

Appendix C

Aesthetics

Appendix C.1

Lighting Report



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Radford Studio Center Project Lighting and Glare Technical Report

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Radford Studio Center Project Lighting and Glare Technical Report

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1.1 Introduction

This Lighting Technical Report (Report) was prepared by Francis Krahe & Associates Inc. for the Radford Studio Center Project (Project) located at 4024-4200 North Radford Avenue, Los Angeles, California (Project Site) to analyze the Project's potential lighting impacts to surrounding light-sensitive uses.¹

The Project Site is located in an urbanized area of Los Angeles and is approximately 55 acres (approximately 52.25 acres after dedications/mergers). The Project Site is comprised of two addressed parcels located at 4200 N. Radford Avenue (APN 2368-001-028), referred to herein as the North Lot, and 4024 and 4064 N. Radford Avenue (APN 2368-005-011), referred to herein as the South Lot, and two unaddressed parcels located within and around the Los Angeles River (APN 2368-001-029) and Tujunga Wash (APN 2368-001-030).² The North Lot and the South Lot are separated by the Los Angeles River. The Project Site, originally constructed in 1928, is currently developed with studio uses and surface/structured parking, including numerous ancillary buildings and structures.

As discussed below in Section 3, the Project would continue the existing studio use and modernize and expand Radford Studio Center through the Radford Studio Center Specific Plan (Specific Plan). The sections within the Specific Plan which pertain to future exterior building, site lighting, and on-site signs are attached herein as Appendix A. Under the Specific Plan, off-site signs (e.g., billboards) would be prohibited, and Digital Displays would be prohibited along the exterior of the Project Site (Digital Displays would only be permitted in the interior areas that are not visible from the public right-of-way [Site Interior]). The Specific Plan would permit a maximum of 109,200 square feet of externally-visible signage. Sign illumination would be governed by the regulations in the Los Angeles Municipal Code (Code).

This Report reviews the parameters that affect light trespass and glare (each as defined below), reviews the applicable lighting regulations pertaining to artificial lighting, examines the existing lighting conditions within and surrounding the Project Site, and evaluates the sources of artificial light and glare from the Project, including outdoor stationary lighting such as building, site, landscape, construction, and security lighting (hereinafter referred to as Exterior Lighting) and nonstationary lighting such as film production or event lighting or other mobile light sources (hereinafter referred to as Production Lighting), and illuminated signs (hereinafter referred to as Signs), to identify the Project's potential CEQA impacts related to light trespass and glare.

The methods of analysis utilized for this Report 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

¹ As used in this Report, "sensitive use" refers to residentially zoned property or property with a residential use or other light or glare sensitive use.

² The Tujunga Wash is a tributary of the Los Angeles River and runs along the east of the North Lot.

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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.

1.2 Light Trespass And Glare

This Report evaluates the potential CEQA impacts related to light trespass and glare from the Project's proposed Exterior Lighting and Signs. This Report analyzes whether the Project would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. For this Report, the light from the Project is analyzed to determine the change in ambient illumination levels as a result of the Project and the extent to which Project light would spill off the Project Site and affect adjacent light-sensitive areas. Adjacent sensitive use properties include residentially-zoned properties and the Los Angeles River / Tujunga Wash. Certain commercial uses such as office buildings or retail stores are not considered light-sensitive uses under CEQA. More distant sensitive use properties are not affected by light from the Project due to the exponential degradation of light energy with increased distance from the source of light as described by the Inverse Square Law.

Environmental impacts from the Project at sensitive use properties 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 (footcandles [fc] 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 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 [fL] or metric units candelas [cd]/square meter [cd/m²]) 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 describe 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. Sign glare is evaluated during the day and night. Building and Exterior Lighting operates only at night.

2. EXECUTIVE SUMMARY OF THE LIGHTING ANALYSIS

This Report analyzes the Exterior Lighting and Signs with respect to light trespass and glare at the nearest sensitive use properties. The Report concludes that the Project will not create light

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trespass or glare impacts at sensitive use properties.

The Project Site property line includes the Project boundary which is adjacent to the Tujunga Wash internal edge where the Project components are developed, however, light trespass is analyzed at the nearest residentially-zoned property line. Project Site property line and Project boundary are technical terms that are being referred to in this report.

2.1 Light Trespass

Regarding light trespass, this Report analyzes the proposed Project's compliance with the applicable requirements identified in the 2006 Los Angeles CEQA Thresholds Guide, the Los Angeles Municipal Code, the RIO District Ordinance, and the requirements of CALGreen. Each of these regulations stipulate maximum permissible light trespass from Exterior Lighting or Signs at sensitive use locations. The Project would comply with the applicable light trespass illumination requirements.

2.1.1 Exterior Lighting Light Trespass

This Report analyzes Exterior Lighting for light trespass with respect to the L.A. CEQA Thresholds Guide, the Code, the RIO, and CALGreen, which are summarized below.

Exhibit A.4-1 of 2006 L.A. CEQA Thresholds Guide summarizes certain City lighting regulations, such as Chapter 9, Article 3, Section 93.0117 of the Code, stating that "No exterior light source may cause more than two foot-candles of lighting intensity or generate direct glare onto exterior glazed windows or glass doors; elevated habitable porch, deck, or balcony; or any ground surface intended for uses such as recreation, barbecue or lawn areas or any other property containing a residential unit or units."

Code Chapter 9, Article 3, Div. 1, Sec. 93.0117 provides the following:

"The provisions of this section shall apply to any exterior luminaire, multi-head luminaire, lamp holder or sign light source.

No person shall construct, establish, create, or maintain any stationary exterior light source that may cause the following locations to be either illuminated by more than two footcandles (21.5 lx) of lighting intensity or receive direct glare from the light source. Direct glare, as used in this subsection is a glare resulting from high luminance or insufficiently shielded light sources that is in the field of view.

1. Any exterior glazed window or sliding glass door on any other property containing a residential unit or units.
2. Any elevated habitable porch, deck or balcony on any other property containing a residential unit or units.
3. Any ground surface intended for use but not limited to recreation, barbecue, or lawn areas on any other property containing a residential unit or units."

Section 93.0117(b) sets forth nine exceptions to this requirement.

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This Report demonstrates that light trespass from Exterior Lighting at adjacent sensitive use properties would be below the 2.0 footcandles (fc) limit established within Code Chapter 9, Article 3, Div. 1, Sec. 93.0117, including Exception 2, where light sources are not visible to persons on residential property, and/or Exception 8, where the light source is greater than 2,000 feet from a property with a residential unit(s). This analysis confirms the Exterior Lighting complies with Section 93.0117.

Furthermore, the Code regulations listed above apply to “any stationary exterior light source”, which does not apply to temporary lighting for film production on the Project Site. Therefore, future Production Lighting which will be similar to the existing uses on the Project Site, will not create a new light trespass impact.

The RIO Ordinance includes regulations relative to exterior lighting, as set forth in Code Section 13.17(F)(3):

“Exterior Site Lighting.

(a) All site and building mounted lighting shall be designed such that it produces a maximum initial luminance value no greater than 0.20 horizontal and vertical foot candles at the site boundary, and no greater than 0.01 horizontal foot candles 15 feet beyond the site. No more than 5.0 percent of the total initial designed lumens shall be emitted at an angle of 90 degrees or higher from nadir (straight down).”

The RIO Ordinance identifies maximum illuminance at the “site boundary” but does not take into account the unique nature and boundaries of the Project Site. Portions of the Los Angeles River and Tujunga Wash are contained within the Project Site in dedicated easement areas. The existing lighting at the Project Site exceeds the RIO Ordinance illumination standards, and future Exterior Lighting as defined by the Specific Plan will be of a similar nature to support the existing functioning film studio adjacent to the Los Angeles River and Tujunga Wash. Future light trespass illuminance from the Exterior Lighting will be similar to or less than the existing lighting conditions at the boundary of the Los Angeles River / Tujunga Wash.

The Project includes a proposed Specific Plan to establish land use regulations for the Project Site to ensure consistent implementation of development standards throughout the Project Site in recognition of the Project Site’s unique characteristics, including the unique nature and demands of an existing studio use and unique constraints posed by the Project Site’s location which are not experienced by other sites. The Specific Plan would establish site-specific lighting standards to ensure Project lighting is consistent with and does not exceed existing conditions (refer to Appendix A of this Report). With compliance with the lighting regulations in the Specific Plan, the CEQA impact of the Exterior Lighting would be less than significant. The areas where Exterior Lighting would exceed the RIO standards include the existing film studio facilities, which is an industrial/commercial use property within the Project site, and do not include natural habitat or residential uses. As such, pursuant to the 2006 L.A. CEQA Thresholds Guide, no light sensitive receptors would be affected.

Exterior Lighting would also comply with light trespass illuminance at the Project Site property line as per California Energy Commission (CEC) Lighting Zone 3.

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2.1.2 Sign Light Trespass

This Report analyzes Sign light trespass with respect to the L.A. CEQA Thresholds Guide and the Code:

Exhibit A.4-1 of 2006 L.A. CEQA Thresholds Guide includes the following provision from Division 62, Sec. 91.6205 M, of the Code: "No sign shall be illuminated in such a manner as to 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 requirement is consistent with Code Section 14.4.4 E, which states:

"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."

As discussed below, this Report measured the light that would emanate from the Signs and determined that light trespass illuminance from the Signs at the nearest residentially zoned properties would be below the threshold of 3.0 fc.

Furthermore, Signs are exempt from the requirements of the RIO and CALGreen.

2.2 Glare

This Report demonstrates that the Project will not create glare, i.e., will not create a new High contrast condition visible at adjacent residentially-zoned properties or at adjacent roadways.

2.2.1 Exterior Lighting Glare

Exterior Lighting will comply with the requirements of CALGreen which stipulate shielding for all outdoor lighting to control and minimize glare visible from off-site locations. Therefore, Exterior Lighting will not create a new source of glare at sensitive use properties.

The Specific Plan and/or Sign District (assumed herein to be the Specific Plan) includes the following lighting standards which regulate the brightness, shielding, location, and direction of visible outdoor light sources.

- Light sources shall be designed to produce not more than 0.74 fc of illumination as measured at the Project Site property line or at the centerline of adjacent public right-of-way.
- Exterior Lighting located within 50 feet of the Project Site boundary must not exceed 30 feet in height, must be fully shielded, and have a Backlight, Uplight and Glare (BUG) rating of B=0 U=0 G=0 to reduce glare, uplight, and backlight onto the adjacent residential properties.
- Exterior Lighting located within 50 feet of the Project Site boundary must have a

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type II distribution³.

- Parking structure rooftop lighting should not exceed 20 feet in mounting height and shall comply with the following lighting standard: Such uses shall be lighted by horizontally mounted, rectilinear-type, sharp cut-off fixtures shielded in such a manner that source cannot be viewed from residentially zoned properties outside of the Project Site. The source must not exceed 9,500 lumens and must be located no less than 40 feet from the building perimeter and/or below the height of the roof parapet.
- All Exterior Lighting must not exceed 2,500 lumens within 50 feet of the Project Site boundary. All Exterior Lighting located beyond 50 feet of the Project Site boundary must not exceed 20,000 lumens.
- Construction lighting needs to comply with the same light trespass and glare thresholds as the permanent stationary lighting under CALGreen.
- All lighting for above-grade parking structures and exterior building terraces will be designed to prevent light spill from any building or parking structure roof deck or terrace, or from any open elevations of any building or parking structure within 50 feet from the Project Site.

Exceptions:

- Temporary lighting for film production activities and special events are not subject to the lighting regulations contained in the Specific Plan.

2.2.2 Sign Glare

This Report analyzes Signs with respect to glare by evaluating the contrast ratio, which compares the maximum Sign luminance to the existing average luminance measured at Monitoring Sites adjacent to the Project Site. This evaluation determined that the contrast ratio will be less than 30:1 at all the Monitoring Sites identified in Figure 5. Contrast ratios less than 30:1 indicate there is no glare from the Signs. As outlined in the proposed Specific Plan, the Signs located within 100 feet from Project property line and/or Project boundary will not exceed 100 cd/m² nighttime luminance and the Signs located further than 100 feet from Project property line and/or Project boundary will not exceed 300 cd/m² nighttime luminance. Therefore, the Signs will not create a new glare condition at adjacent properties with sensitive uses.

The glare visible to drivers at roadways is evaluated with respect to the standards identified by the California Vehicle Code (CVC), 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 Report confirms that the Signs would not exceed the maximum luminance defined by the CVC during the day, or during periods of low sun intensity

³ Distribution types are terms used to define the pattern of light disperse from a luminaire. The type II distribution is used for wide walkways, ramps, and any other long, narrow roadways. This type is meant for illuminating larger areas and is usually located adjacent to the roadside.

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such as overcast sky conditions, or twilight, or at night.

The Project has been designed to include the following Sign features, which are included as requirements in the proposed Specific Plan:

- Signs located within 100 feet from Project property line and/or Project boundary shall not exceed the nighttime luminance of 100 cd/m² at night from sunset until sunrise. Externally illuminated Signs shall be illuminated by fully shielded light fixtures mounted at the top and bottom of the Signs. Digital Displays shall not be permitted on the Project exterior (i.e., Digital Displays will only be permitted in the Site Interior).
- Signs located beyond 100 feet from Project property line and/or Project boundary shall not exceed the nighttime luminance of 300 cd/m² at night from sunset until sunrise. No interior Digital Displays are allowed within 100 feet from the Project property line to the west and south and 100 feet from Project boundary to the east and north.
- Mural walls shall be illuminated with fully shielded floodlights located at the top of the walls shining down. Mural/art walls surface brightness shall not exceed 50 cd/m².
- Signs shall not exceed the daytime luminance of 6,000 cd/m² during the day, from 45 minutes after sunrise until 45 minutes prior to sunset.
- Signs luminance shall transition smoothly from daytime luminance to nighttime luminance and vice versa over a period of no less than 45 minutes.
- Signs that have the capacity to exceed the maximum luminance permitted at night (300 cd/m²) will include an electronic control system to reduce sign luminance to the maximum nighttime brightness (300 cd/m²) at any time when ambient sunlight is less than 100 fc.
- Signs maximum allowed lighting power shall not exceed the product of the illuminated sign area and 12 watts per square foot.
- Signs shall be controlled with a photocontrol in addition to an automatic time-switch control, or an astronomical time-switch control.
- 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 Signs power by a minimum of 65 percent during nighttime hours.
- The Sign area facing the sensitive use property (motel use), which directly abuts the public alley to the south of the Project Site, (see Appendix C, Proposed Signage Elevations - on South Elevation Part C), shall not exceed 270 ft² to comply with the Code required 3fc threshold applied to the Project at adjacent sensitive use properties. This limitation remains in place as long as the sensitive use (motel use) exists to the south of the Project and can be eliminated if the adjacent sensitive use is removed in the future.

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3. PROJECT DESCRIPTION AND SETTING

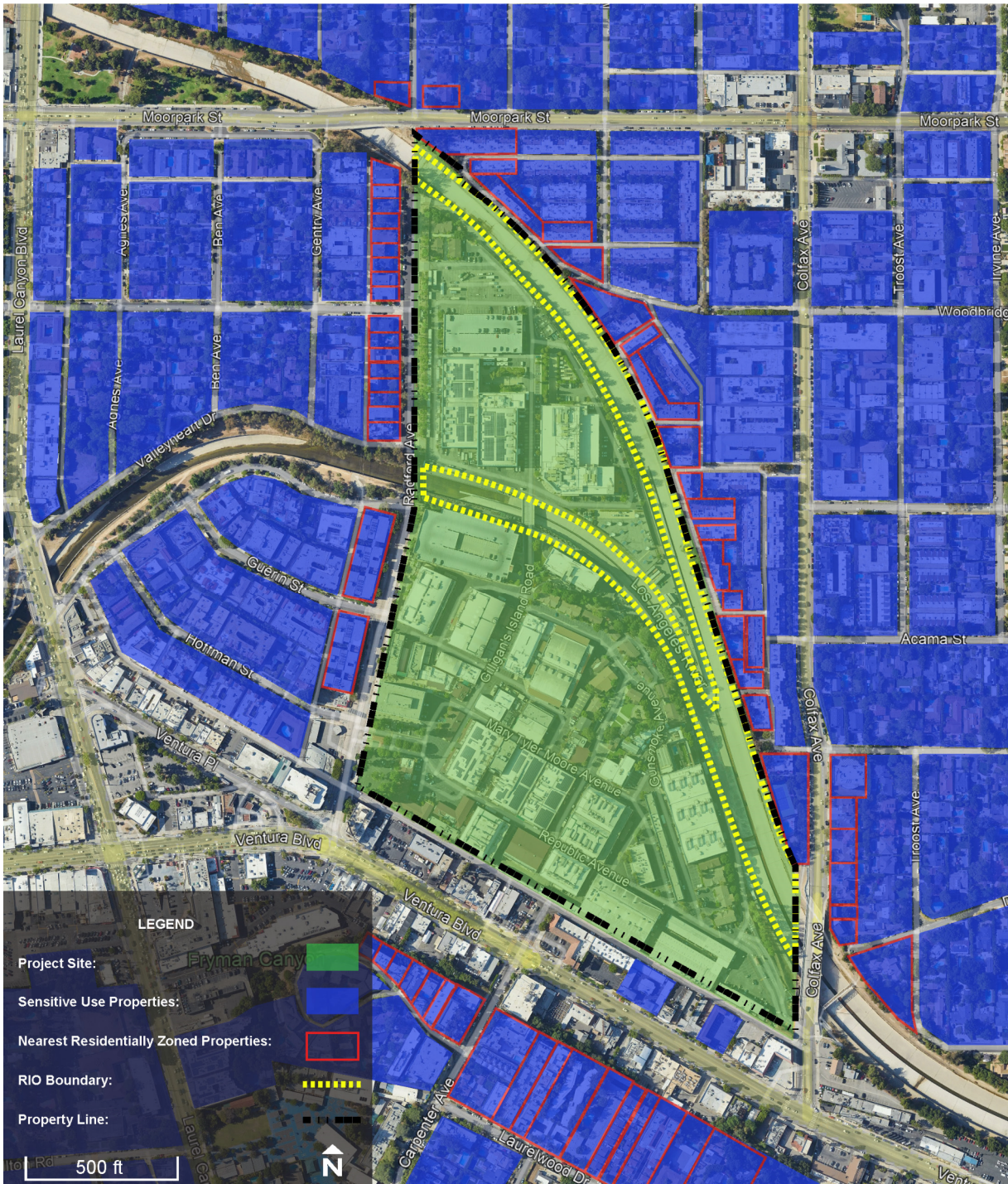


Figure 1: Project Site and Surrounding Properties with Sensitive Uses

The Project entails the continuation of the existing studio use and the modernization and expansion of Radford Studio Center through the proposed Specific Plan. The Project includes the development of up to approximately 1,667,010 square feet of new sound stage, production support, production office, creative office, and retail uses within the Project Site, as well as associated ingress/egress, circulation, parking, basecamp, landscaping, and open space

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improvements. The proposed Specific Plan would allow up to a maximum of 2,200,000 square feet of total floor area within the Project Site upon buildout of the Project (inclusive of approximately 532,990 square feet of existing uses to remain). Proposed new buildings could range in height from approximately 60 feet to up to 135 feet.⁴ A total of approximately 6,050 vehicular parking spaces (including approximately 2,170 existing vehicular parking spaces to remain) would be provided within the Project Site at full buildout of the total floor area permitted under the proposed Specific Plan. As part of the Project, approximately 646,120 square feet of existing uses would be removed. The Project includes new Exterior Lighting associated with the proposed new building structures and new site lighting for the proposed site improvements identified in the Specific Plan. In addition, the Project would establish the Radford Studio Center Specific Plan to regulate on-site signage, which includes new exterior lighted signs.

In addition, the Project proposes off-site improvements, including the construction of a pedestrian, bicycle, and vehicular bridge across the Tujunga Wash to connect Moorpark Street and Radford Avenue (through access for vehicles north or south on Radford Avenue would be prohibited), referred to as the Radford Mobility Connector; the construction of two class IV bikeways along Radford Avenue; and improving the southern alley as a “green alley.” Improvements related to the Radford Mobility Connector include temporary falsework in the Tujunga Wash, removal of LADWP infrastructure (e.g., a pump station and water pipe) with potential relocation in coordination with LADWP’s Trunkline South Project, new electrical/telecommunications infrastructure, relocated and new power poles, and a new traffic signal at the improved Moorpark Street intersection.

The Project Site is bounded by Radford Avenue to the west, a public alley of varying width, from approximately 28 to 30 feet to the south with commercial uses across the alley fronting Ventura Boulevard, Colfax Avenue to the east, and the Los Angeles River and Tujunga Wash to the north and east. Commercial buildings are located adjacent to the Project Site along the alley, with additional commercial buildings across Ventura Boulevard and Radford Avenue. Residential uses are located to the west across Radford Avenue and to the north and east across the Tujunga Wash.

The nearest residentially-zoned properties adjacent to the Project Site include: 4043 - 4333 Radford Avenue and 11906 Moorpark Street located approximately 115 feet west of the Project Site; 4145 - 4245 Colfax Avenue and 11798 - 11868 Moorpark Street located approximately 36 feet east of the Project Site; 3964 - 3965 Carpenter Avenue and 11739 - 11943 Laurelwood Drive located approximately 390 feet south of the Project Site; and 4400 - 4401 Radford Avenue located approximately 145 feet north of the Project Site.

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 Report and the related practice standards. The following

⁴ Based on height measured from Project Grade, which is defined as 595 feet above mean sea level (AMSL) for the North Lot and 610 feet AMSL for the South Lot. Using the Code definition of building height, heights would range between approximately 60 feet and 140 feet.

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technical terms are used in this Report.

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 fc or lux and is described in the technical term Illuminance. This incident light is not visible to the eye 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 fL (or metric equivalent cd/m^2) and is described by the term Luminance.

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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 fL).

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 fL).

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 fL).

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 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 Code (3.0 fc).

Medium Illuminance: Illuminance less than 3.0 fc and greater than 1.0 fc.

Low Illuminance: Illuminance less than 1.0 fc.

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.

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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.

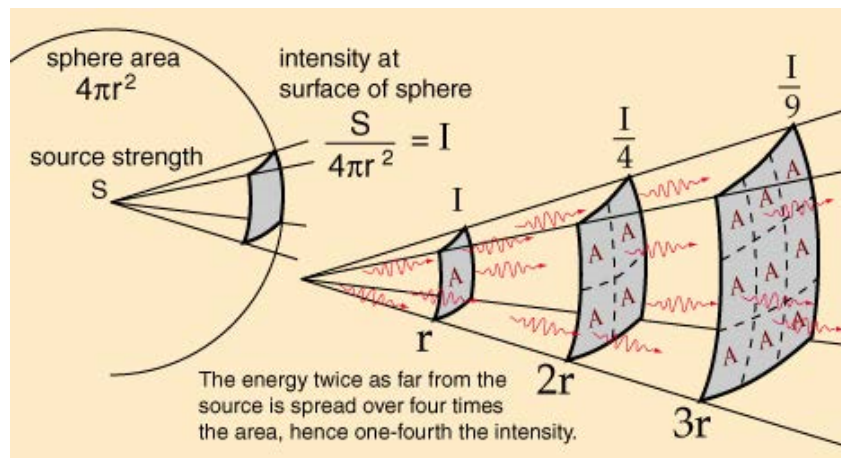


Figure 2: Inverse square law diagram (hyperphysics.phy-astr.gsu.edu)

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 fc or lux, usually analyzed by measurement at or near the adjacent property line.

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.

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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 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.
Outdoor Lighting:	Per CALGreen, Outdoor Lighting is electrical lighting used to illuminate outdoor areas

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Temporary Lighting: Per CALGreen, Temporary Lighting is a lighting installation, with plug-in connections, that does not persist beyond 60 consecutive days or more than 120 days per year.

5. REVIEW OF LIGHTING REGULATIONS AND REFERENCE STANDARDS

Outdoor light and glare is regulated throughout California by local municipal codes and the State energy and building codes. The existing applicable regulations in the Code, the CVC, the California Green Building Standards Code (CalGreen), and the California Energy Code (CEC) are summarized below. Reference standards include model lighting ordinances provided by the IESNA and the International Dark Sky Organization. Various aspects of these reference standards are included in local regulations to improve the outcome of any approved project and avoid future disputes or legal challenges to proposed lighted signs.

5.1 Los Angeles Municipal Code

The Code regulates outdoor 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 applicable Code regulations with respect to Exterior Lighting includes the following section pertaining to exterior illumination:

Chapter 9, Article 3, Div. 1, Sec. 93.0117:

“The provisions of this section shall apply to any exterior luminaire, multi-head luminaire, lamp holder or sign light source.

No person shall construct, establish, create, or maintain any stationary exterior light source that may cause the following locations to be either illuminated by more than two footcandles (21.5 lx) of lighting intensity or receive direct glare from the light source. Direct glare, as used in this subsection is a glare resulting from high luminances or insufficiently shielded light sources that is in the field of view.

1. Any exterior glazed window or sliding glass door on any other property containing a residential unit or units.
2. Any elevated habitable porch, deck or balcony on any other property containing a residential unit or units.
3. Any ground surface intended for use but not limited to recreation, barbecue, or lawn areas on any other property containing a residential unit or units.”

Exterior Lighting would comply with Code Section 93.0117.

The applicable Code regulation includes the following section 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

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above ambient lighting, as measured at the property line of the nearest residentially zoned property.”

Signs would comply with Code Section 14.4.4 E.

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, consists of regulations to control building standards throughout the State. The following components of Title 24 include standards related to building lighting:

California Energy Code (CEC), Title 24, Part 6

The CEC stipulates allowances for lighting power and provides lighting control requirements for various lighting systems (see Appendix D herein), with the aim of reducing energy consumption through efficient and effective use of lighting equipment.

California Green Building Standards Code (Title 24, Part 11)

The California Green Building Standards Code, which is Part 11 of Title 24, is commonly referred to as the CALGreen Code. Paragraph 5.106.8, Light pollution reduction, requires that all non-residential outdoor lighting must comply with the following requirements:

“The minimum requirements in the [CEC] for Lighting Zones 0–4 as defined in Chapter 10, Section 10-114 of the California Administrative Code; and ...” or

“Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.”

The California Energy Code includes the following requirements for glare:

Section 130.2 OUTDOOR LIGHTING CONTROLS AND EQUIPMENT

“(b) Luminaire cutoff requirements. All outdoor luminaires of 6,200 initial luminaire lumens or greater, shall comply with backlight, uplight, and glare (collectively referred to as “BUG” in accordance with IES TM-15-11,

Addendum A) requirements as follows:

1. Maximum zonal lumens for backlight, uplight, and glare shall be in accordance with Title 24, Part 11, Section 5.106.8.

Exception 1 to Section 130.2(b): Signs”

Exception 4 to Section 130.2(b): Temporary outdoor lighting

Furthermore, CALGreen also includes specific exceptions for the glare limits stipulated by BUG ratings under Exceptions 1 and 6 in Section 130.2. Specifically, Exception 6 indicates that the portion of Project lighting required to illuminate the public right-of-way is exempt from the BUG rating glare requirements of CALGreen. Additionally, Exception 4 indicates that temporary outdoor lighting is exempt from the BUG rating requirements of CALGreen.

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Regarding the CALGreen regulations that apply to Sign lighting, the Project has been designed to include energy use and lighting control systems that comply with CEC Sections 130.3 and 140.8, which are included as requirements in the proposed Sign District. Specifically, the proposed Specific Plan includes the following requirements:

- All outdoor 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 Signs power by a minimum of 65 percent during nighttime hours.
- 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.

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 2.2.2 which defines the requirements of the Sign District. Therefore, compliance with the proposed Specific Plan will satisfy CEC Sections 130.3 and 140.8 and therefore will satisfy the exceptions to CEC Section 140.7(a). Accordingly, the Signs are not subject to the light trespass and glare requirement of CALGreen Section 5.106.8, and this Report does not further analyze the Signs light trespass or glare effects with respect to the CALGreen and CEC requirements for outdoor lighting.

5.3 California Energy Code Lighting Zone 3

The Project Site and surrounding properties are located within an urban developed area, and the surrounding area includes mixed use, commercial, and residential uses with extensive nighttime use, including nearby residences, retail, restaurants, entertainment, education, and transportation venues. Current best practices for lighting standards recognize the unique issues related to nighttime use adjacent to light sensitive locations. The CEC includes designations for Lighting Zones (LZ) 1 through 4, included below in Appendix D, which correspond to the Light Trespass Illuminance recommendations within the IESNA 10th Edition Handbook, Table 26.4, included herein at Appendix E and F. The IESNA recommendations for light trespass illuminance vary based upon the extent of nighttime human activity and the extent of natural habitat.

All urban areas within California are designated Lighting Zone 3 as default under the CEC, which limits the light trespass illuminance to 8 lux (0.74 fc). Per the CEC, California Building Energy Efficiency Standards, Section 10-114, Table 10-114-A, page 44, the designations for outdoor lighting zones in urban areas are as follows:

“The default for urban areas, as defined by the U.S. Census Bureau, is Lighting Zone 3. Local AHJs (Authorities Having Jurisdiction) may designate areas to Lighting Zone 4 for high intensity nighttime use, such as entertainment or commercial districts or areas with special security considerations requiring very high light levels.”

The Project Site is within the City of Los Angeles, which is designated by the CEC as Lighting Zone 3. In addition, the IESNA defines Lighting Zone 3 as: “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 nighttime activity, high use recreational and playing fields, regional shopping malls, car dealerships, gas

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stations, and other nighttime active exterior retail areas.”

IESNA Table 26.5 lists a Pre-curfew 8 Lux (0.74 footcandles) maximum at the location where trespass is under review for Lighting Zone 3. The CEC standard is well defined and supported by the IESNA and the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), and other independent lighting organizations such as the International Dark Sky Organization and U.S. Green Building Council.

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

Chapter 2, Article 3 of the 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 112-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 Report analyzes the standard set forth in CVC Section 21466.5 as it applies to the Project on drivers within adjacent streets.

5.5 Los Angeles River Improvement Overlay District

A portion of the Project Site is located within the RIO District, established by City of Los Angeles Ordinance Nos. 183144 and 183145 to support implementation of the Los Angeles River Revitalization Plan. The RIO boundary is defined by 9 maps within the Ordinance. Map Sheet 3 of 9 (included herein as Appendix H) shows the Project Site included within the boundary of the RIO.

The existing luminance and illuminance conditions relative to the RIO boundary is analyzed in Section 8 and summarized in Table 4.

5.6 IESNA Recommended Practices

The 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 and exterior use. For all areas not governed by the regulatory building code, municipal code, or other applicable regulations, 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

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versus natural habitat. LP-11-20, Environmental Considerations for Outdoor Lighting, pages 11 & 12, included in Appendix E of this Report, 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 Appendix F hereto, relative to the Outdoor Lighting Zones. The recommended light trespass illuminance limits define the maximum light trespass values in Lux and fc at the location of the light-sensitive use.

The existing conditions surrounding the Project Site are best described as Lighting Zone 3 which includes areas of human activity (i.e., habitation, recreation, and/or work) where electric lighting may be continuous and is required for convenience at night. IESNA RP-8-18 Table 4-2 lists a Pre-curfew 8 Lux (0.74 fc) maximum at the location of the light-sensitive use for Zone 3.

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

6. SIGNIFICANCE THRESHOLD

Appendix G of the CEQA Guidelines (14 CCR, 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 impacts 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 Report takes into account the following factors identified in the L.A. CEQA Thresholds Guide:

The change in ambient illumination levels as a result of project sources; and

The extent to which project lighting would spill off the Project Site and effect adjacent light-sensitive areas.

Based on these factors and the CEQA Guidelines identified in Section 2.1.1, this Report evaluates whether the Project would create a significant impact with regard to artificial light and glare if:

The Exterior Lighting illuminance is greater than 2.0 fc at the boundary of a property with residential unit(s).

The Sign lighting illuminance is greater than 3.0 fc at a residentially zoned property boundary.

Additionally, the following standards from the Code and other applicable regulations are used

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to inform the determination of impact significance:

Light trespass illuminance from the Signs exceeds 3.0 fc at the property line of a residentially zoned property (Code Chapter 1, Article 4.4, Sec. 14.4.4 E: "Sign Illumination Limitations").

Or, the Signs create glare with new High contrast conditions, with luminance greater than 300 cd/m² at night and contrast ratio greater than 30:1, visible from a field of view from a residential property.

Or, the Project creates glare effects on drivers of motor vehicles by exceeding the maximum luminance standards established by Section 21466.5 of the CVC, where maximum brightness of the 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 fL or less, the measured brightness of the light source in fL exceeds 500 plus 100 times the angle, in degrees, between the driver's field of view and the light source.⁵

7. METHODOLOGY

7.1 Existing Conditions Measurement and Analysis 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 (i.e.,

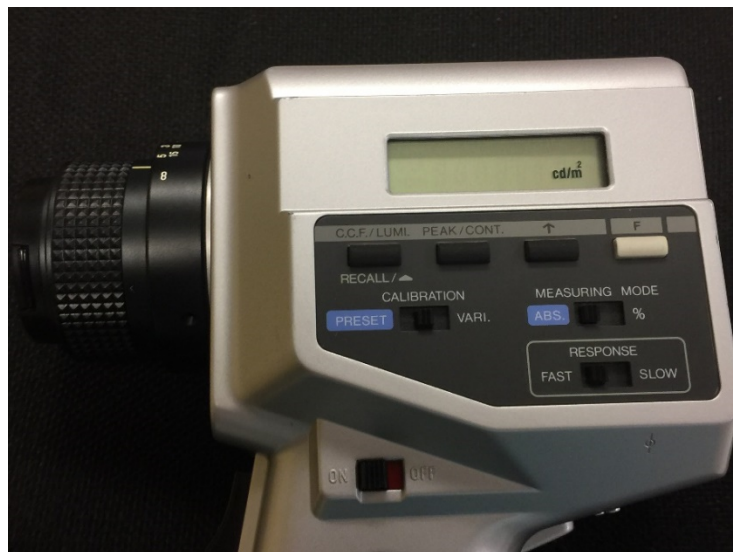


Figure 3: Minolta LS-100 meter

adjacent light-sensitive use) and at Internal Sites within the Project Site. Incident 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

⁵ The driver's field of view from the center of the roadway plus 10 degrees.

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positions, illuminance measurements are recorded horizontally with the photosensor facing up at 3 feet above grade, and vertically with the photosensor facing the Project Site as per IESNA standards. These measurements document the total horizontal illuminance received at a Monitoring Site or Internal Site, as well as the direction and intensity of light converging on the Monitoring Site or Internal 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 8 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 Report would be equal to or greater than the measured illuminance from a precisely perpendicular plane analysis. Therefore, this Report utilizes a vertical illuminance analysis to be conservative. The existing illuminance is measured with a Minolta illuminance meter.

The existing luminance is measured from a Monitoring Site or Internal Site to light sources and surfaces within the field of view toward the Project Site from that Monitoring Site. These 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 cd/m^2 or fL. All existing luminance data measured and reported in this Report are recorded as cd/m^2 .

7.1.1 Monitoring Site Criteria

The following factors are used to assess the existing conditions at each location surrounding the Project Site and within the Project Site where existing lighting is evaluated by field measurements and observations:

Table 1: Existing Conditions Lighting Criteria at Monitoring Sites

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

7.2 Lighting Analysis Methodology

The analysis of the Project includes an evaluation of the light trespass from Exterior Lighting and Signs at the nearest adjacent properties with light-sensitive uses, and an evaluation of light from the Project visible at residential or sensitive use properties, or at adjacent roadway locations to determine whether the Project would introduce a new source of glare. This Report presents a conservative analysis with respect to light trespass and glare, as it assumes that the maximum

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amount of externally-visible light permitted by the Specific Plan would be developed.

7.2.1 Light Trespass Analysis Methodology

This Report analyzes Project light trespass from Exterior Lighting and Signs. Light trespass is the artificial light produced from the Project 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 the Project is evaluated in this Report relative to the thresholds defined above in Section 6. Therefore, the threshold for the analysis of Exterior Lighting will be 2.0 fc maximum at the nearest property with a residential use or other sensitive use properties, and for Signs will be 3.0 fc maximum at the nearest residentially zoned property. Exterior Lighting is analyzed in this Report at the Project Site property line and at the nearest sensitive use locations adjacent to the Project Site. Exterior Lighting is analyzed by comparison of the existing lighting conditions at the Project Site, the proposed new building and site improvements, the requirements of CALGreen, and the lighting requirements defined within the Specific Plan.

Signs analyzed in this Report are defined and illustrated in the draft Specific Plan and Conceptual Sign Plan (Appendix A).

Light trespass illuminance is calculated through the illumination modeling software program AGI32 at virtual vertical surfaces located at the adjacent sensitive use property line or the Project Site property line. The calculations simulate light meters at a vertical surface extending from grade to the height of the tallest light-sensitive use or the height of the Project, whichever is greater. This software utilizes the 3-dimensional architectural computer model of the Project, including the Project Site, existing and proposed buildings within the Project Site, and proposed Sign locations, orientation, dimensions, and luminous specifications to generate an accurate prediction of future light trespass illuminance at adjacent light-sensitive uses. Light trespass illuminance is evaluated with respect to horizontal and vertical illuminance at the vertical plane locations.

Signs are evaluated with a sign configuration at the maximum permissible light intensity within the limits defined by the Specific Plan as discussed in Section 2.1.2 above.

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Figure 4: Vertical Calculation Plane Locations

The Signs analyzed are as defined in and as illustrated in the Conceptual Sign Plan (Appendix C). To provide a conservative analysis, all external Signs are analyzed as operating simultaneously at a maximum luminance of 100 cd/m², all white, at night and all internal Signs are analyzed as operating simultaneously at a maximum luminance of 300 cd/m², all white, at night. The Signs will not operate in an all white mode in practice. However, this analysis with all Signs operating in all white mode presents a conservative (maximum) evaluation of the Signs'

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potential for offsite light trespass illuminance. Table 5 below summarizes the Signs light trespass illuminance calculation data at the vertical plane locations illustrated in Figure 4.

7.2.2 Glare Analysis Methodology

Glare from the Project⁶ is evaluated at adjacent sensitive uses and for drivers on adjacent streets. The glare from Project at sensitive use properties is determined by the contrast ratio, which equals the maximum source luminance divided by the measured average existing luminance within the visual field at the Monitoring Sites as identified in the field survey of existing conditions (see Section 8 below). Contrast ratios greater than 30:1 are considered "High" and potential glare conditions.

Light from the Project and the effect on drivers is analyzed with respect to compliance with the CVC requirements for both night and day conditions at adjacent roadways. CVC Section 21466.5 requires as follows:

- The maximum measured brightness of the light source within 10 degrees from a 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 when the minimum measured brightness in the field of view is greater than 10 fL.
- When the minimum measured brightness in the driver's field of view is 10 fL or less, the measured brightness of the light source in fL shall not exceed 500 fL plus 100 times the angle, in degrees, between the driver's line of sight and the light source.

The analysis of glare impacts includes an evaluation of all view angles from the driver's line of sight to the Project light sources, to determine the visibility of the Project light sources, and evaluates the maximum luminance permitted by the CVC at any angle of view.

8. EXISTING CONDITIONS MEASUREMENTS AND ANALYSIS

This Report represents a conservative evaluation of the potential for the Project to produce off-site light trespass and/or glare at adjacent sensitive uses. In order to analyze the light from the Project, the existing lighting conditions at the adjacent sensitive uses must be identified and summarized. This Report 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 building lighting within the Project Site, on-site exterior Production Lighting, illuminated signs, street lights and building mounted lighting in proximity to adjacent residential and commercial properties.

8.1 Existing Conditions Measurement Locations

The existing lighting conditions within and surrounding the Project Site are measured and

⁶ Luminance and/or glare are not cumulative. Therefore, this Report evaluates the potential glare impact from the proposed Signs and not existing signs.

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evaluated to determine the ambient light conditions and the maximum potential impacts that may result from light or glare onto adjacent sensitive uses surrounding the Project Site. The existing conditions are evaluated at measurement site locations that are representative of the view to the Project Site from the vicinity of sensitive use properties surrounding the Project Site to the north, south, east, and west and adjacent to the Los Angeles River / Tujunga Wash. The following criteria were used to select potential locations for measurement of existing lighting conditions:

Project Light Visibility – Existing conditions are analyzed at locations that provide direct view of the areas of greatest light intensity from the Project. Locations with no or limited visibility of the light from the Project have no potential for light impact.

Proximity to the Project Site – Existing conditions are evaluated at the nearest sensitive use locations to the Project Site. Light intensity diminishes rapidly as distance from the source increases. Therefore, locations near the Project Site receive substantially more light than more distant locations.

Proximity to the Los Angeles River / Tujunga Wash – Existing conditions adjacent to the Los Angeles River and Tujunga wash are within the Project Site and have substantial existing lighting for production and outdoor use in the Project site at night.

Measurement sites surrounding the Project Site are identified as Monitoring Sites. Measurement sites within the Project Site are identified as Internal Sites. Figure 5 shows the Project Site, Monitoring Site locations (M-), Internal Site locations (I-) and the properties surrounding the Project Site. The Project Site is shaded green, and sensitive use properties are shaded blue.

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8.1.1 Monitoring Site Locations

Monitoring Site locations were selected for observation and field lighting measurements to evaluate the views to the Project from adjacent sensitive uses 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 properties with sensitive uses surrounding the Project Site. These Monitoring Sites are used to determine the extent of existing, ambient lighting conditions and to evaluate the Project light trespass and glare impacts at off-site locations.

Monitoring Sites are located as shown in Figure 5 and as described in the following summary:

- M-E1:** Monitoring Site M-E1 is located at 4161 Colfax Avenue (Studio Village), east of the Project Site. The Monitoring Site is located adjacent to the property line which is 170 feet from the Project boundary.
- M-E2:** Monitoring Site M-E2 is located at 4114 Colfax Avenue, southeast of the Project Site. The Monitoring Site is located at 107 feet from the Project property line and at 205 feet from the Project boundary.
- M-NE1:** Monitoring Site M-NE1 is located at 11830 W. Moorpark Street (Studio Village Apartments), northeast of the Project Site. The Monitoring Site is located adjacent to the property line which is 100 feet from the Project boundary.
- M-NE2:** Monitoring Site M-NE2 is located at 11798 W. Moorpark Street (Studio Village Apartments), east/northeast of the Project Site. The Monitoring Site is located adjacent to the property line which is 100 feet from the Project boundary.
- M-NE3:** Monitoring Site M-NE3 is located at the corner of Radford Avenue and Moorpark Street, north of the Project Site. The Monitoring Site is located adjacent to the property line which is 100 feet from the Project boundary.
- M-S1:** Monitoring Site M-S1 is located at 3965 Carpenter Avenue, south of the Project Site. The distance to the Project Site property line is approximately 385 feet.
- M-W1:** Monitoring Site M-W1 is located at the northwest corner of Radford Avenue and Valleyheart Drive, west of the Project Site. The distance to the Project Site property line is approximately 50 feet.
- M-W2:** Monitoring Site M-W2 is located approximately 55 feet north of the northwest corner of Radford Avenue and Hoffman Street, west of the Project Site. The distance to the Project Site property line is approximately 90 feet.

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M-NW1: Monitoring Site M-NW1 is located at 4243 Radford Avenue, west/northwest of the Project Site. The distance to the Project Site property line is approximately 75 feet.

8.1.2 Internal Site Locations

The Internal Sites are located within the Project Site boundary and adjacent to the RIO boundary and are used to measure the existing Exterior Lighting illuminance and glare, including building lighting, site lighting, and film Production Lighting within the Project Site. This existing lighting conditions data is used in this Report to establish the extent of existing ambient lighting and to evaluate the existing lighting within the Project relative to the light and glare impacts at the RIO boundary and off-site views or light impacts at residential properties.

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Figure 5: Monitoring Site and Internal Site Locations

Internal Sites are located as shown in Figure 5 and as described in the following summary:

I-1: Internal Site I-1 is located at the north surface parking lot in the northeast portion of the Project Site adjacent to the Los Angeles River.

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- I-2: Internal Site I-2 is located in the southwest portion of the North Lot adjacent to the north side of the Los Angeles River that bisects the Project Site.
- I-3: Internal Site I-3 is located in the center of the Project Site adjacent to the south side of the Los Angeles River that bisects the Project Site.
- I-4: Internal Site I-4 is located near the southeast portion of the South Lot adjacent to the west side of the Los Angeles River.

8.2 Monitoring Sites 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 6, 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 studio uses with existing lighting and illuminated signs. Lighting within the Project Site and within adjacent commercial properties, residentially zoned properties, and roadway lighting on the adjacent right-of-way contribute to the ambient lighting conditions at all Monitoring Sites.

8.2.1 Monitoring Sites Existing Illuminance

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

Monitoring Site	Existing Illuminance (fc)		Evaluation
	Horizontal	Vertical	
M-E1	0.09	0.03	Low horizontal, Low vertical illuminance.
M-E2	0.11	0.16	Low horizontal, Low vertical illuminance.
M-NE1	0.10	0.04	Low horizontal, Low vertical illuminance.
M-NE2	0.06	0.05	Low horizontal, Low vertical illuminance.
M-NE3	0.55	0.06	Low horizontal, Low vertical illuminance.
M-S1	0.18	0.18	Low horizontal, Low vertical illuminance.
M-W1	0.01	0.05	Low horizontal, Low vertical illuminance.
M-W2	0.10	0.08	Low horizontal, Low vertical illuminance.
M-NW1	0.39	0.25	Low horizontal, Low vertical 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 Code (2.0 fc for Exterior Lighting and 3.0 fc for Signs) and designates all measured illuminance greater than 2.0 fc as High illuminance.

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Measured illuminance less than 2.0 fc and greater than 1.0 fc is designated as Medium illuminance. Measured illuminance less than 1.0 fc is designated as Low illuminance.

The measured horizontal illuminance does not exceed 1.0 fc at any of the Monitoring Sites. The measured horizontal illuminance ranges from a high of 0.55 fc at M-NE3 to a low of 0.01 fc at M-W1. Thus, all the Monitoring Sites have Low horizontal illuminance.

The measured vertical illuminance did not exceed 1.0 fc at any of the Monitoring Sites. The measured vertical illuminance ranged from a high of 0.25 fc at M-NW1 to a low of 0.03 fc at M-E1. Thus, all Monitoring Sites have Low vertical illuminance.

8.2.2 Monitoring Sites Existing Luminance

Table 3 summarizes the measured existing luminance at each Monitoring Site within the visual field to the Project Site. The measurements include existing building lighting, illuminated signs and other light sources or bright 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	73.8	1524	20.7	Medium average luminance, Medium contrast
M-E2	289.2	3715	13.1	Medium average luminance, Medium contrast
M-NE1	40.9	603.9	14.8	Medium average luminance, Medium contrast
M-NE2	34.2	162	4.7	Medium average luminance, Medium contrast
M-NE3	7.0	143.3	20.6	Low average luminance, Medium contrast
M-S1	144.5	2752	19.0	Medium average luminance, Medium contrast
M-W1	37.8	495.0	13.1	Medium average luminance, Medium contrast
M-W2	89.6	1387	15.5	Medium average luminance, Medium contrast
M-NW1	408.6	5773	14.1	High average luminance, Medium contrast

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

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“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 and Internal Site include prominent lighted surfaces or lighting sources visible within the field of view to the Project Site from the Monitoring Sites or from the Internal Site, and the extent of 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 outdoor building, site, landscape, and security lighting, as well as lower brightness surfaces such as un-illuminated walls.

For this Report, the following luminance criteria are applied to measured and calculated luminance: luminance below 10 cd/m² is evaluated as Low luminance; luminance greater than 10 cd/m² and less than 300 cd/m² is evaluated as Medium luminance; and luminance greater than 300 cd/m² is evaluated as High luminance.

The highest average luminance was recorded at Monitoring Site M-NW1 at approximately 409 cd/m², while the lowest average luminance was measured at Monitoring Site M-NE3 at 7 cd/m². The measured average luminance is Medium luminance (greater than 10 cd/m² and less than 300 cd/m²) at 7 of 9 Monitoring Sites. The measured average luminance at Monitoring Site M-NW1 was High luminance (greater than 300 cd/m²) at approximately 409 cd/m². The measured average luminance at Monitoring Site M-NE3 was Low luminance (below 10 cd/m²) at 7 cd/m².

The highest measured maximum luminance was recorded at Monitoring Site M-NW1 with 5773 cd/m², while the lowest maximum luminance was measured at Monitoring Site M-NE3 at approximately 144 cd/m². The measured maximum luminance is High luminance (greater than 300 cd/m²) at 7 of 9 Monitoring Sites. The maximum luminance is Medium luminance (greater than 10 cd/m² and less than 300 cd/m²) at Monitoring Sites M-NE2 and M-NE3.

The calculated contrast ratio (maximum luminance / average luminance) varies from a Low of 4.7 to 1 at Monitoring Site M-NE2 to a High of 20.7 to 1 at Monitoring Site M-E1. The calculated existing contrast ratio at eight Monitoring Site locations is Medium contrast (less than 30 to 1, and greater than 10 to 1). At Monitoring Site M-NE2, the calculated existing contrast ratio is Low contrast (less than 10 to 1).

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8.2.3 Monitoring Site M-E1:

Monitoring Site M-E1 is located at 4161 Colfax Avenue (Studio Village), east of the Project Site. The Monitoring Site is located adjacent to the property line which is 170 feet from the Project boundary. Existing lighting conditions at M-E1 are uniformly low illuminance, from adjacent residential lighting and building lighting from the east side of the Project Site. Prominent light sources visible in the field of view from M-E1 to the east side of the Project Site include building wall lights and street lights.



Figure 6: M-E1 day view March 4, 2024, 3:43 PM



Figure 7: M-E1 night view March 12, 2024, 7:56 PM

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8.2.4 Monitoring Site M-E2:

Monitoring Site M-E2 is located at 4114 Colfax Avenue, southeast of the Project Site. The Monitoring Site is located at 107 feet from the Project property line and at 205 feet from the Project boundary. The southeast side of the Project Site is in direct view from M-E2. The existing lighting conditions at M-E2 are uniformly low from nearby streetlights. Prominent light sources visible in the field of view from M-E2 to the east side of the Project Site include street lights, building wall lights, and small pedestrian pole lights.



Figure 8: M-E2 day view March 4, 2024, 3:30 PM



Figure 9: M-E2 night view March 12, 2024, 7:45 PM

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8.2.5 Monitoring Site M-NE1:

Monitoring Site M-NE1 is located at 1830 W Moorpark Street (Studio Village Apartments), northeast of the Project Site. The Monitoring Site is located adjacent to the property line which is 100 feet from the Project boundary. The east side of the Project Site is in direct view from M-NE1. Existing lighting conditions at M-NE1 are uniformly low. Prominent light sources visible in the field of view from M-NE1 to the east side of the Project Site include lights from the north parking structure and the Broadcast Center, and perimeter wall lights.



Figure 10: M-NE1 day view March 4, 2024, 3:43 PM



Figure 11: M-NE1 night view March 12, 2024, 8:17 PM

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8.2.6 Monitoring Site M-NE2:

Monitoring Site M-NE2 is located at 11798 W Moorpark Street (Studio Village Apartments), east/northeast of the Project Site. The Monitoring Site is located adjacent to the property line which is 100 feet from the Project boundary. The east/northeast elevation of the Project Site is in direct view from M-NE2. Existing lighting conditions at M-NE2 are uniformly low illuminance from nearby apartment wall lights. Prominent light sources visible in the field of view from M-NE2 to the east side of the Project Site include lights from the Broadcast Center, Lagoon Building, Sater parking structure, small pedestrian pole lights, and perimeter wall lights.



Figure 12: M-NE2 day view March 4, 2024, 3:38 PM



Figure 13: M-NE2 night view March 12, 2024, 8:07 PM

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8.2.7 Monitoring Site M-NE3:

Monitoring Site M-NE3 is located at the intersection of Radford Avenue and Moorpark Street north of the Project Site. The Monitoring Site is located adjacent to the property line which is 100 feet from the Project boundary. The north side of the Project Site is partially visible from M-NE3. Existing lighting conditions at M-NE3 are uniformly low, illuminated by nearby street lights. Prominent light sources visible in the field of view from M-NE3 to the north side of the Project Site include perimeter wall lights and street lights.



Figure 14: M-NE3 day view April 24, 4, 2024, 3:30 PM



Figure 15: M-NE3 night view March 12, 2024, 8:28 PM

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8.2.8 Monitoring Site M-S1:

Monitoring Site M-S1 is located at 3965 Carpenter Avenue, south of the Project Site. The distance to the Project Site property line is approximately 385 feet. The south side of the Project Site is in full view from M-S1. Existing lighting conditions at M-S3 are uniformly low illuminance from nearby street lights and residential exterior lighting. Prominent light sources visible in the field of view from M-S1 to the south side of the Project Site include street lights, traffic lights, commercial properties exterior lighting and signs.



Figure 16: M-S1 day view March 4, 2024, 4:04 PM



Figure 17: M-S1 night view March 12, 2021, 9:12 PM

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8.2.9 Monitoring Site M-W1:

Monitoring Site M-W1 is located at the intersection of Radford Avenue and Valleyheart Drive west of the Project Site. The distance to the Project Site property line is approximately 50 feet. The west side of the Project Site is in full view from M-W1. The existing lighting conditions at M-W1 are uniformly low illuminance, and there are no street lights along this portion of Radford Avenue. Prominent light sources visible in the field of view from M-W1 to the west side of the Project Site include building wall lights and pedestrian pole lights along the Los Angeles River.



Figure 18: M-W1 day view March 4, 2024, 3:55 PM

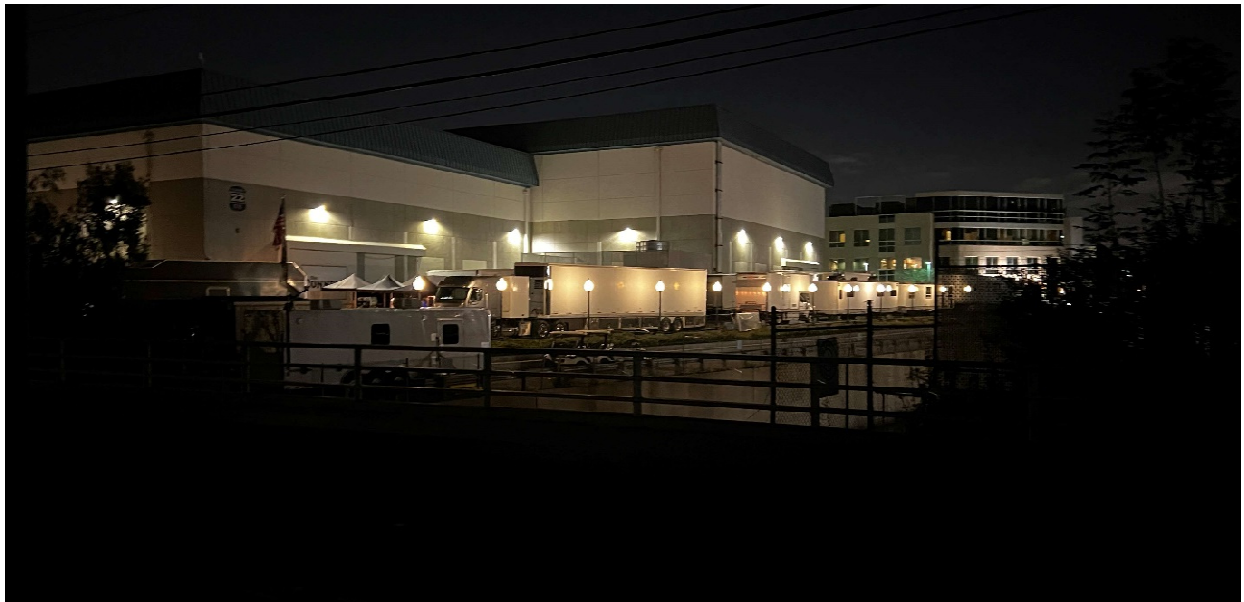


Figure 19: M-W1 night view March 12, 2024, 8:51 PM

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8.2.10 Monitoring Site M-W2:

Monitoring Site M-W2 is located approximately 55 feet north of the intersection of Radford Avenue and Hoffman Street west of the Project Site. The distance to the Project Site property line is approximately 90 feet. The west side of the Project Site is in full view from M-W2. The existing lighting conditions at M-W2 are uniformly low illuminance from building lights, and there are no visible street lights. Prominent light sources visible in the field of view from M-W2 to the west side of the Project Site include building wall lighting, small pedestrian poles, and building façade lights.



Figure 20: M-W2 day view March 4, 2024, 3:58 PM



Figure 21: M-W2 night view March 12, 2024, 9:01 PM

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8.2.11 Monitoring Site M-NW1:

Monitoring Site M-NW1 is located at 4243 Radford Avenue, west/northwest of the Project Site. The distance to the Project Site property line is approximately 75 feet. The west/northwest side of the Project Site is in full view from M-NW1. The existing lighting conditions at M-NW1 are uniformly low illuminance from adjacent streetlights. Prominent light sources visible in the field of view from M-NW1 to the west/northwest side of the Project Site include lights from the Sater parking structure.



Figure 22: M-NW1 day view March 4, 2024, 3:51 PM



Figure 23: M-NW1 night view March 12, 2024, 8:41 PM

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8.3 Internal Sites Data

The observations and measurement of existing lighting conditions within the Internal Sites are summarized below in relation to the evaluation factors established above, and as pertains to the standards of the RIO, discussed in Section 5.5 above. The existing lighting at the Internal Sites includes a wide range of lighting for the studio use of the Project Site including exterior building and site lighting for safety, security, film production, events, and other existing uses of the property. The Internal Sites are adjacent to these existing studio uses with existing lighting and illuminated signs, and adjacent to the Los Angeles River/Tujunga Wash. Lighting within the Project Site contributes to the ambient lighting conditions at all Internal Sites.

8.3.1 Internal Sites Existing Illuminance

Table 4 summarizes the measured existing illuminance at the Internal Sites. This data is analyzed with respect to the light trespass illuminance threshold adjacent to the boundary of the Los Angeles River and Tujunga Wash where the river channel bisects the Project Site or where the Tujunga Wash is within the Project Site boundary.

The illumination standards included in the RIO mandate Exterior Lighting does not exceed 0.20 fc at the Project Site boundary and does not exceed 0.01 fc at 15 feet beyond the Project Site boundary. Since the Los Angeles River and Tujunga Wash are both within the Project Site boundary, the existing lighting is measured at the outer boundary of the Los Angeles River and Tujunga Wash along the Project Site boundary.

The measured existing horizontal and vertical illuminance at all Internal Sites exceed the RIO standard of 0.2 fc. The maximum measured existing vertical illuminance is 7.88 fc at Internal Site I-1 and the maximum measured existing horizontal illuminance is 3.26 fc at Internal Site I-3.

The evaluation of the measured existing illuminance at the Internal Sites compares the measured existing illuminance to the maximum illuminance permitted by the RIO regulations relative to Exterior Lighting (0.2 fc) and designates all measured illuminance greater than 0.2 fc as exceeding this standard. These measurements demonstrate the existing lighting within the Project Site boundary adjacent to the Los Angeles River and Tujunga Wash is greater than the standards defined by the RIO. The RIO Ordinance (Ordinance No. 183145, effective August 20, 2014) was enacted after this existing lighting was permitted and installed.

Table 4: Measured Illuminance (fc) at Internal Sites

Internal Site	Existing Illuminance (fc)		Evaluation
	Horizontal	Vertical	
I-1	2.35	7.88	Exceeds RIO standard of 0.2 fc
I-2	1.32	1.80	Exceeds RIO standard of 0.2 fc
I-3	3.26	2.98	Exceeds RIO standard of 0.2 fc
I-4	0.61	0.87	Exceeds RIO standard of 0.2 fc

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8.3.2 Internal Site I-1:

Internal Site I-1 is located at the north surface parking lot in the northeast portion of the North Lot of the Project Site adjacent to the Tujunga Wash. The existing lighting conditions at I-1 are uniformly high vertical and medium horizontal illuminance from temporary Production Lighting, and nearby parking lot lighting. Prominent light sources visible in the field of view from I-1 to the west side of the Project Site include lights from the north parking structure, parking lot poles and temporary Production Lighting.



Figure 24: I-1 day view April 24, 2024, 4:06 PM



Figure 25: I-1 night view April 24, 2024, 8:02 PM

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8.3.3 Internal Site I-2:

Internal Site I-2 is located in the southwest portion of the North Lot adjacent to the north side of the Los Angeles River that bisects the Project Site. The existing lighting conditions at I-2 are uniformly medium vertical and medium horizontal illuminance from temporary Production Lighting, building wall lights and light poles along the Los Angeles River. Prominent light sources visible in the field of view from I-2 to the toward the east side of the Project Site include building wall lights, light poles and temporary Production Lighting.



Figure 26: I-2 day view April 24, 2024, 4:13 PM

Figure 27: I-2 night view April 24, 2024, 8:17 PM

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8.3.4 Internal Site I-3:

Internal Site I-3 is located in the center of the Project Site adjacent to the south side of Los Angeles River that bisects the Project Site. The existing lighting conditions at I-3 are uniformly medium vertical and high horizontal illuminance from temporary Production Lighting, building wall lights and light poles along the Los Angeles River and internal bridge. Prominent light sources visible in the field of view from I-3 toward the east side of the Project Site include building wall lights, light poles and temporary Production Lighting.



Figure 28: I-3 day view April 24, 2024, 4:20 PM



Figure 29: I-3 night view April 24, 2024, 8:31 PM

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8.3.5 Internal Site I-4:

Internal Site I-4 is located near the southeast portion of the South Lot adjacent to the west side of the Los Angeles River. The existing lighting conditions at I-4 are uniformly low vertical and low horizontal illuminance from temporary Production Lighting and building wall lights. Prominent light sources visible in the field of view from I-4 toward the east side of the Project Site include building wall lights, light poles on Ventura Boulevard, and temporary Production Lighting.



Figure 30: I-4 day view April 29, 2024, 4:26 PM

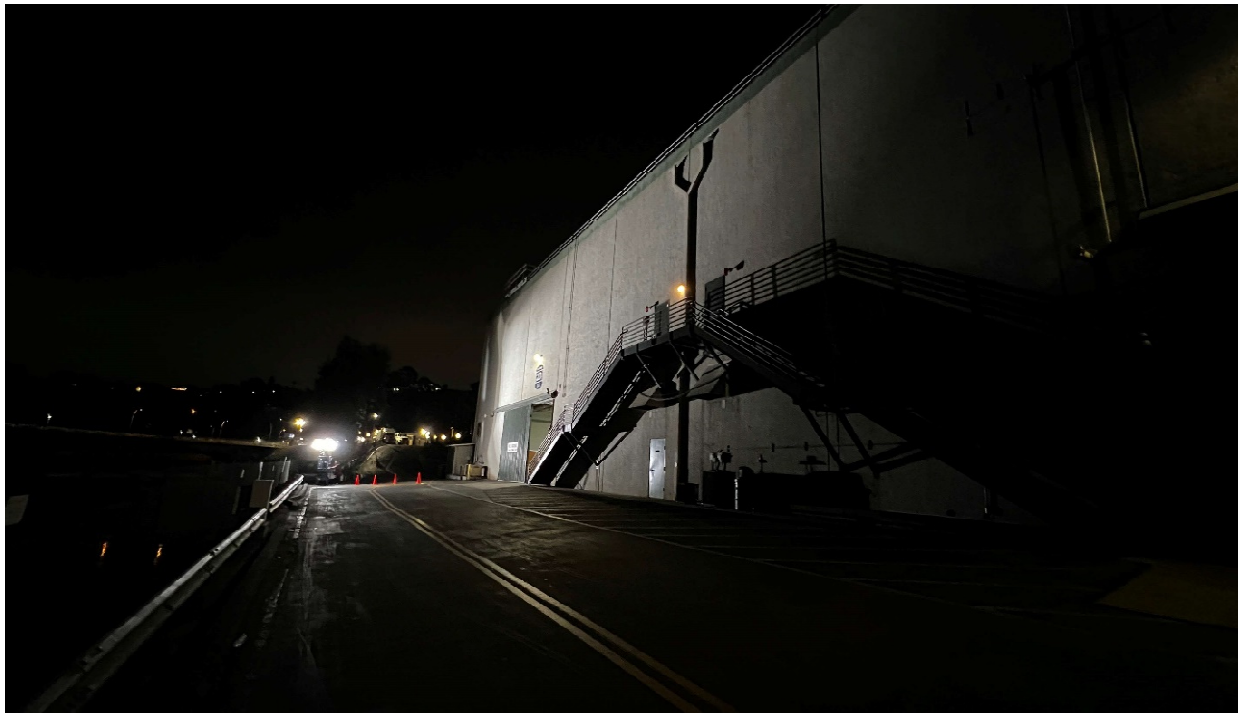


Figure 31: I-4 night view April 24, 2024, 8:44 PM

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9. LIGHTING ANALYSIS

The Project would introduce Exterior Lighting and Signs as described in Section 3 and depicted in Appendix A. This Report evaluates the Project potential to create a new source of light trespass or glare at sensitive use locations relative to the Thresholds defined above in Section 6.

9.1 Exterior Lighting Light Trespass Analysis

Future Exterior Lighting is regulated for this Project by the requirements of the Project Specific Plan and the regulations of CALGreen. These regulations limit the light from Exterior Lighting at adjacent sensitive use properties by defining the performance requirements of Exterior Lighting so as to limit light trespass onto an adjacent property with a residential use or other sensitive use properties.

The existing ambient lighting conditions are as described above in Section 8.2 and 8.3 and which include lighting for the commercial use of the Project Site for film production and other night activities. The existing lighting conditions surrounding the Project Site are generally described as Low vertical and horizontal illuminance.

New Exterior Lighting that may be installed as a part of the Project within 50 feet of the Project Site boundary is limited in height (no greater than 30 feet above grade), limited to 2,500 lumens maximum, and the light source must be directed down and shielded from off-site view. All Exterior Lighting located beyond 50 feet of the Project Site boundary should not exceed 20,000 lumens maximum. Also, all lighting for above grade parking structures and exterior building terraces is limited by the Specific Plan to prevent light spill from any building or parking structure roof deck or terrace, or from any open elevations of any building or parking structure within 50 feet from the Project Site.

These regulations limit the light trespass illuminance at the Project Site property line or at the centerline of the adjacent public right of way to a maximum of 0.74 fc. Light degrades exponentially as distance increases (see Inverse Square Law above). Therefore, the light trespass at residential properties or other sensitive use properties located beyond the centerline of the adjacent public right-of-way surrounding the Project site will receive less light, or less than 0.74 fc. Therefore, the light trespass illuminance from the Exterior Lighting will be less than 2.0 fc, the threshold established above in Section 6, and Exterior Lighting will not cause a substantial change in the existing lighting conditions at adjacent sensitive use or residential use properties.

This Report demonstrates that light trespass from Exterior Lighting at adjacent sensitive use properties would be below the 2.0 fc limit established within Code Chapter 9, Article 3, Div. 1, Sec. 93.0117, including Exception 2, where light sources are not visible to persons on residential property, and/or Exception 8, where the light source is greater than 2,000 feet from a property with a residential unit(s). This analysis confirms the Exterior Lighting complies with Section 93.0117.

Furthermore, the Code regulations listed above apply to "any stationary exterior light source", which does not apply to temporary lighting for film production on the Project Site. Production Lighting is temporary lighting and is not regulated by the Code. The existing ambient conditions at the Project Site include temporary outdoor lighting for film production.

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Therefore, future Production Lighting will be similar to the existing conditions described above in Section 8.2. The existing outdoor production area is approximately 1,045,000 square feet and the proposed area is reduced to approximately 840,000 square feet, and the existing basecamp area is approximately 376,000 square feet and the proposed area is reduced to approximately 331,000 square feet. Therefore, there will be no substantial increase in light trespass from film production, event lighting, other mobile light sources or temporary lighting. Additionally, future film Production Lighting, event lighting, or other mobile light sources on the Project Site, which will be similar in nature to existing uses, will not create a new light trespass impact.

The RIO Ordinance includes regulations relative to Exterior Lighting, as set forth in Code Section 13.17(F)(3):

“Exterior Site lighting.

(a) All site and building mounted lighting shall be designed such that it produces a maximum initial luminance value no greater than 0.20 horizontal and vertical foot candles at the site boundary, and no greater than 0.01 horizontal foot candles 15 feet beyond the site. No more than 5.0 percent of the total initial designed lumens shall be emitted at an angle of 90 degrees or higher from nadir (straight down). ”

The RIO Ordinance identifies maximum illuminance at the “site boundary” but does not take into account the unique nature and boundaries of the Project Site. Portions of the Los Angeles River and Tujunga Wash are contained within the Project Site in dedicated easement areas. The measured existing lighting at the Project Site exceeds the RIO Ordinance illumination standards, as noted in Section 8.2 above, and future Exterior Lighting as defined by the Specific Plan will be of a similar nature to support the existing functioning film studio adjacent to the Los Angeles River and Tujunga Wash. Given that the proposed outdoor exterior and basecamp areas will be reduced in comparison to the existing conditions, the extent of Exterior Lighting will be less than existing conditions. Future light trespass illuminance from the Exterior Lighting will be similar to or less than the existing lighting conditions at the boundary of the Los Angeles River / Tujunga Wash.

The Project includes a proposed Specific Plan to establish land use regulations for the Project Site to ensure consistent implementation of development standards throughout the Project Site in recognition of the Project Site’s unique characteristics, including the unique nature and demands of an existing studio use and unique constraints posed by the Project Site’s location which are not experienced by other sites. The Specific Plan would establish site-specific lighting standards to ensure Project lighting is consistent with and does not exceed existing conditions (refer to Appendix A of this Report). With compliance with the lighting regulations in the Specific Plan, the CEQA impact of the Exterior Lighting would be less than significant. The areas where Exterior Lighting would exceed the RIO standards include the existing film studio facilities, which is an industrial/commercial use property within the Project Site, and do not include natural habitat or residential uses. As such, pursuant to the 2006 L.A. CEQA Thresholds Guide, no light sensitive receptors would be affected.

Exterior Lighting would also comply with light trespass illuminance at the Project Site property line as per CEC Lighting Zone 3.

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9.1.1 Exterior Lighting Glare Analysis

Exterior Lighting that may be installed as a part of the Project is regulated for this Project by the requirements of the Project Specific Plan and the regulations of CALGreen which include regulations to limit the visible luminance from Exterior Lighting that may be visible from adjacent residential use properties or other sensitive use.

The Specific Plan includes requirements that all Exterior Lighting that may be installed as a part of the Project within 50 feet of the Project Site boundary are limited in height (no greater than 30 feet above grade), limited to 2,500 lumens maximum, and the light source must be directed down or away from the Project Site property line, and shielded from off-site view. All Exterior Lighting located beyond 50 feet of the Project Site boundary should not exceed 20,000 lumens maximum. Furthermore, the Specific Plan requires that all light sources must include a BUG rating of B=0, U=0, G=0, which specifies no backlight (B=0), no up light (U=0), and no Glare (G=0).

Therefore, all Exterior Lighting sources will not be visible from adjacent sensitive use properties and will not present a new source of glare.

Similarly, the requirements of the Specific Plan will result in no visible light sources that may impact drivers' visibility. Therefore, there is no impact to drivers' visibility with respect to the CVC.

Furthermore, since the Exterior Lighting complies with the lighting regulations in the Specific Plan, the CEQA impact of the Exterior Lighting would be less than significant.

9.2 Sign Lighting Analysis

Signs light illuminance must not exceed 3.0 fc at the property lines of adjacent residentially zoned properties or other sensitive use properties. Sign luminance visible from residential properties must be less than High contrast conditions, i.e., less than 30 to 1 contrast ratios.

Furthermore, 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 fL or less, the measured brightness of the light source in fL shall not exceed 500 plus 100 times the angle, in degrees, between the driver's line of sight and the light source.

9.2.1 Sign Light Trespass Analysis

Project light illuminance from Signs is evaluated by way of the calculated illuminance (fc) as per the methodology defined in Section 7, at the vertical and horizontal calculation plane locations at the sensitive uses. Sign 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, 95 feet above Project Grade, which is the maximum proposed building height along the perimeter of the Project Site and is an elevation point above the maximum height of the highest Sign location, as shown in the Proposed Signage Elevations as described in Appendix C). As noted above, this Report evaluates the light illuminance from Signs with

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respect to the regulations defined by the Code at adjacent residentially zoned properties. This Report analyzes the proposed Signs as described in Appendix A and C, which defines the Sign locations, dimensions, and orientation.

The evaluation of illuminance as High, Medium, and Low describes the relative amount of light effects at a residentially zoned property at night. Illuminance greater than 3.0 fc, the maximum sign illuminance permitted by the Code, 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."

Signs that are illuminated will operate at maximum luminance of 6,000 cd/m² during the day and 300 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 Sign lighting analysis evaluates the illuminance (fc) from the Signs leaving the Project Site toward adjacent sensitive uses properties as described in Figure 4 above with respect to the maximum light illuminance threshold of 3.0 fc. To provide a conservative analysis, all external Signs are analyzed as operating simultaneously at a maximum luminance of 100 cd/m², all white, at night, and all internal Signs are analyzed as operating simultaneously at a maximum luminance of 300 cd/m², all white, at night. The Signs will not operate in all white mode in practice; however, all white mode would produce the maximum light illuminance and therefore is assumed to represent a conservative analysis. The information in the Specific Plan (Appendix A) and as described in Section 3 was utilized to calculate Signs light illuminance, with the results presented in Table 5 below. Complete Sign illuminance calculated data is presented in Appendix G.

As shown in Table 5, the Signs maximum vertical illuminance ranges from a minimum of 0.1 fc at vertical plane VP-N1 to a maximum of 2.8 fc at vertical plane VP-S4. All light trespass illuminance at the residentially zoned or other sensitive use property lines from Signs is less than or equal to the maximum 3.0 fc threshold established by the Code.

Table 5: Signs Light Illuminance (fc)

Vertical Plane	Illuminance (fc)			Code Threshold (3.0 fc)
	Max	Min	Avg	
VP-E1	1.10	0.00	0.34	Less than threshold
VP-E2	2.50	1.00	2.15	Less than threshold
VP-E3	2.50	0.40	1.55	Less than threshold
VP-E4	1.30	0.10	0.52	Less than threshold
VP-E5	1.50	0.10	0.57	Less than threshold
VP-N1	0.10	0.00	0.05	Less than threshold

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VP-W1	1.80	0.20	0.83	Less than threshold
VP-W2	2.60	1.10	1.90	Less than threshold
VP-W3	1.00	0.10	0.47	Less than threshold
VP-W4	1.30	0.30	0.68	Less than threshold
VP-S1	0.20	0.00	0.06	Less than threshold
VP-S2	0.30	0.00	0.14	Less than threshold
VP-S3	0.30	0.00	0.04	Less than threshold
VP-S4	2.80	0.10	0.47	Less than threshold

The light illuminance from Signs is less than the Code threshold of 3.0 fc, and, therefore, would not create an adverse lighting effect at the Monitoring Sites or at other adjacent residentially zoned properties or sensitive use properties. Light degrades rapidly with distance as described above by the Inverse Square Law. Therefore, residentially zoned properties or other sensitive use properties more distant from the Project Site than the Monitoring Sites will receive substantially less light illuminance than the Monitoring Sites. Therefore, the lighting impact from the Signs at residentially zoned properties or other sensitive use properties would be less than significant.

9.2.2 Sign Glare Analysis

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 the effect of the contrast ratios (the ratio of maximum 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, greater than a 30:1 contrast ratio, indicates 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 12, 2024. Measurements of the existing luminance at night within the field of view from the Monitoring Sites are summarized in Section 8.2, Table 3, above.

Potential glare from the 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.

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Table 6 summarizes the measured average luminance at each Monitoring Site (from Table 3) along with a calculation of the comparison of the proposed Signs maximum nighttime luminance located within 100 feet from Project property line and/or Project boundary to the existing measured average luminance to determine the contrast ratio.

As outlined in the Specific Plan, all Signs located within 100 feet from the Project property line and/or Project boundary will not exceed 100 cd/m^2 nighttime luminance and all Signs located beyond 100 feet from the Project property line and/or Project boundary will not exceed 300 cd/m^2 nighttime luminance.

Table 6: Signs Contrast Ratio

Monitoring Site	Existing Measured Luminance		Project Lighting Luminance		Evaluation
	Average	Maximum	Max	Contrast Ratio	
M-E1	73.8	1524.0	100.00	1.4	Low contrast, no glare
M-E2	282.9	3715.0	100.00	0.4	Low contrast, no glare
M-NE1	40.9	603.9	100.00	2.4	Low contrast, no glare
M-NE2	34.2	162.0	100.00	2.9	Low contrast, no glare
M-NE3	7.0	143.3	100.00	14.4	Medium Contrast, no glare
M-NW1	408.6	5773.0	100.00	0.2	Low contrast, no glare
M-W1	37.8	495.0	100.00	2.6	Low contrast, no glare
M-W2	89.6	1387.0	100.00	1.1	Low contrast, no glare
M-S1	144.5	2752.0	100.00	0.7	Low contrast, no glare

The maximum Sign nighttime luminance of 100 cd/m^2 results in Low contrast ratios for eight out of the nine Monitoring Site locations (M-E1, M-E2, M-NE1, M-NE2, M-S1, M-W1, M-W2, and M-NW1), ranging from a minimum of 0.2:1 to a maximum of 2.9:1. At one of the Monitoring Sites, M-NE3, the Contrast Ratio is 14.4, which indicates a medium contrast and no glare.

The Sign Lighting Contrast Ratio presented in Table 6 is less than 30:1 at all Monitoring Sites. At eight of the Monitoring Sites the Contrast Ratio is less than 10:1, which indicates a low contrast and no glare. The Sign Contrast Ratio varies from a minimum of 0.2 to 1 at M-NW1, to a maximum of 14.4 to 1 at M-NE3. Therefore, there is no glare impact from the Signs at all Monitoring Sites and at adjacent residential use properties.

The lowest existing measured average luminance in Table 6 is Monitoring Site M-NE3, which is less than 100 cd/m^2 .

The measurements of existing average luminance at Monitoring Site M-NW1 is greater than 300 cd/m^2 , and the maximum Sign nighttime luminance results in a contrast ratio of 0.2:1 or less, which implies Low contrast and no glare.

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Therefore, the proposed Sign maximum nighttime luminance at 100 cd/m² located within 100 feet from the Project property line and/or Project boundary will not create a new source of glare with contrast ratios less than 30:1.

Table 7 summarizes the measured average luminance at each Monitoring Site (from Table 3) along with a calculation of the comparison of the proposed Signs maximum nighttime luminance located beyond 100 feet from Project property line and/or Project boundary to the existing measured average luminance to determine the contrast ratio.

Table 7: Signs Contrast Ratio

Monitoring Site	Existing Measured Luminance		Project Lighting Luminance		Evaluation
	Average	Maximum	Max	Contrast Ratio	
M-E1	73.8	1524	300.00	4.1	Low contrast, no glare
M-E2	289.2	3715	300.00	1.1	Low contrast, no glare
M-NE1	40.9	603.9	300.00	7.3	Low contrast, no glare
M-NE2	34.2	162	300.00	8.8	Low contrast, no glare
M-NW1	408.6	5773.0	300.00	0.7	Low contrast, no glare
M-W1	37.8	495.0	300.00	7.9	Low contrast, no glare
M-W2	89.6	1387.0	300.00	3.4	Low contrast, no glare
M-S1	144.5	2752.0	300.00	2.1	Low contrast, no glare

The maximum Sign nighttime luminance of 300 cd/m² results in Low contrast ratios for eight out of the nine Monitoring Site locations (M-E1, M-E2, M-NE1, M-NE2, M-S1, M-W1, M-W2, and M-NW1), ranging from a minimum of 0.7:1 to a maximum of 8.8:1. As outlined in the Specific Plan, no Signs at 300 cd/m² are allowed within 100 feet from the Project property line and/or the Project boundary. Therefore, north-facing Signs adjacent to the Tujunga Wash and facing toward Monitoring Site M-NE3 cannot exceed 100 cd/m² and, therefore, will not cause glare. Thus, impacts would be less than significant.

The existing measured luminance at Monitoring Sites M-E2 and M-S1 are greater than 100 cd/m² and less than 300 cd/m², and the maximum Sign nighttime luminance results in a contrast ratio of 1.1:1 and 2.1:1, which is low contrast and will not produce glare.

The measurements of existing average luminance at Monitoring Site M-NW1 is greater than 300 cd/m², and the maximum Sign nighttime luminance results in a contrast ratio of 0.7:1 or less, which implies Low contrast and no glare.

Therefore, the proposed Sign maximum nighttime luminance at 300 cd/m² for all Signs located beyond 100 feet from Project property line and/or Project boundary will not create a new source of glare with contrast ratios less than 30:1.

Light degrades rapidly with distance as described above by the Inverse Square Law. Therefore,

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sensitive uses more distant from the Project Site than the Monitoring Sites will receive substantially less light than the Monitoring Sites.

9.2.3 Sign Glare Analysis for Roadways, California Vehicle Code

The lighting impact to a driver's visibility from the 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 driver's field of view, from the center line 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 CVC as noted in Section 5.2 above. As summarized below, the results of this Report demonstrate that the maximum Sign luminance is less than the limits established by the CVC for excessive luminance, or glare, during night, twilight (after sunset, and before sunrise), and during the day. Accordingly, the Signs meet the CVC standard for roadways approaching the Project Site from all directions.

The roadway glare analysis evaluates the maximum Sign luminance during night, twilight, and day with respect to the most stringent requirements of the CVC to determine if the Project introduces a source of substantial glare to drivers. The maximum Project luminance at night and during twilight includes the Signs operating at the maximum night luminance of 300 cd/m² in all white mode. The maximum Sign luminance during the day includes the Signs operating at the maximum daytime luminance of 6,000 cd/m² in all white mode.

The most stringent condition identified within CVC Section 21466.5 states: "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-lamberts shall not exceed 500 plus 100 times the angle, in degrees, between the driver's line of sight and the light source." Thus, a conservative evaluation occurs where the Signs are visible within the center line 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 Signs maximum luminance against a maximum luminance threshold of 500 fL.

9.2.4 Night

A measured brightness within the driver's field of view of less than 10 fL may occur at night. The maximum Sign luminance during night is 300 cd/m². Calculating the equivalent maximum luminance by converting to english units from metric units: 300 cd/m² equals 87.5 fL. Because the Signs are proposed to be subject to a limit of a maximum nighttime luminance of 300 cd/m², or 87.5 fL, the Sign maximum luminance will not exceed 87.5 fL, which is substantially less than (approximately 17.5% of) the 500 fL maximum threshold in the CVC where the minimum brightness in the driver's field of view is less than 10 fL. Therefore, at night the Signs within drivers' field of view will not exceed the 500 fL threshold and will not introduce a new source of substantial glare, and impacts would be less than significant.

For Signs located beyond the driver's 10-degree field of view the maximum luminance is permitted to increase under the CVC. For example, light sources located 15 degrees from the center line of the driver's field of view would be limited to a maximum of 1,000 fL (500 fL plus

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100 times the angle (5 degrees) = 1,000 fL). The maximum Sign luminance is 300 cd/m² or 87.5 fL at night, which is substantially less than (approximately 8.75% of) the maximum threshold in the CVC for those Sign locations at 15 degrees from the center of the driver's field of view. Therefore, at night, the Signs beyond drivers' 10 degree field of view will not exceed the 1,000 fL threshold and will not introduce a new source of substantial glare, and impacts would be less than significant.

9.2.5 Twilight

The 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 nighttime values (10 fL) 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. The maximum luminance permitted by the CVC of 500 fL, which, converting to metric units, equals 1,579 cd/m², is far greater than the proposed 300 cd/m² maximum Sign luminance.

The Signs are designed to operate at 300 cd/m² (87.5 fL) maximum luminance, from sunset to sunrise. At 45 minutes prior to sunset, the Signs are specified to begin to transition from the maximum daytime luminance of 6,000 cd/m² to the maximum nighttime luminance of 300 cd/m². This transition must be completed no later than sunset to avoid potential High contrast, glare conditions. Similarly, the Signs are specified to transition from the nighttime maximum luminance of 300 cd/m² to the daytime maximum luminance of 6,000 cd/m², beginning no earlier than sunrise. Therefore, the Signs will not exceed a maximum luminance of 300 cd/m² from sunset to sunrise, which converts to a maximum of 87.5 fL, less than the maximum permitted luminance of 500 fL. Thus, the Signs will not exceed the threshold of 500 fL and will therefore not introduce a new source of substantial glare during twilight, and impacts would be less than significant.

9.2.6 Day

The evaluation of the 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 CVC during full sun conditions and overcast sky conditions. CVC Section 21466.5 referenced above states that "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

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driver's line of sight and the light source."

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 1,200 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 Signs are proposed to be subject to a limit of a maximum luminance of 6,000 cd/m² (1,751 fL) during the daytime, Signs will not exceed 6,000 cd/m² (1,751 fL) during the day, and Signs will therefore operate at substantially less than (approximately 18% of) the maximum luminance stipulated by the CVC. Therefore, the Signs will not create a new source of substantial glare during the daytime with clear sky or light overcast conditions, and impacts would be less than significant.

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 Signs are proposed to include an electronic control system to reduce the sign luminance from 6,000 cd/m² (1,751 fL) to 300 cd/m² (87.5 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 Signs will transition from the daytime 6,000 cd/m² (1,751 fL) to 300 cd/m² (87.5 fL) maximum, and thereby ensure that the sign brightness remains less than the maximum brightness stipulated by the CVC. Therefore, the Signs will not create a new source of substantial glare during daytime periods with storm or severe overcast weather conditions and will not exceed 87.4 fL, which is substantially less than (approximately 17.5% of) the 500 fL maximum allowed by the CVC during overcast conditions. Thus, impacts would be less than significant.

The Signs are designed to not exceed 300 cd/m² (87.5 fL) luminance at night, twilight, or during overcast sky conditions, and Signs will not exceed 6,000 cd/m² (1,751 fL) during the day. Accordingly, the Sign luminance would be substantially less than the CVC standard. Therefore, the Signs will not create a new source of substantial glare, and impacts would be less than significant.

10. CONCLUSIONS

This Report confirms that the light resulting from the Project will not create a new source of substantial light trespass and glare.

The Project includes Exterior Lighting which will be regulated by the requirements defined within the Project Specific Plan and will limit off-site light trespass illuminance to less than the thresholds defined by the Code at 2.0 fc at residential properties and will limit off-site glare to low contrast conditions. In addition, light from Exterior Lighting will not exceed the maximum thresholds defined by the CVC, and the impact from the Exterior Lighting with respect to driver's glare would be less than significant.

The RIO Ordinance identifies maximum illuminance at the "site boundary" but does not take into account the unique nature and boundaries of the Project Site. Portions of the Los Angeles River and Tujunga Wash are contained within the Project Site in dedicated easement areas. The

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existing lighting at the Project Site exceeds the RIO Ordinance illumination standards, and future Exterior Lighting as defined by the Specific Plan will be of a similar nature to support the existing functioning film studio adjacent to the Los Angeles River and Tujunga Wash. Future light trespass illuminance from the Exterior Lighting will be similar to or less than the existing lighting conditions at the boundary of the Los Angeles River / Tujunga Wash.

The Project includes a proposed Specific Plan to establish land use regulations for the Project Site to ensure consistent implementation of development standards throughout the Project Site in recognition of the Project Site's unique characteristics, including the unique nature and demands of an existing studio use and unique constraints posed by the Project Site's location which are not experienced by other sites. The Specific Plan would establish site-specific lighting standards to ensure Project lighting is consistent with and does not exceed existing conditions (refer to Appendix A of this Report). With compliance with the lighting regulations in the Specific Plan, the CEQA impact of the Exterior Lighting would be less than significant. The areas where Exterior Lighting would exceed the RIO standards include the existing film studio facilities, which is an industrial/commercial use property within the Project Site, and do not include natural habitat or residential uses. As such, pursuant to the 2006 L.A. CEQA Thresholds Guide, no light sensitive receptors would be affected. With compliance with the Specific Plan, which would include site-specific lighting standards, the proposed Exterior Lighting will not exceed the existing conditions and, therefore, the impact would be less than significant.

The Project includes Signs which will be regulated by the requirements of the Specific Plan, which will limit off-site light trespass illuminance to less than the thresholds defined by the Code at 3.0 fc at residentially zoned properties and less than 30 to 1 contrast ratio at the Monitoring Sites. Therefore, the light and glare impacts at the Monitoring Sites would be less than significant. In addition, the light from Signs will not exceed the maximum thresholds defined by the CVC, and the impact from the Signs with respect to driver's glare would be less than significant.

Light intensity degrades exponentially with distance. Therefore, properties with sensitive uses which are more distant than the Monitoring Sites will receive substantially less light from the Project. Therefore, the impact from the Project at these sensitive uses would be less than significant.

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APPENDIX A: SPECIFIC PLAN

Refer to the Department of City Planning website for the draft Specific Plan:
<https://planning.lacity.gov/development-services/eir/radford-studio-center>

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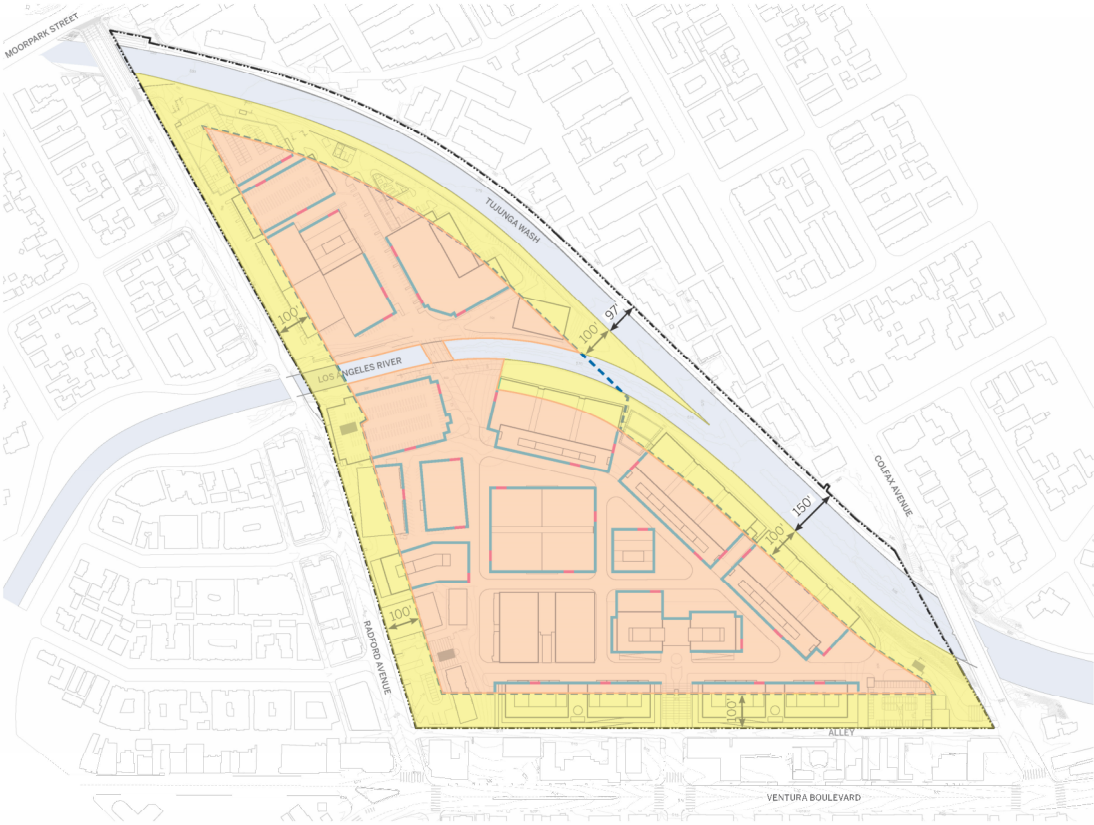
APPENDIX B: SIGN LUMINANCE

SIGN LUMINANCE

- LEGEND
- PROJECT PROPERTY LINE
 - BOUNDARY OF PROJECT INTERIOR SIGNS
 - SITE INTERIOR FACADES SUITABLE FOR DIGITAL SIGNAGE
 - POTENTIAL DIGITAL SIGNAGE LOCATIONS

NOTE:
- DIGITAL DISPLAYS WILL NOT BE PERMITTED ON THE PROJECT EXTERIOR
- ALL SIGNAGE ABOVE 75 FEET ABOVE PROJECT GRADE WILL BE LIMITED TO A MAXIMUM SIGN SIZE OF 300 SQUARE FEET

- LEGEND
- MAXIMUM ALLOWED SIGNAGE LUMINANCE : 100 CD/SQM
 - MAXIMUM ALLOWED SIGNAGE LUMINANCE : 300 CD/SQM



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POTENTIAL INTERIOR DIGITAL
SIGNAGE LOCATIONS
1" = 250'



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APPENDIX C: CONCEPTUAL SIGN PLAN

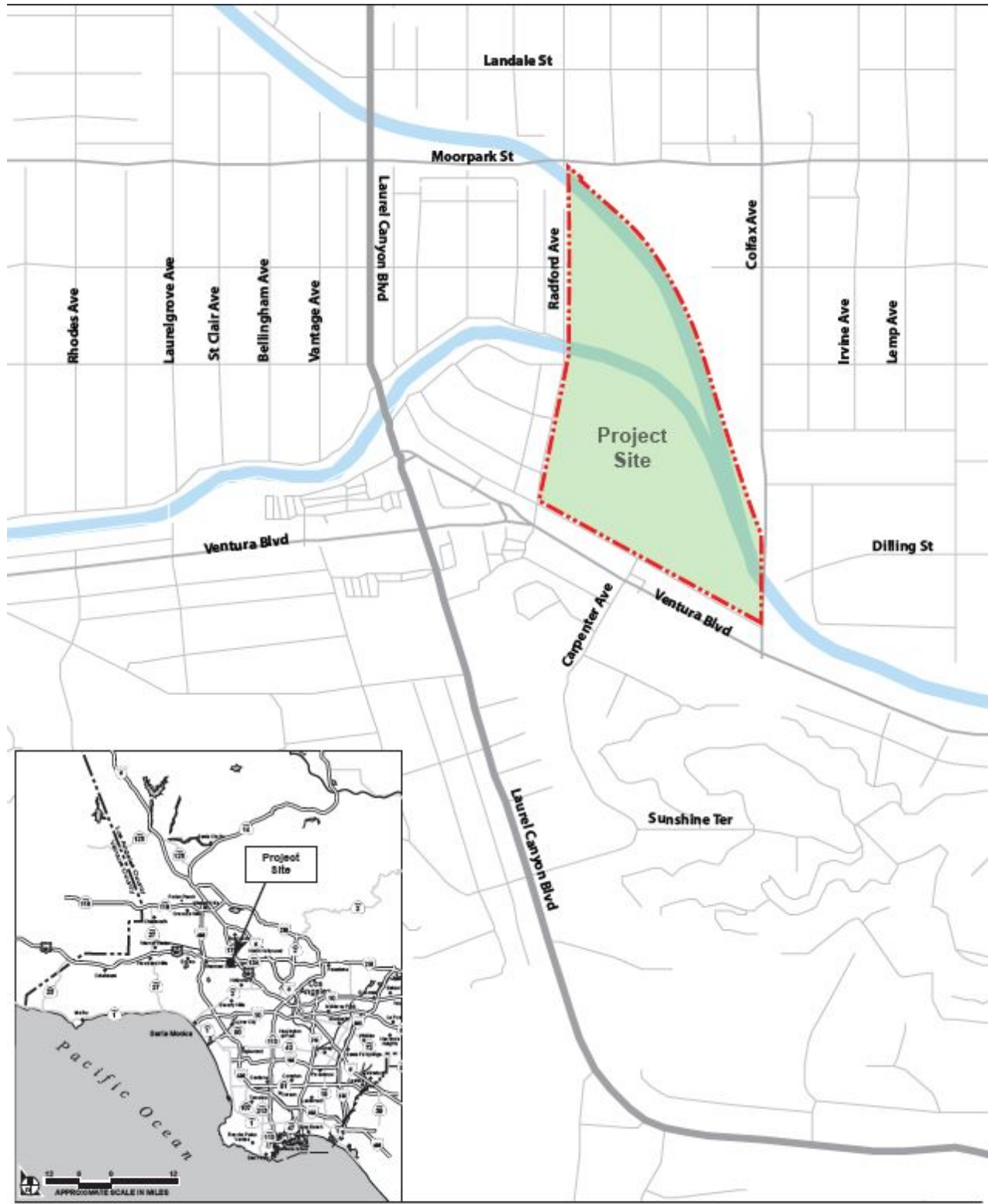


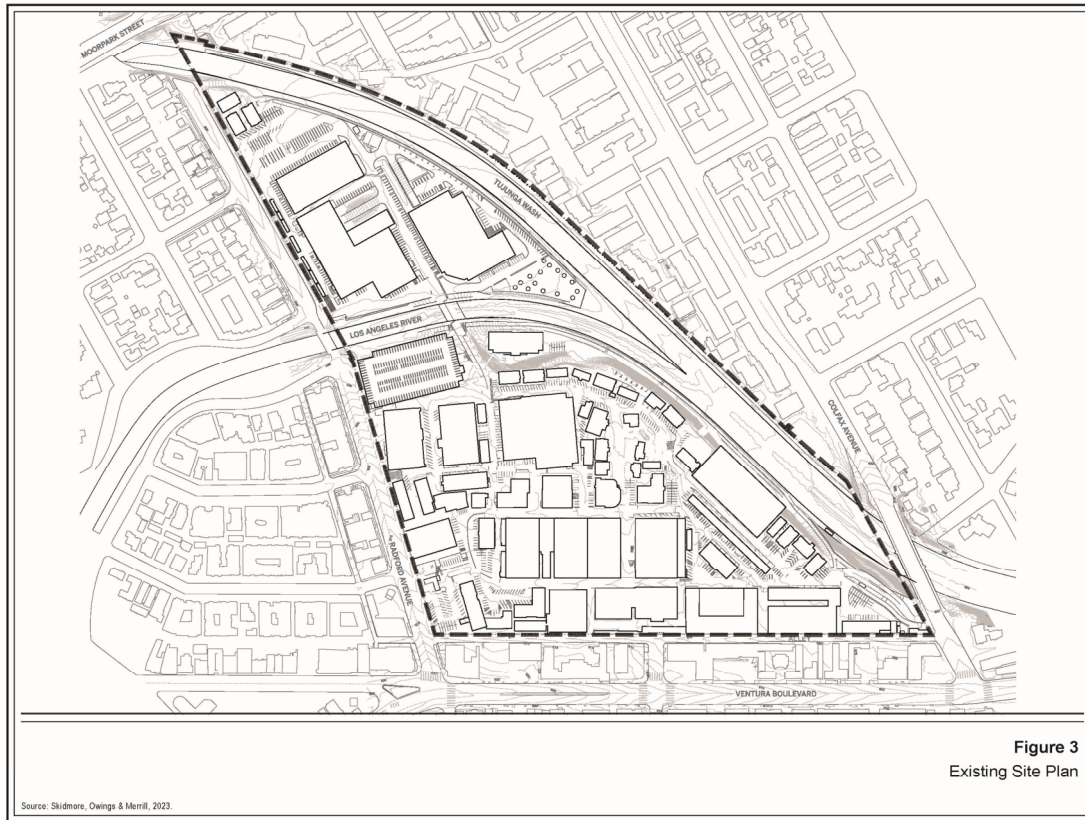
Figure II-1
Project Location Map

Source: ArcGIS, 2024, Eystone Environmental, 2024.

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Figure 6
Conceptual Rendering along Carpenter Gate
Looking North

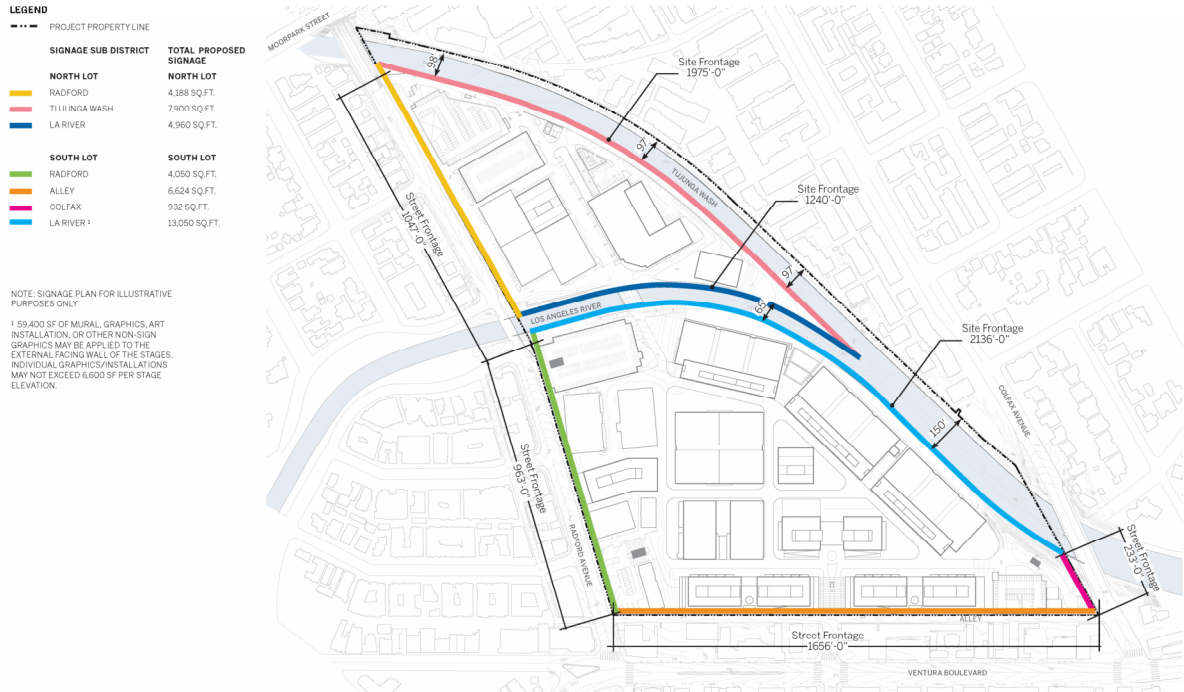
Source: Skidmore, Owings & Merrill, 2023.



Figure 7
Conceptual Rendering of Project Site Interior
Looking South

Source: Skidmore, Owings & Merrill, 2023.

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SIGNAGE PLAN
1" = 200'



LEGEND

- PROPOSED SIGN AREA
- ① Supergraphic: Max Individual Signage Area 1,350 sf
Typ. Dimension - 30'x45'
- ② Building ID Sign: Max Individual Signage Area 240 sf
Typ. Dimension - 8'x20'
- ③ Monument Sign: Max Individual Signage Area 160 sf
Typ. Dimension - 8'x20'
- ④ Architectural Edge Sign: Max Individual Signage Area 150 sf
Typ. Dimension - 2'x10'
- ⑤ Wall Sign: Max Individual Signage Area 900 sf
Typ. Dimension - 30'x30'



A - WEST ELEVATION (NORTH)



B - WEST ELEVATION (SOUTH)



C - SOUTH ELEVATION 1



C - SOUTH ELEVATION 2



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PROPOSED SIGNAGE ELEVATIONS
1" = 200'



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LEGEND

- PROPOSED SIGN AREA
- ① Supergraphic: Max Individual Signage Area 1,350 sf
Typ. Dimension - 30'x45'
- ② Building ID Sign: Max Individual Signage Area 240 sf
Typ. Dimension - 8'x20'
- ③ Monument Sign: Max Individual Signage Area 150 sf
Typ. Dimension - 8'x20'
- ④ Architectural Edge Sign: Max Individual Signage Area 150 sf
Typ. Dimension - 2'x75'
- ⑤ Wall Sign: Max Individual Signage Area 900 sf
Typ. Dimension - 30'x20'



E - NORTH ELEVATION



F - EAST ELEVATION (NORTH)



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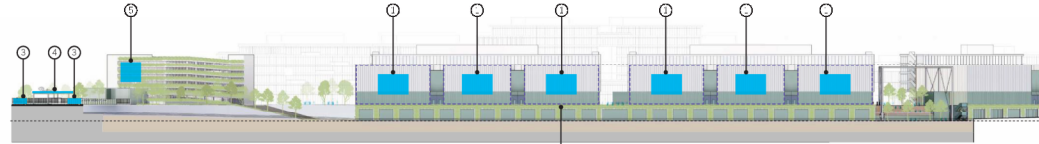
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PROPOSED SIGNAGE ELEVATIONS
1" = 100'

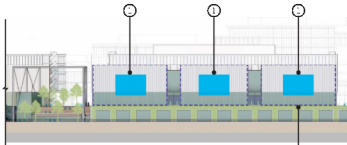


LEGEND

- PROPOSED SIGN AREA
- PROPOSED MURAL/ART AREA
- ① Supergraphic: Max Individual Signage Area 1,350 sf
Typ. Dimension - 30'x45'
- ② Building ID Sign: Max Individual Signage Area 240 sf
Typ. Dimension - 8'x20'
- ③ Monument Sign: Max Individual Signage Area 150 sf
Typ. Dimension - 8'x20'
- ④ Architectural Edge Sign: Max Individual Signage Area 150 sf
Typ. Dimension - 2'x75'
- ⑤ Wall Sign: Max Individual Signage Area 900 sf
Typ. Dimension - 30'x20'



G - EAST ELEVATION (SOUTH)



H - EAST ELEVATION (SOUTH)



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PROPOSED SIGNAGE ELEVATIONS
1" = 100'



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LEGEND
--- PROJECT PROPERTY LINE



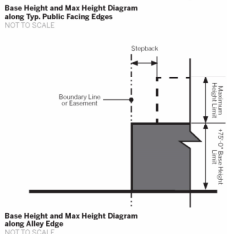
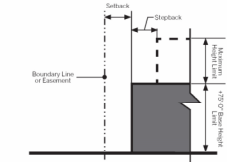
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ILLUSTRATIVE SITE PLAN
1" = 250'

1" = 250' N

LEGEND
--- PROJECT PROPERTY LINE
SUBAREA A - 60' HEIGHT LIMIT
SUBAREA B - 75' BASE HEIGHT LIMIT
95' maximum height limit for 30% of height zone area (see Base Height and Max Height Diagram below)
SUBAREA C - 75' BASE HEIGHT LIMIT
135' maximum height limit for 30% of height zone area (see Base Height and Max Height Diagram below)
SUBAREA D - 75' HEIGHT LIMIT
SETBACK AREA
No occupiable structures are permitted in Setback Area
20' STEPBACK
Only applicable to new buildings



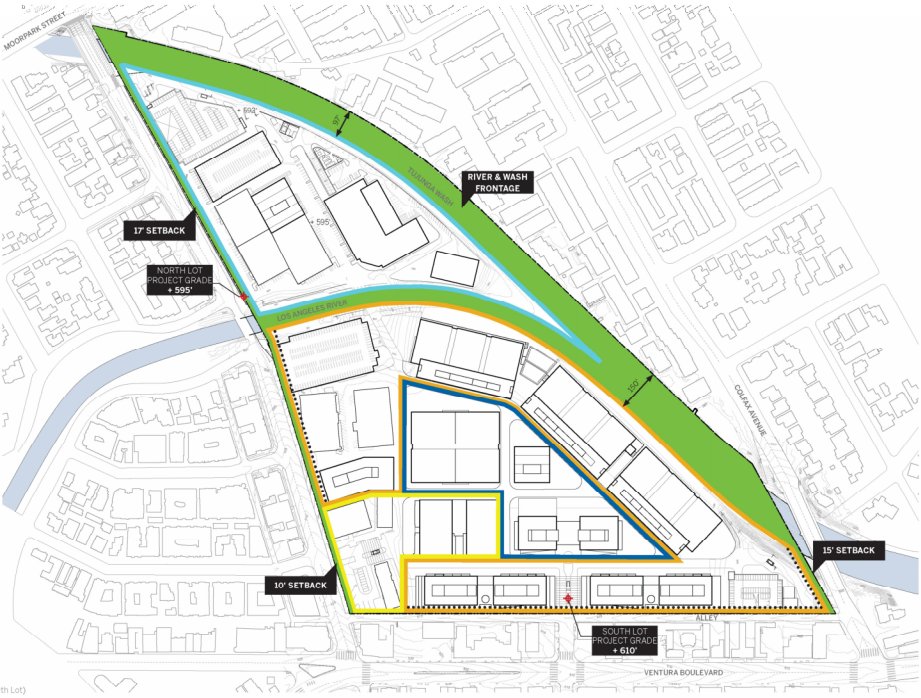
NOTE:
ALL HEIGHTS MEASURED FROM PROJECT GRADE
(i.e., 595 feet AMSL for the North Lot and 610 feet AMSL for the South Lot)

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SUBAREAS
1" = 250'

1" = 250' N

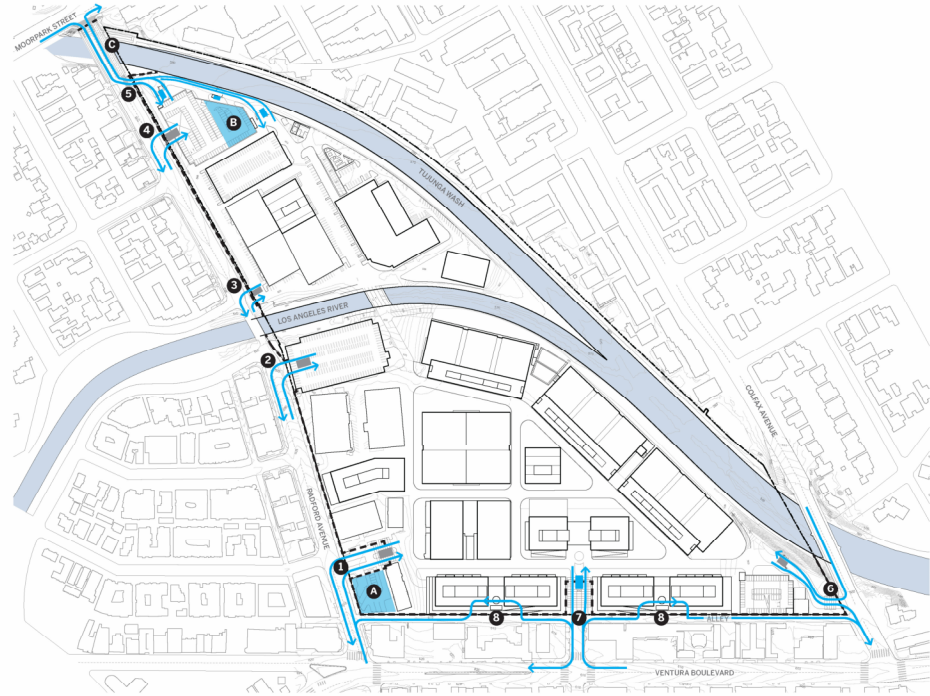


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LEGEND

- PROJECT PROPERTY LINE
- VEHICULAR INGRESS/EGRESS
- PERIMETER SECURITY
- NEW CONTROLLED ENTRY POINT
- EXISTING CONTROLLED ENTRY POINT
- NEW MOBILITY HUB

- 1 RADFORD GATE
- 2 SATER PARKING STRUCTURE
- 3 PRODUCTION ACCESS POINT (LIMITED)
- 4 PRODUCTION ACCESS POINT (LIMITED)
- 5 TUJUNGA WASH EASEMENT ACCESS
- 6 COLFAX GATE
- 7 CARPENTER GATE (RESTORED ACCESS POINT)
- 8 LOADING/SERVICE ACCESS
- A SOUTH MOBILITY HUB
- B NORTH MOBILITY HUB
- C FUTURE LOS ANGELES RIVER CONNECTOR (NO THROUGH ACCESS ALONG RADFORD)



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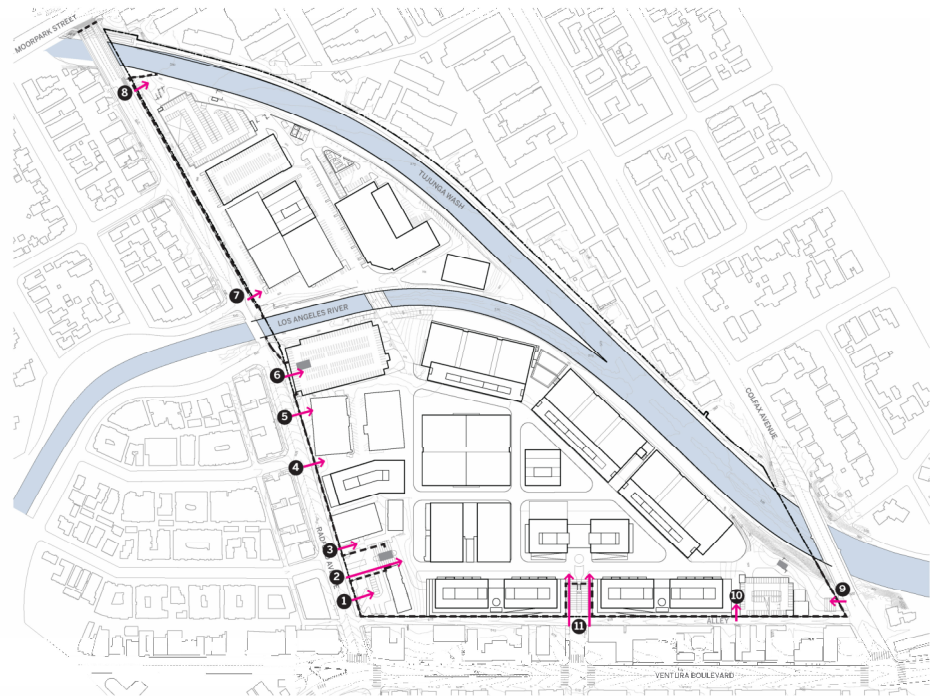
VEHICULAR SITE ACCESS
1" = 250'



LEGEND

- PROJECT PROPERTY LINE
- PEDESTRIAN & BICYCLE ACCESS
- PERIMETER SECURITY

- 1 MACK SENNETT GATE
- 2 RADFORD GATE
- 3 ADMINISTRATION GATE
- 4 STAGE 2 SOUTH GATE
- 5 STAGE 2 NORTH GATE
- 6 SATER PARKING STRUCTURE GATE
- 7 SOUTH RADFORD GATE
- 8 NORTH RADFORD GATE
- 9 COLFAX GATE
- 10 ALLEY GATE
- 11 CARPENTER GATE



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PEDESTRIAN & BICYCLE
SITE ACCESS
1" = 250'

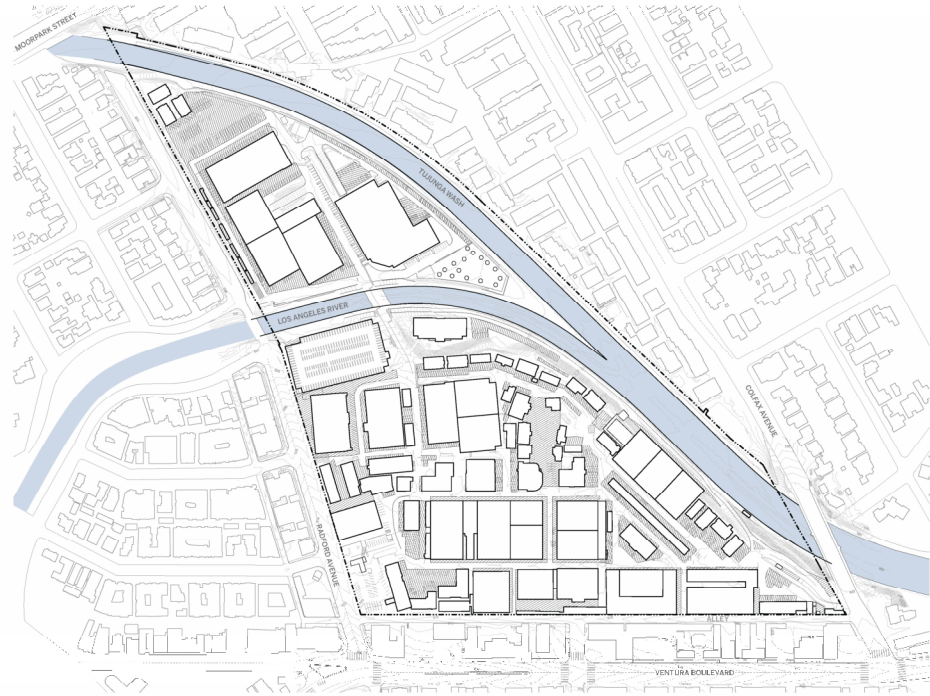


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LEGEND

- PROJECT PROPERTY LINE
- EXISTING BASECAMP AREA

EXISTING BASECAMP AREA: 376,000 SQFT



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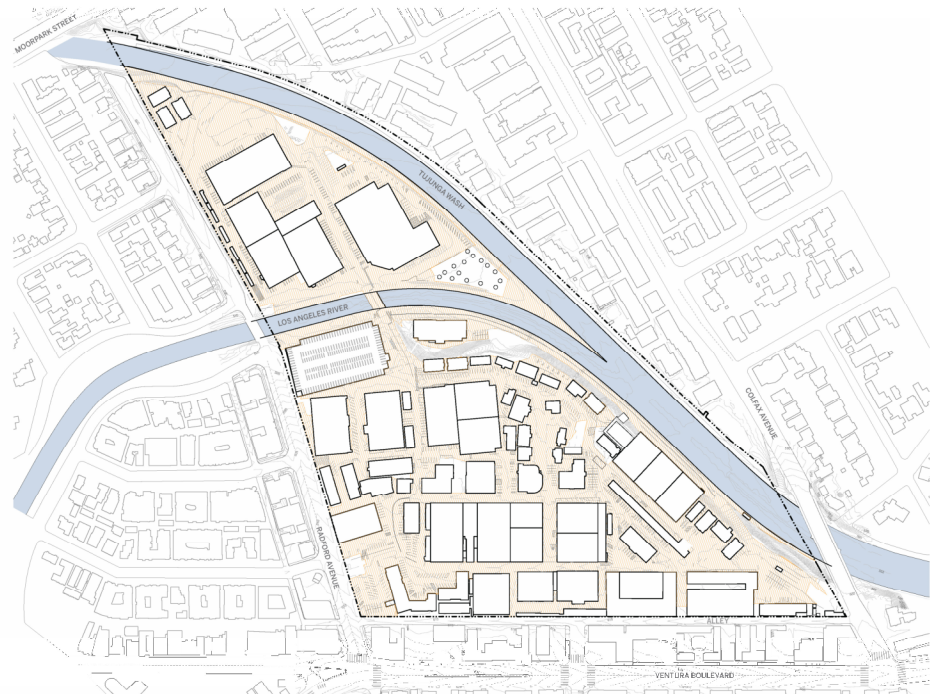
EXISTING BASECAMP AREAS



LEGEND

- PROJECT PROPERTY LINE
- EXISTING OUTDOOR PRODUCTION
ACTIVITY AREAS

1,045,000 SQFT



PROJECT ADDRESS
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Studio City, CA 91604

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EXISTING OUTDOOR PRODUCTION
ACTIVITY AREAS



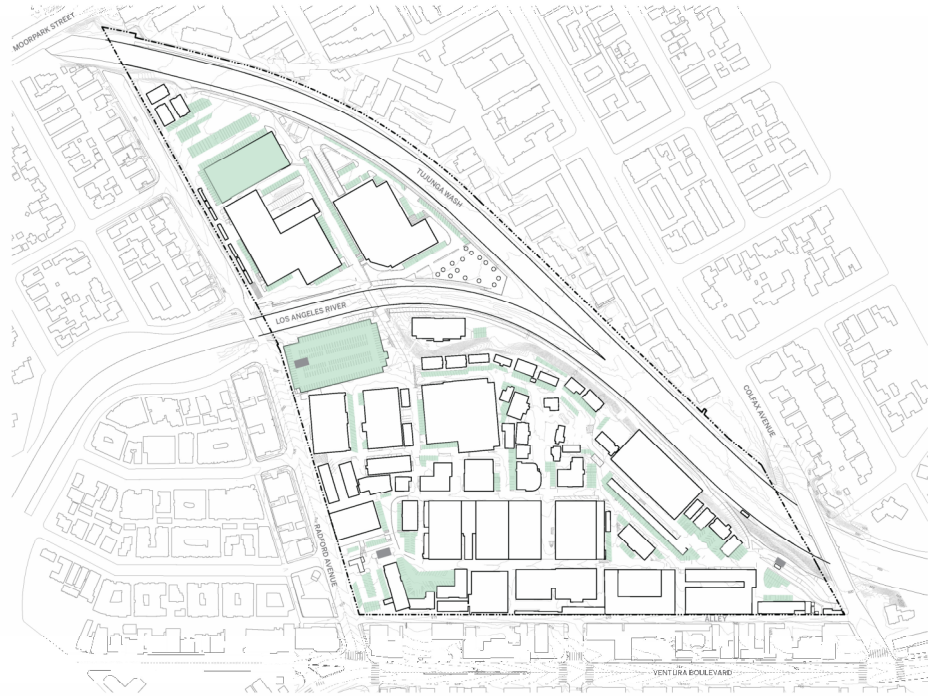
Radford Studio Center Project Lighting and Glare Technical Report

LEGEND

== PROJECT PROPERTY LINE

EXISTING PARKING

3,095 EXISTING PARKING SPACES



Radford
STUDIO CENTER

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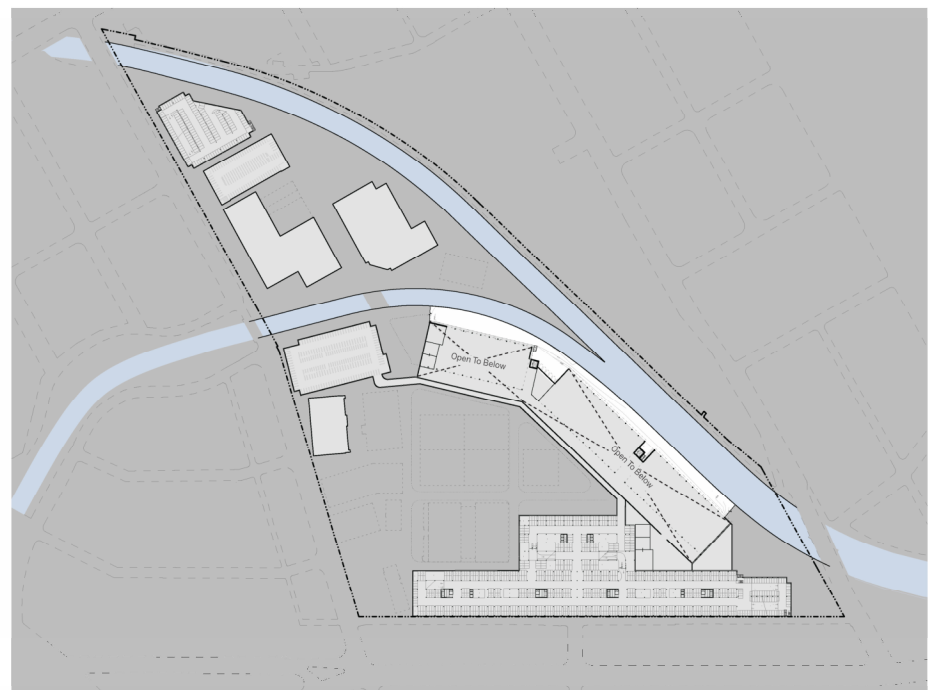
EXISTING PARKING DIAGRAM
1" = 350'



LEGEND

--- PROJECT PROPERTY LINE

PARKING



Radford
STUDIO CENTER

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Studio City, CA 91604

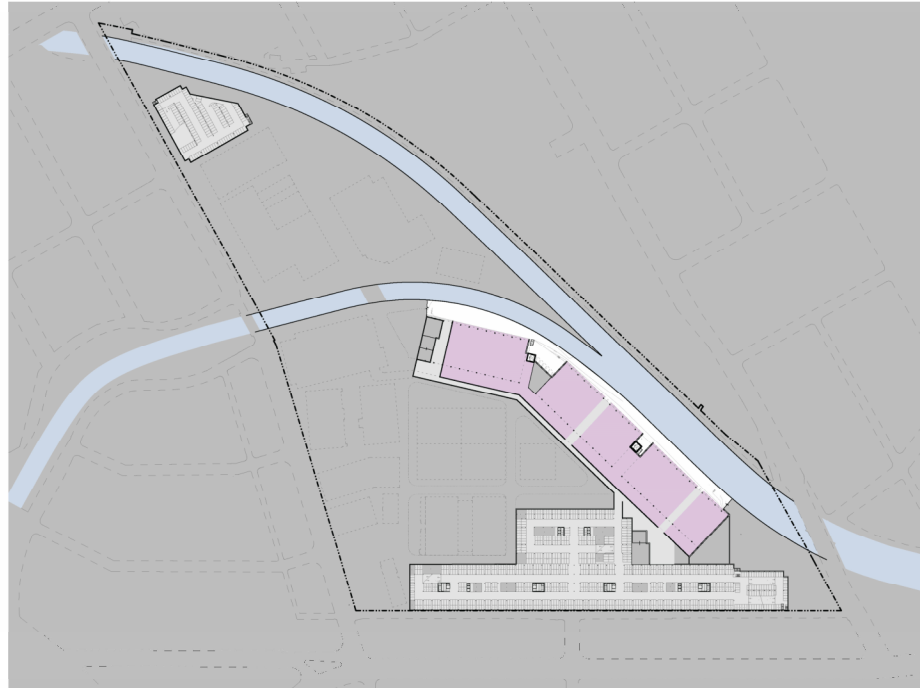
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FLOOR PLAN - LEVEL B1
1" = 250'



Radford Studio Center Project Lighting and Glare Technical Report

LEGEND
 - - - PROJECT PROPERTY LINE
 PARKING
 PRODUCTION SUPPORT



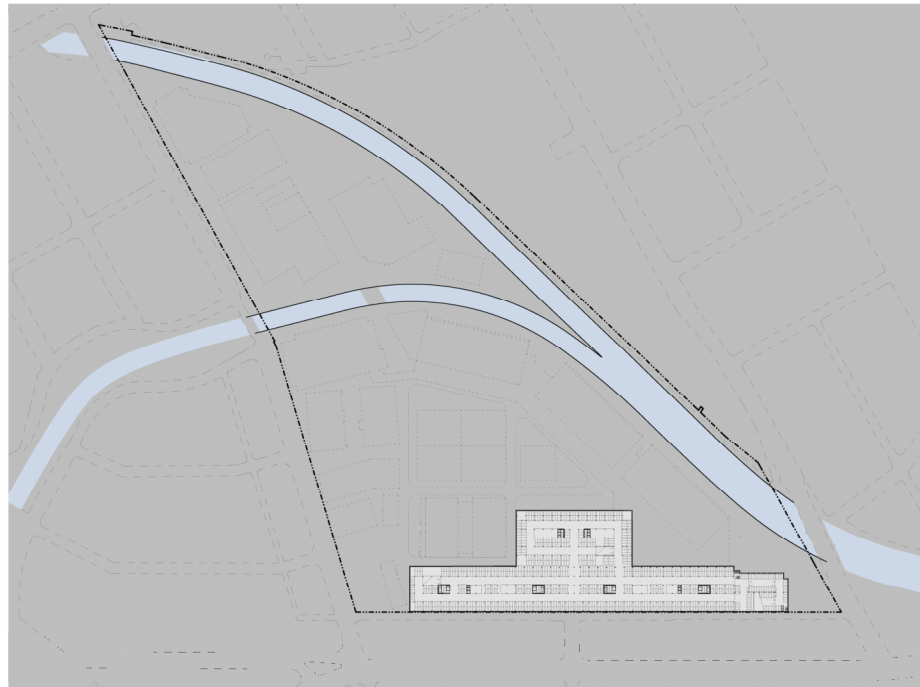
Radford
STUDIO CENTER
 PROJECT ADDRESS
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FLOOR PLAN - LEVEL B2
 1" = 250'



LEGEND
 - - - PROJECT PROPERTY LINE
 PARKING



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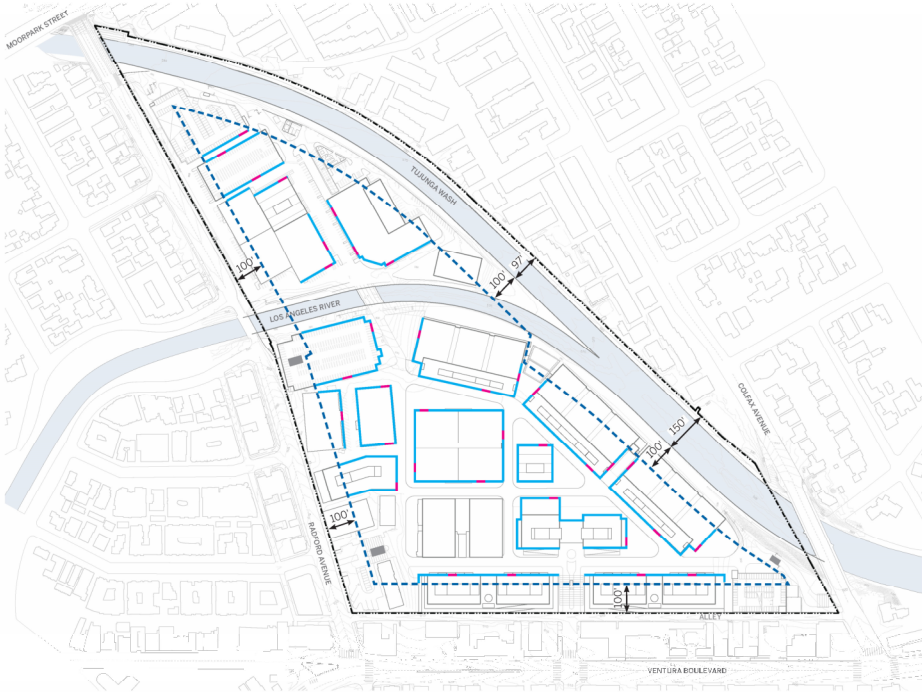
FLOOR PLAN - LEVEL B3
 1" = 250'



Radford Studio Center Project Lighting and Glare Technical Report

- LEGEND**
- PROJECT PROPERTY LINE
 - BOUNDARY OF PROJECT INTERIOR SIGNS
 - SITE INTERIOR FACADES SUITABLE FOR DIGITAL SIGNAGE
 - POTENTIAL DIGITAL SIGNAGE LOCATIONS

NOTE:
- DIGITAL DISPLAYS WILL NOT BE PERMITTED ON THE PROJECT EXTERIOR
- ALL SIGNAGE ABOVE 75 FEET ABOVE PROJECT GRADE WILL BE LIMITED TO A MAXIMUM SIGN SIZE OF 300 SQUARE FEET



PROJECT ADDRESS
4200 Radford Avenue
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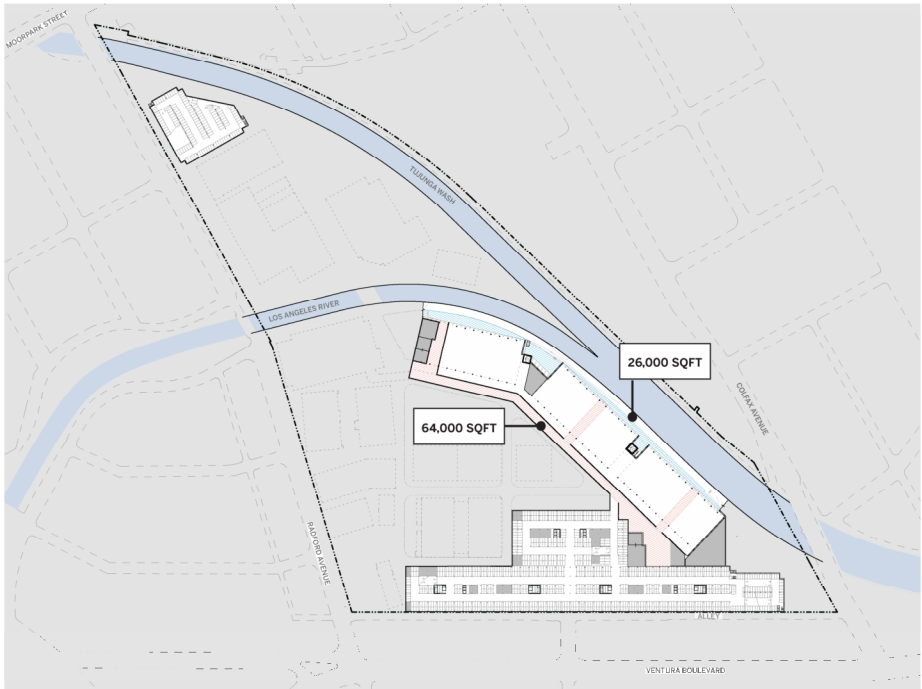
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POTENTIAL INTERIOR DIGITAL
SIGNAGE LOCATIONS
1" = 250'



- LEGEND**
- PROJECT PROPERTY LINE
 - PROPOSED UNCOVERED BASECAMP AREA
 - PROPOSED COVERED BASECAMP AREA

PROPOSED BASECAMP AREA
UNCOVERED: 26,000 SQFT
COVERED: 64,000 SQFT
TOTAL: 90,000 SQFT



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PROPOSED BASECAMP AREAS
BELOW PROJECT GRADE
1" = 250'

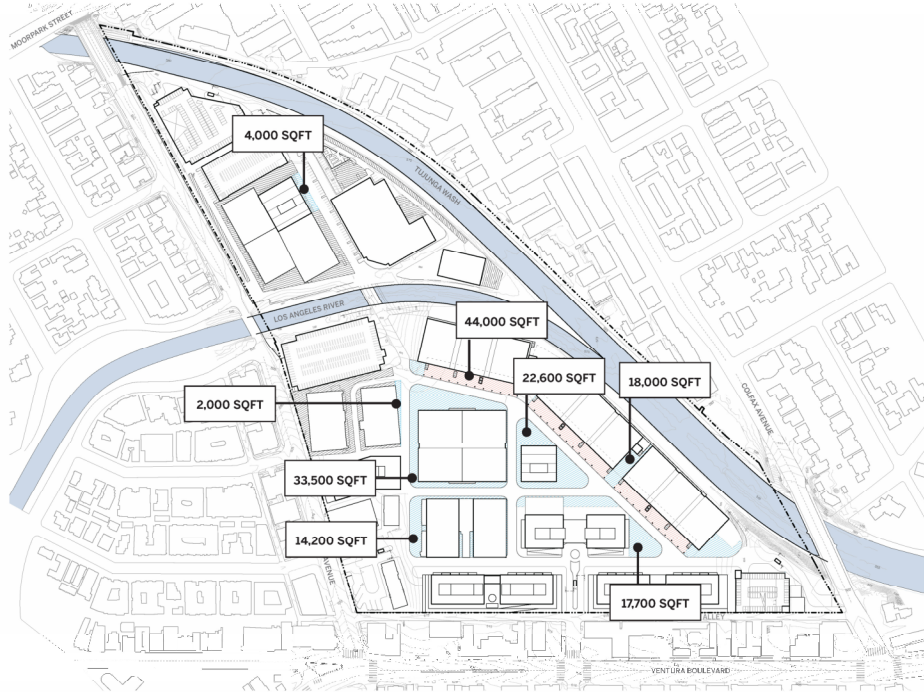


Radford Studio Center Project Lighting and Glare Technical Report

LEGEND

- PROJECT PROPERTY LINE
- EXISTING BASECAMP AREA TO REMAIN
- PROPOSED UNCOVERED BASECAMP AREA
- PROPOSED COVERED BASECAMP AREA

PROPOSED BASECAMP AREA
UNCOVERED: 112,000 SQFT
COVERED: 44,000 SQFT
TOTAL: 156,000 SQFT
EXISTING BASECAMP AREA TO REMAIN
UNCOVERED: 85,000 SQFT



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PROPOSED BASECAMP AREAS AT
PROJECT GRADE
1" = 250'



LEGEND

- PROJECT PROPERTY LINE
- PROPOSED MOBILITY HUB AREA
NORTH MOBILITY HUB 39,200 SQFT
SOUTH MOBILITY HUB 35,000 SQFT
TOTAL PROPOSED AREA: 54,200 SQFT



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PRIMARY MOBILITY HUB LOCATIONS
1" = 250'



Radford Studio Center Project Lighting and Glare Technical Report

LEGEND
 - - - PROJECT PROPERTY LINE
 PROPOSED OUTDOOR PRODUCTION
 ACTIVITY AREAS
 840,000 SQFT



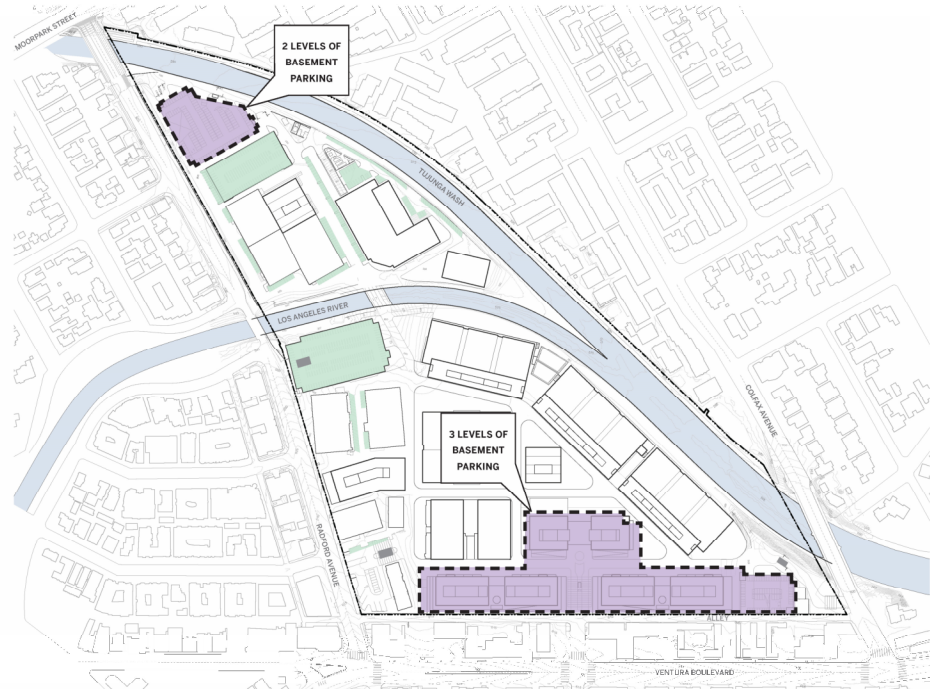
Radford
STUDIO CENTER
 PROJECT ADDRESS
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 Studio City, CA 91604

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PROPOSED OUTDOOR PRODUCTION
 ACTIVITY AREAS
 1" = 250'



LEGEND
 - - - PROJECT PROPERTY LINE
 PROPOSED PARKING
 3,880 PROPOSED PARKING SPACES (51 STRUCTURED)
 2,170 EXISTING PARKING SPACES TO REMAIN
 6,050 TOTAL PROPOSED PARKING SPACES



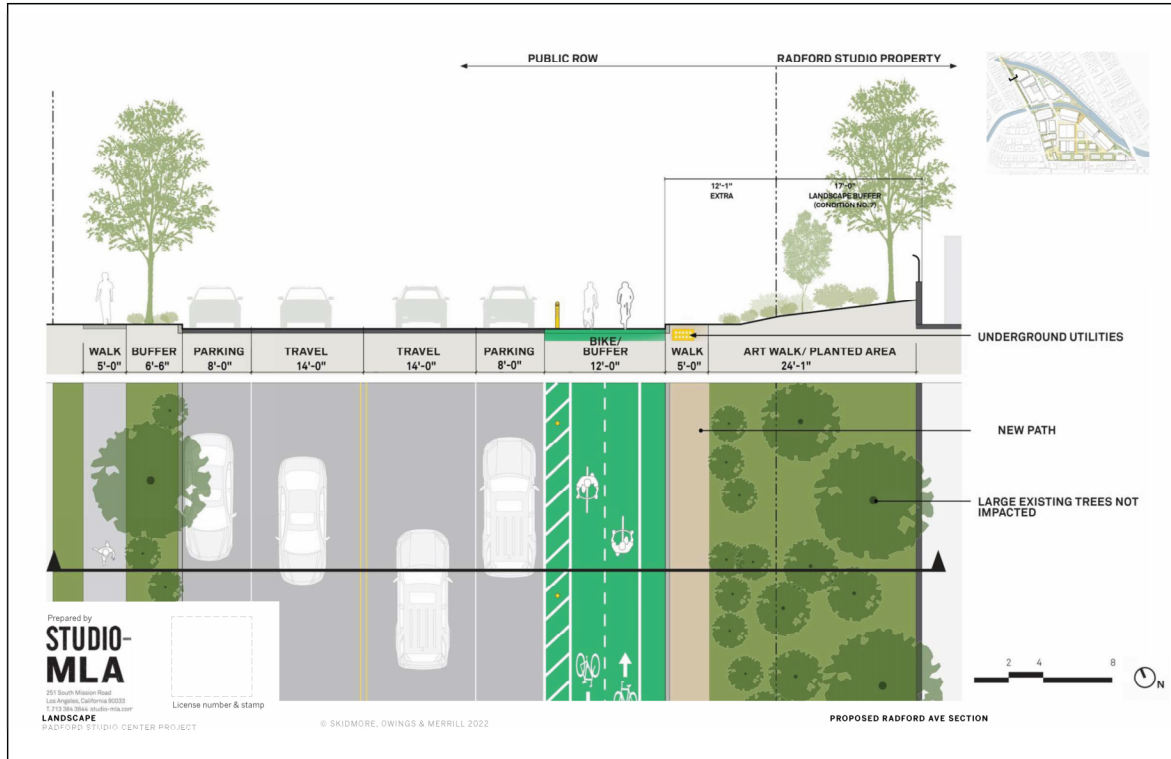
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 PROJECT ADDRESS
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PROPOSED PARKING DIAGRAM
 1" = 250'



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APPENDIX D: 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-

Radford Studio Center Project Lighting and Glare Technical Report

100846031

ADMINISTRATIVE REGULATIONS FOR THE CALIFORNIA ENERGY COMMISSION (CEC)

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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INTERNATIONAL CODE COUNCIL®

2019 CALIFORNIA ADMINISTRATIVE CODE

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Radford Studio Center Project Lighting and Glare Technical Report

APPENDIX E: 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.

Lighting Practice: Environmental Considerations for Outdoor Lighting

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)

Radford Studio Center Project Lighting and Glare Technical Report

APPENDIX F: 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.

Radford Studio Center Project Lighting and Glare Technical Report

APPENDIX G: LIGHT ILLUMINANCE CALCULATION DATA

VP-E1																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80
	85	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80
	75	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80
	65	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80	0.80
	55	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80	0.80
	45	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80
	35	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80
	25	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80	0.70
	15	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80	0.70
	5	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80	0.70

VP-E1																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	0.60	0.60	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	85	0.60	0.60	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	75	0.60	0.60	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	65	0.60	0.60	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20
	55	0.60	0.60	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	45	0.60	0.60	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20
	35	0.60	0.60	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20
	25	0.60	0.60	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	15	0.60	0.50	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	5	0.60	0.50	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20

VP-E1																
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405	415	425	435	445
Vertical (ft)	95	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

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VP-E1																
Horizontal (ft)		455	465	475	485	495	505	515	525	535	545	555	565	575	585	595
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-E1						
Horizontal (ft)		605	615	625	635	645
Vertical (ft)	95	0.00	0.00	0.00	0.00	0.00
	85	0.00	0.00	0.00	0.00	0.00
	75	0.00	0.00	0.00	0.00	0.00
	65	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00

VP-E2																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.20	2.20	2.30	2.30	2.30	2.30	2.40	2.40
	85	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40	2.40	2.40
	75	2.50	2.50	2.50	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.40	2.40	2.40	2.40	2.50
	65	2.50	2.50	2.50	2.40	2.40	2.40	2.40	2.30	2.30	2.40	2.40	2.50	2.50	2.50	2.50
	55	2.50	2.50	2.50	2.40	2.40	2.40	2.40	2.30	2.30	2.40	2.40	2.50	2.50	2.40	2.50
	45	2.40	2.50	2.50	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.40	2.40	2.40	2.40	2.40
	35	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40	2.40	2.30	2.40
	25	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40	2.30	2.30
	15	2.30	2.30	2.40	2.30	2.30	2.30	2.20	2.20	2.20	2.20	2.30	2.30	2.30	2.30	2.30
	5	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.20	2.20	2.20	2.30	2.30	2.20	2.30

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VP-E2																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
	85	2.40	2.50	2.50	2.40	2.40	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30
	75	2.50	2.50	2.50	2.50	2.50	2.50	2.40	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30
	65	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.40	2.40	2.40	2.40	2.40	2.30	2.30	2.30
	55	2.50	2.50	2.50	2.50	2.50	2.50	2.40	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30
	45	2.40	2.50	2.50	2.50	2.50	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30
	35	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
	25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.20
	15	2.30	2.30	2.30	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.20	2.20
	5	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.20	2.20	2.20	2.20

VP-E2																
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405	415	425	435	445
Vertical (ft)	95	2.30	2.30	2.30	2.30	2.20	2.20	2.20	2.10	2.10	2.00	2.00	1.90	1.90	1.80	1.70
	85	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.10	2.10	2.00	2.00	1.90	1.80	1.70
	75	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.10	2.10	2.00	1.90	1.90	1.80
	65	2.30	2.30	2.40	2.40	2.40	2.30	2.30	2.20	2.20	2.10	2.10	2.00	2.00	1.90	1.80
	55	2.30	2.30	2.30	2.40	2.40	2.30	2.30	2.30	2.20	2.10	2.10	2.00	2.00	1.90	1.80
	45	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.10	2.00	1.90	1.90	1.80
	35	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.10	2.10	2.00	1.90	1.90	1.70
	25	2.20	2.20	2.30	2.30	2.30	2.30	2.30	2.20	2.20	2.10	2.10	2.00	1.90	1.90	1.70
	15	2.20	2.20	2.20	2.20	2.30	2.30	2.30	2.20	2.20	2.10	2.10	2.00	1.90	1.80	1.70
	5	2.20	2.20	2.20	2.20	2.30	2.30	2.30	2.20	2.20	2.10	2.00	2.00	1.90	1.80	1.70

VP-E2									
Horizontal (ft)		455	465	475	485	495	505	515	525
Vertical (ft)	95	1.60	1.60	1.50	1.50	1.40	1.40	1.10	1.00
	85	1.70	1.60	1.60	1.50	1.50	1.40	1.10	1.00
	75	1.70	1.60	1.60	1.50	1.50	1.40	1.10	1.00
	65	1.70	1.70	1.60	1.50	1.50	1.40	1.10	1.00
	55	1.70	1.60	1.60	1.50	1.50	1.40	1.10	1.00
	45	1.70	1.60	1.60	1.50	1.50	1.40	1.10	1.00
	35	1.70	1.60	1.60	1.50	1.40	1.40	1.10	1.00
	25	1.70	1.60	1.50	1.50	1.40	1.40	1.00	1.00
	15	1.60	1.60	1.50	1.50	1.40	1.40	1.00	1.00
	5	1.60	1.60	1.50	1.50	1.40	1.30	1.00	1.00

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VP-E3																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	0.90	0.90	0.90	0.90	0.90	1.00	0.90	1.00	1.00	1.00	1.00	1.10	1.10	1.10	1.10
	85	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	1.00	1.00	1.00	1.10	1.10	1.10	1.10
	75	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	1.00	1.00	1.00	1.10	1.10	1.10	1.20
	65	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.10	1.10
	55	0.80	0.80	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	1.00	1.00	1.00	1.10	1.10
	45	0.70	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	1.00	1.00	1.00
	35	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.80	0.80	0.80	0.90	0.90	0.90
	25	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.80	0.80	0.80
	15	0.50	0.60	0.60	0.60	0.60	0.60	0.50	0.50	0.50	0.60	0.60	0.60	0.70	0.70	0.70
	5	0.50	0.50	0.50	0.50	0.50	0.50	0.40	0.40	0.40	0.50	0.50	0.60	0.60	0.60	0.70

VP-E3																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	1.10	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.30	1.30	1.30	1.30	1.30	1.30	1.30
	85	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.30	1.30	1.30	1.30	1.30	1.40
	75	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.30	1.30	1.30	1.30	1.30	1.30	1.40
	65	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.30	1.30	1.30	1.30	1.30	1.40	1.40
	55	1.10	1.20	1.10	1.20	1.20	1.20	1.20	1.20	1.30	1.30	1.30	1.30	1.40	1.40	1.40
	45	1.00	1.10	1.10	1.10	1.10	1.10	1.20	1.20	1.20	1.30	1.30	1.30	1.30	1.40	1.40
	35	0.90	1.00	1.00	1.00	1.00	1.10	1.10	1.10	1.20	1.20	1.20	1.20	1.30	1.30	1.30
	25	0.80	0.80	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.10	1.20	1.20	1.20	1.30	1.30
	15	0.70	0.80	0.80	0.80	0.80	0.90	0.90	1.00	1.00	1.10	1.10	1.10	1.20	1.20	1.20
	5	0.70	0.70	0.70	0.80	0.80	0.80	0.90	1.00	1.00	1.10	1.10	1.10	1.20	1.20	1.20

VP-E3																
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405	415	425	435	445
Vertical (ft)	95	1.30	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	85	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.50	1.40
	75	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	65	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	55	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	45	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	35	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	25	1.30	1.30	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.50	1.50
	15	1.30	1.30	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.40	1.50	1.50	1.50	1.40	1.40
	5	1.30	1.30	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.50	1.40	1.40	1.40

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VP-E3																
Horizontal (ft)		455	465	475	485	495	505	515	525	535	545	555	565	575	585	595
Vertical (ft)	95	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.30	1.40	1.40	1.40	1.40	1.40	1.50	1.50
	85	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50
	75	1.50	1.40	1.40	1.50	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.60	1.60
	65	1.50	1.40	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.60	1.60	1.60
	55	1.50	1.50	1.40	1.40	1.40	1.50	1.50	1.50	1.40	1.40	1.50	1.50	1.60	1.60	1.60
	45	1.50	1.40	1.40	1.50	1.50	1.40	1.50	1.40	1.40	1.40	1.50	1.50	1.60	1.60	1.60
	35	1.50	1.40	1.40	1.40	1.40	1.50	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.60	1.60
	25	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.60	1.60
	15	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.60	1.60
	5	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	1.50	1.50	1.60

VP-E3																
Horizontal (ft)		605	615	625	635	645	655	665	675	685	695	705	715	725	735	745
Vertical (ft)	95	1.50	1.60	1.60	1.60	1.70	1.80	1.80	1.90	1.90	1.90	2.00	2.00	2.10	2.10	2.10
	85	1.60	1.60	1.70	1.70	1.80	1.80	1.90	1.90	1.90	2.00	2.00	2.10	2.10	2.10	2.20
	75	1.70	1.70	1.80	1.80	1.80	1.90	1.90	1.90	2.00	2.10	2.10	2.20	2.20	2.20	2.20
	65	1.70	1.80	1.80	1.80	1.90	1.90	2.00	2.00	2.10	2.10	2.20	2.20	2.30	2.30	2.30
	55	1.80	1.80	1.80	1.80	1.90	2.00	2.00	2.00	2.10	2.10	2.20	2.20	2.30	2.30	2.30
	45	1.80	1.80	1.80	1.80	1.90	2.00	2.00	2.00	2.10	2.10	2.20	2.30	2.30	2.30	2.30
	35	1.70	1.80	1.80	1.80	1.90	2.00	2.00	2.00	2.10	2.10	2.20	2.20	2.30	2.30	2.30
	25	1.70	1.80	1.80	1.80	1.90	1.90	2.00	2.00	2.10	2.10	2.20	2.20	2.20	2.30	2.30
	15	1.70	1.70	1.80	1.80	1.80	1.90	1.90	2.00	2.00	2.10	2.10	2.20	2.20	2.30	2.30
	5	1.70	1.70	1.80	1.80	1.80	1.90	1.90	2.00	2.00	2.10	2.10	2.20	2.20	2.20	2.30

VP-E3																
Horizontal (ft)		755	765	775	785	795	805	815	825	835	845	855	865	875	885	895
Vertical (ft)	95	2.10	2.20	2.20	2.20	2.20	2.20	2.20	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40
	85	2.20	2.20	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40	2.40	2.40	2.40	2.50
	75	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40	2.40	2.40	2.40	2.50	2.50	2.50	2.50
	65	2.30	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.50	2.50	2.50	2.50
	55	2.30	2.30	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.50	2.50	2.50	2.50
	45	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.50	2.50	2.50	2.50
	35	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.50
	25	2.30	2.30	2.40	2.40	2.30	2.40	2.30	2.30	2.30	2.30	2.40	2.40	2.40	2.40	2.40
	15	2.30	2.30	2.40	2.40	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40
	5	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.40	2.40

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VP-E3		
Horizontal (ft)		905
Vertical (ft)	95	2.40
	85	2.50
	75	2.50
	65	2.50
	55	2.50
	45	2.50
	35	2.50
	25	2.40
	15	2.40
	5	2.40

VP-E4																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	1.20	1.20	1.20	1.20	1.10	1.10	1.10	1.00	1.00	0.90	0.90	0.90	0.80	0.80	0.80
	85	1.30	1.20	1.20	1.20	1.10	1.10	1.00	1.00	1.00	0.90	0.90	0.90	0.80	0.80	0.80
	75	1.30	1.20	1.20	1.20	1.10	1.10	1.00	1.00	1.00	0.90	0.90	0.90	0.80	0.80	0.80
	65	1.30	1.20	1.20	1.20	1.10	1.00	1.00	1.00	1.00	0.90	0.90	0.80	0.80	0.70	0.70
	55	1.30	1.20	1.20	1.20	1.10	1.00	1.00	1.00	1.00	0.90	0.80	0.80	0.70	0.70	0.70
	45	1.20	1.20	1.20	1.10	1.10	1.00	1.00	1.00	0.90	0.90	0.80	0.80	0.70	0.70	0.70
	35	1.20	1.20	1.20	1.10	1.10	1.00	1.00	0.90	0.90	0.90	0.80	0.80	0.70	0.70	0.70
	25	1.20	1.10	1.10	1.10	1.00	1.00	1.00	0.90	0.90	0.80	0.80	0.80	0.70	0.70	0.60
	15	1.20	1.10	1.10	1.10	1.00	0.90	0.90	0.90	0.90	0.80	0.70	0.70	0.70	0.60	0.60
	5	1.10	1.10	1.00	1.00	0.90	0.90	0.90	0.90	0.90	0.80	0.70	0.70	0.60	0.60	0.60

VP-E4																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.50	0.50	0.50	0.50	0.40	0.40	0.40	0.40
	85	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.50	0.50	0.50	0.40	0.40	0.40	0.40	0.30
	75	0.70	0.70	0.70	0.60	0.60	0.60	0.50	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.30
	65	0.70	0.70	0.60	0.60	0.60	0.50	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.30	0.30
	55	0.70	0.70	0.60	0.60	0.60	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.20
	45	0.70	0.60	0.60	0.60	0.50	0.50	0.50	0.40	0.40	0.30	0.30	0.30	0.20	0.20	0.20
	35	0.60	0.60	0.60	0.50	0.50	0.50	0.40	0.40	0.30	0.30	0.30	0.20	0.20	0.20	0.20
	25	0.60	0.60	0.50	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.20	0.20	0.20	0.20	0.10
	15	0.60	0.50	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.30	0.20	0.20	0.20	0.10	0.10
	5	0.60	0.50	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.30	0.20	0.20	0.20	0.10	0.10

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VP-E4																
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405	415	425	435	445
Vertical (ft)	95	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50	0.50
	85	0.40	0.30	0.30	0.30	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.50	0.50	0.50
	75	0.30	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	65	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.40	0.40	0.40
	55	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40
	45	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	25	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	15	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	5	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20

VP-E4																
Horizontal (ft)		455	465	475	485	495	505	515	525	535	545	555	565	575	585	595
Vertical (ft)	95	0.50	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
	85	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.60
	75	0.40	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.60	0.60
	65	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.50	0.40	0.50	0.50	0.50	0.50	0.50	0.50
	55	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.50	0.50
	45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.40	0.40
	35	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	25	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30
	5	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30

VP-E4										
Horizontal (ft)		605	615	625	635	645	655	665	675	685
Vertical (ft)	95	0.60	0.70	0.70	0.70	0.70	0.00	0.80	0.80	0.80
	85	0.60	0.60	0.70	0.70	0.70	0.70	0.80	0.80	0.80
	75	0.60	0.60	0.60	0.70	0.70	0.70	0.70	0.80	0.80
	65	0.50	0.60	0.60	0.60	0.60	0.70	0.70	0.70	0.70
	55	0.50	0.50	0.50	0.60	0.60	0.60	0.60	0.70	0.70
	45	0.40	0.50	0.50	0.50	0.50	0.60	0.60	0.60	0.60
	35	0.30	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50
	25	0.30	0.30	0.40	0.40	0.40	0.40	0.50	0.50	0.50
	15	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.40	0.40
	5	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.40	0.40

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VP-E5																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
	15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
	5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20

VP-E5																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.40
	85	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.40
	75	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.40
	65	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.40
	55	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40
	45	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40
	35	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40
	25	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30
	5	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30

VP-E5																
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405	415	425	435	445
Vertical (ft)	95	0.40	0.40	0.50	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.80	0.80	0.80	0.80	0.80
	85	0.40	0.40	0.50	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.80	0.80	0.80	0.80	0.90
	75	0.40	0.40	0.50	0.50	0.60	0.60	0.60	0.70	0.70	0.80	0.80	0.80	0.80	0.90	0.90
	65	0.40	0.40	0.50	0.50	0.60	0.60	0.70	0.70	0.80	0.80	0.80	0.80	0.80	0.90	0.90
	55	0.40	0.40	0.50	0.50	0.50	0.60	0.60	0.70	0.70	0.80	0.80	0.80	0.80	0.90	0.90
	45	0.40	0.40	0.50	0.50	0.50	0.60	0.60	0.70	0.70	0.80	0.80	0.80	0.80	0.80	0.90
	35	0.40	0.40	0.40	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.80	0.80	0.80	0.80	0.80
	25	0.40	0.40	0.40	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.80	0.80	0.80	0.80	0.80
	15	0.30	0.40	0.40	0.50	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.70	0.80	0.80	0.80
	5	0.30	0.30	0.40	0.40	0.50	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.70	0.70	0.80

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VP-E5																
Horizontal (ft)		455	465	475	485	495	505	515	525	535	545	555	565	575	585	595
Vertical (ft)	95	0.80	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.20	1.30	1.30	1.40	1.40	1.40
	85	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.20	1.30	1.30	1.30	1.40	1.40	1.40
	75	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.20	1.30	1.30	1.40	1.40	1.40	1.50
	65	0.90	0.90	1.00	1.00	1.00	1.10	1.10	1.20	1.30	1.30	1.30	1.40	1.40	1.50	1.50
	55	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.30	1.30	1.40	1.40	1.50	1.50	1.50
	45	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.30	1.30	1.40	1.40	1.40	1.50	1.50
	35	0.80	0.90	0.90	0.90	1.00	1.00	1.10	1.20	1.20	1.30	1.30	1.40	1.40	1.40	1.50
	25	0.80	0.80	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.20	1.30	1.30	1.40	1.40	1.40
	15	0.80	0.80	0.90	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.30	1.30	1.30	1.40	1.40
	5	0.80	0.80	0.80	0.90	0.90	1.00	1.00	1.10	1.10	1.20	1.20	1.30	1.30	1.30	1.30

VP-E5		
Horizontal (ft)		605
Vertical (ft)	95	1.40
	85	1.40
	75	1.50
	65	1.50
	55	1.50
	45	1.50
	35	1.50
	25	1.40
	15	1.40
	5	1.30

VP-N1																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.10	0.10	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	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	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	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	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	0.00	0.00	0.00	0.00	0.00	0.00

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VP-N1											
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	35	0.00	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	0.00
	15	0.00	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	0.00

VP-W1																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	1.00	1.10	1.10	1.10	1.20	1.20	1.20	1.10	1.10	1.00	0.80	0.80	0.80	0.80	0.80
	85	0.90	0.90	0.90	1.00	1.10	1.20	1.10	1.10	1.00	0.90	0.80	0.70	0.70	0.70	0.70
	75	0.80	0.80	0.80	0.80	0.90	1.00	1.00	0.90	0.80	0.70	0.60	0.60	0.50	0.50	0.60
	65	0.70	0.70	0.70	0.60	0.70	0.90	0.90	0.80	0.70	0.60	0.50	0.50	0.50	0.50	0.50
	55	0.50	0.50	0.50	0.30	0.60	0.80	0.80	0.70	0.60	0.50	0.40	0.40	0.40	0.50	0.50
	45	0.50	0.40	0.40	0.30	0.60	0.80	0.70	0.70	0.60	0.50	0.40	0.40	0.40	0.40	0.50
	35	0.50	0.40	0.40	0.30	0.60	0.80	0.80	0.70	0.60	0.50	0.40	0.50	0.40	0.40	0.50
	25	0.40	0.40	0.40	0.30	0.60	0.80	0.70	0.60	0.60	0.50	0.40	0.40	0.40	0.40	0.40
	15	0.40	0.40	0.40	0.30	0.50	0.60	0.60	0.50	0.40	0.40	0.30	0.30	0.30	0.30	0.30
	5	0.30	0.30	0.30	0.20	0.40	0.40	0.40	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.30

VP-W1											
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245
Vertical (ft)	95	0.90	1.00	1.20	1.40	1.40	1.50	1.60	1.70	1.70	1.70
	85	0.70	0.90	1.10	1.40	1.40	1.50	1.60	1.70	1.70	1.70
	75	0.60	0.70	1.00	1.20	1.30	1.40	1.50	1.60	1.70	1.70
	65	0.60	0.70	0.90	1.20	1.30	1.40	1.50	1.60	1.70	1.80
	55	0.50	0.60	0.90	1.20	1.30	1.40	1.50	1.60	1.70	1.80
	45	0.50	0.70	0.90	1.20	1.30	1.40	1.50	1.60	1.70	1.80
	35	0.50	0.60	0.90	1.20	1.20	1.30	1.50	1.60	1.70	1.80
	25	0.50	0.60	0.80	1.10	1.20	1.20	1.40	1.50	1.60	1.70
	15	0.40	0.50	0.60	0.80	0.90	1.00	1.10	1.20	1.30	1.40
	5	0.30	0.30	0.40	0.40	0.50	0.50	0.60	0.70	0.80	0.90

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VP-W2																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	2.00	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.00	2.00	2.00	1.90	1.90	1.80	1.80
	85	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.00	2.00	2.00	1.90	1.90	1.80
	75	2.10	2.10	2.10	2.20	2.20	2.10	2.10	2.10	2.10	2.00	2.00	2.00	2.00	1.90	1.90
	65	2.10	2.20	2.20	2.20	2.10	2.10	2.10	2.10	2.00	2.00	2.00	2.00	2.00	1.90	1.90
	55	2.20	2.20	2.20	2.20	2.20	2.20	2.10	2.10	2.10	2.00	2.00	2.00	2.00	2.00	1.90
	45	2.40	2.40	2.40	2.40	2.30	2.30	2.30	2.20	2.20	2.10	2.10	2.10	2.10	2.10	2.00
	35	2.50	2.60	2.60	2.50	2.40	2.40	2.30	2.30	2.20	2.20	2.20	2.20	2.20	2.10	2.00
	25	2.20	2.30	2.50	2.30	2.10	2.10	2.00	2.00	2.00	2.10	2.10	2.10	2.00	1.90	1.90
	15	1.80	1.80	2.00	1.80	1.60	1.60	1.60	1.50	1.60	1.60	1.60	1.60	1.60	1.50	1.50
	5	1.40	1.40	1.40	1.30	1.20	1.20	1.20	1.20	1.10	1.20	1.20	1.20	1.20	1.20	1.20

VP-W2														
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275
Vertical (ft)	95	1.70	1.70	1.60	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.60	1.60
	85	1.80	1.70	1.70	1.70	1.80	1.80	1.70	1.80	1.80	1.70	1.70	1.70	1.70
	75	1.80	1.80	1.80	1.80	1.90	1.90	1.80	1.90	1.80	1.80	1.80	1.70	1.80
	65	1.80	1.80	1.80	1.90	1.90	2.00	1.90	2.00	1.90	1.90	1.90	1.80	1.80
	55	1.90	1.90	1.90	1.90	2.00	2.10	2.00	2.00	2.00	2.00	1.90	1.90	1.90
	45	2.00	1.90	1.90	2.00	2.10	2.10	2.10	2.10	2.10	2.10	2.00	2.00	2.00
	35	2.00	2.00	1.90	2.00	2.10	2.20	2.10	2.10	2.10	2.10	2.00	2.00	2.00
	25	1.80	1.80	1.80	1.90	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.90	1.90
	15	1.50	1.50	1.50	1.60	1.70	1.80	1.80	1.80	1.80	1.80	1.80	1.70	1.70
	5	1.20	1.20	1.20	1.20	1.40	1.50	1.50	1.60	1.60	1.60	1.50	1.50	1.40

VP-W3																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	0.50	0.50	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	85	0.50	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.40	0.40	0.40	0.40	0.40
	75	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	65	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	55	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.30	0.30	0.30
	45	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20
	35	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	25	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	15	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	5	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

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VP-W3																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	0.40	0.40	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.70
	85	0.40	0.40	0.40	0.50	0.50	0.60	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.60
	75	0.40	0.40	0.40	0.40	0.50	0.60	0.70	0.70	0.70	0.60	0.60	0.50	0.50	0.50	0.60
	65	0.30	0.30	0.30	0.40	0.50	0.60	0.60	0.70	0.70	0.60	0.60	0.50	0.50	0.50	0.60
	55	0.30	0.30	0.30	0.30	0.40	0.50	0.60	0.70	0.60	0.60	0.60	0.50	0.50	0.50	0.60
	45	0.20	0.20	0.20	0.30	0.30	0.40	0.60	0.60	0.60	0.50	0.50	0.40	0.40	0.40	0.50
	35	0.20	0.20	0.20	0.20	0.30	0.40	0.50	0.60	0.60	0.50	0.40	0.40	0.40	0.40	0.50
	25	0.10	0.10	0.20	0.20	0.30	0.40	0.50	0.50	0.50	0.40	0.40	0.30	0.30	0.30	0.40
	15	0.10	0.10	0.10	0.20	0.20	0.30	0.40	0.40	0.40	0.30	0.30	0.30	0.20	0.30	0.30
	5	0.10	0.10	0.10	0.10	0.20	0.20	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20

VP-W3											
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395
Vertical (ft)	95	0.80	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	0.90
	85	0.70	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	0.90
	75	0.70	0.80	0.90	0.90	0.90	1.00	1.00	1.00	1.00	0.90
	65	0.70	0.80	0.90	0.90	0.90	0.90	1.00	1.00	1.00	0.90
	55	0.70	0.80	0.80	0.90	0.90	0.90	1.00	1.00	0.90	0.90
	45	0.60	0.70	0.80	0.80	0.80	0.90	0.90	0.90	0.90	0.90
	35	0.60	0.60	0.70	0.80	0.80	0.80	0.90	0.90	0.90	0.80
	25	0.50	0.60	0.70	0.70	0.70	0.80	0.80	0.80	0.80	0.80
	15	0.40	0.40	0.50	0.60	0.60	0.60	0.70	0.70	0.70	0.70
5	0.30	0.30	0.40	0.40	0.50	0.50	0.60	0.60	0.60	0.60	

VP-W4																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	1.00	0.90	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
	85	1.10	1.00	0.80	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.70
	75	1.20	1.00	0.90	0.80	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.70	0.70
	65	1.20	1.10	0.90	0.90	0.80	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.70	0.70	0.80
	55	1.30	1.10	1.00	0.90	0.90	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.70	0.70	0.80
	45	1.30	1.10	1.00	0.90	0.90	0.80	0.80	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.80
	35	1.30	1.10	0.90	0.90	0.80	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.70	0.70	0.80
	25	1.20	1.00	0.90	0.90	0.80	0.80	0.70	0.70	0.60	0.60	0.60	0.60	0.70	0.70	0.80
	15	1.10	1.00	0.90	0.80	0.80	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.70
	5	0.90	0.80	0.80	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.70

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VP-W4																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	0.60	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.50	0.50	0.50	0.50	0.50	0.50
	85	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.50	0.50	0.50
	75	0.80	0.80	0.80	0.80	0.80	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.60
	65	0.80	0.90	0.90	0.90	0.90	0.80	0.80	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60
	55	0.80	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.70	0.70	0.70	0.70	0.70	0.60	0.60
	45	0.90	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80	0.70	0.70	0.70	0.70	0.70	0.70
	35	0.90	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80	0.70	0.70	0.70	0.70	0.70	0.70
	25	0.80	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	15	0.80	0.80	0.80	0.90	0.80	0.80	0.80	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	5	0.70	0.70	0.80	0.80	0.80	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.70	0.70	0.70

VP-W4												
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405
Vertical (ft)	95	0.50	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
	85	0.50	0.50	0.50	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30
	75	0.50	0.50	0.50	0.50	0.50	0.40	0.40	0.40	0.40	0.30	0.30
	65	0.60	0.60	0.50	0.50	0.50	0.50	0.50	0.40	0.40	0.40	0.30
	55	0.60	0.60	0.60	0.60	0.50	0.50	0.50	0.50	0.40	0.40	0.40
	45	0.70	0.60	0.60	0.60	0.60	0.60	0.50	0.50	0.50	0.40	0.40
	35	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.50	0.50	0.50	0.40
	25	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.50	0.50	0.50
	15	0.70	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.50	0.50	0.50
	5	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.50	0.50	0.40

VP-S1																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.10
	75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00
	65	0.00	0.00	0.00	0.00	0.00	0.00	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	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	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	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	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	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	0.00	0.00	0.00	0.00	0.00	0.00

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VP-S1																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.10	0.10
	25	0.00	0.00	0.00	0.00	0.00	0.00	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	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	0.00	0.00	0.00	0.00	0.00	0.00

VP-S1																
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405	415	425	435	445
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00

VP-S1																
Horizontal (ft)		455	465	475	485	495	505	515	525	535	545	555	565	575	585	595
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	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	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	0.00	0.00	0.00	0.00	0.00	0.00

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VP-S1																
Horizontal (ft)		605	615	625	635	645	655	665	675	685	695	705	715	725	735	745
Vertical (ft)	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00

VP-S1																
Horizontal (ft)		755	765	775	785	795	805	815	825	835	845	855	865	875	885	895
Vertical (ft)	95	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.10	0.10	0.00	0.00	0.00	0.00	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	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	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	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	0.00	0.00	0.00	0.00	0.00	0.00

VP-S1				
Horizontal (ft)		905	915	925
Vertical (ft)	95	0.20	0.20	0.20
	85	0.20	0.20	0.20
	75	0.10	0.10	0.10
	65	0.10	0.10	0.10
	55	0.00	0.00	0.00
	45	0.00	0.00	0.00
	35	0.00	0.00	0.00
	25	0.00	0.00	0.00
	15	0.00	0.00	0.00
	5	0.00	0.00	0.00

Radford Studio Center Project Lighting and Glare Technical Report

VP-S2																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.30	0.30	0.30	0.20	0.20	0.20
	85	0.20	0.20	0.20	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.20	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S2																
Horizontal (ft)		155	165	175	185	195	205	215	225	235	245	255	265	275	285	295
Vertical (ft)	95	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S2																
Horizontal (ft)		305	315	325	335	345	355	365	375	385	395	405	415	425	435	445
Vertical (ft)	95	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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VP-S2		
Horizontal (ft)		455
Vertical (ft)	95	0.20
	85	0.20
	75	0.20
	65	0.20
	55	0.10
	45	0.10
	35	0.10
	25	0.10
	15	0.00
	5	0.00

VP-S3																
Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
Vertical (ft)	95	0.10	0.10	0.00	0.00	0.00	0.00	0.10	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30
	85	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.20
	75	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	65	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.20	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.20	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S4										
Horizontal (ft)		5	15	25	35	45	55	65	75	85
Vertical (ft)	95	0.30	0.30	0.30	0.20	0.20	0.10	0.10	0.10	0.10
	85	0.50	0.40	0.30	0.20	0.20	0.10	0.10	0.10	0.10
	75	0.90	0.70	0.40	0.30	0.20	0.10	0.10	0.10	0.10
	65	1.70	1.10	0.60	0.30	0.20	0.10	0.10	0.10	0.10
	55	2.40	1.50	0.80	0.40	0.20	0.20	0.10	0.10	0.20
	45	2.80	1.70	0.90	0.50	0.30	0.20	0.10	0.10	0.20
	35	2.70	1.70	0.90	0.40	0.30	0.20	0.10	0.10	0.20
	25	2.10	1.40	0.70	0.40	0.20	0.20	0.10	0.10	0.20
	15	1.40	0.90	0.60	0.30	0.20	0.10	0.10	0.10	0.20
	5	0.80	0.60	0.40	0.30	0.20	0.10	0.10	0.10	0.10

Appendix C.2

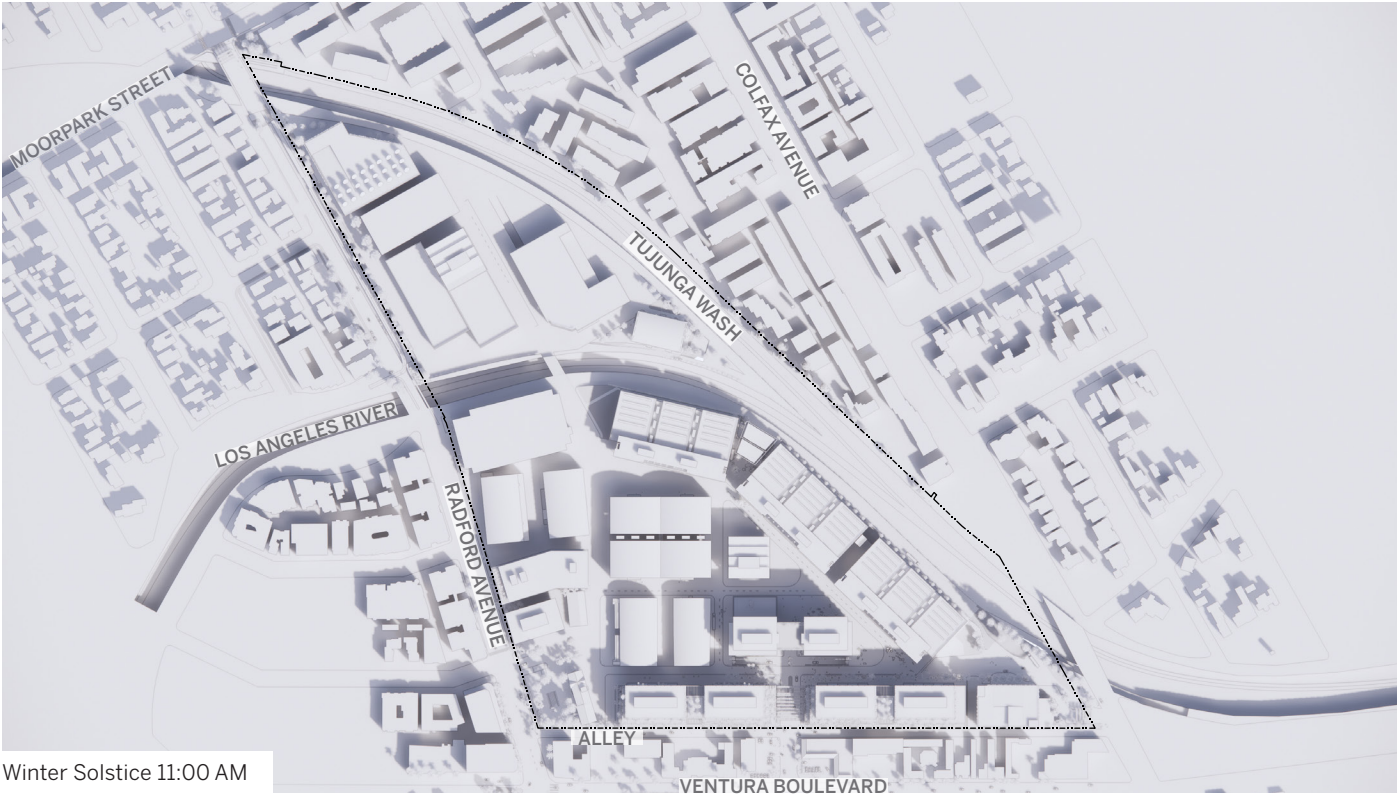
Shadow Study

LEGEND

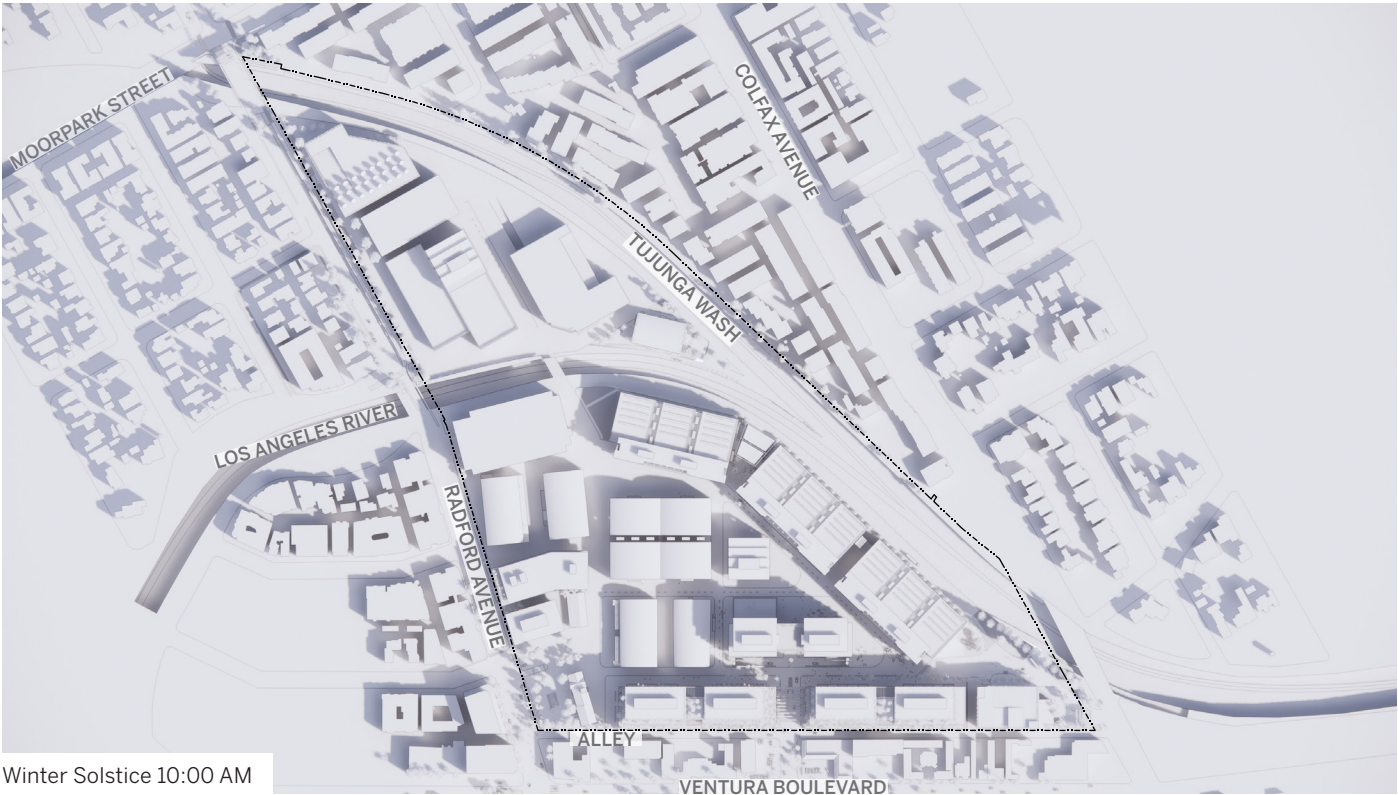
--- PROJECT PROPERTY LINE



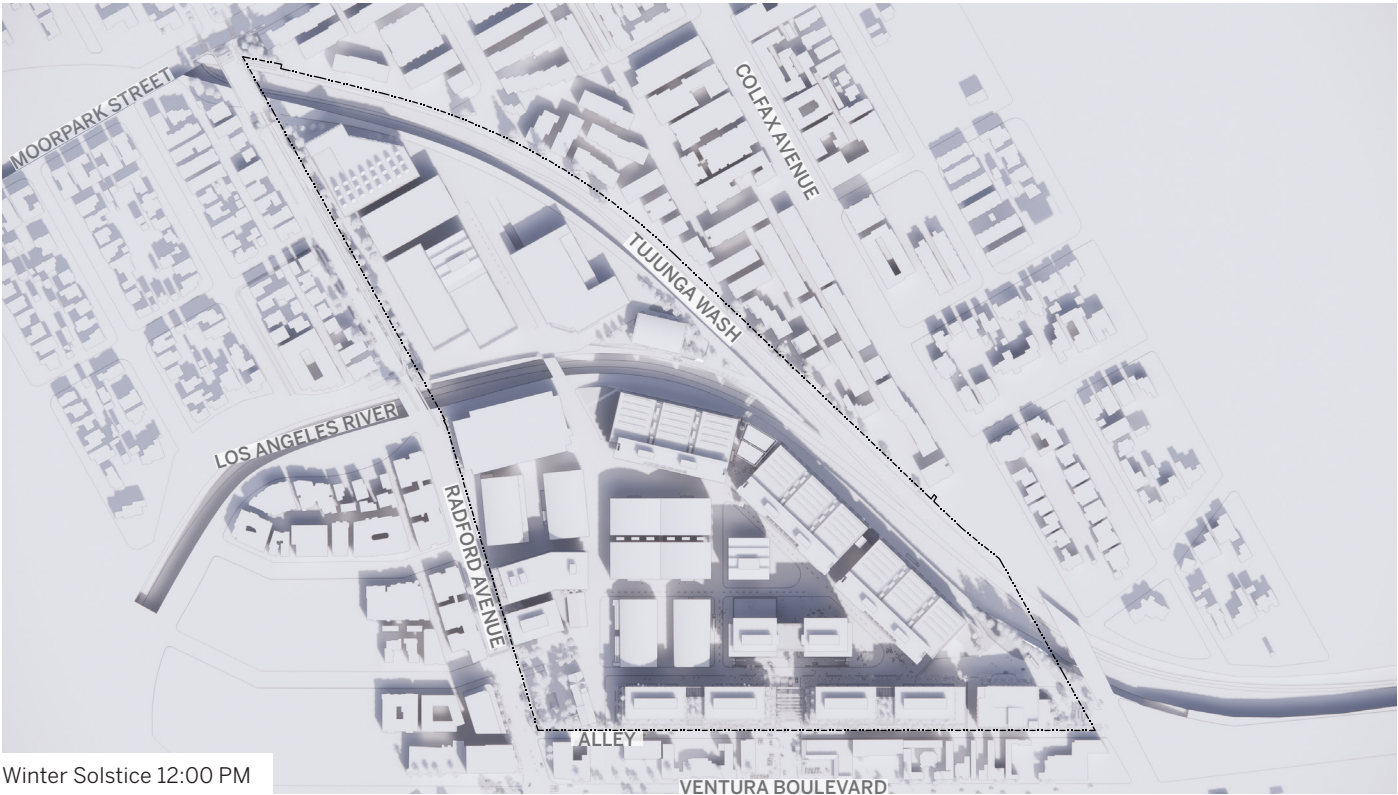
Winter Solstice 9:00 AM



Winter Solstice 11:00 AM



Winter Solstice 10:00 AM



Winter Solstice 12:00 PM



PROJECT ADDRESS
4200 Radford Avenue
Studio City, CA 91604

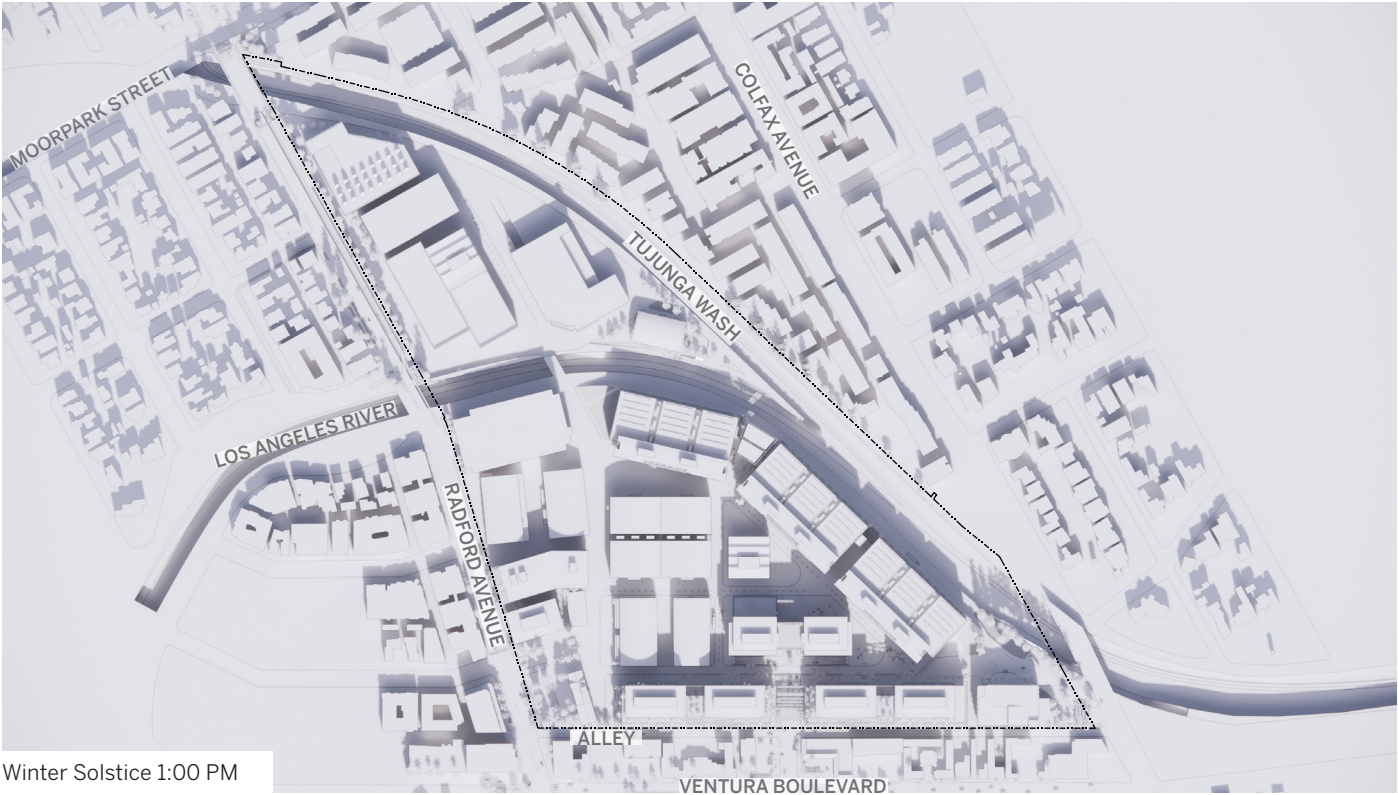
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WINTER SOLSTICE SHADOW STUDY
NOT TO SCALE

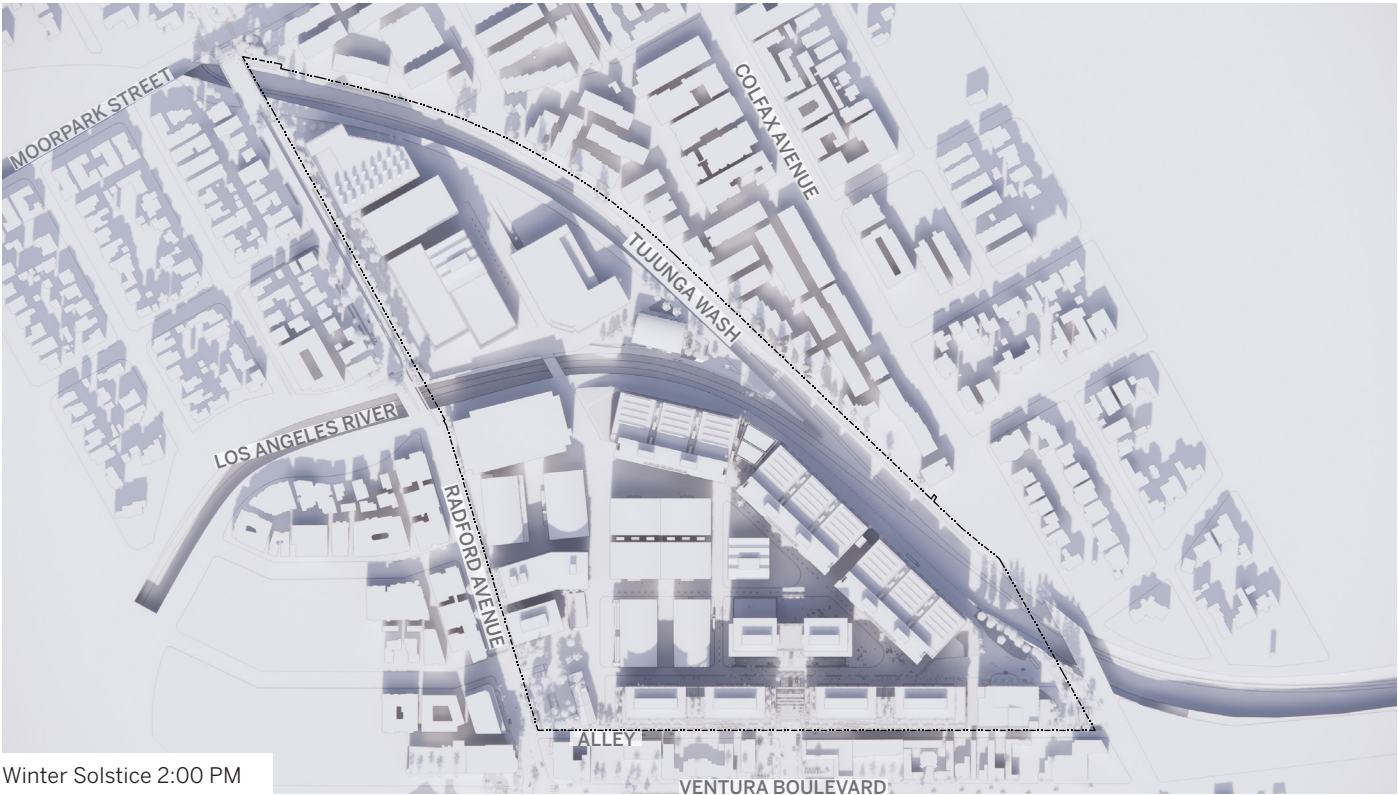


LEGEND

--- PROJECT PROPERTY LINE



Winter Solstice 1:00 PM



Winter Solstice 2:00 PM



PROJECT ADDRESS
4200 Radford Avenue
Studio City, CA 91604

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WINTER SOLSTICE SHADOW STUDY
NOT TO SCALE



Appendix C.3

Transit Priority Area Memorandum

TABLE 1
TRANSIT PRIORITY AREA REVIEW

Transit Priority Area (TPA) [a]	Meets Qualifications?
≤ 0.5 mi / 2,640 ft from Intersection of 2 Major Bus Lines (each with average headways of 20 min or less)	Yes
≤ 0.5 mi / 2,640 ft from Rail or Bus Rapid Transit Station (e.g., Metro Rail Station, Metrolink Rail Station)	No
≤ 0.5 mi / 2,640 ft from Ferry Terminal Served by Bus or Rail Transit Service	No

Notes

[a] Source: Section 21099(a) of the Public Resources Code

TABLE 2
TRANSIT PRIORITY AREA EVALUATION

Transit Stops & Stations	Transit Priority Area [a]	Approximate Distance from Radford Studios
<u>Major Transit Stops</u> [b]		
Metrolink Ventura County Line Bob Hope Station	≤ 0.5 miles	4.0 miles
Metro B (formerly Red) Line Universal City Station	≤ 0.5 miles	1.50 miles
Metro G (formerly Orange) Line North Hollywood Station	≤ 0.5 miles	1.80 miles
Laurel Canyon Boulevard & Ventura Boulevard Metro Local Line 240 (9-10 min headways along Ventura BI) Metro Local Line 230 (18-20 min headways along Laurel Canyon BI)	≤ 0.5 miles	< 1,500 ft
<u>Other Transit Stops</u>		
Metro Local Line 240 (9-10 min headways along Ventura BI) <i>Ventura Boulevard at Carpenter Avenue</i> <i>Ventura Boulevard at Colfax Avenue</i> Metro Local Line 218 (48-60 min headways along Lauren Canyon BI) <i>Laurel Canyon Boulevard at Ventura Boulevard</i> <i>Ventura Place at Ventura Boulevard</i> Metro Local Line 230 (18-20 min headways along Laurel Canyon BI) <i>Ventura Place at Ventura Boulevard</i>	N/A	< 1,500 ft

Notes

[a] Per Section 21099(a) of the Public Resources Code, a Transit Priority Area is defined as an area within one-half mile of a major transit stop that is planned or existing.

[b] Per Section 21064.3 of the Public Resources Code, which was amended by AB 2553 (Friedman, 2024), a major transit stop is defined as a site containing an existing rail or bus rapid transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 20 minutes or less during the morning and afternoon peak commute periods. As detailed in *Methodology for Determining Bus Transit Service Levels; Implementation of Rapid Bus Provisions of the Transit Oriented Communities Project* (Department of City Planning, April 2024), the City's methodology to determine qualifying major transit stops aligns with the SCAG methodology detailed in the *Connect SoCal, A Plan for Navigating to a Brighter Future* (SCAG, April 2024) (2024-2050 RTP/SCS).

EXHIBIT
EXISTING TRANSIT SERVICE IN STUDY AREA

Provider, Route, and Service Area		Service Type	Hours of Operation	Bus Stop Location [b]	Average Headway (minutes) [a]					
					Morning Peak Period		Afternoon Peak Period		Combined Peak Periods	
Metro Bus Service					NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
218	Studio City - Cedars Sinai Medical Center via Laurel Canyon Bl - Fairfax Ave	Local	5:30 A.M. - 10:00 P.M.	Ventura Place & Ventura Blvd	60	60	60	48	60	53
230	Sylmar Station - Studio City via Laurel Canyon Bl	Local	4:50 A.M. - 10:30 P.M.	Laurel Canyon & Ventura Blvd	20	23	22	18	21	20
240	Northridge - Universal City Station via Reseda Bl - Ventura Bl	Local	24 HR	Laurel Canyon & Ventura Blvd	11	10	9	12	10	11
LADOT DASH Bus Service					CW	CCW	CW	CCW	CW	CCW
VNSC	Van Nuys / Studio City	Local	6:00 A.M. - 6:00 P.M.	Laurel Canyon & Ventura Blvd	30	30	30	30	30	30

Notes:

Metro: Los Angeles County Metropolitan Transportation Authority

LADOT DASH: Los Angeles Department of Transportation Downtown Area Short Hop

CW: clockwise; CCW: counter-clockwise

Morning Peak Period: 6-9 AM; Afternoon Peak Period: 3-7 PM; Combined Peak Periods: 6-9 AM and 3-7 PM

[a] Per Section 21064.3 of the Public Resources Code, which was amended by AB 2553 (Friedman, 2024), a major transit stop is defined as a site containing an existing rail or bus rapid transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 20 minutes or less during the morning and afternoon peak commute periods in one or more directions. As detailed in *Methodology for Determining Bus Transit Service Levels; Implementation of Rapid Bus Provisions of the Transit Oriented Communities Project* (Department of City Planning, April 2024), the City's methodology to determine qualifying major transit stops aligns with the SCAG methodology detailed in the *Connect SoCal, A Plan for Navigating to a Brighter Future* (SCAG, April 2024) (2024-2050 RTP/SCS).

[b] Average headways are based on the total number of trips during the peak period as indicated in Metro schedule information from November 7, 2024. The bold and italicized headways identified in this Exhibit meet the headway requirements as defined in the City's and SCAG's methodologies for determining a major transit stop.

Monday through Friday

Effective Jun 23 2024

218

Northbound Al Norte (Approximate Times / Tiempos Aproximados)

LOS ANGELES		PARK LA BREA		WEST HOLLYWOOD		LOS ANGELES		STUDIO CITY			
6		5		4		3		2		1	
Cedars-Sinai Medical Center		Fairfax & 3rd		Fairfax & Santa Monica		Crescent Heights & Sunset		Laurel Canyon & Mulholland		Ventura Pl & Ventura Bl	
5:55A		6:03A		6:11A		6:15A		6:23A		6:31A	
6:50		6:58		7:06		7:10		7:18		7:26	
7:45		7:53		8:01		8:05		8:13		8:22	
8:40		8:48		8:56		9:00		9:08		9:17	
9:35		9:43		9:51		9:55		10:04		10:13	
10:30		10:39		10:47		10:52		11:01		11:10	
11:25		11:35		11:43		11:48		11:57		12:06P	
12:20P		12:30P		12:38P		12:43P		12:52P		1:01	
1:15		1:26		1:36		1:41		1:50		1:59	
2:10		2:21		2:31		2:36		2:45		2:54	
3:05		3:16		3:26		3:31		3:41		3:51	
4:00		4:11		4:21		4:26		4:36		4:46	
4:55		5:05		5:14		5:19		5:29		5:38	
5:50		6:00		6:08		6:13		6:22		6:30	
6:45		6:54		7:02		7:07		7:15		7:23	
7:40		7:49		7:57		8:02		8:10		8:18	
8:35		8:44		8:52		8:57		9:05		9:13	
9:30		9:39		9:47		9:52		10:00		10:08	

Monday through Friday

218

Southbound Al Sur (Approximate Times / Tiempos Aproximados)

STUDIO CITY	LOS ANGELES		WEST HOLLYWOOD	PARK LA BREA	LOS ANGELES
1	2	3	4	5	6
Ventura Pl & Ventura Bl	Laurel Canyon & Mulholland	Crescent Heights & Sunset	Fairfax & Santa Monica	Fairfax & 3rd	Cedars-Sinai Medical Center
5:56A	6:04A	6:12A	6:16A	6:24A	6:32A
6:51	6:59	7:07	7:12	7:20	7:28
7:46	7:54	8:02	8:07	8:15	8:23
8:41	8:49	8:57	9:02	9:10	9:18
9:36	9:44	9:52	9:57	10:05	10:14
10:31	10:39	10:47	10:52	11:00	11:09
11:26	11:34	11:42	11:48	11:57	12:07P
12:21P	12:29P	12:37P	12:43P	12:52P	1:02
1:16	1:25	1:33	1:39	1:48	1:59
2:11	2:20	2:28	2:34	2:43	2:54
3:06	3:15	3:23	3:29	3:38	3:49
4:01	4:10	4:18	4:24	4:33	4:44
4:56	5:04	5:12	5:18	5:27	5:38
5:51	5:59	6:07	6:12	6:20	6:29
6:46	6:54	7:02	7:06	7:14	7:22
7:41	7:48	7:56	8:00	8:08	8:16
8:36	8:43	8:51	8:55	9:03	9:11
9:36	9:43	9:51	9:55	10:03	10:11

Saturday

218

Northbound Al Norte (Approximate Times / Tiempos Aproximados)

LOS ANGELES	PARK LA BREA	WEST HOLLYWOOD	LOS ANGELES		STUDIO CITY
6	5	4	3	2	1
Cedars-Sinai Medical Center	Fairfax & 3rd	Fairfax & Santa Monica	Crescent Heights & Sunset	Laurel Canyon & Mulholland	Ventura Pl & Ventura Bl
5:55A	6:03A	6:11A	6:15A	6:23A	6:31A
6:50	6:58	7:06	7:10	7:18	7:26
7:45	7:53	8:01	8:05	8:13	8:21
8:40	8:48	8:56	9:00	9:09	9:17
9:35	9:44	9:52	9:57	10:06	10:14
10:30	10:39	10:47	10:52	11:01	11:09
11:25	11:34	11:43	11:48	11:57	12:05P
12:20P	12:29P	12:38P	12:43P	12:52P	1:00
1:15	1:24	1:33	1:38	1:47	1:55
2:10	2:19	2:28	2:33	2:42	2:50
3:05	3:14	3:23	3:28	3:37	3:45
4:00	4:09	4:18	4:23	4:32	4:40
4:55	5:04	5:13	5:18	5:27	5:35
5:50	5:59	6:08	6:13	6:22	6:30
6:45	6:54	7:03	7:07	7:15	7:23
7:40	7:49	7:57	8:01	8:09	8:17
8:35	8:43	8:50	8:54	9:02	9:10
9:30	9:38	9:45	9:49	9:57	10:05

Saturday

218

Southbound Al Sur (Approximate Times / Tiempos Aproximados)

STUDIO CITY	LOS ANGELES		WEST HOLLYWOOD	PARK LA BREA	LOS ANGELES
1	2	3	4	5	6
Ventura Pl & Ventura Bl	Laurel Canyon & Mulholland	Crescent Heights & Sunset	Fairfax & Santa Monica	Fairfax & 3rd	Cedars-Sinai Medical Center
5:56A	6:03A	6:11A	6:16A	6:25A	6:33A
6:51	6:59	7:07	7:12	7:21	7:29
7:46	7:54	8:02	8:07	8:16	8:25
8:41	8:49	8:57	9:02	9:11	9:20
9:36	9:44	9:52	9:57	10:06	10:15
10:31	10:39	10:47	10:52	11:01	11:10
11:26	11:34	11:42	11:47	11:56	12:05P
12:21P	12:29P	12:37P	12:42P	12:51P	1:00
1:16	1:24	1:32	1:37	1:46	1:55
2:11	2:19	2:27	2:32	2:41	2:50
3:06	3:14	3:22	3:27	3:36	3:45
4:01	4:09	4:17	4:22	4:31	4:40
4:56	5:04	5:12	5:17	5:26	5:35
5:51	5:59	6:07	6:12	6:21	6:30
6:46	6:54	7:02	7:06	7:14	7:22
7:41	7:48	7:56	8:00	8:08	8:16
8:36	8:43	8:51	8:55	9:03	9:11
9:36	9:43	9:51	9:55	10:03	10:11

Sunday and Holiday Schedules

Sunday and Holiday Schedule in effect on New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

Horarios de domingo y días feriados

Horarios de domingo y días feriados en efecto para año nuevo, día conmemorativo, cuatro de julio, día del trabajo, día de acción de gracias, y Navidad.

Special Notes

- A Trip ends at Laurel Canyon and Ventura Bl at time shown.
- B Trip departs from Laurel Canyon and Ventura Bl at time shown.

Avisos especiales

- A El viaje termina en Laurel Canyon y Ventura Bl a la hora indicada
- B El viaje sale de Laurel Canyon y Ventura Bl a la hora indicada

Follow us.

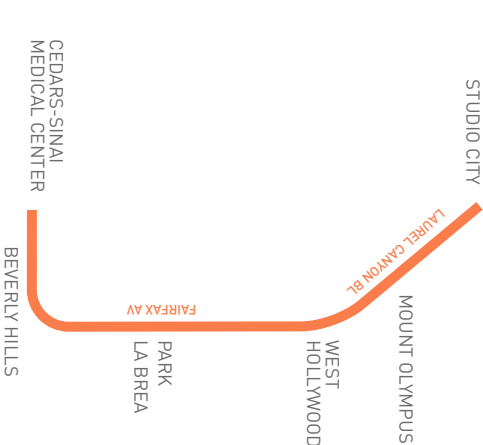
- @metrolosangeles
- @losangelesmetro
- @metrolosangeles

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Metro

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Sujeto a cambios sin previo aviso



323.G0 METRO

Wheelchair Hotline
800.621.7828

511

California Relay Service
711

Effective Jun 23 2024

Metro Local

Northbound to Studio City
Southbound to Beverly Hills
via Laurel Canyon Bl

218

Sunday and Holidays

Effective Jun 23 2024

218

Northbound Al Norte (Approximate Times / Tiempos Aproximados)

LOS ANGELES	PARK LA BREA	WEST HOLLYWOOD	LOS ANGELES	STUDIO CITY	
6	5	4	3	2	1
Cedars-Sinai Medical Center	Fairfax & 3rd	Fairfax & Santa Monica	Crescent Heights & Sunset	Laurel Canyon & Mulholland	Ventura Pl & Ventura Bl
5:55A	6:03A	6:11A	6:15A	6:23A	▲6:28A
6:50	6:58	7:06	7:10	7:18	▲7:23
7:45	7:53	8:01	8:05	8:13	▲8:18
8:40	8:48	8:56	9:00	9:09	▲9:14
9:35	9:44	9:52	9:57	10:06	▲10:11
10:30	10:39	10:47	10:52	11:01	▲11:06
11:25	11:34	11:43	11:48	11:57	▲12:02P
12:20P	12:29P	12:38P	12:43P	12:52P	▲12:57
1:15	1:24	1:33	1:38	1:47	▲1:52
2:10	2:19	2:28	2:33	2:42	▲2:47
3:05	3:14	3:23	3:28	3:37	3:45
4:00	4:09	4:18	4:23	4:32	4:40
4:55	5:04	5:13	5:18	5:27	5:35
5:50	5:59	6:08	6:13	6:22	6:30
6:45	6:54	7:03	7:07	7:15	7:23
7:40	7:49	7:57	8:01	8:09	8:17
8:35	8:43	8:50	8:54	9:02	9:10
9:30	9:38	9:45	9:49	9:57	10:05

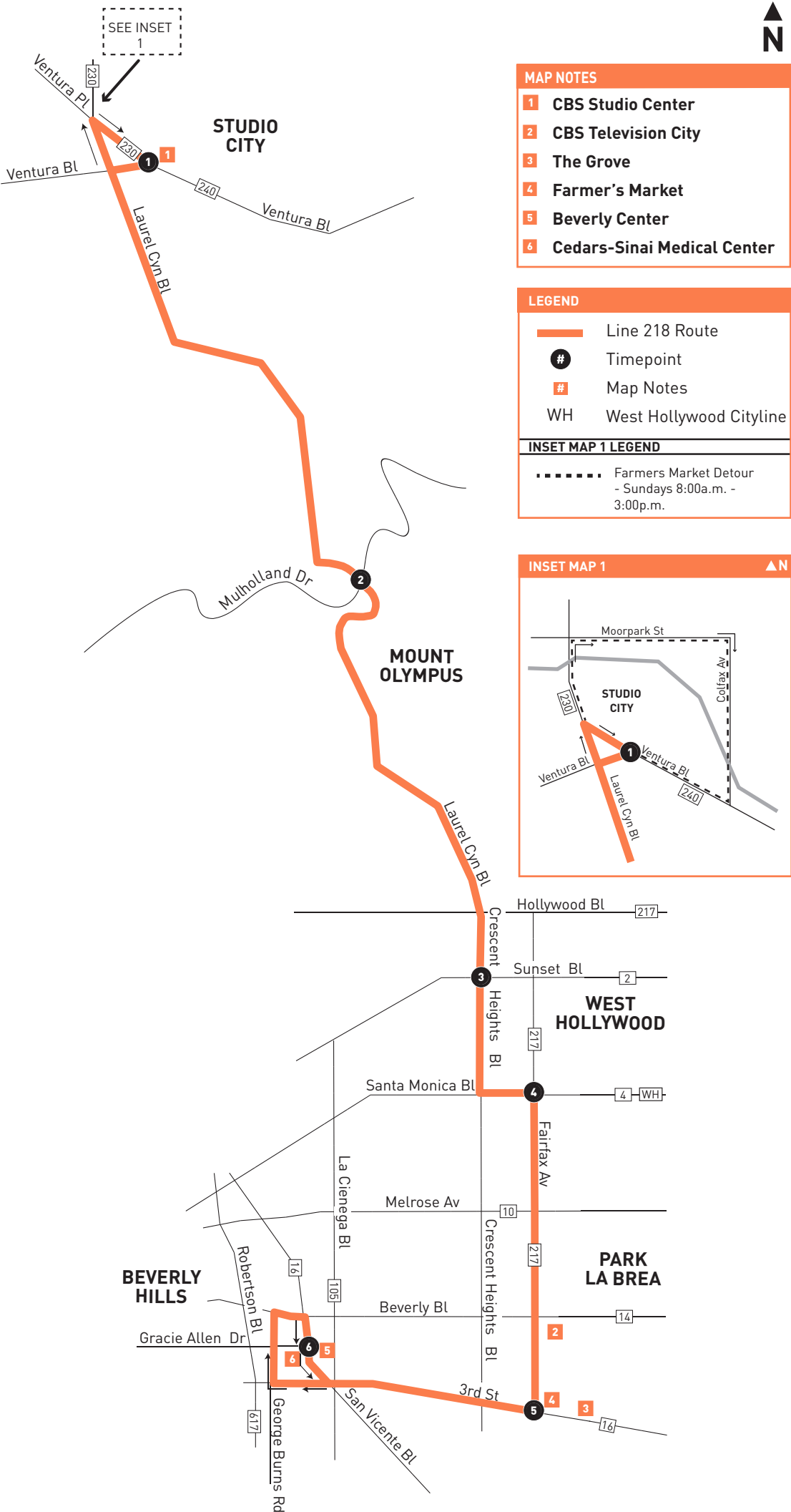
Sunday and Holidays

218

Southbound Al Sur (Approximate Times / Tiempos Aproximados)

STUDIO CITY	LOS ANGELES	WEST HOLLYWOOD	PARK LA BREA	LOS ANGELES	
1	2	3	4	5	6
Ventura Pl & Ventura Bl	Laurel Canyon & Mulholland	Crescent Heights & Sunset	Fairfax & Santa Monica	Fairfax & 3rd	Cedars-Sinai Medical Center
5:56A	6:03A	6:11A	6:16A	6:25A	6:33A
▲6:45	6:59	7:07	7:12	7:21	7:29
▲7:39	7:54	8:02	8:07	8:16	8:25
▲8:34	8:49	8:57	9:02	9:11	9:20
▲9:29	9:44	9:52	9:57	10:06	10:15
▲10:23	10:39	10:47	10:52	11:01	11:10
▲11:18	11:34	11:42	11:47	11:56	12:05P
▲12:13P	12:29P	12:37P	12:42P	12:51P	1:00
▲1:08	1:24	1:32	1:37	1:46	1:55
▲2:03	2:19	2:27	2:32	2:41	2:50
▲2:58	3:14	3:22	3:27	3:36	3:45
4:01	4:09	4:17	4:22	4:31	4:40
4:56	5:04	5:12	5:17	5:26	5:35
5:51	5:59	6:07	6:12	6:21	6:30
6:46	6:54	7:02	7:06	7:14	7:22
7:41	7:48	7:56	8:00	8:08	8:16
8:36	8:43	8:51	8:55	9:03	9:11
9:36	9:43	9:51	9:55	10:03	10:11

ROUTE MAP



Lose something?

Learn more about Metro's Lost & Found service. Visit metro.net/lostandfound or call 323.937.8920.



Monday through Friday

Effective Jun 23 2024

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Northbound Al Norte (Approximate Times / Tiempos Aproximados)

STUDIO CITY	NORTH HOLLYWOOD	SUN VALLEY	PACOIMA	SYLMAR
1	2	3	4	5
Ventura Place & Ventura	Laurel Canyon G Line Station	Laurel Canyon & Roscoe	Laurel Canyon & Van Nuys	Sylmar Station
4:53A	5:00A	5:13A	5:23A	5:34A
5:30	5:37	5:50	6:01	6:12
6:00	6:07	6:21	6:33	6:46
6:20	6:27	6:41	6:54	7:08
6:40	6:48	7:02	7:17	7:31
7:00	7:08	7:24	7:39	7:54
7:20	7:28	7:44	7:59	8:14
7:40	7:48	8:04	8:18	8:33
8:00	8:09	8:25	8:39	8:54
8:20	8:29	8:45	8:59	9:14
8:43	8:52	9:08	9:22	9:37
9:13	9:22	9:38	9:52	10:07
9:41	9:51	10:08	10:22	10:37
10:10	10:20	10:38	10:52	11:07
10:40	10:50	11:08	11:22	11:37
11:10	11:20	11:38	11:52	12:07P
11:39	11:50	12:08P	12:22P	12:37
12:09P	12:20P	12:38	12:52	1:07
12:39	12:50	1:08	1:22	1:37
1:09	1:20	1:39	1:53	2:08
1:39	1:50	2:09	2:23	2:38
2:04	2:16	2:36	2:50	3:05
2:28	2:40	3:01	3:16	3:32
B2:39	2:51	3:12	3:27	3:44
2:48	3:00	3:21	3:36	3:53
3:07	3:20	3:41	3:56	4:14
3:26	3:40	4:01	4:16	4:34
A3:38	3:52	4:13	4:28	4:46
3:46	4:00	4:21	4:36	4:54
4:06	4:20	4:41	4:56	5:13
4:27	4:41	5:01	5:16	5:33
4:48	5:01	5:21	5:36	5:52
5:10	5:22	5:41	5:55	6:10
5:41	5:52	6:09	6:22	6:36
6:11	6:22	6:39	6:52	7:05
6:43	6:52	7:09	7:21	7:34
7:14	7:23	7:39	7:51	8:04
7:52	8:00	8:14	8:26	8:38
8:37	8:45	8:59	9:11	9:23
9:28	9:36	9:50	10:01	10:12
10:27	10:35	10:47	10:58	11:09

Monday through Friday

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Southbound Al Sur (Approximate Times / Tiempos Aproximados)

SYLMAR	PACOIMA	SUN VALLEY	NORTH HOLLYWOOD	STUDIO CITY
5	4	3	2	1
Sylmar Station	Laurel Canyon & Van Nuys	Laurel Canyon & Roscoe	Laurel Canyon G Line Station	Ventura Place & Ventura
5:03A	5:16A	5:26A	5:40A	5:46A
5:30	5:43	5:53	6:07	6:13
5:51	6:05	6:16	6:30	6:37
6:11	6:25	6:36	6:52	6:59
6:31	6:45	6:56	7:13	7:22
6:49	7:04	7:16	7:35	7:44
7:06	7:23	7:36	7:55	8:04
7:24	7:41	7:56	8:15	8:24
7:46	8:03	8:16	8:35	8:44
8:06	8:23	8:36	8:54	9:03
8:26	8:43	8:56	9:13	9:22
8:57	9:13	9:26	9:43	9:52
9:27	9:43	9:56	10:13	10:22
9:57	10:13	10:26	10:43	10:52
10:27	10:43	10:56	11:13	11:22
10:57	11:13	11:26	11:43	11:52
11:27	11:43	11:56	12:14P	12:23P
11:56	12:13P	12:26P	12:44	12:53
12:26P	12:43	12:56	1:14	1:23
12:55	1:12	1:26	1:44	1:53
1:25	1:42	1:56	2:14	2:23
1:55	2:12	2:26	2:44	2:53
2:18	2:35	2:49	3:07	3:16
2:38	2:55	3:09	3:27	3:36
—	B2:56	3:10	3:28	3:37
2:57	3:15	3:29	3:47	3:56
3:17	3:36	3:50	4:07	4:16
3:41	4:00	4:13	4:29	4:37
—	A4:01	4:14	4:30	4:38
4:03	4:20	4:33	4:49	4:57
4:23	4:40	4:53	5:09	5:17
4:43	5:00	5:13	5:29	5:37
5:03	5:20	5:33	5:49	5:57
5:24	5:41	5:53	6:09	6:17
5:54	6:10	6:22	6:38	6:46
6:28	6:44	6:56	7:12	7:19
7:00	7:15	7:26	7:40	7:47
7:35	7:50	8:01	8:14	8:20
8:35	8:50	9:00	9:12	9:18
9:35	9:49	9:59	10:11	10:17
10:25	10:39	10:49	11:01	11:07

Saturday

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Northbound Al Norte (Approximate Times / Tiempos Aproximados)

STUDIO CITY	NORTH HOLLYWOOD	SUN VALLEY	PACOIMA	SYLMAR
1	2	3	4	5
Ventura Place & Ventura	Laurel Canyon G Line Station	Laurel Canyon & Roscoe	Laurel Canyon & Van Nuys	Sylmar Station
5:15A	5:23A	5:35A	5:46A	5:58A
5:54	6:03	6:15	6:27	6:40
6:29	6:38	6:51	7:03	7:17
7:01	7:10	7:25	7:38	7:52
7:34	7:44	8:00	8:13	8:27
8:08	8:18	8:35	8:48	9:03
8:43	8:53	9:10	9:23	9:39
9:18	9:28	9:45	9:58	10:14
9:53	10:03	10:20	10:33	10:49
10:27	10:37	10:55	11:08	11:24
11:03	11:13	11:31	11:44	12:00P
11:39	11:49	12:07P	12:20P	12:36
12:13P	12:23P	12:41	12:54	1:10
12:47	12:57	1:15	1:28	1:44
1:22	1:32	1:50	2:03	2:19
1:57	2:07	2:25	2:38	2:54
2:32	2:42	3:00	3:13	3:27
3:08	3:18	3:35	3:48	4:02
3:45	3:55	4:12	4:25	4:39
4:20	4:30	4:47	5:00	5:14
4:55	5:05	5:21	5:34	5:48
5:30	5:40	5:56	6:09	6:23
6:08	6:18	6:34	6:46	7:00
6:47	6:56	7:12	7:24	7:37
7:28	7:37	7:53	8:05	8:18
8:28	8:37	8:51	9:03	9:15
9:28	9:37	9:50	10:01	10:12
10:27	10:35	10:47	10:58	11:09

Saturday

230

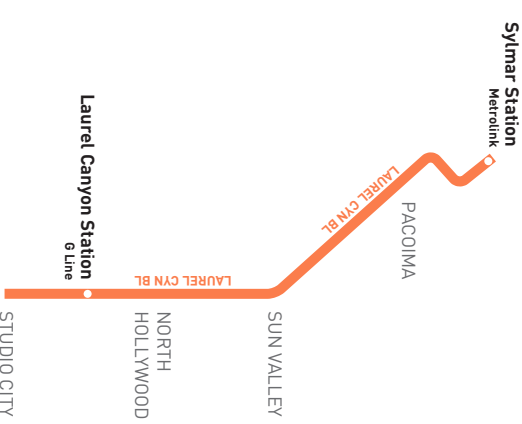
Southbound Al Sur (Approximate Times / Tiempos Aproximados)

SYLMAR	PACOIMA	SUN VALLEY	NORTH HOLLYWOOD	STUDIO CITY
5	4	3	2	1
Sylmar Station	Laurel Canyon & Van Nuys	Laurel Canyon & Roscoe	Laurel Canyon G Line Station	Ventura Place & Ventura
5:17A	5:31A	5:41A	5:54A	5:59A
5:50	6:04	6:14	6:28	6:34
6:28	6:42	6:53	7:09	7:16
7:02	7:17	7:28	7:44	7:51
7:36	7:51	8:03	8:19	8:26
8:11	8:26	8:38	8:54	9:01
8:44	9:01	9:14	9:30	9:38
9:19	9:36	9:49	10:05	10:13
9:54	10:11	10:24	10:40	10:49
10:30	10:47	11:00	11:16	11:25
11:04	11:21	11:34	11:52	12:01P
11:38	11:56	12:10P	12:28P	12:37
12:12P	12:31P	12:45	1:03	1:12
12:47	1:06	1:20	1:37	1:46
1:21	1:40	1:54	2:11	2:19
1:57	2:16	2:29	2:45	2:53
2:33	2:51	3:04	3:20	3:28
3:08	3:26	3:39	3:55	4:03
3:43	4:01	4:14	4:30	4:37
4:19	4:37	4:50	5:06	5:13
4:55	5:13	5:26	5:42	5:49
5:30	5:48	6:01	6:17	6:24
6:09	6:25	6:37	6:52	6:59
6:45	7:01	7:13	7:28	7:35
7:23	7:38	7:50	8:04	8:11
8:26	8:41	8:51	9:04	9:10
9:24	9:39	9:49	10:02	10:08

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800.621.7828
Travel Info
511
California Relay Service
711

Metro Local
Northbound to Sylmar Station
Southbound to Studio City
via Laurel Canyon BL

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Effective Jun 23 2024

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Sujeto a cambios sin previo aviso

Effective Jun 23 2024

Eastbound *Al Este* (Approximate Times / *Tiempos Aproximados*)

Westbound *Al Oeste* (Approximate Times / *Tiempos Aproximados*)

ROUTE MAP

INSET 1 – UNIVERSAL CITY/STUDIO CITY STATION

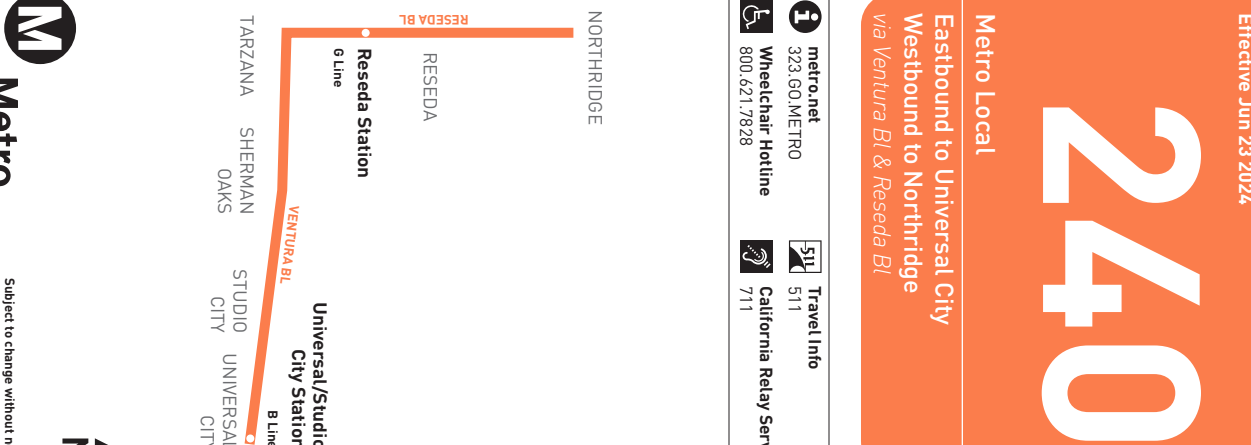
North Hollywood
To
Universal City/Studio City
Universal Studios Shuttle Pick-Up
Ventura Bl Campo de Cahuenga Way
Riverton Av
155
B Line
To
Downtown L.A.
Cahuenga Bl
101

MAP NOTES

- California State University, Northridge**
- Providence Tarzana Medical Center**
- Sherman Oaks Galleria**
- CBS Studio Center**
- Universal/Studio City Station**
Metro Bus Lines 155, 224, 240; Metro B Line; BB Pink Route; Universal Studios Shuttle
- Universal Studios CityWalk**
- Campo de Cahuenga**

LEGEND

- Route of Line 240
- Metro G Line
- Metro B Line
- Local Stop Timepoint
- Metro Busway/Rail Station & Timepoint
- Metro Busway/Rail Station
- Transit Center
- Metrolink Station
- AV Antelope Valley Transit Authority
- BB Burbank Bus
- CE LADOT Commuter Express



Saturday

Effective Jun 23 2024

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Eastbound Al Este (Approximate Times / Tiempos Aproximados)

Westbound Al Oeste (Approximate Times / Tiempos Aproximados)

NORTHBRIDGE																	
1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 9									9 → 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1								
Reseda & Devonshire	CSUN Transit Center	Reseda & Sherman Way	Reseda G Line Station	Ventura & Reseda	Ventura & Balboa	Ventura & Van Nuys	Ventura & Laurel Cyn	Universal/ Studio City Station	Universal/ Studio City Station	Ventura & Laurel Cyn	Ventura & Van Nuys	Ventura & Balboa	Ventura & Reseda	Reseda G Line Station	Reseda & Sherman Way	CSUN Transit Center	Reseda & Devonshire
4:25A	4:30A	4:42A	4:48A	4:52A	4:57A	5:06A	5:14A	5:21A	5:04A	5:11A	5:19A	5:29A	5:36A	5:40A	5:45A	5:56A	6:03A
4:45	4:50	5:02	5:08	5:12	5:17	5:26	5:34	5:41	5:31	5:39	5:48	5:58	6:06	6:10	6:16	6:28	6:36
5:05	5:10	5:22	5:28	5:32	5:38	5:47	5:55	6:02	6:00	6:08	6:17	6:28	6:36	6:40	6:46	6:58	7:06
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