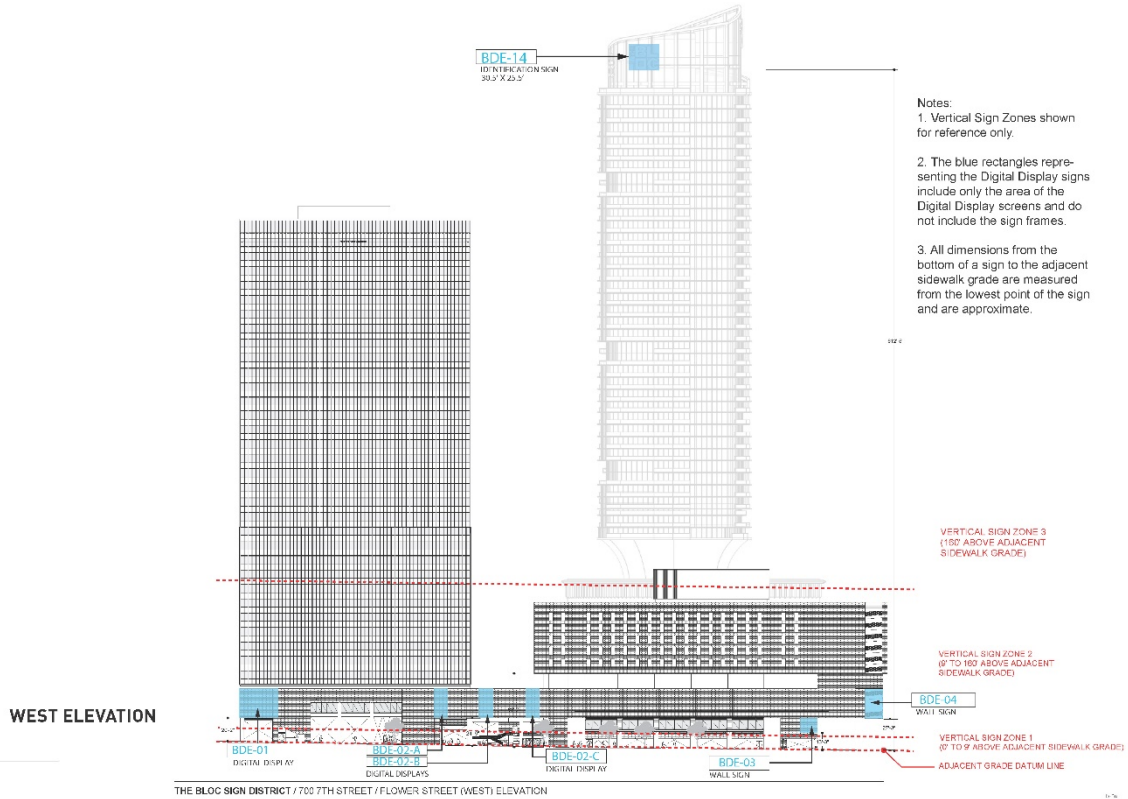
ROOF LEVEL



- Notes:
1. Vertical Sign Zones shown for reference only.
 2. The blue rectangles representing the Digital Display signs include only the area of the Digital Display screens and do not include the sign frames.
 3. All dimensions from the bottom of a sign to the adjacent sidewalk grade are measured from the lowest point of the sign and are approximate.



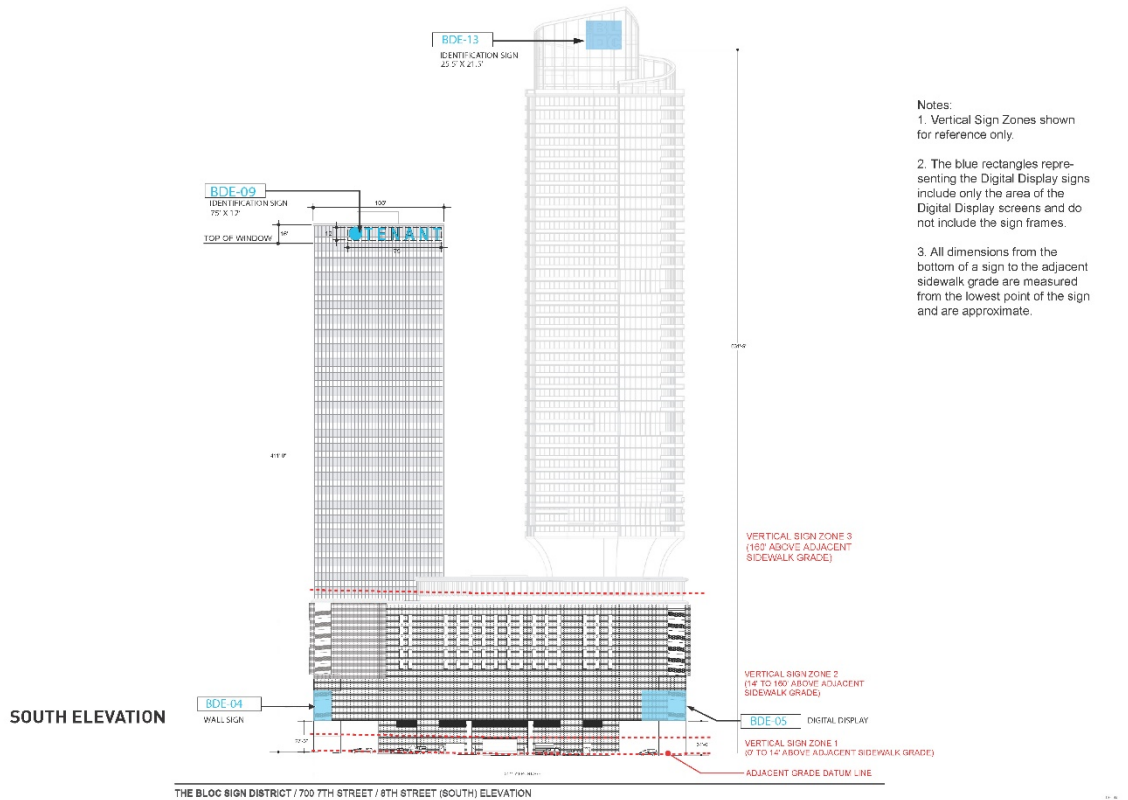
The Bloc Sign Supplemental Use District Lighting Study



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SUD RELIABLE | L.L.B.C.C. NATIONAL REAL ESTATE DEVELOPMENT | FEBRUARY 23, 2024

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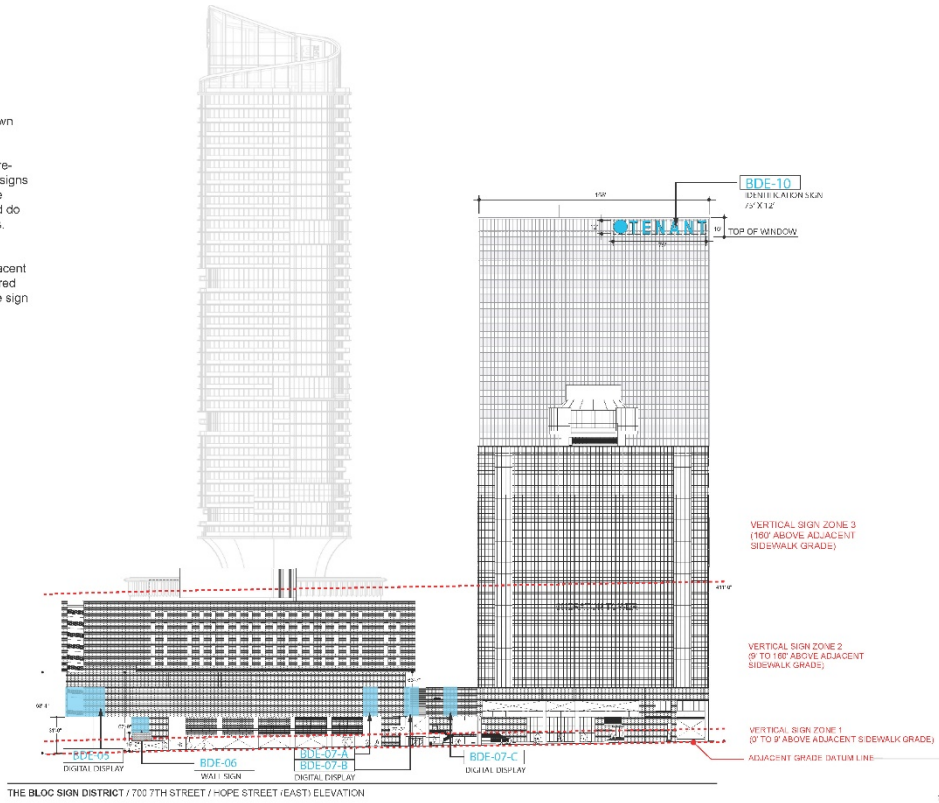
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- Notes:
1. Vertical Sign Zones shown for reference only.
 2. The blue rectangles representing the Digital Display signs include only the area of the Digital Display screens and do not include the sign frames.
 3. All dimensions from the bottom of a sign to the adjacent sidewalk grade are measured from the lowest point of the sign and are approximate.

EAST ELEVATION



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Office Tower Corner - Facing 7th Street/ Northwest Corner
BDE-01 60'w x 26'h

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Flower Street Triplets - Facing Flower Street/ West Facade

BDE-02-A

12'w x 26'h

BDE-02-B

12'w x 26'h

BDE-02-C

12'w x 26'h

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Parking Garage Entry - Facing Flower Street/ West Facade

BDE-03

20'w x 14'h

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Garage Corner - Facing 8th & Flower / Southwest Corner

BDE-04 23' w x 26' h



Garage Corner - Facing 8th & Hope / Southeast Corner

BDE-05 79' w x 26' h

The Bloc Sign Supplemental Use District Lighting Study



Parking Garage Entry - Facing Flower Street/ East Facade

BDE-06 20'w x 14'h

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Hope Street Triplets - Facing Hope Street/ East Facade

BDE-07-A 12'w x 26'h

BDE-07-B 12'w x 26'h

BDE-07-C 12'w x 26'h

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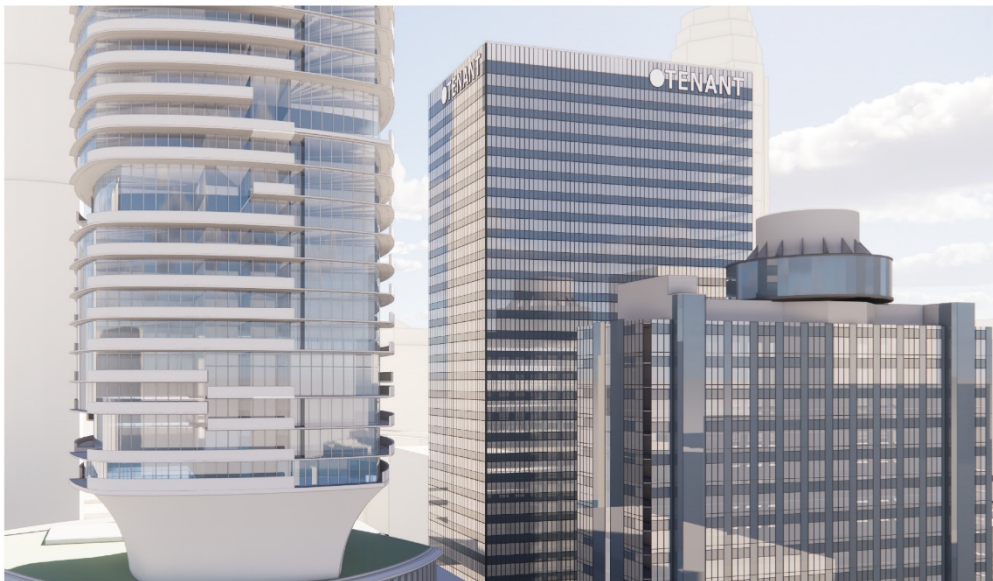
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Hope and 7th Corner- Facing 7th Street/ North Facade

BDE-08 25'w x 22'h



Office Tower Top - Facing 8th Street / South

BDE-09 75'w x 12'h

Office Tower Top - Facing Hope Street / East

BDE-10 75'w x 12'h

The Bloc Sign Supplemental Use District Lighting Study



Hotel Tower Top - Facing 7th Street / North
BDE-11 43'w x 10'h

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New Tower Top Sign - Facing 7th Street / North Facade
BDE-12 25'w x 20'h

New Tower Top Sign - Facing 8th Street / South Facade
BDE-14 30'-6" w x 25'-4" h



New Tower Top Sign - Facing Flower St / West Facade
BDE-13 25'-8" w x 21'-3" h

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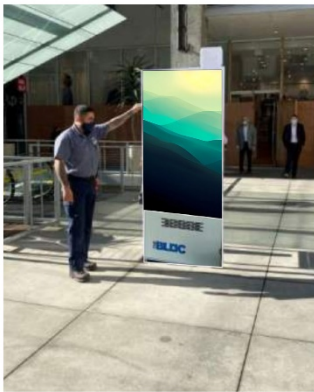
BDE-12 - New Tower Top Sign - Facing 7th Street / North Facade



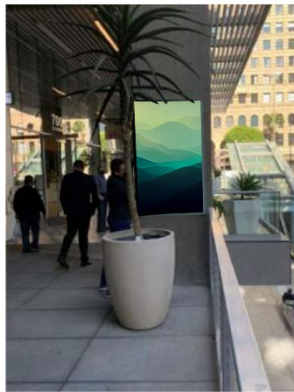
BDE-13 - New Tower Top Sign - Facing 8th Street / South Facade



BDE-14 - New Tower Top Sign - Facing Flower St. / West Facade



K1: STREET LEVEL/7TH STREET PLAZA (K2 & K3 SIMILAR)



W2: STREET LEVEL/OFFICE COLONNADE (W4 SIMILAR)



W1: STREET LEVEL/OFFICE COLONNADE (W3 & W5 SIMILAR)

The Bloc Sign Supplemental Use District Lighting Study

Sign No.	Sign Type	Digital / Non-Digital	On-Site / Off-Site	Dimensions (W X H)	Sign Area (SF)	Location	Facing (Street / Direction)	Encroachment over Property Line
BDE-01	Digital Display	Digital	Off-Site	60' X 26'	1,590	Horizontal Band	7th Street / N & W	2'-6"
BDE-02-A,B,C	Digital Display	Digital	Off-Site	12' X 26', 12' X 26', 12' X 26'	936	Horizontal Band	Flower Street / W	6'-8"
BDE-03	Wall Sign	Non-Digital	On-Site	20' X 14'	280	Parking/Retail Podium	Flower Street / W	6"
BDE-04	Wall Sign	Non-Digital	On-Site	23' X 26'	598	Horizontal Band	8th & Flower Street / SW	2'-6" (5'-4" at Corner Radius Portion)
BDE-05	Digital Display	Digital	Off-Site	26' X 79'	2,054	Horizontal Band	8th & Hope / SE	2'-6" (7'-7" at Corner Radius Portion)
BDE-06	Wall Sign	Non-Digital	On-Site	20' X 14'	280	Parking/Retail Podium	Hope Street / E	6"
BDE-07-A,B,C	Digital Display	Digital	Off-Site	12' X 26', 12' X 26', 12' X 26'	936	Horizontal Band	Hope Street / E	6'-8"
BDE-08	Digital Display	Digital	Off-Site	25' X 22'	560	Horizontal Band	7th Street / N	0"
BDE-09	Identification Sign	Non-Digital	On-Site	75'x12'	900	Office Tower	8th Street / S	0"
BDE-10	Identification Sign	Non-Digital	On-Site	75'x12'	900	Office Tower	Hope Street / E	0"
BDE-11	Identification Sign	Non-Digital	On-Site	43'x10'	430	Hotel Tower	7th Street / N	0"
BDE-12	Identification Sign	Non-Digital	On-Site	25' X 20'	500	New Tower	7th Street / N	0"
BDE-13	Identification Sign	Non-Digital	On-Site	25'-6" X 21'-6"	548.25	New Tower	Flower Street / W	0"
BDE-14	Identification Sign	Non-Digital	On-Site	30'-6" X 25'-6"	777.75	New Tower	8th Street / S	0"
Total Sign Area					11,250.00			

* Horizontal Band: The horizontal architectural element that resembles a band and extends around the entirety of the mixed-use complex
 NOTE: Signs BDE-03, BDE-04 and BDE-06 are not digital and will have externally mounted light fixtures that will extend beyond the property line

The square footages provided in the "Sign Area" column represent the area of the Digital Display screens and does not include the area of the sign frames for any Digital Display signs. The square footage provided in the "Sign Area" column represents the area of the Identification Signs which is the area of a rectangle circumscribed around the Identification Sign. There are no sign frames around the Identification Signs.

Kiosk No.	Kiosk Type	Mounting	Frame Dimensions	Frame Area	Screen Dimensions (VO)	Screen Area (VO)	Number of Sides	Total Screen Area per Kiosk	Location
K1	Digital Kiosk	Floor	6'-11 15/16" x 2'-11 1/4"	20,547.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	2	24,707 SF	Street Level / 7th Street Plaza
K2	Digital Kiosk	Floor	6'-11 15/16" x 2'-11 1/4"	20,547.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	2	24,707 SF	Plaza Level / Center Court
K3	Digital Kiosk	Floor	6'-11 15/16" x 2'-11 1/4"	20,547.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	2	24,707 SF	Plaza Level / Center Court
W1	Digital Kiosk	Wall	4'-11 15/16" x 2'-11 3/8"	14,724.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	1	12,353.5 SF	Street Level / Office Colonnade
W2	Digital Kiosk	Wall	4'-11 15/16" x 2'-11 3/8"	14,724.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	1	12,353.5 SF	Street Level / Office Colonnade
W3	Digital Kiosk	Wall	4'-11 15/16" x 2'-11 3/8"	14,724.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	1	12,353.5 SF	Street Level / Office Colonnade
W4	Digital Kiosk	Wall	4'-11 15/16" x 2'-11 3/8"	14,724.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	1	12,353.5 SF	Street Level / Office Colonnade
W5	Digital Kiosk	Wall	4'-11 15/16" x 2'-11 3/8"	14,724.2 SF	4'-8 1/4" x 2'-7 5/8"	12,353.5 SF	1	12,353.5 SF	Street Level / Office Colonnade
Exterior Screen Area SubTotal								135,888.5 SF	

Note: All Digital Kiosks will include off-site content.

CONCEPTUAL SIGN PLAN DEFINITIONS AND REGULATIONS

Conceptual Sign Plan Regulations

The proposed The Bloc Sign Supplemental Use District ("SUD") provides that the new illuminated signs and digital kiosks signs subject to regulation by the SUD (collectively, "signs") shall comply with the following requirements:

- No sign shall be arranged and illuminated in a manner that will produce a light intensity of greater than three footcandles above ambient lighting, as measured at the property line of the nearest residentially zoned property (LAMC Section 14.4.4 E)
- Project Signs will not exceed the nighttime luminance of 200 cd/m2 at night from sunset until sunrise.
- Project Signs will not exceed the daytime luminance of 6000 candelas per square meter (cd/m2) for all signs during the day, from 45 minutes after sunrise until 45 minutes prior to sunset.
- Project Signs luminance shall transition smoothly from daytime luminance to nighttime luminance and vice versa over a period of no less than 45 minutes.
- Illuminated signs that have the capacity to exceed the maximum luminance permitted at night (200 cd/m2) will include an electronic control system to reduce sign luminance to the maximum nighttime brightness (200 cd/m2) at any time when ambient sunlight is less than 100 footcandles (fc).
- For internally illuminated signs, the maximum allowed lighting power shall not exceed the product of the illuminated sign area and 12 watts per square foot.

The following definitions apply to the above regulations:

Brightness:	The magnitude of sensation that results from viewing surfaces from which light comes to the eye. This sensation is determined partly by the measurable luminance of the source and partly by the conditions of observation (observer), such as the state of adaptation of the eye. For example, very bright lamps at night appear dim during the day, because the eye adapts to the higher brightness of daylight.
Candela:	Measure of light energy from a source at a specific standard angle and distance. Candela (cd) is a convenient measure to evaluate output of light from a lamp or light fixture in terms of both the intensity of light and the direction of flow of the light energy away from the source.
Electronic Control System:	Integrated hardware and software system which provides sign lighting control functionality for time of day scheduling, response to ambient light, and direct user control with full range of dimming from 0% to 100% full light output, full color, or all white.
Illuminance:	Illuminance is the means of evaluating the density of luminous flux. Illuminance indicates the amount of luminous flux from a light source falling on a given area. Illuminance is measured in footcandles (fc) which is the lumens per square foot, or lux (lumens per square meter). Illuminance need not necessarily be related to a real surface since it may be measured at any point within a space. Illuminance is determined from the luminous intensity of the light source. Illuminance of a point source decreases with the square of the distance from the light source (see Inverse Square Law definition). For the purposes of this analysis, illuminance may be described subjectively by the following criteria: High Illuminance: Illuminance greater than the maximum permitted by the LAMC, and greater than 3.0 footcandles. Medium Illuminance: Illuminance less than 3.0 footcandles and greater than 1.0 footcandle. Low Illuminance: Illuminance less than 1.0 footcandle.
Luminance:	Luminance is a measure of emitted or reflected light from a specific surface in a specific direction over a standard area. Luminance is measured in footlamberts (fL) (Lux Candelas per square foot), or cd/m ² (Candelas per square meter). fL = 3.43 cd/m ² . Whereas illuminance indicates the amount of luminous flux falling on a given surface, luminance describes the brightness of an illuminated or luminescent surface. Luminance is defined as the ratio of luminous intensity of a surface (candela) to the projected area of this surface (m ² or ft ²).

APPENDIX B: CALIFORNIA ENERGY CODE ZONE DESIGNATIONS

100846031

ADMINISTRATIVE REGULATIONS FOR THE CALIFORNIA ENERGY COMMISSION (CEC)

- certifying organizations that ensures uniform application of the CRRC testing and rating procedures, labeling and rating, and such other rating procedures for other factors that improves the accuracy of properties of roofing products affecting energy performance as the CRRC and the Commission may adopt.
4. The entity shall require manufacturers and independent certifying organizations within its program to use only laboratories accredited by the supervisory entity to perform tests in accordance with CRRC-1.
 5. The entity shall maintain appropriate guidelines for testing laboratories and manufacturers, including requirements for adequate:
 - A. Possession and calibration of equipment;
 - B. Education, competence, and training of personnel;
 - C. Quality control;
 - D. Record keeping and reporting;
 - E. Periodic review including, but not limited to, blind testing by laboratories; inspections of products; and inspections of laboratories, and manufacturing facilities;
 - F. Challenges to ratings; and
 - G. Guidelines to maintain the integrity of the program, including, but not limited to, provisions to avoid conflicts of interest within the rating process.
 6. The entity shall be a nonprofit organization and shall maintain reasonable, nondiscriminatory fee schedules for the services it provides, and shall make its fee schedules, the financial information on which fees are based, and financial statements available to its members for inspection.
 7. The entity shall provide hearing processes that give laboratories, manufacturers and certifying agencies a fair review of decisions that adversely affect them.
 8. The entity shall maintain a policy committee or similar body whose procedures are designed to avoid conflicts of interest in deciding appeals, resolving disputes and setting policy for the certifying organizations in its program.
 9. The entity shall publish at least annually a directory of rated products and products that are no longer rated by the CRRC.
 10. The entity itself shall be free from conflict-of-interest ties or to undue influence from any particular roofing product manufacturing interest(s), testing or independent certifying organization(s).
 11. The entity shall provide or authorize the use of labels that can be used to meet the requirements for showing compliance with the requirements of Sections 140.1, 140.2, 140.3(a)1, 141.0(b)2B, 150.1(c)11, 150.2(b)1H and 150.2(b)2, and this section.
 12. The entity's rating program shall allow for multiple participants in each aspect of the program to provide for competition between manufacturers and between testing labs.
- Authority:** Sections 25402 and 25402.1, Public Resources Code.
Reference: Sections 25007, 25008, 25218.5, 25310, 25402, 25402.1, 25402.4, 25402.5, 25402.8 and 25943, Public Resources Code.
- 10-114. Determination of outdoor lighting zones and administrative rules for use.** This section establishes rules for implementing outdoor lighting zones to show compliance with Section 140.7 of Title 24, California Code of Regulations, Part 6.
- (a) **Lighting zones.** Exterior lighting allowances in California vary by Lighting Zones (LZ).
 - (b) **Lighting zone characteristics.** Table 10-114-A specifies the relative ambient illumination level and the statewide default location for each lighting zone.
 - (c) **Amending the lighting zone designation.** A local jurisdiction may officially adopt changes to the lighting zone designation of an area by following a public process that allows for formal public notification, review and comment about the proposed change. The local jurisdiction may determine areas where Lighting Zone 4 is applicable and may increase or decrease the lighting zones for areas that are in State Default Lighting Zones 1, 2 and 3, as specified in Table 10-114-A.
 - (d) **Commission notification, amended outdoor lighting zone designation.** Local jurisdictions who adopt changes to the State Default Lighting Zones shall notify the Commission by providing the following materials to the Executive Director:
 1. A detailed specification of the boundaries of the adopted lighting zones, consisting of the county name, the city name if any, the zip code(s) of the redesignated areas, and a description of the physical boundaries within each zip code;
 2. A description of the public process that was conducted in adopting the lighting zone changes; and
 3. An explanation of how the adopted lighting zone changes are consistent with the specifications of Section 10-114.
 - (e) The Commission shall have the authority to not allow Lighting Zone changes which the Commission finds to be inconsistent with the specifications of Section 10-114.
- Authority:** Sections 25402 and 25402.1, Public Resources Code.
Reference: Sections 25007, 25008, 25218.5, 25310, 25402, 25402.1, 25402.4, 25402.5, 25402.8 and 25943, Public Resources Code.
- 10-115 – Community shared solar electric generation system or community shared battery storage system compliance option for onsite solar electric generation or battery storage requirements.**
- (a) **Community shared solar electric generation system or battery storage system offset.** A community shared solar system, other community shared renewable system, community shared battery storage system, or combination of the aforementioned systems (hereinafter referred to as a community shared solar or battery stor-

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age system) may be approved by the Commission as a compliance option to partially or totally meet the on-site solar electric generation system and/or battery storage system that is otherwise required by Section 150.1(b)1 of Title 24, California Code of Regulations, Part 6. To be approved, the community shared solar electric generation or community shared battery storage system shall meet the following requirements.

1. **Enforcement agency.** The community shared solar electric generation system and/or community shared battery storage system shall be installed and available for enforcement agency site inspection, no later than the point in time the enforcement agency must physically verify compliance of the building, which would otherwise be required to have an on-site solar electric generation and/or battery storage system, and shall not cause delay in the process of enforcement agency review and approval of that building. The enforcement agency shall have jurisdiction and facilitated access to make site inspections. All documentation for the community solar electric generation system and/or community solar battery storage system that is required to demonstrate compliance for the

building shall be completed prior to building permit application.

2. **Energy performance.** The community shared solar electric generation system and/or community shared battery storage system shall be demonstrated to provide the same or better energy performance equal to the partial or total compliance with the energy performance of the on-site solar electric generation and/or battery storage system that would otherwise have been required for the building, computed by compliance software certified for use by the Commission.
3. **Dedicated building energy savings benefits.** The community shared solar electric generation system and/or community shared battery storage system shall provide energy saving benefits directly to the building that would otherwise have been required to have an on-site solar electric generation system and/or battery storage system. The energy savings benefits shall be allocated from the total resource of the community shared solar electric generation system and/or community shared battery storage system in a manner demonstrated to be equivalent to the reductions in

**TABLE 10-114-A
LIGHTING ZONE CHARACTERISTICS AND RULES FOR AMENDMENTS BY LOCAL JURISDICTIONS**

ZONE	AMBIENT ILLUMINATION	STATEWIDE DEFAULT LOCATION	MOVING UP TO HIGHER ZONES	MOVING DOWN TO LOWER ZONES
LZ0	Very Low	Undeveloped areas of government designated parks, recreation areas, and wildlife preserves.	Undeveloped areas of government designated parks, recreation areas, and wildlife preserves can be designated as LZ1 or LZ2 if they are contained within such a zone.	Not applicable.
LZ1	Low	Developed portion of government designated parks, recreation areas and wildlife preserves. Those that are wholly contained within a higher lighting zone may be considered by the local government as part of that lighting zone.	Developed portion of a government designated park, recreation area, or wildlife preserve, can be designated as LZ2 or LZ3 if they are contained within such a zone.	Not applicable.
LZ2	Moderate	Rural areas, as defined by the 2000 U.S. Census.	Special districts within a default LZ2 zone may be designated as LZ3 or LZ4 by a local jurisdiction. Examples include special commercial districts or areas with special security considerations located within a rural area.	Special districts and government designated parks within a default LZ2 zone may be designated as LZ1 by the local jurisdiction for lower illumination standards, without any size limits.
LZ3	Moderately High	Urban areas, as defined by the 2000 U.S. Census.	Special districts within a default LZ3 may be designated as LZ4 by local jurisdiction for high-intensity nighttime use, such as entertainment or commercial districts or areas with special security considerations requiring very high light levels.	Special districts and government designated parks within a default LZ3 zone may be designated as LZ1 or LZ2 by the local jurisdiction, without any size limits.
LZ4	High	None.	Not applicable.	Not applicable.

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APPENDIX C: IESNA LP-11-20 LIGHTING ZONE DEFINITIONS

ANSI/IES LP-11-20

4.1 Lighting Zone Definitions

Because identifying the appropriate outdoor lighting zone is a matter of judgment and consensus, there is no absolute means of determining which lighting zone designation is appropriate for a given area. The same type of lighting application may fall into different lighting zones in different jurisdictions or using different standards. As used in the *Joint IDA-IES Model Lighting Ordinance (MLO)*,⁹ the lighting zones are defined with suggested uses:

- **LZ-0: No ambient light**

LZ-0 (see **Figure 4-1**) includes areas where the natural environment could be seriously and adversely affected by small amounts of electric lighting at night. This includes biological cycles of flora and fauna, and human enjoyment and appreciation of the natural environment. The vision of human residents and users of these areas is adapted to the total darkness, and they do not expect to see electric lighting. Human activity is sparse and is subordinate in importance to the natural environment. There is no expectation for electric lighting. Although some lighting is allowed, it is required to be controlled.

LZ-0	Lighting Zone 0 should be applied to areas in which permanent lighting is not expected and when used, is limited in the amount of lighting and the period of operation. LZ-0 typically includes undeveloped areas of open space, wilderness parks and preserves, areas near astronomical observatories, or any other area where the protection of a dark environment is critical. Special review should be required for any permanent lighting in this zone. Some rural communities may choose to adopt LZ-0 for residential areas.	Recommended default zone for wilderness areas, parks and preserves, and undeveloped rural areas. Includes protected wildlife areas and corridors.
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Figure 4-1. LZ-0 description from the MLO.

- **LZ-1: Low ambient light**

LZ-1 (see **Figure 4-2**) includes developed areas within a natural environment and areas of human activity that are inherently dark at night. Electric lighting at night could adversely affect the biological cycles of flora and fauna, or could interrupt the quiet, dark character of the area. The vision of human residents and users of these areas is adapted to the low light levels, and they do not expect to see electric lighting except where absolutely necessary to improve visibility and safety. In these limited areas, low light levels

are appropriate. Lighting is expected to be non-continuous (i.e., pools of light rather than uniform lighting along a path or roadway). After curfew, both light levels and uniformity may be reduced in some areas. An example of a parking lot in an LZ-1 area is shown in **Figure 4-3**.

LZ-1	Lighting Zone 1 pertains to areas that desire low ambient lighting levels. These typically include single and two family residential communities, rural town centers, business parks, and other commercial or industrial/storage areas typically with limited nighttime activity. May also include the developed areas in parks and other natural settings.	Recommended default zone for rural and low density residential areas. Includes residential single or two family, agricultural zone districts, rural residential zone districts, business parks, open space include preserves in developed areas.
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Figure 4-2. LZ-1 description from the MLO.



Figure 4-3. A parking lot located in a Lighting Zone 1 community. (Image courtesy of Bob Parks)

- **LZ-2: Moderate ambient light**

LZ-2 (see **Figure 4-4**) includes areas human activity (i.e., habitation, recreation, and/or work) where electric lighting may be required for increased mobility and convenience at night. The vision of human residents and users of these areas is adapted to moderate light levels, and they have moderate expectations of electric lighting. Lighting is expected to be non-continuous (e.g., pools of light at crosswalks or intersections, rather than uniform lighting along a path or street). After curfew, both light levels and uniformity may be reduced in some areas as activity levels decline. **Figure 4-5** shows an example of a street located in an LZ-2 area.

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LZ-2	Lighting Zone 2 pertains to areas with moderate ambient lighting levels. These typically include multifamily residential uses, institutional residential uses, schools, churches, hospitals, hotels/motels, commercial and/or businesses areas with evening activities embedded in predominately residential areas, neighborhood serving recreational and playing fields and/or mixed use development with a predominance of residential uses. Can be used to accommodate a district of outdoor sales or industry in an area otherwise zoned LZ-1.	Recommended default zone for light commercial business districts and high density or mixed use residential districts. Includes neighborhood business districts; churches, schools and neighborhood recreation facilities; and light industrial zoning with modest nighttime uses or lighting requirements.
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Figure 4-4. LZ-2 description from the MLO.



Figure 4-5. A street located in an LZ-2 area: fully shielded lighting, uniform distribution. (Image courtesy of Bob Parks)

• **LZ-3: Moderately high ambient light**

LZ-3 (see **Figure 4-6**) includes areas of human activity (i.e., habitation, recreation, and/or work) where electric lighting may be continuous and is required for and convenience at night. The vision of human residents and users of these areas is adapted to moderately high light levels, and they have moderate to high expectations of electric lighting. Lighting is expected to be continuous (e.g. lighting delivered fairly evenly along the length of a path or street). After curfew, both light levels and uniformity may be reduced in some areas as activity levels decline. **Figure 4-7** shows an example of building façade lighting in an LZ-3 area.

LZ-3	Lighting Zone 3 pertains to areas with moderately high lighting levels. These typically include commercial corridors, high intensity suburban commercial areas, town centers, mixed use areas, industrial uses and shipping and rail yards with high night time activity, high use recreational and playing fields, regional shopping malls, car dealerships, gas stations, and other nighttime active exterior retail areas.	Recommended default zone for large cities' business district. Includes business zone districts; commercial mixed use; and heavy industrial and/or manufacturing zone districts.
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Figure 4-6. LZ-3 description from the MLO.



Figure 4-7. A long-term care facility in an LZ-3 area: well-shielded lighting—no direct uplight. (Image courtesy of David Roederer)

• **LZ-4: High ambient light**

LZ-4 (see **Figure 4-8**) includes areas of high levels of human activity at night, including significant interaction among pedestrians and/or vehicles. The vision of humans when outside is typically adapted to moderate light levels. Lighting is continuous and is required for safety and convenience. Expectations for electric lighting are high, both in terms of light levels and uniformity along pathways or streets. However, both light levels and uniformity may be reduced after curfew hours in some areas as activity levels decline. **Figure 4-9** shows an example of an urban entertainment area designated as LZ-4.

LZ-4	Lighting zone 4 pertains to areas of very high ambient lighting levels. LZ-4 should only be used for special cases and is not appropriate for most cities. LZ-4 may be used for extremely unusual installations such as high density entertainment districts, and heavy industrial uses.	Not a default zone. Includes high intensity business or industrial zone districts.
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Figure 4-8. LZ-4 description from the MLO.



Figure 4-9. Example of an entertainment district in an LZ-4 urban area. (Image courtesy of Bob Parks)

APPENDIX D: IESNA RP-8-18 TABLE 4-2

Table 4-2. Recommended Maximum Initial Vertical Illuminance Spill Light from Exterior Lighting, Based on Lighting Zone.

Lighting Zone	Maximum Initial Vertical Illuminance, lux (fc)*
LZ-0	0.5 (0.05)
LZ-1	1.0 (0.1)
LZ-2	3.0 (0.3)
LZ-3	8.0 (0.7)
LZ-4	15.0 (1.4)

* Maximum at any point in the vertical plane of the property line.

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VP-E2		515	525	535	545	555	565	575	585	595
Horizontal (ft)										
Vertical (ft)	715	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	705	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	695	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	685	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	675	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	665	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	655	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	645	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	635	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	625	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	615	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
	605	0.10	0.10	0.10	0.10	0.00	0.10	0.00	0.00	0.00
	595	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00
	585	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	575	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	565	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.10
	555	0.10	0.10	0.10	0.10	0.00	0.10	0.10	0.10	0.00
	545	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	535	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	525	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	515	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	505	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	495	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	485	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	475	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	465	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	455	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	445	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	435	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	425	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	415	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	345	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	335	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	325	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
315	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
305	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
275	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	
265	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
245	0.10	0.10	0.10	0.10	0.10	0.00	0.10	0.00	0.10	
235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
195	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	
185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	
175	0.10	0.10	0.10	0.00	0.10	0.00	0.00	0.00	0.00	
165	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	
155	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
145	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
135	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
125	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
115	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
105	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
95	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
85	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
75	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

