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SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN LIGHTING STUDY

West Hollywood, California

REVISED LIGHTING STUDY

Prepared for City of West Hollywood

May 5, 2025

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I. Executive Summary

This Revised Lighting Study (Study) is prepared by Francis Krahe & Associate Inc. for the City of West Hollywood to provide a review of the Sunset Boulevard Arts & Advertising program which includes illuminated Billboards and Tall Walls along Sunset Boulevard. This Study includes a detailed evaluation of the existing lighting conditions and future off-site advertising illumination within a portion of Sunset Boulevard where the off-site advertising is in close proximity to residential properties. The Draft Lighting Study issued on September 30, 2024 is updated in this Study to clarify recommendations previously stipulated, including Modification of Recommendations 1 and 2 presented on pages 20 through 23 below. This Study serves as the basis for the conclusions and recommendations to the City of West Hollywood presented below.

There are many Illuminated off-site advertising signs along Sunset Boulevard today with a planned increased number of signs either in the submittal process or anticipated in the future. This Study evaluates the existing lighting conditions and the effect of the proposed future signs. This Study also evaluates the effectiveness of the City of West Hollywood's Sunset Boulevard Off-Site Signage Policy with respect to light trespass and glare, and suggests clarifications to the Policy to improve the outcomes of future lighted signs.

The City of West Hollywood Planning Department identifies new proposed off-site advertising Signs within the Sunset Boulevard Arts & Advertising program along Sunset Boulevard as Round 1.0, Round 1.5, and Round 2.0 (attached Appendix A). The following Signs are included in this Study:

- Round 1.0 Signs approved under existing Policy and some of which are not yet constructed, which includes 19 Sign locations along Sunset Boulevard. The constructed Sign locations are evaluated as a part of the Existing Conditions in this Study. The Study area includes calculations for the Signs not yet constructed.

- Round 1.5 Signs includes 6 Sign locations along Sunset Boulevard. These are new signs included in the calculations below.

- Round 2.0 Signs includes 10 Sign locations along Sunset Boulevard in the City of West Hollywood. These are new signs included in the calculations below.

The Study includes detailed calculations and analysis for a portion of Sunset Boulevard containing 10 of these proposed Signs, and more generalized conclusions for the remainder of the proposed Signs along Sunset Boulevard. The extent of Sign locations along Sunset Boulevard varies in density and proximity to residential properties. This Study evaluates a portion of Sunset Boulevard with the highest density of Signs and with the greatest proximity to the residential properties to provide the most conservative evaluation of the Signs' potential for light trespass illuminance and glare, and the effectiveness of the current Policy.

This Study evaluates the light from off-site advertising which may be visible at the property line of adjacent residential zoned properties. In this Study, off-site advertising is hereinafter referred to as Signs, which includes Billboards and Back lit Signs, or any other materials that may be deployed to illuminate Sign faces at night, to display color, graphics, or text.

All exterior architectural lighting in the state of California is regulated by California Energy Code (CEC) section 140.7 and CalGreen section 5.106.8. All lighting that does not classify as a sign as defined in CEC section 130.3 is considered architectural lighting which must comply with the light trespass requirements of CalGreen. This includes architectural lighting, temporary event lighting, or any other materials that may be deployed to be illuminated at night to display color, graphics, or text images. Signs complying with the requirements of CEC section 130.3 are exempt from the CalGreen light trespass requirements and are evaluated in this Study relative to the Policy.

This Study also explains the how light is measured, which regulations control artificial lighting, and what type of artificial light exists along Sunset Boulevard and surrounding neighborhoods. This information is used to identify the change in the lighting conditions that would be produced by the Signs along Sunset Boulevard and at surrounding residential zoned properties.

This Study evaluates the Signs with respect to the City of West Hollywood Sunset Boulevard Off-Site Signage Policy (Policy). The Signs listed above are analyzed to confirm compliance with the Policy, and the Study identifies issues where the lighting resulting from the implementation of the proposed Round 1.0, 1.5, and 2.0 Signs would exceed the limits established by the Policy or create substantial change to the existing ambient lighting. This Study also includes recommendations for clarifications to the Policy to reduce the possibility of adverse lighting at residential zoned properties.

The methods of analysis utilized for this Study follow 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.[1] This Study includes measurement of the existing light along Sunset Boulevard and adjacent intersecting streets, and calculations to determine the light added by the Signs.

This Study evaluates the change in lighting conditions created from the Signs that would be authorized by approval of each of the listed Signs in Tables 1 through 3, and as identified within the Conceptual Sign Plans included as Appendix A. As noted above, the Signs evaluated include Digital Display Signs, Billboards, front lighted signs, back lighted signs, as described below in Section 2, Signs Description, and as illustrated in Appendix A. Each individual Sign and the collective light from all Signs that may affect light trespass and or glare at surrounding residential properties are evaluated. This Study evaluates the light from the Signs at residential properties where additional light from the Signs may substantially affect the use of these properties. Commercial use properties such as office buildings or retail stores are not affected by additional light, and are not evaluated in this Study.

Light from the Signs at residential properties are evaluated with respect to light trespass and glare. These two technical terms are defined by the IESNA as follows:

- *Light Trespass*[2] is excessive stray light on surrounding properties. Light trespass is measured in terms of illuminance (foot-candles or metric units lux), and can be measured at any point and in any direction. Where light trespass is evaluated for this Study, the illuminance is measured perpendicular to and towards the source of light, at the property line, or the location where light would cause an issue. Light trespass is evaluated at night.

- *Glare*[3] occurs when the eye is unable to comfortably adapt to the visual scene. This may occur when the overall light level is too great, or where there is a large difference of brightness in a visual field. 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 (which is measured in footlamberts or metric units candelas/m^2) of the source of light, such as a digital sign, in comparison to the surrounding adjacent luminance. In this Study the contrast ratios define the extent of Glare within the field of view at any observer position. The contrast ratio is determined by the variation of luminance within the field of view. "High," "Medium," and "Low" contrast

1 IESNA publications: 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; ANSI/IES OL-IM-04 Lighting Equipment Testing Procedures and Measurements; and ANSI/IES OL-IM-05 Lighting Roadway and Parking Facilities

2 ANSI_IES LP-2-20, Lighting Practice: Designing Quality Lighting for People in Outdoor Environment, Section 2.3.2 Light Trespass, page 4

3 ANSI_IES LS-8-20, Lighting Science: Vision – Perceptions and Performance, Section 4.4 Glare, page 16

ratios are the comparison of peak measured luminance to the average luminance within a field of view: Contrast ratios above 30:1 are generally uncomfortable for the human eye to perceive, and in a conservative analysis would be perceived as a source of glare. Contrast ratios less than 30:1 and greater than 10:1 are clearly visible (defined as Medium contrast); and below 10:1 are less noticeable (Low contrast). Contrast ratios less than 3 to 1 appear equal. Glare may occur either during the day or night.

The Signs should ultimately comply with the requirements of the Policy as adopted as an amendment to the Sunset Specific Plan (Ordinance No. 19-1063) by the City of West Hollywood. The Policy, included herein as Appendix B, regulates sign types, location, size, and operating characteristics of signage proposed at each Sign site specifically and within the Policy boundaries generally.

This Study utilizes the illumination standards for Sign Lighting defined by the Policy to evaluate the light trespass and glare at residential zoned properties adjacent to Sunset. The Policy stipulates the following illumination requirements for each individual Sign project:

- Light trespass illuminance from off-site advertising signs, architectural lighting, and temporary lighting shall not exceed 1.4 footcandles (fc) at any adjacent residential zoned property line.
- Signs will not exceed 6000 candelas per meter squared (cd/m^2) luminance during the day from sunrise until 20 minutes prior to sunset.
- Maximum luminance at night from sunset until 20 minutes prior to sunrise, or at any time when ambient sunlight is less than 100 (fc) must not exceed 300 cd/m^2.
- Maximum luminance during the day must not exceed 6000 cd/m^2.
- From 2:00 a.m. until sunrise no animated content or moving patterns shall be permitted.
- Luminance shall transition smoothly from daytime luminance to nighttime luminance and vice versa.

In addition, this Study includes the following recommended clarifications to the Policy to prevent light trespass greater 1.4 fc at residential zoned properties:

- Illuminated surface area must not exceed 1,000 square feet and the maximum luminance must not exceed 300 cd/m^2; if illuminated area is greater than 1,000 square feet the maximum luminance must be reduced proportionally as listed in Table 4 below.
- All Signs (which in this Study includes off-site advertising, architectural lighting, and or temporary event lighting) at properties abutting a residential zoned property must be oriented toward Sunset Boulevard and away from the adjacent residential zoned property lines, with the illuminated face(s) parallel to or no more than 45 degrees to the residential zoned property line. In addition, all Signs must be offset at least 20 feet from the abutting residential zoned property.

This Study demonstrates light trespass from the off-site advertising, architectural lighting, and or temporary event lighting will be less than 1.4 footcandles (fc) at the property line of residential zoned properties adjacent to Sunset Boulevard when off-site advertising, architectural lighting, and or temporary event lighting comply with the Policy illumination requirements, the maximum permitted luminance defined in Table 4, and where abutting residential zoned properties are oriented parallel to or no more than 45 degrees to the adjacent residential zoned property line, and are offset at least 20 feet from the abutting residential zoned property.

This Study also evaluates Sign light trespass illuminance at the property line of residential zoned properties more distant from Sunset Boulevard, which are located beyond the boundary of the Sunset Boulevard Specific

Plan boundary. For these more distant residential zoned properties, the maximum light trespass illuminance is defined by the California Energy Commission (CEC) for urban areas in California. CEC defines all urban areas designated by US Census as Lighting Zone 3 (LZ3), which is assigned a maximum light trespass illuminance of 0.74 fc by CEC and IESNA. This light trespass maximum applies to each individual property or project, and is not aggregated or evaluated cumulatively. This Study evaluates the illuminance from the Signs at residential zoned properties outside of the Sunset Boulevard Specific Plan boundary and demonstrates the light trespass from the Signs at residential zoned properties outside the Sunset Boulevard Specific Plan boundary will be less than 0.74 fc when Signs comply with the Policy illumination requirements, maximum permitted luminance defined in Table 4, and Signs abutting residential zoned properties are oriented parallel to or no more than 45 degrees to the adjacent residential zoned property line, and are offset at least 20 feet from the abutting residential zoned property.

Furthermore, the Signs are evaluated with respect to glare visible at adjacent residential properties or within adjacent roadways. To present a conservative analysis, this Study evaluates the Signs with a maximum luminance of 6000 cd/m^2 during the day and 300 cd/m^2 at night with the Signs operating at all white. The existing lighting conditions along Sunset and adjacent properties are measured, documented, and compared to the new lighting conditions which would be created by the Signs. The existing lighting conditions along Sunset Boulevard are relatively bright, in alignment with nighttime entertainment use described within Lighting Zone 4 (LZ4). This Study confirms the contrast ratios, which compares the maximum Sign luminance to the existing average luminance measured at the Monitoring Sites, are less than 30:1. Contrast ratios less than 30:1 indicate the Signs would not create a new glare condition at adjacent residential properties or a substantially different lighting environment from the existing conditions.

The glare at adjacent roadways is also evaluated with respect to the maximum permitted luminance defined within the California Vehicle Code, within a driver's field of view for both day and night. This Study confirms the Sign would not exceed the maximum luminance defined by the California Vehicle Code during the day, at night, and during periods of low sun intensity. Therefore, the results of this Study indicate the Signs would not create a new source of glare for drivers at adjacent roadways. Description of the Signs

The Sunset Boulevard Arts & Advertising Program was launched by the City of West Hollywood to "reimagine the world's premier locations for outdoor advertising" and to include outdoor art to reinvent the idea of what

Figure 1: Sunset Boulevard, City of West Hollywood, and environs

a billboard can be. The Sunset Boulevard Arts & Advertising Program includes signs along the length of Sunset Boulevard within the City of West Hollywood, from the western border with City of Beverly Hills up to the eastern border with the City of Los Angeles.

The City of West Hollywood (WEHO) Sunset Boulevard Specific Plan defines the geographic district along Sunset Boulevard in WEHO where creative and innovative outdoor signs are encouraged, while defining operating limits with regard to the size of the Signs and the intensity of permitted Sign illumination. Figure 1 illustrates the extent of Sunset Boulevard and the adjacent properties within the City of West Hollywood, and the extent of the properties within the City of Los Angeles to the north, and the City of Beverly Hills to the west. New signs along Sunset Boulevard are regulated by the Sunset Boulevard Specific Plan (the "Specific Plan") which regulates lighting with respect to light trespass (i.e., the spillover of light onto adjacent light-sensitive properties). The Specific Plan is illustrated in Figure 2 within the Zoning Plan for the City of West Hollywood, labeled SSP, and shaded light blue. The Specific Plan includes the lighting requirements within the Sunset Boulevard Off-Site Signage Policy (Policy) which are summarized above.

Figure 2: City of West Hollywood Zoning Plan, Sunset Specific Plan Shaded Light Blue

In 2017 Francis Krahe & Associates provided a lighting analysis for the proposed Sunset Boulevard Arts & Advertising Program, which is summarized in the Sunset Strip Off-Site Signage Policy Lighting Report (Report), published June 1, 2017 (attached here as Appendix D). The Report evaluated the light trespass and glare from the proposed signs, and provided recommendations for the lighting requirements which were adopted within the Policy. Key findings of the Report include:

- The existing lighting within the commercial area along Sunset Boulevard included high measured luminance and illuminance from existing signs, exterior building lighting, and street lights.

- The existing measured illuminance supports the recommended adoption of Lighting Zone 4 (LZ4) within California Energy Code regulations and IESNA standards, to formalize the existing lighting within the commercial area along Sunset Boulevard to support the entertainment and artistic environment proposed by the Sunset Boulevard Arts & Advertising Program.

- The Report recommended maximum Sign area and night time luminance to allow Signs along Sunset Boulevard which would not create an excessive light at adjacent residential properties (greater than 1.4 fc). The basis of the Report recommendations included an estimated distance of no less than 250 feet away from the Signs to the nearest residential properties. The distance of 250 feet is identified in the Sunset Strip Off-Site Signage Policy Initial Study / Negative

Declaration, Section 3.1(d), page 252 (attached herein Appendix E), which states:

- "Along Sunset Boulevard, most residential properties are set back behind the commercial properties that front onto Sunset Boulevard. The slope to the north and south of Sunset Boulevard significantly affect the visibility of signs from residential properties. … The distance from Sunset Strip properties to adjacent residential properties varies considerably. The properties within close proximity are generally 250 feet to 300 feet away from the existing signs on Sunset Boulevard."

This Study serves to further evaluate the effectiveness of the Policy with respect to the actual Signs installed and the future Signs proposed. The following Signs have been proposed within the purview of The Sunset Boulevard Arts & Advertising Program:

- Round 1.0 Signs approved under existing Policy include 19 Sign locations along Sunset Boulevard in the City of West Hollywood.
- Round 1.5 Signs include 6 proposed Sign locations along Sunset Boulevard in the City of West Hollywood.
- Round 2.0 Signs include 10 Sign proposed Sign locations along Sunset Boulevard in the City of West Hollywood.

Figure 3: Sunset Blvd. Arts & Advertising Program Signs

Figure 3 indicates the locations of the Signs included with the Sunset Arts & Advertising Program, Round 1.0, Round 1. 5, and Round 2.0. Tables 1 through 3 below list the identification number, address, number of faces, and area for all Signs within the Sunset Arts & Advertising Program. The Signs are located along Sunset Boulevard within the City of West Hollywood, California (see Figure 1).

The Signs include several different methods of illumination: front lighting; backlighted acrylic; digital LED, and include architectural lighting or other products not yet specified. All methods of Sign illumination technology have the ability to produce light trespass or glare. In this Study the Signs are evaluated with uniform maximum

luminance of 300 cd/m^2 applied to the defined surface area of the proposed Sign as listed below in Tables 1 and 2, to present the worst case, most conservative evaluation of Sign light trespass and glare.

Table 1: Round 1.0 Signs[4]

Sign ID #	Location	Sign Faces	Sign Area Note: Dimensions of Signs may change through the approval process. Sign dimensions below are as listed from the initial Sign application plans
1.0-1	9201 Sunset	2	(1) 6,156 SQFT - south facing (1) 3,000 SQFT - east facing
1.0-2	9200 Sunset	2	(1) 1,000 SQFT - east facing (1) 500 SQFT - west facing
1.0-3	9165-69 Sunset	2	(1) 900 SQFT - south facing (2) 600 SQFT - south facing
1.0-4	9157 Sunset	1	(1) 1,023 SQFT - south facing
1.0-5	9101 Sunset	2	(1) 360 SQFT - east facing (1) 360 SQFT - west facing
1.0-6	9015 Sunset	2	(1) 672 SQFT - east facing (1) 672 SQFT - west facing
1.0-7	9009 Sunset	1	(1) 800 SQFT - west facing
1.0-8	8901 Sunset	3	(2) 672 SQFT - east, west (1) 70 SQFT - south facing
1.0-9	8760 Sunset	2	(1) 1,000 SQFT - west facing
1.0-10	8752 Sunset	2	(2) 532 SQFT - east, west facing
1.0-11	8743 Sunset	1	(1) 672 SQFT - southwest facing
1.0-12	8730 Sunset	2	(1) 1,500 SQFT - northeast (1) 963 SQFT – southwest
1.0-13	8590 Sunset	2	(1) 1200 SQFT - east facing (1) 1200 SQFT - west facing
1.0-14	8501 Sunset	2	(1) 1,000 SQFT - west facing (1) 1,000 SQFT - east facing
1.0-15	8497 Sunset	3	(1) 1,200 SQFT - south facing (1) 811 SQFT - east facing (1) 676 SQFT - down facing
1.0-16	8439 Sunset	2	(1) 672 SQFT - east facing (1) 672 SQFT - west facing
1.0-17	8433 Sunset	2	(1) 500 SQFT - east facing (1) 500 SQFT - west facing
1.0-18	8301 Sunset	1	(1) 1,500 SQFT - east facing
1.0-19	8240 Sunset	1	(1) 1,000 SQFT - west facing

[4] Sign information is based on the latest information received through the City of West Hollywood as of June 1, 2023.

Table 2. Round 1.5 Signs[5]

Sign ID #	Location	# of Sign Faces	Sign Area
1.5-1	9039 Sunset	4	(2) 960 SQFT - east, west (1) 499 SQFT - south facing (1) 244 SQFT - east facing
1.5-2	8440 Sunset	2	(2) 800 SQFT - east, west
1.5-3	8410 Sunset	4	(1) 803 SQFT - north facing (1) 668 SQFT - north facing (1) 551 SQFT - east facing (1) 446 SQFT - west facing
1.5-4	8371 Sunset	1	(1) 1,000 SQFT - south facing
1.5-5	8300 Sunset	1	(1) 989 SQFT - west facing
1.5-6	8222 Sunset	2	(1) 1,000 SQFT - east facing (1) 500 SQFT - west facing

Table 3. Round 2.0 Signs[6]

Sign ID #	Location	# of Sign Faces	Sign Area
2.0-1	9229 Sunset	1	(1) 5,640 SQFT total - east facing
2.0-2	9176 Sunset	2	(1) 2234 SQFT - north facing (1) 428 SQFT - west facing
2.0-3	9121 Sunset	2	(1) 1000 SQFT - west facing (1) 500 SQFT - east facing
2.0-4	8919 Sunset	2	(1) 1,000 SQFT - west facing (1) 500 SQFT - south facing
2.0-5	8906 Sunset	3	(1) 1,000 SQFT - east facing (2) 1,000 SQFT - south, west facing
2.0-6	8873 Sunset	2	(1) 1,000 SQFT - west facing (1) 500 SQFT - east facing
2.0-7	8850 Sunset	2	(1) 1,000 SQFT - west facing (1) 1,000 SQFT - east facing

[5] Sign information is based on the latest information received through the City of West Hollywood as of June 1, 2023.

[6] Sign information is based on the latest information received through the City of West Hollywood as of June 1, 2023.

2.0-8	8801 Sunset	2	(1) 1,000 SQFT - west facing (1) 500 SQFT - east facing
2.0-9	8481 Sunset	2	(1) 1,000 SQFT - south facing (1) 500 SQFT - west facing
2.0-10	8250 Sunset	1	(1) 1,000 SQFT - east facing

1. Methodology

1.1 Existing Conditions Procedures

Existing conditions lighting observations were conducted following recommended practice procedures defined by the IESNA in RP-33-00 Lighting for Outdoor Environments, TM-10-00 Addressing Obtrusive Light (Urban Sky Glow and Light trespass) in Conjunction with Roadway Lighting, and TM-11-00 Light Trespass: Research, Results and Recommendations. Field illuminance and luminance measurements were conducted to accurately document all existing incident and visible light at each Monitoring Site location. Incident light can be understood as a vector of luminous flux moving through space. As the vector (light) is incident upon a surface, the intensity of the resulting illuminance will vary depending upon the relative orientation of the vector to the surface. The greatest illuminance will result when the surface and vector are perpendicular. The least illuminance will result when the surface and vector are parallel. In the field conditions, where there are multiple sources of light originating from varied positions, illuminance measurements are recorded horizontally with the photosensor facing up at 3 feet above grade, and vertically with the photosensor facing the Signs as per as per IESNA standards. These measurements document the total horizontal illuminance received at a Monitoring Site as well as the direction and intensity of light converging on the Monitoring Site from the direction of the Signs. This study utilizes a vertical and horizontal illuminance analysis. The existing Illuminance is measured with a Minolta Illuminance meter.

Figure 4: Minolta LS-100 meter

The existing luminance is measured from a Monitoring Site to light sources and surfaces within the field of view toward the Property from that Monitoring Site. The 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 meter utilized by Francis Krahe & Associates, Inc. reports luminance data in either candelas per square meter or footlamberts (fL). All existing luminance data measured and reported in this Study are recorded as cd/m^2.

1.2 Lighting Analysis

The analysis of the Signs includes evaluation of the light trespass illuminance from the Signs at adjacent residential zoned properties, and an evaluation of glare from the Sign visible at residential zoned properties, or at adjacent roadway locations.

This Study presents a conservative analysis with respect to light trespass and glare. The Signs presented in Appendix A are evaluated with all lighting permitted within the limits of the Policy, with all sign faces operating simultaneously at the maximum night luminance of 300 cd/m^2, all white.

a. Signs Light Trespass Analysis

Light trespass illuminance is evaluated in this Study with respect to vertical illuminance at nearby residential property lines. Light trespass illuminance is calculated by the illumination modeling software program AGI32 in accordance with the procedures defined by IESNA[7]. This software utilizes the three-dimensional computer models of the topography along Sunset Boulevard, the buildings, and Signs to generate an accurate prediction of future illuminance from the Signs identified within Appendix A. The calculated illuminance data is presented at 10 feet on center within a vertical planar surface at the residential property lines adjacent to Sunset Boulevard. The calculation plane simulates the illumination (fc) captured by light meters. The extent of Sign locations along Sunset Boulevard varies in density and proximity to residential properties. This Study evaluates the highest density of Signs with the greatest proximity to the residential properties in order to provide the most conservative evaluation of the Signs' potential for light trespass illuminance. Residential zoned properties located farther away from the Signs or locations with lower density of Sign locations will receive less light trespass illuminance due to the reduced illuminance with distance as results of the inverse square law.

Figure 5: Signs Light Distribution Diagram

Figure 5 presents a graphic representation of the light distribution from the Signs along the length of Sunset Boulevard within the City of West Hollywood. The highest density of Signs with close proximity to residential properties is within the portion of Sunset Boulevard from the intersection with Hillsdale Street at the west, to

[7] ANSI/IESNA Technical Memorandum: Calculation Procedures and Specification Criteria for Lighting Calculations

the eastern boundary of 8721 Sunset. This region of Sunset Boulevard is defined in this Study as Study Area A, and is illustrated in Figure 6. There are ten Signs located within Study Area A, with variations in size and direction of orientation. Study Area A represents the worst-case condition along Sunset Boulevard where multiple Signs are adjacent to each other and are located within less than 250 feet of residential zoned properties. Therefore, the following detailed analysis utilizes Study Area A to evaluate light trespass. The other portions of Sunset Boulevard beyond Study Area A where residential zoned properties are located more than 250 feet from Sunset Boulevard will receive similar or less light than Study Area A.

The light trespass from all Signs within Study Area A operating simultaneously is calculated at the nearest residential property lines defined by the Vertical Planes within Figure 7, and the calculation data is presented in Tables 9 and 11. Within Study Area A all Signs are analyzed individually for compliance with the Policy limit of 1.4 fc at the nearest residential property line to each individual Sign and the calculation data is presented in Table 10. The Sign area included in the calculations are listed in Tables 1 through 3 above; Architectural sign lighting is not included in the lighting analysis.

Figure 6: Study Area A, Sign Locations

Light trespass illuminance from the Signs is evaluated in this Study at the nearest residential property line within Study Area A, as illustrated in Figure 7. The calculations simulate light meters measuring the illuminance at ten feet on center from the ground to the maximum height. Light trespass illuminance is evaluated within these

vertical planes at each adjacent residential zoned property line extending from grade at the residential zoned property to the height of the tallest adjacent Sign or structure. For this Study, the vertical calculation planes extend from grade to 150 feet above grade. Residential properties abutting the Specific Plan boundary are analyzed as part of the Specific Plan.

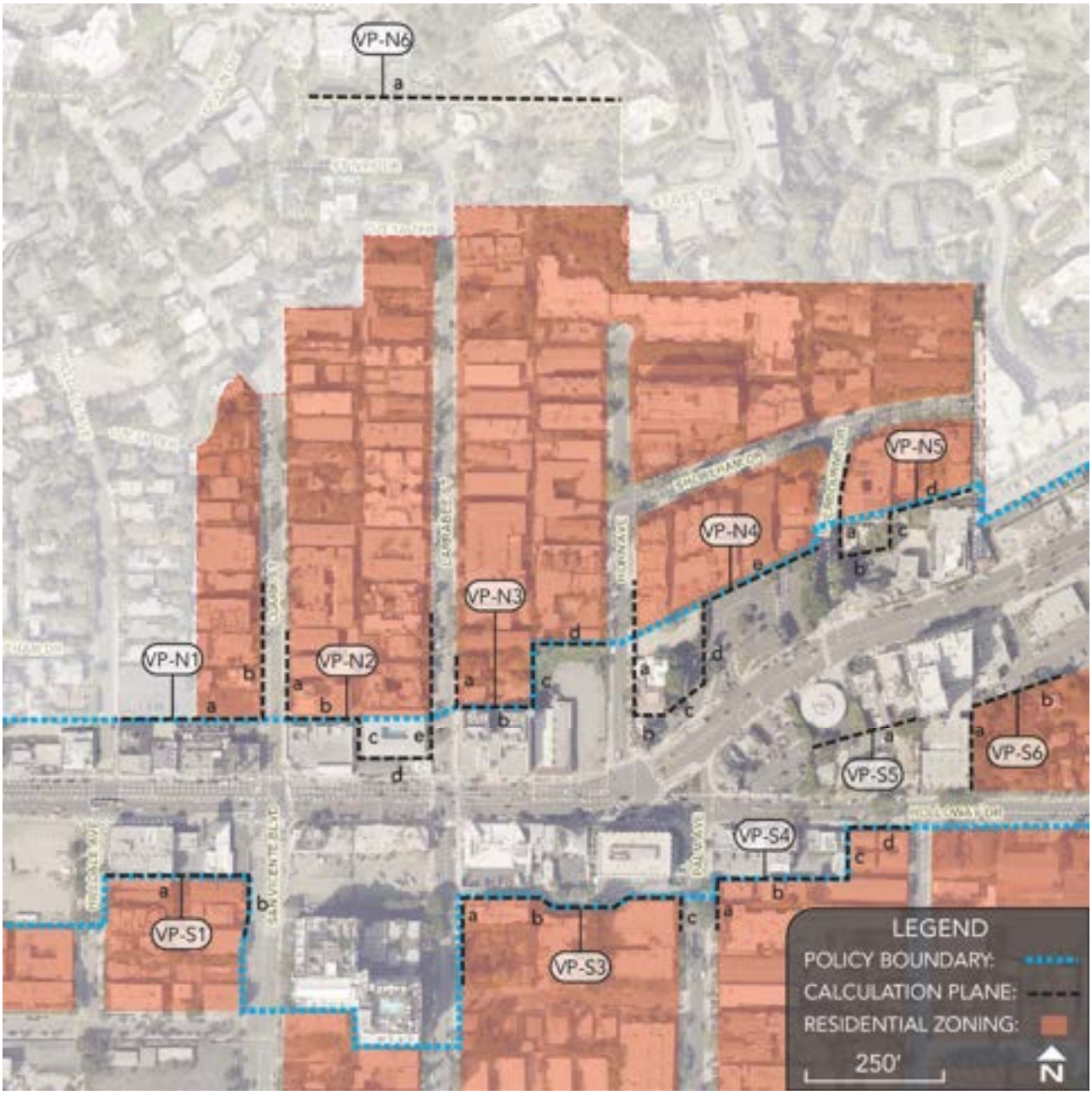


Figure 7: Calculation Plane Locations at Residential Zoned Property Lines

The distance to adjacent residential properties varies considerably. There are existing residential properties located north and south of the Signs, including the abutting residential properties to the north of Sunset Boulevard. Residential properties also exist to the south of Sunset Boulevard, approximately 60 feet from the nearest Sign.

b. Signs Glare Analysis

Glare from the Signs is evaluated at nearby residential zoned properties and for drivers on adjacent streets. The Signs' maximum luminance is evaluated by the contrast ratio, which equals the maximum Sign luminance divided by the measured average existing luminance within the field of view as measured at the Monitoring Sites identified in the field survey of existing conditions (see Section II.1 below). Contrast ratios greater than 30:1 are considered potential glare conditions.

Luminance is independent of distance for large area sources, such as illuminated signs, where the viewing locations are relatively close to the sign and the sign fills a large portion of the field of view. At viewing locations less than 19 times the height or width of the illuminated surface, the sampled area viewed or measured by a luminance meter increases with distance, cancelling the inverse square losses. The standard meter for luminance measurement utilizes a 3 degree lens, thus the 3 degree view translates to approximately 19.1 times the height or width dimension. At viewing locations beyond 19 times the height or width the illuminated surface becomes a point source, and the inverse square relationship will again predict the measured luminance or perceived brightness. The luminance of the Signs is analyzed with a constant luminance of 300 cd/m^2 for all viewing distances up to 1,000 feet.

Glare to drivers traveling on adjacent roadways is analyzed with respect to the Signs' luminance compliance with the California Vehicle Code requirements for both night and day conditions. According to California Vehicle Code Section 21466.5, the Signs would create a glare condition if:

- The maximum measured brightness of a light source within 10 degrees from a driver's normal line of sight exceed 1,000 times the minimum measured brightness in the driver's field of view, except when the minimum values are less than 10 footlamberts (fL).

- At minimum luminance less than 10 footlamberts (fL) the source brightness shall not exceed 500 fL plus 100 times the angle, in degrees, between the driver's line of sight and the light source

2. Conclusions

This Study analyzes the lighting associated with the proposed illuminated Sign locations along Sunset Boulevard within the City of West Hollywood, California and determines the proposed Signs which are compliant with the Policy will not create a substantial change to the nighttime environment along Sunset Boulevard or at adjacent residential use properties. The majority of Signs analyzed in Study area A (8 of 10) do not create light trespass or glare impacts at adjacent residential properties and do not significantly alter the existing lighting conditions within or adjacent to the Sunset Specific Plan. Two proposed projects within Study area A either exceed the size limits within the Policy, or are located immediately adjacent to and facing residential properties. These proposed projects do not comply with the Policy and should not proceed as currently designed. The Study includes recommended revisions to effect compliance with the Policy.

This Study evaluates potential future lighting conditions associated with these Signs, which would be authorized by approval of each of the proposed Signs presented in Appendix A. This Study analyzes light from each individual Sign and the collective light from all Signs that may affect the light trespass and glare conditions at surrounding properties. For this Study the light from the Signs are analyzed at residential zoned properties where additional light from the Signs may substantially affect the use of these properties, and at sensitive natural habitats. Light from the Signs at commercial use properties such as office buildings or retail stores are not considered in this Study, as the additional light from the Signs will not adversely affect the operations of these properties.

When all Signs are analyzed simultaneously, the calculation results indicate four (4) of the twenty-four (24) vertical plane locations within the Specific Plan boundary, may receive light trespass Illuminance exceeding 1.4

footcandles (fc. These four (4) vertical planes (VP-N2c, VP-N2d, VP-S1a, VP-S1b) where light trespass illuminance exceeds 1.4 fc are located adjacent to the intersection of San Vicente Boulevard and Sunset Boulevard, where the measured existing vertical illuminance is 2.93 fc. The high illuminance at each of these four vertical plane locations is attributed to individual adjacent signs which do not comply with the Policy. The illuminance from these signs exceeds 1.4 fc at the adjacent residential property line due to the Sign orientation toward the abutting residential property. Generally, Signs will not comply with the Policy where the distance from the Sign to the residential property line is less than 250 feet. When these Signs are analyzed individually with revised orientation to aim away from the adjacent residential properties, and comply with the Policy light trespass, the resulting light trespass with all Signs operating simultaneously will also be less than the 1.4 fc maximum at 23 of 24 locations where light trespass is reviewed within the Specific Plan boundary.

The one vertical plane location that exceeds the 1.4 fc when Sign illuminance is calculated simultaneously for all Signs, is VP-N1a, where two (2) Signs are adjacent and oriented toward VP-N1a. Vertical plane VP-N1a is located at the residential property line to the north of Sunset Boulevard, between Hilldale Avenue and San Vicente Blvd, where multiple signs are located nearby. Each individual nearby Sign independently complies with the Policy with a maximum illuminance less than 1.4 fc. However, when analyzed together the light trespass exceeds 1.4 fc. However, both adjacent Signs are compliant with the Policy, and the Policy does not regulate the ambient illuminance or the collective illuminance from Signs at any given property line. Therefore, the effect of multiple adjacent Signs may exceed 1.4 fc when these Signs are both: 1) located directly adjacent to a residential property line; and 2) Signs are oriented perpendicular or toward the adjacent residential property line. This Study includes recommendations regarding orientation and setback of Signs to minimize the potential for Signs to create high illuminance at adjacent residential properties.

This Study confirms residential zoned properties outside of the Specific Plan boundary to the north and or south of Sunset Boulevard within WEHO will not receive light trespass greater than 0.74 fc from the Signs when analyzed individually, and at 7 of the 8 locations analyzed with all Signs operating simultaneously. In the simultaneously operating analysis, the Sign light trespass exceeds 0.74 fc at Vertical Plane VP-N2a, located at the residential property lines to the north of Sunset Boulevard along the east side of Clark Street. The higher illuminance is due to multiple adjacent Signs that independently comply with the Policy but cause light trespass exceeding the 0.74 fc limit when calculated simultaneously. Therefore, the Signs individually comply the Policy at all residentially zoned properties outside the Specific Plan. Light trespass illuminance will not exceed 0.74 fc at 7 of 8 locations where light trespass is reviewed in this Study at locations outside of the Specific Plan boundary, with all Sign operating simultaneously.

At locations identified above where light trespass exceeds 1.4 fc from multiple adjacent Signs (VP-N1a, and VP-N2a), one or more of the adjacent Signs are less than 250 feet away from the residential property line and are visible. This Study's conclusions align with the lighting study completed by Francis Krahe and Associates in 2017 (Appendix D) which states that Signs located less than 250 away feet from a residential property may create excessive light trespass at residential properties.

This Study demonstrates that visibility at the Monitoring Sites to Sunset Boulevard and the proposed Signs locations is reduced as distance increases. Visibility is substantially reduced at locations farther away from Sunset Boulevard, greater than 250 feet. The data presented in Table 8 indicates that the greatest visibility occurs at Sunset Boulevard and visibility reduces substantially as distance from Sunset Boulevard increases. Visibility of Signs are blocked, obscured, or more oblique as distance to Sunset increases.

This Study also concludes the Signs will not create a new source of glare, or high contrast conditions. The Signs will be less than 30:1 contrast conditions with a maximum sign luminance of 300 cd/m^2 at night, during twilight, and overcast conditions, and will not create glare at residential zoned properties. This Study also confirms the Signs will not create a new source of glare to drivers on adjacent roadways. The maximum Signs luminance from the Signs at 300 cd/m^2 (87.6 fL) luminance at night, or during overcast sky conditions, and at 6,000 cd/m^2

(1,751 fL) during the day is less than the California Vehicle Code required maximum allowable luminance. Therefore the Signs will not create a new source of Glare.

3. Recommendations

As stated in the conclusions of this Study, several locations exceed the light trespass limits within and outside of the Specific Plan boundary. Implementing the following recommendations would prevent excessive light trespass from the Signs at residential zoned property lines. Specifically, these recommendations would reduce light trespass at residential zoned properties to less than 1.4 fc within the Specific Plan boundary and less than 0.74 fc outside of the Specific Plan boundary.

Signs which exceed the Policy maximum Sign face area have greater potential to produce excessive light trespass at residential zoned properties. Therefore, Signs should be limited to sign illuminated face area of 1,000 square feet, or reduce Sign nighttime maximum luminance proportionally, so as to limit light trespass illuminance at residential zoned properties to less than the Policy maximum of 1.4 fc inside the Specific Plan boundary and 0.74 fc outside the Specific Plan Boundary.

Modify the Policy to include the following:

a. Recommendation 1: Sign Nighttime luminance is limited by the Policy to prevent excessive light trespass. Nighttime luminance is reduced from 300 cd/m^2 for all Signs exceeding 1,000 square feet in proportion to the increased sign area as defined below in Table 4. Projects with multiple Sign faces oriented in the same direction (parallel to each other or 0 degrees, and up to and including 45 degrees from each other) shall be added together in reference to Table 4. Projects with Sign faces oriented in opposite directions (46 degrees from each other up to 180 degrees from each other) shall be considered individually. See Figure 8 below.

Table 4: Maximum Luminance by Sign Size

Sign Size (sq ft)	Maximum Allowable Nighttime Luminance (cd/m^2)
0 - 1000	300.0
1001 - 1500	200.0
1501 - 2000	150.0
2001 - 3000	100.0
3001 - 5000	60.0
5001 - 7000	40.0

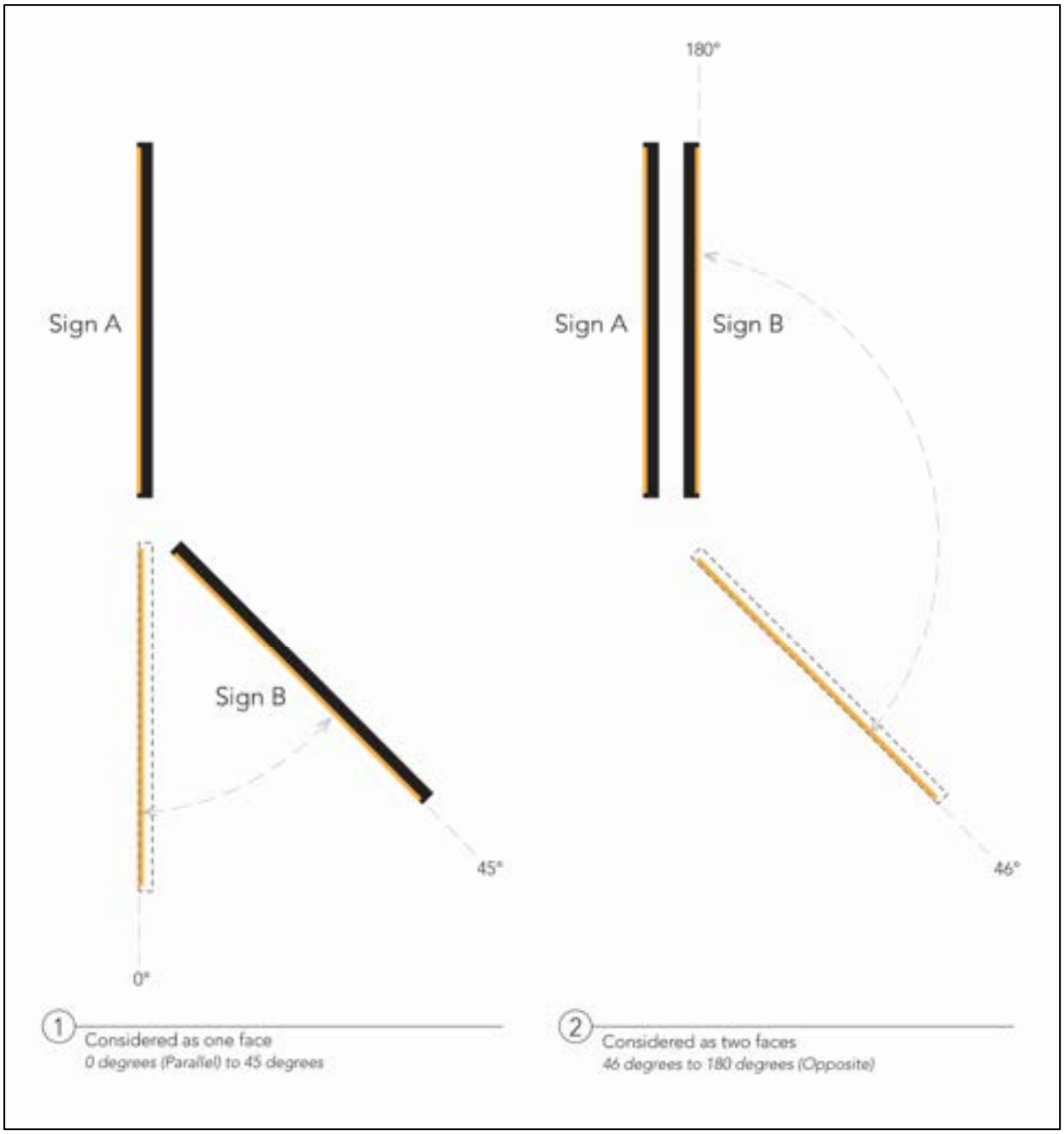


Figure 8: Sign Face Areas Considered Together Versus Separate

Signs abutting any residential zoned property line should be oriented away and offset from the abutting residential zoned property line, since the distance from the Sign to the residential zoned property line will be less than 250 feet and the Signs may cause light trespass exceeding the Policy limit of 1.4 fc.

Modify the Policy to include the following:

b. Recommendation 2: Sign faces abutting any residentially zoned property shall be oriented toward Sunset Boulevard, and away from any abutting residentially zoned property line. Sign faces at 16 degrees to 45 degrees to the abutting residentially zoned property line shall be offset at least 20 feet from the abutting residentially zoned property line. Sign faces located more than 70 feet from an abutting residentially zoned property line may be oriented up to a maximum of 90 degrees to the abutting property line. Figure 9 below diagrams the sign face orientation allowed, and minimum offset from an abutting residentially zoned property.

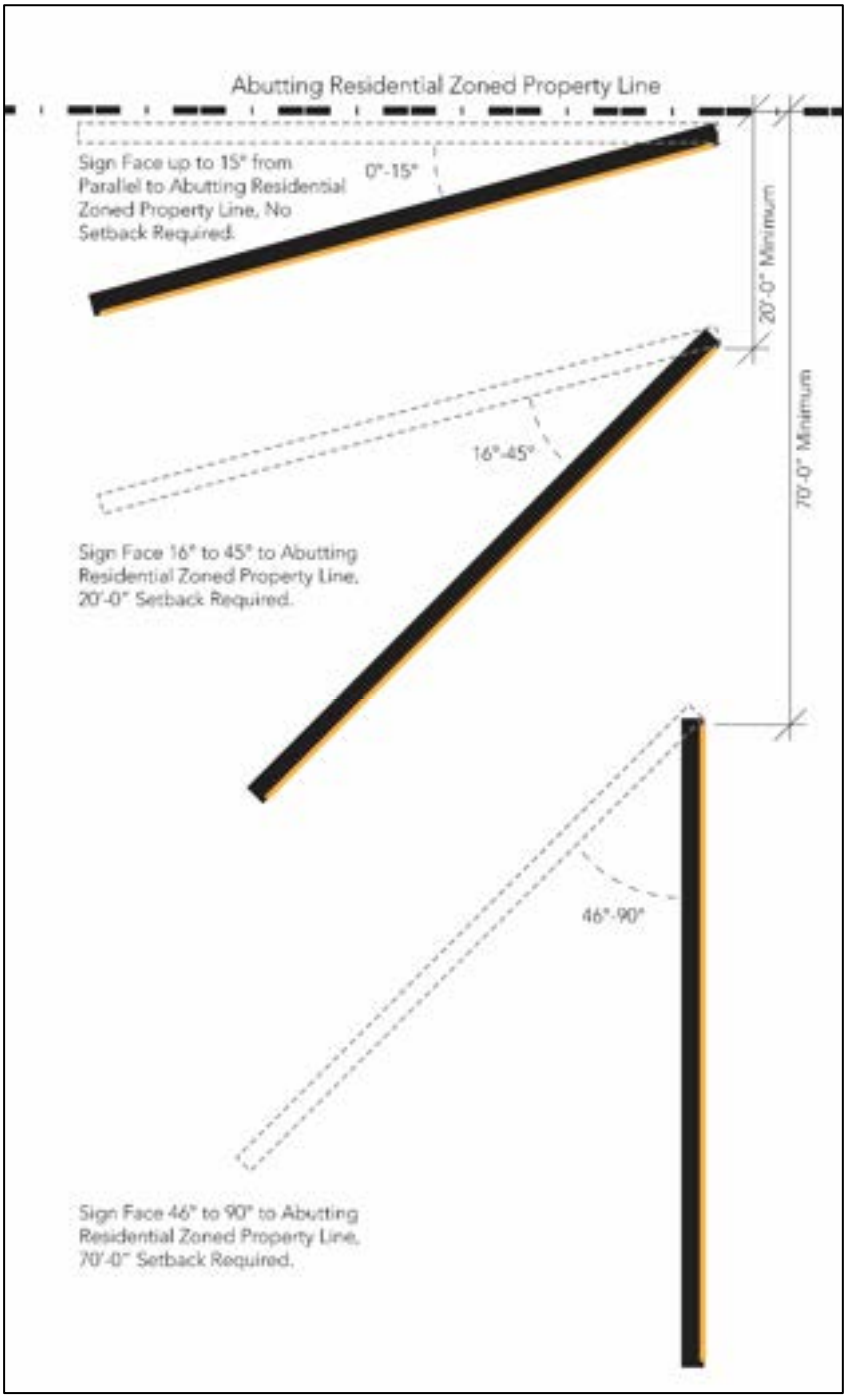


Figure 9: Sign Orientation Diagram

Implementing recommendations 1. and 2. above will reduce light trespass from Signs and result in all Sign light trespass less than 1.4 fc maximum at residential zoned property lines within the Specific Plan boundary and less than 0.74 fc maximum at residential zoned property lines outside the Specific Plan boundary.

II. Lighting Study

This lighting Study includes a detailed evaluation of existing conditions and future Sign illumination within a portion of Sunset Boulevard where the Signs are in close proximity to residential zoned properties to provide a conservative analysis of the potential for light from the Signs to create excessive light trespass or glare at residential zoned properties.

1. Existing Lighting Conditions Along Sunset Boulevard

Monitoring sites are utilized to describe and evaluate the existing lighting conditions along Sunset Boulevard and the surrounding intersecting streets within Study Area A. The lighting data collected at the Monitoring Sites establishes the existing lighting conditions and context for comparison to the future conditions that may result from light or glare from the future Signs. All Monitoring Site locations are within close proximity of Sunset Boulevard and have views toward Sunset Boulevard. Monitoring Sites are located adjacent to existing residential zoned properties or along Sunset Boulevard.

The following criteria are used to select potential Monitoring Site locations:

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

Proximity – Monitoring sites at the least distance to the Sunset Boulevard are analyzed. These locations are selected because light intensity decreases exponentially with distance. Locations at a greater distance will experience less light intensity than nearby locations (see Inverse Square Law below).

Figure 10 shows the Study Area A, Monitoring Site locations and the properties surrounding the Signs within Study Area A. Monitoring Site locations were selected for observation and field lighting measurements to evaluate the views to the Signs from adjacent residential zoned properties and to determine the extent and intensity of existing light sources within and surrounding the Signs. The Monitoring Sites are within the public right of way or adjacent to residences or residential zoning. These locations are representative of the views to the Signs from the vicinity of the residential zoned properties surrounding Sunset Boulevard to the north, east, south and west.

Figure 10 illustrates the following Monitoring Site locations:

Monitoring Site M-HI1: Monitoring Site M-HI1 is located at 1121 Hilldale Ave, to evaluate the Signs located at Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 196 feet. Sunset Blvd. is in partial view to the South of M-HI1. The existing lighting conditions at M-HI1 are relatively low illumination from street and parking lot lighting. Prominent light sources visible in the field of view from M-HI1 to the South toward Sunset include streetlights, billboard lighting, Parking lot lighting and building lighting.

Monitoring Site M-HI2: Monitoring Site M-HI2 is located at 1207 Hilldale Ave., to evaluate the Signs located at Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 355 feet. Sunset Blvd. is in partial view to the west of M-HI2. The existing lighting conditions at M-HI2 are low illumination by adjacent street lighting. Prominent light sources visible in the field of view from M-HI2 to the south toward Sunset include streetlights, parking lot lights, and city lights beyond Sunset.

Monitoring Site M-C1: Monitoring Site M-C1 is located at 1119 North Clark St., to evaluate the Signs located at Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 200 feet. Sunset Blvd. is in partial view to the South of M-C1. The existing lighting conditions at M-C1 are low illumination by street lighting. Prominent light sources visible in the field of view from M-C1 toward Sunset to the south include street lighting, traffic lighting, billboard and building lighting.

Monitoring Site M-C2: Monitoring Site M-C2 is located at 1140 North Clark St., to evaluate the Signs located at Sunset Blvd. to the south. The distance Sunset Blvd. to the south is approximately 467 feet. Sunset Blvd. is in partial view to the south of M-C2. The existing lighting conditions at M-C2 are low illumination by adjacent street lighting. Prominent light sources visible in the field of view from M-C2 toward Sunset to the south include streetlights, billboard and building lighting, traffic lighting and lighting from nearby apartments.

Monitoring Site M-C3: Monitoring Site M-C3 is located at the Northeast Corner of Sunset and Clark St., to evaluate the lighting on Sunset Blvd. to the southwest. The existing lighting conditions at M-C3 are high illumination by street lighting, traffic lighting, billboard lighting, and building lighting. Prominent light sources visible in the field of view from M-C3 to the southwest along Sunset include streetlights, traffic lights, building store fronts and billboard lighting.

Monitoring Site M-C4: Monitoring Site M-C4 is located at the Southeast Corner of Sunset and San Vicente Blvd., to evaluate the lighting on Sunset Blvd. to the northeast. The existing lighting conditions at M-C4 are moderate vertical high horizontal illumination by street lighting, traffic lighting billboard and building lighting. Prominent light sources visible in the field of view from M-C4 to the southwest along Sunset include streetlights, traffic lights, building store fronts and billboard lighting.

Monitoring Site M-C5: Monitoring Site M-C5 is located at 1020 N. San Vicente Blvd, to evaluate the Signs located at Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 164 feet. Sunset Blvd. is in partial view to the North of M-C5. The existing lighting conditions at M-C5 are low illumination by street lighting. Prominent light sources visible in the field of view from M-C5 toward Sunset to the north include street lighting, traffic lighting, billboard lighting, parking lot lighting, building lighting.

Monitoring Site M-C6: Monitoring Site M-C6 is located at 1000 N. San Vicente Blvd, to evaluate the Signs located at Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 365 feet. Sunset Blvd. is in partial view to the North of M-C6. The existing lighting conditions at M-C6 are low illumination by street lighting. Prominent light sources visible in the field of view from M-C6 toward Sunset to the north include street lighting, traffic lighting, billboard lighting, parking lot lighting, building lighting.

Monitoring Site M-L1: Monitoring Site M-L1 is located at 1115 Larrabee St., to evaluate the Signs located at Sunset Blvd, to the south. The distance to Sunset Blvd. to the south is approximately 186 feet. Sunset Blvd. is in limited view to the South of M-L1. The existing lighting conditions at M-L1 are moderate illumination from, street lighting, traffic signal. Prominent light sources visible in the field of view from M-L1 toward Sunset to the south include, street lighting, traffic lighting, and lighting reflected off building surface.

Monitoring Site M-L2: Monitoring Site M-L2 is located at 1128 Larrabee St., to evaluate the Signs located at Sunset Blvd to the south. The distance to Sunset Blvd. to the south is approximately 275 feet. Sunset Blvd. is in limited view to the South of M-L2. The existing lighting conditions at M-L2 are moderate illumination from street lighting. Prominent light sources visible in the field of view from M-L2 toward Sunset to the south include street lighting, traffic lighting, billboard lighting and building lighting.

Monitoring Site M-L3: Monitoring Site M-L3 is located at the Northeast Corner of Sunset and Larrabee St., to evaluate the lighting on Sunset Blvd. to the southwest. The existing lighting conditions at M-L3 are high illumination by street lighting, traffic lighting billboard and building lighting. Prominent light sources visible in the field of view from M-L3 to the southwest along Sunset include streetlights, traffic lights, building store fronts and billboard lighting.

Monitoring Site M-L4: Monitoring Site M-L4 is located at the Southeast Corner of Sunset and Larrabee St., to evaluate the lighting on Sunset Blvd. to the northeast. The existing lighting conditions at M-L4 are high illumination by street lighting, traffic lighting billboard and building lighting. Prominent light sources visible in

the field of view from M-L4 to the northeast along Sunset include streetlights, traffic lights, building store fronts and billboard lighting.

Monitoring Site M-L5: Monitoring Site M-L5 is located at 1014 N. Larrabee St., to evaluate the Signs located at Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 160 feet. Sunset Blvd. is in partial view to the North of M-L5. The existing lighting conditions at M-L5 are Moderate illumination by street lighting, Parking lot lighting. Prominent light sources visible in the field of view from M-L5 toward Sunset to the north include street lighting, traffic lighting, billboard lighting, parking lot lighting, building lighting.

Monitoring Site M-L6: Monitoring Site M-L6 is located at 1000 N. Larrabee St., to evaluate the Signs located at Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 315 feet. Sunset Blvd. is in partial view to the North of M-L6. The existing lighting conditions at M-L6 are High Horizontal, Low Vertical illumination by street lighting, Parking lot lighting. Prominent light sources visible in the field of view from M-L6 toward Sunset to the north include street lighting, traffic lighting, parking lot lighting, building lighting.

Monitoring Site M-H1: Monitoring Site M-H1 is Located at 1114 Horn Ave., to evaluate the Signs located at Sunset Blvd to the south. The distance to Sunset Blvd. to the south is approximately 132 feet. Sunset Blvd. is in partial view to the South of M-H1. The existing lighting conditions at M-H1 are low illumination from street lighting. Prominent light sources visible in the field of view from M-H1 toward Sunset to the south include street and traffic lighting, billboard lighting and building lighting.

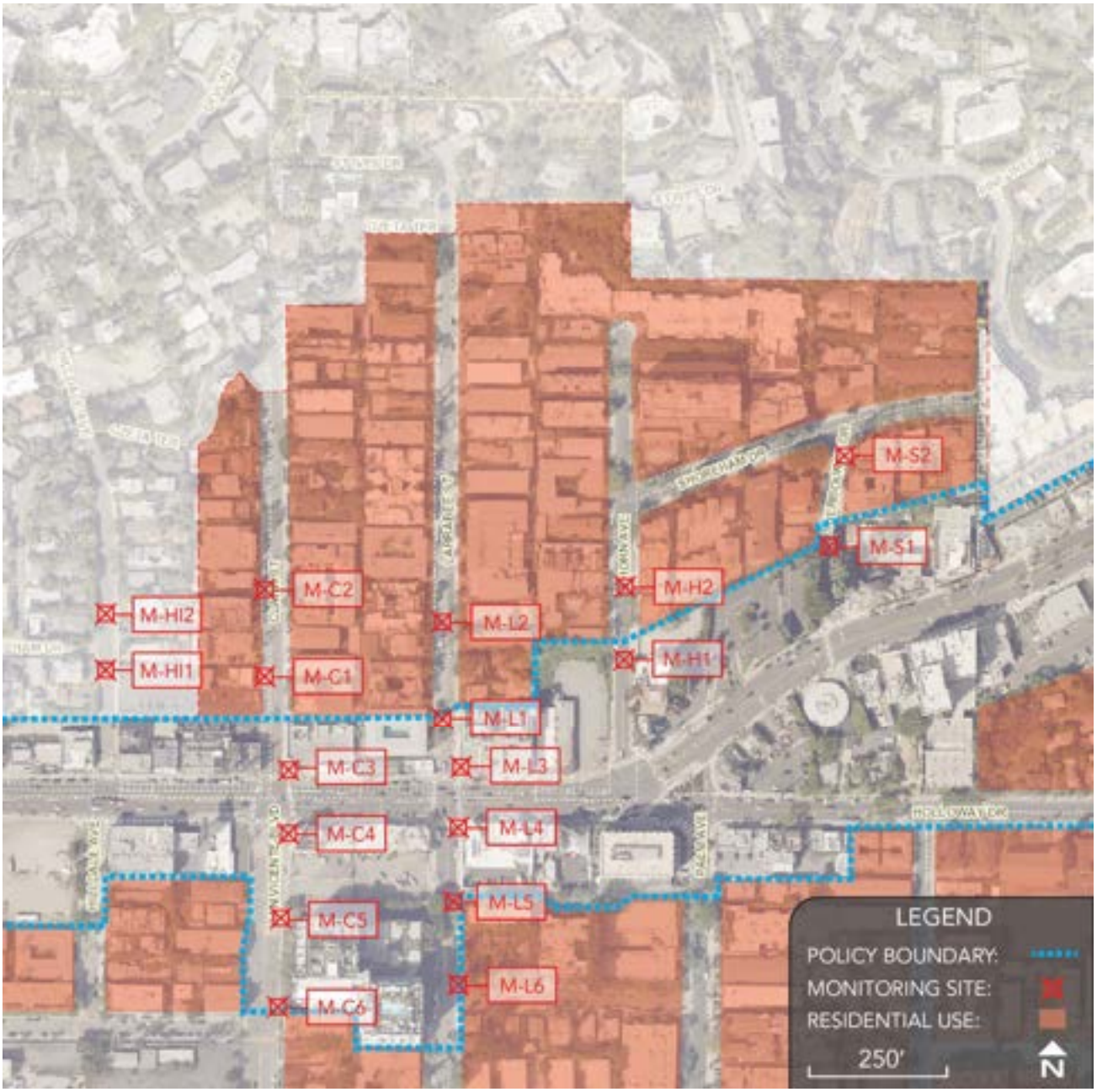


Figure 10: Monitoring Site Locations

Monitoring Site M-H2: Monitoring Site M-H2 is located at 1127 Horn Ave., to evaluate the Signs located at Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 305 feet. Sunset Blvd. is in partial view to the South of M-H2. The existing lighting conditions at M-H2 are moderate illumination by adjacent streetlights. Prominent light sources visible in the field of view from M-H2 toward Sunset to the south include street lighting, traffic lighting, billboard and building lighting.

Monitoring Site M-S1: Monitoring Site M-S1 is located at 1112 Sherbourne Dr., to evaluate the Signs located at Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 167 feet. Sunset Blvd. is in limited view to the South of M-S1. The existing lighting conditions at M-S1 are High illumination from, street lighting. Prominent light sources visible in the field of view from M-S1 toward Sunset to the south include, street lighting, limited billboard lighting and building lighting.

Monitoring Site M-S2: Monitoring Site M-S2 is located at 1124 Sherbourne Dr., to evaluate the Signs located at Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 324 feet. Sunset Blvd. is in limited view to the South of M-S2. The existing lighting conditions at M-S2 are moderate illumination from street lighting. Prominent light sources visible in the field of view from M-S2 toward Sunset to the south include street lighting, limited billboard lighting and building lighting.

Table 5 summarizes the criteria and methods of measurement and or evaluation used to assess the existing lighting conditions at each Monitoring Site:

Table 5. Existing Conditions Lighting Criteria

Criteria	Metric	Procedure
Light trespass - Illuminance	Measured illuminance (footcandle) documented at each Monitoring Site	Measured illuminance recorded each Monitoring Site with Minolta illuminance meter.
Glare – Contrast Ratio	Measured luminance candelas per meter squared, documented at each Monitoring Site Observed existing conditions	Measured luminance recorded at each Monitoring Site with Minolta luminance meter. Day and night photograph to record the evaluation of the view to the Signs from the Monitoring Site in terms of visibility and prominent light sources, lighted surfaces, and illuminated signs.

The visibility of the Signs at each Monitoring Site is evaluated during field surveys during the day and at night. Distance to the Signs and visibility from each Monitoring Site is presented in Table 8. Visibility of Sign locations within the visual field is observed from each Monitoring Site toward Sunset Boulevard.

2. Monitoring Site Survey Data

The observations and measurement of existing lighting conditions within and surrounding Study Area A are summarized below in relation to the evaluation factors established in Section 3.5, Applicable Reference Standards:

Illuminance: The Illuminance listed in Table 6, below, summarize the measured Illuminance at the Monitoring Sites. The measured illuminance is consistent with an urban lighting condition, with relatively high illuminance at the street and sidewalk within the public right of way and nearby commercial properties, and lower illuminance within the residential zoned properties, but sufficient light for safety and security.

Table 6. Measured Illuminance (fc) at Monitoring Sites

Monitoring Site	Illuminance (fc)		Location	Evaluation
	Horizontal	Vertical		
M-HI1	0.44	0.40	1121 Hilldale Ave.	Low Horizontal, Low Vertical illuminance
M-HI2	0.29	0.68	1207 Hilldale Ave.	Low Horizontal, Low Vertical illuminance
M-C1	0.51	0.76	1119 North Clark St.	Low Horizontal, Medium Vertical illuminance

M-C2	1.10	1.60	1140 North Clark St.	Medium Horizontal, High Vertical illuminance
M-C3	2.20	2.93	Northeast intersection of Sunset Blvd. and Clark St.	High Horizontal, High Vertical illuminance
M-C4	3.55	1.12	Southeast intersection of Sunset Blvd., San Vicente Blvd.	High Horizontal, Medium Vertical illuminance
M-C5	0.42	1.30	1020 N. San Vicente Blvd.	Low Horizontal, Medium Vertical illuminance
M-C6	0.86	0.16	1000 N. San Vicente Blvd.	Medium Horizontal, Low Vertical illuminance
M-L1	0.39	0.15	1115 Larrabee St.	Low Horizontal, Low Vertical illuminance
M-L2	0.30	0.25	1128 Larrabee St.	Low Horizontal, Low Vertical illuminance
M-L3	1.74	1.95	Northeast intersection of Sunset Blvd. and Larrabee St.	High Horizontal, High Vertical illuminance
M-L4	1.66	1.49	Southeast intersection of Sunset Blvd. and Larrabee St.	High Horizontal, High Vertical illuminance
M-L5	1.27	1.28	1020 Larrabee St.	Medium Horizontal, Medium Vertical illuminance
M-L6	1.55	0.44	1000 Larrabee St	High Horizontal. Low Vertical illuminance
M-H1	0.25	0.18	1114 Horn Ave.	Low Horizontal, Low Vertical illuminance
M-H2	0.98	0.60	1127 Horn Ave.	Medium Horizontal, Low Vertical illuminance
M-S1	2.01	1.01	1112 Sherbourne Dr.	High Horizontal, Medium Vertical illuminance
M-S2	1.89	0.90	1124 Sherbourne Dr.	High Horizontal, Medium Vertical illuminance

Measured illuminance greater than 1.4 fc is evaluated as high illuminance, from 0.75 fc to 1.4 fc is evaluated as medium illuminance, and from 0.74 fc or less as low illuminance.

The highest existing horizontal illuminance level was recorded at Monitoring Site at M-C4 with 3.55 fc, while the lowest horizontal illuminance was recorded at Monitoring Site M-H1 at 0.25 fc. The highest existing vertical illuminance level was recorded at Monitoring Site M-C3 at 2.93 fc, while the lowest vertical illuminance was recorded at Monitoring Site M-L1 at 0.15 fc.

The existing lighting conditions along Sunset Boulevard are relatively bright, in alignment with entertainment districts in LZ4. This ambient condition is defined by the existing vertical illuminance measurements along Sunset Boulevard at Monitoring Sites M-C3, M-C4, M-L3, and M-L4, which are described as High horizontal and vertical illuminance, summarized in Study Table 6, which range from 2.93 fc, 1.12 fc, 1.95 fc, and 1.49 fc respectively. The measured illuminance along the adjacent residential properties to the north and south of Sunset varies considerably, with measured illuminance from medium to low.

Contrast/Glare: The visual evaluation of High, Medium and Low Contrast describes the perception of how bright a visible object appears to the surrounding objects within any given field of view and context. High Contrast indicates a potential glare condition for residential zoned properties nearby.

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 and evaluated as high; less than 30 to 1 to greater than 10 to 1 is medium contrast; 10 to 1 are clearly visible and evaluated as low; and less than 3 to 1 appear to be equal and evaluated as very low.

The measured luminance recorded at the Monitoring Sites within the view toward Sunset Blvd. includes prominent, high brightness light sources and illuminated surfaces, such as streetlights, illuminated signs, and flood lighted buildings, as well as lower brightness surfaces such as sidewalks, parking lots, and un-illuminated walls or landscape areas. The existing conditions vary from high brightness conditions along and immediately adjacent to Sunset Blvd. to low brightness conditions adjacent to residential zoned properties more than 250 feet from Sunset Blvd. The range of recorded luminance is summarized in Table 7.

For this Study, the following luminance criteria are applied to measured and calculated luminance: Luminance below 10 cd/m^2 is evaluated as Low luminance; Luminance greater than 10 cd/m^2 and less than 300 cd/m^2 is evaluated as medium luminance; Luminance greater than 300 cd/m^2 is evaluated as high luminance.

The highest average luminance was recorded at Monitoring Site M-C3 at 1008 cd/m^2, while the lowest average luminance was measured at Monitoring Site M-C6 at 49 cd/m^2. The measured average luminance is evaluated as Medium Luminance (greater than 10 cd/m^2 and less than 300 cd/m^2) at 12 of the 18 monitoring sites. The measured average luminance at 6 Monitoring Site is evaluated as high Luminance (above 300 cd/m^2). The highest maximum luminance was recorded at Monitoring Site M-L3 with 9347 cd/m^2, while the lowest maximum luminance was measured at Monitoring Site M-C6 at 677 cd/m^2. The measured maximum luminance is High Luminance (greater than 300 cd/m^2) at all 18 monitoring sites.

The existing contrast ratios (maximum luminance / average luminance) varies from a minimum ratio of 6 to 1 at Monitoring Site M-C3 to a maximum ratio of 24 to 1 at Monitoring Site M-H1 and M-L5. The calculated existing contrast ratio at 16 of 18 Monitoring Site locations is evaluated as Medium Contrast (less than 30 to 1, and greater than 10 to 1). The calculated existing contrast ratio at Monitoring Sites M-C1 and M-C3 is evaluated as low (less than 10 to 1).

The visibility of existing signs and future Signs is evaluated at each Monitoring Site with field surveys during the day and at night. The distance to nearby Signs and potential view of Signs from each Monitoring Site is presented in Table 8. Visibility of the Signs within the visual field is observed from each Monitoring Site looking toward Sunset Blvd.

The existing properties within and along Sunset Blvd., within the Sunset Specific Plan are predominantly commercial properties, with several residential and hotel use properties. The properties within Sunset Specific Plan include hotel, entertainment venues, restaurants, retail, and other commercial uses which operate during the day and evening until approximately 2:00 am. There is extensive pedestrian and vehicular activity along Sunset Blvd at night. Existing lighting along the Sunset Blvd. right of way is generally bright and continuous. The existing light levels decrease rapidly as distance from Sunset Blvd. increases, as evidenced by the Monitoring Site data.

Table 7. Measured Luminance, (cd/m^2) at Monitoring Sites

Monitoring Site	Luminance (cd/m^2)		Contrast Ratio (Max / Average)	Location	Evaluation
	Average	Maximum			
M-HI1	148	2514	17 : 1	1121 Hilldale Ave.	Medium average luminance, medium contrast
M-HI2	143	1956	14 : 1	1207 Hilldale Ave.	Medium average luminance, medium contrast
M-C1	141	1212	9 : 1	1119 North Clark St.	Medium average luminance, low contrast
M-C2	206	3781	18 : 1	1140 North Clark St.	Medium average luminance, medium contrast
M-C3	1008	6413	6 : 1	Northeast intersection of Sunset Blvd. and Clark St.	High average luminance, low contrast
M-C4	393	8876	23 : 1	Southeast intersection Sunset Blvd. / San Vicente	High average luminance, medium contrast
M-C5	282	6241	22 : 1	1020 N. San Vicente Blvd.	Medium average luminance, medium contrast
M-C6	49	676.6	14 : 1	1000 N. San Vicente Blvd.	Medium average luminance, medium contrast
M-L1	114	2299	20 : 1	1115 Larrabee St.	Medium average luminance, medium contrast
M-L2	229	4019	18 : 1	1128 Larrabee St.	Medium average luminance, medium contrast
M-L3	464	9347	20 : 1	Northeast intersection of Sunset Blvd. and Larrabee	High average luminance, medium contrast
M-L4	612	9153	15 : 1	Southeast intersection Sunset Blvd./ Larrabee St.	High average luminance, medium contrast
M-L5	405	9587	24 : 1	1020 Larrabee St.	High average luminance, medium contrast
M-L6	177	3117	18 : 1	1000 Larrabee St	Medium average luminance, medium contrast
M-H1	206	4900	24 : 1	1114 Horn Ave.	Medium average luminance, medium contrast
M-H2	552	8772	16 : 1	1127 Horn Ave.	High average luminance, medium contrast
M-S1	248	2684	11 : 1	1112 Sherbourne Dr.	Medium average luminance, medium contrast
M-S2	112	2490	22 : 1	1124 Sherbourne Dr.	Medium average luminance, medium contrast

Table 8. Distance & Visibility to Sunset Boulevard

Monitoring Site	Distance to Sunset	Sign Visibility from Monitoring Site
M-HI1	196 ft	Signs 1.0-8, 2.0-4, and 2.0-5 would be visible to the south and east along Sunset Blvd. No Signs visible west due to trees and buildings obstructing view.
M-HI2	355 ft	Sign 2.0-4 would be visible near the intersection of Sunset Blvd. and Hilldale Ave. at a sharp angle. No other Signs visible due to trees and buildings obstructing views on both sides of Hilldale Ave.
M-C1	200 ft	Sign 2.0-6 would be obliquely visible at the intersection of North Clark St. and Sunset Blvd. No Signs visible east or west due to buildings obstructing view. The rear of Sign 1.0-8 would be visible, which does not contain sign area.
M-C2	467 ft	Oblique view of Sign 2.0-6 at the intersection of Clark St. and Sunset Blvd. may be possible. No Signs visible east or west along Sunset Blvd. The backside of Sign 1.0-8 would be partially visible.
M-C3	0 ft	Signs 1.0-8 and 2.0-5 would be prominent in the view to the west. An obstructed view of Sign 2.0-4 may be visible from the monitoring site.
M-C4	0 ft	Signs 2.0-6, 2.0-7, and 2.0-8 along Sunset Blvd. would be visible along Sunset Blvd. to the east. Signs further west would likely be obscured by buildings, trees, and existing signage.
M-C5	164 ft	Signs 1.0-8, 2.0-4, and 2.0-5 would be clearly visible to the east. Sign 2.0-6 at the corner of Clark St. and Sunset Blvd. may be partially visible.
M-C6	365 ft	There would be a partially obstructed view of Sign 1.0-8 and 2.0-4 from the monitoring site. There would be no visibility of Signs to the east.
M-L1	186 ft	Visibility of Sign 2.0-7 at the intersection of Larrabee St. and Sunset Blvd. would be mostly obstructed. Trees and buildings on both sides of the Larrabee St. right of way would block the view of all other Signs.
M-L2	275 ft	View of Sign 2.0-7 at the intersection of Larrabee St. and Sunset Blvd. may be partially visible. Trees and buildings on both sides of the Larrabee St. right of way would block the view of all other Signs.
M-L3	0 ft	Signs 2.0-5 and 2.0-7 along Sunset Blvd. would be fully visible towards the west.
M-L4	0 ft	Sign 2.0-8 would be visible in the view towards the east along Sunset Blvd. All other Signs to the east would not be visible as Sunset Blvd. curves toward the north.
M-L5	160 ft	There would be an oblique view of Sign 2.0-7 at the corner of Larrabee St. and Sunset Blvd. In addition, there would be a partially obstructed view of Sign 2.0-5 to the west.
M-L6	315 ft	Oblique view of Sign 2.0-7 may be possible. Visibility to the east and west along Sunset Blvd. is obstructed by trees and buildings.
M-H1	132 ft	Sign 2.0-8 would be obliquely visible from the monitoring site. Sign 2.0-7 may be visible in the distance toward the west.
M-H2	305 ft	Obscured and oblique view of Sign 2.0-8 may be possible from the monitoring site.
M-S1	167 ft	Signs 1.0-9 and 1.0-10 would be visible across the Sunset Blvd. to the south. All other Signs are blocked by trees and buildings along Sherbourne Dr.
M-S2	324 ft	Sign 1.0-9 would be partially visible from the monitoring site.

Visibility at the Monitoring Sites to Sunset Blvd. and the proposed Signs locations are reduced due to adjacent buildings and trees between the Monitoring Sites and Sunset Blvd. Visibility is substantially reduced at locations farther away from Sunset Blvd., greater than 250 feet. The data presented in Table 7 indicates that the highest brightness occurs at Sunset Blvd. and reduces substantially as distance from Sunset Blvd. increases. Similarly, visibility of the Signs becomes blocked, obscured, or more oblique as distance to Sunset Blvd. increases.

2.1 Monitoring Site M-HI1:

Monitoring Site M-HI1 is located at 1121 Hilldale Ave, to evaluate the nearby existing lighting and the view to Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 196 feet.

Figure 11: M-HI1 – 07/12/2023, 3:32 pm

Figure 12: M-HI1 – 07/12/2023, 9:12 pm

2.2 Monitoring Site M-HI2:

Monitoring Site M-HI2 is located at 1207 Hilldale Ave., to evaluate the nearby existing lighting and the view to Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 355 feet.

Figure 13: M-HI2 – 07/12/2023, 3:33 pm

Figure 14: M-HI2 – 07/12/2023, 8:59 pm

2.3 Monitoring Site M-C1:

Monitoring Site M-C1 is located at 1119 North Clark St., to evaluate the nearby existing lighting and the view Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 200 feet.

Figure 15: M-C1 – 05/03/2023, 3:45 pm

Figure 16: M-C1 -07/12/2023, 9:40 pm

2.4 Monitoring Site M-C2:

Monitoring Site M-C2 is located at 1140 North Clark St., to evaluate the nearby existing lighting and the view to Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 467 feet.

Figure 17: M-C2 – 05/03/2023, 3:44 pm

Figure 18: M-C2 -07/12/2023, 9:13 pm

2.5 Monitoring Site M-C3:

Monitoring Site M-C3 is located at the Northeast Corner of Sunset Blvd. and Clark St., to evaluate the existing lighting along Sunset Blvd. and the view to the southwest along Sunset Blvd.

Figure 19: M-C3 – 08/24/2023, 8:31 am

Figure 20: M-C3 – 08/28/2023, 9:17 pm

2.6 Monitoring Site M-C4:

Monitoring Site M-C4 is located at the Southeast Corner of Sunset Blvd. and San Vicente Blvd., to evaluate the existing lighting along Sunset Blvd. and the view to the northeast along Sunset Blvd.

Figure 21: M-C4 – 08/24/2023, 8:34 am

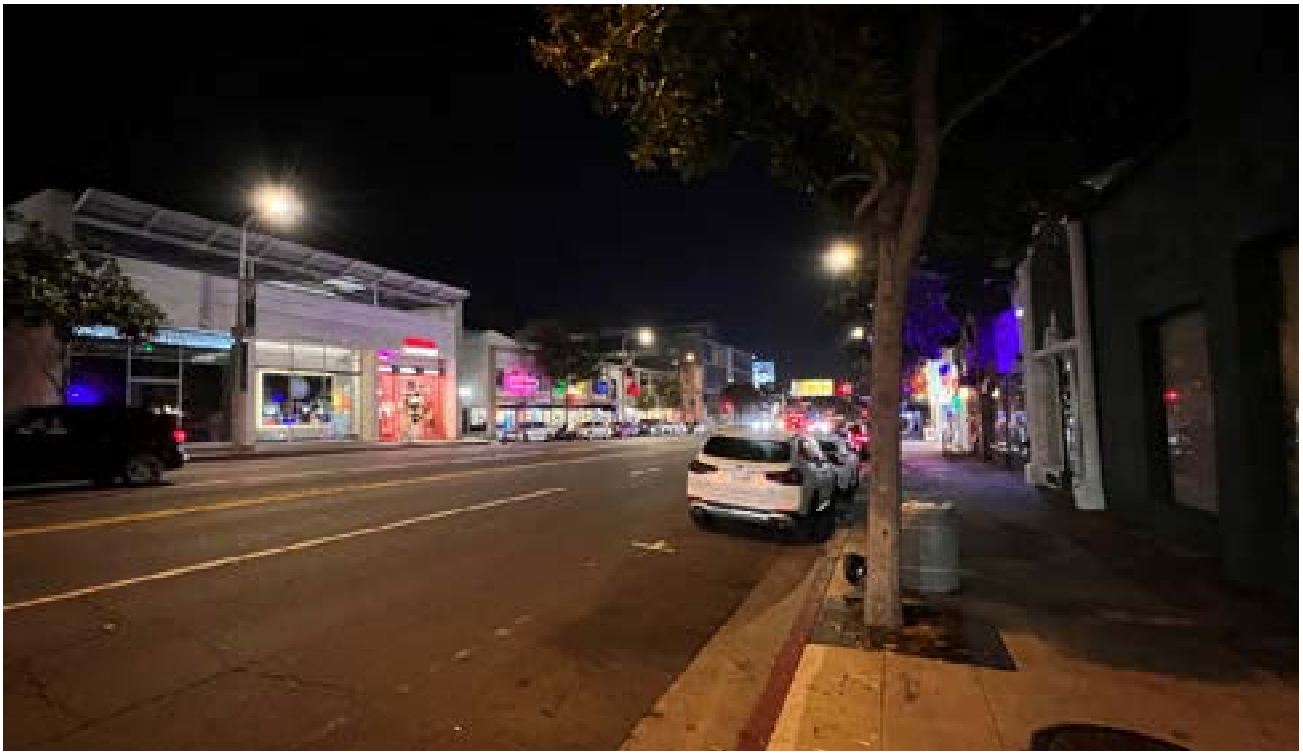


Figure 22: M-C4 – 08/28/2023, 8:48 pm

2.7 Monitoring Site M-C5:

Monitoring Site M-C5 is located at 1020 N. San Vicente Blvd., to evaluate the nearby existing lighting and the view to Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 164 feet.

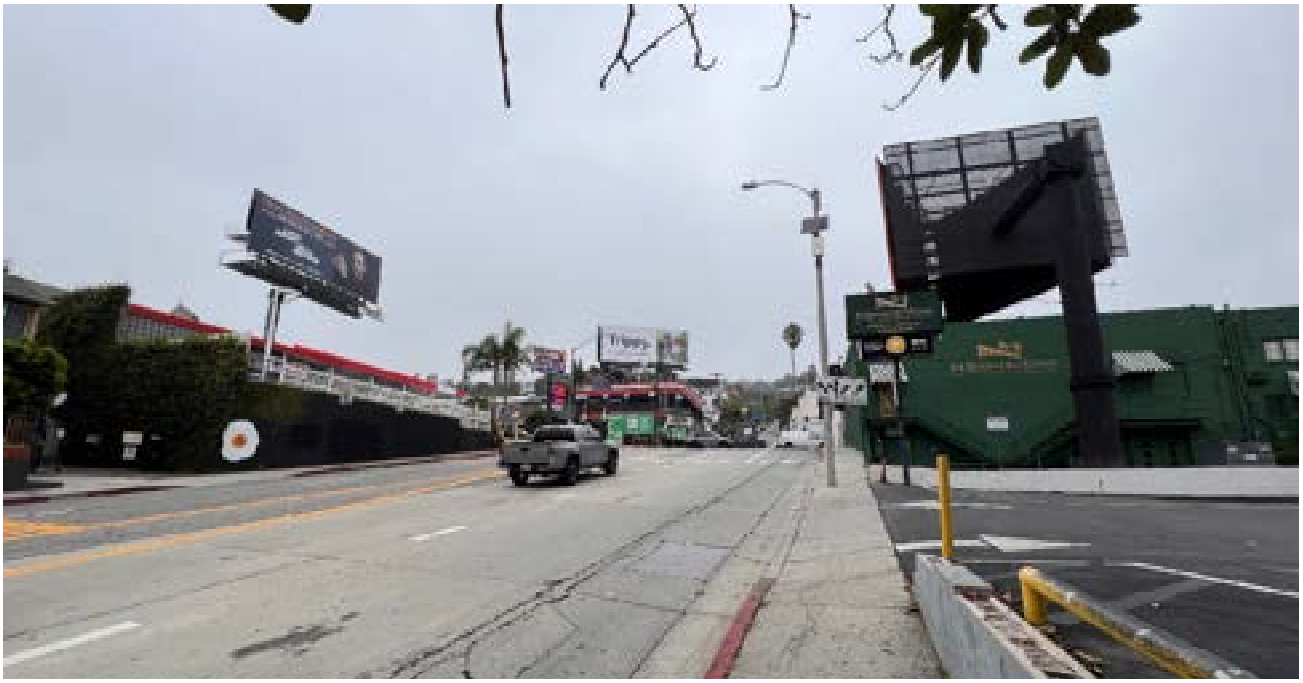


Figure 23: M-C5 – 08/24/2023, 8:35 am

Figure 24: M-C5 – 08/28/2023, 9:08 pm

2.8 Monitoring Site M-C6:

Monitoring Site M-C6 is located at 1000 N. San Vicente Blvd, to evaluate the nearby existing lighting and the view to Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 365 feet.

Figure 25: M-C6 – 08/24/2023, 8:37 am

Figure 26: M-C6 – 08/28/2023, 8:58 pm

2.9 Monitoring Site M-L1:

Monitoring Site M-L1 is located at 1115 Larrabee St., to evaluate the nearby existing lighting and the view to Sunset Blvd, to the south. The distance to Sunset Blvd. is approximately 186 feet.

Figure 27: M-L1 – 05/03/2023, 3:52 pm

Figure 28: M-L1 -07/12/2023, 10:07 pm

2.10 **Monitoring Site M-L2:**

Monitoring Site M-L2 is located at 1128 Larrabee St., to evaluate the nearby existing lighting and the view to Sunset Blvd to the south. The distance to Sunset Blvd. to the south is approximately 275 feet.

Figure 29: M-L2 – 05/03/2023, 3:48 pm

Figure 30: M-L2 -07/12/2023, 9:55 pm

2.11 Monitoring Site M-L3

Monitoring Site M-L4 is located at the northeast corner of Sunset Blvd. and Larrabee St., to evaluate the existing lighting on Sunset Blvd. and the view along Sunset Blvd. to the southwest.

Figure 31: M-L3 – 08/24/2023, 8:47 am

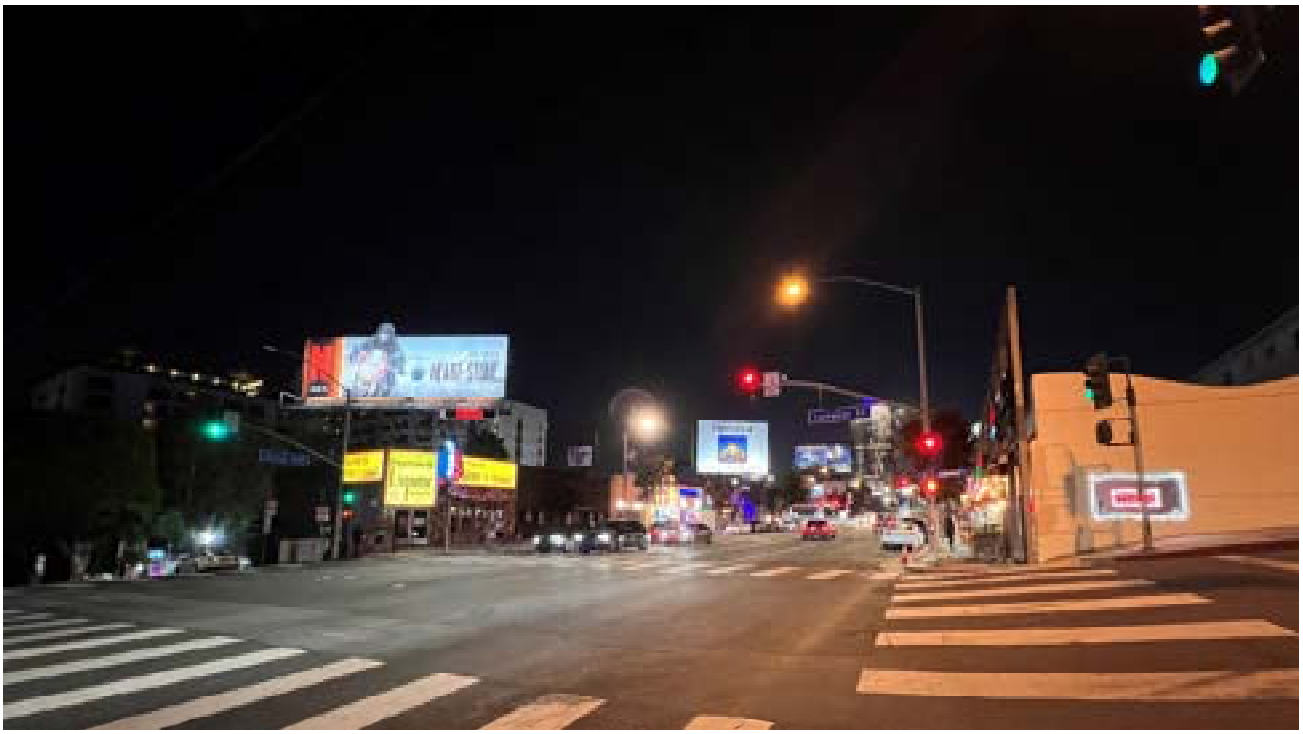


Figure 32: M-L3 – 08/28/2023, 8:10 pm

2.12 Monitoring Site M-L4

Monitoring Site M-L4 is located at the southeast corner of Sunset and Larrabee St., to evaluate the existing lighting on Sunset Blvd. and the view along Sunset Blvd. to the northeast.

Figure 33: M-L4 – 08/24/2023, 8:47 am

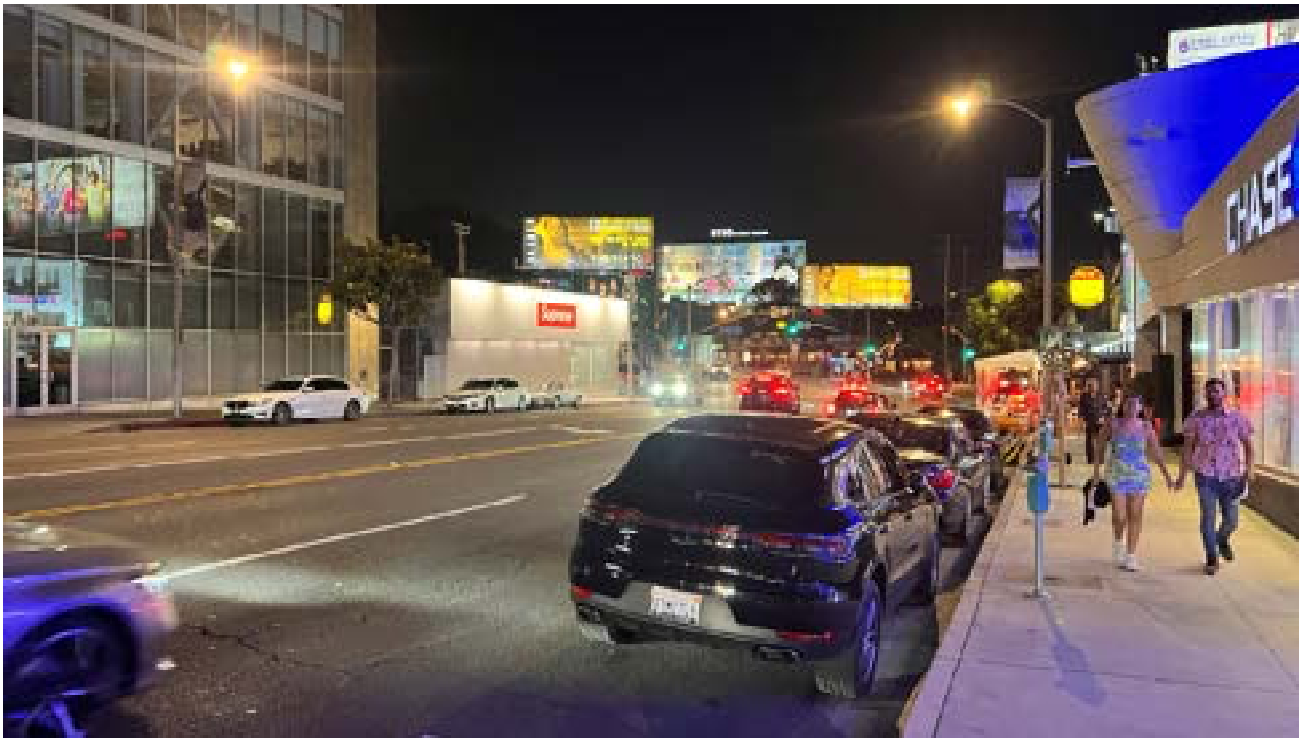


Figure 34: M-L4 – 08/28/2023, 8:19 pm

2.13 Monitoring Site M-L5

Monitoring Site M-L5 is located at 1014 N. Larrabee St., to evaluate the nearby existing lighting and the view to at Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 160 feet.

Figure 35: M-L5 – 08/24/2023, 8:44 am

Figure 36: M-L5 – 08/28/2023, 8:38 pm

2.14 **Monitoring Site M-L6:**

Monitoring Site M-L6 is located at 1000 N. Larrabee St., to evaluate the nearby existing lighting and the view to Sunset Blvd. to the north. The distance to Sunset Blvd. to the north is approximately 315 feet.

Figure 37: M-L6 – 08/24/2023, 8:43 am

Figure 38: M-L6 – 08/28/2023, 8:28 pm

2.15 **Monitoring Site M-H1:**

Monitoring Site M-H1 is Located at 1114 Horn Ave., to evaluate the nearby existing lighting and the view to Sunset Blvd to the south. The distance to Sunset Blvd. to the south is approximately 132 feet.

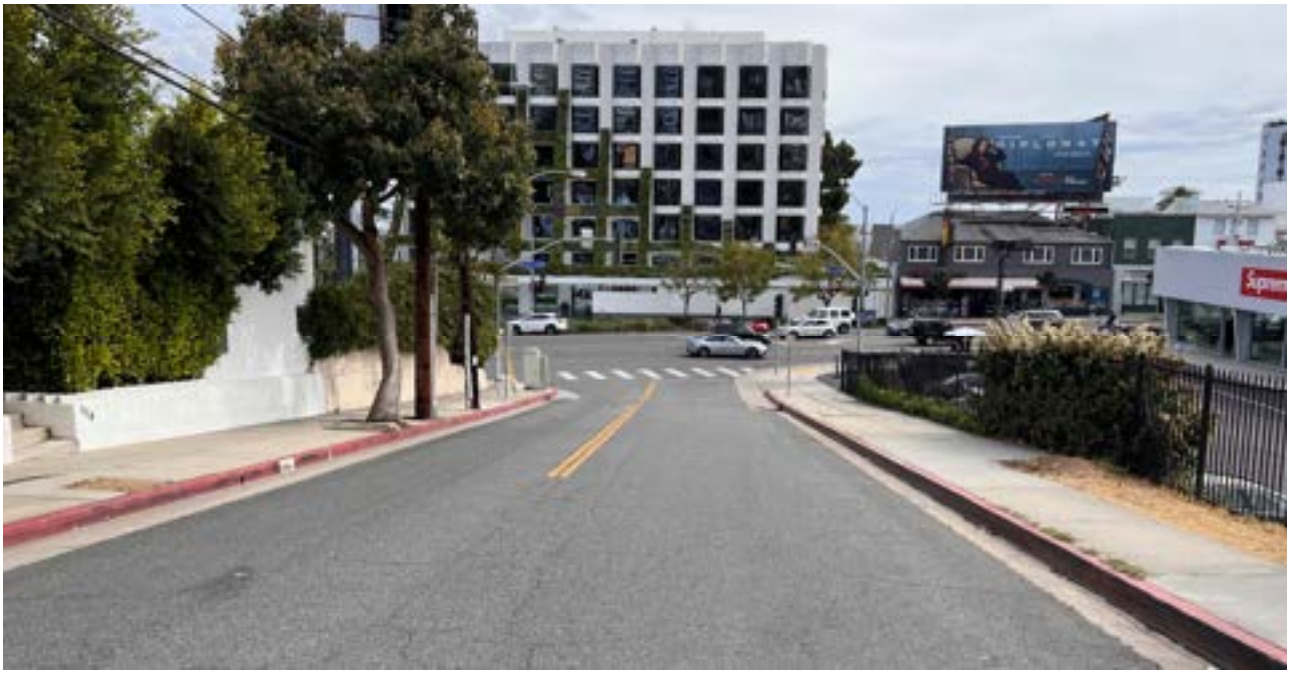


Figure 39: M-H1 – 05/03/2023, 3:59 pm

Figure 40: M-H1 -07/12/2023, 10:27 pm

2.16 **Monitoring Site M-H2:**

Monitoring Site M-E4 is located at 1127 Horn Ave., to evaluate the nearby existing lighting and the view to Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 305 feet.

Figure 41: M-H2 – 05/03/2023, 3:55pm

Figure 42: M-H2 -07/12/2023, 9:55 pm

2.17 **Monitoring Site M-S1:**

Monitoring Site M-S1 is located at 1112 Sherbourne Dr., to evaluate the nearby existing lighting and the view to Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 167 feet.

Figure 43: M-S1 – 05/03/2023, 4:04 pm

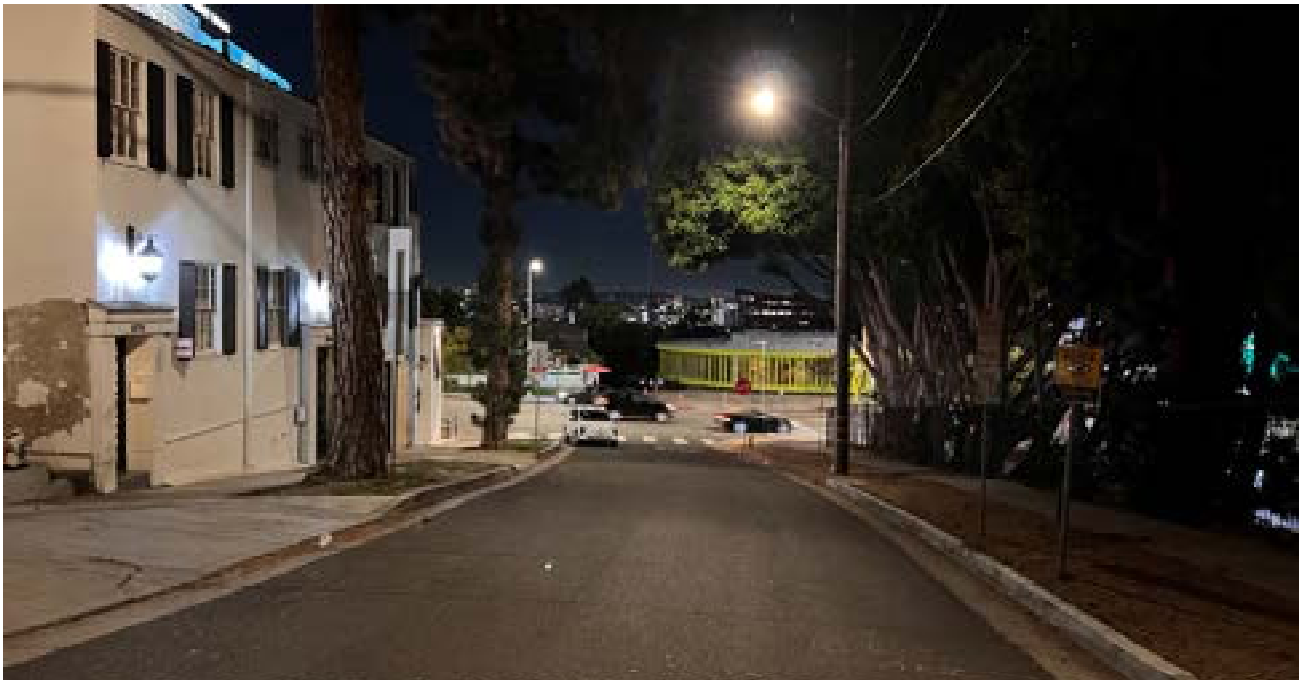


Figure 44: M-S1 -07/12/2023, 10:46 pm

2.18 **Monitoring Site M-S2:**

Monitoring Site M-S2 is located at 1124 Sherbourne Dr., to evaluate the nearby existing lighting and the view to Sunset Blvd. to the south. The distance to Sunset Blvd. to the south is approximately 324 feet.

Figure 45: M-S2 – 05/03/2023, 4:03pm

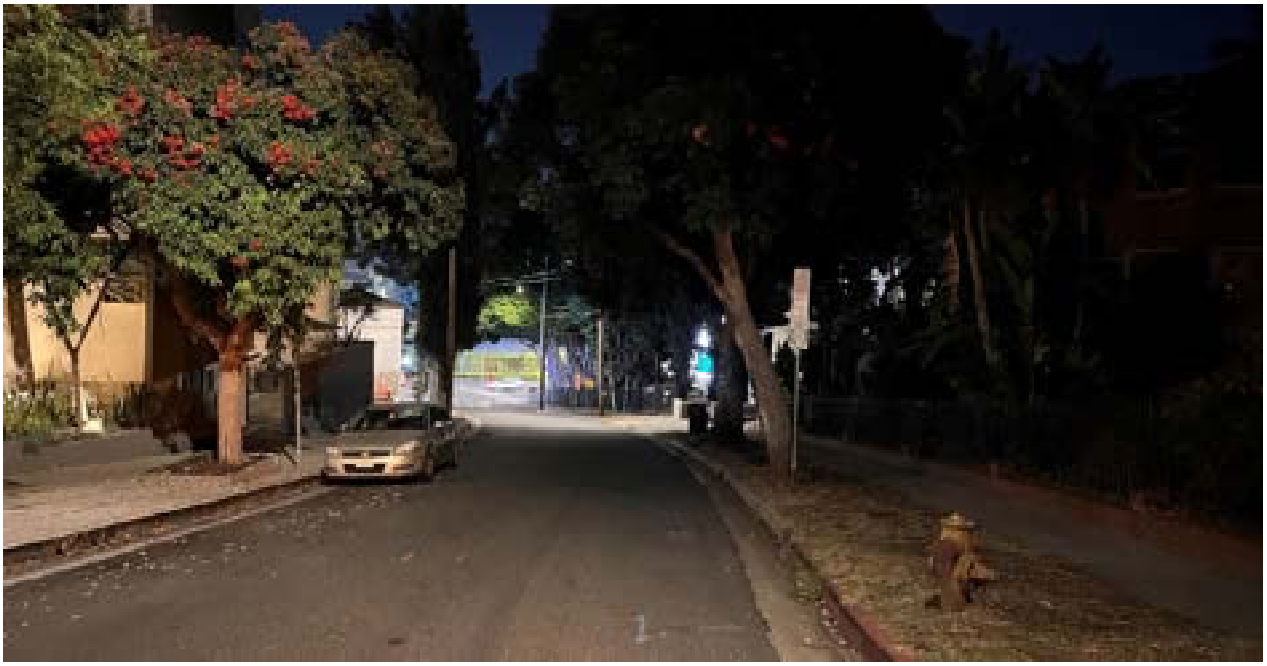


Figure 46: M-S2 -07/12/2023, 10:37 pm

3. Sign Lighting Analysis

The location and size of the Signs are identified in detail within Appendix A. The light from the Signs is evaluated by a lighting calculation model which utilizes the size, shape, orientation, and luminance of the Signs to predict the light adjacent to the Signs and at the nearby residential zoned properties. The calculation simulates the worst case condition with all Signs operating simultaneously at the maximum permitted night time luminance of 300 cd/m^2, in all white mode. The Signs will not operate in this manner in practice. However, this analysis presents a very conservative evaluation of the Signs' potential for offsite light trespass Illuminance and glare. All Signs are evaluated individually to test compliance with the Policy, and simultaneously to define the additional ambient illumination from the Signs operating together.

3.1 Sign Light Trespass Illuminance Analysis

The Sign light trespass analysis evaluates the illuminance (fc) from the Sign leaving the Sign and landing at adjacent residential zoned properties. Tables 9 and 10 summarize the Sign light trespass illuminance calculation data with all Signs operating simultaneously at the nearest residential zoned properties. The calculations are presented at the vertical plane locations illustrated in Figure 7, which are located at the nearest residentially zoned property line within and, or abutting the Specific Plan boundary. Complete calculated data is presented in Appendix L.

Figure 47: Aerial View of Signs and Calculation Planes

The maximum calculated light trespass illuminance in Table 9 varies from 0.10 fc at vertical plane VP-S6b to 39.80 fc at vertical plane VP-N2c. Figure 47 shows an aerial, 3-D view of Study Area A, the Signs within the Study area, and the calculation data within the various vertical planes. Calculation data which are less than 1.4 fc appear in white text to indicate at these locations the maximum light trespass illuminance is less than 1.4 fc. Where the illuminance is greater than 1.4 fc the data appear as red text. 19 of 24 locations, or 79%, of the calculation planes receive light trespass below 1.4 fc maximum, while 5 vertical planes (21%) receive illuminance greater than 1.4 fc.

The calculated maximum illuminance from the Signs with the Signs operating simultaneously exceed 1.4 fc at vertical planes VP-S1b (1.70 fc), VP-N2d (3.20 fc), VP-N1a (3.40 fc), VP-S1a (7.70 fc), and VP-N2c (39.80 fc). Figure 48 is an enlarged view of the western edge of Study Area A where the illuminance at vertical planes exceed 1.4 fc.

Table 9: Simultaneous Sign Trespass Illuminance (fc) Within Policy Boundary, 300 cd/m^2

Vertical Plane	Illuminance (fc)		
	Maximum	Minimum	Average
VP-N1a	3.40	0.00	1.15
VP-N2b	1.00	0.00	0.56
VP-N2c	39.80	0.00	2.25
VP-N2d	3.20	0.00	0.45
VP-N3b	0.50	0.00	0.21
VP-N3c	0.50	0.00	0.23
VP-N3d	0.20	0.00	0.12
VP-N4b	0.50	0.00	0.28
VP-N4c	0.60	0.00	0.36
VP-N4d	1.00	0.00	0.77
VP-N4e	0.70	0.00	0.49
VP-N5b	1.10	0.00	0.71
VP-N5c	0.60	0.00	0.29
VP-N5d	0.70	0.00	0.44
VP-S1a	7.70	0.00	2.16
VP-S1b	1.70	0.30	0.75
VP-S3a	0.40	0.00	0.27
VP-S3b	1.00	0.00	0.30
VP-S4b	0.30	0.00	0.16
VP-S4c	0.20	0.00	0.09
VP-S4d	0.30	0.00	0.15
VP-S5a	1.00	0.00	0.61
VP-S6a	0.20	0.00	0.09
VP-S6b	0.10	0.00	0.06

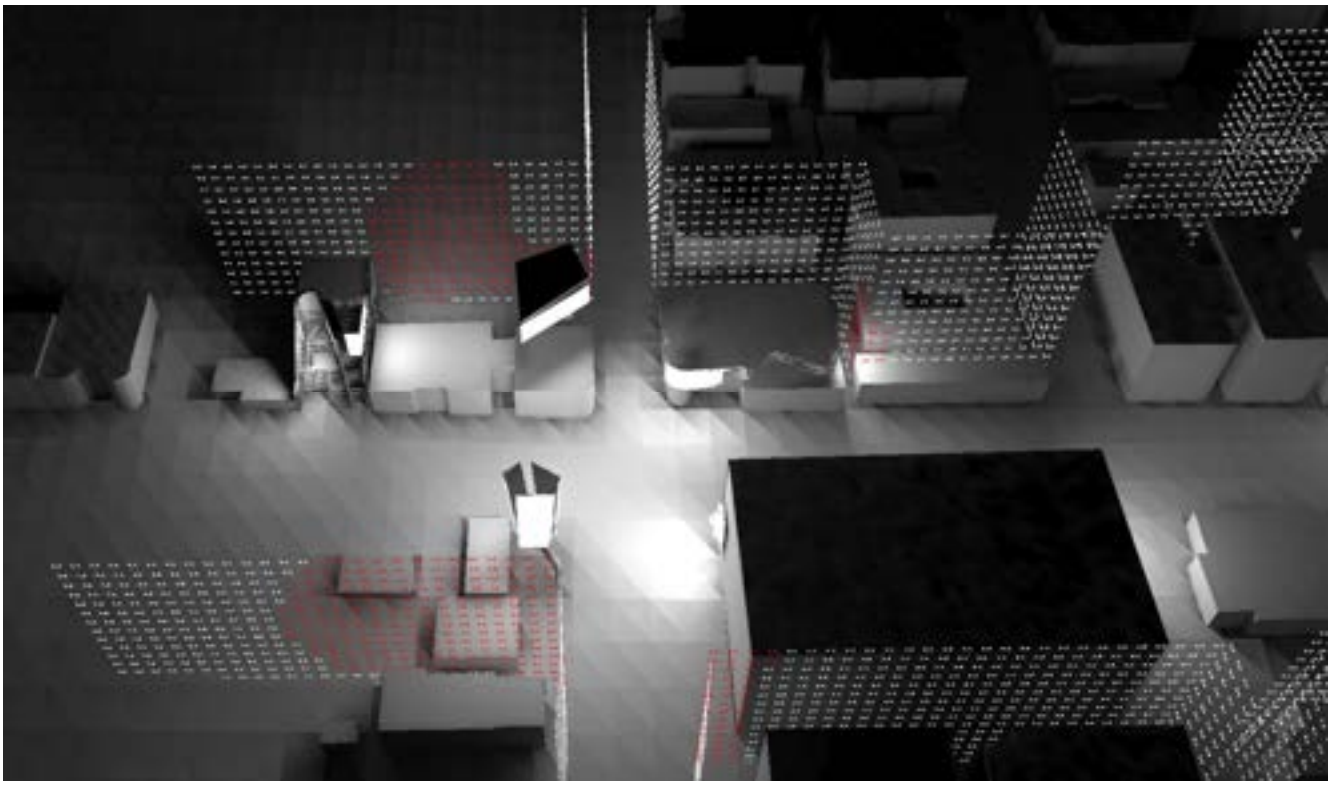


Figure 48: Enlarged View of Signs and Calculation Planes

a. Vertical Plane VP-S1b

Vertical calculation plane VP-S1b is east facing and located at the east residential property line of 1023 San Vicente Blvd, to the south of Sunset Boulevard. The calculated maximum illuminance at vertical plane VP-S1b with adjacent Signs 2.0-7 and 2.0-5 operating simultaneously at maximum 300 cd/m^2 luminance is 1.7 fc. The calculated illuminance data for all adjacent Signs operating simultaneously is illustrated in Figure 49 within the vertical calculation plane VP-S1b. Illuminance data less than 1.4 fc appears as white text while data above 1.4 fc appear as red text.

The calculated maximum illuminance at vertical plane VP-S1b when Signs 2.0-7 and 2.0-5 are analyzed simultaneously exceeds 1.4 fc with maximum illuminance of 1.7 fc. The west facing portion of Sign 2.0-7 contributes the majority of the illuminance at VP-S1b with additional reflected light from Sign 2.0-5. The distance from the Sign 2.0-7 to the VP-S1b is approximately 115 feet. The portion of the calculation plane that exceeds the 1.4 fc is located at the north end toward Sunset Blvd.

When Signs 2.0-7 and 2.0-5 are analyzed separately, light trespass does not exceed the Policy limit of 1.4 fc, and therefore, these Signs comply with the Policy. However, when analyzed together, as illustrated in Figure 49, the maximum Sign illuminance is 1.7 fc at calculation plan VP-S1b. The Policy does not regulate the collective illuminance from the adjacent Signs or the total ambient illuminance within the Specific Plan. These adjacent Signs are located less than 250 feet from the residential property line at VP-S1b. The orientation of Signs 2.0-7 and 2.0-5 toward the residential property lines causes the higher illuminance when these Signs are analyzed simultaneously. This analysis aligns with the conclusions within the Report published in 2017 (see Appendix D) which identified Signs located less than 250 feet from a residential zoned property may cause excessive light trespass. In order to reduce the maximum light trespass at residential properties immediately adjacent to or abutting the Sign properties, the Signs should be oriented toward Sunset or at no less than 45 degrees to the adjacent residential property. Rotating the signs toward Sunset will reduce the direct illumination of the residential properties.

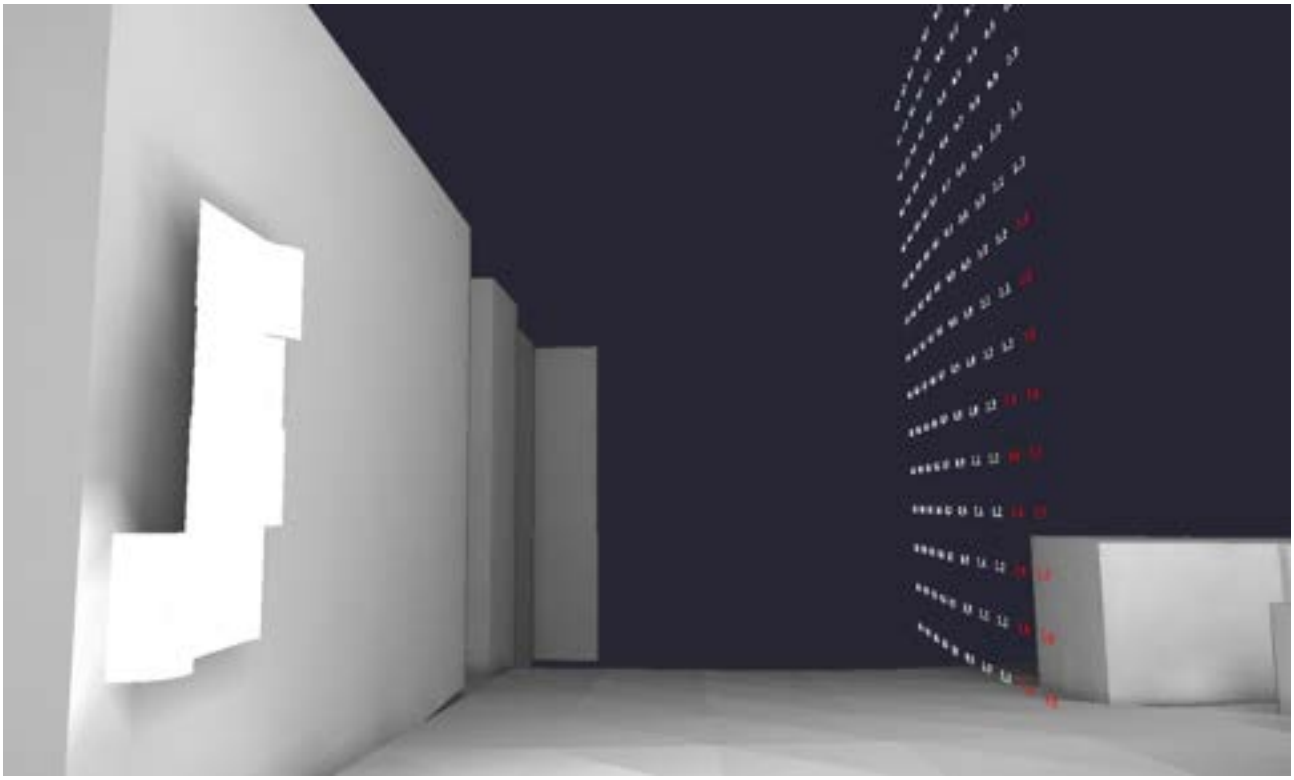


Figure 49: Calculation Plane VP-S1b

b. Vertical Plane VP-N1a:

Vertical calculation plane VP-N1a is located at the residential property line of 1113 Clark St to the north of Sunset Boulevard, to the west of Clark Street. Figure 50 provides a 3-dimensional view of Signs 2.0-4, 1.0-8, immediately adjacent to VP-N1a, and Sign 2.0-5 to the south of Sunset Boulevard. The calculated maximum illuminance with all adjacent Signs operating at maximum 300 cd/m^2 luminance at vertical plane VP-N1a is 3.4 fc. The calculated illuminance data for all adjacent Signs operating simultaneously is illustrated in Figure 50 within the vertical calculation plane VP-N1a. Illuminance data less than 1.4 fc appears as white text while data above 1.4 fc appear as red text.

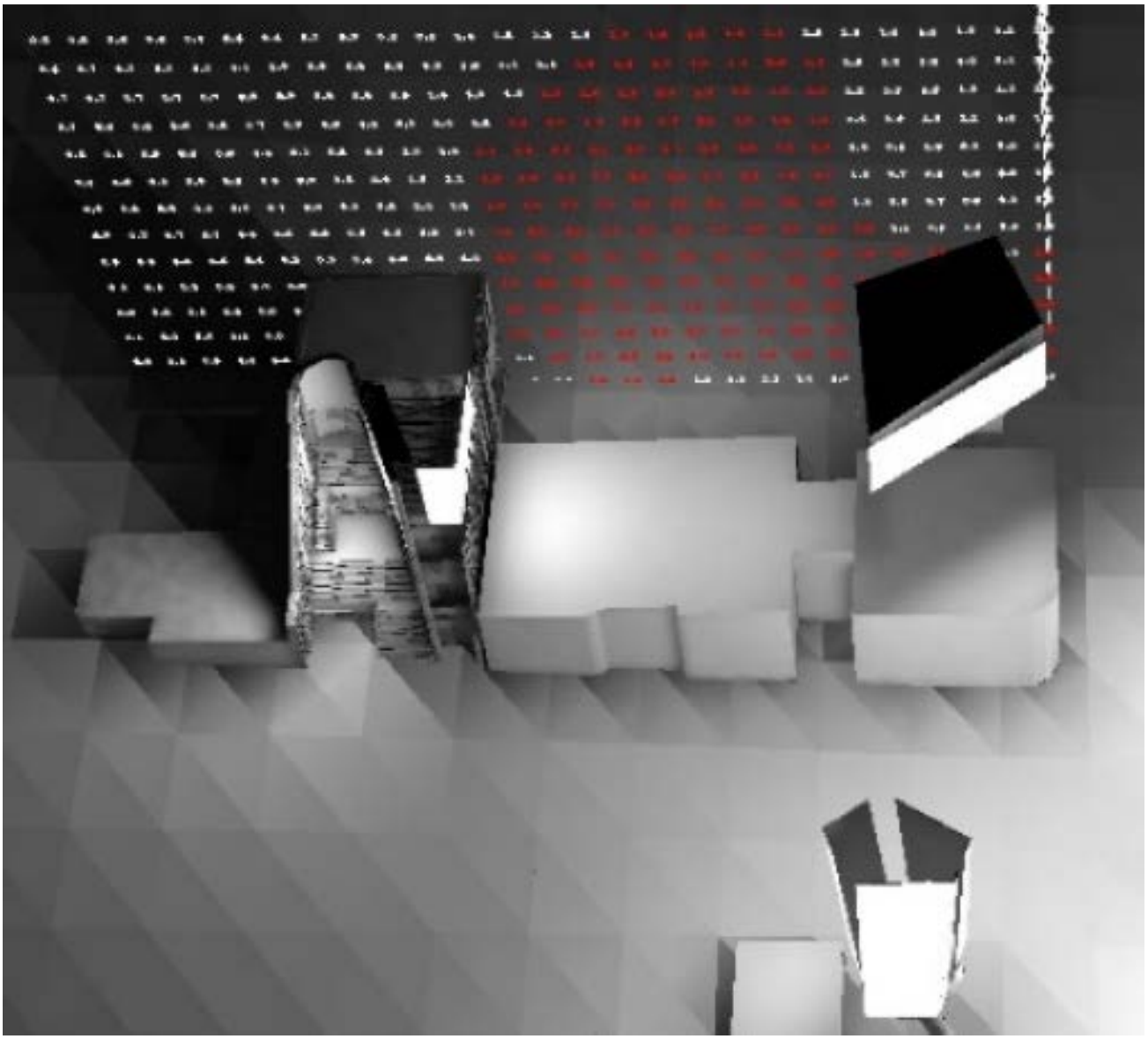


Figure 50: Calculation Plane VP-N1a

When Signs 2.0-4, 1.0-8, and 2.0-5 are analyzed separately, light trespass does not exceed the Policy limit of 1.4 fc, and therefore, these Signs comply with the Policy. However, when analyzed together, as illustrated in Figure 50, the maximum Sign illuminance is 3.4 fc at calculation plan VP-N1a. The Policy does not regulate the collective illuminance from the adjacent Signs or the total ambient illuminance within the Specific Plan. All

three adjacent Signs are located less than 250 feet from the residential property line at VP-N1a. The orientation of Signs 2.0-4, 1.0-8 toward the residential property lines causes the higher illuminance when these Signs are analyzed simultaneously. This analysis aligns with the conclusions within the Report published in 2017 (see Appendix D) which identified Signs located less than 250 feet from a residential zoned property may cause excessive light trespass. In order to reduce the maximum light trespass at residential properties immediately adjacent to or abutting the Sign properties, the Signs should be oriented toward Sunset or no less than 45 degrees to the adjacent residential property. Rotating the signs toward Sunset will reduce the direct illumination of the residential properties.

c. Vertical Plane VP-S1a

Vertical calculation plane VP-S1a is located at the north residential property line of 1023 San Vicente Blvd, south of Sunset Boulevard. Figure 51 shows vertical plane VP-S1a and the adjacent Sign 2.0-5. Illuminance data which are below the 1.4 fc Policy limit appear as white text while data above 1.4 fc appear as red text The calculated maximum illuminance at vertical plane VP-S1a exceeds the Policy limit of 1.4 fc with maximum illuminance of 7.7 fc. Light trespass illuminance maximum of 7.70 at VP-S1a is caused by the south facing

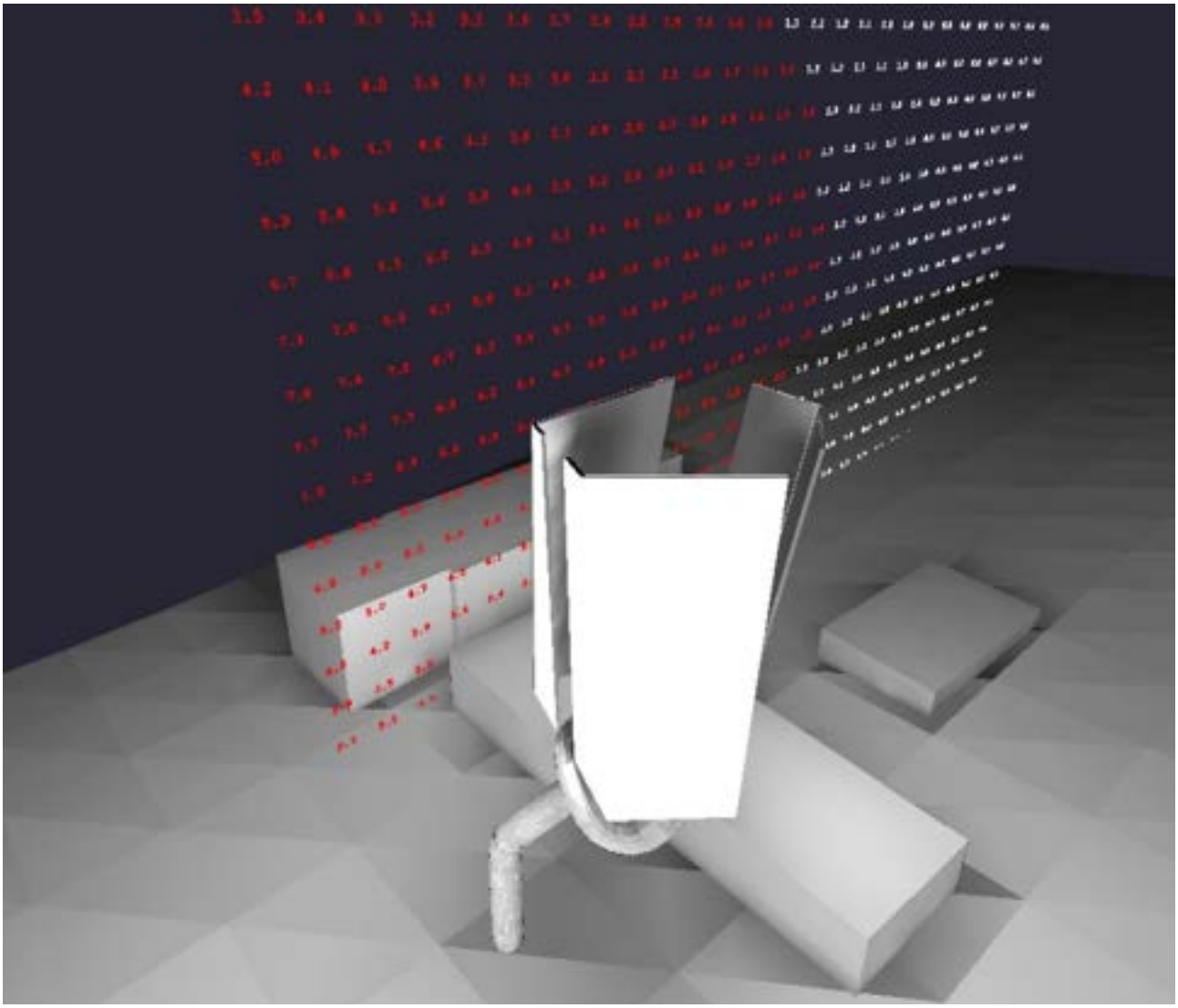


Figure 51: Calculation Plane VP-S1a

portion of Sign 2.0-5. The distance from the Sign to the Calculation Plane is approximately 60 feet. Sign 2.0-5 does not comply with the Policy light trespass limits when calculated independently of other Signs.

The orientation of Sign 2.0-5 toward the abutting residential property line causes the high illuminance, and Sign 2.0-5 does not comply with the Policy. This analysis aligns with the conclusions within the Report published in 2017 (see Appendix D) which identified Signs located less than 250 feet from a residential zoned property may cause excessive light trespass. To reduce the maximum light trespass at residential properties immediately adjacent to or abutting the Sign properties, the Sign should be oriented toward Sunset or at no less than 45 degrees to the adjacent residential property. Rotating the Sign toward Sunset will reduce the direct illumination of adjacent residential properties.

d. Vertical Planes VP-N2c & VP-N2d

Vertical Planes VP-N2c and VP-N2d are located north of Sunset Boulevard adjacent to the residential property at 1111 Larrabee. Figure 52 shows vertical planes VP-N2c and VP-N2d and the adjacent Sign 2.0-6. Illuminance data below the 1.4 fc Policy limit appear as white text while data above 1.4 fc appear as red text.

The calculated maximum illuminance from Sign 2.0-6 exceeds the Policy limit of 1.4 fc at vertical plane VP-N2c with maximum illuminance of 39.80 fc, and at VP-N2d with maximum illuminance of 3.20 fc. Therefore, Sign 2.0-6 does not comply with the Policy. The high illuminance at VP-N2c and VP-N2d is caused by the east face of Sign 2.0-6, which is approximately 10 feet away from the adjacent residential property at 1111 Larrabee. Sign 2.0-6 does not comply with the Policy light trespass limits when calculated independently of other Signs. Furthermore, adjacent Signs to the east and west of VP-N2c and VP-N2d do not contribute any additional illuminance at these two vertical planes.

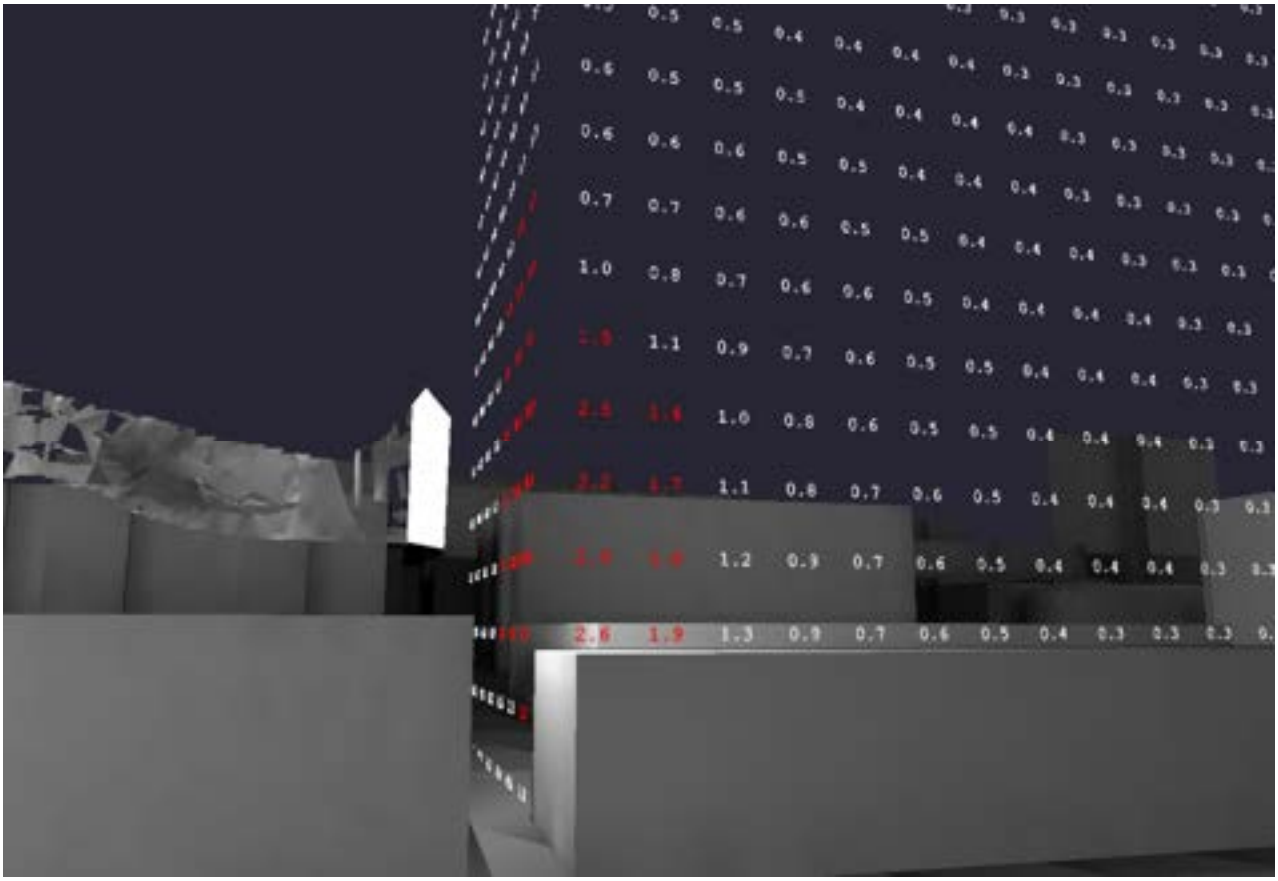


Figure 52: Calculation Planes VP-N2c and VP-N2d

Signs 1.0-8, 2.0-4, 2.0-5, 2.0-6, and 2.0-7 are analyzed individually to determine compliance with the Policy and define each Sign's contribution of light trespass at nearby residential zoned properties. Table 10 below lists the maximum light trespass from each individual Sign surrounding the intersection of San Vicente and Sunset Boulevard. All other Signs are not included in Table 10 are not near calculation planes which exceed 1.4 fc when calculated simultaneously, and therefore independently will not exceed 1.4 fc.

Table 10: Individual Sign Trespass Illuminance (fc) WHMC, 300 cd/m^2

Sign	Maximum Trespass Illuminance (fc)	Maximum Trespass Location	Analysis (1.4 fc Policy Maximum)
1.0-8	0.90	VP-N1a	Complies
2.0-4	1.40	VP-N1a	Complies
2.0-5	6.20	VP-S1a	Exceeds Policy
2.0-6	39.80	VP-N2c	Exceeds Policy
2.0-7	1.10	VP-S1b	Complies

e. Analysis of Sign Illuminance Beyond the Specific Plan Boundary

This Study also evaluates Sign light trespass illuminance (fc) toward residential zoned properties which are not within the Sunset Specific Plan boundary. Light trespass illuminance at residential zoned properties in urban areas within the City of West Hollywood beyond the boundaries of the Sunset Specific Plan, or the within the City of Los Angeles, are evaluated with respect to the CalGreen maximum light trespass limit of 0.74 fc. The Los Angeles Municipal Code allows light trespass from signs up to 3.0 fc. However, to provide a conservative analysis, this Study applies the 0.74 fc CalGreen threshold to evaluate the light trespass at residential zoned properties within the City of Los Angeles. The Signs are defined and illustrated in Appendix A.

Table 11 summarizes the Sign light trespass illuminance calculation data at the vertical planes located outside of the boundary of the Sunset Specific Plan, as illustrated in Figure 7. Complete calculated data is presented in Appendix L.

The Sign maximum calculated illuminance in Table 11 varies from a minimum of 0.00 fc at vertical plane VP-N3a to a maximum of 0.80 fc at vertical plane VP-N2a. Eight of the nine (89%) Calculation Plane locations where light trespass outside of the Specific Plan boundary is analyzed comply with the CalGreen 0.74 fc limit.

Vertical calculation plane VP-N2a is located at the west residential property line of 1114 Clark St facing west. See Figure 53 below which illustrates VP-N2a and adjacent Signs 2.0-4, 2.0-5, 1.0-8, 2.0-6, and 2.0-7. The calculated illuminance data below the 0.74 CalGreen limit appear as white text while values above 0.74 fc appear as red text. The calculated maximum illuminance at vertical plane VP-N2a exceeds the CalGreen limit of 0.74 fc with maximum illuminance of 0.80 fc. The portion of the calculation plane exceeding the CALGreen limit is at the south end, nearest Sunset Blvd.

Table 11: Sign Trespass Illuminance (fc) Outside Policy Boundary, 300 cd/m^2

Vertical Plane	Illuminance (fc)		
	Max	Min	Avg
VP-N1b	0.20	0.00	0.12
VP-N2a	0.80	0.00	0.36
VP-N2e	0.40	0.10	0.21
VP-N3a	0.00	0.00	0.00
VP-N4a	0.40	0.00	0.14
VP-N5a	0.20	0.00	0.09
VP-N6a	0.06	0.00	0.01
VP-S3c	0.10	0.00	0.01
VP-S4a	0.20	0.00	0.06

The excessive light trespass is due to adjacent Signs 2.0-4 and the north face of Sign 2.0-5, which are located less than 250 feet away from the residential property line at VP-N2a and oriented toward VP-N2a. While each sign individually complies with the Policy, the proximity and orientation toward residential properties cause the light trespass to exceed the 0.74 fc limit. This analysis aligns with the previous lighting study by Francis Krahe & Associates published in 2017 (see Appendix D), which identified Signs located less than 250 feet from a residential property may cause excessive light trespass.

Properties located farther away will receive less light trespass from the Sign than ones that are near, due to the Inverse Square Law. Therefore, light trespass from the Signs at any residential zoned properties located farther away would not receive excessive light trespass.

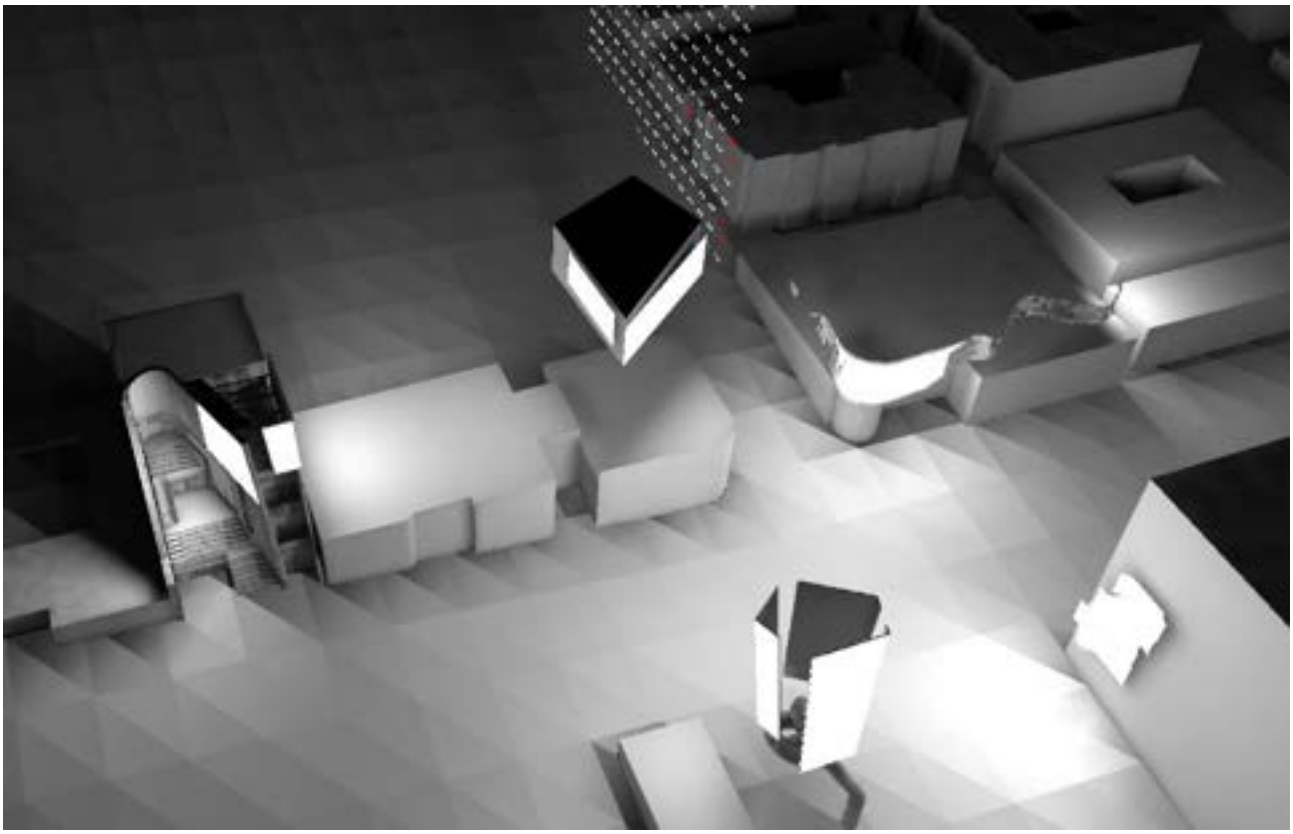


Figure 53: Calculation Plane VP-N2a and adjacent Signs

Furthermore, light trespass illuminance from the Signs was reviewed at the nearest biologically sensitive area in the vicinity of the Signs. The nearest biologically significant area is directly north of Larrabee St., approximately 1200 feet north of Sunset Blvd. Vertical Plane VP-N6a (see Figure 7) corresponds to the location where the light trespass illuminance was analyzed from all Signs in Study Area A. Table 11 includes the calculated maximum light trespass from the Signs as 0.06 fc at vertical plane VP-N6a. The light trespass illuminance calculated from the Signs is very low, and therefore will not affect biological processes within the biological area.

The existing light trespass conditions along Sunset boulevard are bright and continuous (See Table 6), consistent with the characteristics of Lighting Zone 4. The illumination calculated from the Signs is generally less than or equal to the existing illumination, and less than the Policy limit of 1.4 fc. Signs that exceed 1.4 fc are not compliant with the Policy. While the lighting condition if Signs are installed and operating, the lighting character will not be substantially changed

3.2 Signs Glare Analysis

Glare from Signs lighting occurs when the light source is visible against a dark background, such as a dark sky. For this Study, the maximum nighttime sign luminance is 300 cd/m^2, which is the maximum Sign luminance permitted by the Policy. The measured existing luminance along Sunset Boulevard and adjacent residential zoned properties is summarized in Table 7 within Section II.2 above. Table 12 summarizes the contrast ratio calculated for the Sign maximum night luminance versus the average existing measured luminance in Table 7 at each Monitoring Site.

Table 12: Contrast Ratio: Comparison of existing measured to Signs @ 300 cd/m^2

Monitoring Site	Existing Measured Average Luminance (cd/m^2)	Sign Luminance		Evaluation
		Maximum (cd/m^2)	Contrast Ratio	
M-HI1	148	300	2.0 : 1	Low Contrast
M-HI2	143	300	2.1 : 1	Low Contrast
M-C1	141	300	2.1 : 1	Low Contrast
M-C2	206	300	1.5 : 1	Low Contrast
M-C3	1008	300	0.3 : 1	Low Contrast
M-C4	393	300	0.8 : 1	Low Contrast
M-C5	282	300	1.1 : 1	Low Contrast
M-C6	49	300	6.1 : 1	Low Contrast
M-L1	114	300	2.6 : 1	Low Contrast
M-L2	229	300	1.3 : 1	Low Contrast
M-L3	464	300	0.6 : 1	Low Contrast
M-L4	611	300	0.5 : 1	Low Contrast
M-L5	405	300	0.7 : 1	Low Contrast
M-L6	177	300	1.7 : 1	Low Contrast
M-H1	206	300	1.5 : 1	Low Contrast
M-H2	552	300	0.5 : 1	Low Contrast
M-S1	248	300	1.2 : 1	Low Contrast
M-S2	112	300	2.7 : 1	Low Contrast

The contrast ratio is less than 10 to 1 at all Monitoring Site locations, which is low contrast and indicates no glare. All Monitoring Sites are near the Signs and have potential direct view of the Signs. The low contrast evaluation at all Monitoring Sites indicates the Signs will not present a glare condition for residential zoned properties more distant from the Signs than the Monitoring Sites.

3.3 Sign Glare Analysis for Roadways

The lighting condition which may affect driver's visibility from the Signs is evaluated by comparison to the requirements stipulated by the California Vehicle Code (CVC). As summarized below, the results of this evaluation demonstrate the light condition resulting from the Signs at the locations where light is under review are below the CVC limit for excessive luminance, or glare, during night, twilight (sunrise/sunset), and day. The Signs comply with the CVC standard for roadways approaching the Signs from all directions.

The glare analysis of the Signs during night assumes use of any or all Signs on full white at the maximum luminance of 300 cd/m^2 and compares the resulting luminance to the most stringent requirements of the California Vehicle Code to determine if the Signs introduces a source of distracting glare to drivers. The most stringent condition identified within the California Vehicle Code Section 21466.5, states: "except that when the minimum measured brightness in the field of view is 10 footlamberts or less, the measured brightness of the light source in footlamberts (fL) shall not exceed 500 plus 100 times the angle, in roadway degrees, between the driver's field of view and the light source." Thus, a conservative evaluation, occurs where any Sign is visible within the centerline of the driver's field of view, the angle noted above within the field of view is 0, the surrounding surface luminance is less than 10 fL, and therefore the maximum allowable luminance is 500 fL. Therefore, the most conservative condition at night evaluates the Signs against the maximum luminance limit of 500 fL. Sign luminance is not additive or cumulative, therefore the maximum from any Sign represents the highest intensity that may affect the driver's ability to see.

A measured brightness within the driver's field of view of less than 10 fL may occur at night. The Signs are evaluated with a maximum luminance of 300 cd/m^2. Calculating the equivalent Sign luminance by converting to english units from metric units: 300 cd/m^2 equals 87.6 fL. The Signs will not exceed 87.6 fL, which is 17.5% of the 500 fL maximum, the most conservative limit stipulated by the California Vehicle Code for conditions where the minimum brightness in the driver's field of view is less than 10 fL.

Where the Signs are located beyond the driver's 10 degree field of view the maximum luminance is permitted to increase under the California Vehicle Code. For example, Signs located 15 degrees from the centerline of the driver's field of view would be limited to a maximum of 1,000 fL (500 fL plus 100 times the angle (5 degrees) = 1,000 fL). The Signs will operate at maximum of 87.6 fL at night, or less than approximately 8.8% of the maximum allowed by the California Vehicle code for those locations at 15 degrees from the center of the driver's field of view. Therefore, at night the Signs beyond the drivers 10 degree field of view will not exceed the 1000 fL limit and will not introduce a new source of glare as defined by the California Vehicle Code Section 21466.5.

The Signs are also evaluated during twilight (the transition period from day to night). Sunlight increases gradually from the minimum brightness at approximately 45 to 50 minutes before sunrise (dawn) to maximum brightness at mid-day, and then decreases gradually to the minimum brightness at 45 to 50 minutes after sunset. Therefore, the minimum ambient luminance occurs between sunset and 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 until 20 minutes before sunrise, extending the duration of night. At sunset the ambient sunlight will be greater than the minimum values during the night, and at 20 minutes before sunrise the luminance will also be greater than the minimum at night. At sunset, 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 sun. However, to maintain a conservative analysis, this Study assumes the minimum luminance within the driver's field of view will be less than 10 fL from sunset until 20 minutes before sunrise. Therefore, the maximum luminance limit during this time will remain at 500 fL as noted above in the evaluation of the nighttime luminance limit. The maximum sign luminance allowed by the California Vehicle Code of 500 fL converting to metric units equals 1713 cd/m^2.

The Signs is required by the Policy to operate at 300 cd/m^2 (87.6 fL) maximum luminance, from sunset to 20 minutes before sunrise. At 20 minutes before sunset the Sign is specified to begin transition from the maximum daytime luminance of 6,000 cd/m^2 to the maximum nighttime luminance of 300 candelas/m^2. This transition must be completed no later than sunset to avoid potential high contrast, glare conditions. Similarly, the Sign is specified to transition from the night maximum luminance of 300 cd/m^2 to the day maximum luminance of 6,000 cd/m^2, beginning no earlier than 20 minutes before sunrise. The duration of the transition from the night maximum luminance to maximum day luminance must be completed no earlier than sunrise.

Therefore, the Signs will not exceed 300 cd/m^2 for the period beginning at sunset until sunrise. The Signs remain limited to the 300 cd/m^2 (87.6 fL) maximum luminance value, from sunset to 20 minutes before sunrise. Therefore, at sunset and until 20 minutes before sunrise, the Sign will not exceed the limit of 500 fL, and will therefore not introduce a new source of Glare.

The evaluation of the Signs during the day (sunrise until 20 minutes before sunset) compares the daytime, ambient brightness to the maximum Sign brightness stipulated by the California Vehicle Code during full sun conditions and overcast sky conditions. The California Vehicle Code, Section 21466.5 above permits the Signs to "generate light intensity levels greater than 1,000 times the minimum measured brightness in the driver's field of view, except when the minimum values are less than 10 (fL)."

During the day (after sunrise until 20 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 1300 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. The Policy requires that the Sign not exceed 6,000 cd/m^2 (1751 fL) during the daytime hours of operation, and Signs will therefore operate at less than 17.5% of the maximum luminance stipulated by the California Vehicle Code. Therefore, the Signs will not create a new source of glare during daytime hours of operation with clear sky or light overcast conditions.

Severe storms, heavy cloud cover, or other atmospheric conditions may occur during the day, which may cause the minimum brightness within the driver's field of view to be less than 10 fL. The Signs are required to include an electronic control system to reduce the maximum Sign luminance from 6,000 cd/m^2 (1,751 fL) to 300 cd/m^2 (87.6 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/m^2 (1,751 fL) to 300 cd/m^2 (87.6 fL) maximum, and thereby ensure that the Sign brightness remains less than the maximum brightness stipulated by the California Vehicle Code. Therefore, the Signs will not create a new source of glare during daytime periods with storm or severe overcast weather conditions.

The Signs are required by the Policy to not exceed 300 cd/m^2 (87.6 fL) luminance at night or during overcast sky conditions and, or, exceed 6,000 cd/m^2 (1,751 fL) during the day. The luminance is less than the California Vehicle Code standard, including 17.5% of the maximum allowable luminance identified as the limit for glare during the day. Therefore the Signs will not create a new source of Glare for drivers.

III. Review of Lighting Regulations & Reference Standards

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

1. Sunset Boulevard Specific Plan

The Sunset Boulevard Specific Plan (the "Specific Plan") regulates lighting with respect to sign and building lighting with respect to light trespass (i.e., the spillover of light onto adjacent residential zoned properties) and glare. The City of West Hollywood also enforces the building code requirements of the West Hollywood Building Code, the California Building Code, the California Green Building Standards Code (CALGreen), and the California Energy Code.

The Specific Plan includes the following requirements which apply in this Study to sign illumination within the Sunset Boulevard Off-Site Signage Policy (Policy).

- Sign luminance will be less than 6,000 candelas per meter squared (cd/m^2) during the day, and less than 300 cd/m^2 from 20 minutes prior to sunset until 20 minutes prior to sunrise.
- Sign luminance shall transition smoothly over no less than 20 minutes, from the daytime to the nighttime (or nighttime to daytime) maximum luminance.
- From 2:00 a.m until sunrise no animated content or moving patterns shall be permitted.
- Sign illuminance will not exceed 1.4 foot-candles at any adjacent residential zoned property.

In this Study the Policy requirements stated above apply where signs are adjacent to residential zoned properties within the City of West Hollywood and adjacent to, within 250 feet of Sunset Boulevard. The distance of 250 feet is identified in the Sunset Strip Off-Site Signage Policy Initial Study / Negative Declaration, Section 3.1(d), page 252 (attached herein Appendix E), which states:

"Along Sunset Boulevard, most residential properties are set back behind the commercial properties that front onto Sunset Boulevard. The slope to the north and south of Sunset Boulevard significantly affect the visibility of signs from residential properties. … The distance from Sunset Strip properties to adjacent residential properties varies considerably. The properties within close proximity are generally 250 feet to 300 feet away from the existing signs on Sunset Boulevard."

Therefore, residential zoned properties within 250 feet of Sunset Boulevard are considered within the area included to and subject to the WEHO Policy regulations and the 1.4 fc light trespass illuminance limit applies.

This Study also evaluates Sign light trespass illuminance at residential zoned properties that are not adjacent to Sunset Boulevard, more than 250 feet from Sunset Boulevard, and not a part of the Sunset Specific Plan and directly regulated by the Policy. For those residential zoned properties that are not adjacent to Sunset Boulevard, the regulations of CALGreen would apply as follows:

- CEC defines all urban areas as LZ3 (see below). Maximum light trespass illuminance within LZ3 is 0.74 fc. Therefore, Signs light trespass illuminance will not exceed 0.74 foot-candles at any adjacent residential zoned property more than 250 feet away from Sunset Boulevard.

2. California Code of Regulations, Title 24

Title 24 of the California Code of Regulations (CCR), also known as the California Building Standards Code, includes regulations for signs throughout the State of California. The following components of Title 24 include standards related to Sign Lighting:

2.1 2022 California Administrative Code, Administrative Regulations for the California Energy Commission (CEC):

The California Administrative Code, which is Part 1 of Title 24, includes Section 10-114., Determination of Outdoor Lighting Zones and Administrative Rules for Use. This section establishes rules for implementing outdoor lighting zones, and is included herein as Appendix F.

Nighttime lighting environment are defined as Lighting Zones 0 through 4 in Table 10-114-A LIGHTING ZONE CHARACTERISTICS AND RULES FOR AMENDMENTS BY LOCAL JURISDICTIONS. The requirements of Section 10-114 are established to show compliance with Section 140.7 of Title 24, California Code of Regulations, Part 6. The description of nighttime lighting environments in Table 10-114 are similar to IESNA RP-8-22 Table 4-1, discussed below.

The Signs locations and surrounding properties are an urban, mixed use, commercial and residential zone with extensive nighttime use, including nearby industrial, retail, restaurants, and entertainment venues. Current best practices for lighting standards recognize the unique issues related to nighttime use adjacent to residential sites. As noted above, CEC includes designations for Lighting Zones (LZ) 0 through 4, included below in Appendix F, which correspond to the Light trespass Illuminance recommendations within the IESNA Tenth Edition Handbook Table 26.5, included herein Appendix K. The IESNA recommendations for light trespass Illuminance vary based upon the extent of nighttime human activity and the extent of natural habitat.

The existing conditions surrounding the Signs locations and along Sunset Boulevard are consistent with the definition of LZ4 noted above. In addition, the IESNA defines LZ4 as:

> "…areas of very high ambient lighting levels. LZ4 should only be used for special cases and is not appropriate for most cities. LZ4 may be used for extremely unusual installations such as high density entertainment districts, and heavy industrial uses."

IESNA Tenth Edition Handbook Table 26.5, lists a Pre-curfew 15.0 Lux (1.4 footcandles) maximum at the location where trespass is under review for LZ4. As noted above, the City of West Hollywood Ordinance has incorporated the requirements of Lighting Zone 4, 1.4 fc maximum light trespass illuminance, for all residential zoned properties within the Sunset Specific Plan Boundary. Therefore, this Study utilizes the Policy maximum Sign light trespass illuminance of 1.4 fc at residential zoned properties adjacent to Sunset Boulevard.

Per the CEC, California Building Energy Efficiency Standards, Section 10-114, 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."

All urban areas within California are designated LZ3 as default under the CEC. The corresponding light trespass illuminance defined by IESNA for LZ3 limits the maximum light trespass to 8.0 lux or 0.74 footcandles. Therefore, all urban areas within the City of West Hollywood not included within the Sunset Specific Plan, and adjacent neighborhoods within the City of Los Angeles are designated by CEC as Lighting Zone 3. The City of Los Angeles Municipal Code includes sign lighting regulations which permit sign light trespass illuminance not to exceed 3.0 fc (LAMC Chapter 1, Article 4.4, Sec. 14.4.4 E) at residential use properties. However, this Study utilizes the more stringent CEC designation of LZ3, 0.74 fc as the basis of the evaluation of Sign light trespass to present a more conservative analysis for areas not within the Sunset Boulevard Specific Plan.

2.2 California Energy Code 2022, Section 140.7, PRESCRIPTIVE REQUIREMENTS FOR OUTDOOR LIGHTING

The California Energy Code (CEC) stipulates allowable energy use for Outdoor Lighting (see Appendix G herein), including with the aim of reducing energy consumption at night through efficient and effective use of sign lighting equipment. Sign lighting is exempt as per "Section 140.7 (a), Exceptions to Section 140.7(a) …. 7. Lighting of signs complying with the requirements of Sections 130.3 and 140.8". However, the requirements of CEC are applied in this Study to present a conservative analysis of light trespass illuminance at residential use properties.

2.3 California Energy Code 2022, Section 130.3, SIGN LIGHTING CONTROLS

The California Energy Code (CEC) stipulates control requirements for signs (see Appendix H herein), including with the aim of reducing energy consumption at night through efficient and effective use of sign lighting equipment.

2.4 California Energy Code 2022, Section 140.8, PRESCRIPTIVE REQUIREMENTS FOR SIGNS

The California Energy Code (CEC) stipulates energy and light source requirements for signs (see Appendix I herein), including requirements for "(a) Maximum allowed lighting power.", or "(b) Alternate lighting sources." Both sections require high efficiency light sources, LED, or equivalent.

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

Chapter 2, Article 3 of the California Vehicle Code stipulates limits to the location of light sources that may cause glare and impair the vision of drivers.

ARTICLE 3. Offenses Relating to Traffic Devices [21450 - 21468] (Article 3 enacted by Stats. 1959, Ch. 3.), Section 21466.5. 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 1-1/2 degree photoelectric brightness meter placed at the driver's point of view. The maximum measured brightness of the light source within 10 degrees from the driver's normal field of view 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 footlamberts or less, the measured brightness of the light source in footlambert shall not exceed 500 plus 100 times the angle, in degrees, between the driver's field of view and the light source.

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

4. IESNA Recommended Practices

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

As stated above, ANSI/IESNA LP-11-20 Section 4.1, included herein as Appendix J, defines Outdoor Lighting Zones relative to a range of human activity versus natural habitat. Section 4.1 establishes the Outdoor Lighting Zone designation for a range of existing lighting conditions, from low or no existing lighting to high light levels in urban areas. Section 4.1 is referenced by the CEC as noted above in relation to allowable energy use for outdoor lighting. In addition, IESNA Tenth Edition Handbook defines Recommended Light Trespass Limits in Table 26.5 included in Appendix K hereto, relative to the Outdoor Lighting Zones. The Recommended Light Trespass Illuminance Limits describe the maximum light trespass values in Lux at the location where trespass is under review.

The existing conditions surrounding and adjacent to the Sunset Boulevard are best described as Lighting Zone 4 in IESNA RP-8-22 Table 4-1. Therefore, the corresponding maximum Pre-curfew illuminance for Lighting Zone 4 identified in IESNA RP-8-22 Table 4-2 is 15 Lux (1.4 footcandles) maximum at the location where trespass is under review.

5. Applicable Reference Standards

In the context of the regulations listed above, this Study takes into account the following regulations to evaluate the proposed Signs:

The Policy requires Sign light trespass illuminance to be less than 1.4 fc at residential zoned property lines within and abutting the Sunset Specific Plan boundary.

Calgreen requires Sign light trespass illuminance to be less than 0.74 fc at residential use property lines outside of the Sunset Specific Plan boundary, more than 250 feet from Sunset Boulevard.

The Policy requires that the Sign Luminance does not exceed 300 cd/m^2.

In addition, the Policy requires the Signs to comply with the California Vehicle Code requirements which stipulate the maximum measured brightness of the light source within 10 degrees from the driver's normal field of view 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 footlamberts or less, the measured brightness of the light source in footlambert shall not exceed 500 plus 100 times the angle, in degrees, between the driver's field of view and the light source.[8]

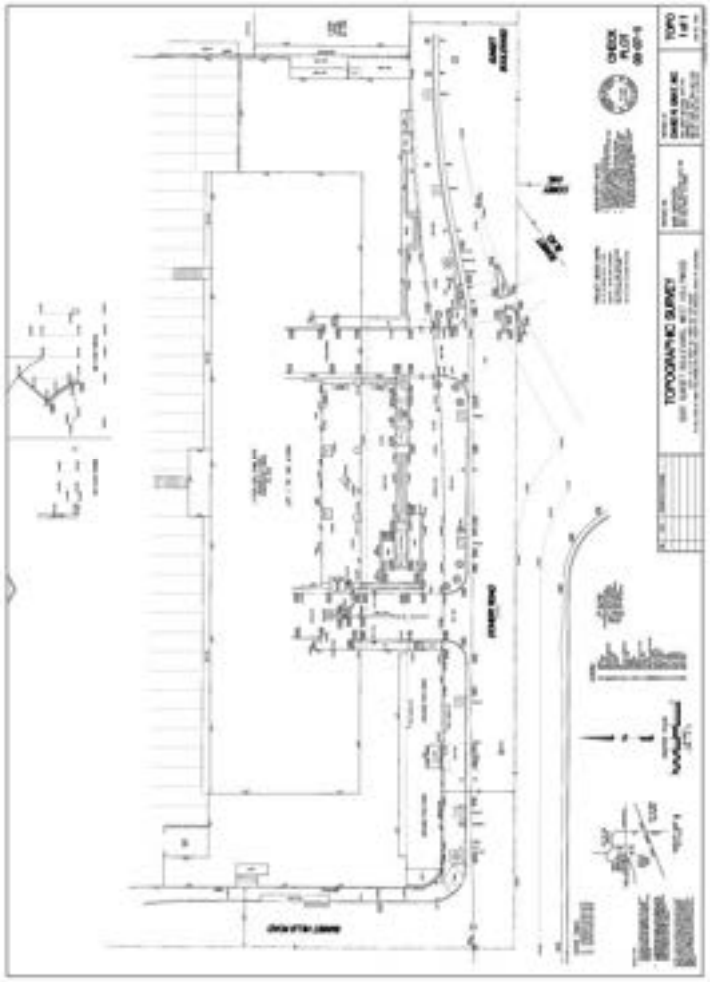
The Signs are evaluated in this Study with regard to the applicable references listed above.

[8] The driver's field of view from the center of the roadway plus 10 degrees."

APPENDIX A. Sunset Boulevard Arts & Advertising Program Sign Plans

FRANCIS KRAHE & ASSOCIATES

1.0-1



SITE SURVEY

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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FRANCIS KRAHE & ASSOCIATES

1.0-1

NEIGHBORHOOD PLAN/FIGURE GROUND MAP

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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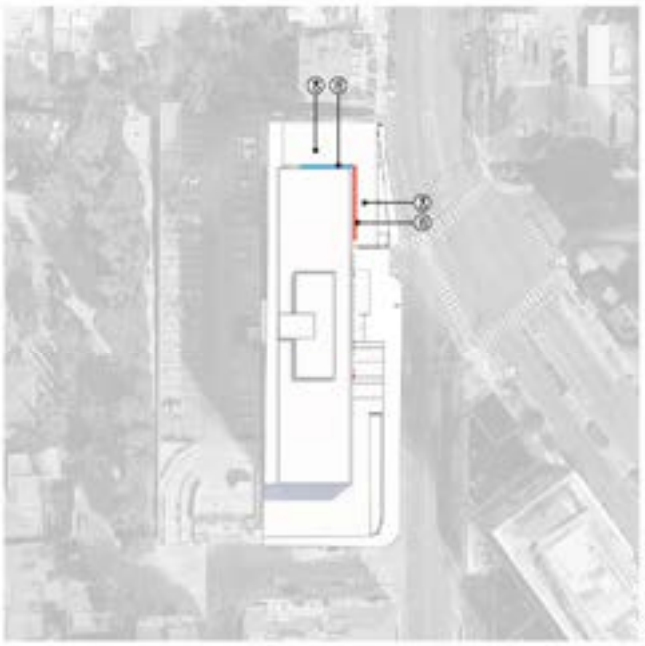
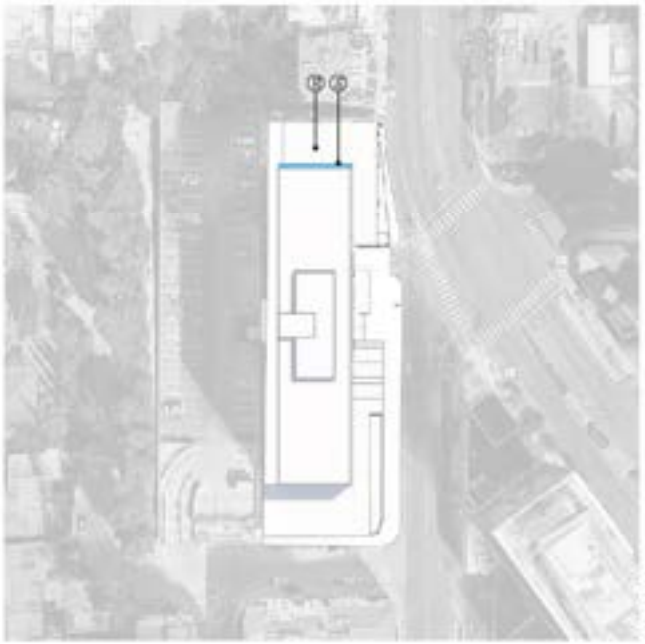
FRANCIS KRAHE & ASSOCIATES

1.0-1





SITE PLANS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 4

FRANCIS KRAHE & ASSOCIATES

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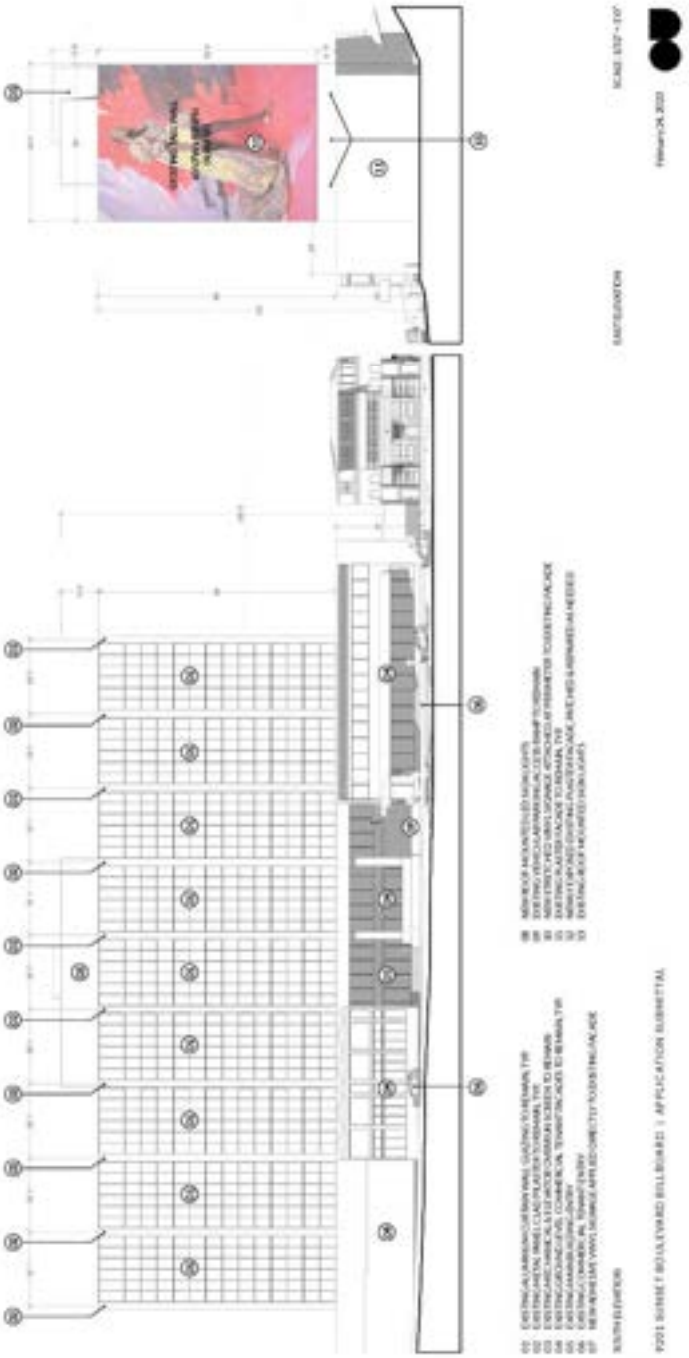

ELEVATIONS | EXISTING

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FRANCIS KRAHE & ASSOCIATES

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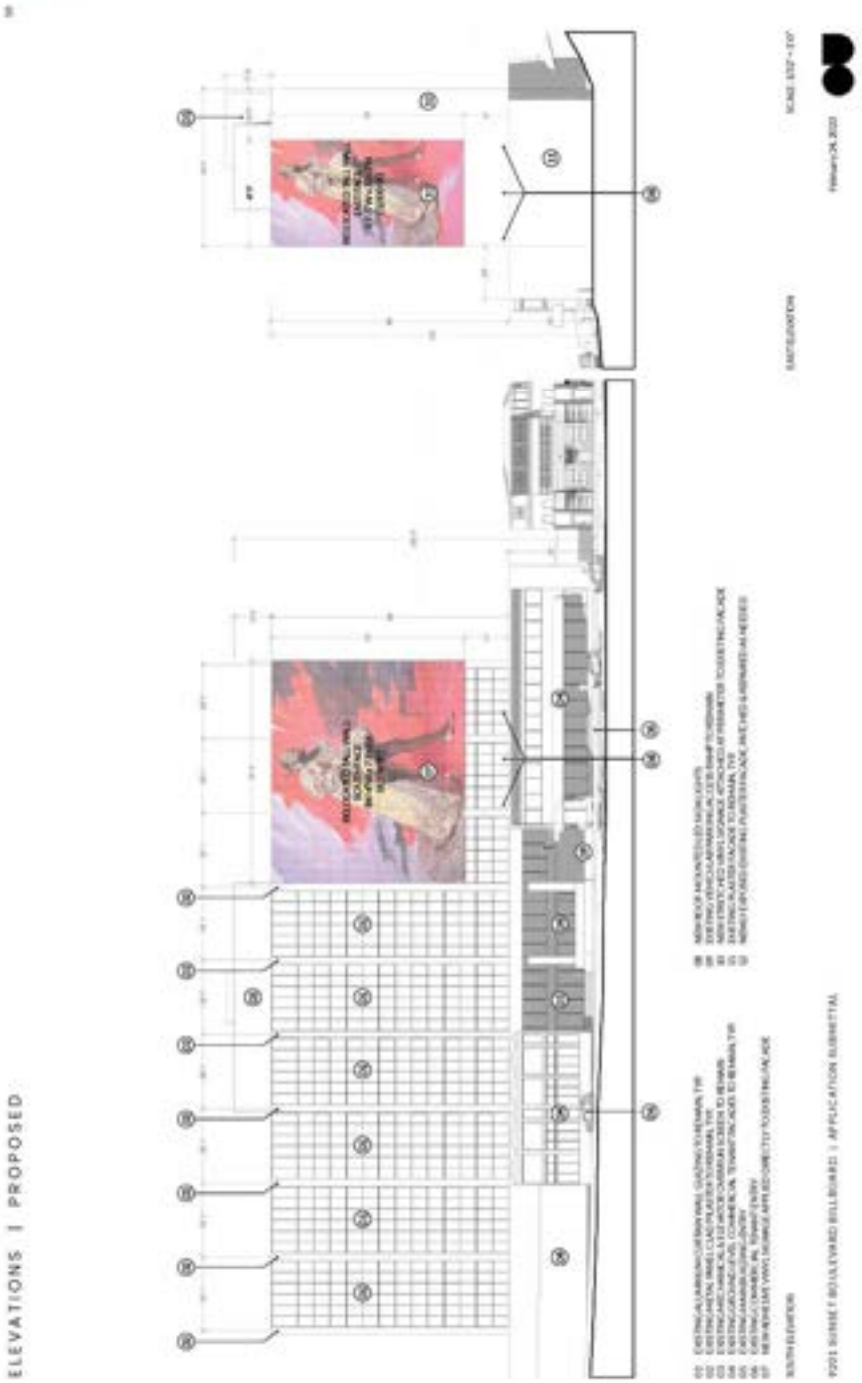

ELEVATIONS | PROPOSED

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 6

FRANCIS KRAHE & ASSOCIATES

1.0-2

NEIGHBORHOOD PLAN/FIGURE GROUND MAP

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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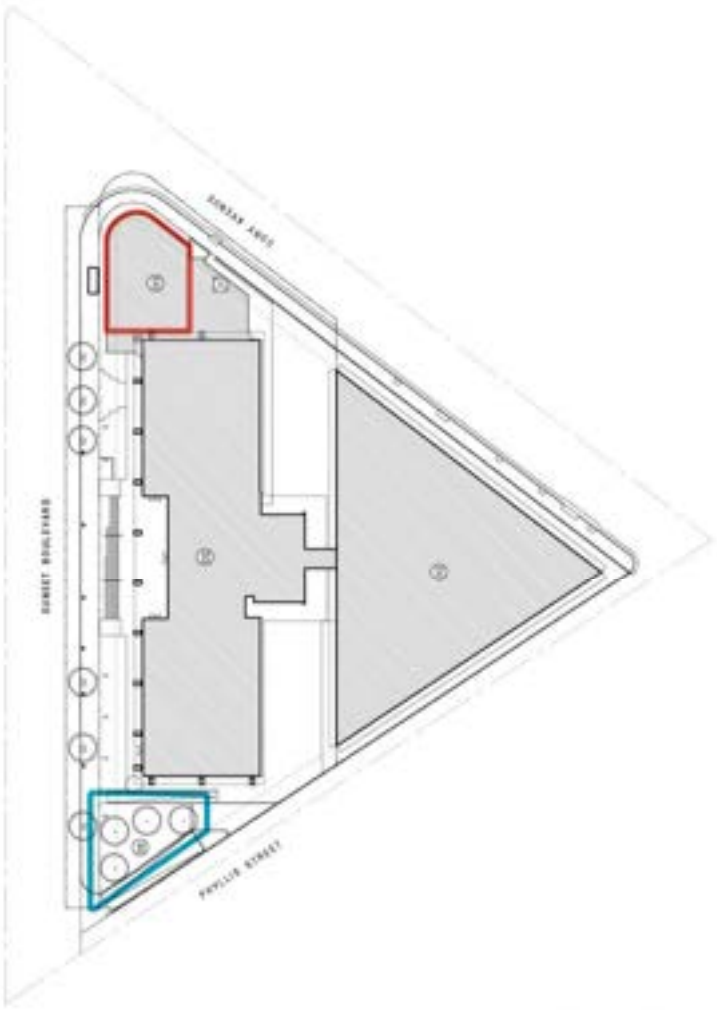
FRANCIS KRAHE & ASSOCIATES

1.0-2



OVERALL / SCOPING SITE PLAN

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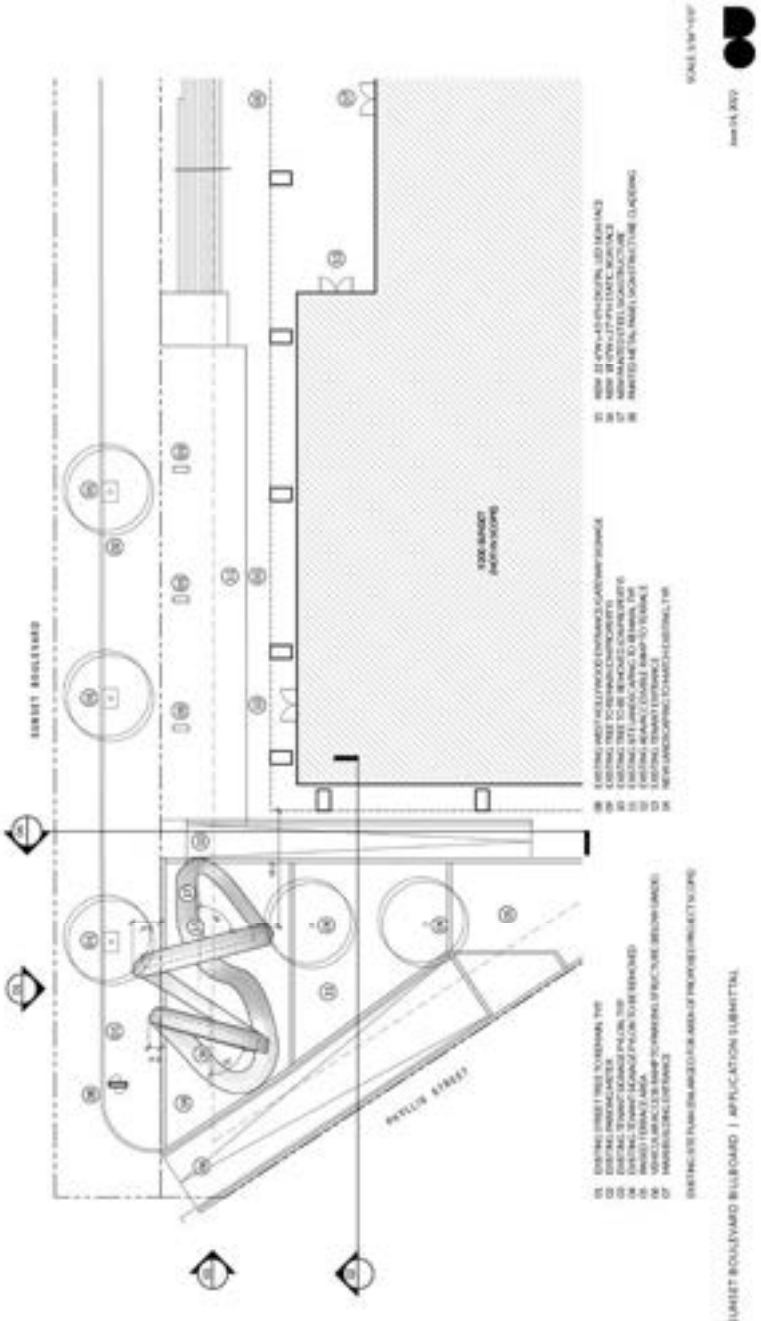

PROPOSED SITE PLAN

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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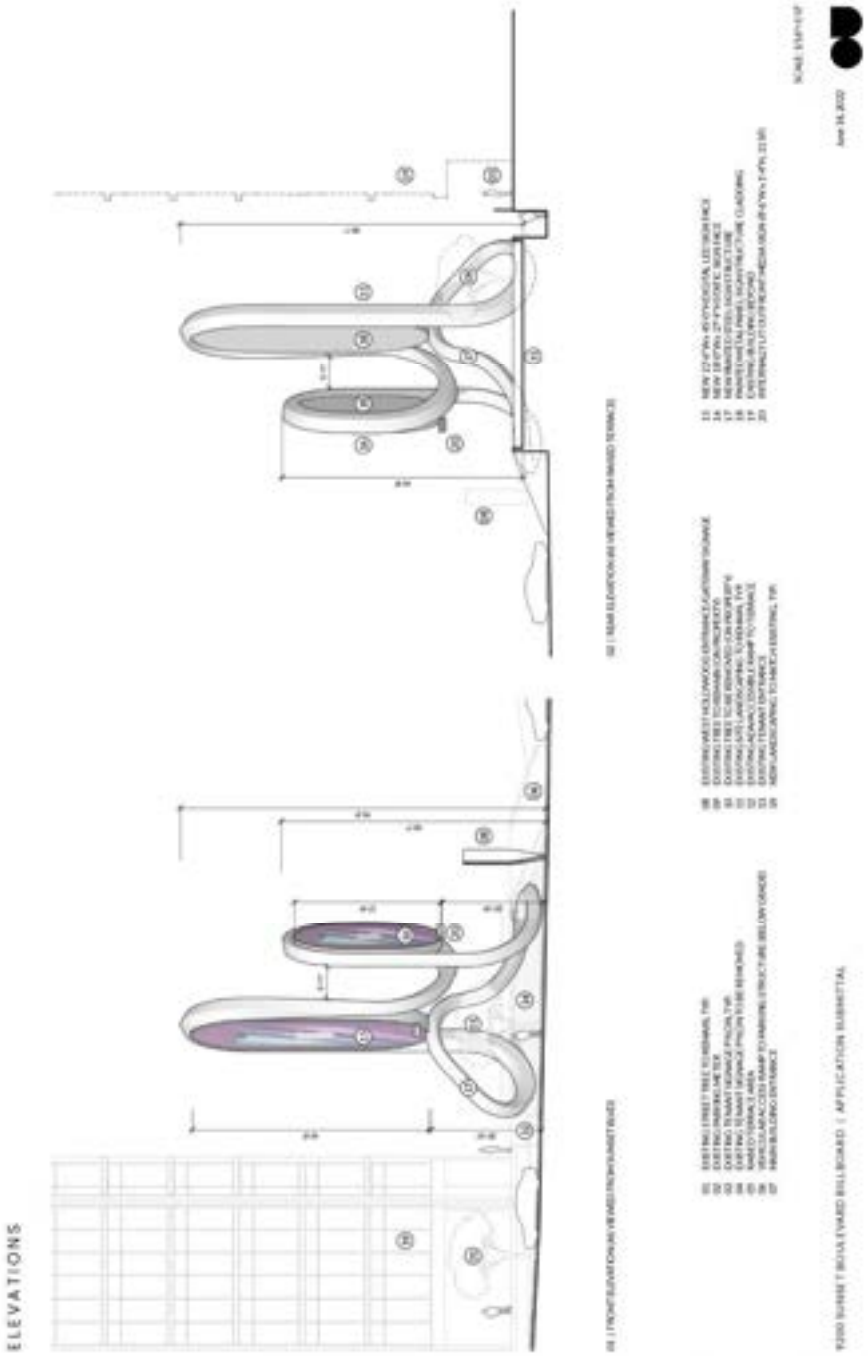

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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FRANCIS KRAHE & ASSOCIATES

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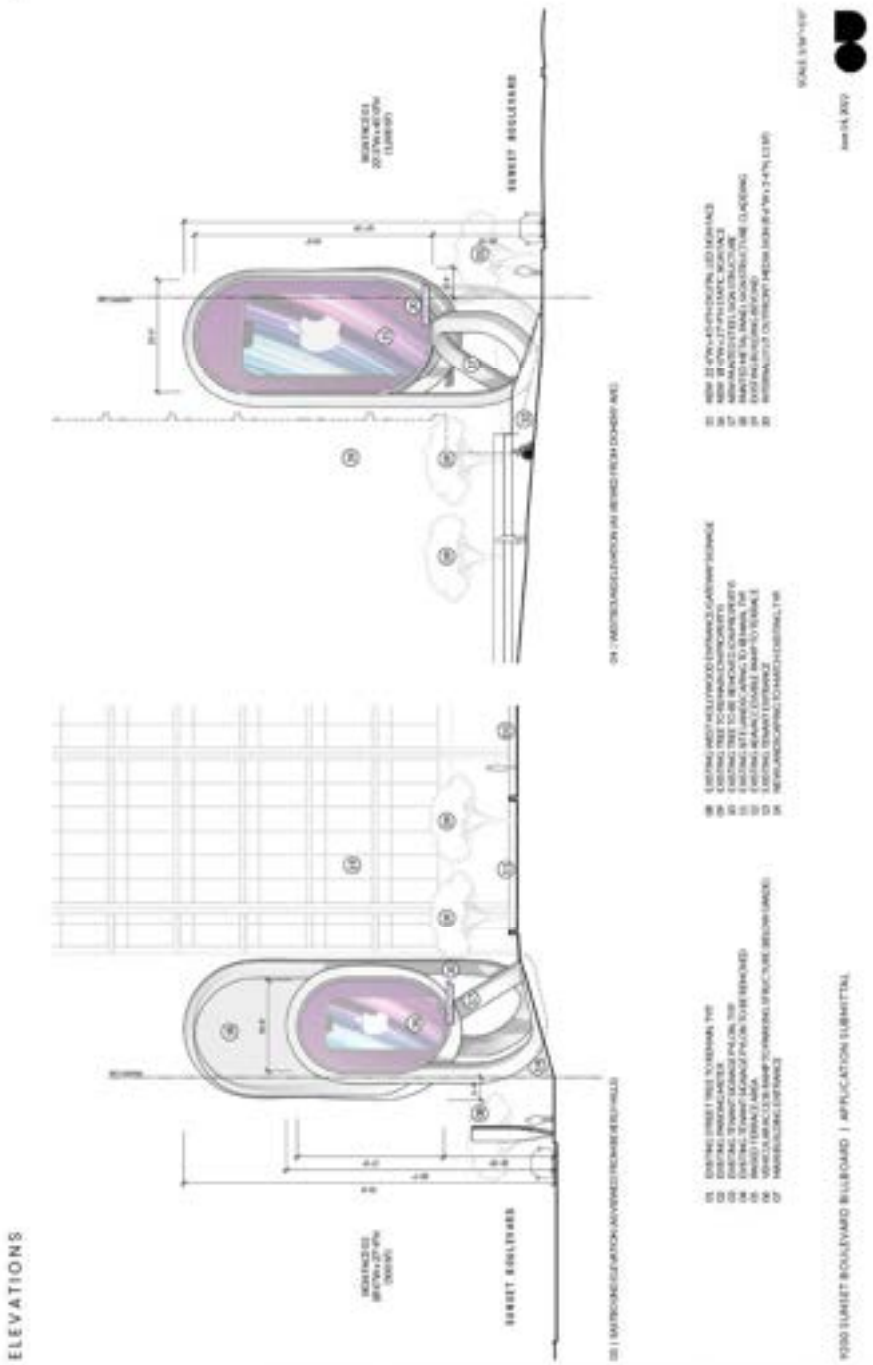

ELEVATIONS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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FRANCIS KRAHE & ASSOCIATES

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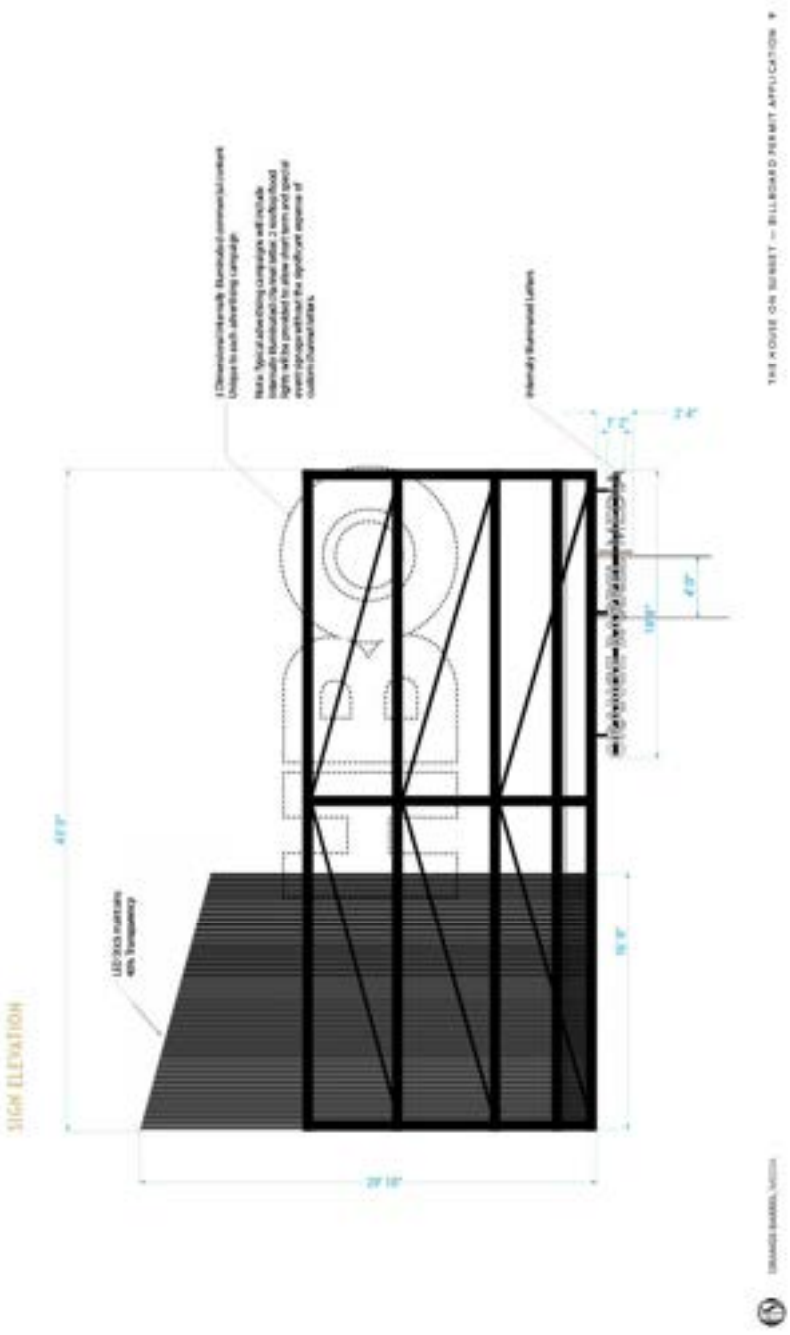

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 12

FRANCIS KRAHE & ASSOCIATES

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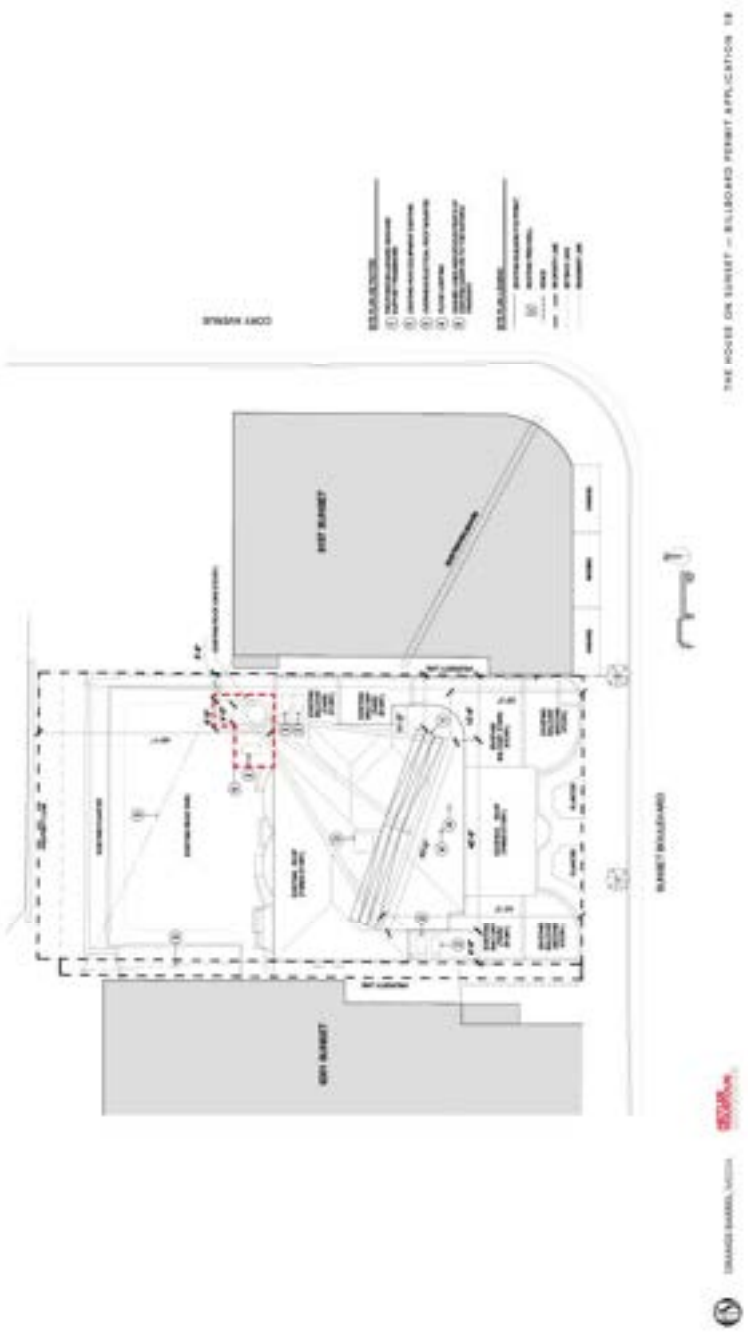

SITE PLAN

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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FRANCIS KRAHE & ASSOCIATES

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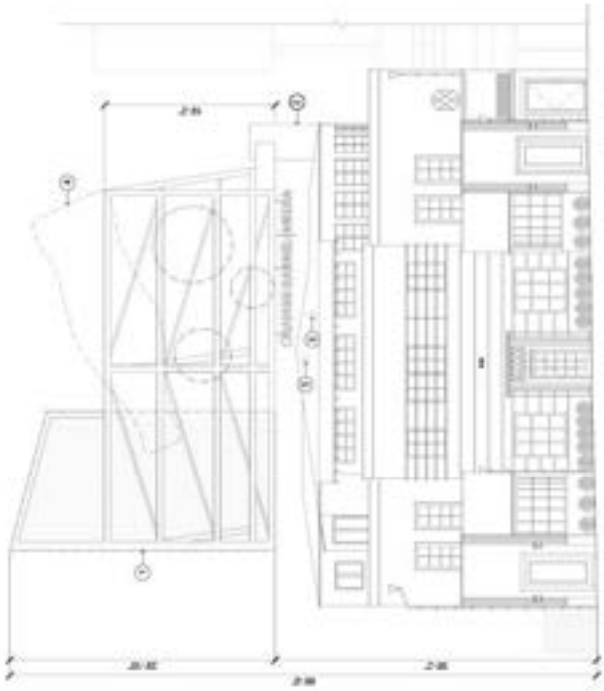

SOUTH (FRONT) ELEVATION

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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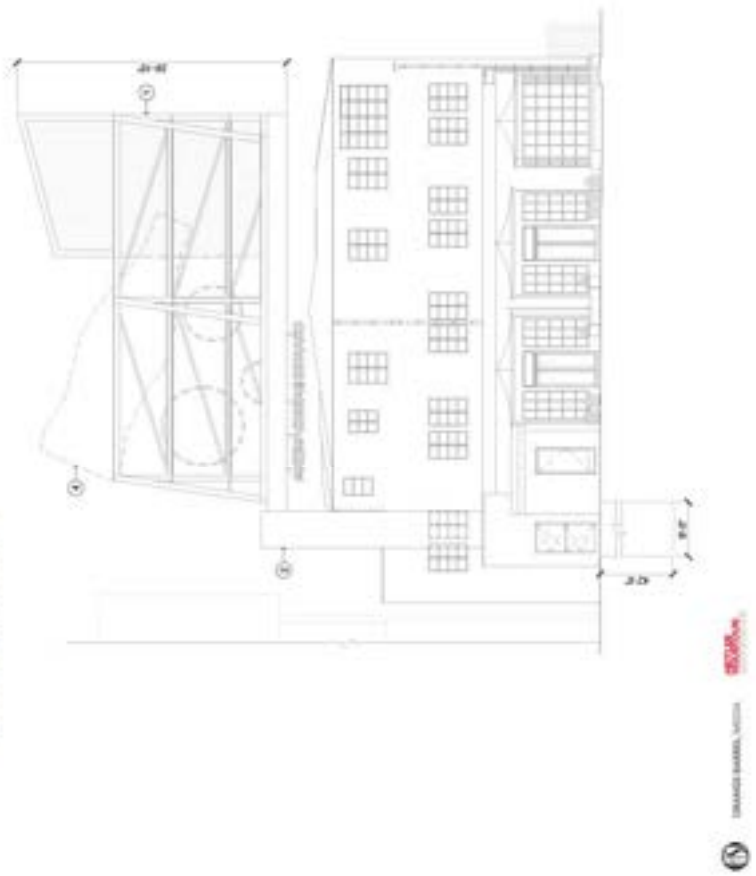
FRANCIS KRAHE & ASSOCIATES

1.0-3

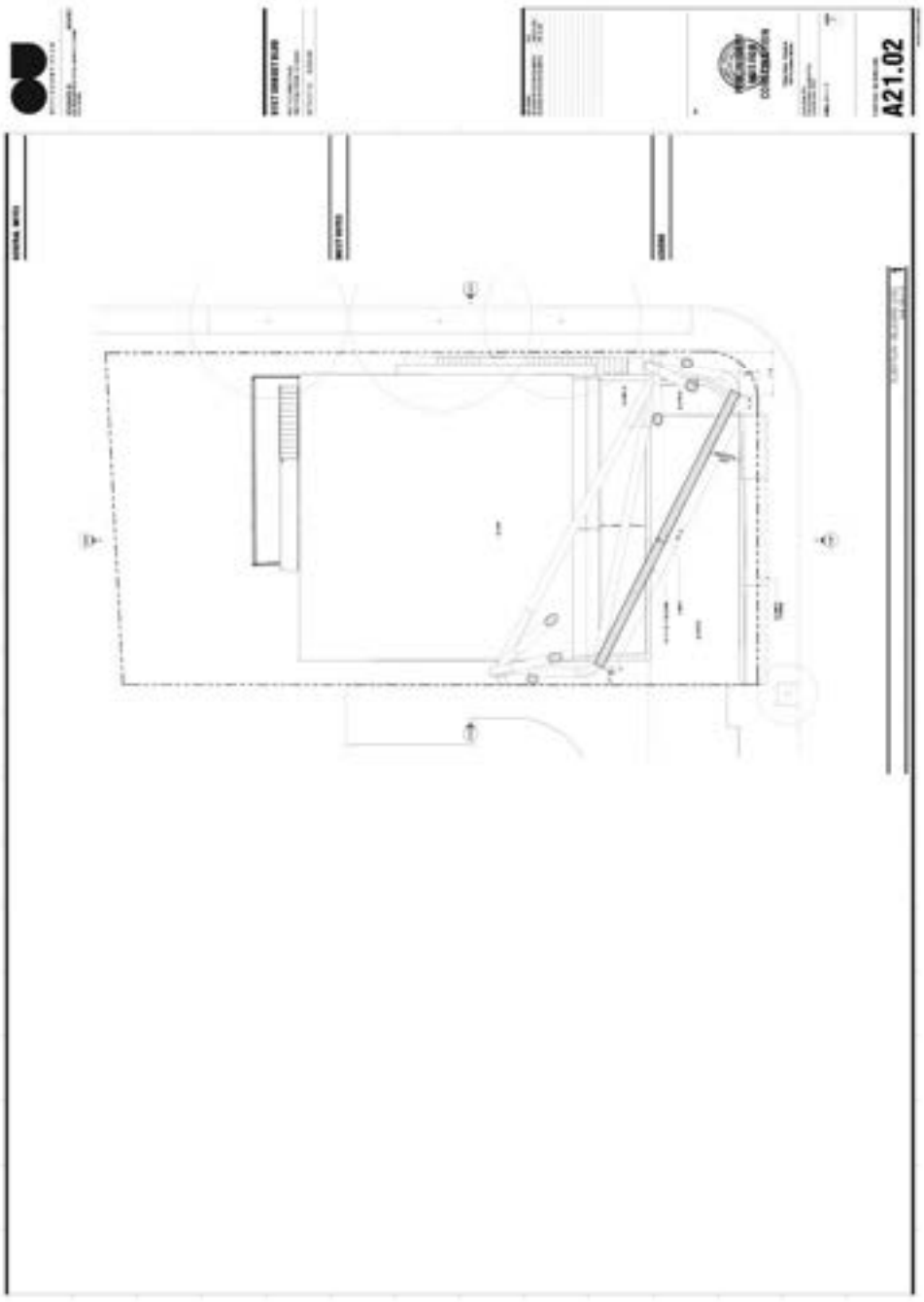


NORTH (REAR) ELEVATION

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
PAGE: 15

FRANCIS KRAHE & ASSOCIATES

1.0-4



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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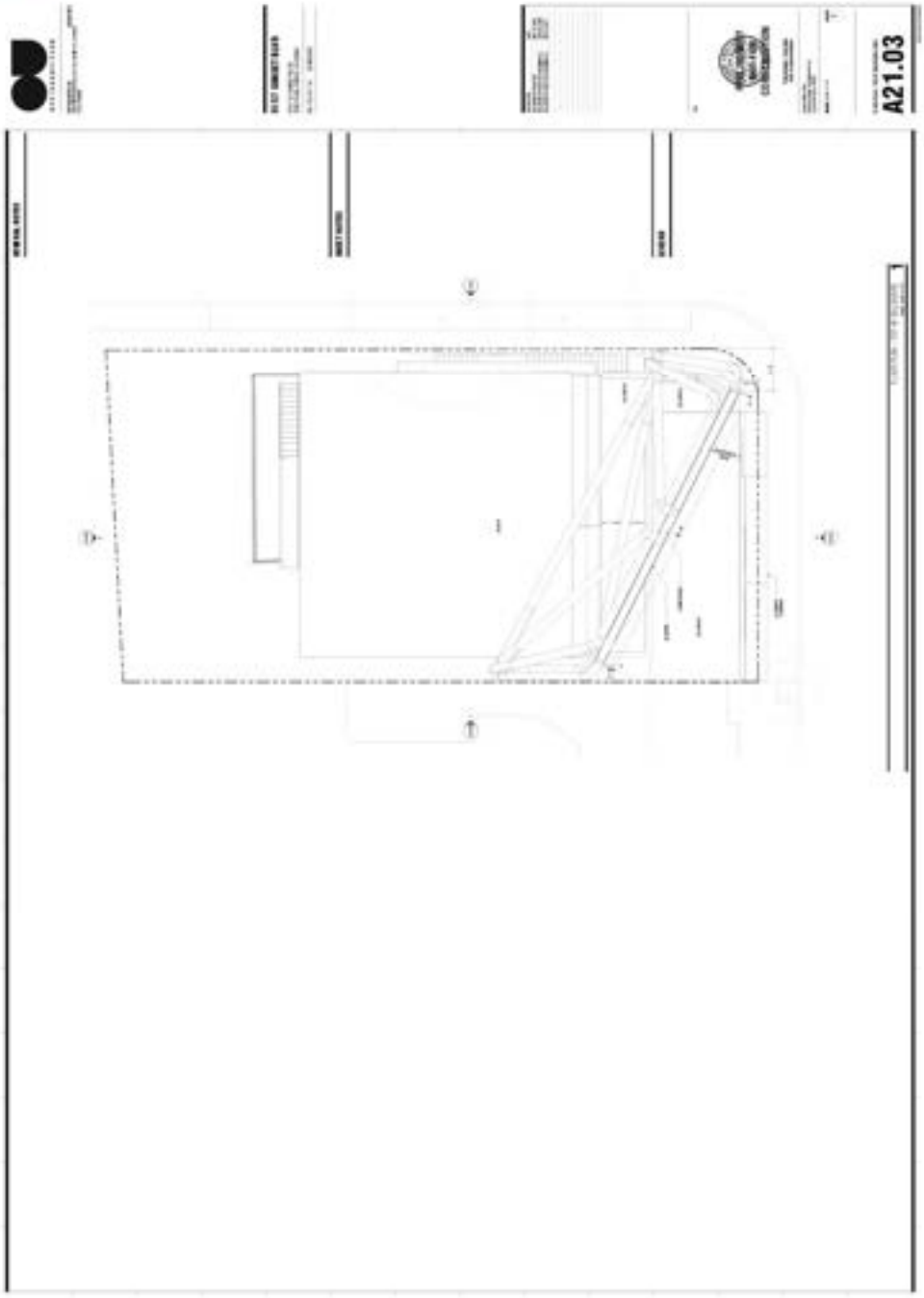
FRANCIS KRAHE & ASSOCIATES

1.0-4



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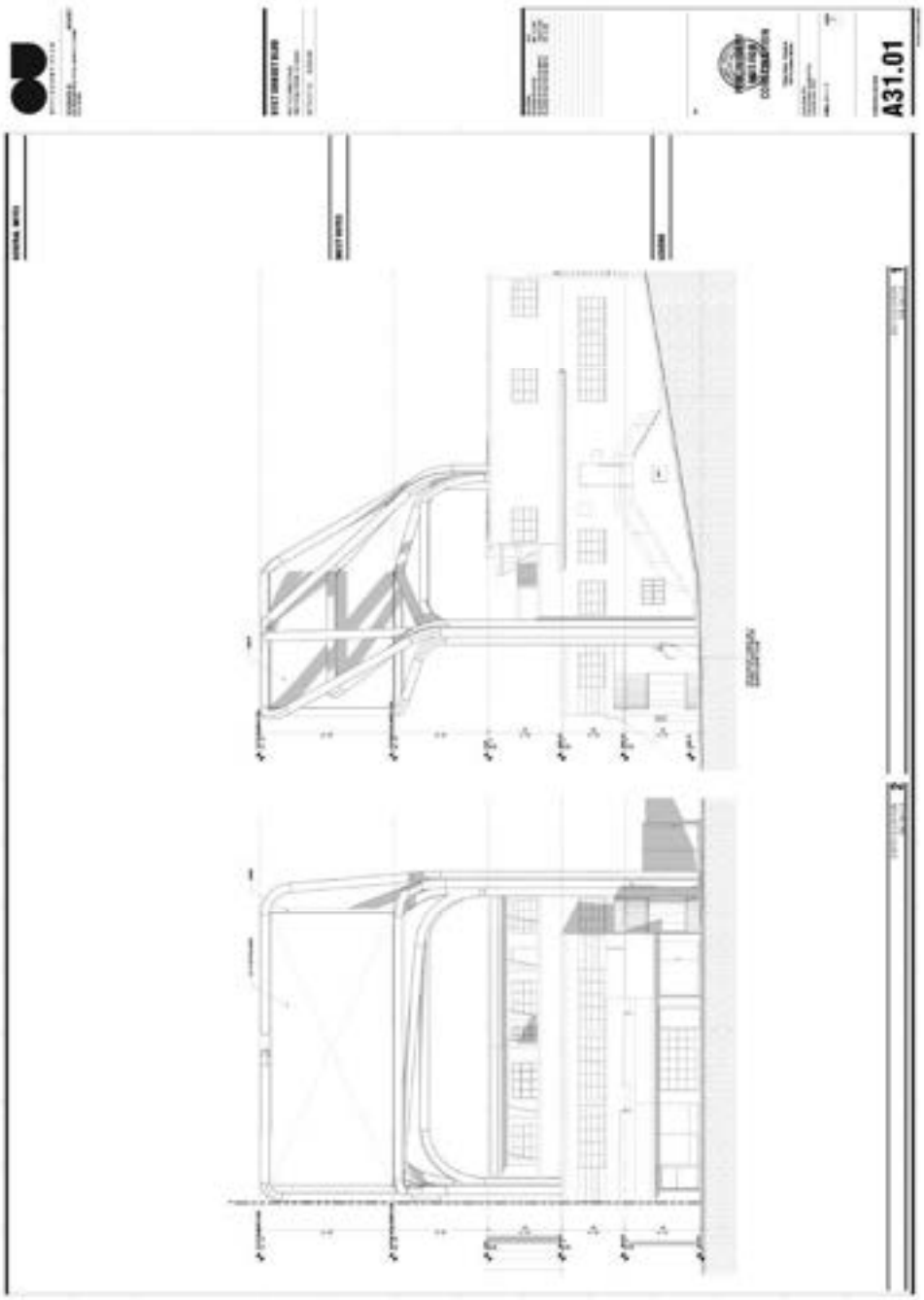
FRANCIS KRAHE & ASSOCIATES

1.0-4



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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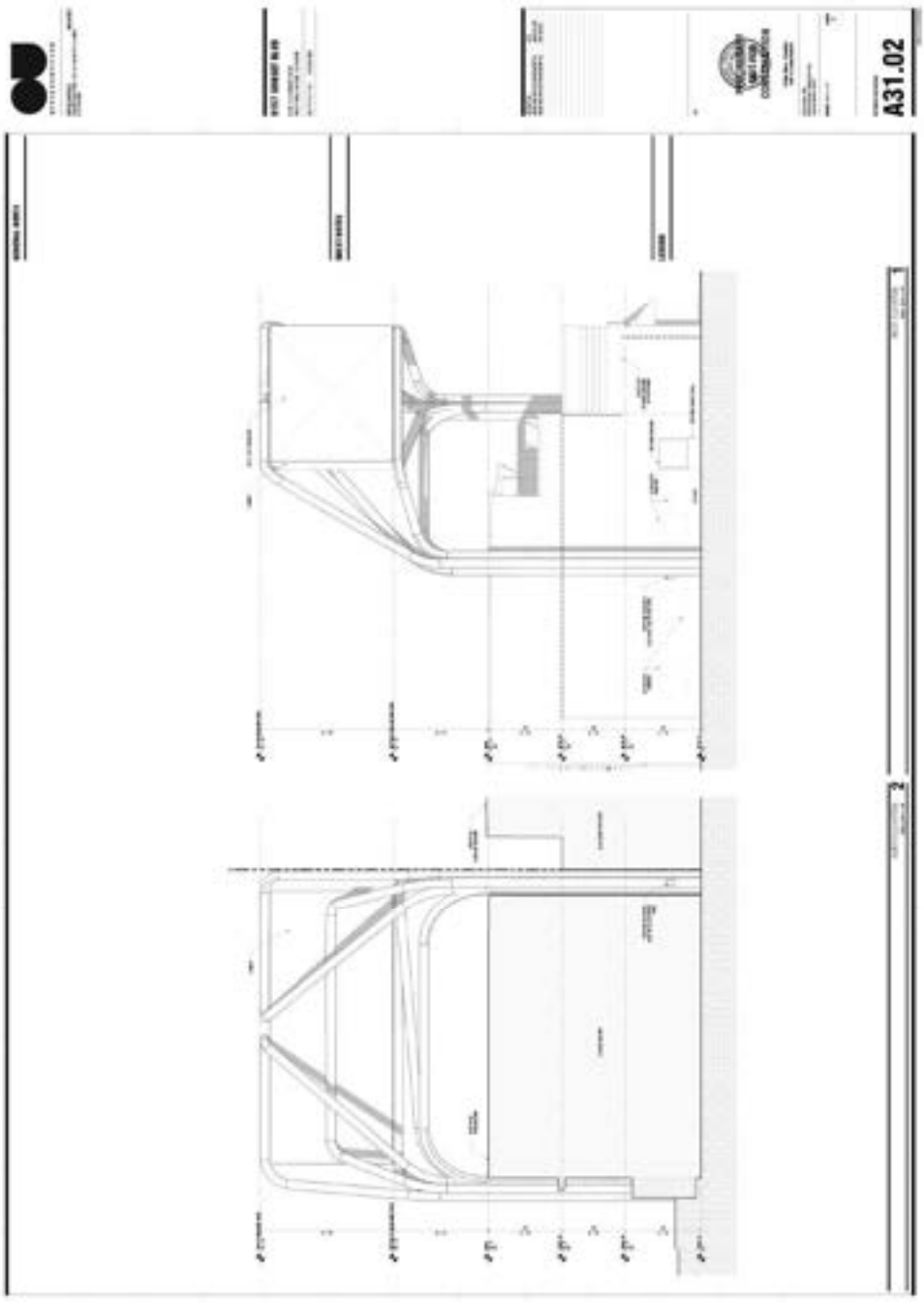
FRANCIS KRAHE & ASSOCIATES

1.0-4



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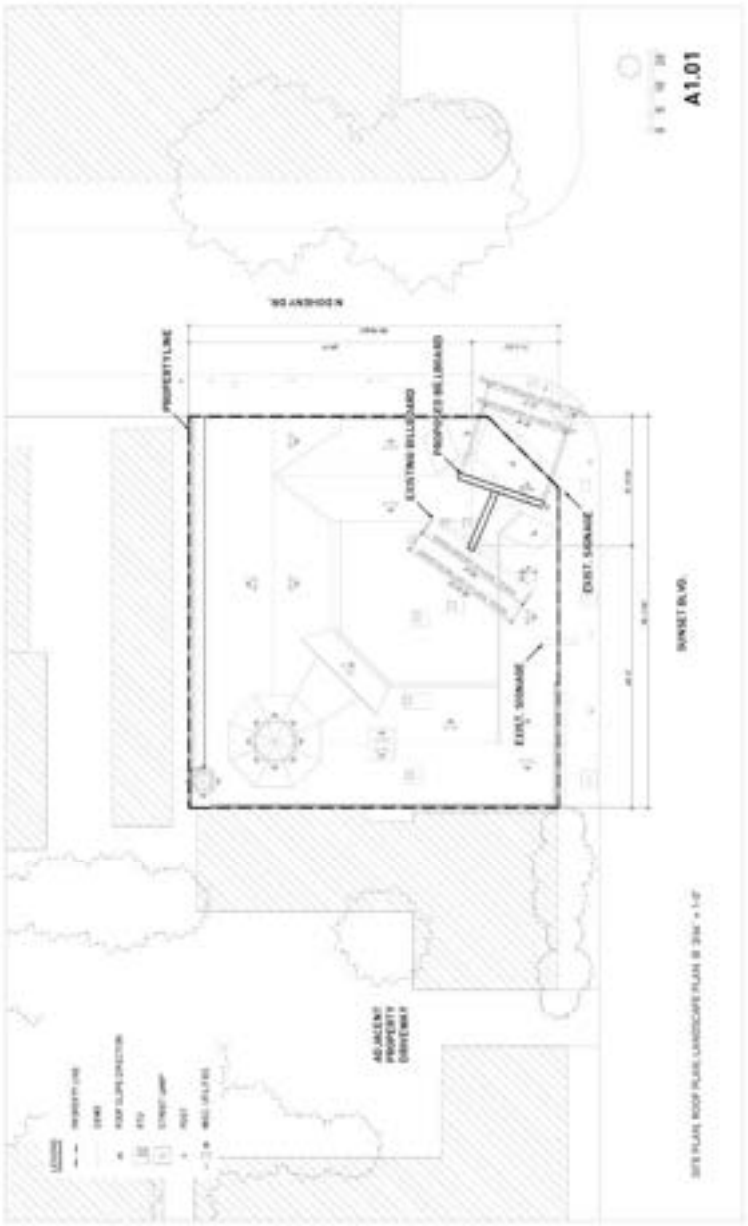
FRANCIS KRAHE & ASSOCIATES

1.0-5



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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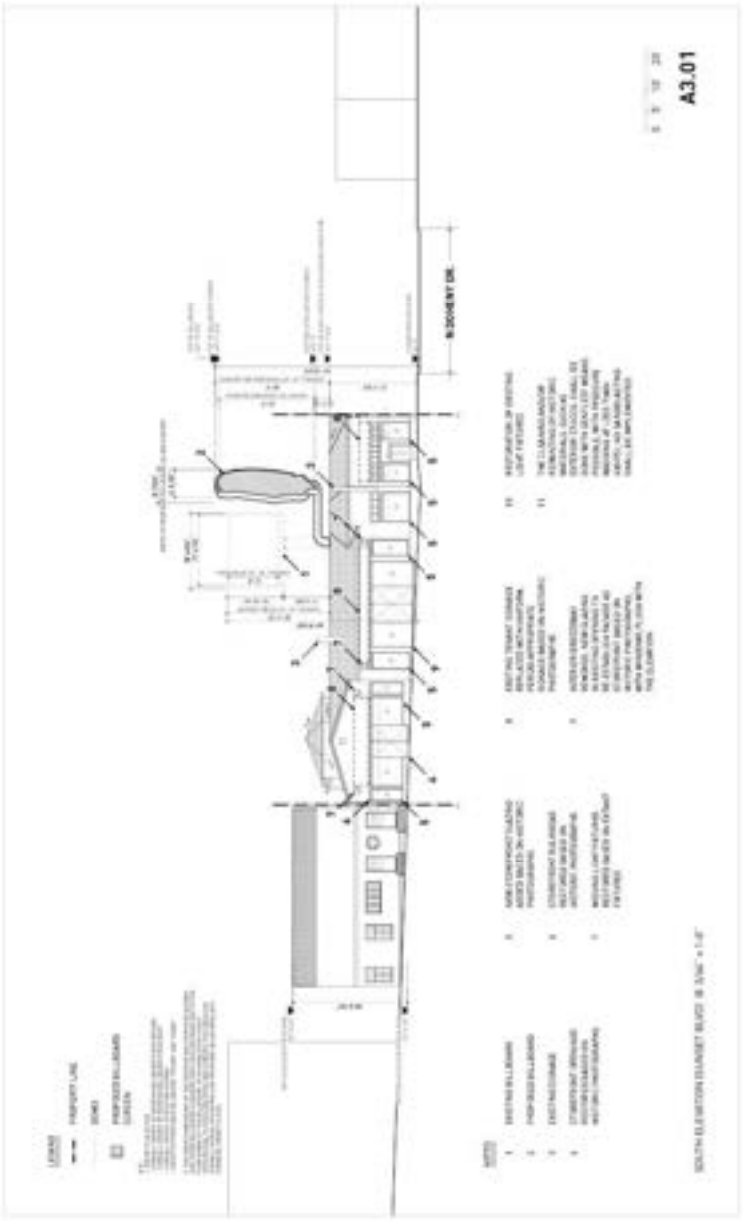
FRANCIS KRAHE & ASSOCIATES

1.0-5



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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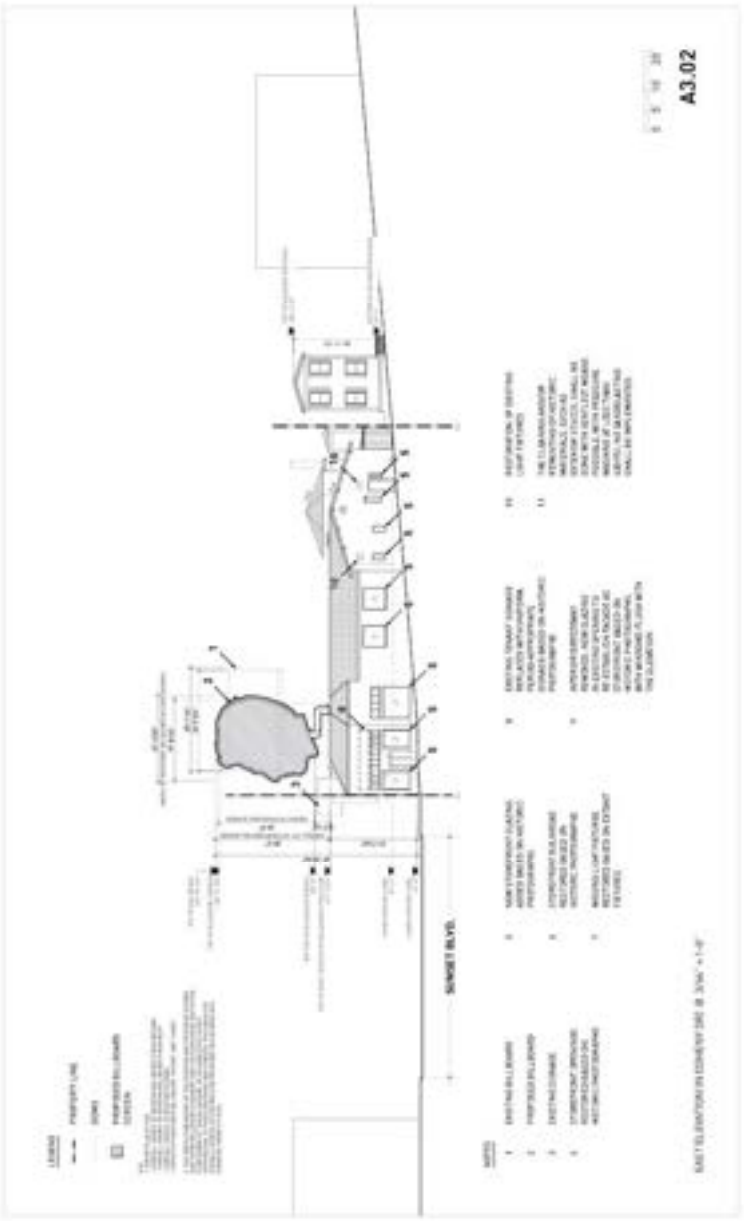
FRANCIS KRAHE & ASSOCIATES

1.0-5



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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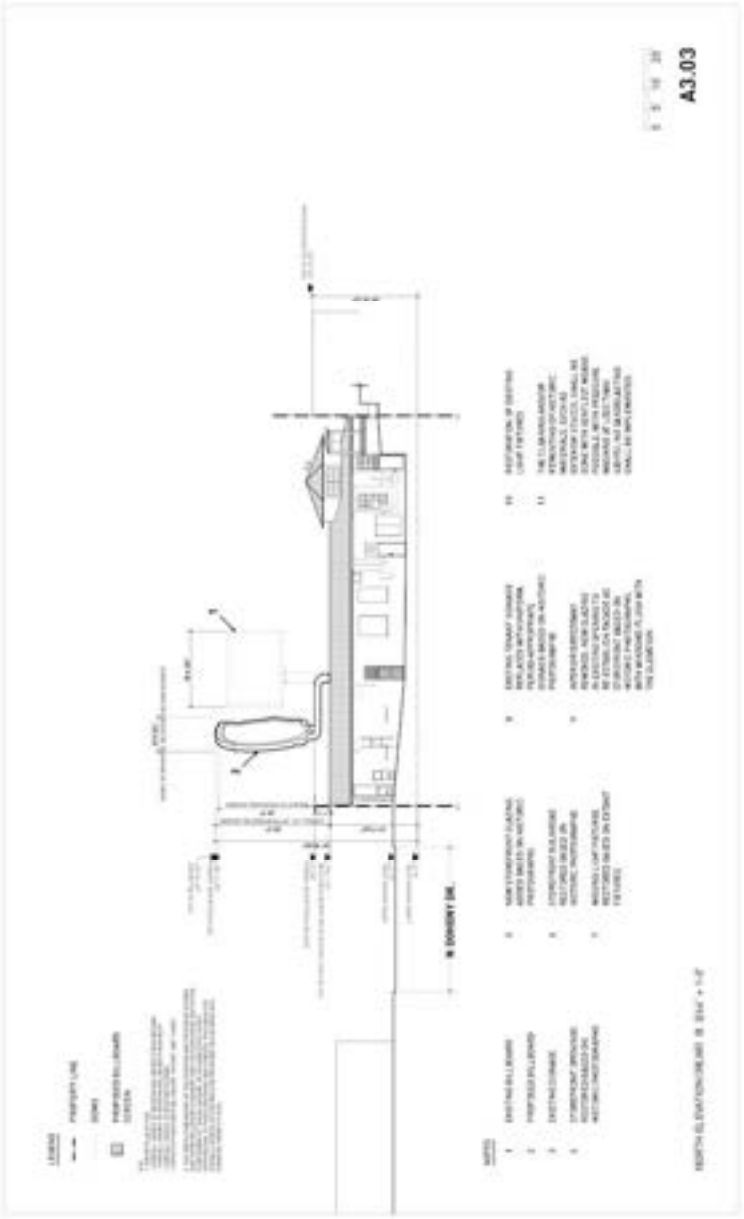
FRANCIS KRAHE & ASSOCIATES

1.0-5



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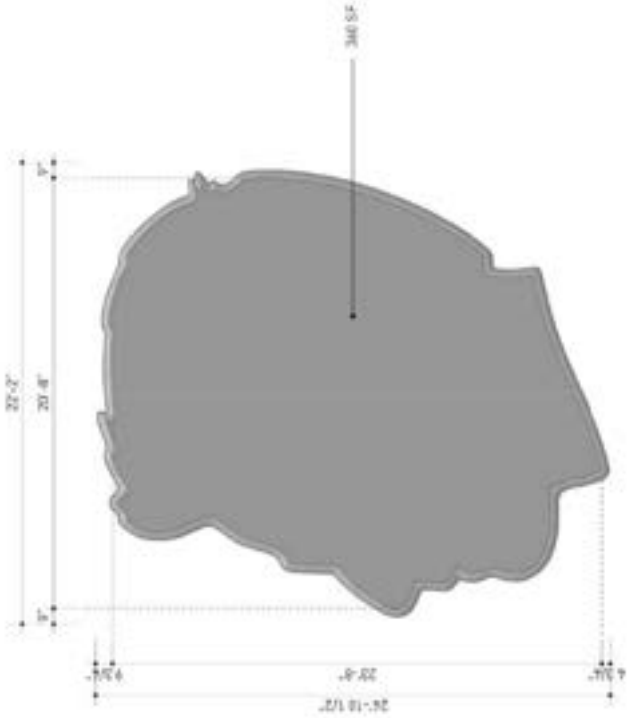
FRANCIS KRAHE & ASSOCIATES

1.0-5



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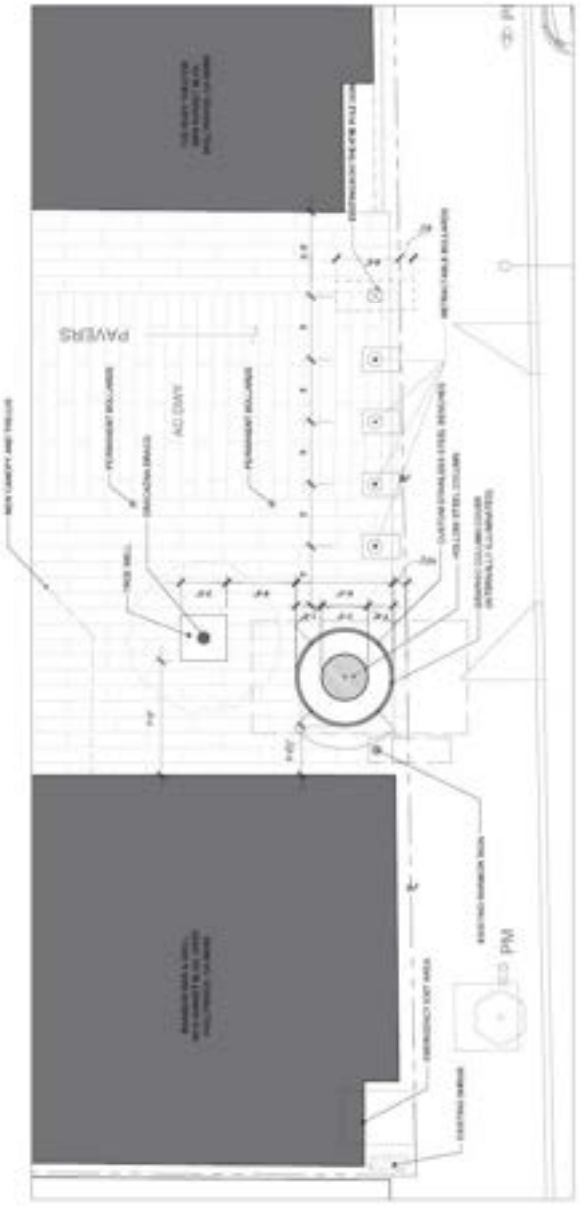
FRANCIS KRAHE & ASSOCIATES

1.0-6

ENLARGED BASE PLAN

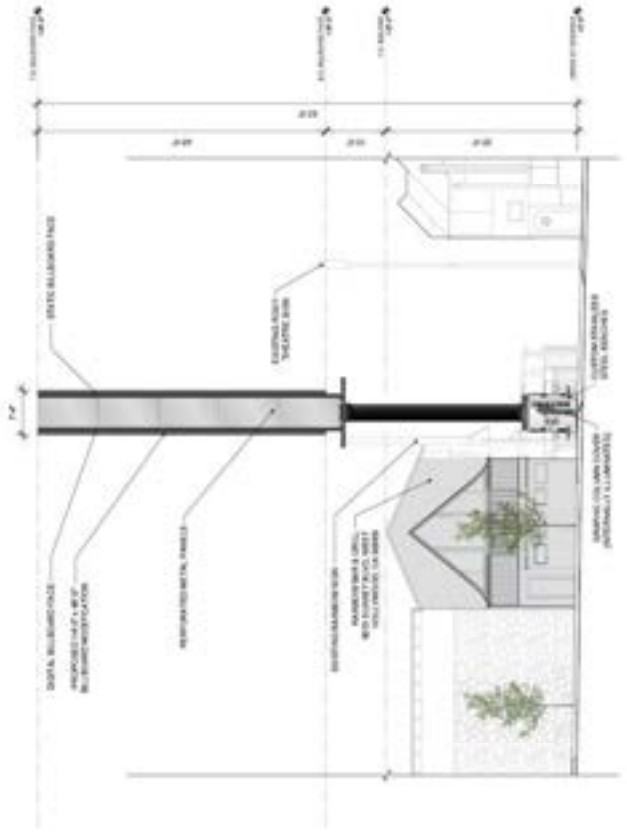


BILLBOARD APPLICATION EXHIBITS

FRANCIS KRAHE & ASSOCIATES

1.0-6

SOUTH ELEVATION



BILLBOARD APPLICATION EXHIBITS

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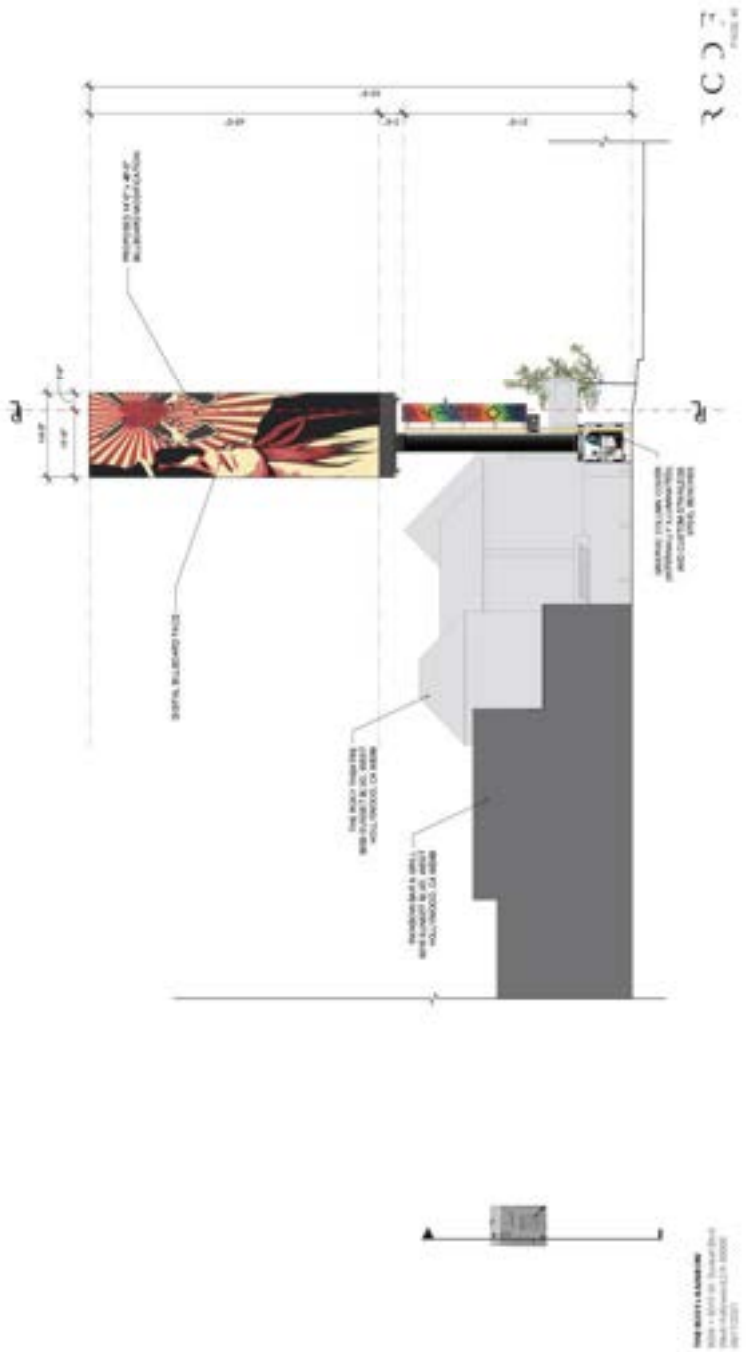
FRANCIS KRAHE & ASSOCIATES

1.0-6

WEST ELEVATION

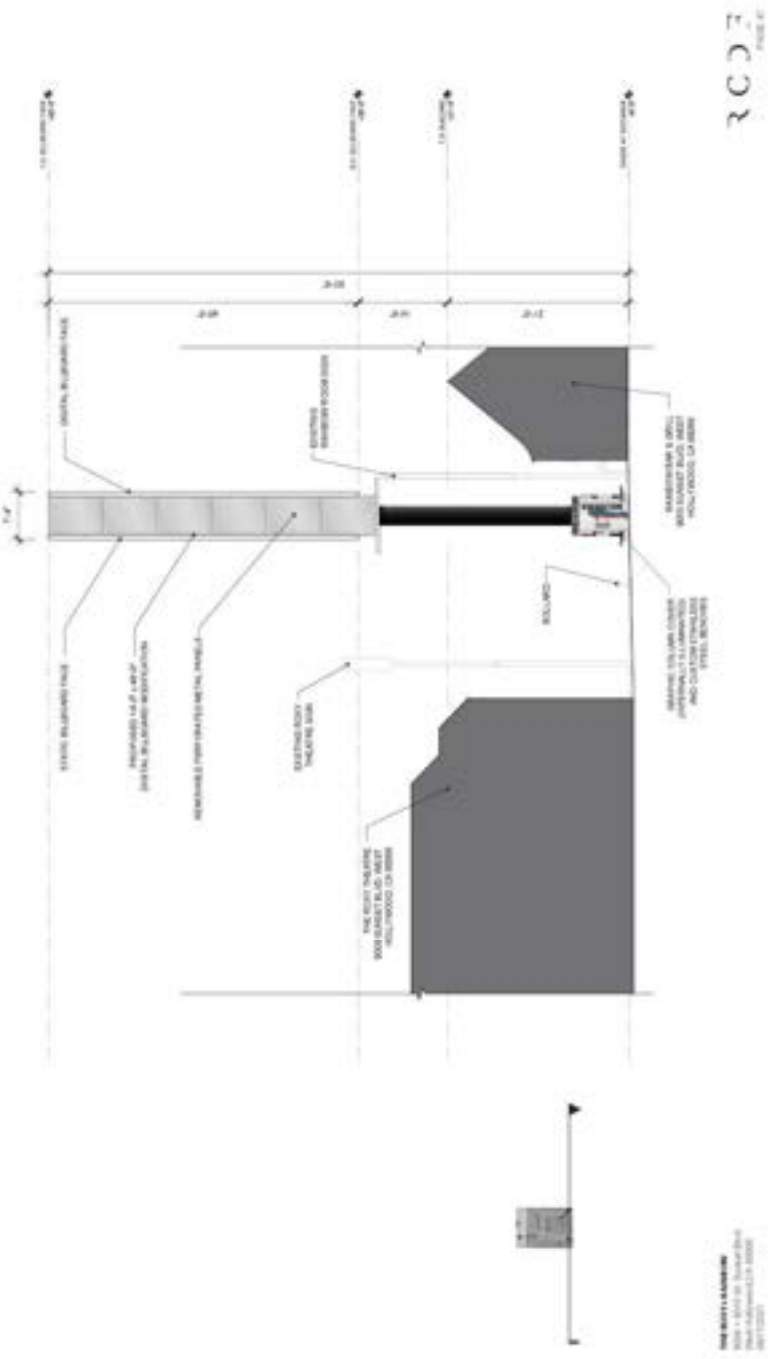


BILLBOARD APPLICATION EXHIBITS

FRANCIS KRAHE & ASSOCIATES

1.0-6

NORTH ELEVATION



BILLBOARD APPLICATION EXHIBITS

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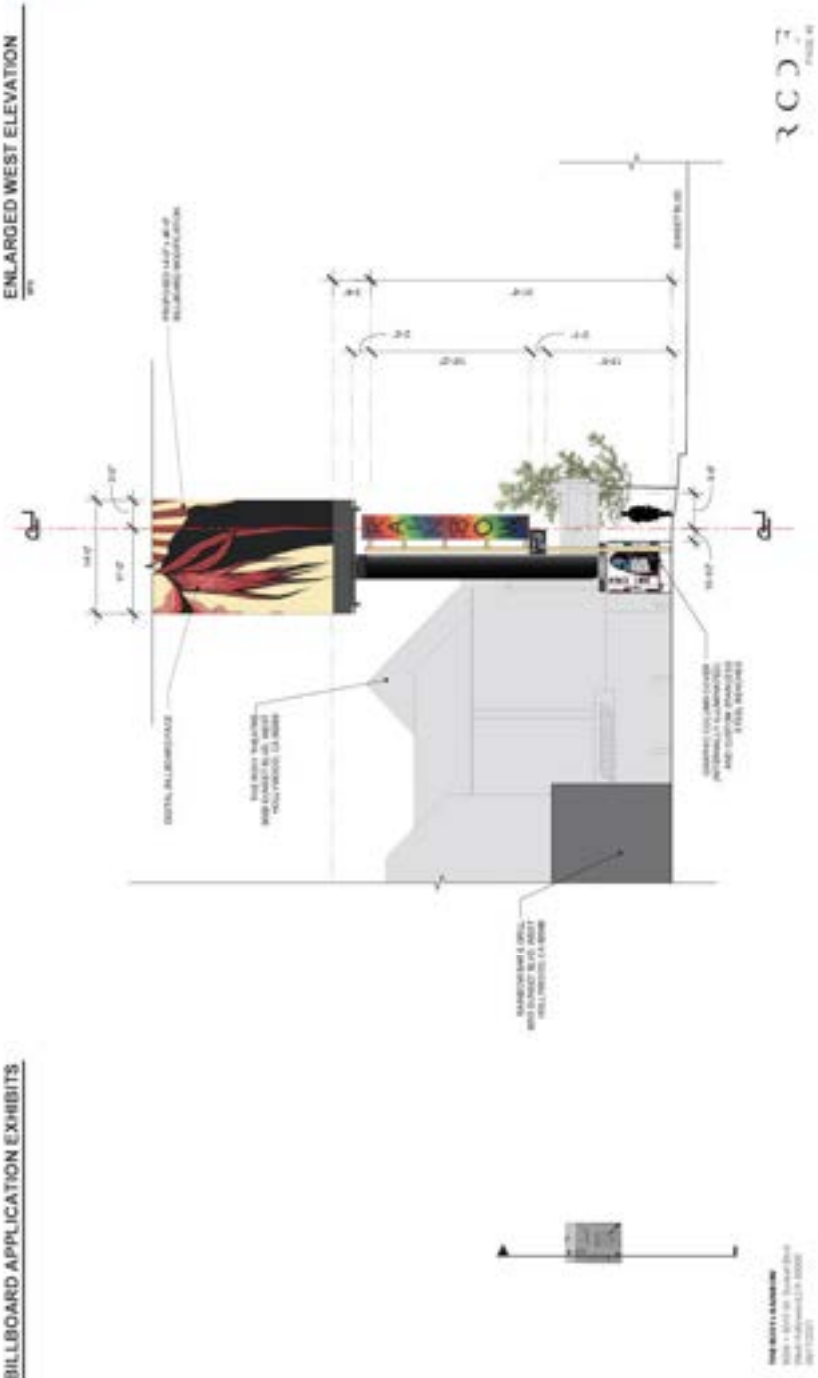
FRANCIS KRAHE & ASSOCIATES

1.0-6

ENLARGED WEST ELEVATION

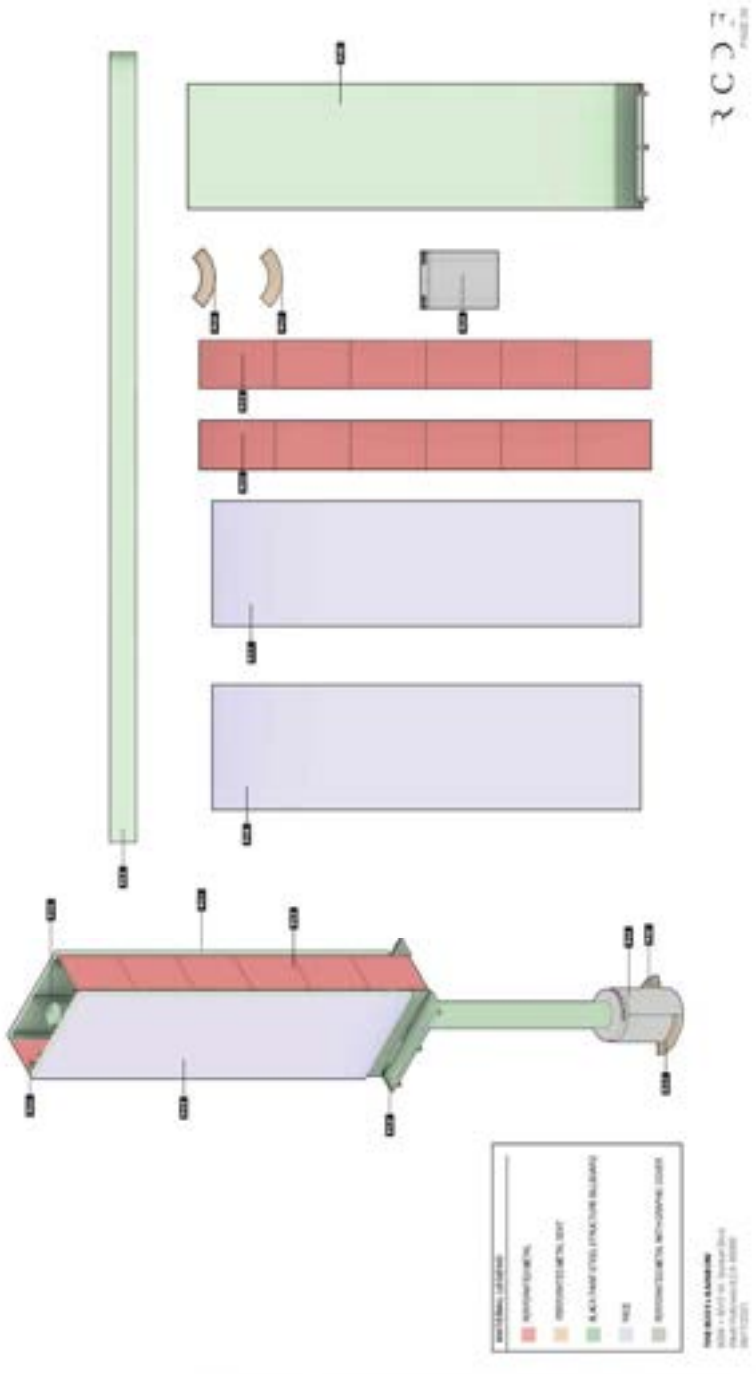


BILLBOARD APPLICATION EXHIBITS

FRANCIS KRAHE & ASSOCIATES

1.0-6

MATERIALS



BILLBOARD APPLICATION EXHIBITS

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FRANCIS KRAHE & ASSOCIATES

1.0-7

SOUTH ELEVATION

BILLBOARD APPLICATION EXHIBITS

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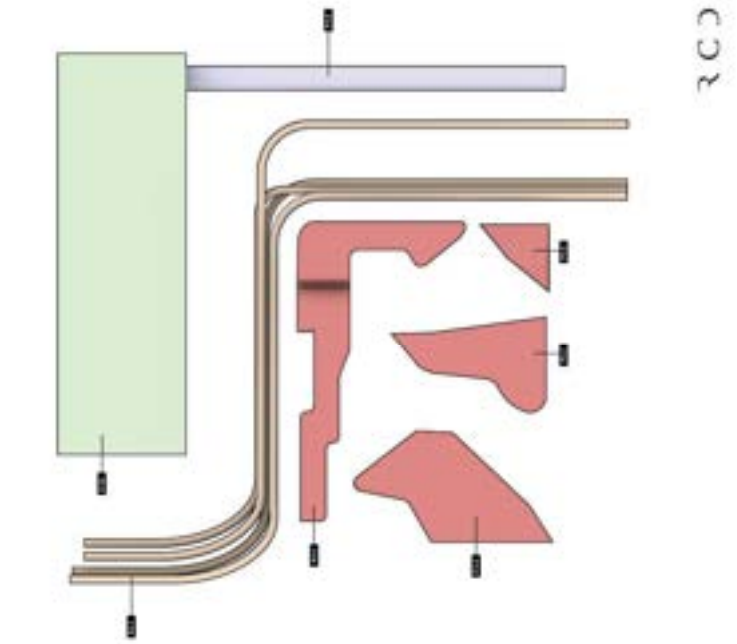
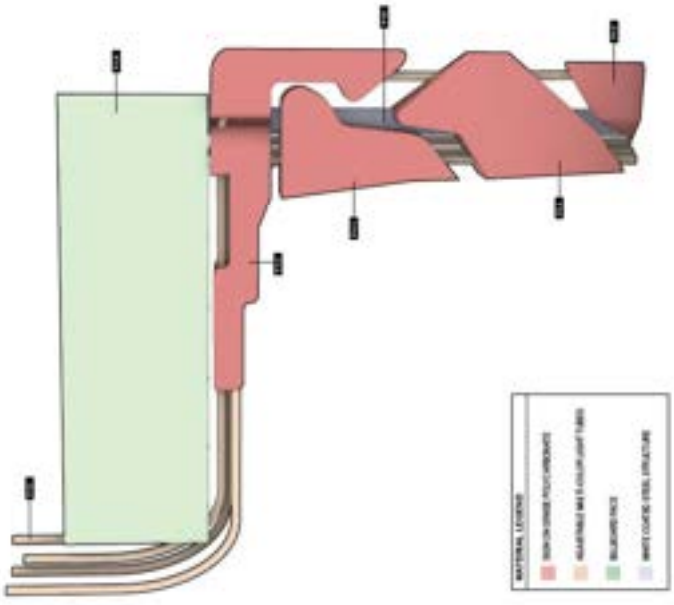
FRANCIS KRAHE & ASSOCIATES

1.0-7

MATERIALS





BILLBOARD APPLICATION EXHIBITS

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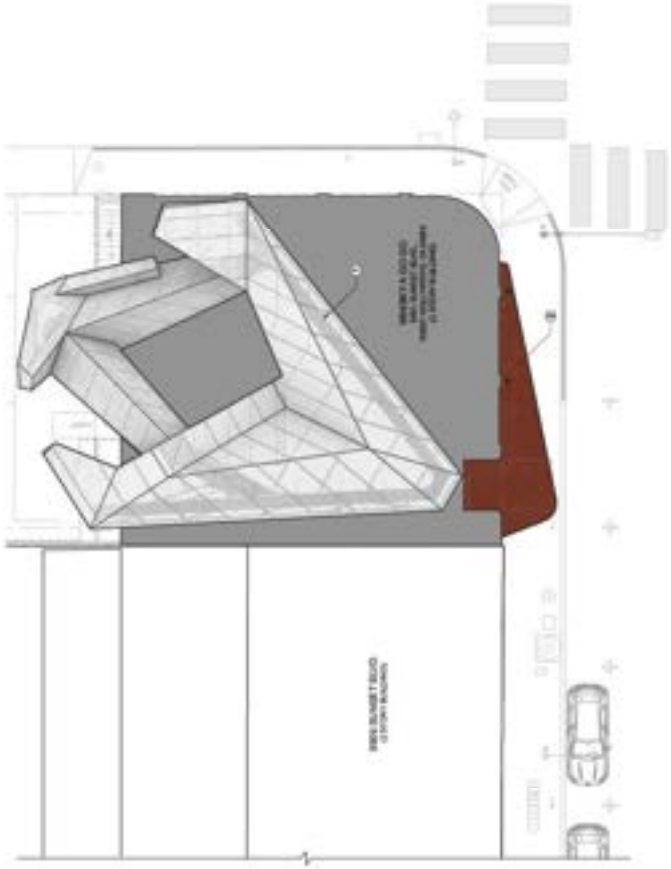
FRANCIS KRAHE & ASSOCIATES

1.0-8

SITE PLAN



BILLBOARD APPLICATION EXHIBITS

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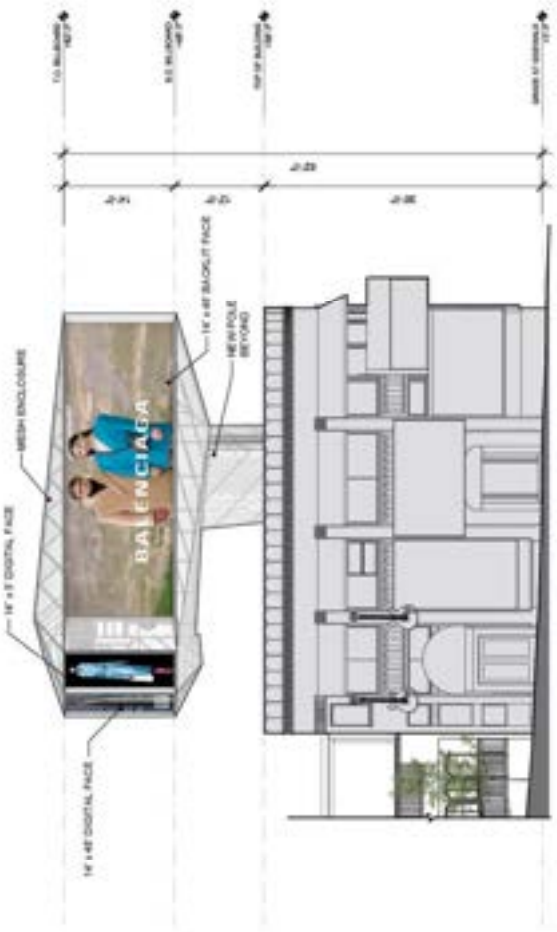
FRANCIS KRAHE & ASSOCIATES

1.0-8

SOUTH ELEVATION



BILLBOARD APPLICATION EXHIBITS

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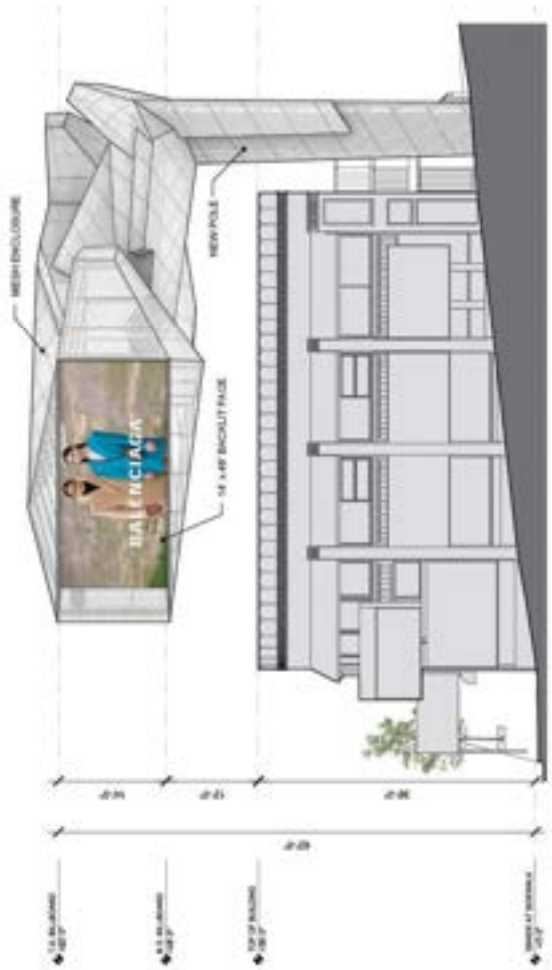
FRANCIS KRAHE & ASSOCIATES

1.0-8

EAST ELEVATION



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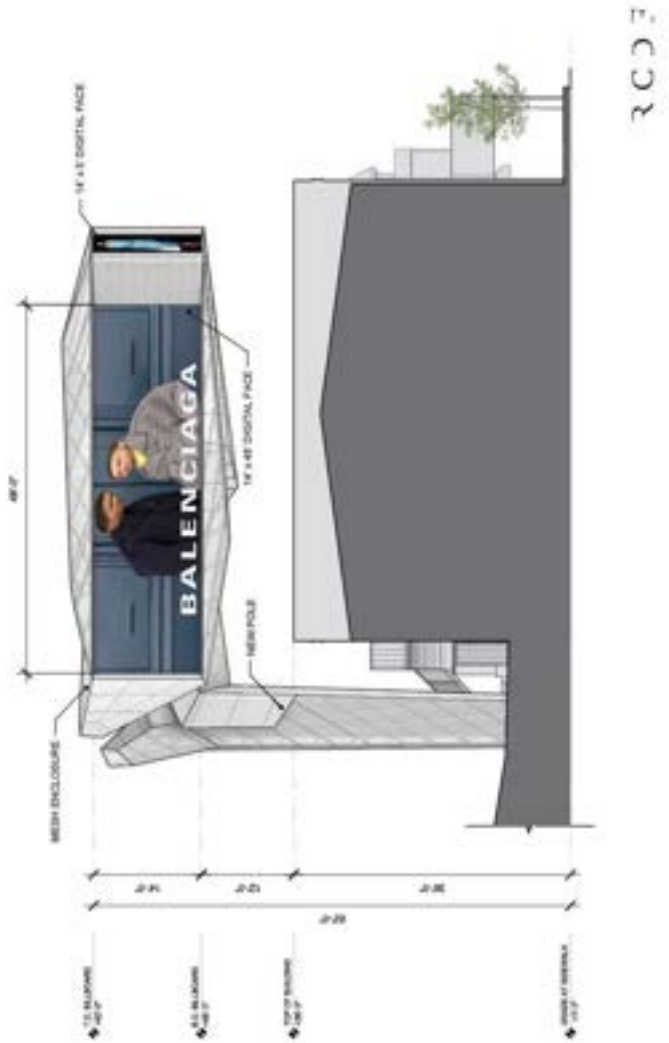
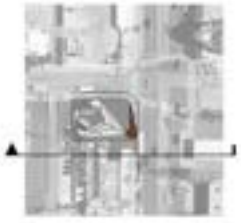
1.0-8

WEST ELEVATION





BILLBOARD APPLICATION EXHIBITS

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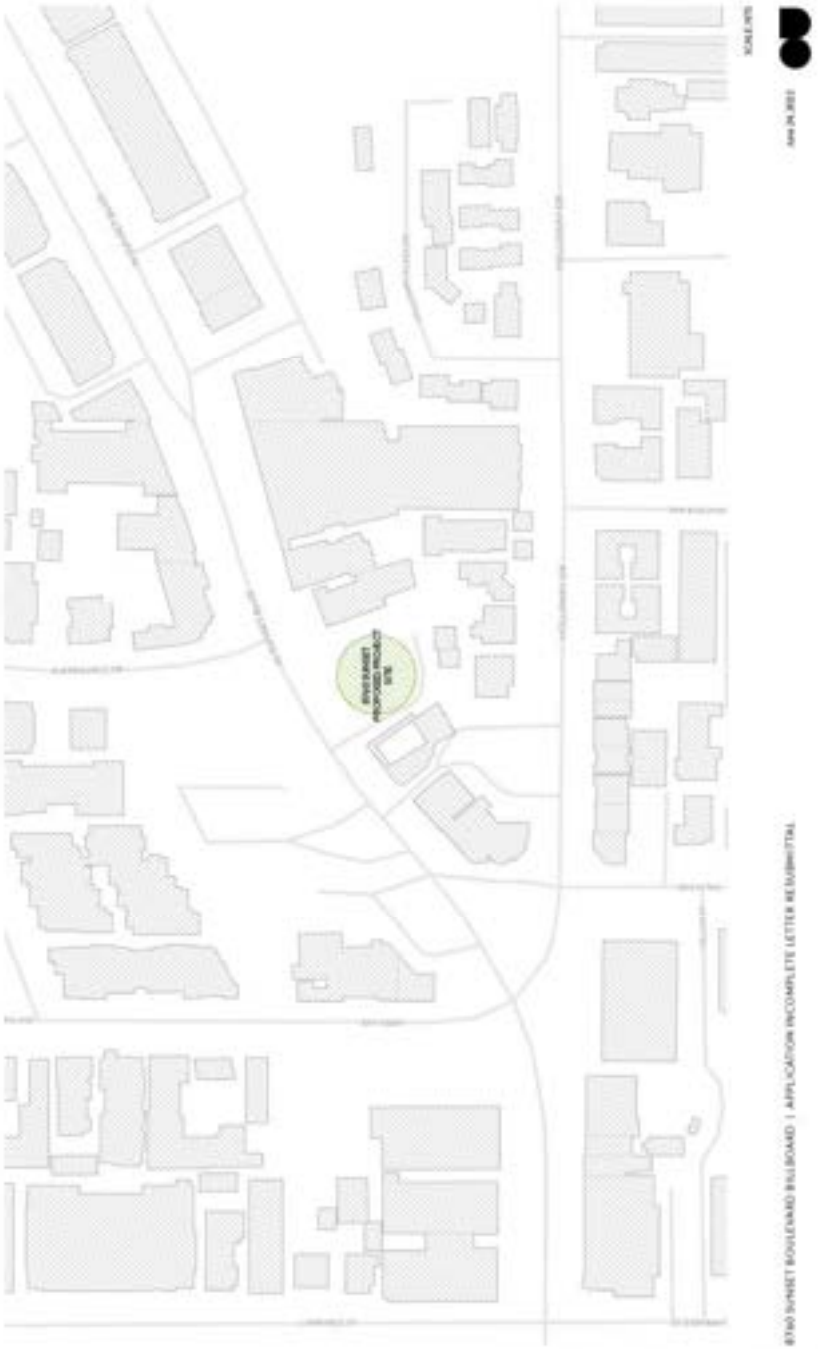
FRANCIS KRAHE & ASSOCIATES

1.0-9

MUTATO MUZIKA +

NEIGHBORHOOD PLAN/FIGURE GROUND MAP



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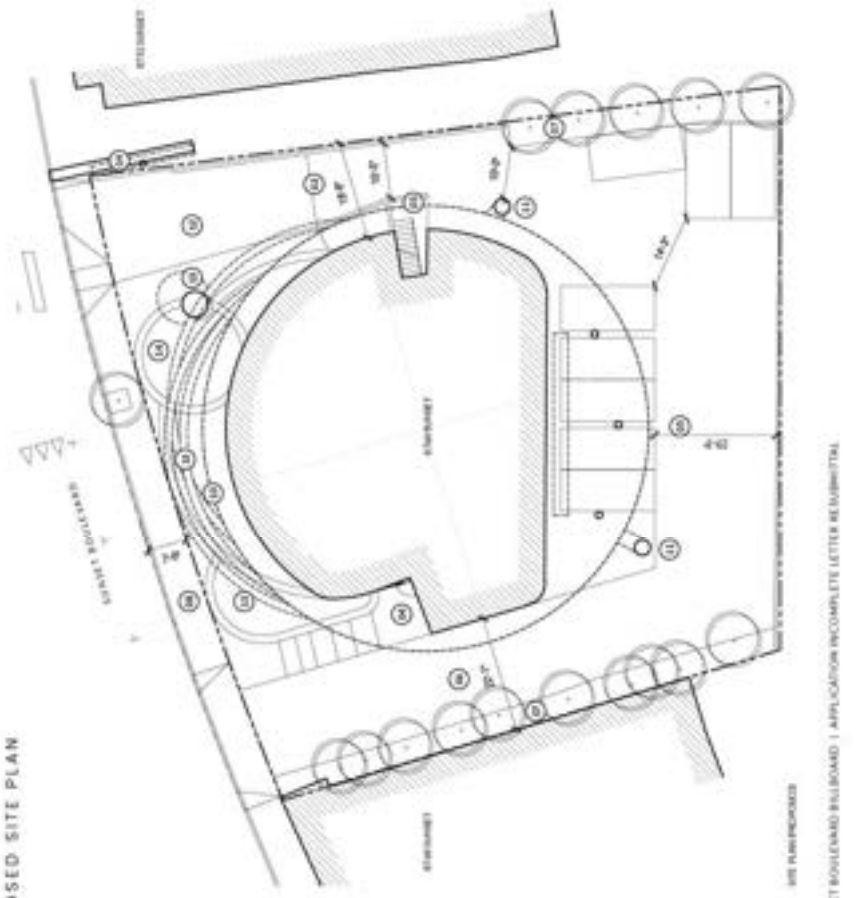
FRANCIS KRAHE & ASSOCIATES

1.0-9

MUTATO MUZIKA



PROPOSED SITE PLAN

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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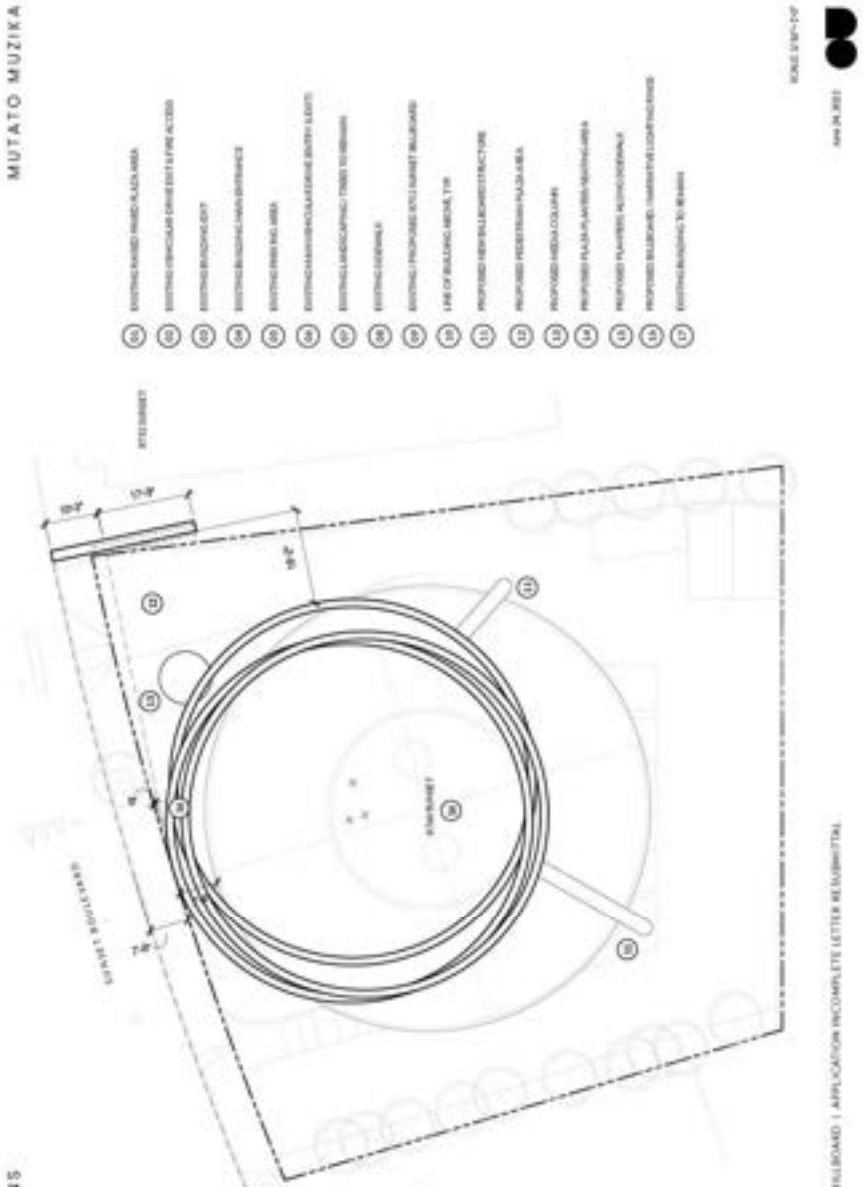
FRANCIS KRAHE & ASSOCIATES

1.0-9

MUTATO MUZIKA



BUILDING PLANS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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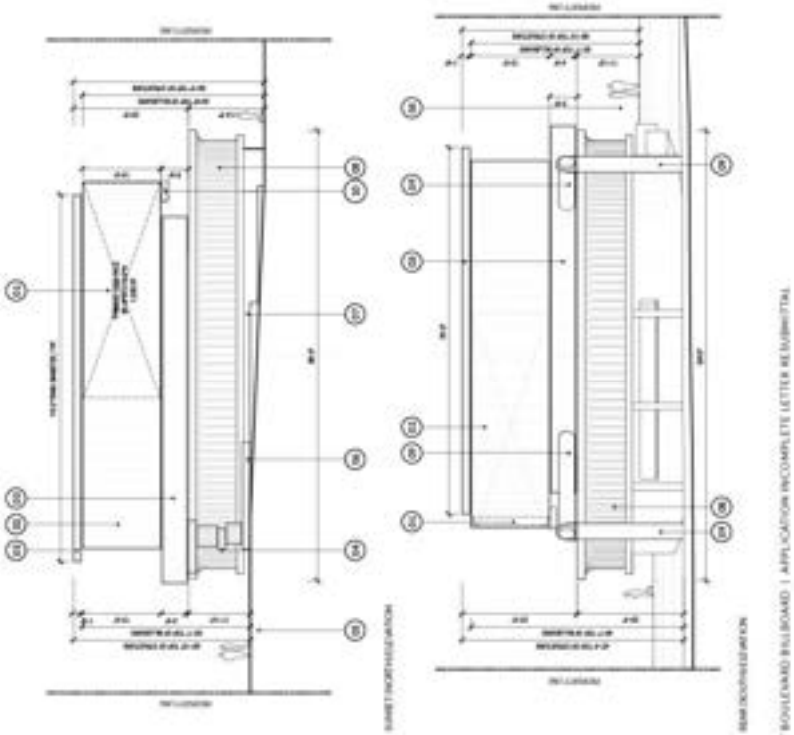
FRANCIS KRAHE & ASSOCIATES

1.0-9

MUTATO MUZIKA



BUILDING ELEVATIONS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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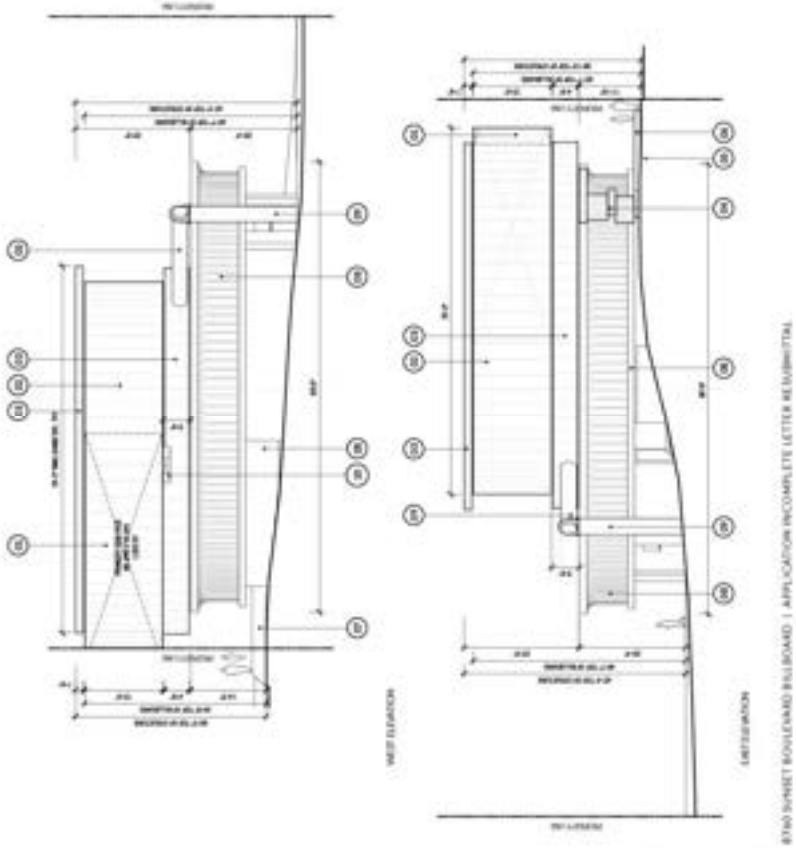
FRANCIS KRAHE & ASSOCIATES

1.0-9

MUTATO MUZIKA



BUILDING ELEVATIONS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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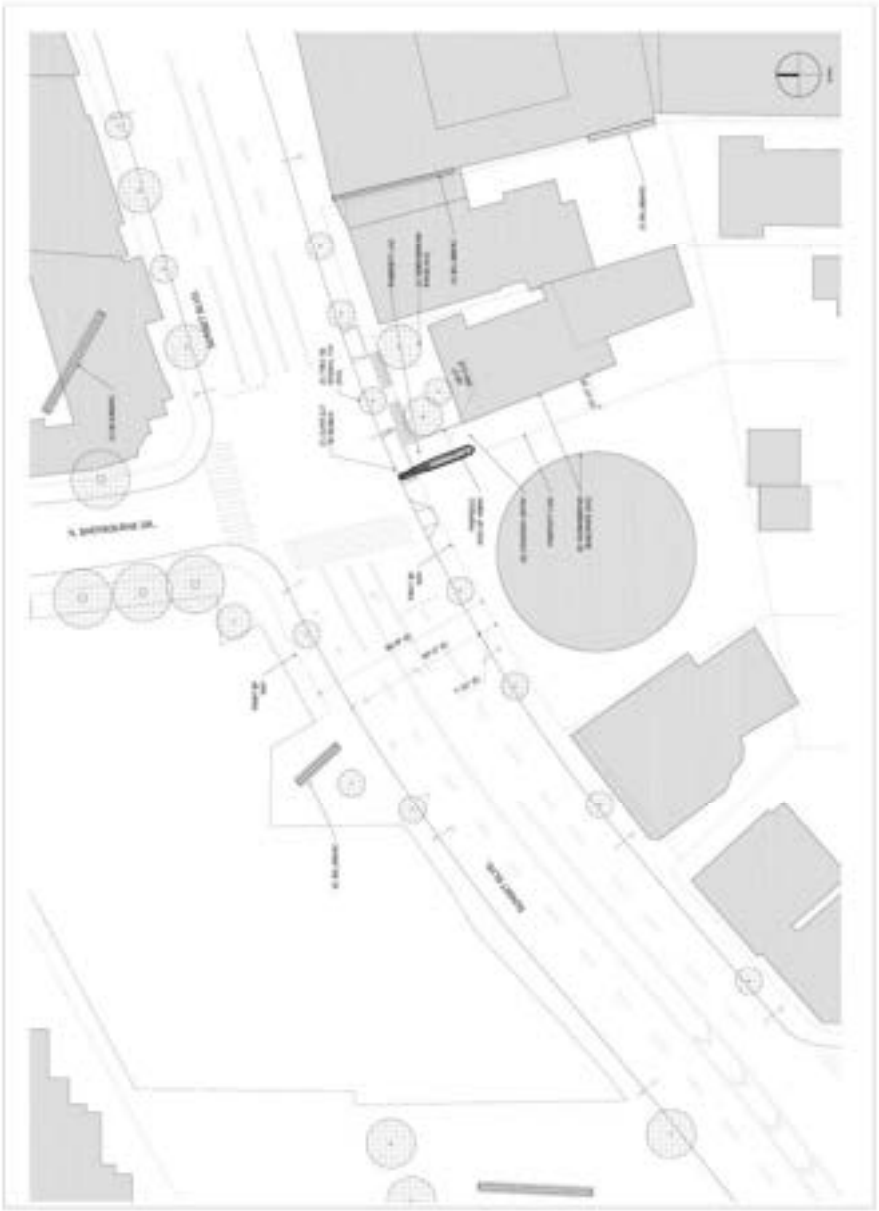
FRANCIS KRAHE & ASSOCIATES

1.0-10

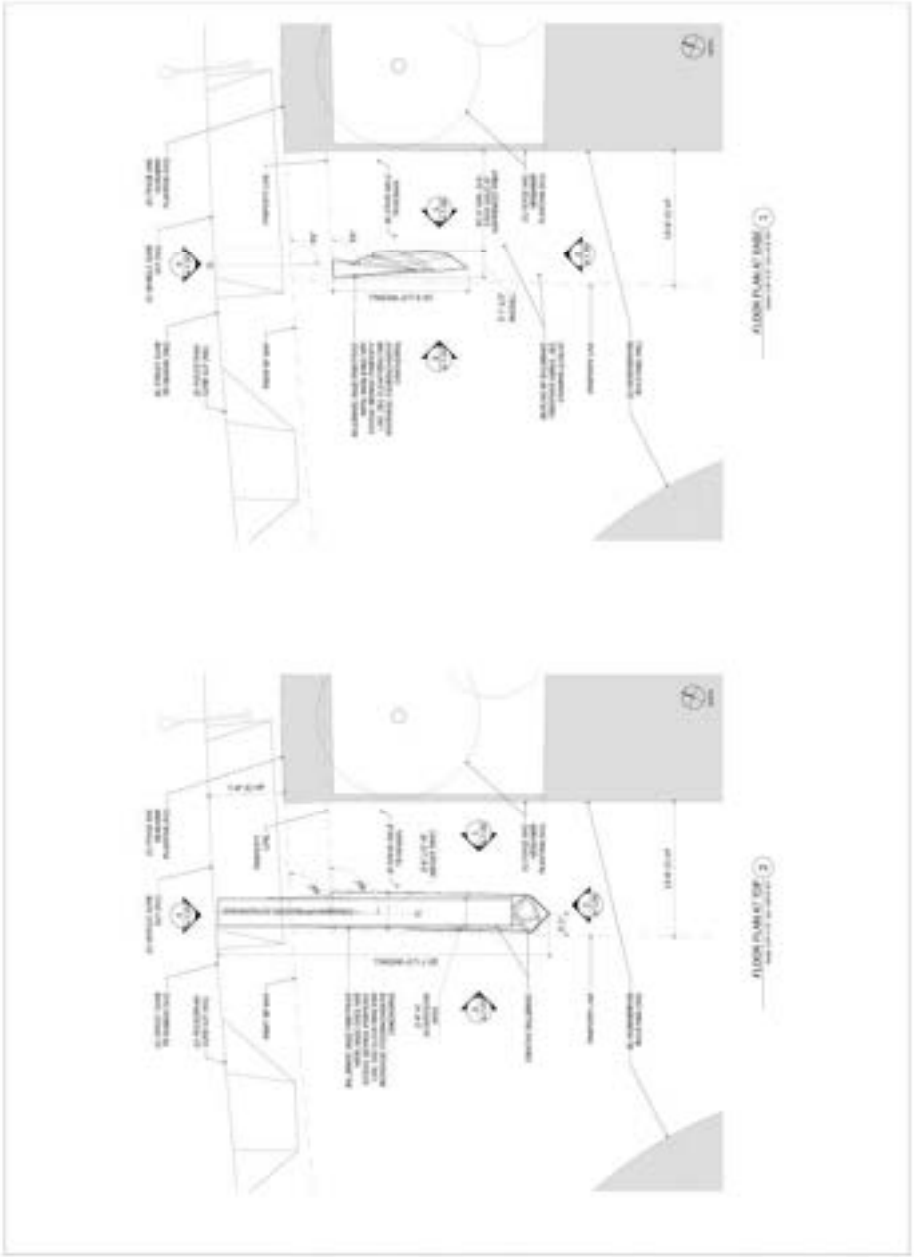
RIOS | OB|M | STANDING MEADOW | SITE PLAN | A-1.00



FRANCIS KRAHE & ASSOCIATES

1.0-10

RIOS | 19326 | OB|M | STANDING MEADOW | A-3.00



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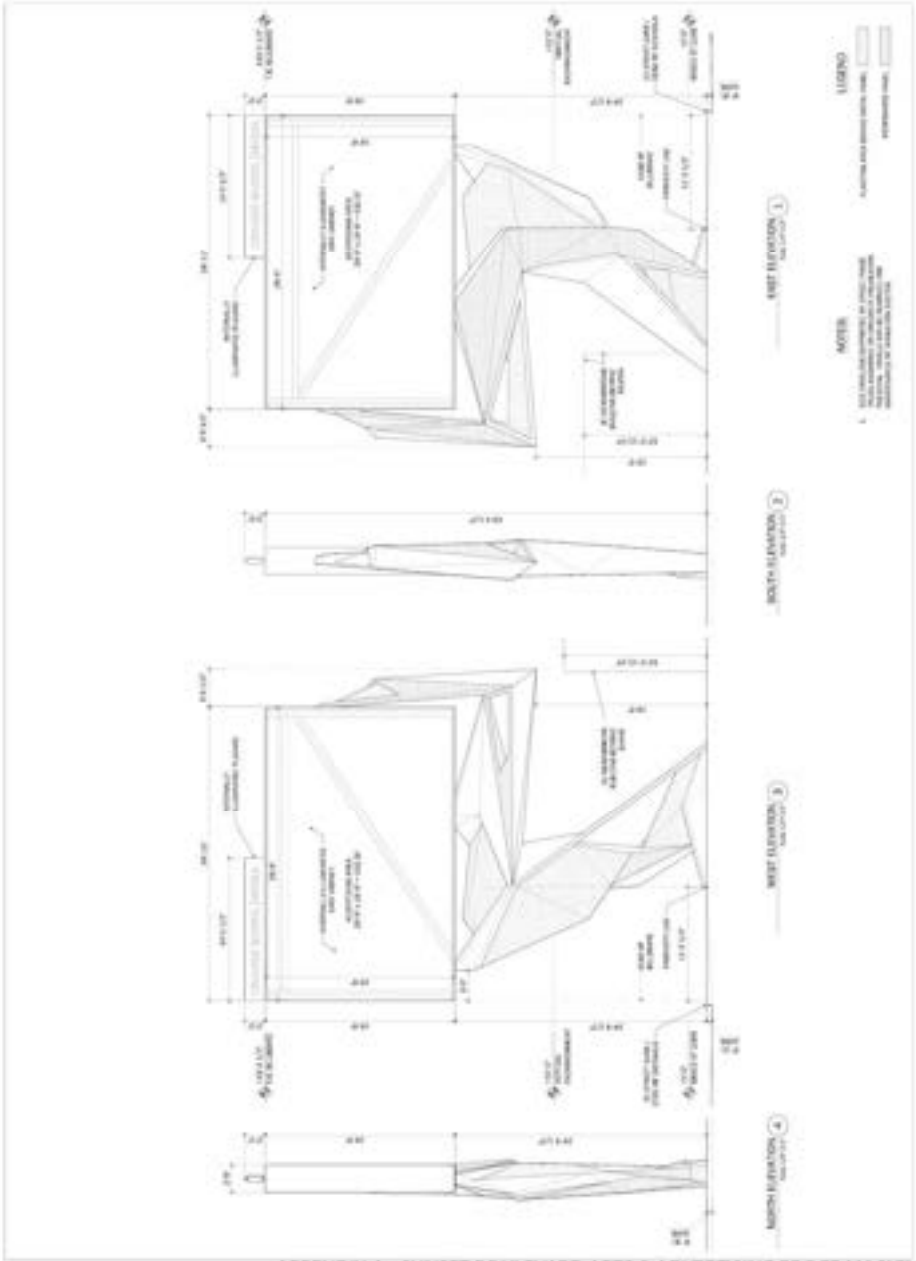
FRANCIS KRAHE & ASSOCIATES

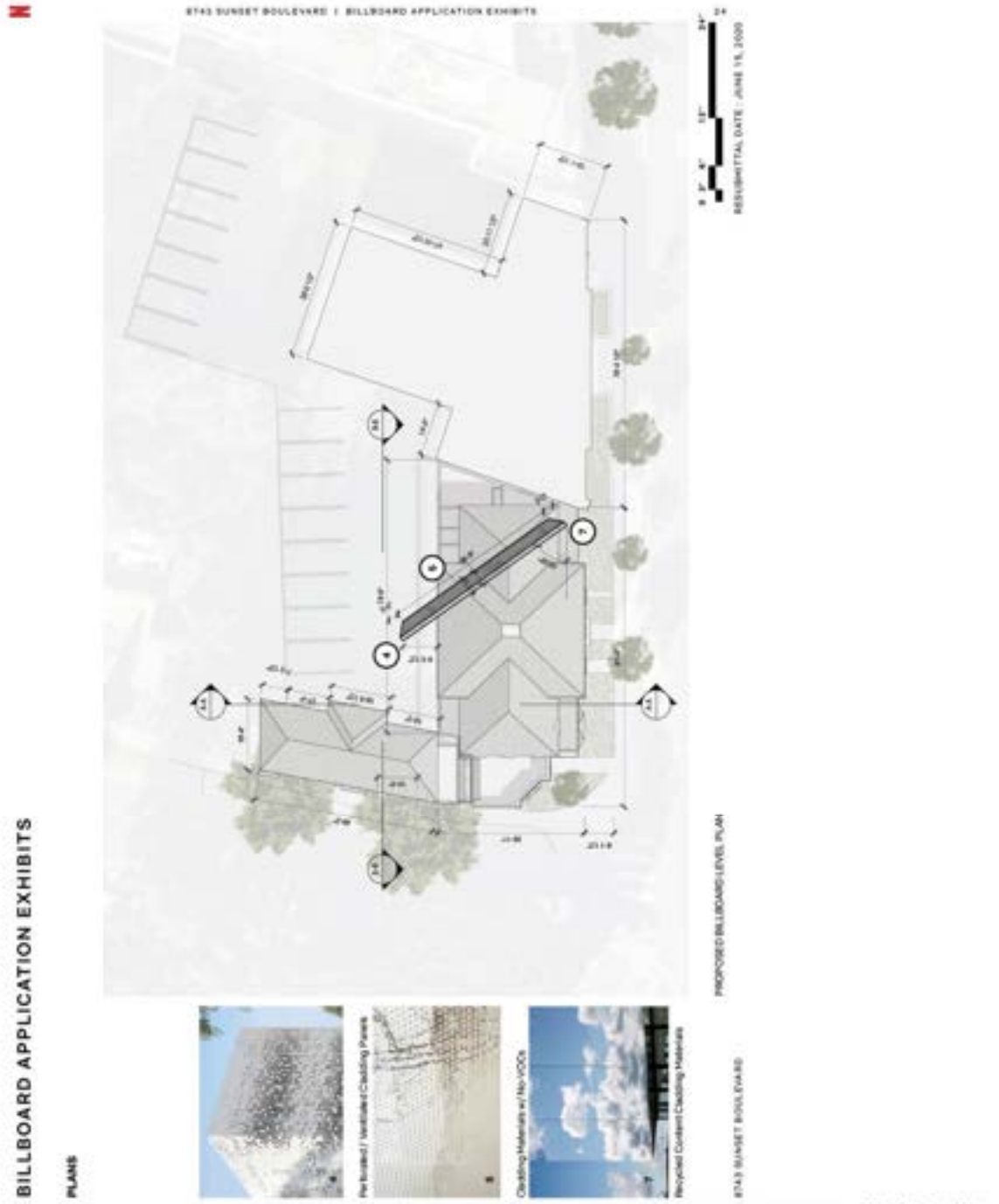
1.0-10

RIOS | 19326 | OB|M | STANDING MEADOW | ELEVATIONS | A-7.00



FRANCIS KRAHE & ASSOCIATES

1.0-11



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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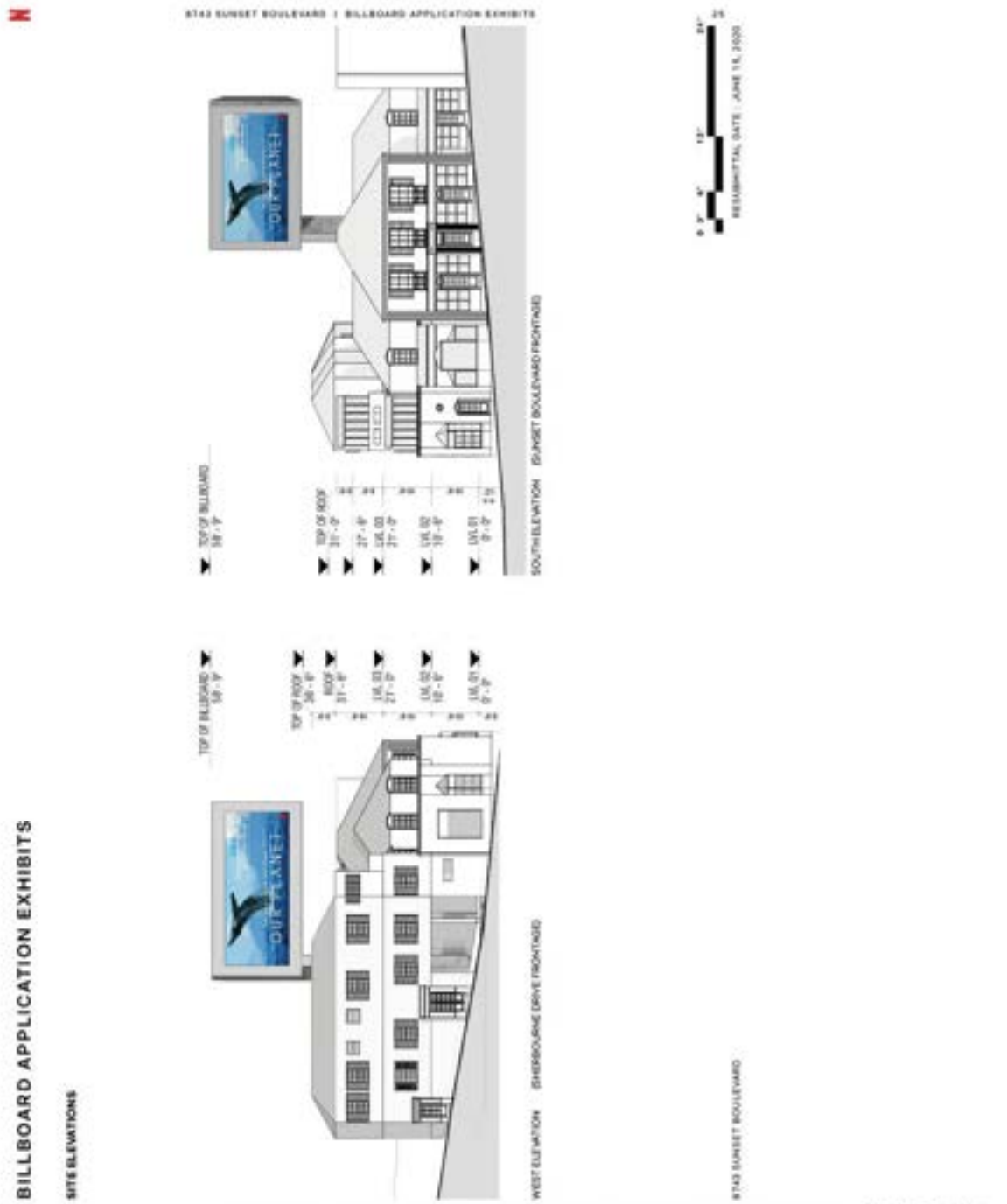
FRANCIS KRAHE & ASSOCIATES

1.0-11



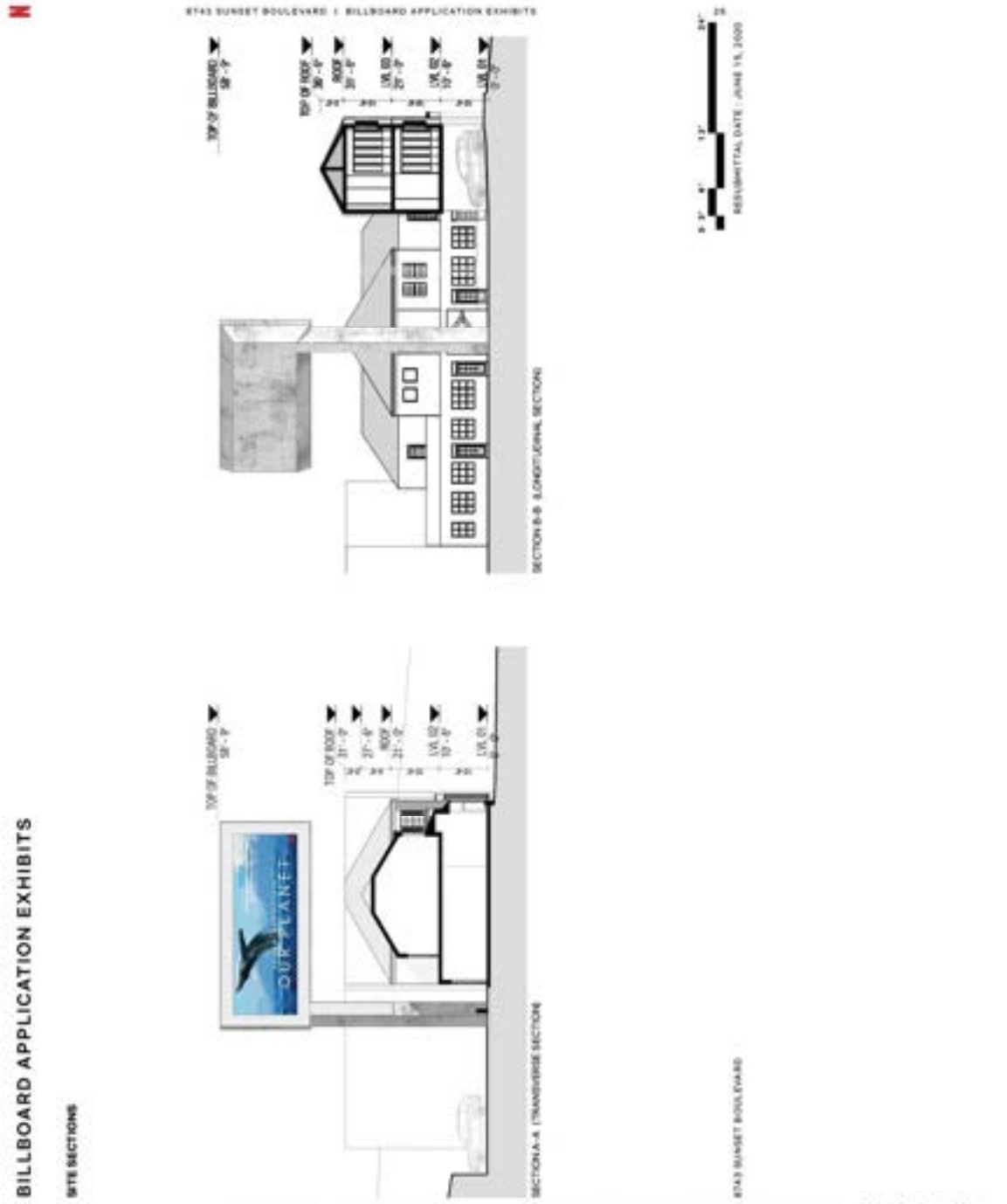
BILLBOARD APPLICATION EXHIBITS

SITE ELEVATIONS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 46

FRANCIS KRAHE & ASSOCIATES

1.0-11



BILLBOARD APPLICATION EXHIBITS

SITE SECTIONS

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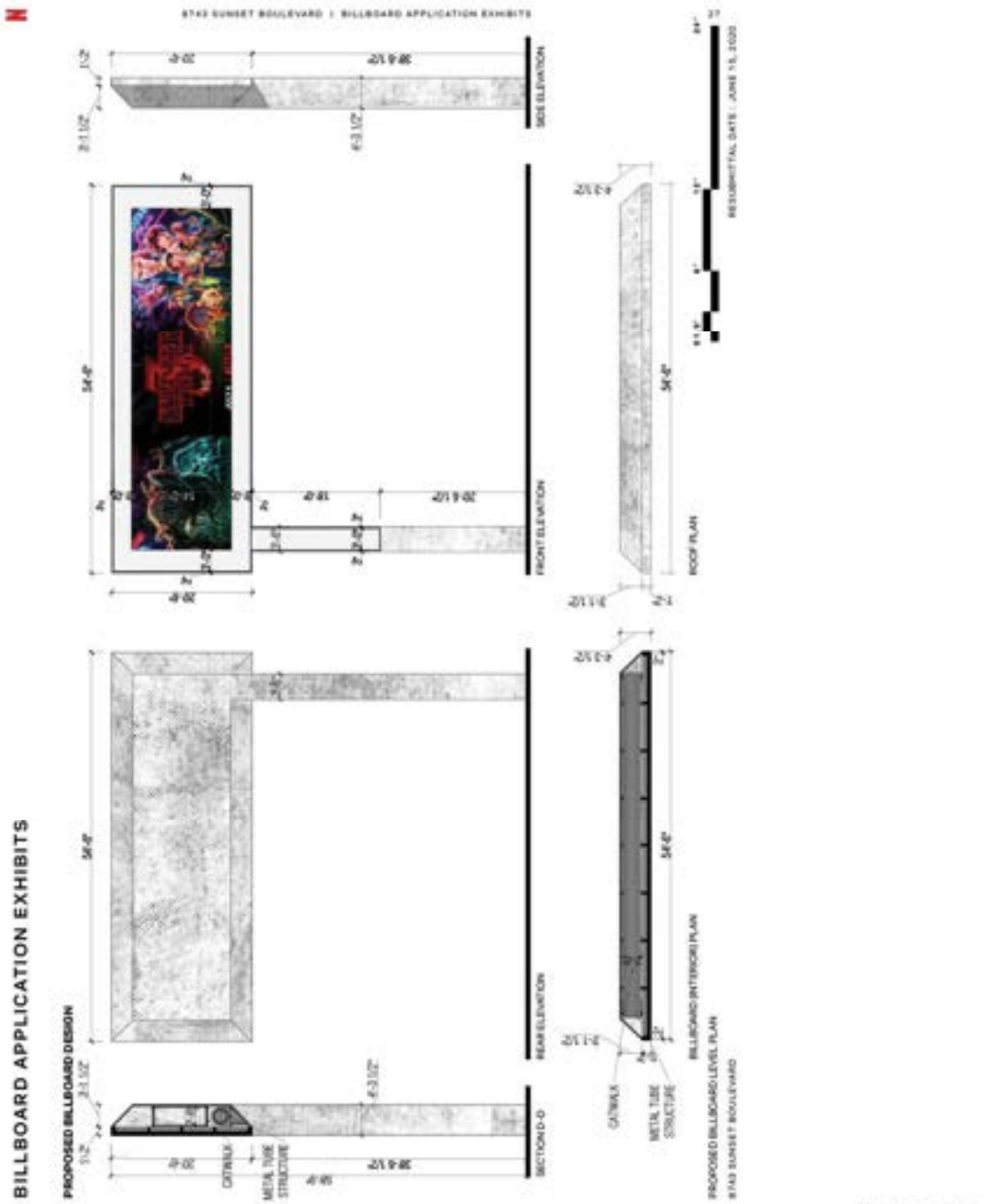
1.0-11



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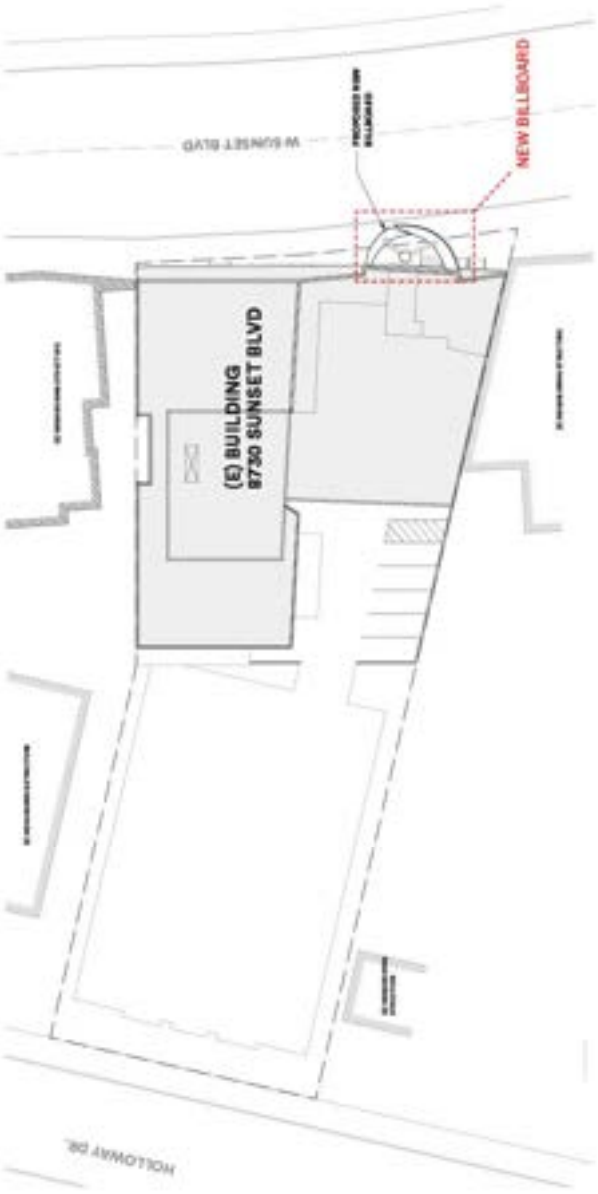
FRANCIS KRAHE & ASSOCIATES

1.0-12

PROPOSED NEW BILLBOARD LOCATION



ARCHITECTURAL SITE PLAN

04 / 25 / 2022

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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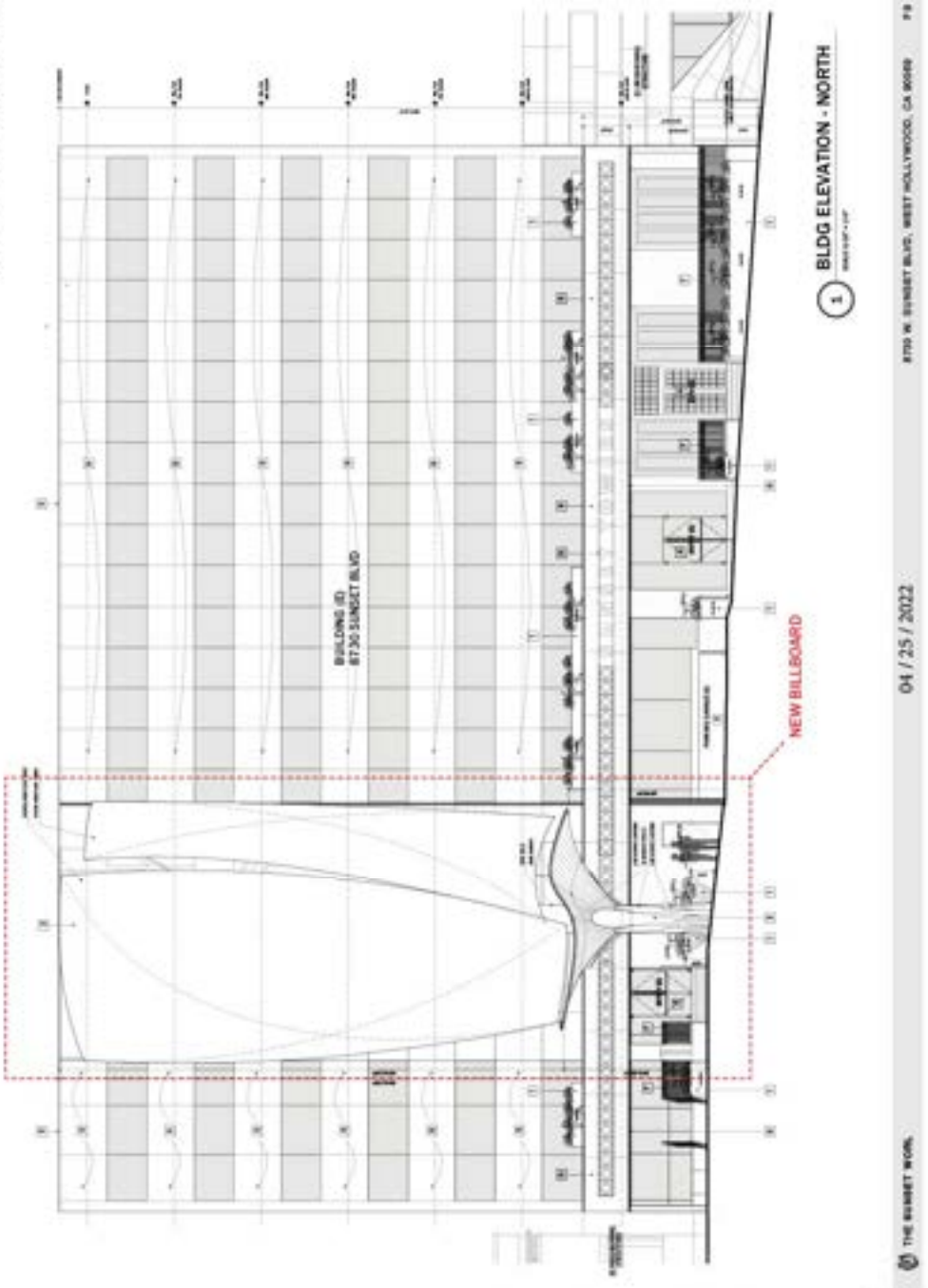
FRANCIS KRAHE & ASSOCIATES

1.0-12

PROPOSED NEW BILLBOARD NORTH ELEVATION



FRANCIS KRAHE & ASSOCIATES

1.0-12

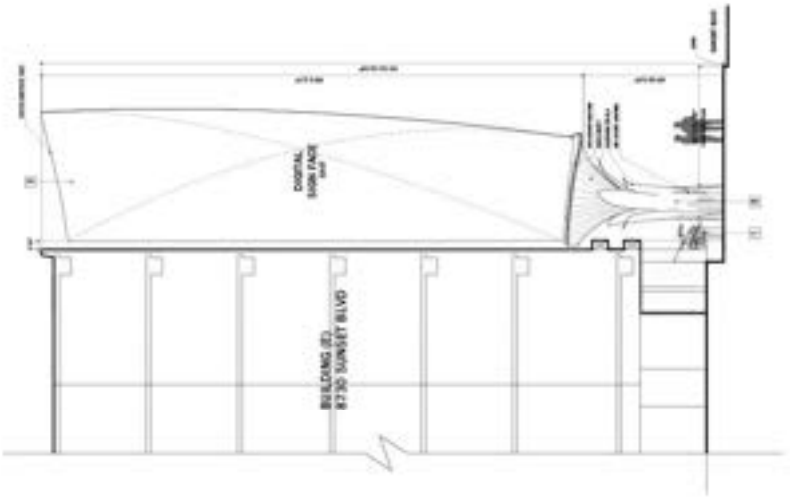
DIGITAL EAST FACE BILLBOARD ELEVATION

NOTE:
THE EAST-FACING SIDE OF THE WORL IS DIGITAL COMPRISING 1733 SQ FT OF WHICH 1,500 SQUARE FEET WILL DISPLAY ADVERTISING CONTENT SURROUNDED BY A BORDER MEASURING 253 SQUARE FEET. THIS BORDER IS ALSO DIGITAL AND PROVIDES A FRAME TO THE ADVERTISING CONTENT. (SEE PAGE 12)

LEGEND

KEY NOTES

BILLBOARD DIMS. TABLE:



② EAST FACE - ELEVATION B

8700 W. SUNSET BLVD, WEST HOLLYWOOD, CA 90069

04 / 25 / 2022

① THE SUNSET WORL

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FRANCIS KRAHE & ASSOCIATES

1.0-12

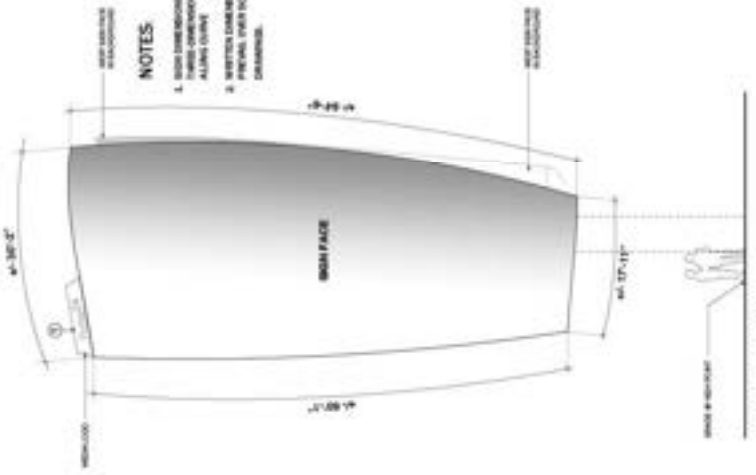
DIGITAL EAST FACE DIMENSIONS & DETAILS

LED SPECIFICATIONS

DISPLAY TYPE:	FULL MOTION DIGITAL
TECHNOLOGY:	LED
SIDE(S):	SINGLE-FACED
COLOR:	275+ TRILLION
INTERIOR/EXTERIOR:	OUTDOOR
PIXEL PITCH:	6MM-8MM
BASE MODULE:	1FT x 1FT
ACCESSIBILITY:	FRONT
DISPLAY BRIGHTNESS:	7000 NITs

TYP. LED MODULE

NOTES



SIGN FACE DIMENSIONS

NOTE:
THE EAST-FACING SIDE OF THE WORL IS DIGITAL COMPRISING 1753 SQ FT OF WHICH 1,500 SQUARE FEET WILL DISPLAY ADVERTISING CONTENT SURROUNDED BY A BORDER MEASURING 253 SQUARE FEET. THIS BORDER IS ALSO DIGITAL AND PROVIDES A FRAME TO THE ADVERTISING CONTENT. (SEE AD ALLOCATION)

04 / 25 / 2022

THE SUNSET WORL — 8700 W. SUNSET BLVD., WEST HOLLYWOOD, CA 90069 — # 12

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FRANCIS KRAHE & ASSOCIATES

1.0-12

DIGITAL EAST FACE
LIGHTING & OPERATION STANDARDS

LIGHTING NOTES:

LIGHTING AND OPERATION STANDARDS, THE DISPLAY EQUIPMENT AND SOFTWARE SHALL BE ADJUSTED AND SET SO THAT THE DIGITAL DISPLAYS AND ARCHITECTURAL LIGHTING DO NOT EXCEED THE MAXIMUM LUMINANCE LIMITS. THE DISPLAYS WILL HAVE AN AMBIENT LIGHT SENSOR THAT WILL AUTOMATICALLY ADJUST THE LUMINANCE OF THE DISPLAYS UP OR DOWN, BASED ON AMBIENT LIGHT (DAYTIME OR NIGHTTIME). THE HIGH AND LOW LIMITS OF THE LUMINANCE RANGE CONTROLLED BY THE AMBIENT LIGHT SENSOR WILL BE ADJUSTED AND SET TO CONTROL EXCESSIVE LUMINANCE PURSUANT TO INDUSTRY STANDARDS AND THE CITY OF WEST HOLLYWOOD REGULATIONS. THE SETTINGS SHALL BE PASSWORD PROTECTED. THE SETTINGS WILL BE DOCUMENTED AND RECORDED IN AN INSTALLATION REPORT FOR THE SUNSET BOULEVARD OFF-SITE SIGNAGE POLICY, INCLUDING A LIGHTING MONITORING REPORT SUBMITTED UPON INSTALLATION AND AT THREE-YEAR INTERVALS THEREAFTER TO CONFIRM CONFORMANCE WITH THE LIGHTING REQUIREMENTS. THE SETTINGS SHALL NOT EXCEED THE CITY OF WEST HOLLYWOOD STANDARDS FOR DIGITAL BILLBOARDS AS BELOW:

- DAYTIME: 6,000 CANDELAS PER METER SQUARED FROM SUNRISE UNTIL 20 MINUTES PRIOR TO SUNSET.
- EVENING: 300 CANDELAS PER METER SQUARED FROM SUNSET UNTIL 20 MINUTES PRIOR TO SUNRISE.
- AFTER HOURS: NO ANIMATED CONTENT OR MOVING PATTERNS FROM 2:00 AM UNTIL SUNRISE.

AMBIENT SUNLIGHT ILLUMINANCE DURING THE DAYTIME IS LESS THAN 100 FOOT CANDELAS FOR MORE THAN AN HOUR, THE DIGITAL DISPLAY WILL TRANSITION TO THE EVENING LUMINANCE LEVEL ALSO AT A SMOOTH RATE OVER A TIME PERIOD OF NO LESS THAN 20 MINUTES. IMAGES DISPLAYED ON A DIGITAL SIGN FACE WOULD NOT BE REFRESHED MORE OFTEN THAN ONCE EVERY EIGHT SECONDS, AND EACH NEW IMAGE DISPLAYED WOULD FADE IN FROM THE PREVIOUS IMAGE OVER NO LESS THAN ONE SECOND.

OPERATIONS:

THE SUNSET WORK WILL UTILIZE AN INDUSTRY LEADING MEDIA CONTENT PLAYERS IN COMBINATION WITH ROBUST CLOUD NETWORKING SOLUTIONS FOR COMMERCIAL DIGITAL SIGNAGE WITH REMOTE MONITORING CAPABILITIES, MULTIZONE SCREEN LAYOUTS AND MORE.

CONTROLLER:

NovaStar VX1000 LED Display Controller

NOVASTAR VX1000 - THE DEVICE FEATURES STEPLESS OUTPUT SCALING, LOW LATENCY, 10- PIXEL-LEVEL BRIGHTNESS AND CHROMA CALIBRATION AND MORE, TO PRESENT YOU WITH AN EXCELLENT IMAGE DISPLAY EXPERIENCE.

NOVASTAR CAN AUTOMATICALLY OR PROGRAMMATICALLY SET THE BRIGHTNESS OF EACH PIXEL TO ADHERE TO BRIGHTNESS STANDARDS.

THE SUNSET WORK

04 / 25 / 2022

8700 W. SUNSET BLVD., WEST HOLLYWOOD, CA 90069

P 13

FRANCIS KRAHE & ASSOCIATES

1.0-12

DIGITAL EAST FACE AD ALLOCATION

EXAMPLE AD:
COMMERCIAL COPY SHOWN = 1,500 SF

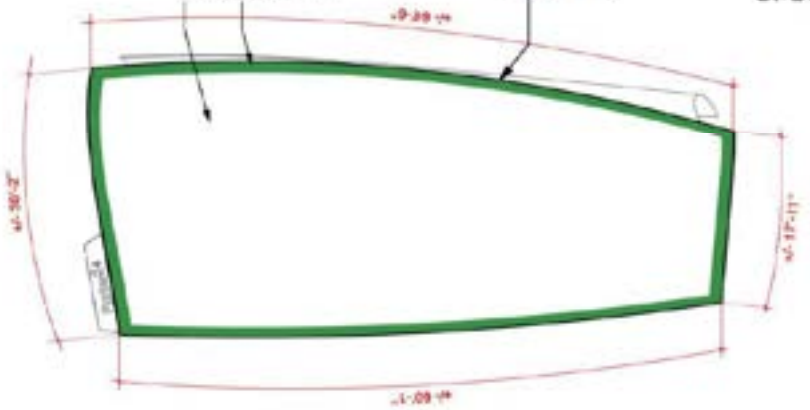
- 1,500 SF MAX ALLOWABLE COMMERCIAL COPY

1,500 SF
LIVE COMMERCIAL COPY AREA

253 SF
NON COMMERCIAL COPY DIGITAL BORDER AREA

TOTAL COMBINED AREA
= 1,753 SF

BORDER WIDTH = 1' 8.25"
- DIGITAL (LED)
- NON COMMERCIAL COPY
- 253 SF



NOTE:
THE EAST FACE DIGITAL INCORPORATES A BORDER MEASURING 253 SQUARE FEET. THIS BORDER ALSO DIGITAL WILL ALWAYS FRAME THE ADVERTISING WITH SOLID COLORS. COLOR GRADIENTS AND/OR DYNAMIC OR STATIC GRAPHICS THAT ARE NOT A PART OF THE COMMERCIAL CONTENT

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THE SUNSET WORK

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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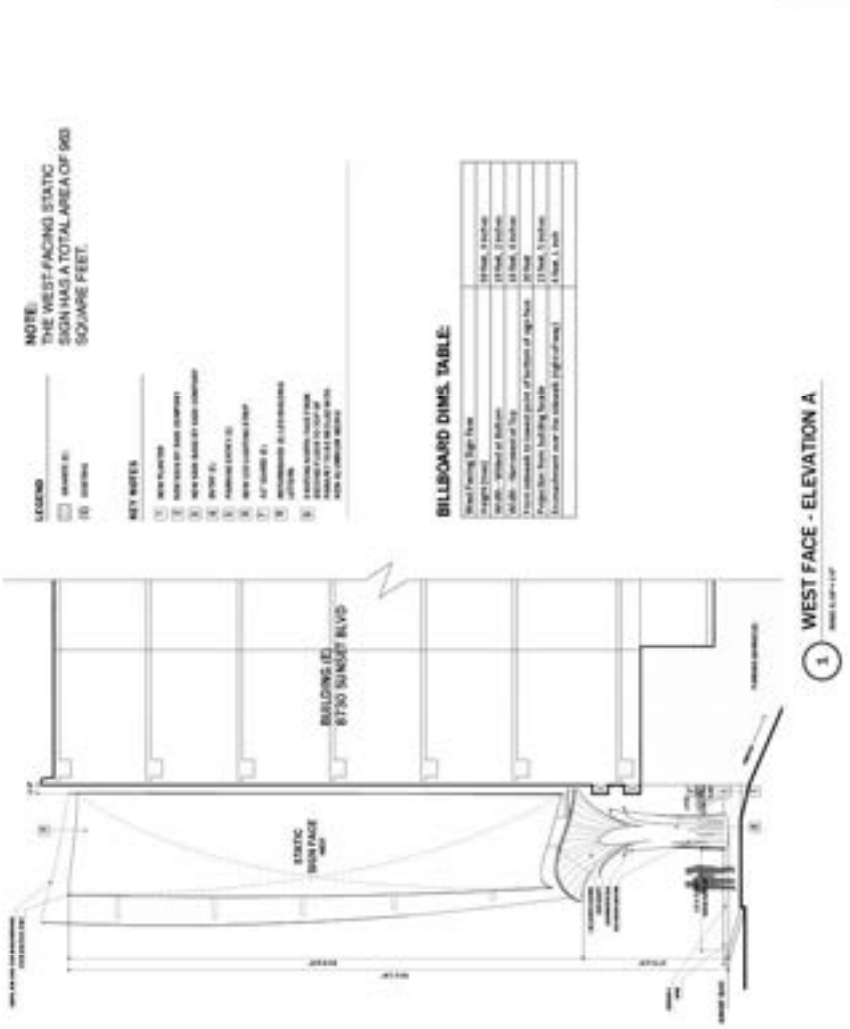
1.0-12

BACKLIT WEST FACE BILLBOARD ELEVATION



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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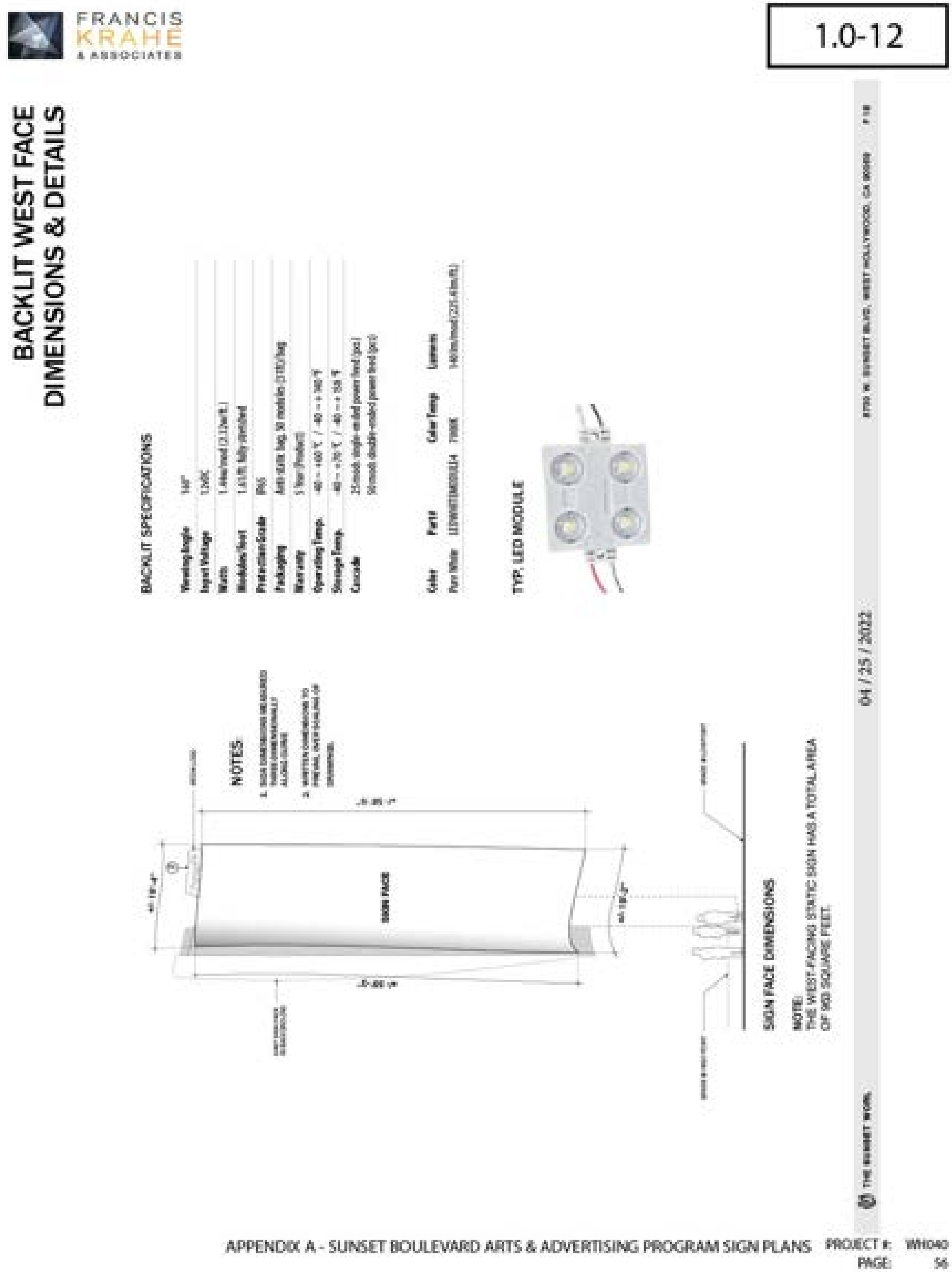
BACKLIT WEST FACE
DIMENSIONS & DETAILS
1.0-12
BACKLIT SPECIFICATIONS
TYP. LED MODULE
NOTES
SIGN FACE DIMENSIONS
04 / 25 / 2022
APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS
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FRANCIS KRAHE & ASSOCIATES

1.0-12

BACKLIT WEST FACE AD ALLOCATION

EXAMPLE AD:
COMMERCIAL COPY SHOWN = 500 SF

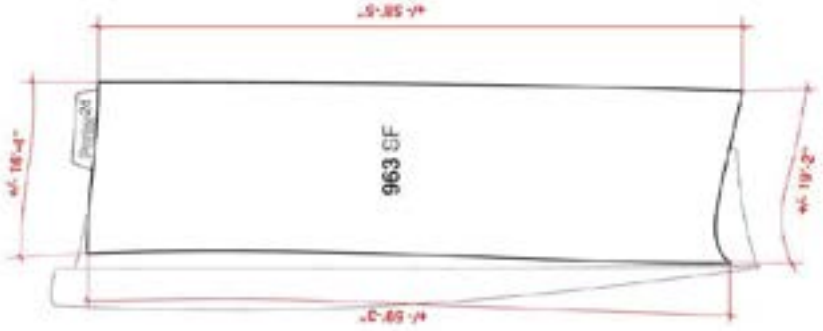
- 500 SF MAX ALLOWABLE COMMERCIAL COPY
- ZONE CLEARANCE REQUIRED FOR EACH COPY CHANGE

500 SF
LIVE COMMERCIAL COPY AREA

463 SF
NONE COMMERCIAL AREA

TOTAL COMBINED AREA
= **963** SF

NOTE:
THE WEST-FACING STATIC SIGN HAS A TOTAL AREA OF 963 SQUARE FEET. THE WEST FACE IS LIMITED TO 500 SQUARE FEET OF ADVERTISING COPY AREA. THE REMAINING 463 SQUARE FEET OF THE SPACE WILL BE NON-ADVERTISING SUCH AS SOLID COLORS, COLOR GRADIENTS AND/OR DYNAMIC OR STATIC GRAPHICS THAT ARE NOT A PART OF THE COMMERCIAL CONTENT AND DO NOT CONVEY A COMMERCIAL ADVERTISING MESSAGE, NOR CONTAIN ANY GRAPHICS THAT ARE PART OF THE 500 SQUARE FOOT COMMERCIAL CONTENT.



04 / 25 / 2022

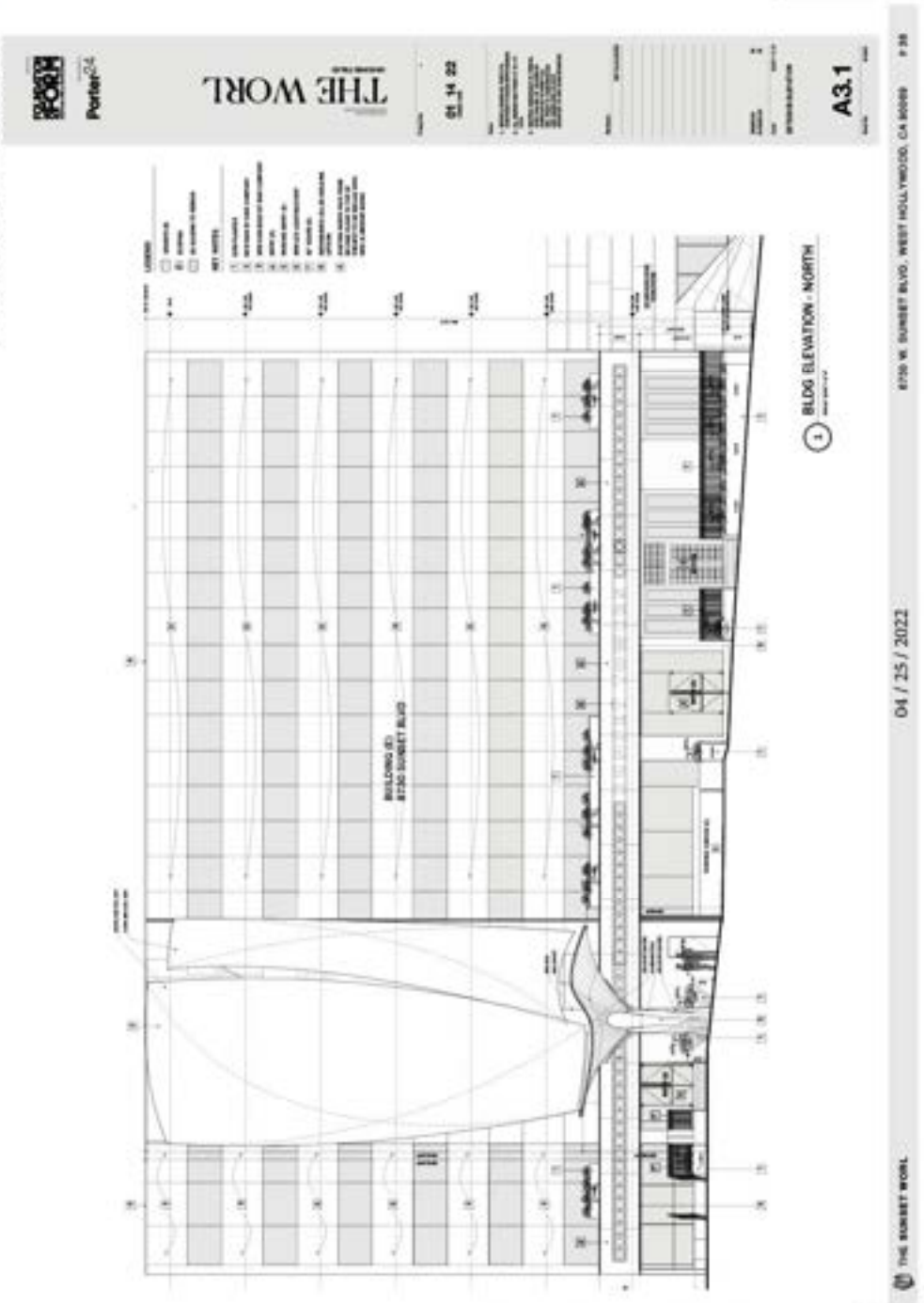
8730 W. SUNSET BLVD., WEST HOLLYWOOD, CA 90069

THE SUNSET MODEL

FRANCIS KRAHE & ASSOCIATES

1.0-12

FACADE IMPROVEMENTS
BUILDING ELEVATION



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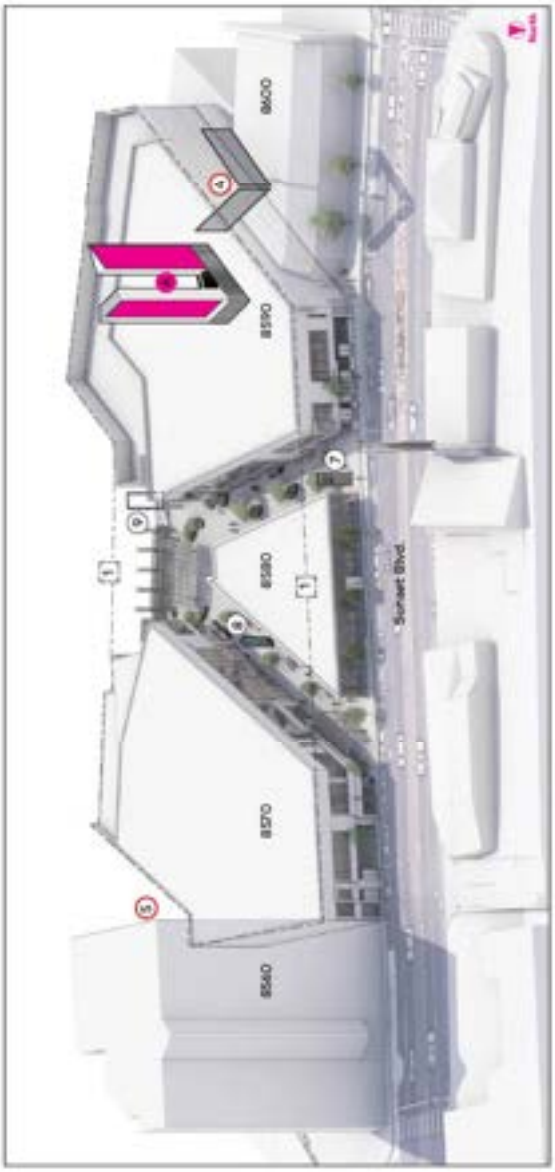
1.0-13

JF( )AK

T0.06

PROPOSED CONDITIONS



PROPOSED CONDITIONS - STATIC BILLBOARD AND PEDESTRIAN ENHANCEMENTS

- Sky Frames - 2,400 SF static two-sided Static Billboard (East Facing and West Facing)
- (7) Pedestrian Plaza Frame - Threshold
- (8) Pedestrian Plaza Frame - Seat
- (9) Pedestrian Plaza Frame - Sun

EXISTING CONDITIONS

- (1) The Sunset - Kilroy Realty Development (property limit)
- Existing 932 SF Static Billboard on 8570 Sunset Blvd. to be removed (showing on-premise advertising)
- Existing 932 SF two-sided Static Billboard on 8590 Sunset Blvd. to be removed (showing on-premise advertising)
- (4) Existing Billboard on adjacent property (8600) to remain
- (5) Existing Sign on west facade of adjacent building (8560) to remain (facade not visible in this drawing)

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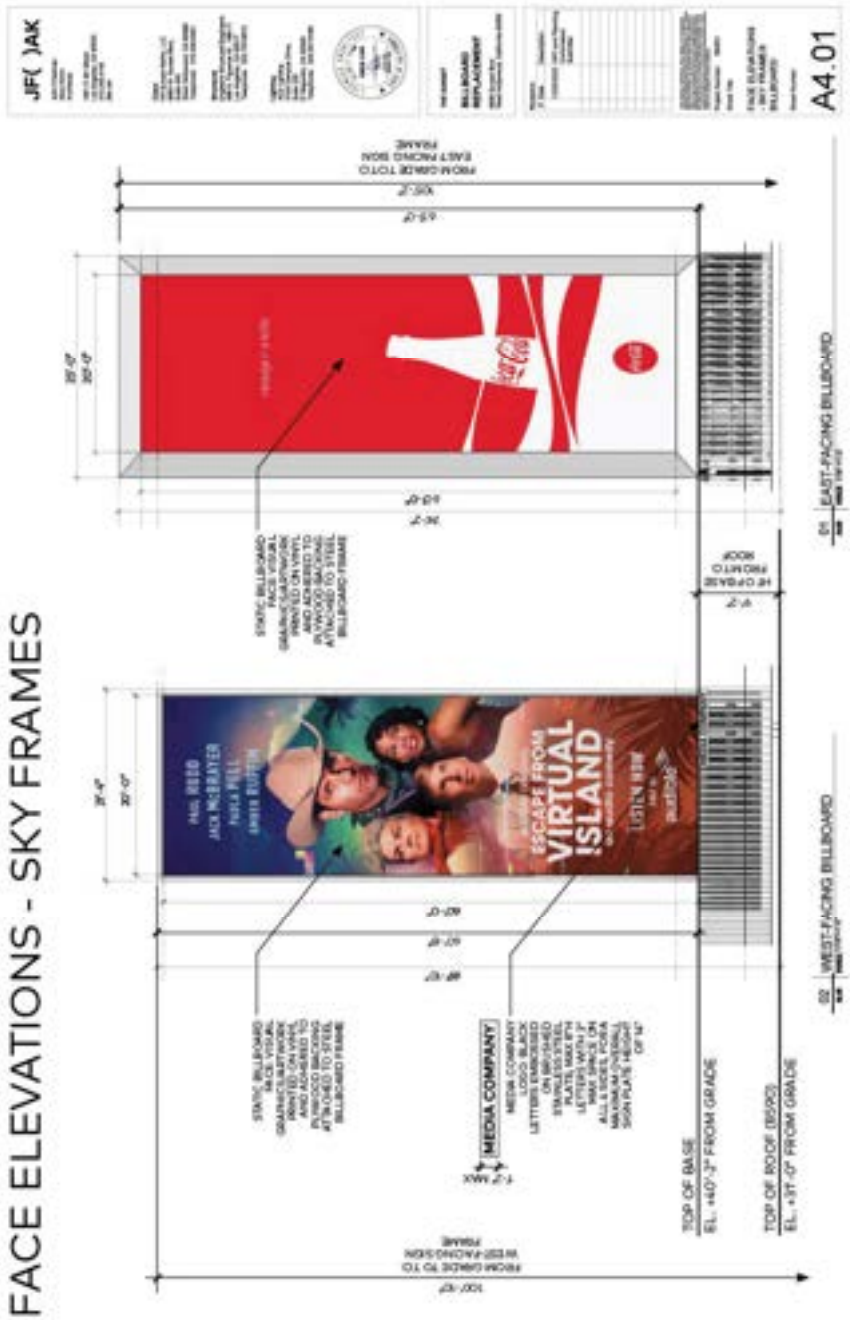
1.0-13



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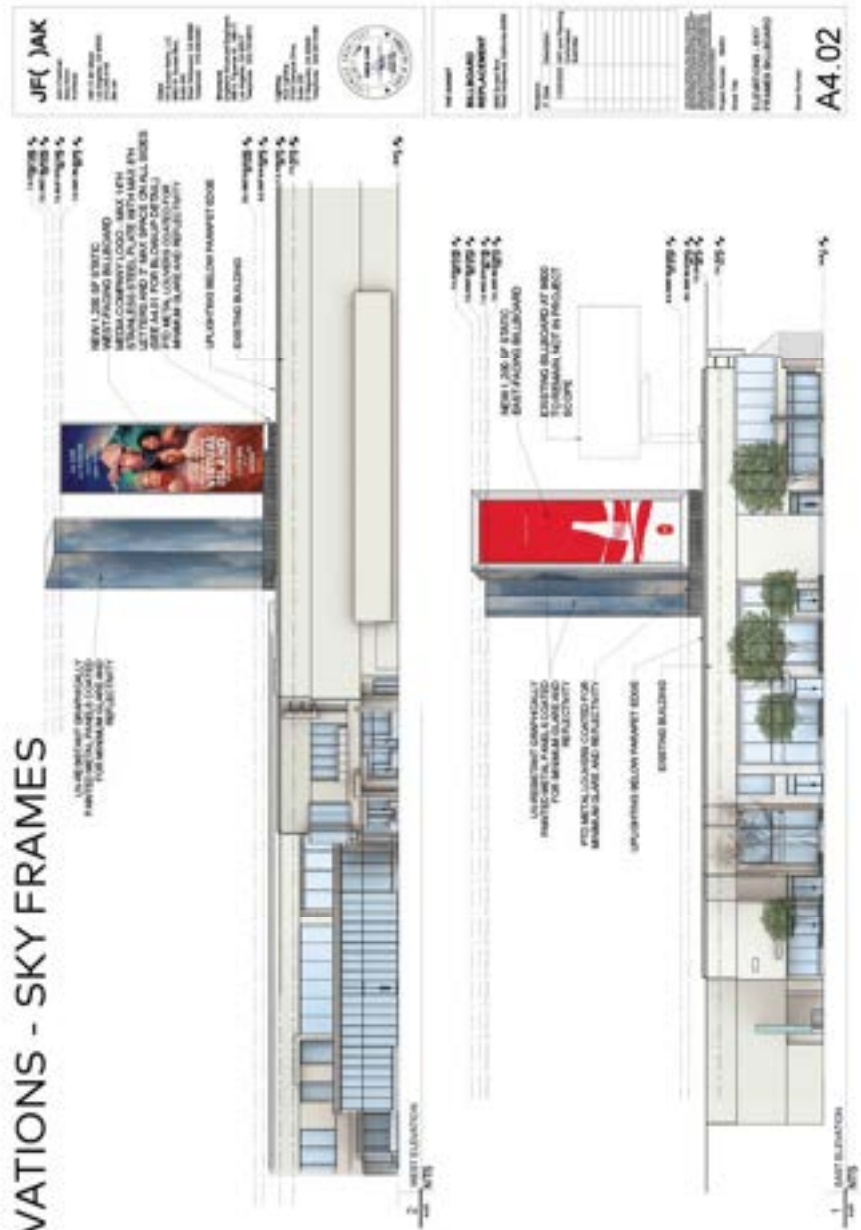
1.0-13



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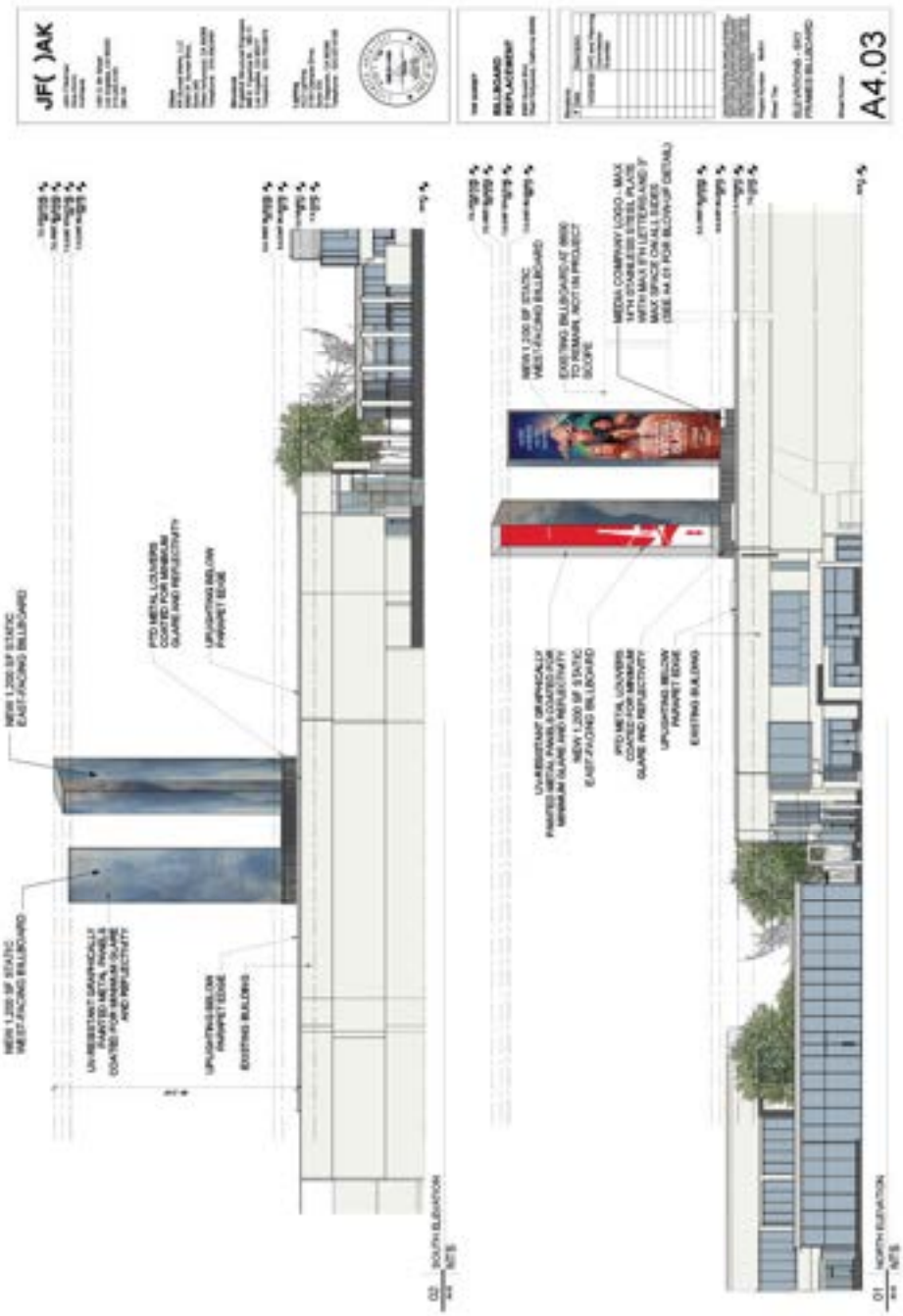
1.0-13



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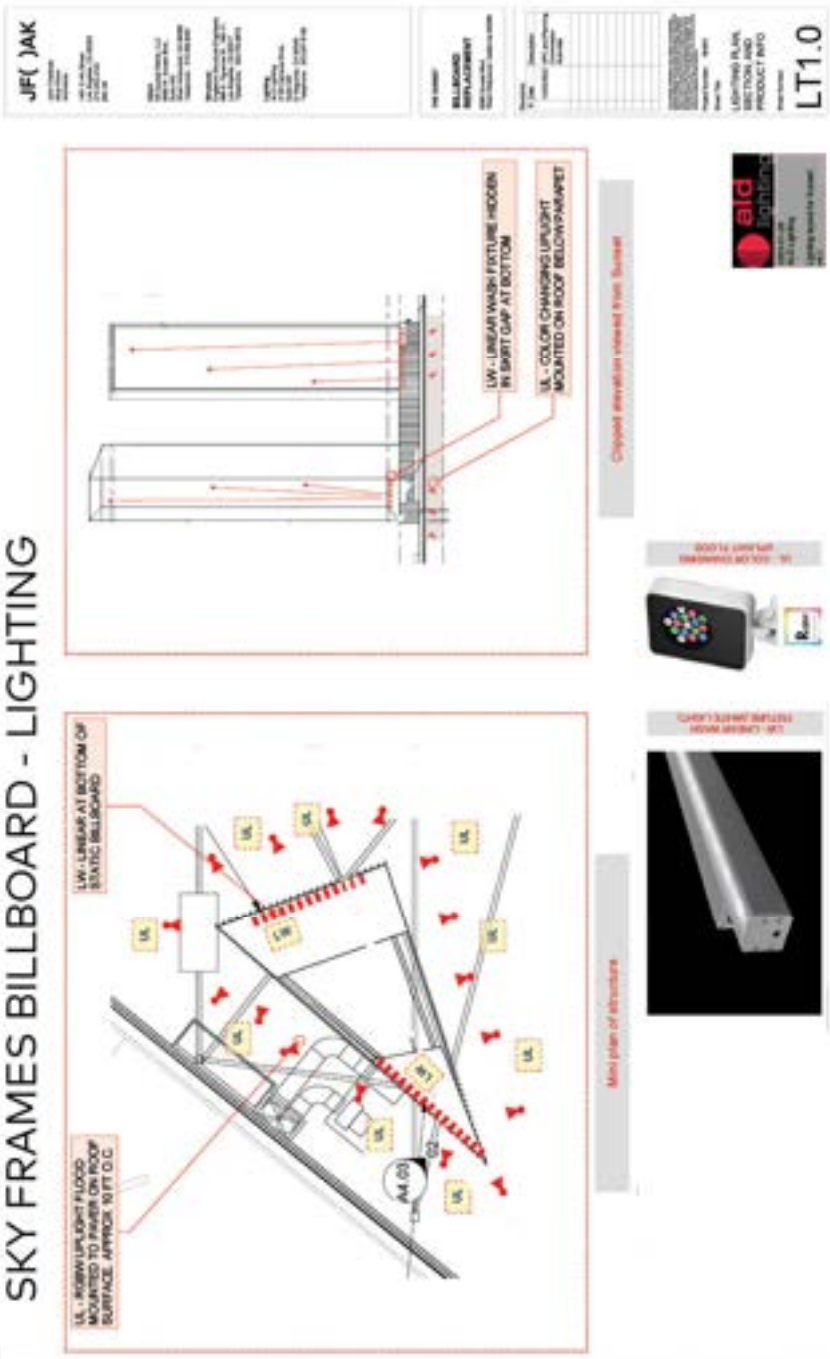
1.0-13

SKY FRAMES BILLBOARD - LIGHTING



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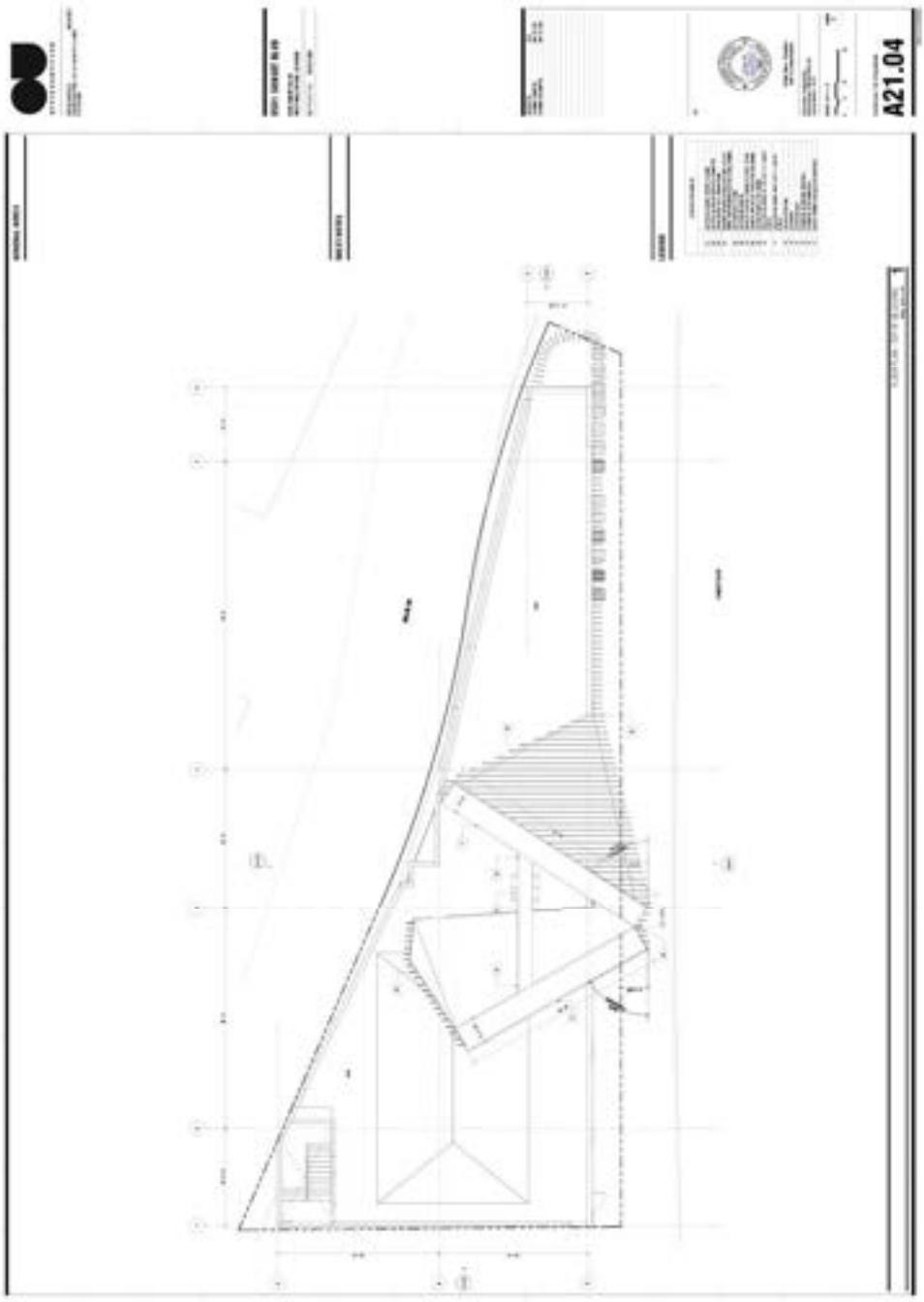
1.0-14



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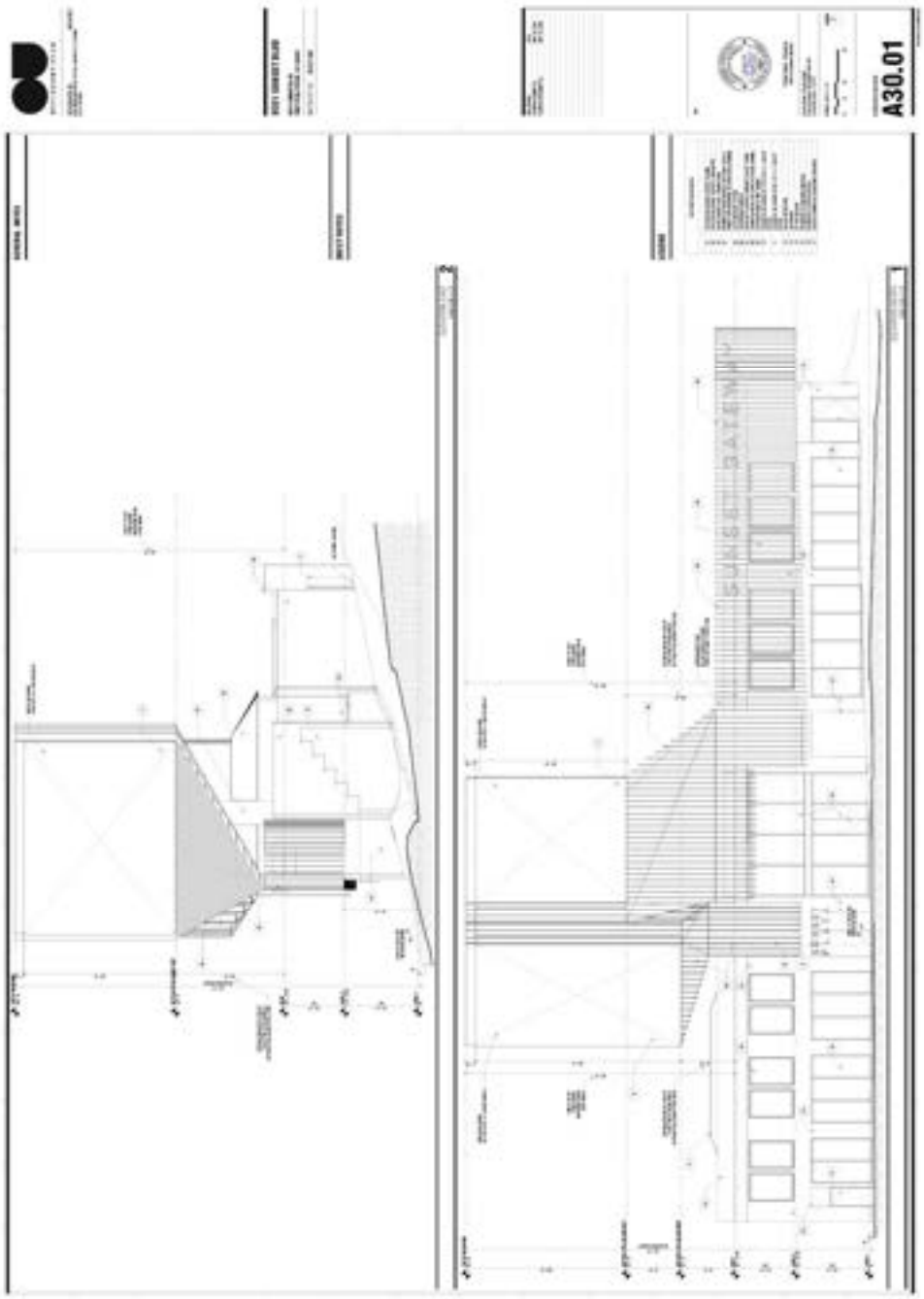
1.0-14



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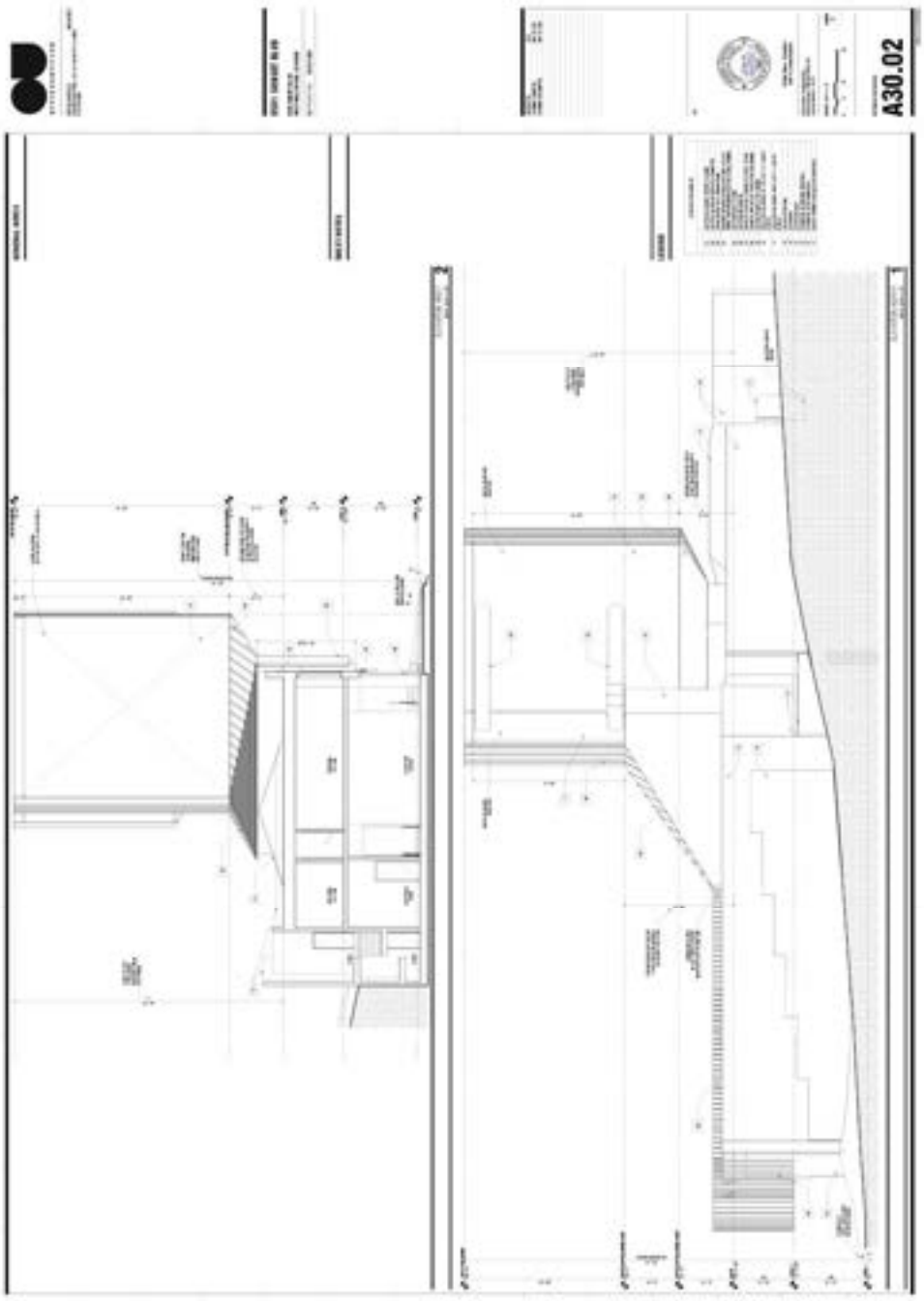
FRANCIS KRAHE & ASSOCIATES

1.0-14



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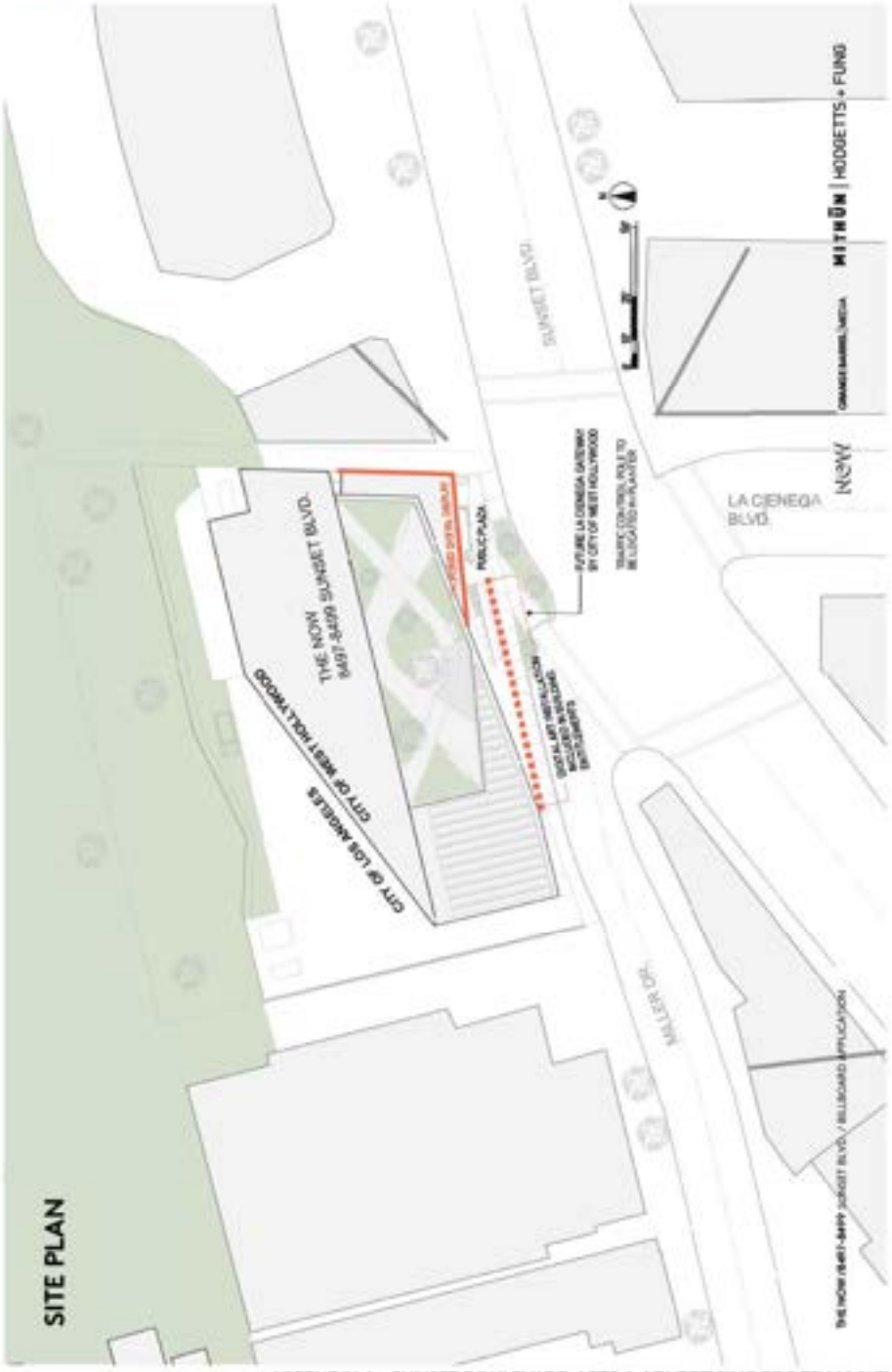
FRANCIS KRAHE & ASSOCIATES

1.0-15



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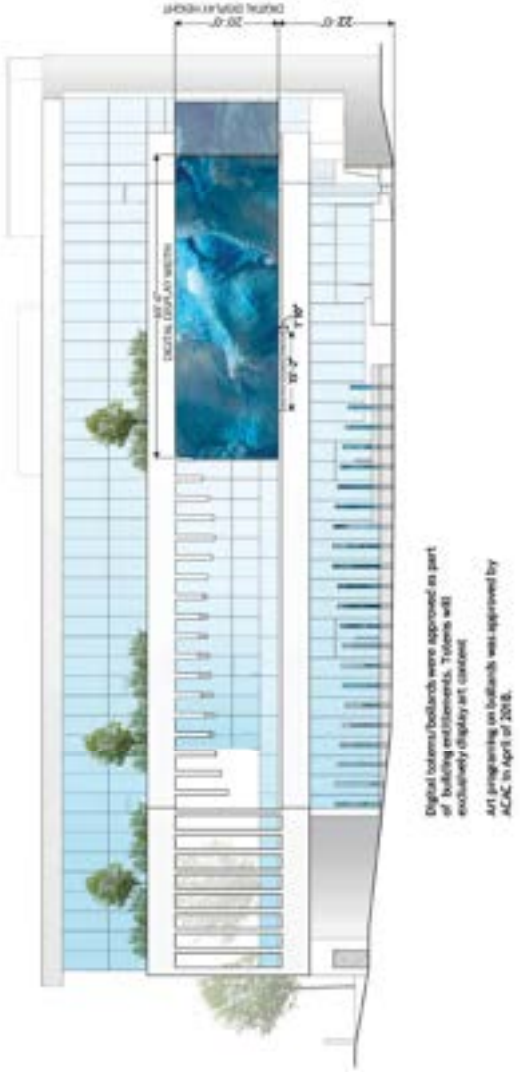
1.0-15



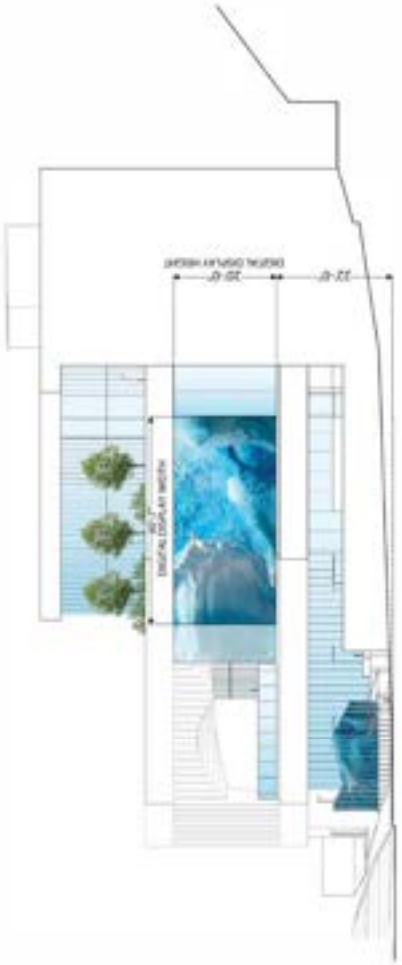
SOUTH ELEVATION

NOW | MITHÜN | HODGETTS + FUNG

THE NOW /8401-8495 SUNSET BLVD. / BILLBOARD APPLICATION

FRANCIS KRAHE & ASSOCIATES

1.0-15



NOW | MITHŪN | HODGETTS + FUNG

EAST ELEVATION

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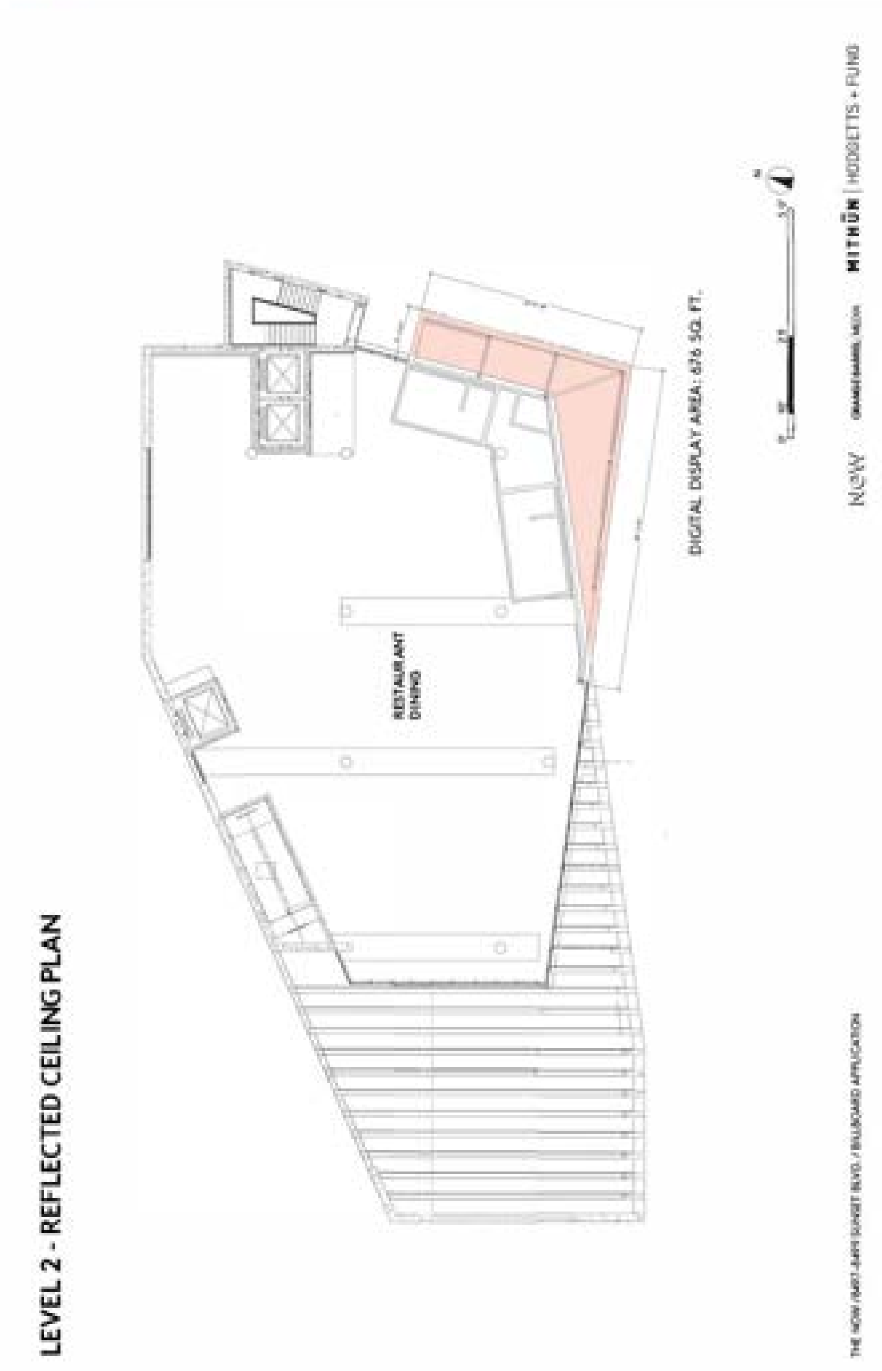
FRANCIS KRAHE & ASSOCIATES

1.0-15



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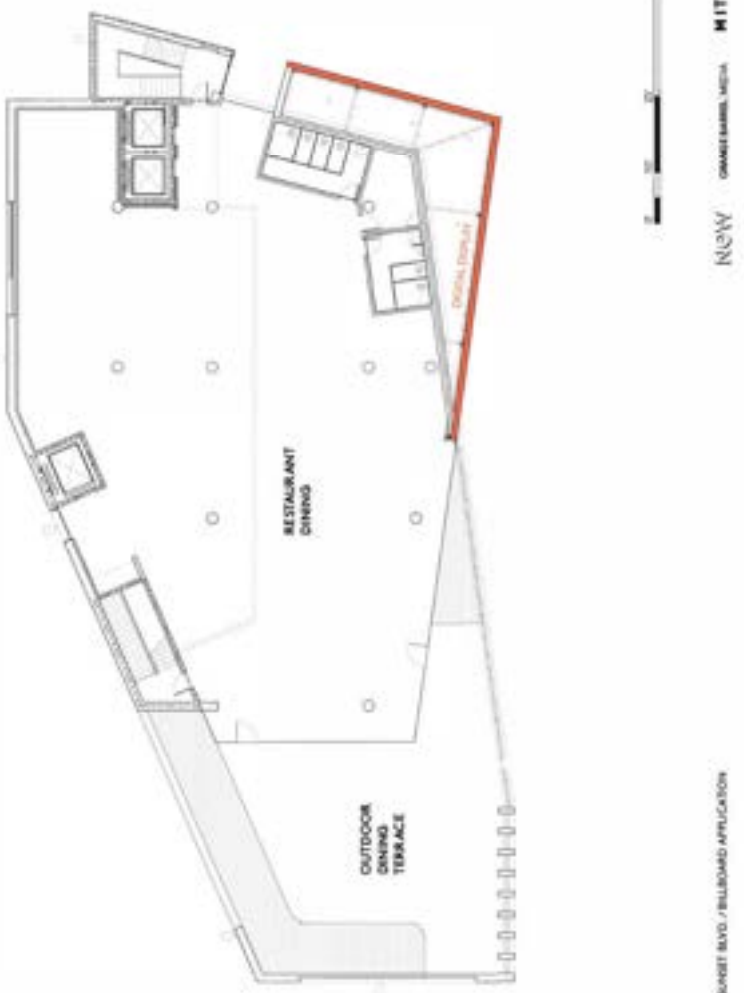
1.0-15



LEVEL 2 PLAN

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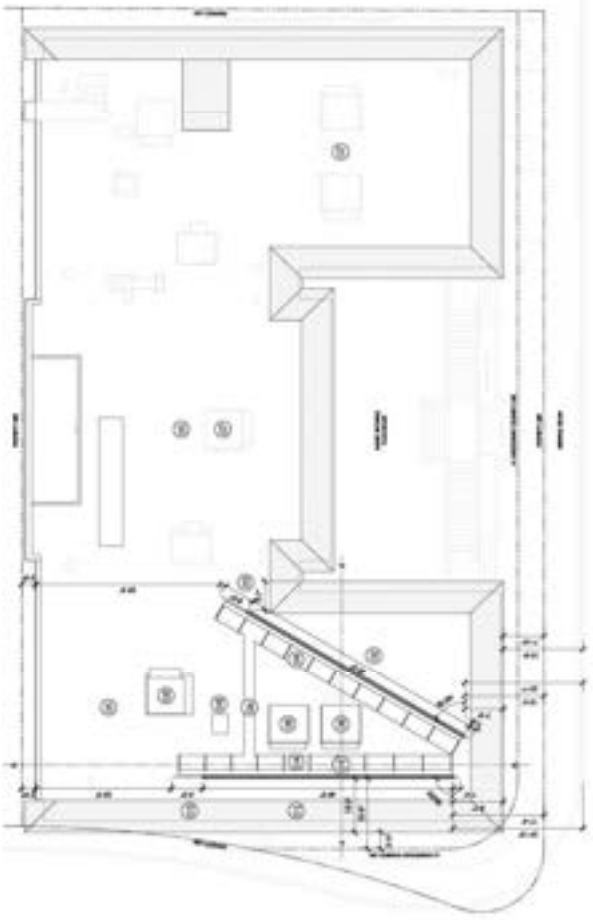
FRANCIS KRAHE & ASSOCIATES

1.0-16

PIAZZA DEL SOL



PLANS

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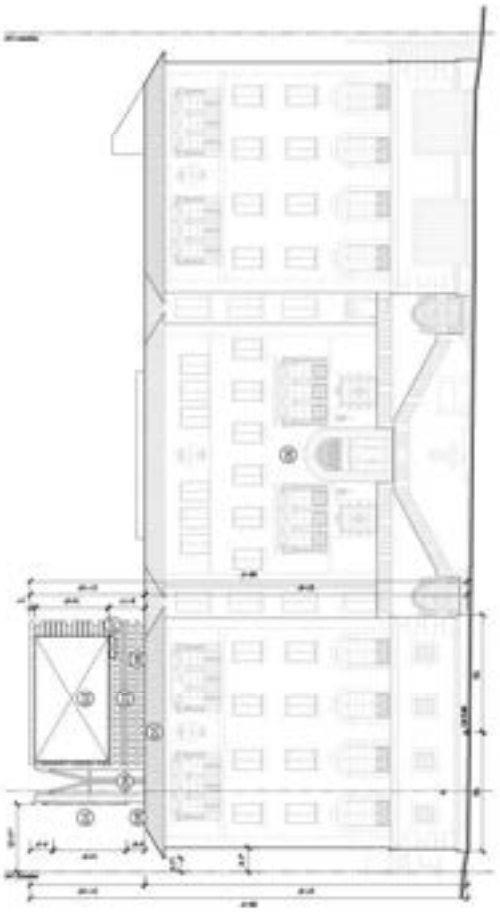
FRANCIS KRAHE & ASSOCIATES

1.0-16

PIAZZA DEL SOL II



ELEVATIONS

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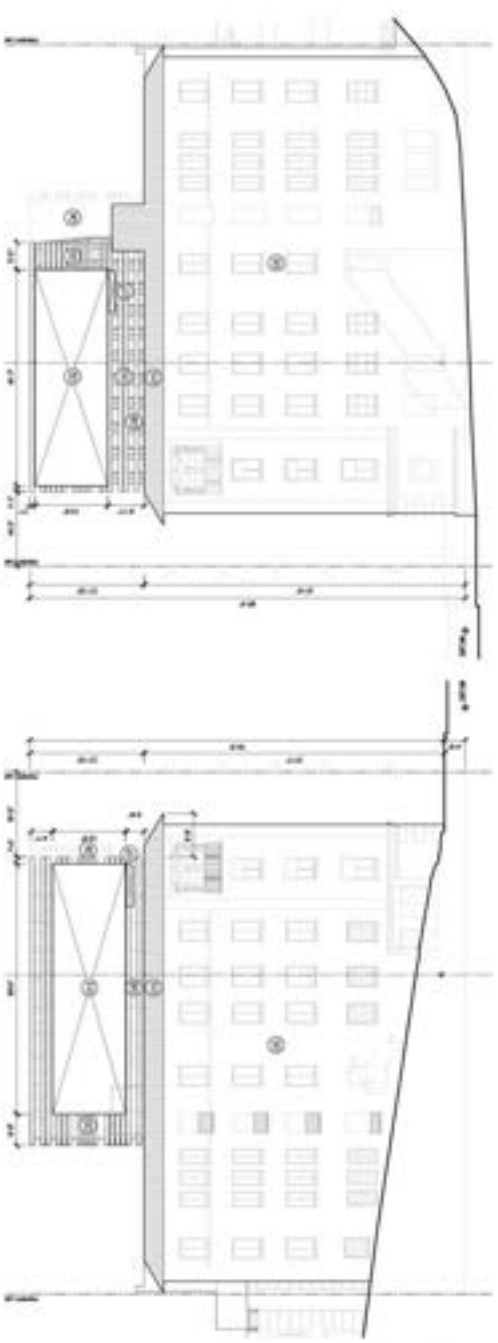
1.0-16

PIAZZA DEL SOL II



ELEVATIONS

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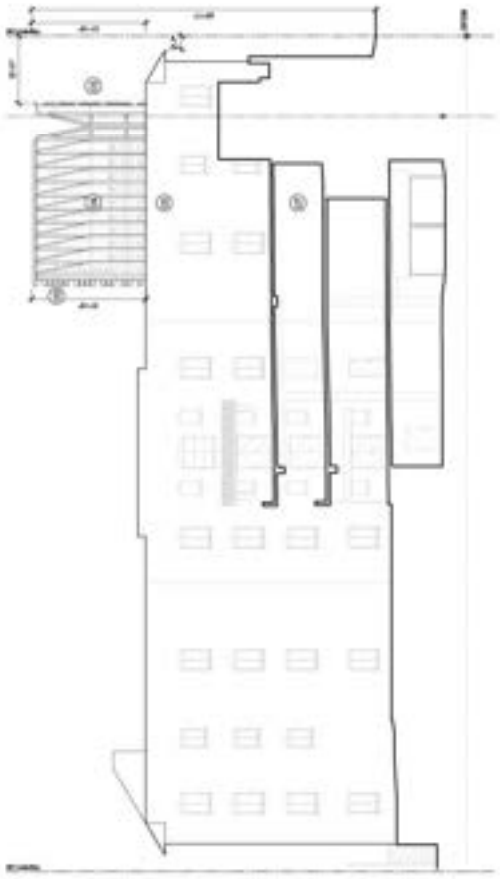
1.0-16

PIAZZA DEL SOL



ELEVATIONS

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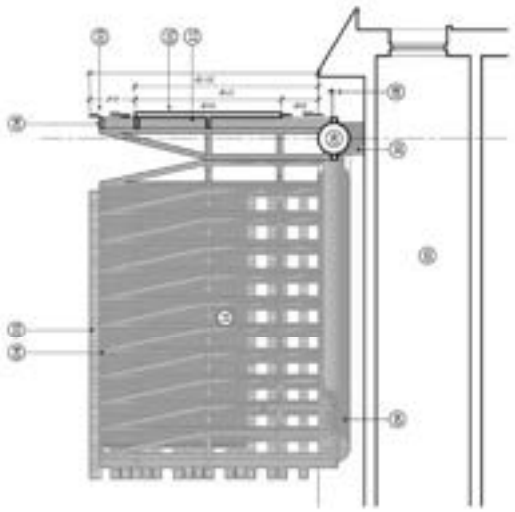
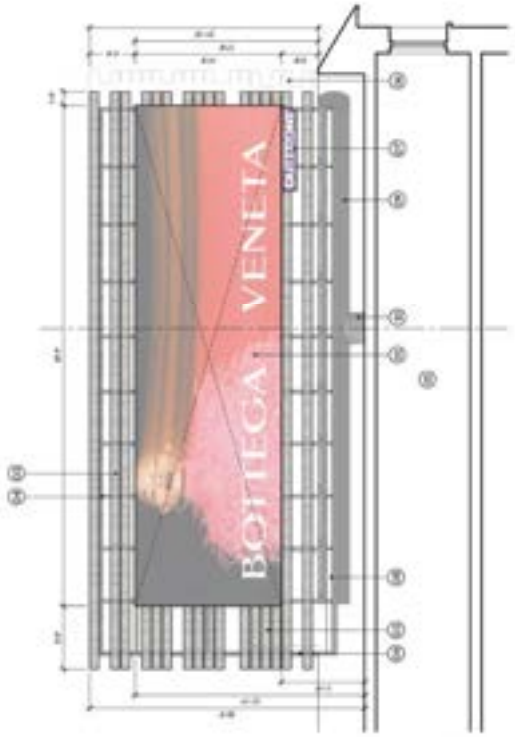
PIAZZA DEL SOL II



ENLARGED ELEVATIONS / SECTIONS I WEST SIGN FACE



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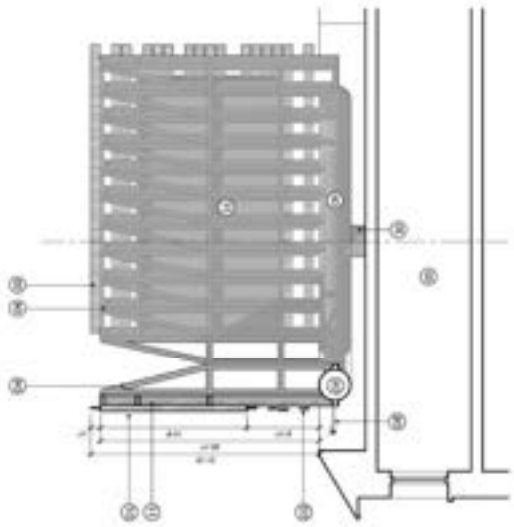
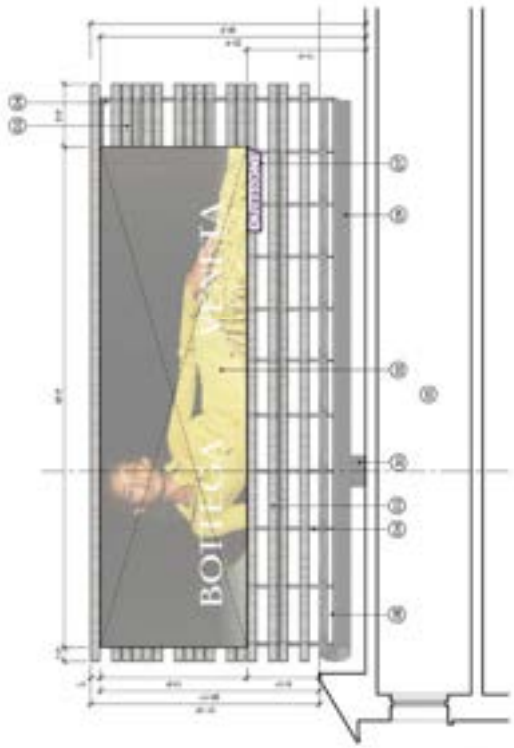
1.0-16

PIAZZA DEL SOL II





ENLARGED ELEVATIONS / SECTIONS I EAST SIGN FACE

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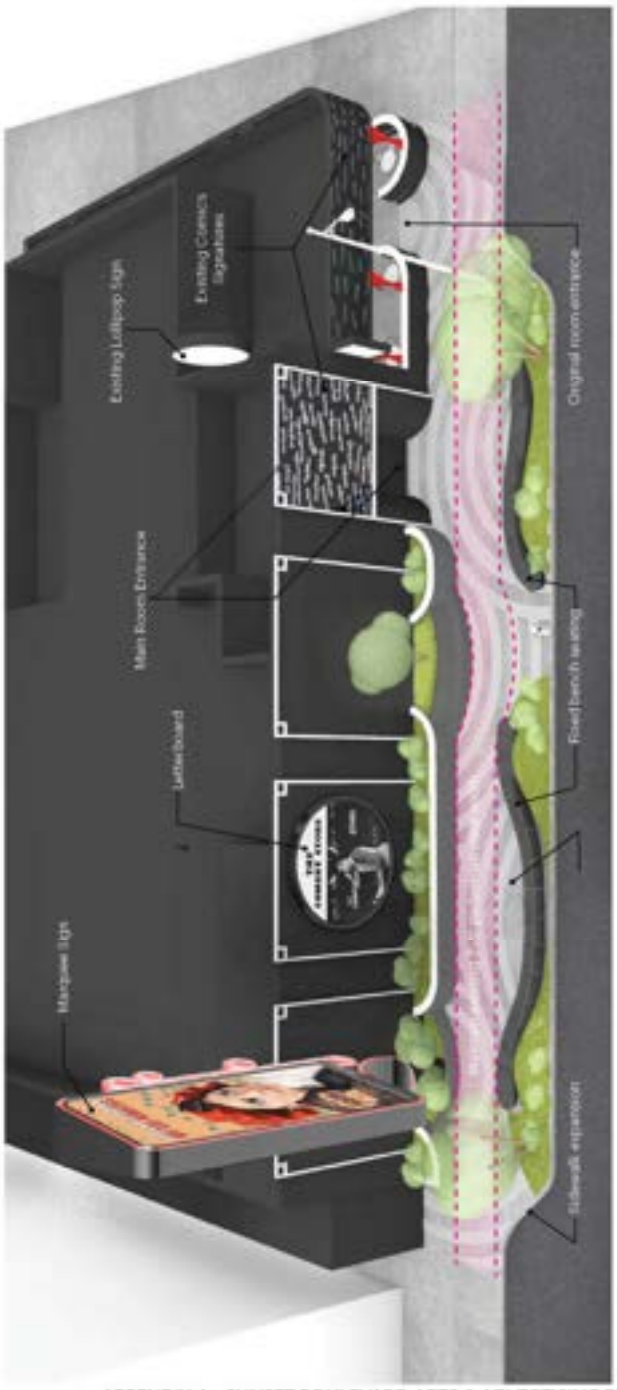
1.0-17



PROPOSAL ELEMENTS

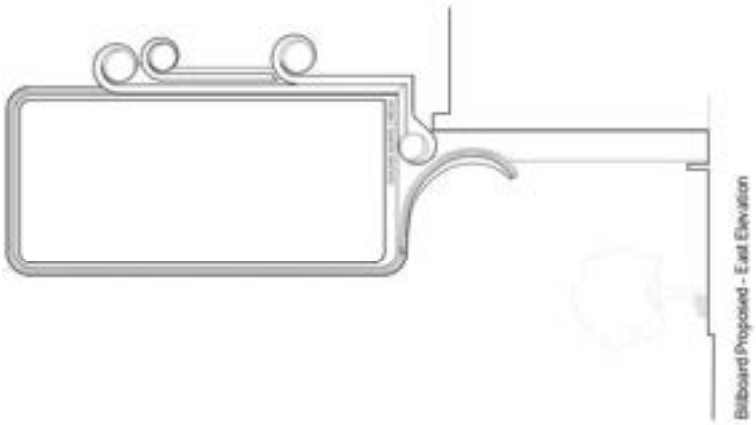
- 2-Sided digital billboard
- Digital letterboard dedicated to non-commercial content. Replaces existing analog letterboard.
- Sidewalk extension with public seating and pollinator friendly planting.

OBJM RIOS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 78

FRANCIS KRAHE & ASSOCIATES

1.0-17



Billboard Proposed - East Elevation

BILLBOARD DESIGN BRINGS MAIN ROOM TO THE STREET

Main Room Stage

Neon Detail

RIOS

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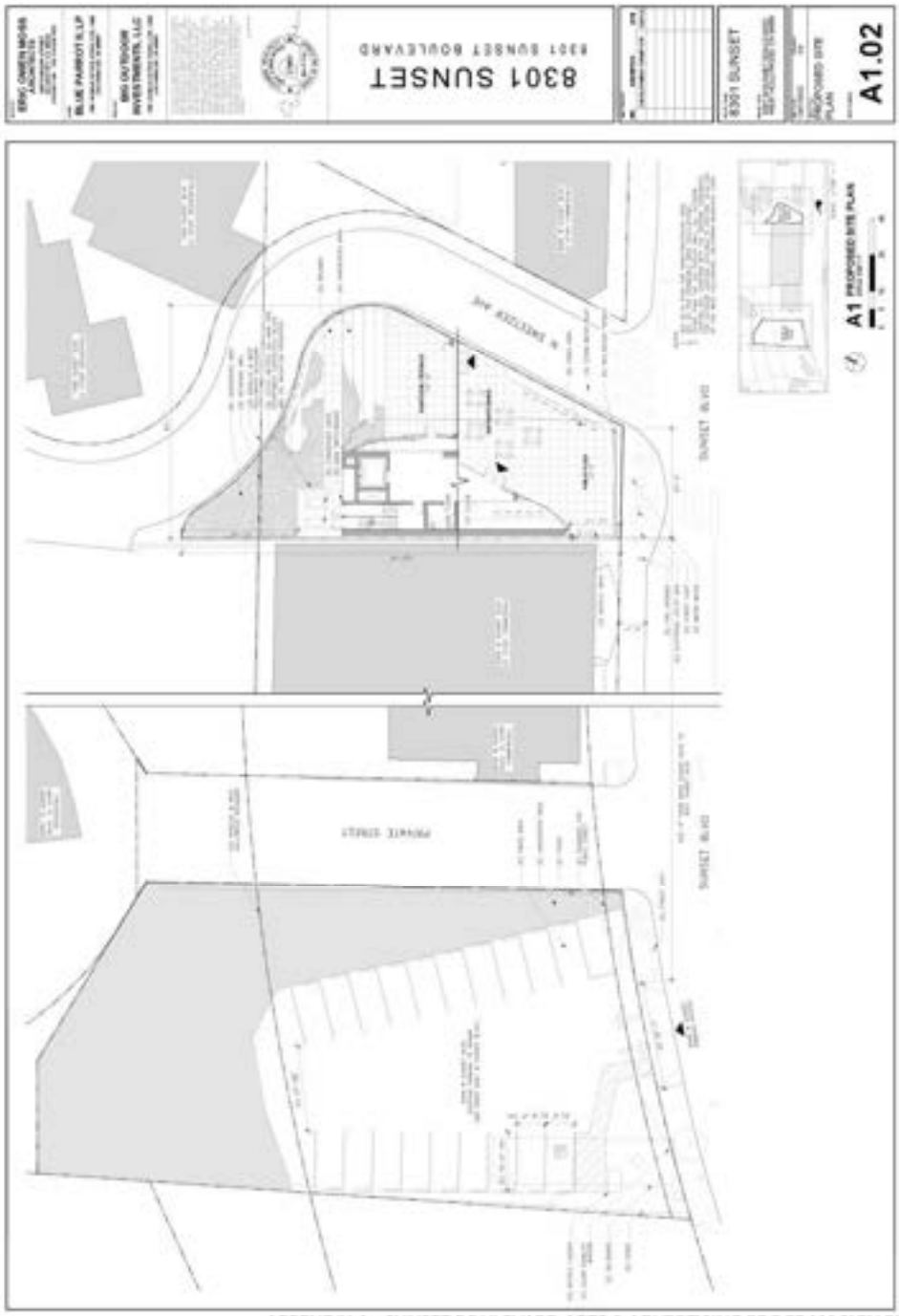
1.0-18



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1.0-18

FRANCIS KRAHE & ASSOCIATES

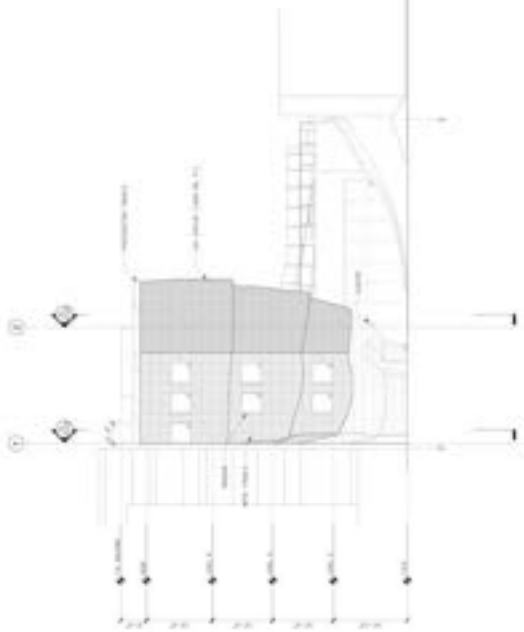
1.0-18

8301 SUNSET BOULEVARD

8301 SUNSET

A4.01

A1 SOUTH ELEVATION



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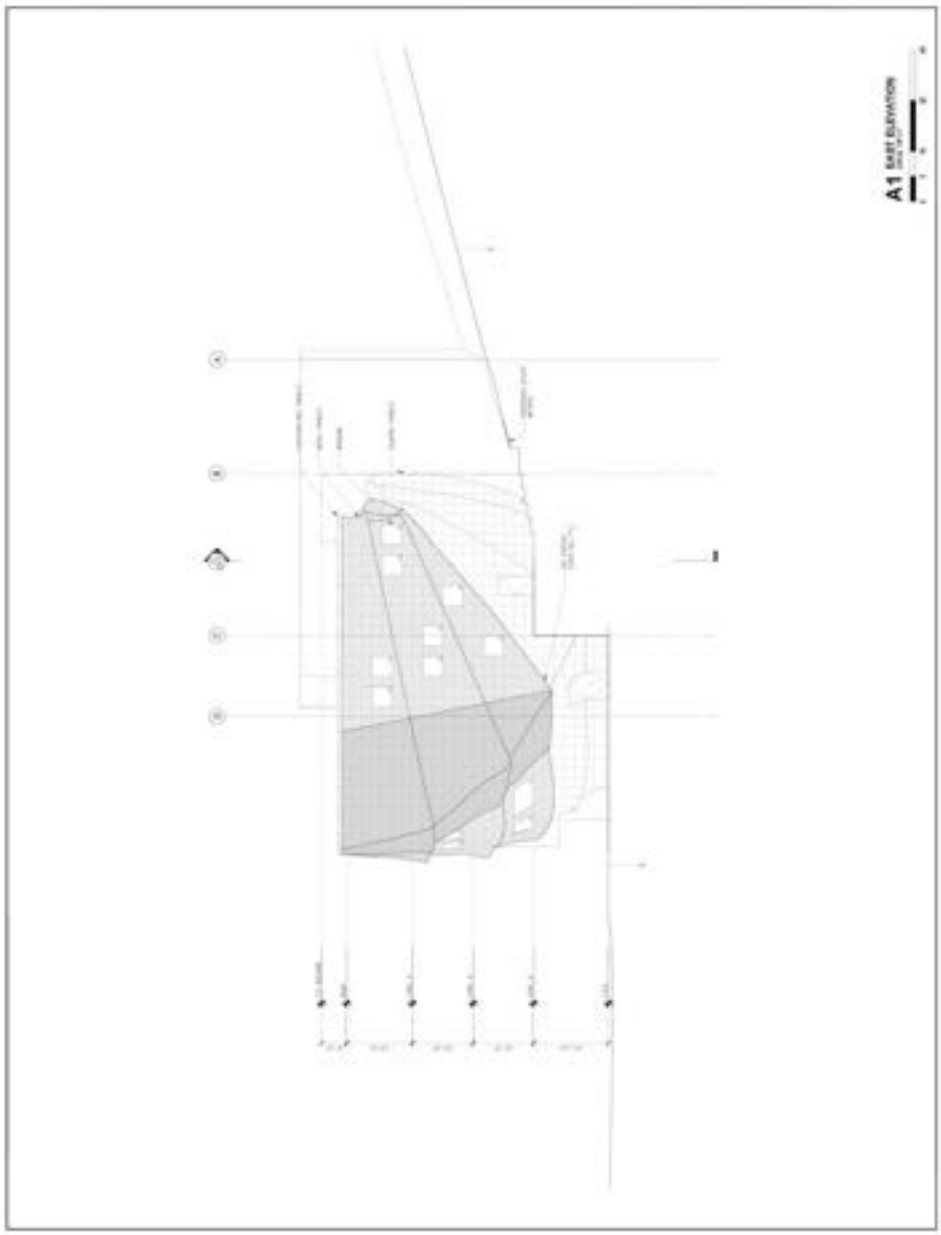
1.0-18

8301 SUNSET BOULEVARD

8301 SUNSET

A4.02



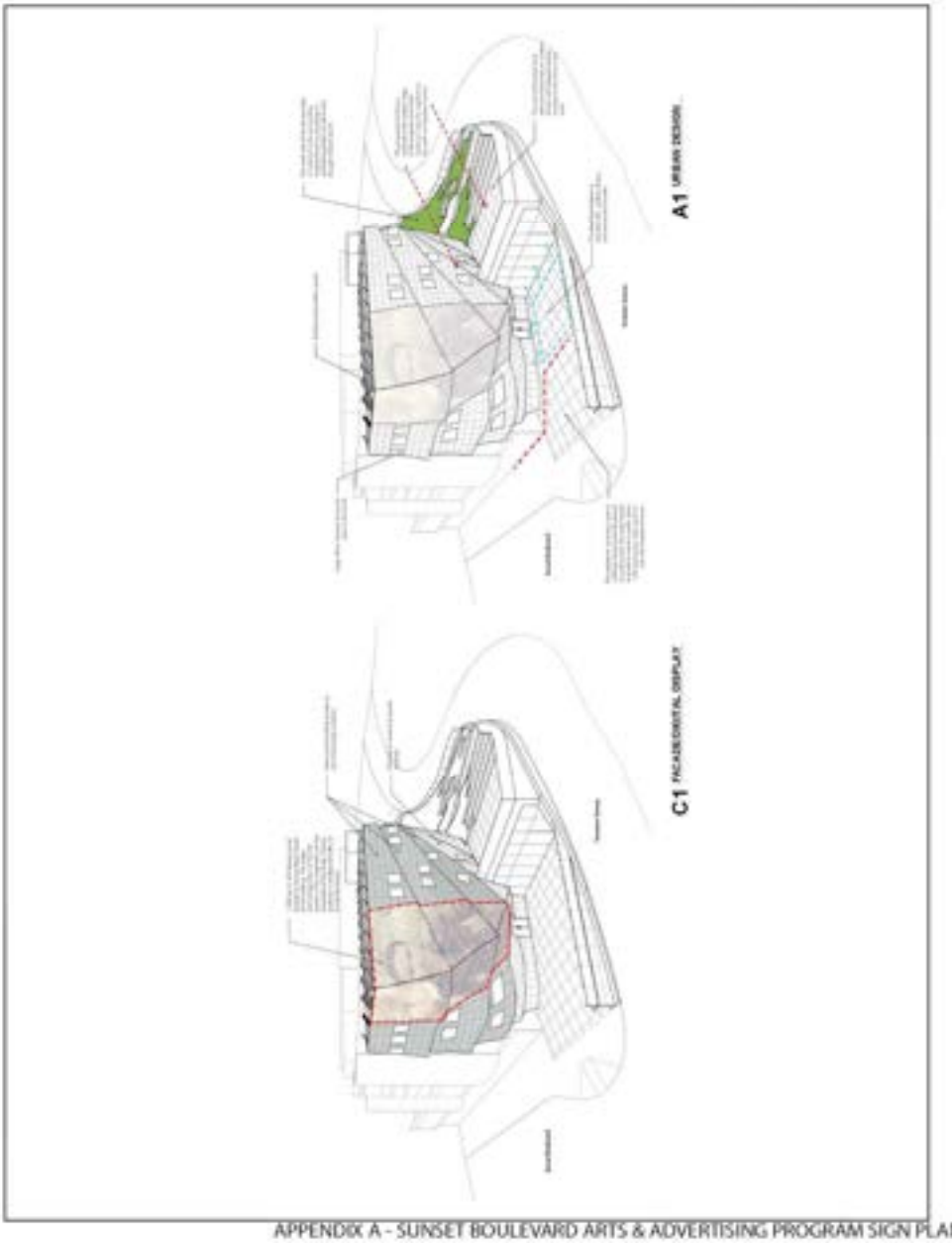
FRANCIS KRAHE & ASSOCIATES

1.0-18

8301 SUNSET BOULEVARD

8301 SUNSET

A7.10



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1.0-19

SITE PLAN

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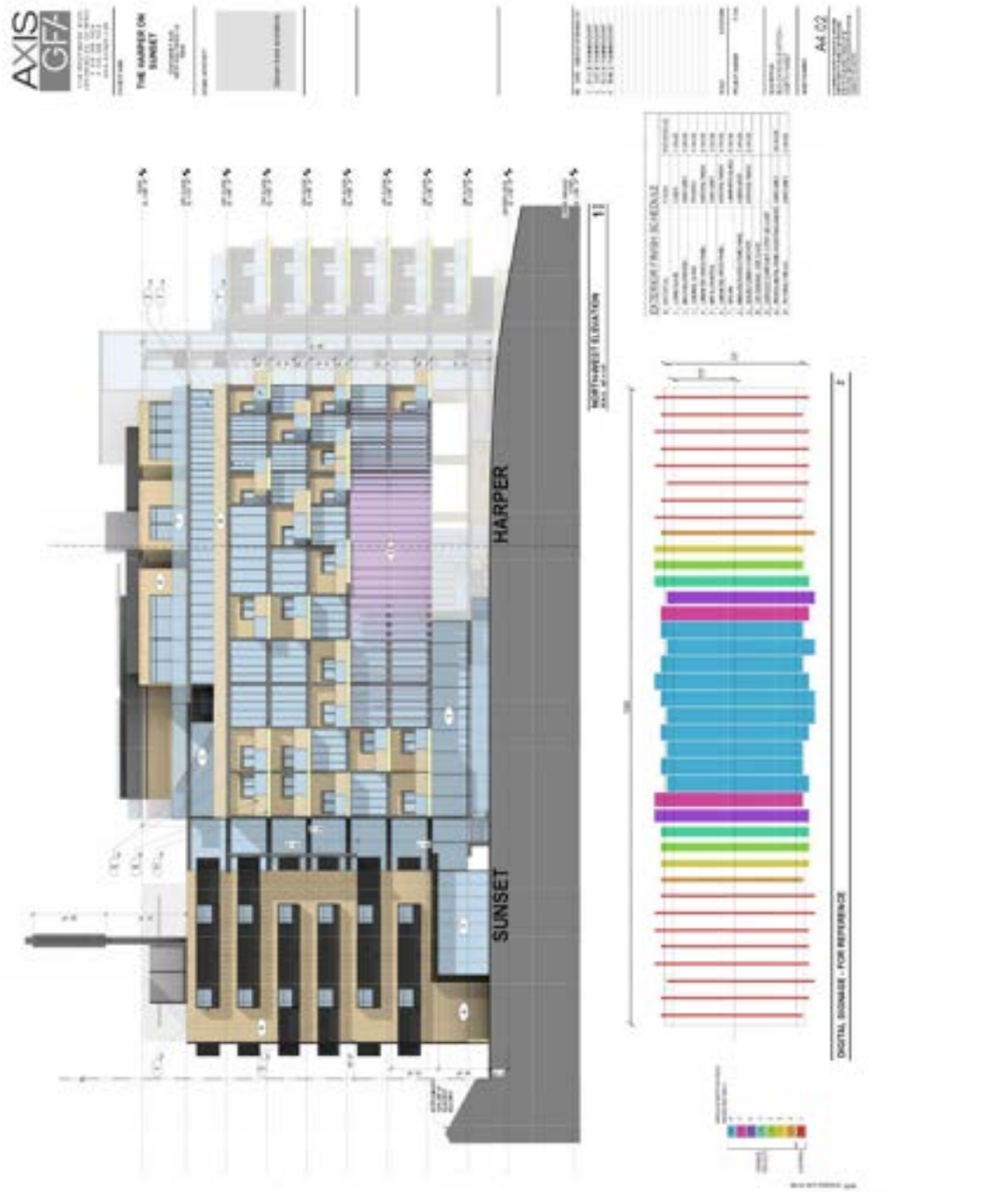
1.0-19



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1.0-19

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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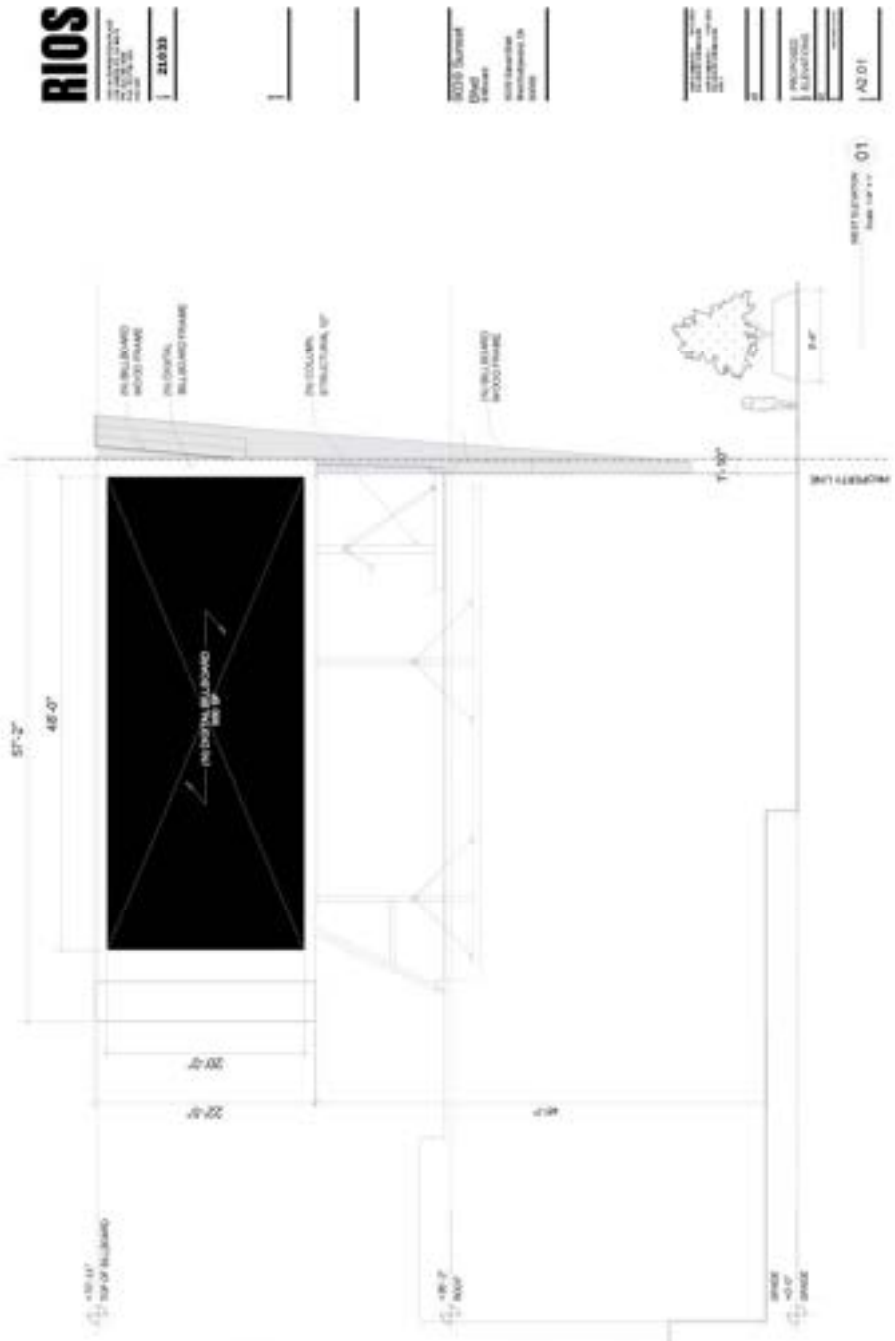
FRANCIS KRAHE & ASSOCIATES

1.5-1

RIOS

FRANCIS KRAHE & ASSOCIATES

1.5-1



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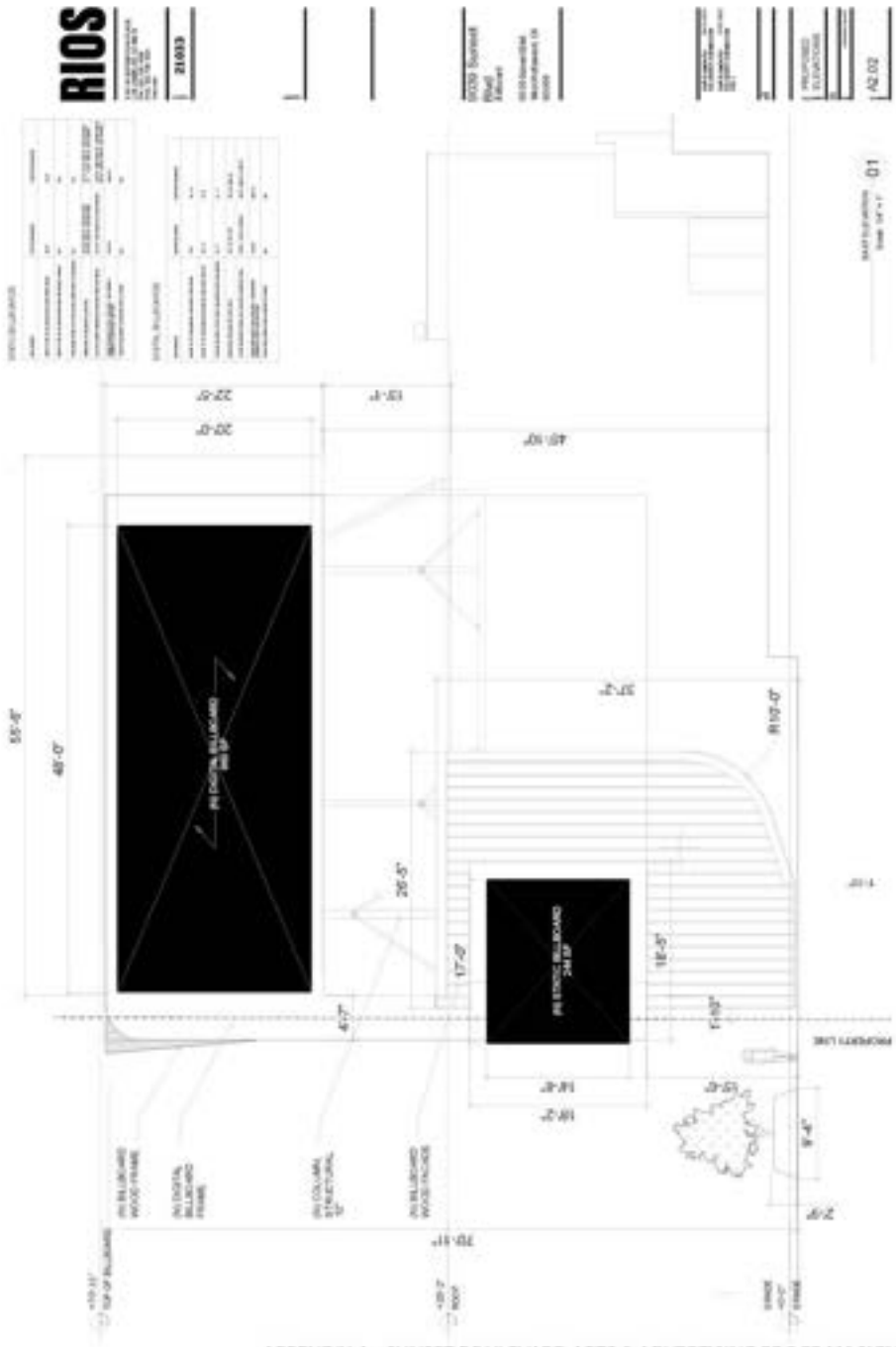
FRANCIS KRAHE & ASSOCIATES

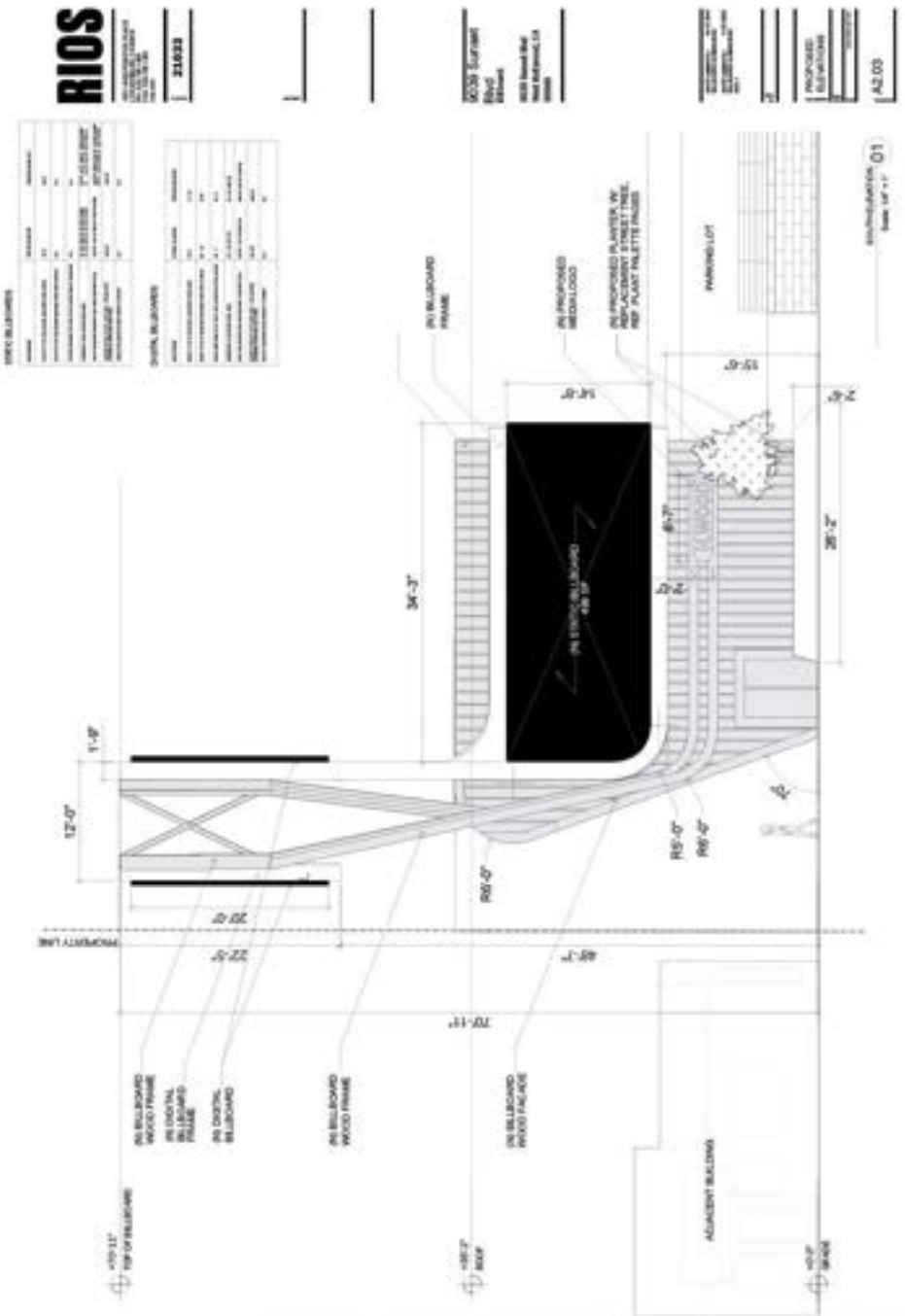
1.5-1



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
PAGE: 90

FRANCIS KRAHE & ASSOCIATES

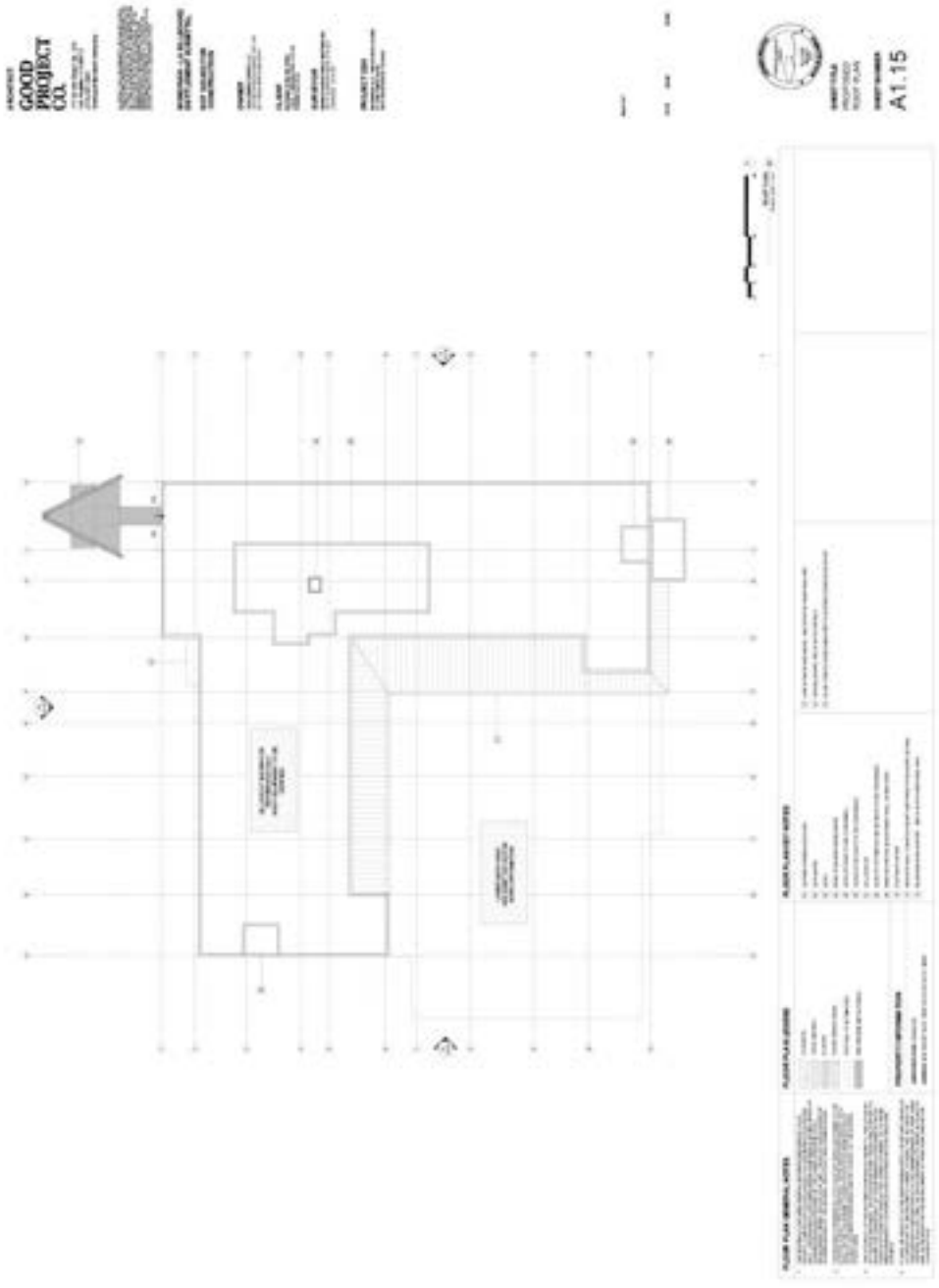
1.5-1



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
PAGE: 91

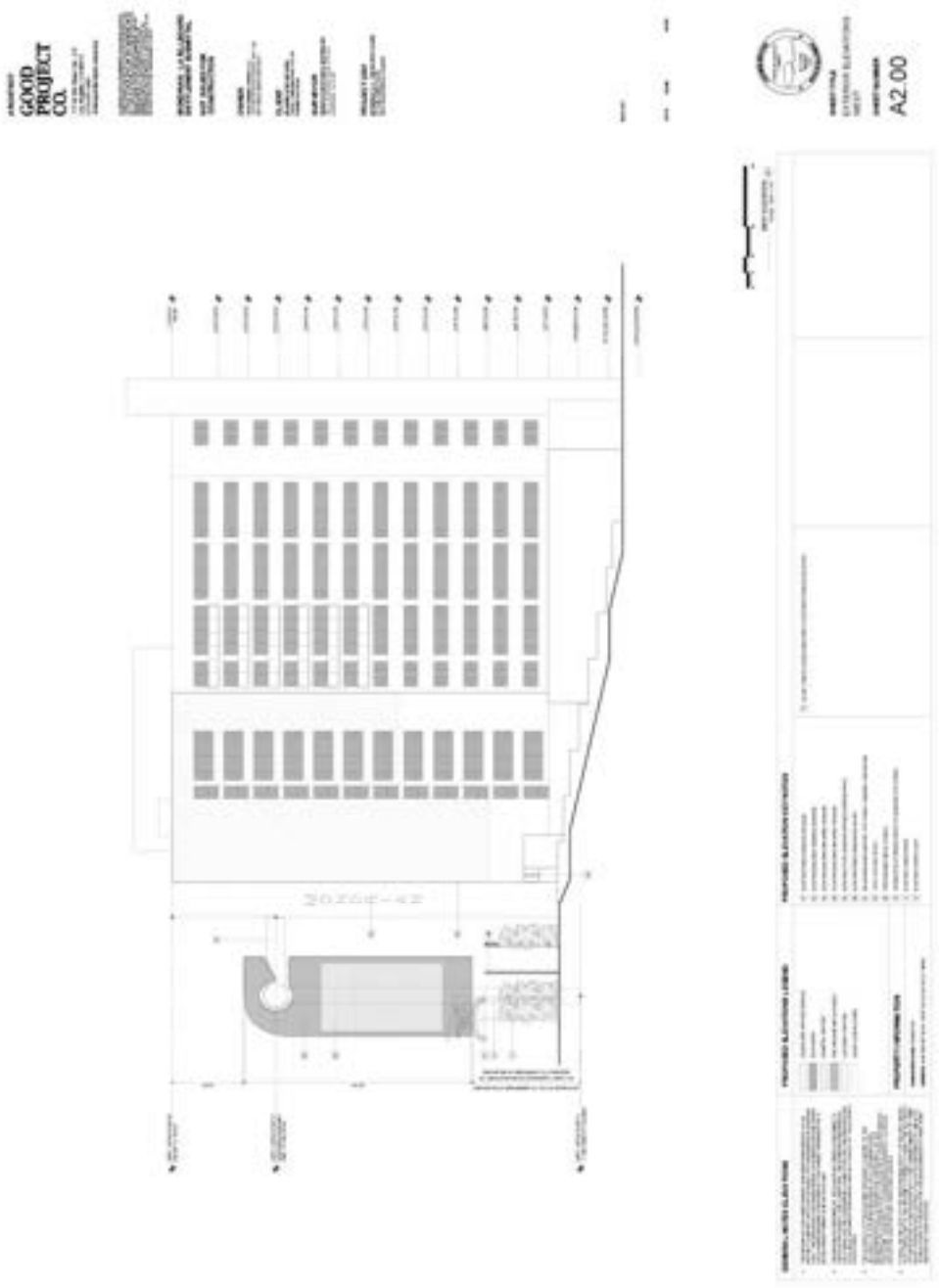
FRANCIS KRAHE & ASSOCIATES

1.5-2



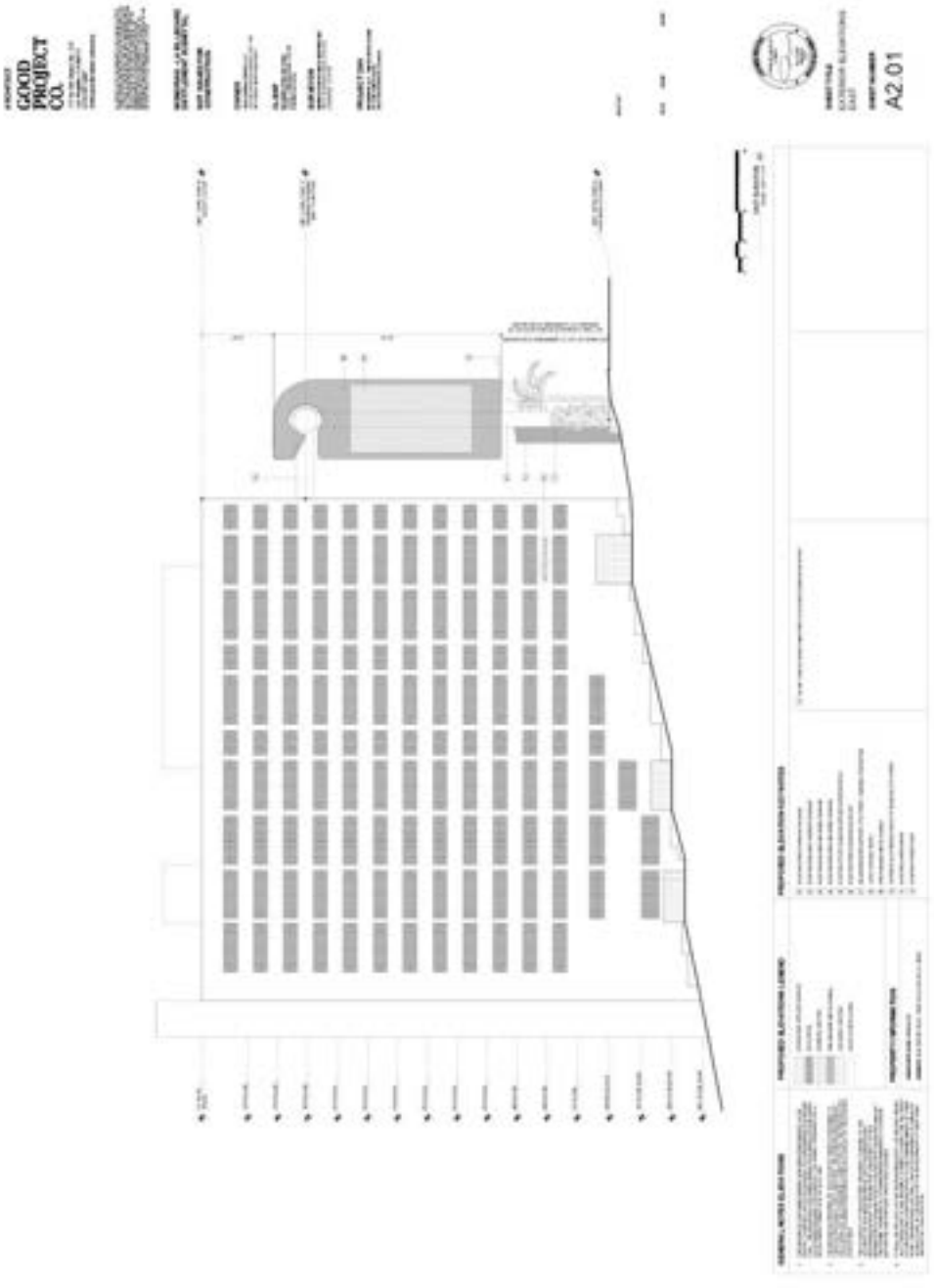
FRANCIS KRAHE & ASSOCIATES

1.5-2



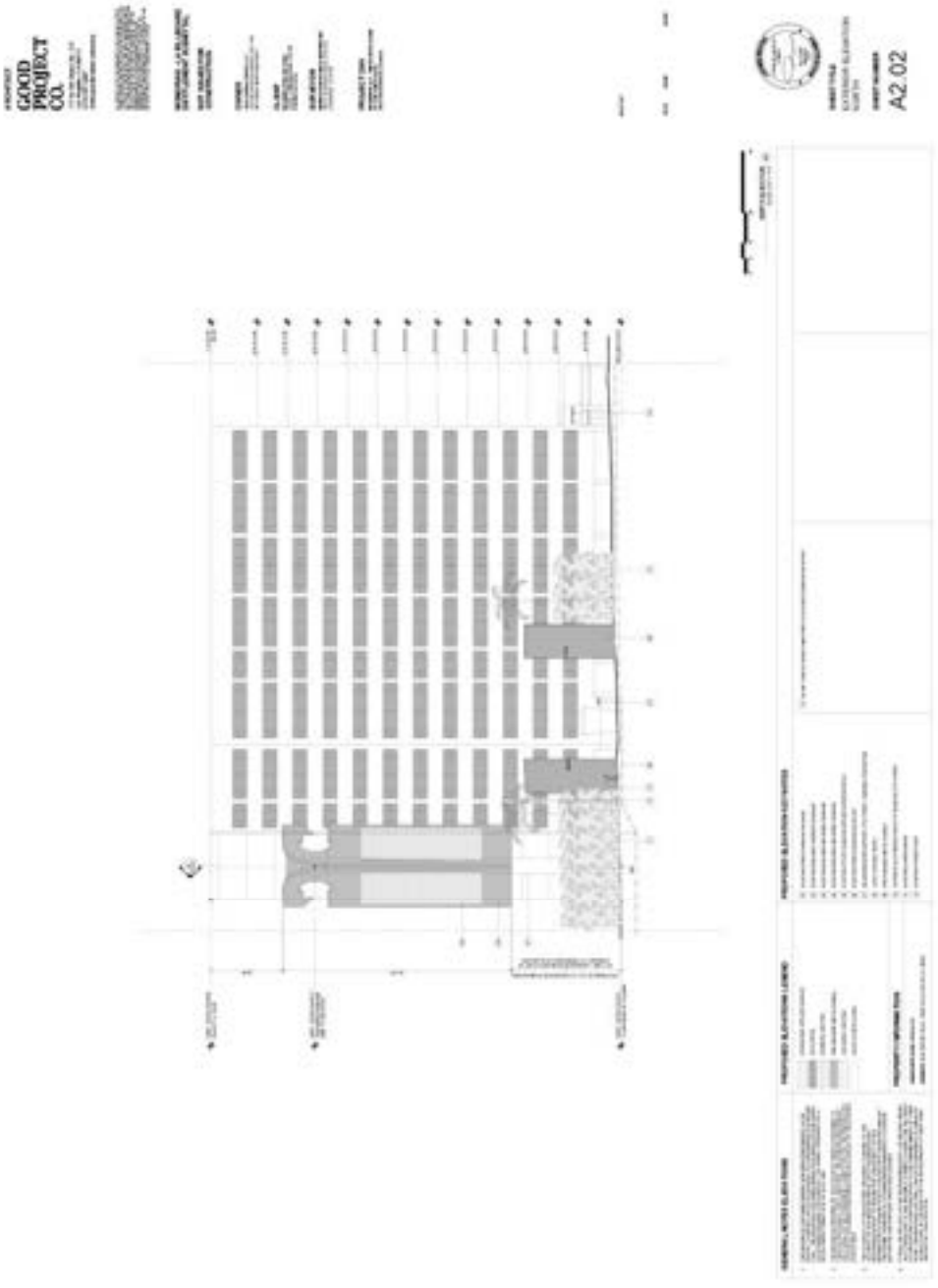
FRANCIS KRAHE & ASSOCIATES

1.5-2



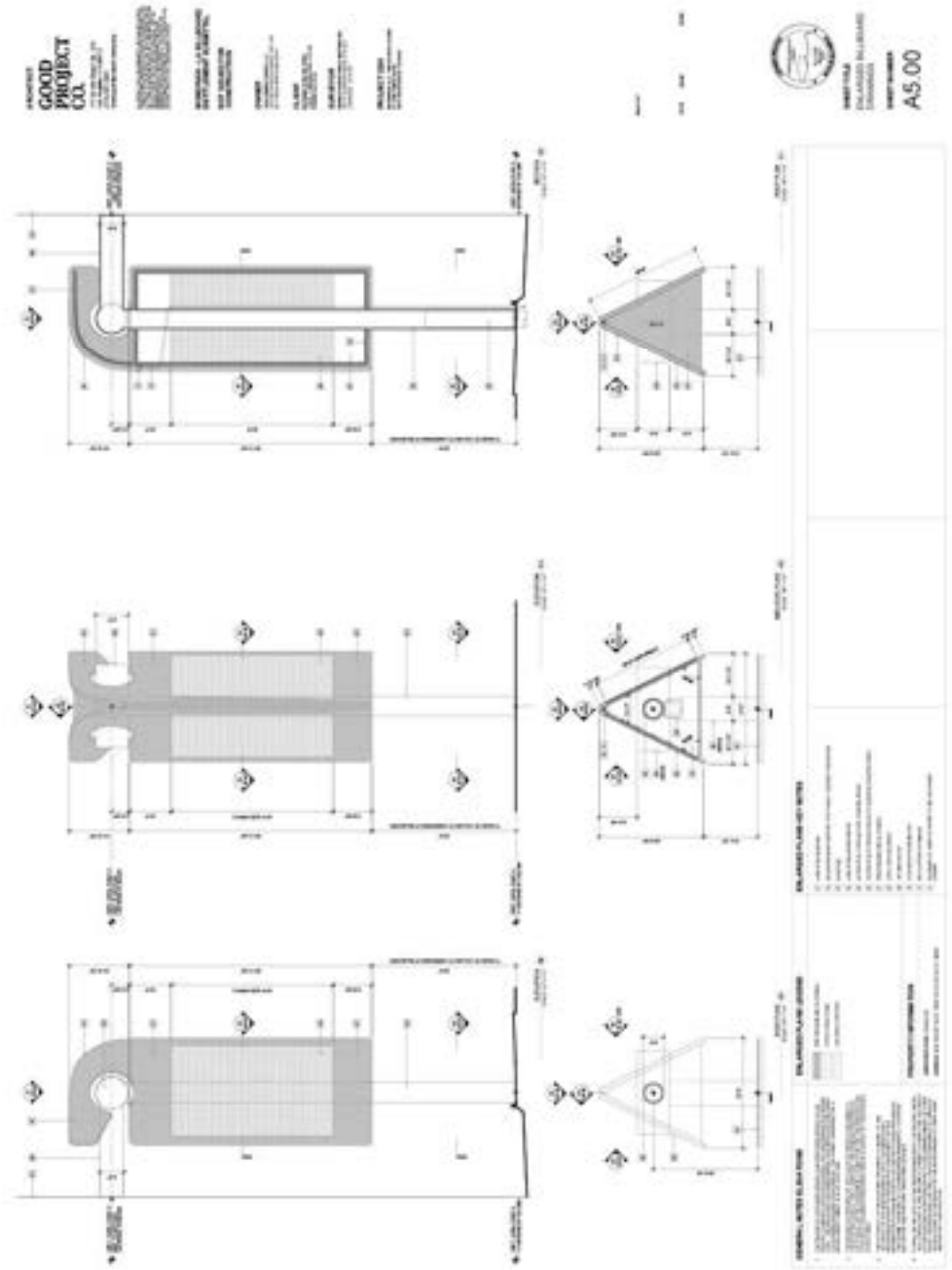
FRANCIS KRAHE & ASSOCIATES

1.5-2



FRANCIS KRAHE & ASSOCIATES

1.5-2



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FRANCIS
KRAHE
& ASSOCIATES

1.5-3

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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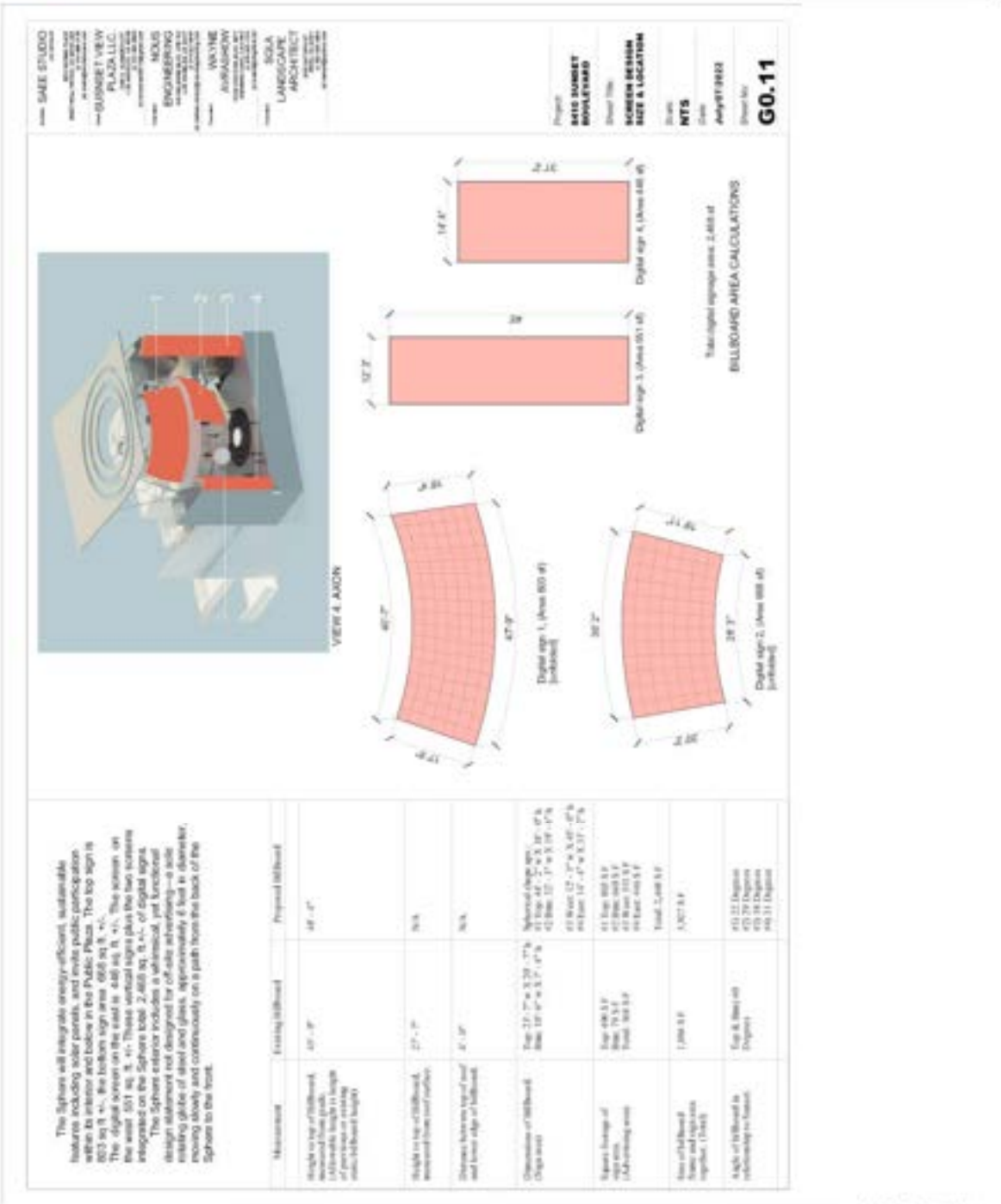
FRANCIS KRAHE & ASSOCIATES

1.5-3



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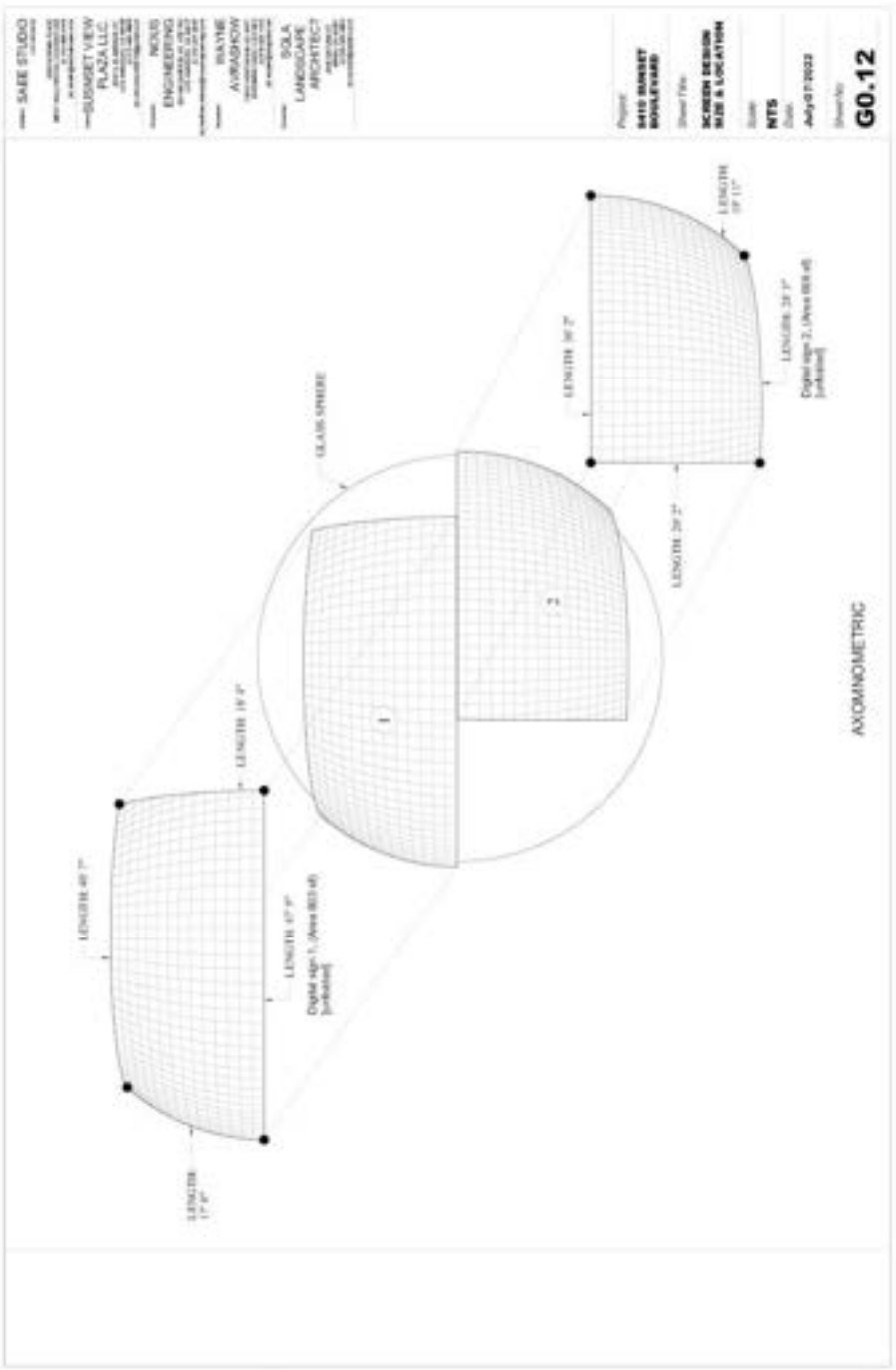
FRANCIS KRAHE & ASSOCIATES

1.5-3



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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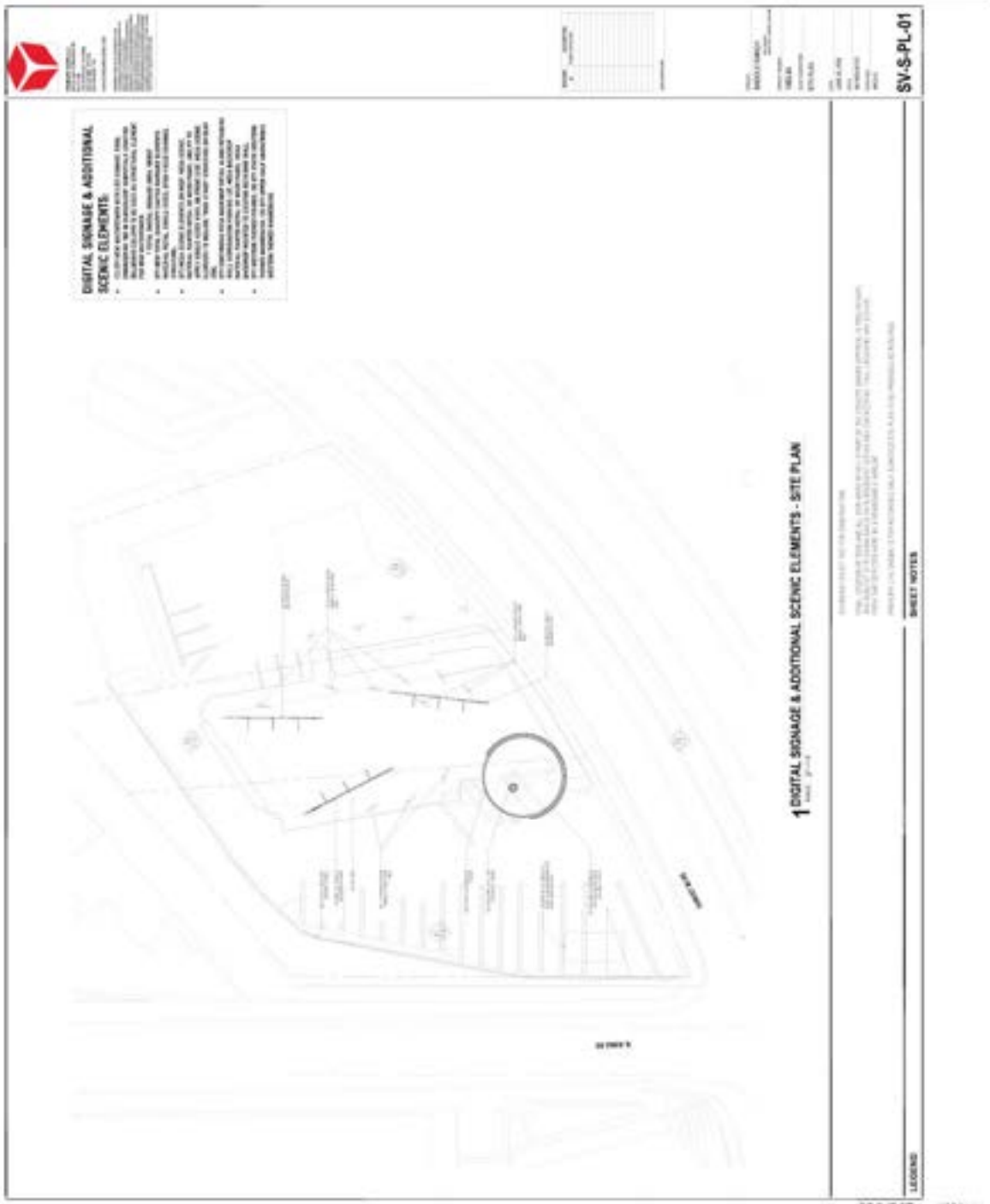
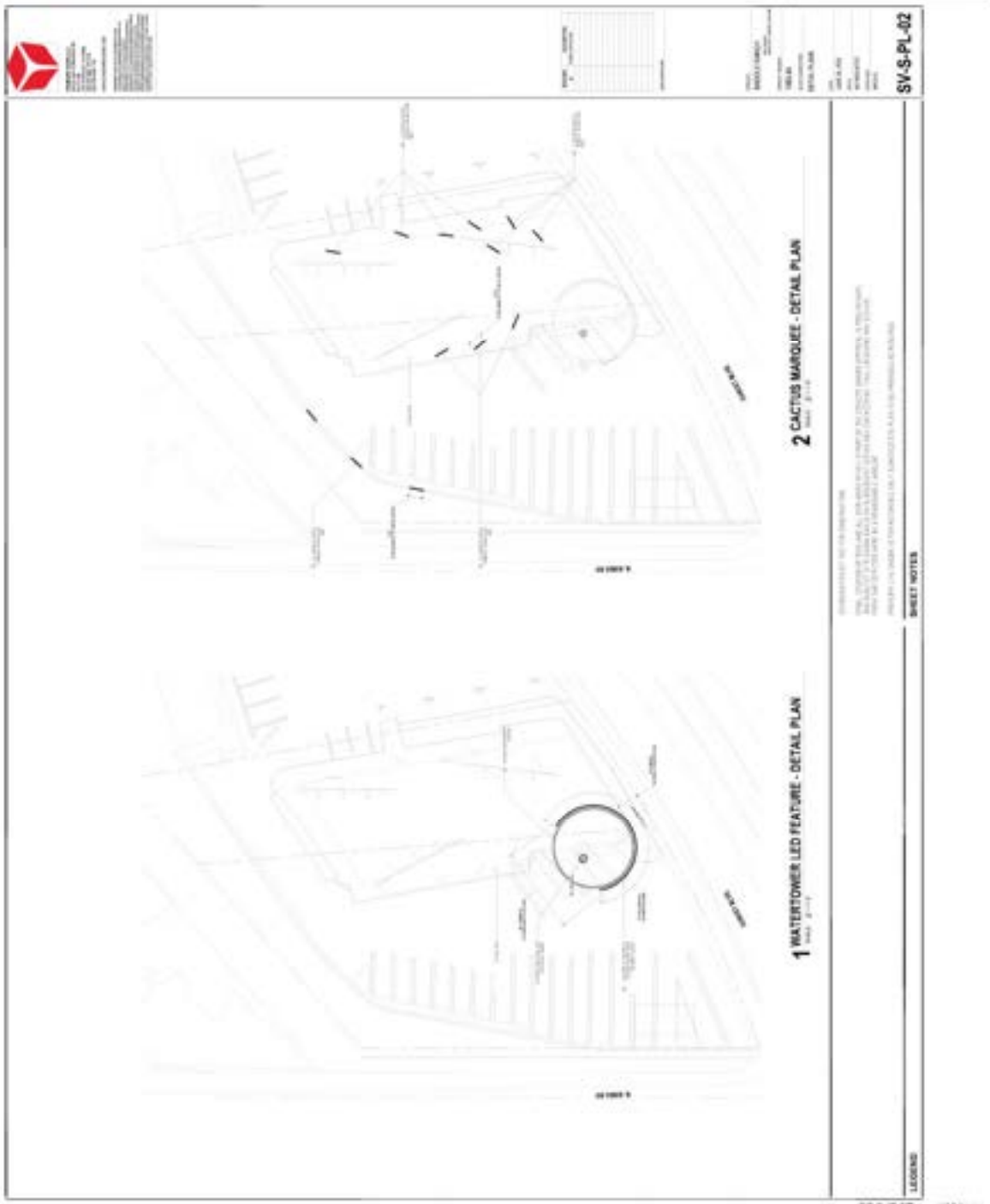
FRANCIS KRAHE & ASSOCIATES

1.5-4



FRANCIS KRAHE & ASSOCIATES

1.5-4



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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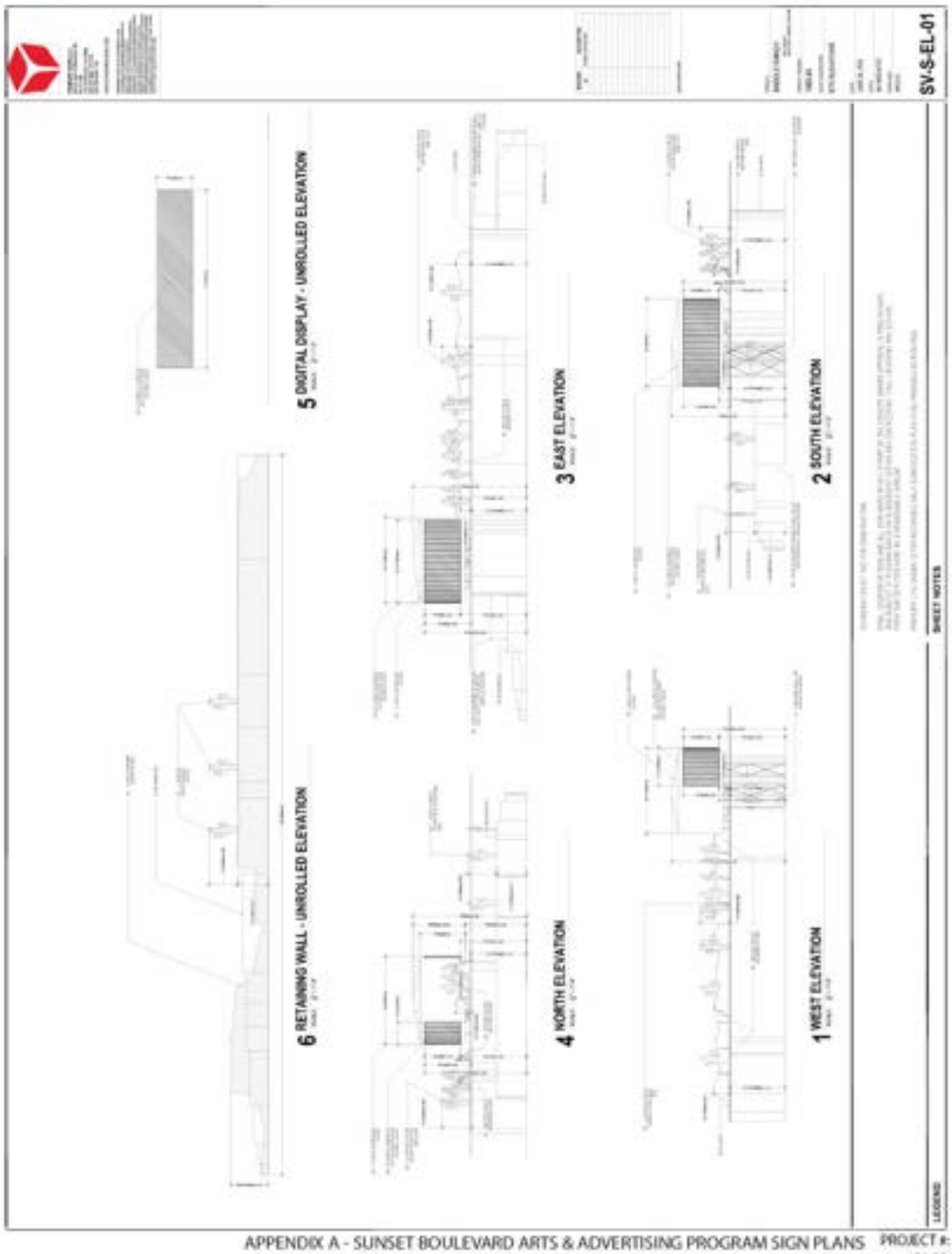
FRANCIS KRAHE & ASSOCIATES

1.5-4



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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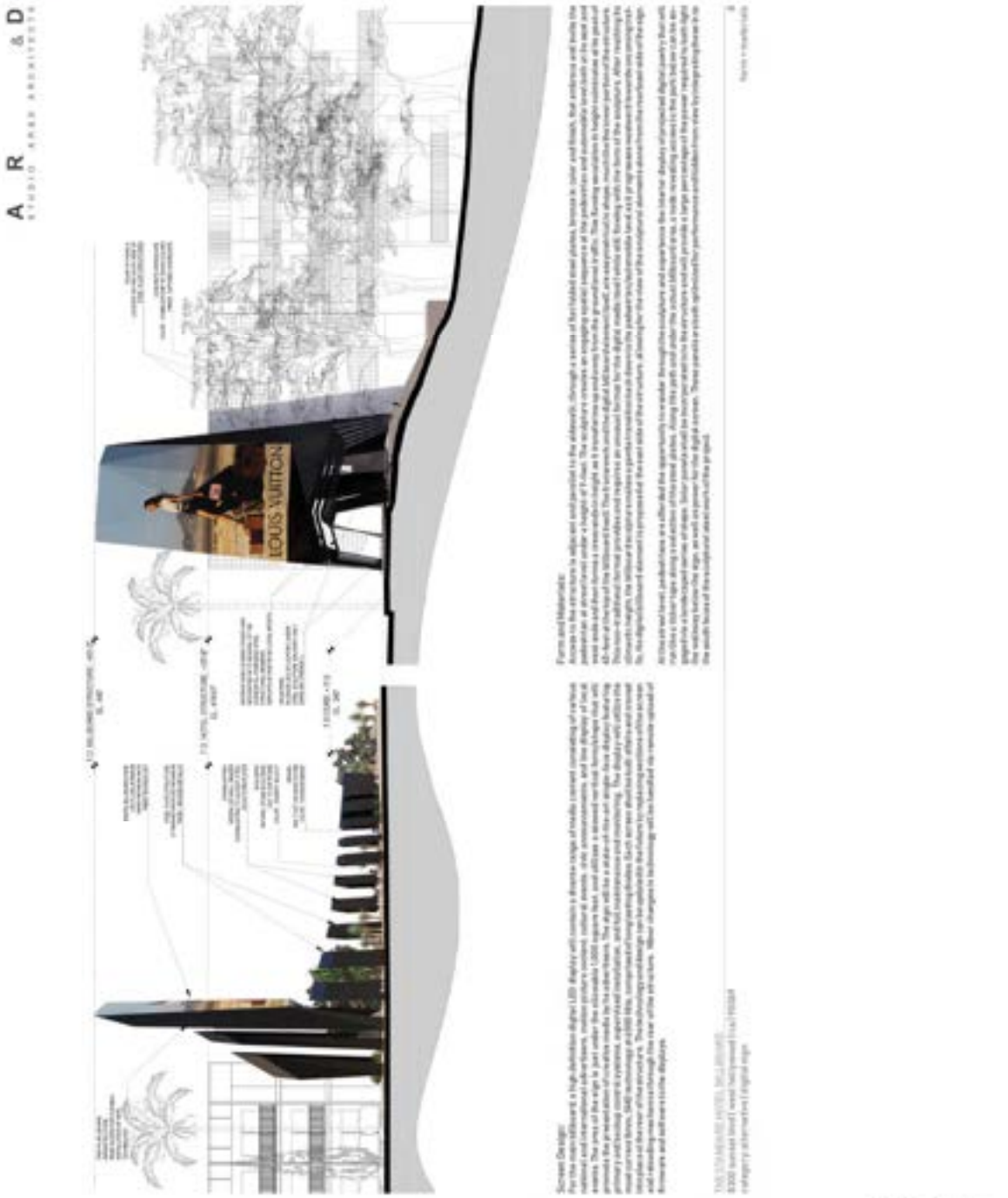
FRANCIS KRAHE & ASSOCIATES

1.5-5

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 103

FRANCIS KRAHE & ASSOCIATES

1.5-5



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 104

FRANCIS KRAHE & ASSOCIATES

1.5-6

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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FRANCIS KRAHE & ASSOCIATES

1.5-6

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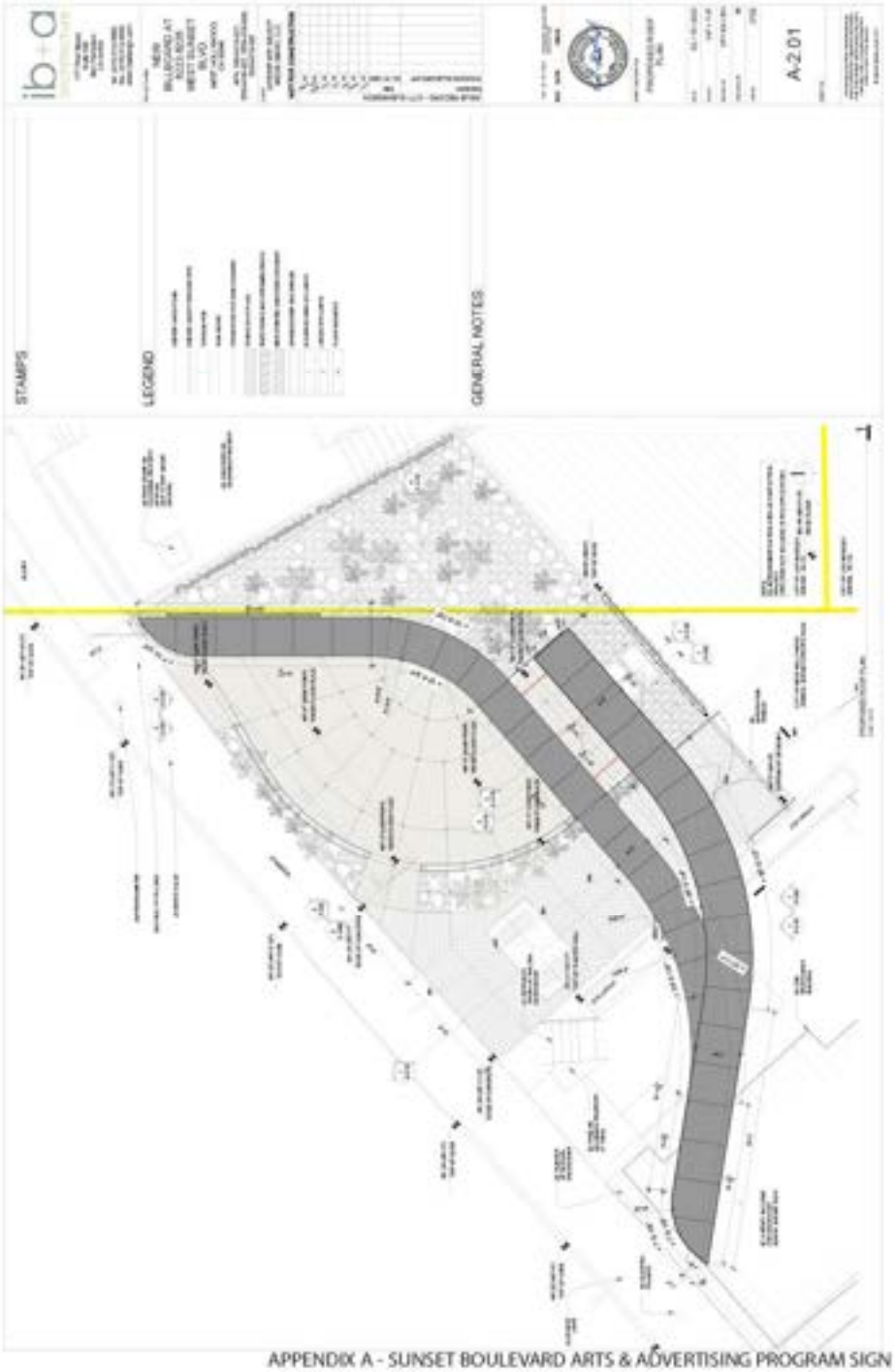
FRANCIS KRAHE & ASSOCIATES

1.5-6

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 107

FRANCIS KRAHE & ASSOCIATES

1.5-6



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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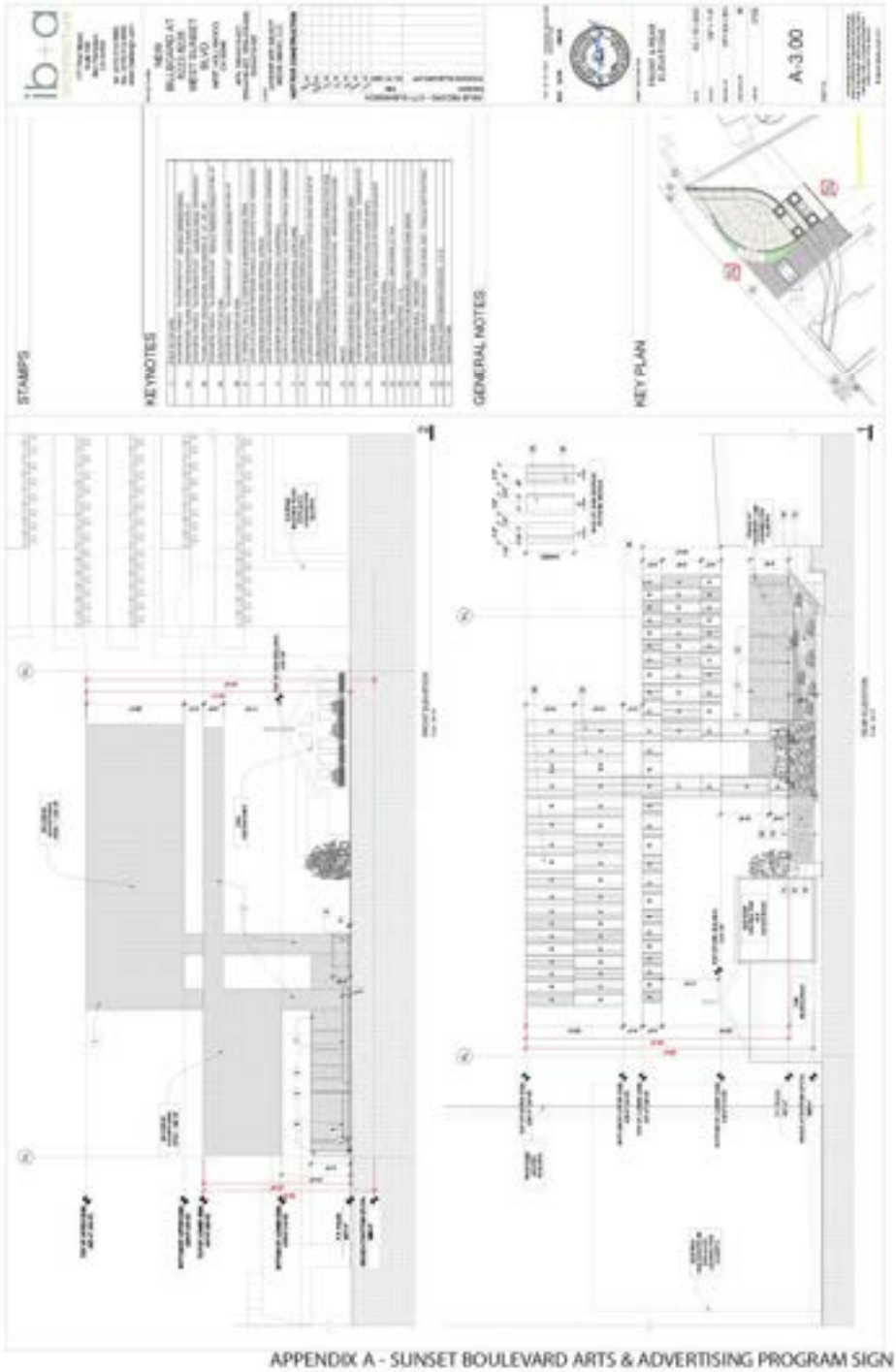
FRANCIS KRAHE & ASSOCIATES

1.5-6



APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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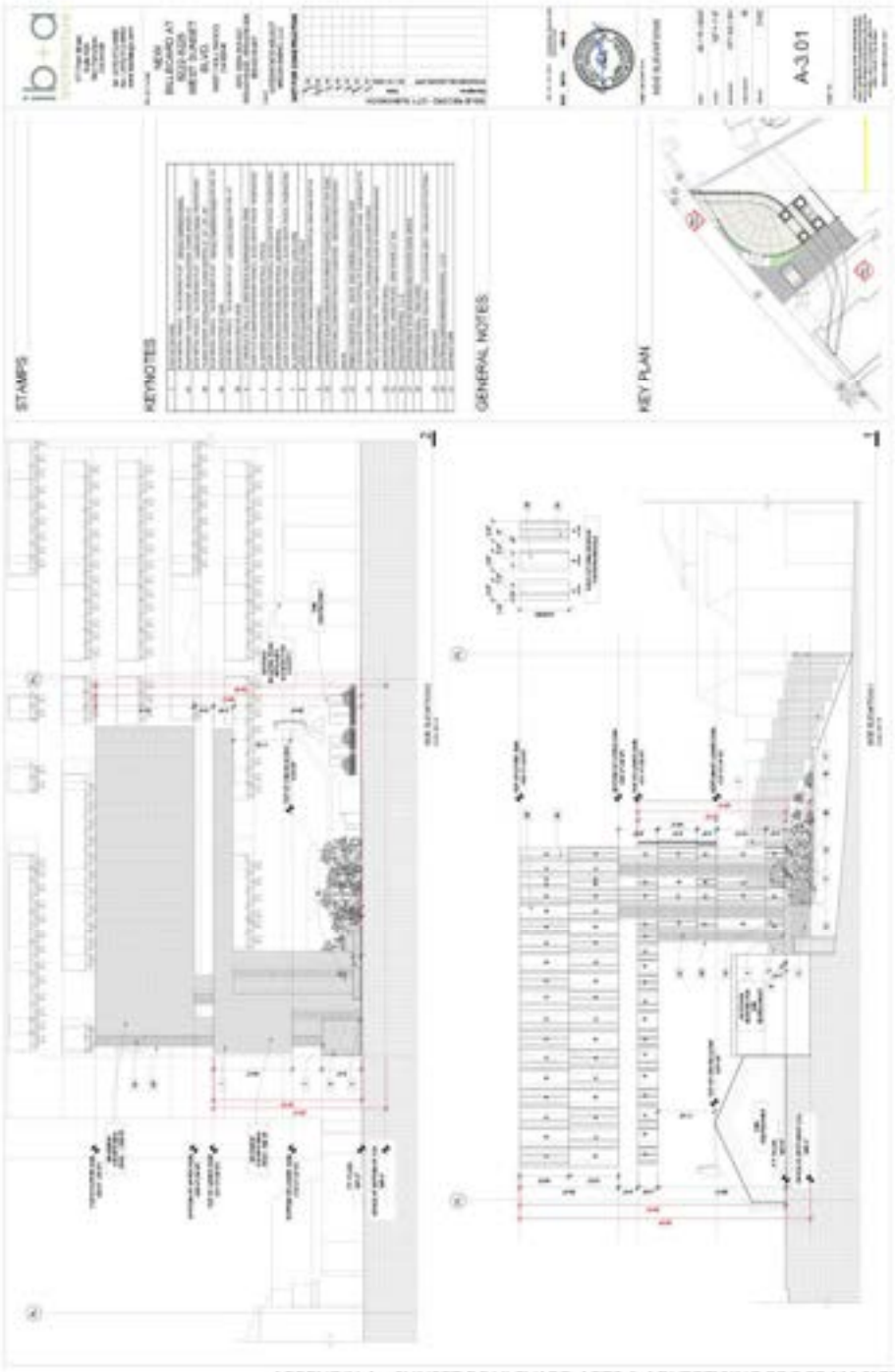
FRANCIS KRAHE & ASSOCIATES

1.5-6



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FRANCIS KRAHE & ASSOCIATES

1.5-6

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 111

FRANCIS KRAHE & ASSOCIATES

1.5-6

FRANCIS KRAHE & ASSOCIATES

1.5-6

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FRANCIS KRAHE & ASSOCIATES

2.0-1

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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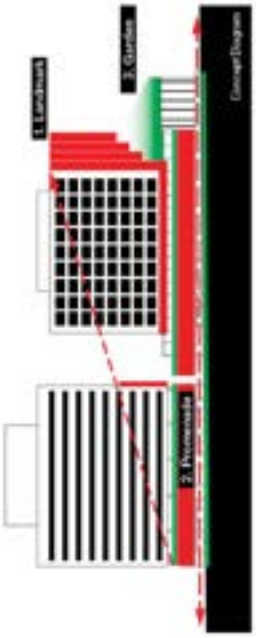
FRANCIS KRAHE & ASSOCIATES

2.0-1

Patterns Architecture Culture

Three Elements, One Place

Gateway into WeHo, not only a Landmark but a Place



A new urban destination at the intersection of culture and retail, media and art, landscape, and architecture; a true contemporary gateway. Articulating and integrating, in a single, multi-layered and multidimensional project, a uniquely designed transition between the civic, monumental scale of architectural landmarks, and the more intimate scale of the human body expressed by pedestrian experience.

Our proposal for 9229-9255 Sunset Blvd. aims to create a true gateway on the westernmost portion of the Sunset Strip by combining and integrating two ambitions.

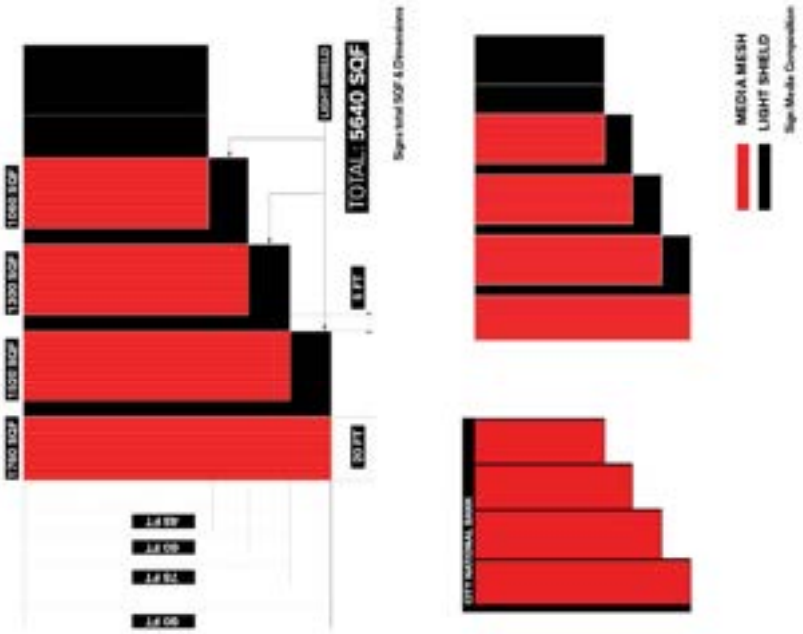
First, by creating a new landmark that dramatically celebrates the beginning and end of West Hollywood (depending on the direction one is approaching from), by expressing and enhancing a prominent architectural corner with a colossal digital waterfall, an articulate cascade of media, art and advertisement

leading to a roof garden which along the new sign, becomes an airborne wonder, instagram-ready visual amenity for the neighboring buildings. Second, by creating a new sidewalk-park and art boardwalk along Sunset Strip, a calm, linear promenade scattered with seating areas, trees with abundant shadow, native vegetation and a public art walkway featuring local artists by means of seasonal exhibition

Wonderwall | Off-site Advertising Signage Program

FRANCIS KRAHE & ASSOCIATES

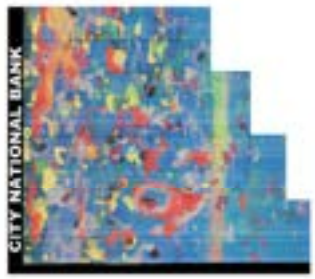
2.0-1



Patterns Architecture/Culture

Wonderwall

Media Approach - Integrating Arts & Advertising



Art on Display

Advertisement

A new landmark that dramatically celebrates the beginning and end of West Hollywood, by expressing and enhancing a prominent architectural corner with a colossal digital waterfall, an articulate cascade of media, art and advertisement leading to a roof garden which along the new sign.

Wonderwall | Off-site Advertising Signage Program

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 116

FRANCIS KRAHE & ASSOCIATES

2.0-1

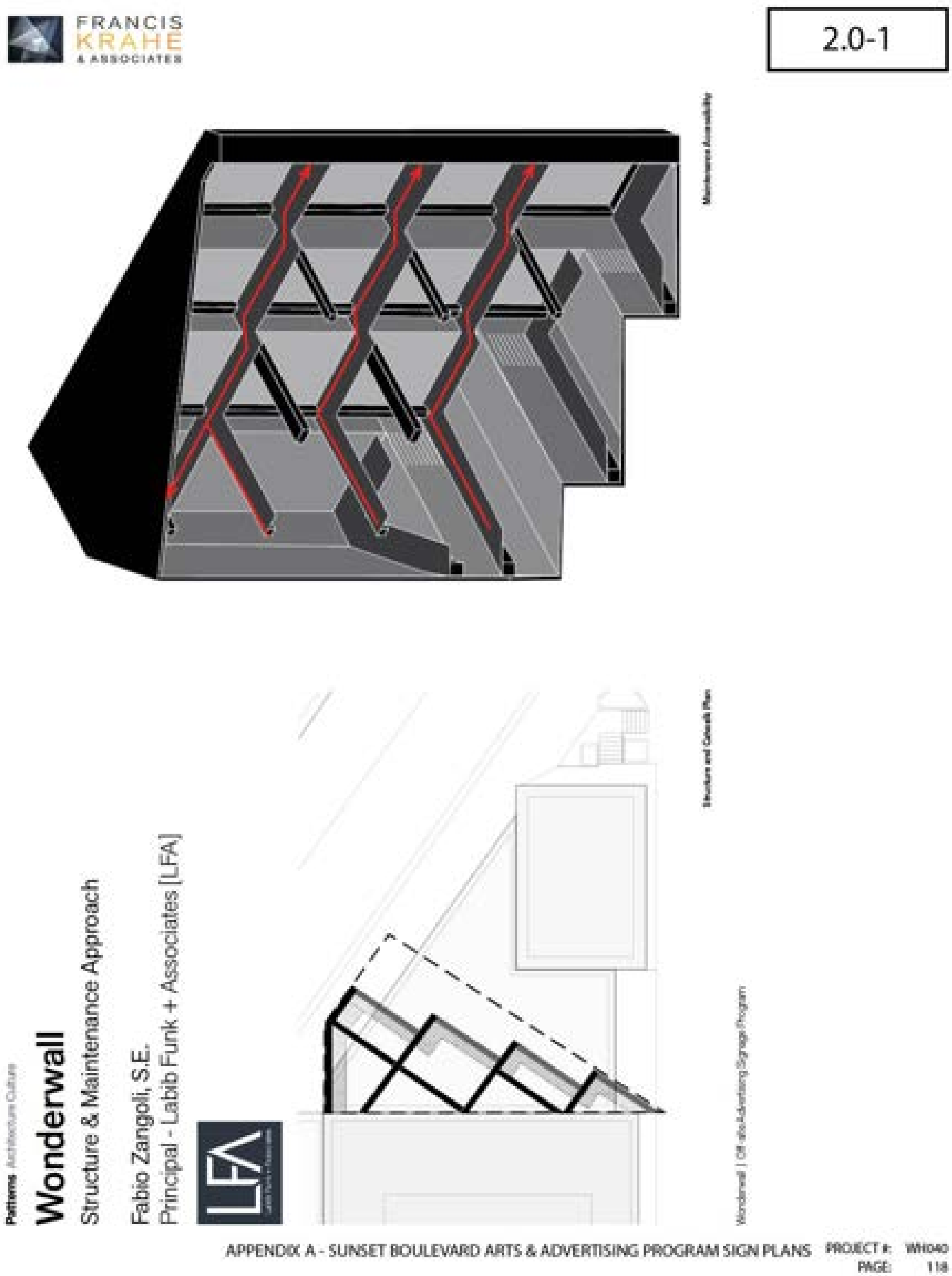
Side Sign Elevation

Front Sign Elevation

Patterns Architecture Culture

Wonderwall | Off-site Advertising Signage Program

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 117


FRANCIS KRAHE & ASSOCIATES
2.0-1
Patterns Architecture Culture
Wonderwall
Structure & Maintenance Approach
Fabio Zangoli, S.E.
Principal - Labib Funk + Associates [LFA]
LFA
APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS
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PAGE: 118

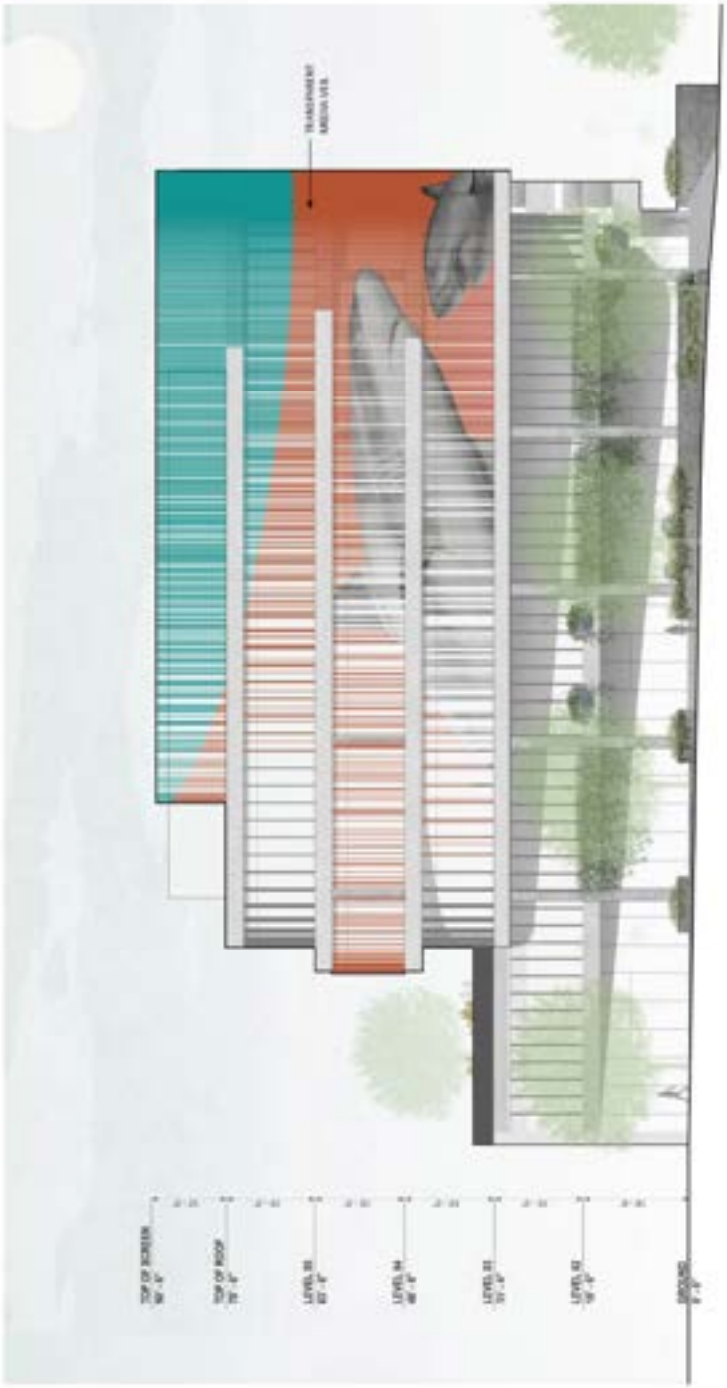
FRANCIS KRAHE & ASSOCIATES

2.0-2

Site Plan and Local Context

FRANCIS KRAHE & ASSOCIATES

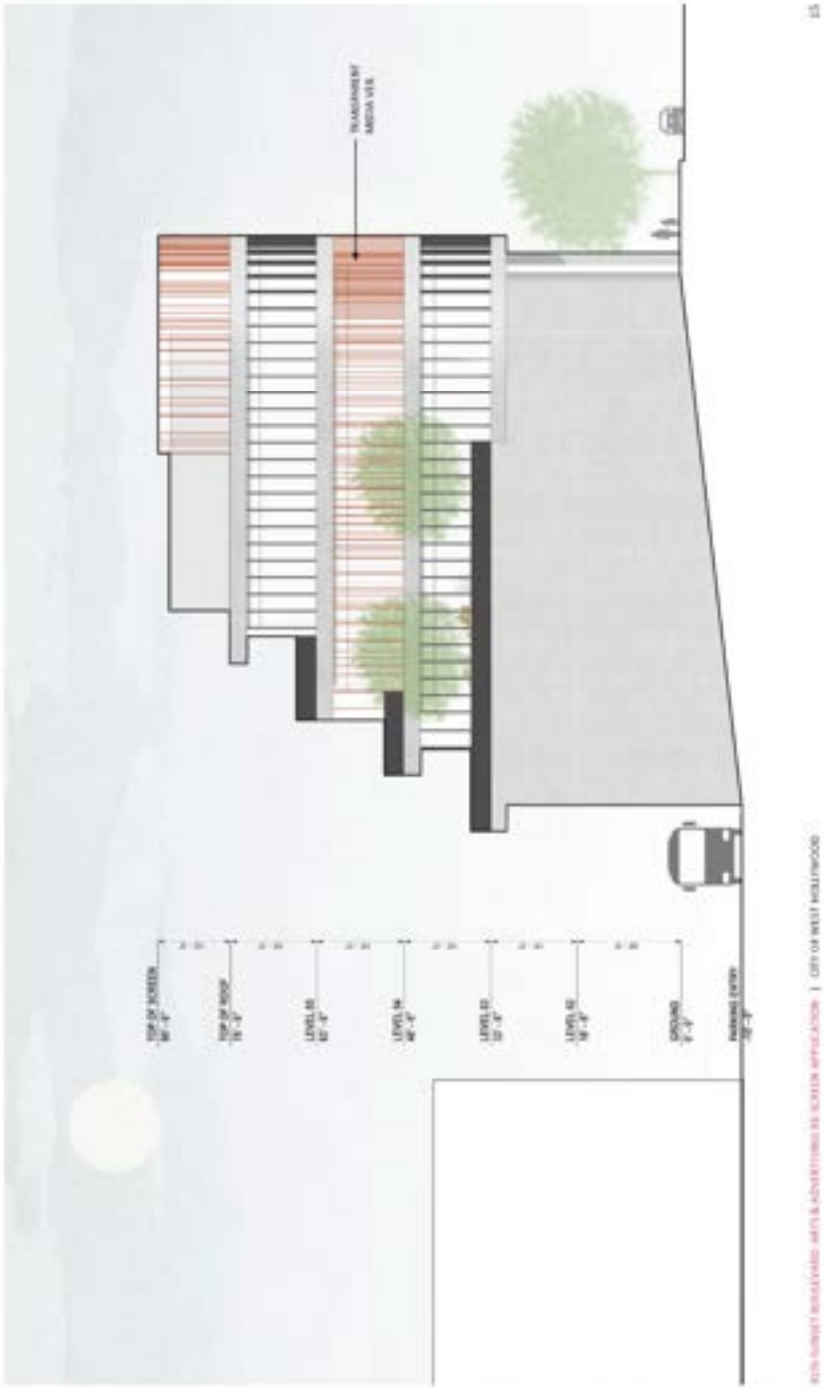
2.0-2



North Elevation

FRANCIS KRAHE & ASSOCIATES

2.0-2

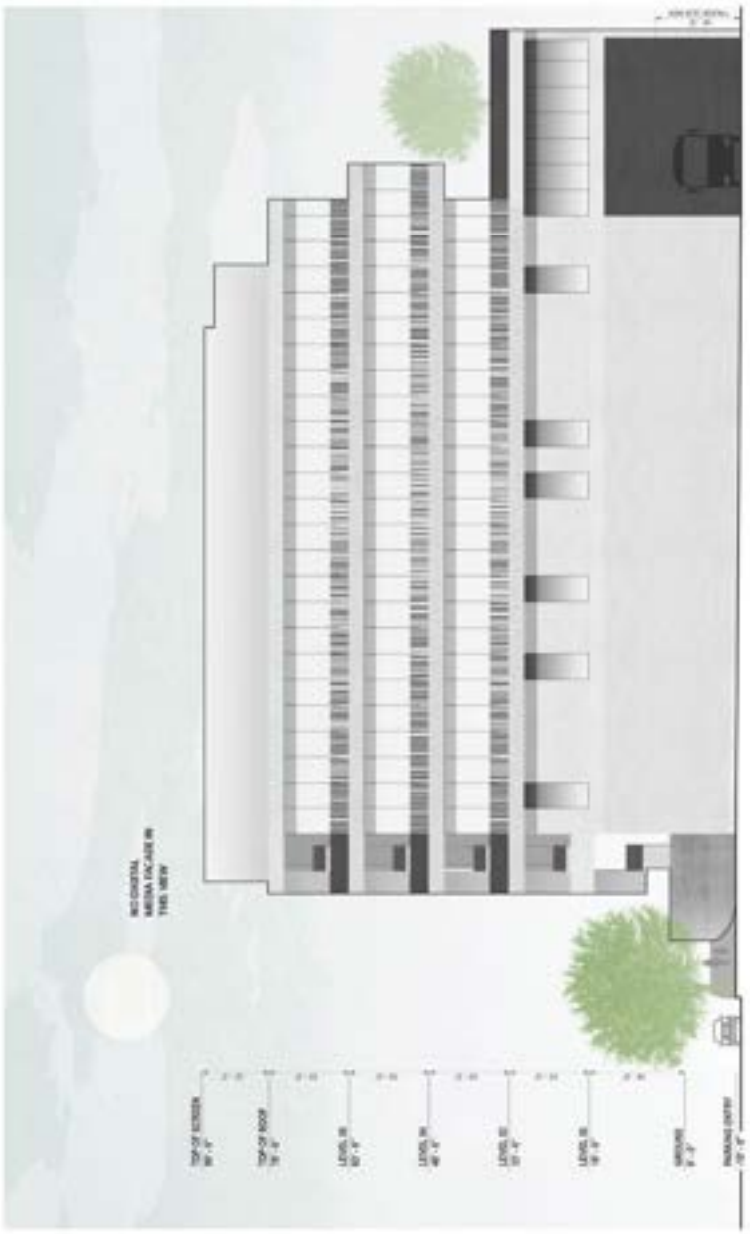


East Elevation

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 121

FRANCIS KRAHE & ASSOCIATES

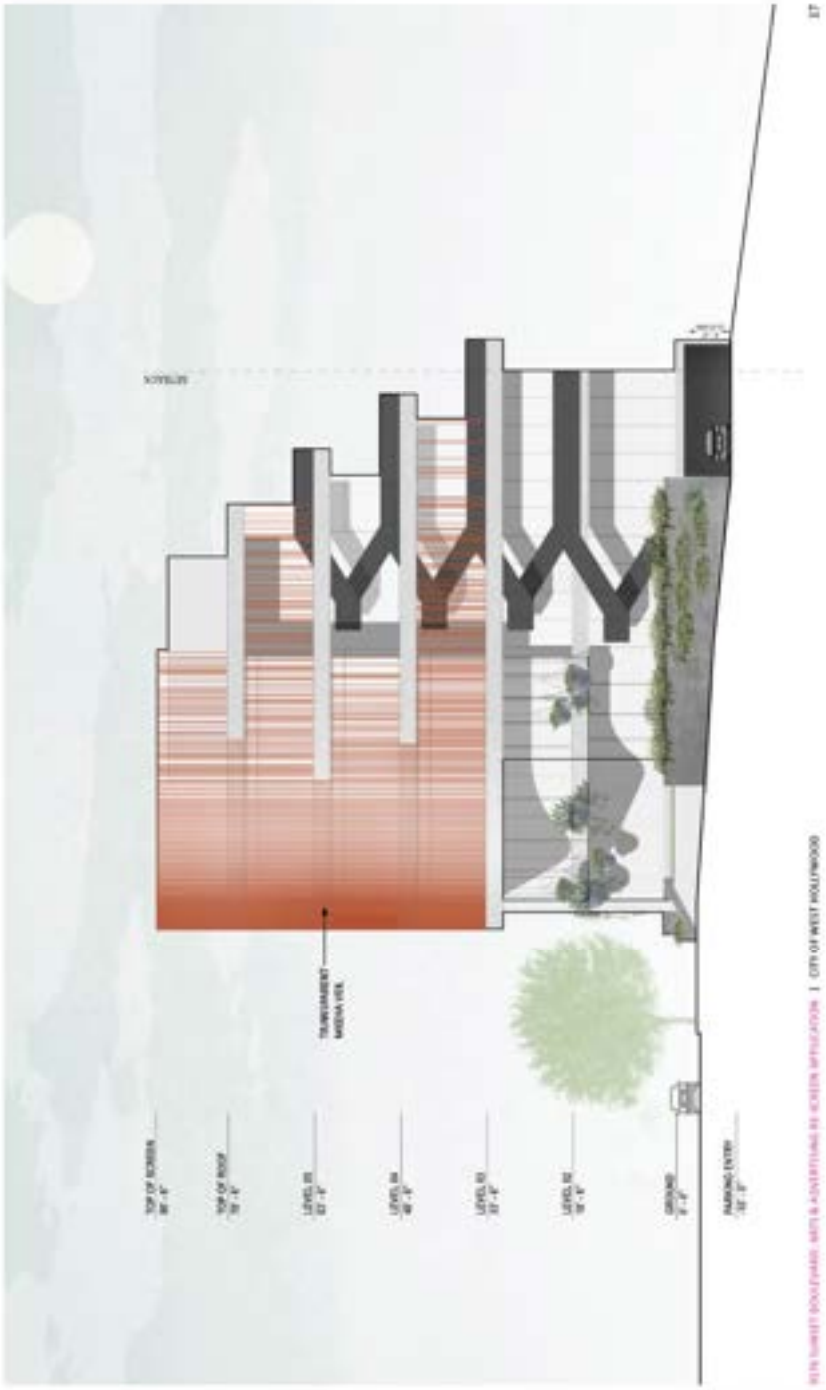
2.0-2



South Elevation

FRANCIS KRAHE & ASSOCIATES

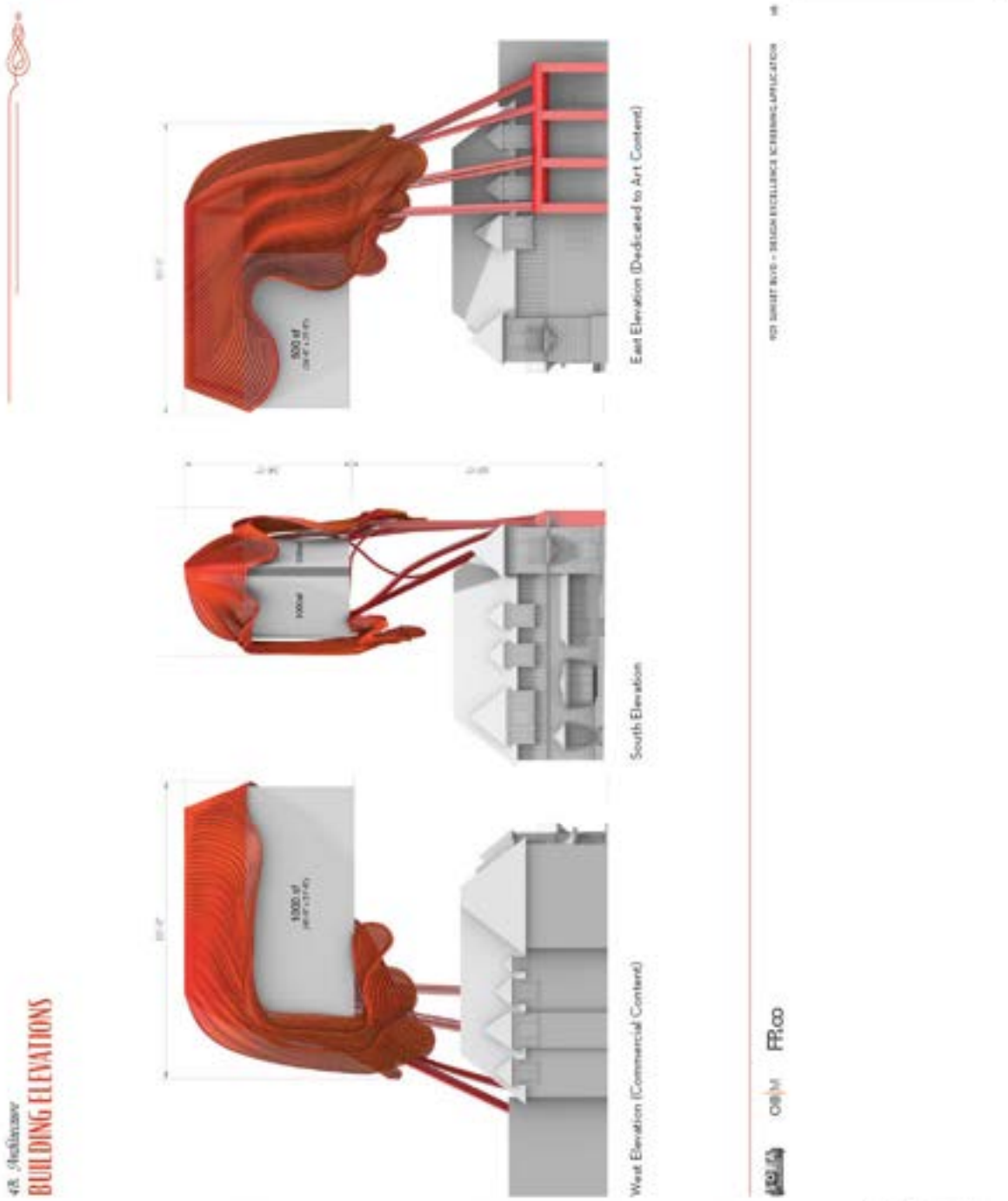
2.0-2



West Elevation

FRANCIS KRAHE & ASSOCIATES

2.0-3



4B. Architecture

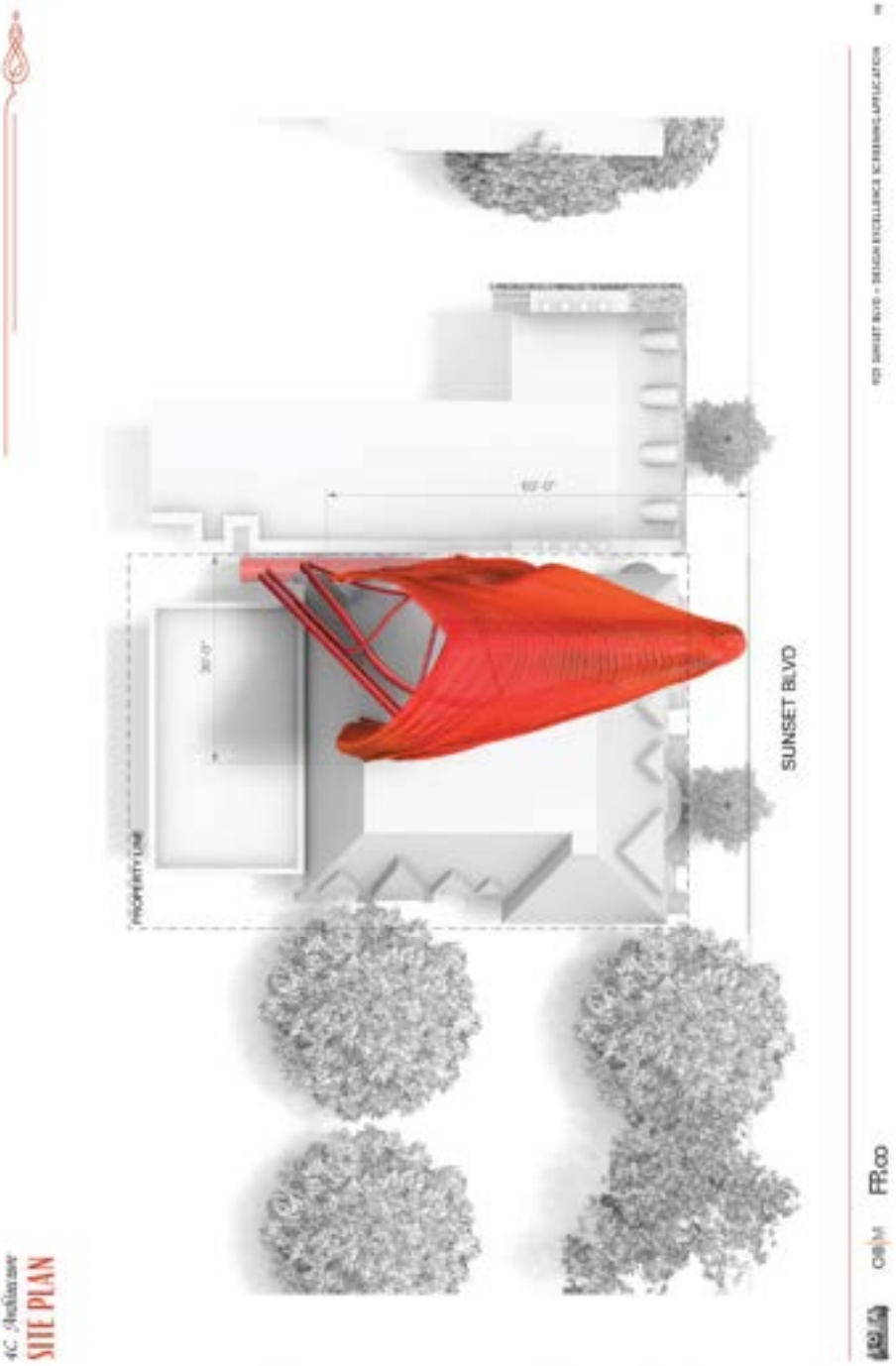
BUILDING ELEVATIONS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS

PROJECT #: WH040
PAGE: 124

FRANCIS KRAHE & ASSOCIATES

2.0-3



4C Architecture

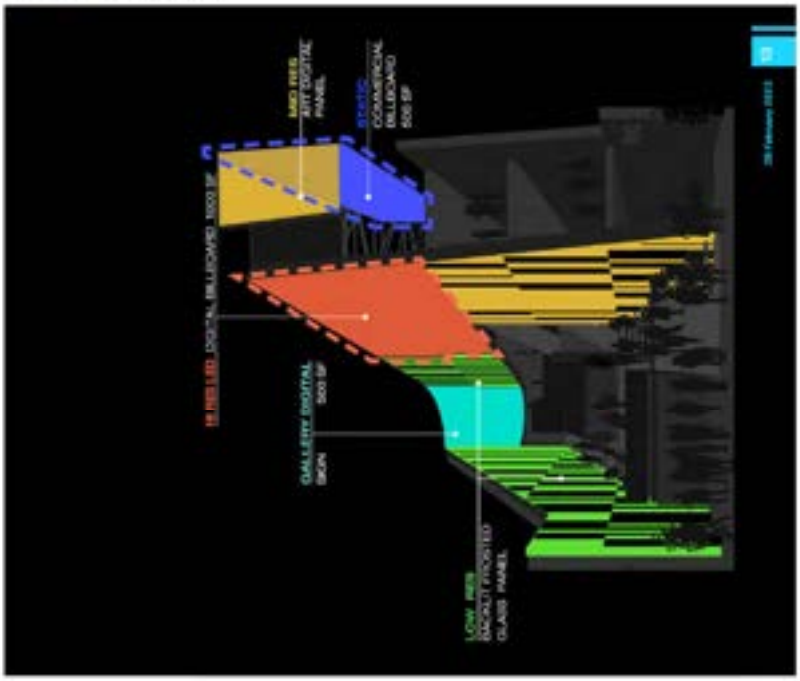
SITE PLAN

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS

PROJECT #: WH040
PAGE: 125

FRANCIS KRAHE & ASSOCIATES

2.0-4



Advertising Spaces

A core component of The Clearing's business model is advertising.

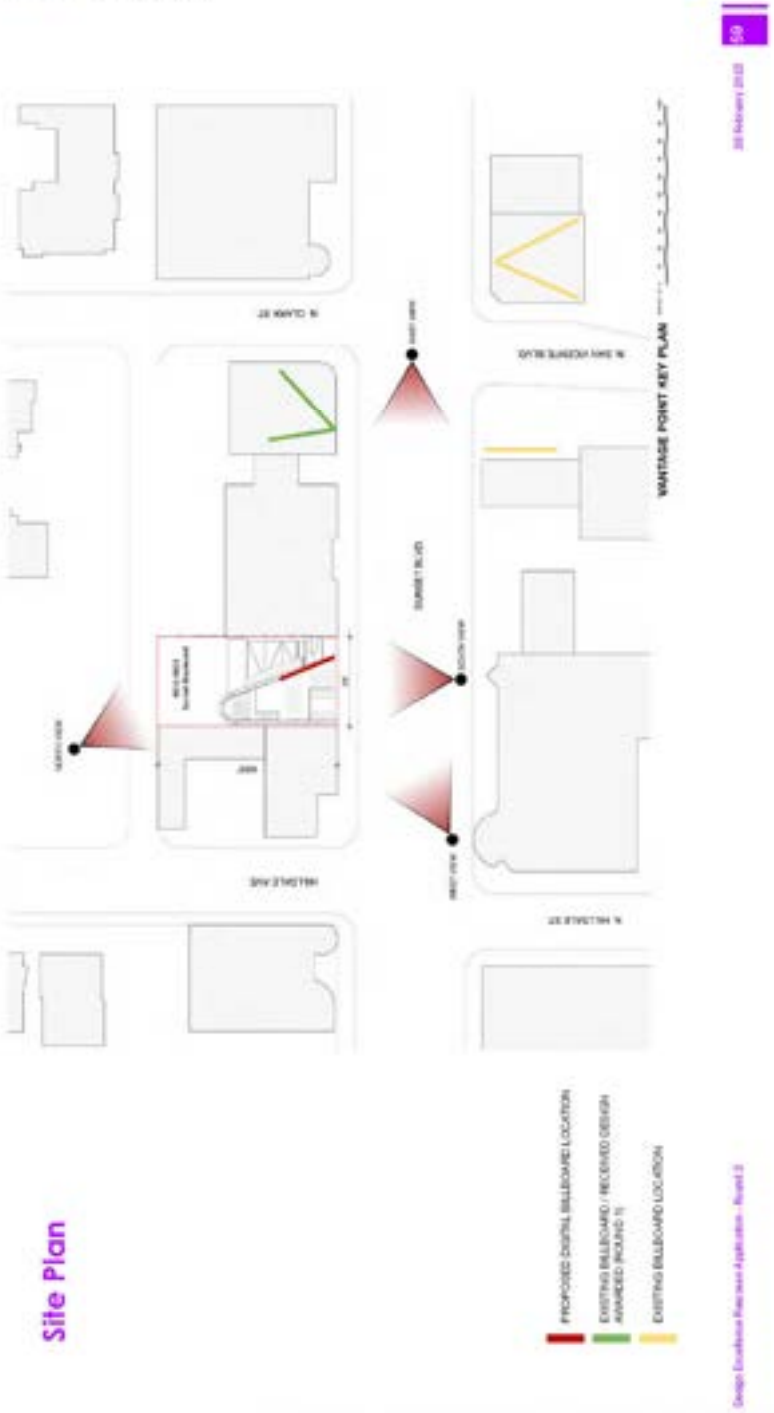
The Clearing has a total of 1,500 square feet of commercial advertising space—divided across two signs:

- **1,000-square-foot LED panel**—facing west and hovering over the open-air public square we've created (The Clearing).
- **500-square-foot static panel**—facing east.
  - This static panel is joined with a decorative, **south-facing LED panel** that will not display advertising content.

This sign is the focal point of The Clearing's constellation of LED panels—setting the mood and driving the storytelling. The display is high-resolution and high-quality, giving the artistic works, public service announcements, and ads appearing within it a special vibrancy.

FRANCIS KRAHE & ASSOCIATES

2.0-4



Site Plan


FRANCIS KRAHE & ASSOCIATES
2.0-5
4F. ARCHITECTURE & ART
SITE PLAN AND AXONOMETRIC
SUNSET BOULEVARD
SAN VICENTE BOULEVARD
BOUWMAN ZAGO
APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS
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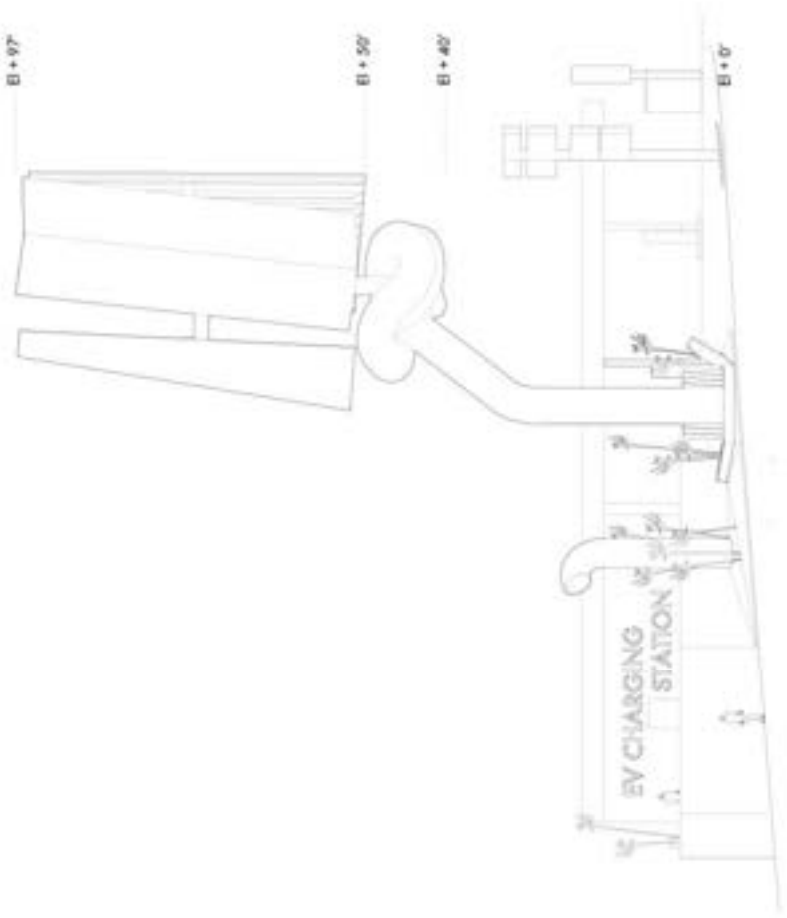
FRANCIS KRAHE & ASSOCIATES

2.0-5



4G. ARCHITECTURE & ART

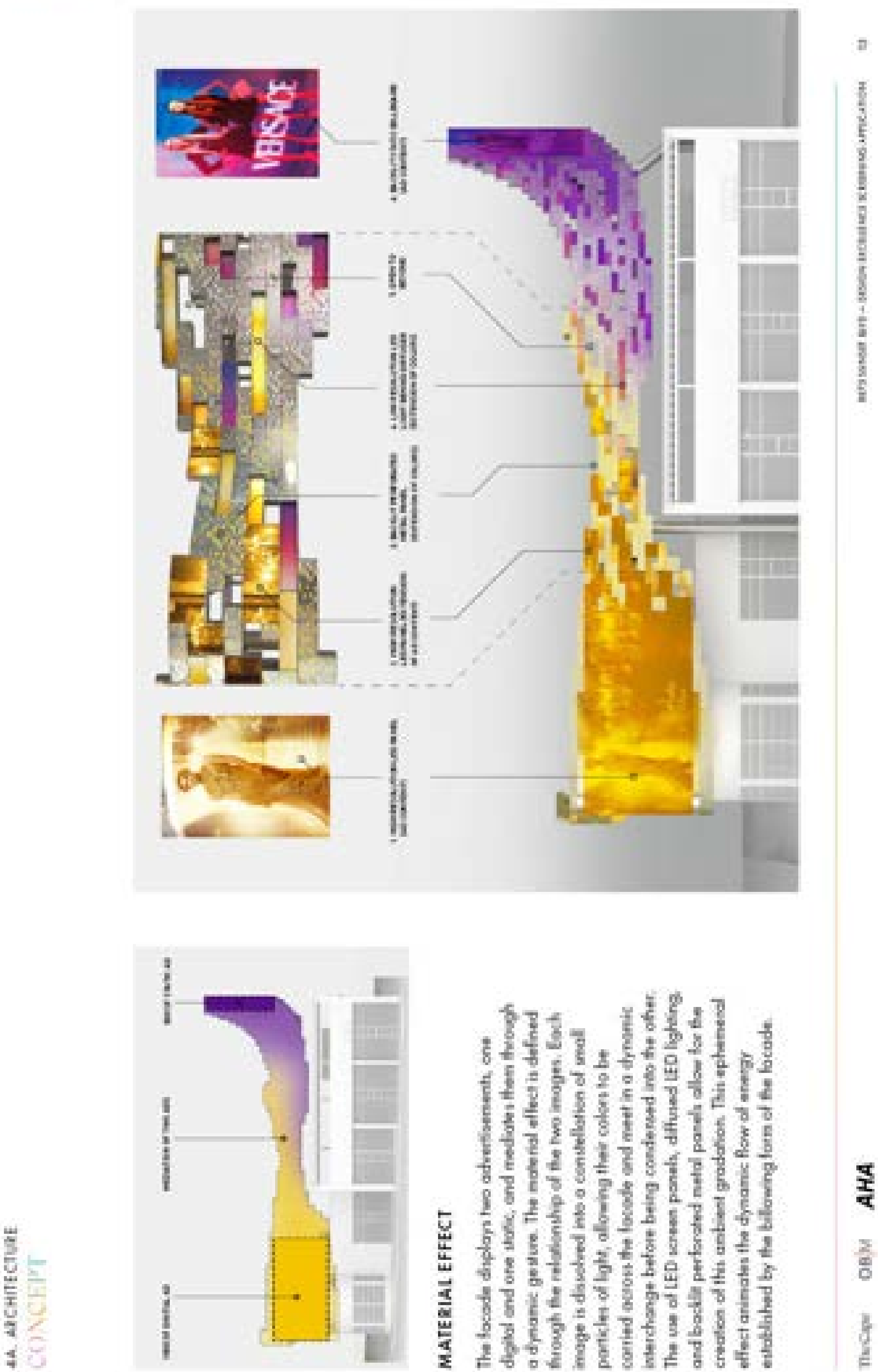
ELEVATION

BOUWMAN ZAGO OBJM

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 129

FRANCIS KRAHE & ASSOCIATES

2.0-6



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FRANCIS KRAHE & ASSOCIATES

2.0-6

4IC. ARCHITECTURE
SITE PLAN

The Cupp OBJM AHA

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FRANCIS KRAHE & ASSOCIATES

2.0-6

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FRANCIS KRAHE & ASSOCIATES

2.0-6

4D ARCHITECTURE
BUILDING ELEVATIONS

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FRANCIS KRAHE & ASSOCIATES

2.0-6

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FRANCIS KRAHE & ASSOCIATES

2.0-7

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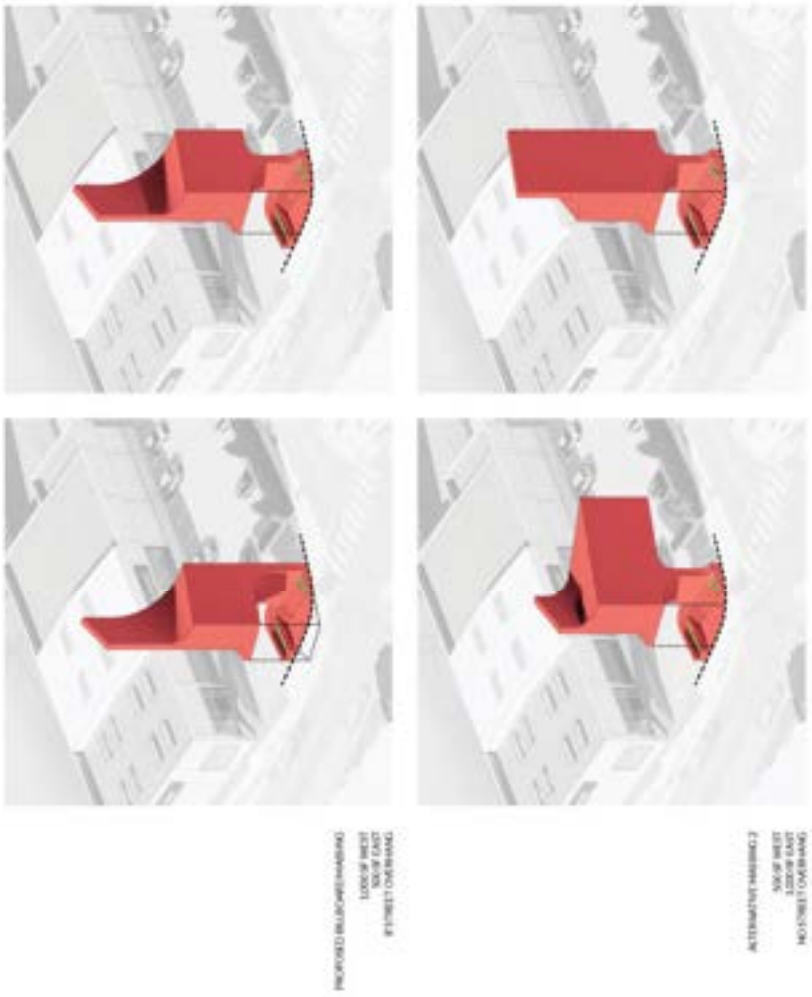
FRANCIS KRAHE & ASSOCIATES

2.0-7

PLANS

BILLBOARD MASSING RESPONSES TO CONSTRAINTS DON'T LIMIT CREATIVE POTENTIAL OF FINAL DESIGN



FRANCIS KRAHE & ASSOCIATES

2.0-8

PLANS

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FRANCIS KRAHE & ASSOCIATES

2.0-8

ELEVATIONS

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040 PAGE: 139

FRANCIS KRAHE & ASSOCIATES

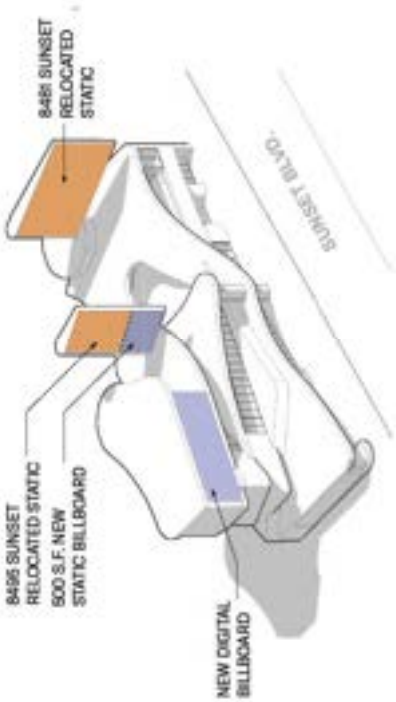
2.0-9

03. PROJECT SUMMARY

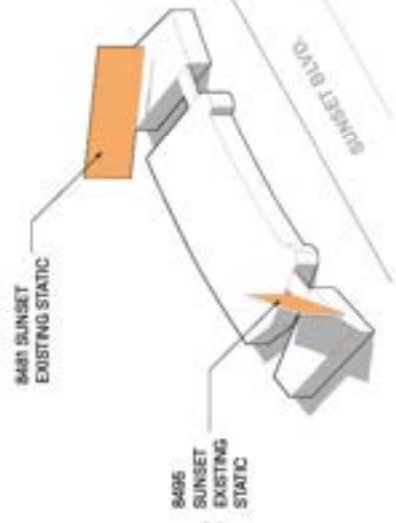
PROPOSAL OVERVIEW

SIGN SCOPE

- The redevelopment of the 3-building parcel will include the relocation of existing static billboards at 8495 Sunset and 8481 Sunset. These relocations will obtain necessary approvals through the administrative process outlined under the City of West Hollywood's Off-Site Signage Policy and are not a part of this application for new signage.
- This application is limited to the new digital billboard and 500 SF of supplemental static signage placed adjacent to the relocated 8495 Sunset signage.



Proposed Billboard Locations

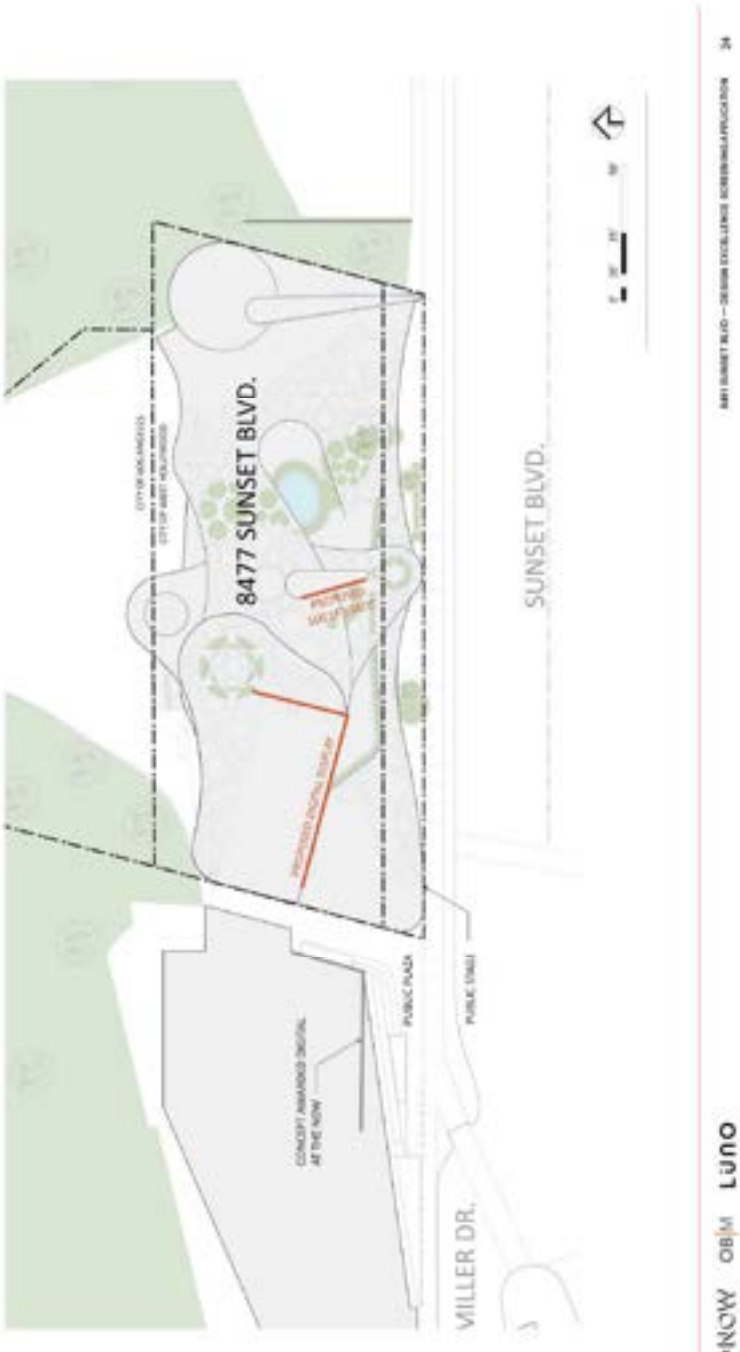


Existing Billboard Locations

THE NOW OBJM LUNO

FRANCIS KRAHE & ASSOCIATES

2.0-9



AD ARCHITECTURE

SITE PLAN

theNOW OBIM LUNO

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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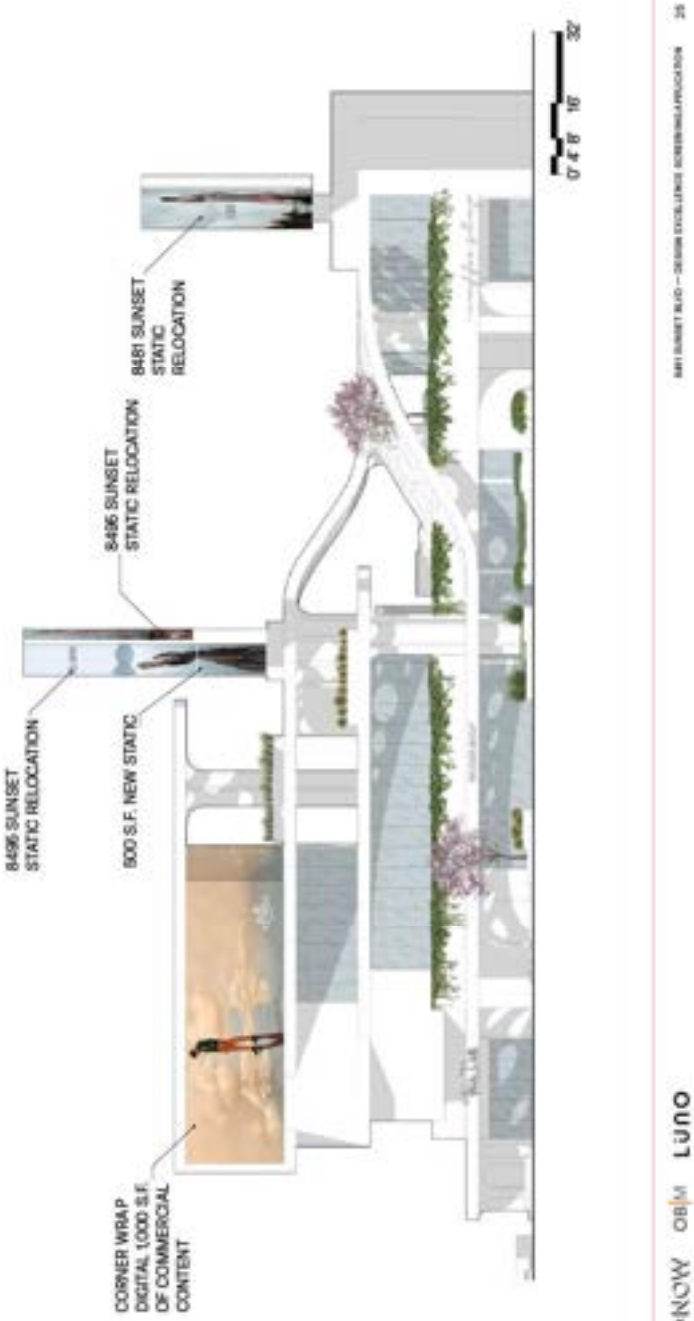
FRANCIS KRAHE & ASSOCIATES

2.0-9



AE ARCHITECTURE

BUILDING ELEVATION

theNOW OBUM Luno

APPENDIX A - SUNSET BOULEVARD ARTS & ADVERTISING PROGRAM SIGN PLANS PROJECT #: WH040
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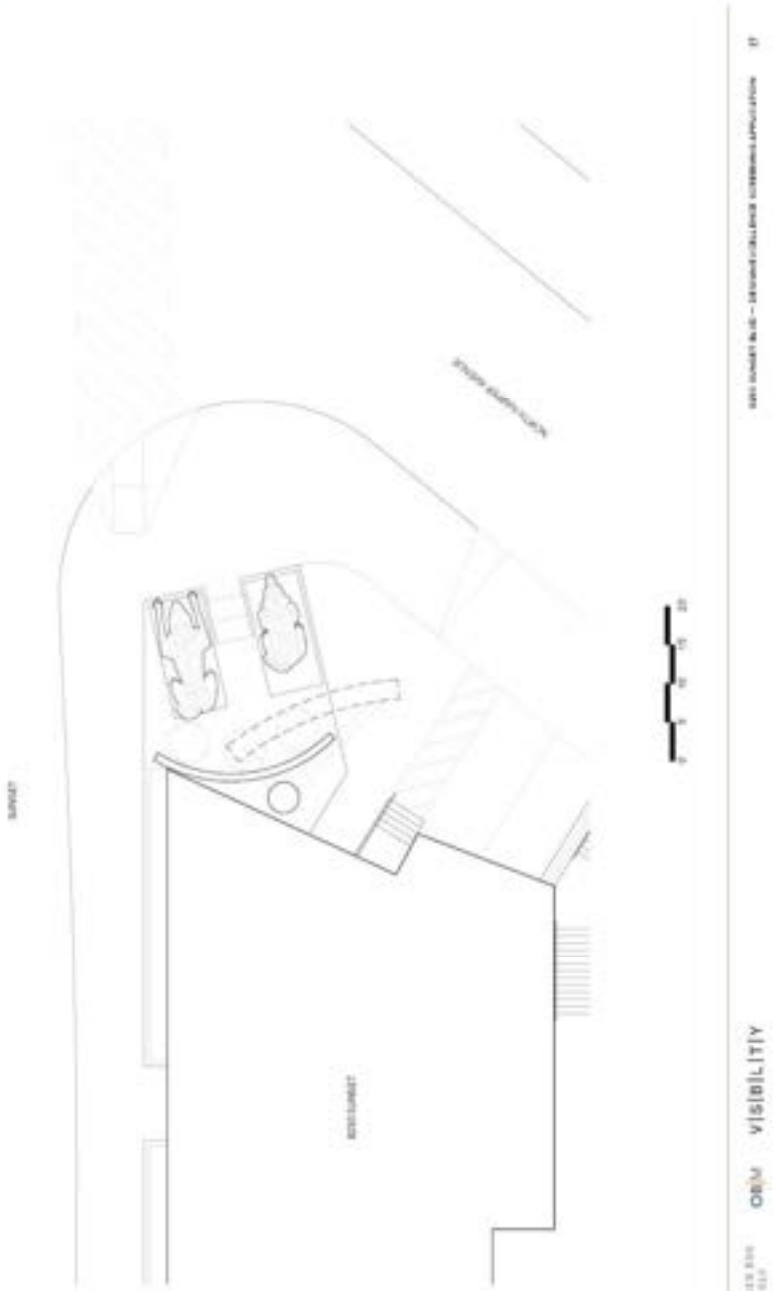
FRANCIS KRAHE & ASSOCIATES

2.0-10



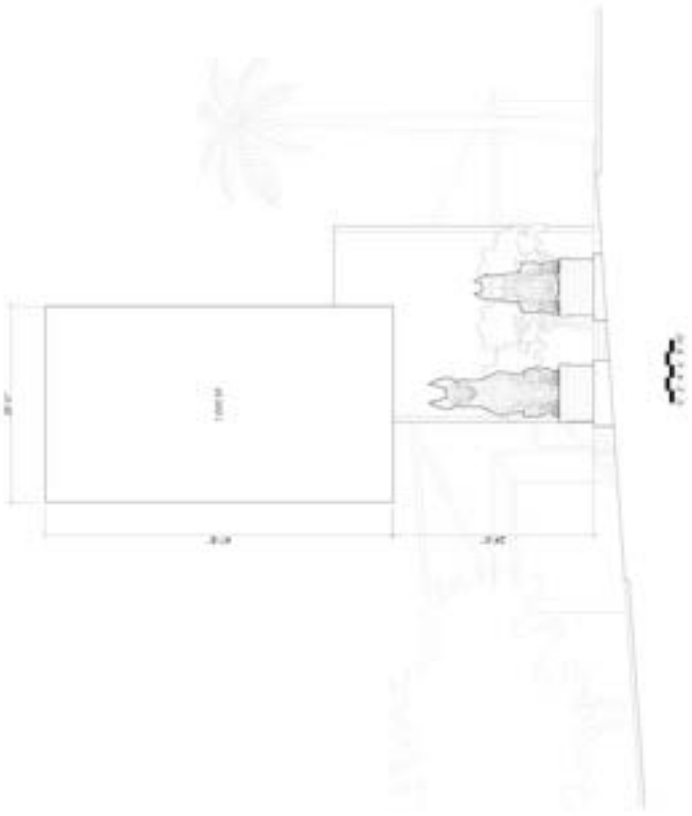
4D. PUBLIC ART

SITE PLAN

OBJU VISIBILITY

FRANCIS KRAHE & ASSOCIATES

2.0-10



4E PUBLIC ART
ELEVATIONS

OBJU VISIBILITY

APPENDIX B. City of West Hollywood Ordinance No. 19-1063, Attachment A, pgs. 13, 14, 15

5. **Lighting and Operational Standards.** All new or modified off-site advertising signs, architectural lighting, and temporary displays shall comply with the following luminance and operational standards.
    a. Hours of Operation: All digital billboards shall meet the following limits for time of day and ambient lighting conditions:
        i. Sign luminance shall change during each day on the following schedule:
            1. Daytime: From sunrise until 20 minutes prior to sunset, luminance shall not exceed 6,000 candelas per meter squared. Any portions of signs that are less than 10' above adjacent side shall not exceed 2,400 candelas.
            2. Evening: From sunset until 20 minutes prior to sunrise Luminance shall not exceed 300 candelas per meter squared.
            3. After Hours: From 2:00 am until sunrise, no animated content or moving patterns shall be permitted.
    b. Illuminance
        i. Illuminance from signs or architectural lights shall not exceed 1.4 foot candles at any adjacent residential zoned property line.
    c. Digital Sign Control and Transitions.
        i. Sign luminance shall transition smoothly between the hours of operation limits above over a time period of no less than 20 minutes. All transitions shall be completed so that the maximum allowable luminance is achieved by the stated time listed above.
        ii. When ambient sunlight illuminance during daytime is less than 100 foot candles for more than one (1) hour, the digital billboard should transition at a smooth rate of change from the daytime luminance level permitted above to the evening luminance level permitted at a suggested rate of no less than 20 minutes.
        iii. Each image displayed on a digital billboard shall not be refreshed more often than once every 8 seconds.
        iv. Each image displayed on a digital billboard (i.e., each individual advertisement or artwork) shall fade in from the previous image over no less than one (1) second, and shall fade out over no less than one (1) second to the image of the immediately succeeding content.
    d. Visual Comfort and Contrast Control
        i. Digital billboards shall not incorporate driver interaction features.
        ii. No signs shall use colors or images that replicate or could be confused with traffic safety signage.
        iii. No signs shall use scrolling text.
        iv. Signs shall not use stroboscopic of flashing images which rapidly change direction, oscillate, flash or reverse in contrast.
        v. Animated content and moving images shall be designed specifically for the size and format of the digital billboard.
        vi. Animated content shall <u>not</u> exhibit
            1. Rapidly changing images shall use dissolves for transitions between static images, and between static and animated content;
            2. Sequences that result in visible brightness change over more than ten percent (10%) of the total display area at a greater rate than three (3) changes per second; or
            3. Edits at a rate of more than one (1) edit every three (3) seconds
    e. Renewable Energy Use.

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i. All new billboard operations shall utilize the highest available clean energy tier from the City's energy provider to the extent feasible.
ii. The incremental energy usage attributable to digital signs, as defined in 4.c, should be fully offset to the extent feasible through demonstrated improvement in the energy performance for new buildings or major renovations of existing buildings.

f. Audio. On site sound shall be allowed only during special events.
g. Monitoring
   i. All digital billboard operators shall submit a Lighting Monitoring Report to the Director upon installation, and at three year intervals thereafter to confirm conformance with the lighting requirements above. The report shall include:
      1. Digital billboard luminance measured in nits (candelas per square meter). Measurements shall be conducted at the property line of the digital billboard site, or in the nearest adjacent public right of way, perpendicular to the digital billboard sign face.
      2. Digital billboard sign illuminance measured in foot candles. Measurements shall be conducted perpendicular to the digital billboard sign face, at the property line containing the digital billboard, and at adjoining residential use property or properties. The illuminance meter shall be aimed toward the sign face from the measurement location.
      3. All measurements shall include both luminance and illuminance for three conditions:
         a. The sign off
         b. The sign illuminated with an image
         c. The sign illuminated using an all-white display
   ii. Complaints about lighting will be investigated by the City, and if determined necessary by the Director, the digital billboard operator shall provide an updated Lighting Monitoring Report within 72 hours of the notice from the City. The City shall reserve the right to conduct digital billboard lighting measurements. If the measured luminance and or illuminance exceed the data presented in operator's Lighting Monitoring Report, the findings of the City report shall prevail.

6. **Architectural Lighting.** Architectural lighting may be integrated into a building façade to enhance the architectural design of the building if the following requirements are met:

    a. Integral large scale architectural lighting, digital or otherwise, shall contain no commercial logos, images, or messages that may be interpreted as advertising.
    b. Architectural lighting shall not be counted towards permitted signage area, either on or off-site, and shall not be considered a billboard.
    c. Architectural lighting is subject to maximum allowable lighting levels of Section 5.
    d. Architectural lighting shall be designed and operated to minimize impact on adjacent buildings.

7. **Temporary Creative Billboards or Tall Walls**. Temporary modification to existing billboards or tall wall signs may be permitted in compliance with this section. The following regulations are intended to encourage creatively designed short-term installations that make a positive visual contribution to Sunset Boulevard and to the overall image of the city.

    a. **Approval Authority**. Temporary creative billboards and tall walls are subject to approval by the Director.
    b. **Time Limit.** The Director may approve the placement of a temporary creative billboard or tall wall for a maximum period of 12 months. One six-month time extension may be approved or denied by the Director and the temporary creative billboard or tall wall shall be removed immediately upon expiration. Certain types of physical extensions may be installed for a longer period, as allowed by state law.
    c. **Standards:** A temporary creative billboard or tall wall sign shall be designed and located in compliance with all of the following standards:

        i. The temporary creative billboard or tall wall sign shall alter an existing sign without changing its location. Any enlargement of the sign shall be designed as an integral part of the image and contribute to the overall creativity of its design.
        ii. The temporary creative billboard or tall wall sign shall be properly sited and well-integrated within the context of its surroundings.
        iii. Temporary creative billboard or tall wall shall be an inventive and original representation of the product or business being advertised.
        iv. The temporary creative billboard or tall wall sign shall exhibit one or more of the following elements:
            1. Three-dimensional props and extensions.
            2. Extensions with cut-out shapes or voids.
            3. Integrated thematic lighting such as neon, LED, images which change from day to night through lighting effects, projected light, video projections, or other emerging technologies.
            4. Moving or animated mechanical elements.
            5. Different day-time and night-time images.
            6. Hand-painted graphics or graphics crafted on-site.
            7. Alternative textures and materials, such as plants and vegetation.
            8. Live action.

APPENDIX C. Glossary of Lighting Terminology[9]

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

Brightness: The magnitude of sensation that results from viewing surfaces from which light comes to the eye. This sensation is determined partly by the measurable luminance of the source and partly by the conditions of observation (Context), such as the state of adaptation of the eye. For example, very bright lamps at night appear dim during the day, because the eye adapts to the higher brightness of daylight.

Candela: Measure of light energy from a source at a specific standard angle and distance. Candela (cd) is a convenient measure to evaluate output of light from a lamp or light fixture in terms of both the intensity of light and the direction of travel of the light energy away from the source.

Contrast: Calculated evaluation of high, medium and low contrast of visible light sources or surfaces within the Property by a ratio of luminance. Contrast is the ratio of one surface luminance to a second surface luminance or to the field of view. Contrast exceeding 30 to 1 are usually deemed uncomfortable; 10 to 1 are clearly visible; and less than 3 to 1 appear to be equal.

Electronic Control System: Integrated hardware and software system which provides sign lighting control functionality for time of day scheduling, response to ambient light, and direct user control with full range of dimming from 0% to 100% full light output, full color, or all white.

Fully Shielded: A lighting fixture constructed in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the Luminaire, is projected below the horizontal as determined by photometric test or certified by the manufacturer. Any structural part of the light fixture providing this shielding must be permanently affixed. In other words, no light shines above the horizontal from any part of the fixture.

Glare: Glare is visual discomfort experienced from high luminance or high range of luminance. For exterior environments at night, glare occurs when the range of luminance in a visual field is too large. The light energy incident at a point is measured by a scale of footcandles or lux, and is described in the technical term Illuminance. This incident light is not visible to the eye until it is reflected from a surface, such as pavement, wall, dust in the atmosphere or the surface of a light bulb. The visible brightness of a surface is measured in footlamberts (or metric equivalent candelas per square meter) and is described by the term Luminance.

[9] ANSI/IES LS-1-22 Lighting Science: Nomenclature and Definitions for Illuminating Engineering

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.

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

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

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

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

Illuminance:

Illuminance is the means of evaluating the density of Luminous Flux. Illuminance indicates the amount of Luminous Flux from a light source falling on a given area (See Figure 54). Illuminance is measured in footcandles (fc) which is the lumens per square foot, or Lux (lumens per square meter). Illuminance need not necessarily be related to a real surface since it may be measured at any point within a space. Illuminance is determined from the Luminous intensity of the light source. Illuminance of a point source decreases with the square of the distance from the light source (see Inverse Square Law definition).

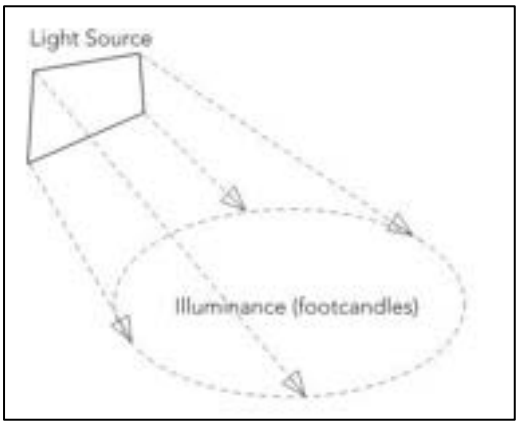

Figure 54: Diagram of Illuminance

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 Policy, and greater than 1.4 footcandles.

Medium Illuminance: Illuminance less than 1.4 footcandles and greater than the maximum permitted by the CEC 0.74 footcandles.

Low Illuminance: Illuminance less than maximum permitted by the CEC 0.74 footcandles.

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

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

Inverse Square Law: In physics, an inverse-square law is any physical law stating that a specified physical quantity or intensity is inversely proportional to the square of the distance from the source of that physical quantity. The fundamental cause for this relationship can be understood as geometric dilution corresponding to point-source radiation into three-dimensional space (see Figure 55). 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.

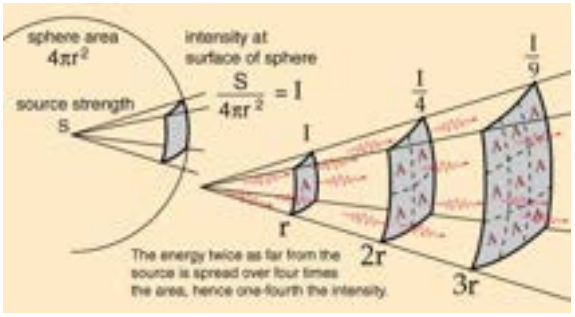

Figure 55: Inverse square law diagram (hyperphysics.phy-ast.gsu.edu)

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.

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

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

Lighting Zone (LZ): Defined by IESNA[10] and adopted by CALGreen, Lighting Zones define regions of human activity and corresponding recommended maximum light trespass illuminance.

[10] ANSI LP-11-20 Environmental Considerations for Outdoor Lighting, page 10

Luminaire: A complete lighting unit consisting of a lamp or lamps and ballast(s) (when applicable) together with the parts designed to distribute the light, to position and protect the lamps, and to connect the lamps 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 (See Figure 56). Luminance is measured in footlamberts (fL) (1/π Candela per square foot) or cd/m^2 (Candela per square meter). 1fL = 3.43 cd/m^2.

Whereas Illuminance indicates the amount of Luminous Flux falling on a given surface, Luminance describes the brightness of an illuminated or 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).

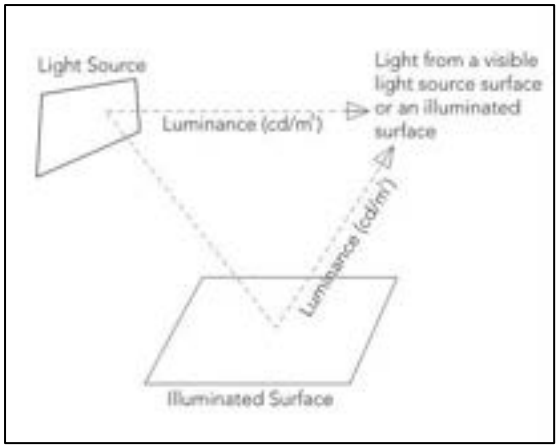

Figure 56: Diagram of Luminance

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 watt 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 of the Signs from adjacent residential zoned properties and to determine the extent and intensity of existing light sources within and surrounding the Signs. The Monitoring Sites are within the public right of way, and adjacent to residential zoned properties. These locations are representative of the view to the Signs from the vicinity of the residential zoned properties surrounding the Signs to the north, south, east and west. Figure 11 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.

APPENDIX D. SUNSET STRIP OFF-SITE SIGNAGE POLICY LIGHTING REPORT

SUNSET STRIP OFF-SITE SIGNAGE POLICY LIGHTING REPORT

Prepared for: the City of West Hollywood
Dudek & Associates

June 1, 2017

Francis Krahe & Associates Inc. is pleased to present the following analysis of lighting for the proposed Sunset Strip Off-Site Signage Policy as follows:

- Recommendations for illuminated signs with the Sunset Strip Off-Site Signage Policy.
- Analysis of the parameters that affect Light Trespass or Glare at adjacent properties or public rights of way in the vicinity of the proposed sign district.
- Review of pertinent lighting regulations, and the best practices for lighting design recommended by the Illuminating Engineering Society of North America (IESNA) and other agencies.
- Discussion of significance thresholds with respect to off-site illuminated signs.

1. Recommendations

The following issues should be addressed in the West Hollywood Sunset Strip Sign District to facilitate an appropriate process of submittal, review, and approval for new or converted illuminated signs.

Lighting impact issues are focused around two key subjects: Light Trespass and Glare.

- ***Light Trespass***[1] is the light that falls on a property but originates on an adjacent property. Light Trespass is measured in terms of illuminance (foot-candles or metric units lux), and can be measured at any point and at 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 is causing an issue, such as a residential window or balcony.

- ***Glare***[2] occurs when either the luminance is too high or the range of brightness in a visual field is too large. A bright light source, such as a flood light or street light, viewed against a dark sky may be uncomfortable to look at, and may create a temporary sensation of blindness, which is referred to as disability glare. Glare is evaluated by measuring the luminance (footlamberts or metric units candelas/m^2) at the source of light, such as a digital display, in comparison to the surrounding adjacent luminance. The term which describes the extent of Glare at an observer position for a view is referred to as contrast, and is determined by the variation of luminance within the field of view. "High," "Medium," and "Low" contrast are terms used to describe contrast ratios. The ratio of peak measured luminance to the average within a field of view: contrast ratios greater than 30:1, between 10:1 and 30:1, and below 10:1, respectively. Contrast ratios above 30:1 are generally uncomfortable for the human eye to perceive. Any source luminance that is

[1] *IESNA Handbook, 10th Edition, 19.3: Light Pollution and Trespass, page 19.7*

[2] *IESNA Handbook, 10th Edition, 4.10: Glare, page 4.25*

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more than 50 times the adjacent background will be viewed as prominent, and may be viewed as distracting.

Illumination limits should be clearly stipulated in the Sign District regulations to prevent signs that create excessive Light Trespass and/or Glare, to allow the illuminated sign conversions to be evaluated efficiently, and provide a consistent lighting performance standard for property owners, applicants, and the general public. Currently there is no regulation of these lighting factors within the City of West Hollywood Municipal code. Clear standards would improve the operations for digital off-site signage process for all parties.

The IESNA lists multiple visual factors[3] which affect human cognitive recognition of visual signals, including the brightness of the source, size of the image, and the rate of change in the brightness. High contrast signs may increase driver distraction by elevating the prominence of these signs above traffic signals or other critical roadway information. Limiting sign luminance to result in medium contrast will increase the safety for drivers by ensuring the most critical traffic information will be the most prominent within the field of view.

Considering the range of aspects of visual perceptions and performance important to lighting, these fundamental quantities are: luminance, the amount of light entering the eye and falling on the retina, the size of a visual task, a visual task's luminance and chromatic contrast, spatial frequency, and flicker. Changes in these fundamental quantities affect threshold and suprathreshold performance.

1.1 West Hollywood Lighting Regulations

We recommend the City develop new lighting standards within the Sign District regulations to limit Light Trespass and Glare consistent with the current State and National standards. These State and National standards are designed to limit light pollution and off site lighting effects.

Reference standards include the California Energy Code (CalGreen), ASHRAE 90-75, the U.S. Green Building Council, and model lighting ordinances provided by the Illuminating Engineering Society of North America (IESNA) and the International Dark Sky Organization. Various aspects of these standards are included in local regulations to improve the outcomes of any approved project and avoid future disputes or legal challenges to proposed lighting plans. Standards suggested below will allow sufficient sign brightness and flexibility for the sign owners and advertisers, while minimizing the off-site negative effects of Light Trespass and Glare.

1.2 Lighting Zone Designation LZ 4

The Sunset Strip is an existing urban commercial zone with extensive nighttime use, including restaurants, entertainment, and outdoor advertising. Current best practices for

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[3] *IESNA Handbook, 10th Edition, 4.2: Basic Parameters, page 4.4*

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lighting standards recognize the unique issues related to areas of high volume night time use versus areas where the primary use is residential. The California Energy Code (CEC) includes designations for Lighting Zones (LZ) 1 through 4 , included below in Appendix A, which correspond to the Light Trespass recommendations within the IESNA 10th Edition Handbook, Table 26.4, included in Appendix B.

All urban areas within California are designated Lighting Zone 3 as default under the CEC, which limits the Light Trespass to 8 lux (0.74 footcandles). Per the CEC, California Building Energy Efficiency Standards, Section 10-114, page 40, 41., 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."

CEC Lighting Zone 4 allows higher illuminance for Light Trespass for building and illuminated signs in areas of High Ambient Lighting, defined by the IESNA as "areas of human activity where the vision of human residents and users is adapted to high light levels. Lighting is generally considered necessary for safety, security and/or convenience and it is mostly uniform or continuous." We recommend the City of West Hollywood designate the Sunset Strip District to be Lighting Zone 4 to allow higher illuminance values for Light Trespass under the CEC standards, which apply to all exterior lighting for building and illuminated signs.

Procedures for lighting zone designation changes are summarized in CEC Section 10-114 – DETERMINATION OF OUTDOOR LIGHTING ZONES AND ADMINISTRATIVE RULES FOR USE, which stipulates the local jurisdiction may implement changes to the Lighting Zone Designation as follows:

> "(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 re designated areas, and a description of the physical boundaries within each zip code;

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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."

By comparison, the Los Angeles Municipal Code (LAMC) defines a substantially higher Sign Illuminance Light Trespass maximum of 32.3 lux (3.0 footcandles) versus the CEC standards for Zone 3 or 4 (see section 2.2 below). The LAMC is 4 times higher than the CEC Zone 3 Light Trespass and 2.14 times higher than the Lighting Zone 4. While the LZ4 value is much less than the current LAMC maximum, the CEC standard is well defined and supported by the IESNA and ASHRAE, and other independent lighting organizations such as the International Dark Sky Organization and U.S. Green Building Council.

2. Analysis of Sunset Strip Lighting

The development of the lighting regulations noted above is recommended based upon an evaluation of the existing conditions along the Sunset Strip, the proposed conversion of a portion of the existing illuminated sign billboards to digital illuminated signs, and the proposed addition of new illuminated signs at selected sites along the Sunset Strip.

2.1 Existing Lighting Conditions

The existing lighting conditions along the Sunset Strip include a variety of light sources which contribute to a brightly illuminated outdoor urban environment. The streets and sidewalks along the Sunset Strip have a relatively high illumination consistent with the vehicular design standards for a high volume arterial street. The public right of way is surrounded on both north and south with commercial properties where parking lot lights and exterior building lighting is frequent. Within this well illuminated context, the lighted billboards and signs are prominent, but not excessively bright in comparison to their surroundings.

Residential properties to the north and south along the Sunset Strip are generally set back behind the commercial properties that front onto Sunset. The slope north and south of Sunset significantly affects the visibility of the signs from residential properties. To the north, the residential properties are usually well above the elevation of the Sunset Strip, and in most locations, above the top elevation of the illuminated signs. To the north of Sunset, the ambient light levels at residential streets and properties are very low, therefore the light incident at these residential properties from the signs may be substantial. However, most of the existing illuminated signs are located and directed such that there are few locations where signs project significant Light Trespass or Glare. The distances to adjacent residential properties varies considerably. The properties within close proximity are 250 feet to 300 feet away from the existing signs on the Sunset Strip.

To the south of the Sunset Strip, the residential properties are below the elevation of the Sunset Strip and well below the elevation of the illuminated signs. Signs located on the

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south side of the Sunset Strip have the potential to create Light Trespass and or Glare due to the difference in elevation. Most of the existing illuminated signs are located and directed such that there are few locations where signs project significant Light Trespass or Glare to adjacent residential properties.

2.2 Future Lighting Conditions

Future proposed signs may cause Light Trespass or Glare with respect to the following variables:

- The sign light source (LED, metal halide lamps, or other technology) projects toward an adjacent property, and is close enough (immediately adjacent to or less than 250 feet away) to create substantial illuminance at a residential property line.
- The sign surface area is large enough to create substantial illuminance at an adjacent residential property line.
- The sign surface is bright enough to create Glare, or high contrast conditions, when the sign surface luminance is compared to the surrounding surface luminance.
- North facing (northeast to northwest) signs from the south side of Sunset Strip may be a source of Glare to residential properties to the north of The Sunset Strip.
- Signs along the south side of Sunset may create Light Trespass illuminance to residential zoned properties down the slope, south of the Sunset Strip, adjacent to or within 250 feet of the sign.

The following regulatory criteria will limit the Light Trespass and Glare impacts of the proposed illuminated signs:

Light Trespass sign illuminance must be less than the LZ4 value of 1.4 footcandles at adjacent residential zoned property lines.

Sign luminance maximum 300 candelas/m^2 will reduce Glare to below high contrast conditions.

The following formula describes the relationship between the Light Trespass illuminance measured in footcandles (fc) at any property line, the Sign Luminance (cd/m^2), the Sign Area (ft^2), and the distance (ft) from the sign to the property line.

$$Light\ Trespass\ Illuminance = \frac{\text{Sign Area x Sign Luminance}}{10.76\ x\ Distance^2}$$

To comply with these regulations, signs will be either greater than 250 feet from a residential use, or reduced sign area, or reduced sign luminance.

3. Review of Lighting Regulations

Exterior lighting for signs is regulated throughout California by the local municipal code and the state energy, building, and vehicle codes. Pertinent lighting sections are summarized and discussed for the City of West Hollywood Municipal Code, the City of Los Angeles Municipal Code, City of Los Angeles Sign Use Districts, the State of California Green Building Code, and State of California Vehicle Code.

3.1 City of West Hollywood Municipal Code

The City of West Hollywood has established various codes and design guidelines that regulate the design of outdoor lighting and signs. Several code sections that regulate outdoor lighting are listed below:

West Hollywood Municipal Code contains guidelines for exterior building lighting and exterior sign illumination as follows:

Sections G-12.040 and G-34.250 define requirements for On Site Signage and Buildings. Because the proposed Sunset Strip Off-Site Signage Policy pertains to off-site signs and Sections G-12.040 and G-34.250 consist of design guidelines for on-site signs, these sections of the Municipal Code to not directly apply to the signs that would be regulated by the proposed project. However, the factors identified in the Municipal Code are pertinent to the evaluation of any potential lighting impact in that the Code stipulates Light Trespass and Glare restrictions.

City of West Hollywood Municipal Code, Section G-12.040 Building Design and Architecture.

6. Lighting.

f. All lighting should be shielded to confine light spread within the site boundaries.

j. Illuminate signs and billboards from above, not below.

City of West Hollywood Municipal Code, Section G-34.250 Sign Illumination.

Shield the light source. Whenever direct lighting fixtures are used (fluorescent or incandescent), care should be taken to properly shield the light source to prevent Glare from spilling over into residential areas and any public right-of-way. Signs should be lighted only to the minimum level required for nighttime readability.

3.2 Los Angeles Municipal Code

The City of Los Angeles regulates lighting with respect to building and safety, transportation, and Light Trespass (i.e., the spillover of light onto adjacent residential properties). Since the City of West Hollywood does not specify Light Trespass values at the property line of a residential zoned property, the LA Municipal Code is frequently used as the basis of developing a Significance Threshold for a lighting analysis. The following sections of the LA Municipal Code specify limits for exterior lighting:

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Exterior lighting, such as streetlights and illuminated signs are regulated by the Los Angeles Municipal Code (LAMC). Applicable regulations include the following:

- LAMC Chapter 1, Article 4.4, Sec. 14.4.4 E. No sign shall be arranged and illuminated in such a manner as to produce a light intensity greater than 3 foot-candles above ambient lighting, as measured at the property line of the nearest residentially zoned property.

3.3 California Code of Regulations, Title 24

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 lighting:

California Building Code (Title 24, Part 1) and California Electrical Code (Title 24, Part 3)

The California Building Code (Title 24, Part 1) and the California Electrical Code (Title 24, Part 3) stipulate minimum light intensities for safety and security at pedestrian pathways, circulation ways, and paths of egress. All exterior lighting will comply with the requirements of the California Building Code and California Electrical Code.

California Energy Code (Title 24, Part 6)

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

Section 130.3 – SIGN LIGHTING CONTROLS (herein as Appendix E) sets forth requirements for Sign Lighting Controls. All signs must comply with these requirements including a sign ON both and day and night must include a minimum 65 percent dimming at night.

Section 140.8 of the CEC (herein as Appendix F) sets forth lighting power density restrictions for signs.

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 5.1106.8, Light pollution reduction, requires that all non-residential outdoor lighting must comply with the following:

- The minimum requirements in the CEC for Lighting Zones 1–4 as defined in Chapter 10 of the California Administrative Code as noted above; and
- Backlight, Uplight and Glare (BUG) ratings as defined in the Illuminating Engineering Society of North America's Technical Memorandum on Luminaire Classification Systems for Outdoor Luminaires identified as IESNA TM-15-07 Addendum A; and

- Allowable BUG ratings not exceeding those shown in Table A5.106.8 in Section 5.106.8[4] of the CALGreen Code (excerpt included in the Appendix H of this Study); or
- Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

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

Chapter 2, Article 3 of the California Vehicle Code stipulates limits to the location of light sources that may cause glare and impair the vision of drivers.

- ARTICLE 3. Offenses Relating to Traffic Devices [21450 - 21468] (Article 3 enacted by Stats. 1959, Ch. 3.), Section 21466.5. No person shall place or maintain or display, upon or in view of any highway, any light of any color of such brilliance as to impair the vision of drivers upon the highway. A light source shall be considered vision impairing when its brilliance exceeds the values listed below.

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

Utilizing the proposed limits to sign brightness outlined in Section 2.2 above will ensure the signs are well below the California Vehicle Code requirements. This analysis assumes the worst case, most conservative, condition where the Project signs would be within the centerline of the driver's field of view, and the angle noted above is 0. For this worst case condition the maximum allowable luminance is 500 fL. Therefore the threshold for night luminance is a maximum 500 fL for the California Vehicle code.

In Section 2.2 above, illuminated signs are recommended to not exceed a maximum surface brightness of 300 candelas/m^2. Calculating the equivalent sign luminance by converting to English units from metric units, 300 candelas/m^2 equals 87.6 fL. The illuminated sign brightness will not exceed 87.6 fL, which is far less than the 500 fL maximum. Therefore, at night the illuminated signs will not exceed the 500 fL threshold

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[4] *Table 5.106.8, Footnote 2 defines the location of the Property Line for the purpose of evaluating compliance with the BUG ratings and provides that: "For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section." See Appendix H.*

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and will not introduce a new source of glare as defined by the California Vehicle Code, Article 3.

3.5 IESNA Recommended Practices

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

The IESNA 10th Edition Lighting Handbook defines Outdoor Lighting Zones relative to a range of human activity versus natural habitat. Table 26.4, Nighttime Outdoor Lighting Zone Definitions, included in Appendix C of this Study, establishes the Zone designation for a range of existing lighting conditions, from low or no existing lighting to high light levels in urban areas. Table 26.4 is referenced by the CEC in sections 10-114 and 140.7 relative to allowable energy use for outdoor lighting. In addition, the IESNA 10th Edition Lighting Handbook defines Recommended Light Trespass Limits in Table 25.5, included in the Appendix C hereto, relative to the Outdoor Lighting Zones. The Recommended Light Trespass Illuminance Limits describe the maximum Light Trespass values in Lux at the location where trespass is under review. As noted above, the CEC stipulates that all urban areas in California are designated as Lighting Zone 3. IESNA Table 25.5, lists a Pre-curfew 8 Lux (0.74 footcandles) maximum at the location where trespass is under review for Zone 3.

4. Significance Threshold

The recommended lighting regulations identified in Section 2.2 above will ensure that significant light or glare impacts will not occur as a result of the Sunset Strip Off-Site Signage Policy. Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 California Code of Regulations, Sections 15000–15387) provides a set of sample questions to evaluate impacts with regard to aesthetics, including light and glare. The question that pertains to light and glare is as follows:

Would the project:

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

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

- The change in ambient nighttime levels as a result of project sources; and
- The extent to which project lighting would spill off the project site and affect adjacent residential zoned properties.

Implementation of the lighting regulations in Section 2.2 will prevent a significant impacts with regard to artificial light or glare because:

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- The Project will not exceed 1.4 foot-candles at the property line of a residential zoned property and will therefore not adversely change the ambient light level at residential properties.
- The Project will not exceed 300 cd/m^2 and will therefore not create new high contrast conditions visible from a field of view from a residential zoned property or driver on Sunset Boulevard.

Section 3.1(d). Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

- The streets and sidewalks along Sunset Boulevard have a relatively high illumination consistent with the vehicular design standards for a high volume arterial street. The public right of way is surrounded on both north and south with commercial properties where parking lot lights and exterior building lighting is frequent. Within this well-illuminated context, lighted billboards and signs are prominent but are not excessively bright in comparison to their surroundings.
- Along Sunset Boulevard, most residential properties are set back behind the commercial properties that front onto Sunset Boulevard. The slope to the north and south of Sunset Boulevard significantly affects the visibility of the signs from residential properties. … The distance from Sunset Strip properties to adjacent residential properties varies considerably. The properties within close proximity are generally 250 feet to 300 feet away from the existing signs on Sunset Boulevard. To the south of Sunset Boulevard, the residential properties are below the elevation of Sunset Boulevard and well below the elevation of the illuminated signs. Signs located on the south side of Sunset Boulevard have the potential to create light trespass and or glare due to the difference in elevation. However, most of the existing illuminated signs are located and directed such that there are few locations where signs project significant light trespass or glare.
- North facing (northeast to northwest) signs from the south side of Sunset Boulevard may be a source of glare to residential properties to the north of Sunset Boulevard.
- Signs along the south side of Sunset Boulevard may create light trespass to residential properties down the slope, south of Sunset Boulevard.
- The purpose of the proposed regulations is to allow sufficient brightness and flexibility for billboard operators and advertisers, while limiting the off-site light trespass and glare.

Section 3.10(b). Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

- Consistency with General Plan Policy LU-16.2: The proposed project updates existing regulations for off-site signage along the Sunset Strip. The regulations establish protections for nearby properties (particularly residential properties) from light trespass and other potential adverse effects…. Height limitations and requirements for sightline and viewshed studies would help prevent adverse visual affects at adjacent properties, including blockage of nearby outdoor advertisements and public viewsheds.

APPENDIX F. 2022 California Administrative Code, Section 10-114

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-

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.

energy consumption that would have resulted from the on-site solar electric generation system and/or battery storage system that is otherwise required by Section 150.1 of Title 24. The energy savings benefits allocated to the building shall be in the form of:

A. actual reductions in the energy consumption of the dedicated building;

B. utility energy reduction credits that will result in virtual reductions in the building's energy consumption that is subject to energy bill payments; or

C. payments to the building that will have an equivalent effect as energy bill reductions.

The reduction in the building's energy bill resulting from A, B, or C above shall be greater than the added cost to the building resulting from the building's share in the community shared solar or battery system.

4. **Durability.** The community shared solar electric generation system and/or community shared battery storage system shall be designed and installed to provide the energy savings benefits to the dedicated building specified in Section 10-115(a)3 for a period of no less than twenty (20) years.

5. **Additionality.** The community shared solar electric generation system and/or community shared battery storage system shall provide the energy savings benefits specified in Section 10-115(a)3 exclusively to the dedicated building. Those energy savings benefits shall in no way be attributed to other purposes or transferred to other buildings or property.

6. **Accountability and recordkeeping.** Applicants for Commission approval of community shared solar electric generation systems and/or community shared battery storage systems shall be accountable to all parties who relied on these systems for partial or total compliance with the on-site solar electric generation and/or battery storage system that would otherwise be required, including but not limited to builders of the buildings, owners of the buildings, enforcement agencies, and the Commission. Recordkeeping regarding compliance with the requirements in Sections 10-115(a)1–6 shall be maintained over the period of time specified in Section 10-115(a)4 for each building for which the community shared solar electric generation or battery storage system is used to demonstrate partial or total compliance. Access to these records shall be provided to any entity approved by the Commission for auditing compliance with these requirements.

(b) **Application for commission approval.** Any entity may apply to the Commission for approval to administer a community shared solar electric generation or community shared battery storage system to provide partial or total compliance with the on-site solar electric generation system and/or battery storage system required by Section 150.1 of Title 24, California Code of Regulations, Part 6. The application shall demonstrate to the Commission's satisfaction that each of the requirements specified in Section 10-115(a)1-6 will be met and shall include detailed explanation of the actions that will be taken by the applicant to ensure that each requirement is met over the period of time specified in Section 10-115(a)4 for each building for which a partial or total offset is used to demonstrate compliance. All applicants have the burden of proof to establish that their application should be granted. The Commission shall have the authority to not approve any application that the Commission determines to be inconsistent with the requirements of Section 10-115.

(c) **Commission approval.** Community shared solar electric generation systems and/or community shared battery storage systems, which demonstrate to the Commission's satisfaction that all of the requirements specified in Section 10-115 will be met, shall be approved.

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.

APPENDIX G. 2022 California Energy Code, Section 140.7 Prescriptive Requirements for Outdoor Lighting

TABLE 140.6-G
TAILORED METHOD GENERAL LIGHTING POWER ALLOWED –BY ILLUMANCE AND ROOM CAVITY RATIO

	GENERAL LIGHTING POWER DENSITY (W/FT²) FOR THE FOLLOWING RCR VALUES[b] VALUES[b]			
GENERAL ILLUMINANCE LEVEL (LUX)[a]	RCR ≤ 2.0	RCR > 2.0 AND ≤ 3.5	RCR > 3.5 AND ≤ 7.0	RCR > 7.0
150	0.40	0.45	0.60	0.75
200	0.45	0.55	0.75	1.00
300	0.65	0.80	1.00	1.40
400	0.75	0.95	1.25	1.50
500	0.90	1.05	1.45	1.85
600	1.08	1.24	1.64	2.38

a. Illuminance values from Column 2 of Table 140.6-D.
b. RCR values are calculated using applicable equations in Table 140.6-F.

Note: Authority: Sections 25213, 25218, 25218.5, 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*.

SECTION 140.7 PRESCRIPTIVE REQUIREMENTS FOR OUTDOOR LIGHTING

(a) An outdoor lighting installation complies with this section if it meets the requirements in Subsections (b) and (c), and the actual outdoor lighting power installed is no greater than the allowed outdoor lighting power calculated under Subsection (d). The allowed outdoor lighting shall be calculated according to outdoor lighting zone in Title 24, Part 1, Section 10-114.

Exceptions to Section 140.7(a): When more than 50 percent of the light from a luminaire falls within one or more of the following applications, the lighting power for that luminaire shall be exempt from Section 140.7:

1. Temporary outdoor lighting.
2. Lighting required and regulated by the Federal Aviation Administration, and the Coast Guard.
3. Lighting for public streets, roadways, highways and traffic signage lighting, including lighting for driveway entrances occurring in the public right-of-way.
4. Lighting for sports and athletic fields, and children's playgrounds.
5. Lighting for industrial sites, including but not limited to, rail yards, maritime shipyards and docks, piers and marinas, chemical and petroleum processing plants, and aviation facilities.
6. Lighting of public monuments.
7. Lighting of signs complying with the requirements of Sections 130.3 and 140.8.
8. Lighting of tunnels, bridges, stairs, wheelchair elevator lifts for American with Disabilities Act (ADA) compliance, and ramps that are other than parking garage ramps.
9. Landscape lighting.
10. In theme parks: outdoor lighting only for themes and special effects.
11. Lighting for outdoor theatrical and other outdoor live performances, provided that these lighting systems are additions to area lighting systems and are controlled by a multiscene or theatrical cross-fade control station accessible only to authorized operators.
12. Outdoor lighting systems for qualified historic buildings, as defined in the *California Historic Building Code* (Title 24, Part 8), if they consist solely of historic lighting components or replicas of historic lighting components. If lighting systems for qualified historic buildings contain some historic lighting components or replicas of historic components, combined with other lighting components, only those historic or historic replica components are exempt. All other outdoor lighting systems for qualified historic buildings shall comply with Section 140.7.

(b) **Outdoor lighting power trade-offs.** Outdoor lighting power trade-offs shall be determined as follows:

1. Allowed lighting power determined according to Section 140.7(d)1 for general hardscape lighting allowance may be traded to specific applications in Section 140.7(d)2, provided the hardscape area from which the lighting power is traded continues to be illuminated in accordance with Section 140.7(d)1A.
2. Allowed lighting power determined according to Section 140.7(d)2 for additional lighting power allowances for specific applications shall not be traded between specific applications, or to hardscape lighting in Section 140.7(d)1.
3. Trading of lighting power allowances between outdoor and indoor areas shall not be permitted.

(c) **Calculation of actual lighting power.** The wattage of outdoor luminaires shall be determined in accordance with Section 130.0(c).

(d) **Calculation of allowed lighting power.** The allowed lighting power shall be the combined total of the sum of the

general hardscape lighting allowance determined in accordance with Section 140.7(d)1, and the sum of the additional lighting power allowance for specific applications determined in accordance with Section 140.7(d)2.

1. **General hardscape lighting allowance.** Determine the general hardscape lighting power allowances as follows:
   A. The general hardscape area of a site shall include parking lot(s), roadway(s), driveway(s), sidewalk(s), walkway(s), bikeway(s), plaza(s), bridge(s), tunnel(s), and other improved area(s) that are illuminated. In plan view of the site, determine the illuminated hardscape area, which is defined as any hardscape area that is within a square pattern around each luminaire or pole that is ten times the luminaire mounting height with the luminaire in the middle of the pattern, less any areas that are within a building, beyond the hardscape area, beyond property lines or obstructed by a structure. The illuminated hardscape area shall include portions of planters and landscaped areas that are within the lighting application and are less than or equal to 10 feet wide in the short dimensions and are enclosed by hardscape or other improvement on at least three sides. Multiply the illuminated hardscape area by the area wattage allowance (AWA) from Table 140.7-A for the appropriate lighting zone.
   B. Determine the perimeter length of the general hardscape area. The total perimeter shall not include portions of hardscape that are not illuminated according to Section 140.7(d)1A. Multiply the hardscape perimeter by the linear wattage allowance (LWA) for hardscape from Table 140.7-A for the appropriate lighting zone. The perimeter length for hardscape around landscaped areas and permanent planters shall be determined as follows:
      i. Landscaped areas completely enclosed within the hardscape area, and which have a width or length less than 10 feet wide, shall not be added to the hardscape perimeter length.
      ii. Landscaped areas completely enclosed within the hardscape area, and which width or length is a minimum of 10 feet wide, the perimeter of the landscaped areas or permanent planter shall be added to the hardscape perimeter length.
      iii. Landscaped edges that are not abutting the hardscape shall not be added to the hardscape perimeter length.
   C. Determine the initial wattage allowance (IWA) for general hardscape lighting from Table 140.7-A for the appropriate lighting zone. The hardscape area shall be permitted one IWA per site.
   D. The general hardscape lighting allowance shall be the sum of the allowed watts determined from (A), (B) and (C) above.
2. **Additional lighting power allowance for specific applications.** Additional lighting power for specific applications shall be the smaller of the additional lighting allowances for specific applications determined in accordance with Table 140.7-B for the appropriate lighting zone, or the actual installed lighting power meeting the requirements for the allowance.

Note: Authority: Sections 25213, 25218, 25218.5, 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*.

TABLE 140.7-A
GENERAL HARDSCAPE LIGHTING POWER ALLOWANCE

TYPE OF POWER ALLOWANCE	LIGHTING ZONE 0[1]	LIGHTING ZONE 1	LIGHTING ZONE 2[3]		LIGHTING ZONE 3[3]		LIGHTING ZONE 4
	Asphalt/Concrete	Asphalt/Concrete	Asphalt	Concrete[2]	Asphalt	Concrete[2]	Asphalt/Concrete
Area wattage allowance (AWA)	No allowance[1]	0.018 W/ft^2	0.023 W/ft^2	0.025 W/ft^2	0.025 W/ft^2	0.03 W/ft^2	0.03 W/ft^2
Linear wattage allowance (LWA)		0.15 W/lf	0.17 W/lf	0.4 W/lf	0.25 W/lf	0.4 W/lf	0.35 W/lf
Initial wattage allowance (IWA)		180 W	250 W	250 W	350 W	350 W	400 W

1. Continuous lighting is explicitly prohibited in Lighting Zone 0. A single luminaire of 15 Watts or less may be installed at an entrance to a parking area, trail head, fee payment kiosk, outhouse, or toilet facility, as required to provide safe navigation of the site infrastructure. Luminaires installed shall meet the maximum zonal lumen limits as specified in Section 130.2(b).
2. Where greater than 50% of the paved surface of a parking lot is finished with concrete. This does not extend beyond the parking lot, and does not include any other General Hardscape areas.
3. Narrow band spectrum light sources with a dominant peak wavelength greater than 580 nm – as mandated by local, state, or federal agencies to minimize the impact on local, active professional astronomy or nocturnal habitat of specific local fauna – shall be allowed a 2.0 lighting power allowance multiplier.

TABLE 140.7-B
ADDITIONAL LIGHTING POWER ALLOWANCE FOR SPECIFIC APPLICATIONS
All area and distance measurements in plan view unless otherwise noted.

LIGHTING APPLICATION	LIGHTING ZONE 0	LIGHTING ZONE 1	LIGHTING ZONE 2	LIGHTING ZONE 3	LIGHTING ZONE 4
WATTAGE ALLOWANCE PER APPLICATION. Use all that apply as appropriate.					
Building entrances or exits. Allowance per door. Luminaires qualifying for this allowance shall be within 20 feet of the door.	Not applicable	9 watts	15 watts	19 watts	21 watts
Primary entrances to senior care facilities, police stations, healthcare facilities, fire stations and emergency vehicle facilities. Allowance per primary entrance(s) only. Primary entrances shall provide access for the general public and shall not be used exclusively for staff or service personnel. This allowance shall be in addition to the building entrance or exit allowance above. Luminaires qualifying for this allowance shall be within 100 feet of the primary entrance.	Not applicable	20 watts	40 watts	57 watts	60 watts
Drive up windows. Allowance per customer service location. Luminaires qualifying for this allowance shall be within two mounting heights of the sill of the window.	Not applicable	16 watts	30 watts	50 watts	75 watts
Vehicle service station uncovered fuel dispenser. Allowance per fueling dispenser. Luminaires qualifying for this allowance shall be within two mounting heights of the dispenser.	Not applicable	55 watts	77 watts	81 watts	135 watts
ATM machine lighting. Allowance per ATM machine. Luminaires qualifying for this allowance shall be within 50 feet of the dispenser.	Not applicable	100 watts for first ATM machine; 35 watts for each additional ATM machine.			
WATTAGE ALLOWANCE PER UNIT LENGTH (W/linear ft). May be used for one or two frontage side(s) per site.					
Outdoor sales frontage. Allowance for frontage immediately adjacent to the principal viewing location(s) and unobstructed for its viewing length. A corner sales lot may include two adjacent sides, provided that a different principal viewing location exists for each side. Luminaires qualifying for this allowance shall be located between the principal viewing location and the frontage outdoor sales area.	Not applicable	No Allowance	11 W/linear ft	19 W/linear ft	25 W/linear ft
WATTAGE ALLOWANCE PER HARDSCAPE AREA (W/ft²). May be used for any illuminated hardscape area on the site.					
Hardscape ornamental lighting. Allowance for the total site illuminated hardscape area. Luminaires qualifying for this allowance shall be rated for 100 watts or less as determined in accordance with Section 130.0(d), and shall be post-top luminaires, lanterns, pendant luminaires or chandeliers.	Not applicable	No Allowance	0.007 W/ft²	0.013 W/ft²	0.019 W/ft²
WATTAGE ALLOWANCE PER SPECIFIC AREA (W/ft²). **Use as appropriate, provided that none of the following specific applications shall be used for the same area.**					
Building facades. Only areas of building facade that are illuminated shall qualify for this allowance. Luminaires qualifying for this allowance shall be aimed at the facade and shall be capable of illuminating it without obstruction or interference by permanent building features or other objects.	Not applicable	No Allowance	0.100 W/ft²	0.170 W/ft²	0.225 W/ft²
Outdoor sales lots. Allowance for uncovered sales lots used exclusively for the display of vehicles or other merchandise for sale. Driveways, parking lots or other nonsales areas shall be considered hardscape areas even if these areas are completely surrounded by sales lot on all sides. Luminaires qualifying for this allowance shall be within five mounting heights of the sales lot area.	Not applicable	0.060 W/ft²	0.210 W/ft²	0.280 W/ft²	0.485 W/ft²
Vehicle service station hardscape. Allowance for the total illuminated hardscape area less area of buildings, under canopies, off property, or obstructed by signs or structures. Luminaires qualifying for this allowance shall be illuminating the hardscape area and shall not be within a building, below a canopy, beyond property lines or obstructed by a sign or other structure.	Not applicable	0.006 W/ft²	0.068 W/ft²	0.138 W/ft²	0.200 W/ft²
Vehicle service station canopies. Allowance for the total area within the drip line of the canopy. Luminaires qualifying for this allowance shall be located under the canopy.	Not applicable	0.220 W/ft²	0.430 W/ft²	0.580 W/ft²	1.010 W/ft²
Sales canopies. Allowance for the total area within the drip line of the canopy. Luminaires qualifying for this allowance shall be located under the canopy.	Not applicable	No Allowance	0.470 W/ft²	0.622 W/ft²	0.740 W/ft²
Nonsales canopies and tunnels. Allowance for the total area within the drip line of the canopy or inside the tunnel. Luminaires qualifying for this allowance shall be located under the canopy or tunnel.	Not applicable	0.057 W/ft²	0.137 W/ft²	0.270 W/ft²	0.370 W/ft²
Guard stations. Allowance up to 1,000 square feet per vehicle lane. Guard stations provide access to secure areas controlled by security personnel who stop and may inspect vehicles and vehicle occupants, including identification, documentation, vehicle license plates and vehicle contents. Qualifying luminaires shall be within two mounting heights of a vehicle lane or the guardhouse.	Not applicable	0.081 W/ft²	0.176 W/ft²	0.325 W/ft²	0.425 W/ft²
Student pick-up/drop-off zone. Allowance for the area of the student pick-up/drop-off zone, with or without canopy, for preschool through 12th grade school campuses. A student pick-up/drop-off zone is a curbside, controlled traffic area on a school campus where students are picked-up and dropped-off from vehicles. The allowed area shall be the smaller of the actual width or 25 feet, times the smaller of the actual length or 250 feet. Qualifying luminaires shall be within two mounting heights of the student pick-up/drop-off zone.	Not applicable	No Allowance	0.056 W/ft²	0.200 W/ft²	No Allowance
Outdoor dining. Allowance for the total illuminated hardscape of outdoor dining. Outdoor dining areas are hardscape areas used to serve and consume food and beverages. Qualifying luminaires shall be within two mounting heights of the hardscape area of outdoor dining.	Not applicable	0.004 W/ft²	0.030 W/ft²	0.050 W/ft²	0.075 W/ft²
Special security lighting for retail parking and pedestrian hardscape. This additional allowance is for illuminated retail parking and pedestrian hardscape identified as having special security needs. This allowance shall be in addition to the building entrance or exit allowance.	Not applicable	0.004 W/ft²	0.005 W/ft²	0.010 W/ft²	No Allowance

APPENDIX H. 2022 California Energy Code, Section 130.3 Sign Lighting Controls

SECTION 130.3
SIGN LIGHTING CONTROLS

Nonresidential buildings other than healthcare facilities, high-rise residential buildings, and hotel/motel buildings shall comply with the applicable requirements of Sections 130.3(a)1 through 130.3(a)3.

(a) **Controls for sign lighting.** All sign lighting shall meet the requirements below as applicable:

1. **Indoor signs.** All indoor sign lighting other than exit sign lighting shall be controlled with an automatic time-switch control or astronomical time-switch control.
2. **Outdoor signs.** Outdoor sign lighting shall meet the following requirements as applicable:
   A. All outdoor sign lighting shall be controlled with a photocontrol in addition to an automatic time-switch control, or an astronomical time-switch control.

   Exception to Section 130.3(a)2A: Outdoor signs in tunnels, and signs in large permanently covered outdoor areas that are intended to be continuously lit, 24 hours per day and 365 days per year.

   B. All outdoor sign lighting that is ON both day and night shall be controlled with a dimmer that provides the ability to automatically reduce sign lighting power by a minimum of 65 percent during nighttime hours. Signs that are illuminated at night and for more than 1 hour during daylight hours shall be considered ON both day and night.

   Exception to Section 130.3(a)2B: Outdoor signs in tunnels and large covered areas that are intended to be illuminated both day and night.
3. **Demand responsive Electronic Message Center (EMC) control.** See Section 110.12 for requirements for demand responsive EMC controls.

Note: Authority: Sections 25213, 25218, 25218.5, 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*.

SECTION 130.4
LIGHTING CONTROL ACCEPTANCE AND INSTALLATION CERTIFICATE REQUIREMENTS

Nonresidential buildings other than healthcare facilities, high-rise residential buildings and hotel/motel buildings shall comply with the applicable requirements of Sections 130.4(a) through 130.4(c). Healthcare facilities shall comply with the applicable acceptance and installation documentation requirements of OSHPD.

(a) **Lighting control acceptance requirements.** Before an occupancy permit is granted, indoor and outdoor lighting controls serving the building, area or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4(a). A Certificate of Acceptance shall be submitted to the enforcement agency under Section 10-103(a) of Part 1, that:

1. Certifies that all of the lighting acceptance testing necessary to meet the requirements of Part 6 is completed;
2. Certifies that the applicable procedures in Reference Nonresidential Appendix NA7.6 and NA7.8 have been followed;
3. Certifies that automatic daylight controls comply with Section 130.1(d) and Reference Nonresidential Appendix NA7.6.1;
4. Certifies that lighting shut-OFF controls comply with Section 130.1(c) and Reference Nonresidential Appendix NA7.6.2;
5. Certifies that demand responsive controls comply with Section 130.1(e) and Reference Nonresidential Appendix NA7.6.3; and
6. Certifies that outdoor lighting controls comply with the applicable requirements of Section 130.2(c) and Reference Nonresidential Appendix NA7.8; and
7. Certifies that lighting systems receiving the Institutional Tuning Power Adjustment Factor comply with Section 140.6(a)2J and Reference Nonresidential Appendix NA7.7.6.2.

(b) **Lighting control installation certificate requirements.** To be recognized for compliance with Part 6 an installation certificate shall be submitted in accordance with Section 10-103(a) for any lighting control system, energy management control system, track lighting integral current limiter, track lighting supplementary overcurrent protection panel, interlocked lighting system, lighting power adjustment factor, or additional wattage available for a videoconference studio, in accordance with the following requirements, as applicable:

1. Certification that when a lighting control system is installed to comply with lighting control requirements in Part 6 it complies with the applicable requirements of Section 110.9; and complies with Reference Nonresidential Appendix NA7.7.1.
2. Certificationes that when an energy management control system is installed to function as a lighting control required by Part 6 it functionally meets all applicable requirements for each application for which it is installed, in accordance with Sections 110.9, 130.0 through 130.5, 140.6 through 150.0, and 150.2; and complies with Reference Nonresidential Appendix NA7.7.2.
3. **Reserved.**
4. **Reserved.**
5. Certification that interlocked lighting systems used to serve an approved area comply with Section 140.6(a)1; and comply with Reference Nonresidential Appendix NA7.7.5.

APPENDIX I. 2022 California Energy Code, Section 140.8 Prescriptive Requirements for Signs

SECTION 140.8 PRESCRIPTIVE REQUIREMENTS FOR SIGNS

This section applies to all internally illuminated and externally illuminated signs, unfiltered light emitting diodes (LEDs) and unfiltered neon, both indoor and outdoor. Each sign shall comply with either subsection (a) or (b), as applicable.

(a) **Maximum allowed lighting power.**

1. 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. For double-faced signs, only the area of a single face shall be used to determine the allowed lighting power.
2. For externally illuminated signs, the maximum allowed lighting power shall not exceed the product of the illuminated sign area and 2.3 watts per square foot. Only areas of an externally lighted sign that are illuminated without obstruction or interference, by one or more luminaires, shall be used.
3. Lighting for unfiltered light emitting diodes (LEDs) and unfiltered neon shall comply with Section 140.8(b).

(b) **Alternate lighting sources.** The sign shall comply if it is equipped only with one or more of the following light sources:

1. High pressure sodium lamps; or
2. Metal halide lamps that are:
   A. Pulse start or ceramic served by a ballast that has a minimum efficiency of 88 percent or greater, or
   B. Pulse start that are 320 watts or smaller, are not 250 watt or 175 watt lamps, and are served by a ballast that has a minimum efficiency of 80 percent.

   Ballast efficiency is the reference lamp power divided by the ballast input power when tested according to ANSI C82.6-2015.
3. Neon or cold cathode lamps with transformer or power supply efficiency greater than or equal to the following:
   A. A minimum efficiency of 75 percent when the transformer or power supply rated output current is less than 50 mA; or
   B. A minimum efficiency of 68 percent when the transformer or power supply rated output current is 50 mA or greater.

   The ratio of the output wattage to the input wattage is at 100 percent tubing load.
4. Fluorescent lighting systems meeting one of the following requirements:
   A. Use only lamps with a minimum color rendering index (CRI) of 80; or
   B. Use only electronic ballasts with a fundamental output frequency not less than 20 kHz.
5. Light emitting diodes (LEDs) with a power supply having an efficiency of 80 percent or greater; or

   Exception to Section 140.8(b)5: Single voltage external power supplies that are designed to convert 120 volt AC input into lower voltage DC or AC output, and have a nameplate output power less than or equal to 250 watts, shall comply with the applicable requirements of the appliance efficiency regulations (Title 20).
6. Compact fluorescent lamps that do not contain a medium screw base socket (E24/E26).

Exception 1 to Section 140.8: Unfiltered incandescent lamps that are not part of an electronic message center (EMC), an internally illuminated sign or an externally illuminated sign.

Exception 2 to Section 140.8: Exit signs. Exit signs shall meet the requirements of the appliance efficiency regulations.

Exception 3 to Section 140.8: Traffic Signs. Traffic signs shall meet the requirements of the appliance efficiency regulations.

Note: Authority: Sections 25213, 25218, 25218.5, 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*.

SECTION 140.9 PRESCRIPTIVE REQUIREMENTS FOR COVERED PROCESSES

(a) **Prescriptive requirements for computer rooms.** Space conditioning systems serving a computer room with a power density greater than 20 W/ft^2 shall comply with this section by being designed with and having constructed and installed a cooling system that meets the requirements of Subsections 1 through 6.

1. **Economizers.** Each individual cooling system primarily serving computer room shall include either:
   A. An integrated air economizer capable of providing 100 percent of the expected system cooling load as calculated in accordance with a method approved by the Commission, at outside air temperatures of 55°F dry-bulb/50°F wet-bulb and below, and be equipped with a fault detection and diagnostic system as specified by Section 120.2(i); or
   B. An integrated water economizer capable of providing 100 percent of the expected system cooling load as calculated in accordance with a method approved by the Commission, at outside air temperatures of 40°F dry-bulb/35°F wet-bulb and below.

   Exception 1 to Section 140.9(a)1: Individual computer rooms under 5 tons in a building that does not have any economizers.

   Exception 2 to Section 140.9(a)1: New cooling systems serving an existing computer room in an existing building up to a total of 50 tons of new cooling equipment per building.

APPENDIX J. IESNA Nighttime Outdoor Lighting Zone Definitions

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.

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.

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.

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.

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.

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.

Figure 4-8. LZ-4 description from the MLO.

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

APPENDIX K. IESNA Recommended Light Trespass Illuminance Limits

Table 26.5 | Recommended Light Trespass Illuminance Limits

Lighting Zone	Limit in lux[a]	
	Pre-curfew	Post-curfew
LZ4	15	6
LZ3	8	3
LZ2	3	1
LZ1	1	0
LZ0	0.1	0

a. Maximum initial illuminance on a plane perpendicular to the line of sight to the luminaire(s). Plane located at observer position where light trespass is under review. [7]

APPENDIX L. Sign Lighting Illuminance Calculation (fc)

Sign Lighting illuminance data presented below is derived from the lighting illuminance calculations prepared as per the methods described in Section I.1 above. Illuminance data is presented in the following tables with location coordinates defined relative to the elevation and horizontal distance from lower left, viewing from the Property to the vertical plane where Light trespass illuminance is under review. Grid data is displayed at ten feet on center, vertical and horizontal.

VP-N1a

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.70
135	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70
125	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.80
115	0.70	0.80	0.80	0.80	0.80	0.70	0.70	0.80
105	0.80	0.80	0.90	0.90	0.80	0.80	0.70	0.80
95	0.80	0.80	0.90	0.90	0.90	0.80	0.70	0.80
85	0.80	0.80	0.80	0.80	0.80	0.70	0.70	0.80
75	0.70	0.70	0.70	0.70	0.60	0.60	0.50	0.60
65	0.60	0.50	0.50	0.40	0.40	0.30	0.30	0.40
55	0.50	0.30	0.30	0.20	0.10	0.00	0.00	0.00
45	0.20	0.10	0.00	0.00	0.00	0.00	0.00	0.00
35	0.10	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
15	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

VP-N1a

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.70	0.80	0.80	1.00	1.10	1.20	1.30	1.40
135	0.80	0.80	0.90	1.00	1.10	1.30	1.50	1.60
125	0.80	0.90	1.00	1.10	1.30	1.50	1.60	1.90
115	0.80	0.90	1.00	1.20	1.50	1.70	1.90	2.00
105	0.90	1.00	1.00	1.40	1.80	2.20	2.40	2.40
95	0.90	1.00	1.10	1.50	2.20	2.60	2.70	2.90
85	0.80	1.00	1.10	1.80	2.60	2.90	3.10	3.20
75	0.80	0.90	1.10	1.90	3.00	3.20	3.40	3.30
65	0.80	0.90	1.00	2.30	3.20	3.20	3.40	3.40
55	0.00	0.00	0.00	1.70	2.20	2.60	2.90	3.00
45	0.00	0.00	0.00	1.90	2.30	2.60	2.70	2.80
35	0.00	0.00	0.00	1.50	2.10	2.30	2.60	2.50
25	0.00	0.10	0.60	1.10	1.60	1.70	2.00	2.10
15	0.00	0.00	0.00	0.60	1.00	1.60	1.40	1.40
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N1a

Vertical (ft) \ Horizontal (ft)	165	175	185	195	205	215	225	235
145	1.50	1.50	1.40	1.40	1.30	1.20	1.20	1.10
135	1.70	1.70	1.60	1.50	1.40	1.20	1.20	1.20
125	1.90	1.90	1.90	1.60	1.50	1.20	1.20	1.20
115	2.20	2.10	2.00	1.90	1.50	1.10	0.90	1.00
105	2.50	2.40	2.30	2.10	1.60	1.00	0.80	0.80
95	2.90	2.70	2.60	2.30	1.70	1.00	0.70	0.60
85	3.20	3.00	2.80	2.50	1.90	1.10	0.80	0.70
75	3.30	3.20	3.00	2.70	2.20	1.40	1.10	0.90
65	3.30	3.10	3.00	2.70	2.20	1.80	1.70	1.50
55	3.00	2.90	2.70	2.50	2.10	1.70	1.70	1.50
45	2.80	2.70	2.60	2.30	2.00	1.70	1.70	1.50
35	2.50	2.40	2.30	2.00	1.70	1.50	1.60	1.40
25	2.00	2.00	1.80	1.70	1.50	1.40	1.40	1.40
15	1.30	1.30	1.10	1.10	1.00	0.70	0.80	0.70
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N1a

Vertical (ft) \ Horizontal (ft)	245	255	265
145	1.10	1.10	1.00
135	1.20	1.10	1.10
125	1.20	1.20	1.20
115	1.10	1.20	1.20
105	0.90	1.00	1.00
95	0.80	0.80	0.70
85	0.80	0.80	0.80
75	0.90	0.90	1.00
65	1.60	0.90	1.60
55	1.60	0.80	1.50
45	1.60	0.80	1.50
35	1.50	0.80	1.50
25	1.40	0.80	1.50
15	0.70	0.70	0.80
5	0.00	0.00	0.00

VP-N1b

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

VP-N1b

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
135	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
125	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
115	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
105	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
95	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
75	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
55	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	0.00
35	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00
25	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00
15	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

VP-N2a

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.20	0.10	0.20	0.20	0.30	0.30	0.30	0.40
135	0.20	0.20	0.20	0.30	0.30	0.30	0.40	0.40
125	0.20	0.20	0.30	0.20	0.30	0.30	0.40	0.40
115	0.20	0.20	0.20	0.20	0.20	0.30	0.40	0.40
105	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30
95	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
85	0.20	0.20	0.20	0.20	0.30	0.30	0.40	0.40
75	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.50
65	0.30	0.30	0.30	0.20	0.40	0.40	0.40	0.40
55	0.30	0.30	0.20	0.30	0.30	0.30	0.30	0.40
45	0.20	0.30	0.30	0.20	0.30	0.30	0.40	0.30
35	0.30	0.20	0.30	0.30	0.40	0.30	0.50	0.40
25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50
15	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

VP-N2a

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.40	0.40	0.40	0.50	0.50	0.50	0.60	0.60
135	0.40	0.40	0.50	0.40	0.60	0.60	0.60	0.60
125	0.40	0.40	0.50	0.50	0.50	0.60	0.60	0.70
115	0.40	0.40	0.50	0.50	0.50	0.70	0.50	0.60
105	0.30	0.40	0.40	0.40	0.50	0.50	0.50	0.60
95	0.30	0.40	0.50	0.40	0.50	0.50	0.60	0.60
85	0.40	0.60	0.40	0.50	0.50	0.60	0.70	0.70
75	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.80
65	0.70	0.50	0.60	0.80	0.60	0.70	0.70	0.80
55	0.40	0.40	0.40	0.40	0.50	0.60	0.60	0.60
45	0.30	0.40	0.40	0.50	0.60	0.50	0.60	0.60
35	0.50	0.50	0.60	0.60	0.70	0.70	0.70	0.80
25	0.50	0.50	0.60	0.50	0.60	0.70	0.60	0.80
15	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N2b

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.90	0.80	0.80	0.80	0.80	0.70	0.70	0.70
135	0.90	0.80	0.80	0.80	0.80	0.70	0.70	0.70
125	0.90	0.90	0.80	0.80	0.80	0.80	0.70	0.70
115	0.90	0.90	0.80	0.80	0.80	0.80	0.80	0.70
105	1.00	0.90	0.80	0.80	0.80	0.80	0.80	0.70
95	1.00	0.90	0.90	0.80	0.80	0.80	0.80	0.70
85	1.00	0.90	0.90	0.80	0.80	0.80	0.80	0.70
75	1.00	0.90	0.80	0.80	0.80	0.80	0.80	0.70
65	1.00	0.90	0.80	0.80	0.80	0.70	0.70	0.70
55	0.90	0.90	0.80	0.80	0.70	0.70	0.70	0.70
45	0.90	0.80	0.70	0.70	0.70	0.70	0.70	0.60
35	0.90	0.80	0.60	0.70	0.50	0.50	0.50	0.50
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N2b

Horizontal (ft)		85	95	105	115	125	135
Vertical (ft)	145	0.60	0.60	0.60	0.60	0.50	0.50
	135	0.70	0.60	0.60	0.60	0.50	0.50
	125	0.70	0.70	0.60	0.60	0.60	0.50
	115	0.70	0.70	0.60	0.60	0.60	0.50
	105	0.70	0.70	0.60	0.60	0.60	0.60
	95	0.70	0.70	0.60	0.60	0.60	0.60
	85	0.70	0.70	0.60	0.60	0.60	0.60
	75	0.70	0.70	0.60	0.60	0.60	0.60
	65	0.70	0.60	0.60	0.60	0.60	0.60
	55	0.60	0.60	0.60	0.60	0.60	0.60
	45	0.60	0.60	0.60	0.50	0.50	0.50
	35	0.50	0.40	0.40	0.40	0.40	0.40
	25	0.00	0.00	0.00	0.00	0.00	0.30
	15	0.00	0.00	0.00	0.00	0.00	0.10
	5	0.00	0.00	0.00	0.00	0.00	0.00

VP-N2c

Horizontal (ft)		5	15	25	35	45	55	65
Vertical (ft)	145	0.70	0.60	0.70	0.70	0.80	0.80	0.90
	135	0.60	0.60	0.70	0.70	0.80	0.90	0.90
	125	0.60	0.60	0.70	0.80	0.80	0.90	1.00
	115	0.60	0.70	0.70	0.80	0.90	0.90	1.00
	105	0.70	0.70	0.70	0.80	0.90	1.00	1.10
	95	0.60	0.70	0.80	0.80	1.00	1.10	1.30
	85	0.70	0.70	0.80	0.90	1.10	1.40	1.70
	75	0.70	0.80	0.90	1.00	1.40	2.00	2.80
	65	0.70	0.80	0.90	1.10	1.90	3.90	7.10
	55	0.80	0.80	0.90	1.20	2.70	10.50	23.90
	45	0.70	0.80	0.80	1.10	3.10	15.60	39.80
	35	0.60	0.70	0.70	1.00	2.50	10.40	26.60
	25	0.50	0.50	0.60	0.90	1.80	4.20	8.30
	15	0.00	0.10	0.10	0.20	0.60	1.30	2.30
	5	0.00	0.10	0.10	0.20	0.40	0.60	1.00

VP-N2d

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
135	0.50	0.40	0.40	0.40	0.40	0.30	0.30	0.30
125	0.50	0.50	0.40	0.40	0.40	0.40	0.30	0.30
115	0.50	0.50	0.50	0.40	0.40	0.40	0.40	0.30
105	0.60	0.50	0.50	0.50	0.40	0.40	0.40	0.40
95	0.60	0.60	0.60	0.50	0.50	0.40	0.40	0.40
85	0.70	0.70	0.60	0.60	0.50	0.50	0.40	0.40
75	1.00	0.80	0.70	0.60	0.60	0.50	0.40	0.40
65	1.50	1.10	0.90	0.70	0.60	0.50	0.50	0.40
55	2.50	1.40	1.00	0.80	0.60	0.50	0.50	0.40
45	3.20	1.70	1.10	0.80	0.70	0.60	0.50	0.40
35	2.90	1.80	1.20	0.90	0.70	0.60	0.50	0.40
25	2.60	1.90	1.30	0.90	0.70	0.60	0.50	0.40
15	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

VP-N2d

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135
145	0.30	0.30	0.30	0.20	0.20	0.30
135	0.30	0.30	0.30	0.30	0.30	0.30
125	0.30	0.30	0.30	0.30	0.30	0.30
115	0.30	0.30	0.30	0.30	0.30	0.30
105	0.30	0.30	0.30	0.30	0.30	0.30
95	0.30	0.30	0.30	0.30	0.30	0.30
85	0.40	0.30	0.30	0.30	0.30	0.30
75	0.40	0.40	0.30	0.30	0.30	0.30
65	0.40	0.40	0.30	0.30	0.30	0.30
55	0.40	0.40	0.30	0.30	0.30	0.30
45	0.40	0.40	0.30	0.30	0.30	0.30
35	0.40	0.40	0.30	0.30	0.30	0.30
25	0.30	0.30	0.30	0.20	0.20	0.30
15	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

VP-N2e

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

VP-N2e

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

VP-N3a

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40
135	0.30	0.30	0.30	0.30	0.30	0.40	0.30	0.40
125	0.30	0.30	0.30	0.30	0.30	0.40	0.40	0.40
115	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.50
105	0.30	0.30	0.30	0.40	0.30	0.30	0.40	0.40
95	0.30	0.30	0.30	0.40	0.30	0.40	0.50	0.40
85	0.40	0.40	0.30	0.30	0.40	0.40	0.50	0.60
75	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.40
65	0.30	0.20	0.20	0.30	0.30	0.40	0.50	0.50
55	0.00	0.00	0.00	0.20	0.20	0.20	0.30	0.40
45	0.00	0.00	0.00	0.20	0.20	0.20	0.30	0.30
35	0.00	0.00	0.00	0.10	0.20	0.20	0.20	0.30
25	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.20
15	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

VP-N3a

Vertical (ft) \ Horizontal (ft)	85	95
145	0.40	0.40
135	0.40	0.40
125	0.40	0.40
115	0.40	0.40
105	0.40	0.50
95	0.50	0.50
85	0.40	0.60
75	0.50	0.50
65	0.50	0.50
55	0.50	0.60
45	0.50	0.50
35	0.50	0.50
25	0.20	0.20
15	0.00	0.00
5	0.00	0.00

VP-N3b

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
135	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
125	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
115	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
105	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
95	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
85	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
75	0.40	0.30	0.30	0.20	0.20	0.20	0.20	0.20
65	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.10	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

VP-N3b

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135
145	0.40	0.40	0.40	0.40	0.40	0.40
135	0.40	0.40	0.40	0.40	0.40	0.40
125	0.40	0.40	0.40	0.40	0.40	0.40
115	0.40	0.40	0.40	0.40	0.50	0.50
105	0.40	0.40	0.40	0.40	0.40	0.50
95	0.40	0.40	0.40	0.40	0.40	0.40
85	0.30	0.30	0.30	0.40	0.40	0.40
75	0.20	0.20	0.20	0.20	0.20	0.20
65	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
45	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
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00

VP-N3c

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.20
135	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30
125	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
115	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
105	0.50	0.40	0.40	0.30	0.30	0.30	0.30	0.30
95	0.50	0.40	0.40	0.30	0.30	0.30	0.30	0.30
85	0.50	0.40	0.40	0.30	0.30	0.30	0.30	0.20
75	0.50	0.40	0.40	0.30	0.30	0.30	0.30	0.20
65	0.20	0.40	0.40	0.30	0.30	0.30	0.30	0.20
55	0.20	0.40	0.40	0.30	0.30	0.30	0.30	0.20
45	0.20	0.40	0.40	0.30	0.30	0.30	0.30	0.20
35	0.10	0.40	0.30	0.30	0.20	0.20	0.20	0.20
25	0.10	0.30	0.20	0.20	0.20	0.20	0.10	0.10
15	0.00	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

VP-N3c

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

VP-N3d

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
135	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
125	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
115	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
105	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
95	0.20	0.20	0.20	0.20	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
75	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
55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
45	0.10	0.00	0.10	0.10	0.10	0.10	0.10	0.10
35	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
25	0.00	0.00	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N3d

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135
145	0.20	0.20	0.20	0.20	0.20	0.20
135	0.20	0.20	0.20	0.20	0.20	0.20
125	0.20	0.20	0.20	0.20	0.20	0.20
115	0.20	0.20	0.20	0.20	0.20	0.20
105	0.20	0.20	0.20	0.20	0.20	0.20
95	0.20	0.20	0.20	0.20	0.20	0.10
85	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
65	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
45	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
25	0.10	0.10	0.00	0.00	0.00	0.10
15	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

VP-N4a

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
135	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
125	0.20	0.10	0.20	0.20	0.20	0.20	0.20	0.20
115	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
105	0.20	0.10	0.10	0.20	0.20	0.20	0.20	0.20
95	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	0.20	0.10	0.10	0.10
75	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
55	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
45	0.00	0.00	0.00	0.10	0.10	0.00	0.10	0.10
35	0.00	0.00	0.00	0.10	0.10	0.00	0.10	0.10
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N4a

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145
145	0.20	0.20	0.20	0.30	0.30	0.30	0.30
135	0.20	0.20	0.20	0.30	0.30	0.30	0.30
125	0.20	0.30	0.20	0.30	0.30	0.30	0.40
115	0.20	0.20	0.20	0.30	0.30	0.30	0.40
105	0.20	0.20	0.20	0.20	0.30	0.30	0.40
95	0.20	0.20	0.20	0.20	0.20	0.30	0.40
85	0.10	0.20	0.20	0.20	0.20	0.30	0.40
75	0.10	0.10	0.10	0.10	0.10	0.20	0.30
65	0.10	0.10	0.10	0.10	0.10	0.20	0.30
55	0.10	0.10	0.10	0.10	0.10	0.20	0.30
45	0.10	0.10	0.10	0.10	0.10	0.20	0.30
35	0.10	0.10	0.10	0.10	0.10	0.20	0.30
25	0.00	0.00	0.10	0.10	0.10	0.20	0.30
15	0.00	0.00	0.10	0.10	0.10	0.10	0.20
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N4b

Horizontal (ft)		5	15	25	35	45	55
Vertical (ft)	145	0.20	0.20	0.30	0.30	0.20	0.20
	135	0.30	0.30	0.30	0.30	0.30	0.30
	125	0.30	0.30	0.30	0.30	0.30	0.30
	115	0.30	0.30	0.30	0.30	0.30	0.30
	105	0.30	0.40	0.40	0.30	0.30	0.30
	95	0.40	0.40	0.40	0.40	0.30	0.30
	85	0.40	0.40	0.40	0.40	0.40	0.30
	75	0.40	0.40	0.40	0.40	0.20	0.20
	65	0.40	0.40	0.40	0.40	0.10	0.10
	55	0.50	0.50	0.40	0.40	0.10	0.10
	45	0.50	0.50	0.40	0.40	0.10	0.10
	35	0.40	0.40	0.40	0.40	0.10	0.10
	25	0.40	0.40	0.40	0.40	0.10	0.10
	15	0.00	0.00	0.00	0.00	0.00	0.10
	5	0.00	0.00	0.00	0.00	0.00	0.00

VP-N4c

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.30	0.30	0.30	0.30	0.30	0.40	0.40	0.40
135	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.40
125	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.50
115	0.30	0.30	0.30	0.40	0.40	0.40	0.40	0.50
105	0.30	0.30	0.30	0.40	0.40	0.40	0.50	0.50
95	0.30	0.30	0.30	0.40	0.40	0.40	0.50	0.50
85	0.30	0.30	0.30	0.30	0.40	0.40	0.50	0.50
75	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.50
65	0.30	0.30	0.30	0.30	0.40	0.40	0.40	0.50
55	0.20	0.30	0.30	0.30	0.30	0.40	0.40	0.50
45	0.20	0.20	0.30	0.30	0.30	0.40	0.40	0.50
35	0.20	0.20	0.30	0.30	0.30	0.30	0.40	0.40
25	0.20	0.20	0.20	0.30	0.30	0.30	0.40	0.40
15	0.20	0.20	0.20	0.30	0.30	0.30	0.40	0.40
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N4c

Vertical (ft) \ Horizontal (ft)	85	95
145	0.40	0.50
135	0.50	0.50
125	0.50	0.50
115	0.50	0.60
105	0.50	0.60
95	0.60	0.60
85	0.60	0.60
75	0.50	0.60
65	0.50	0.60
55	0.50	0.60
45	0.50	0.60
35	0.50	0.50
25	0.50	0.50
15	0.50	0.50
5	0.00	0.00

VP-N4d

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.70
135	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
125	0.90	0.90	0.90	0.90	0.90	0.80	0.80	0.80
115	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.80
105	1.00	1.00	1.00	0.90	0.90	0.90	0.90	0.90
95	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
85	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90
75	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90
65	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
55	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
45	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90
35	0.90	1.00	1.00	1.00	1.00	1.00	0.90	0.90
25	0.90	1.00	1.00	1.00	1.00	1.00	0.90	0.90
15	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N4d

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145
145	0.70	0.70	0.70	0.70	0.60	0.60	0.60
135	0.80	0.80	0.70	0.70	0.70	0.60	0.60
125	0.80	0.80	0.80	0.70	0.70	0.70	0.60
115	0.80	0.80	0.80	0.70	0.70	0.70	0.70
105	0.90	0.80	0.80	0.80	0.70	0.70	0.70
95	0.90	0.80	0.80	0.80	0.80	0.70	0.70
85	0.90	0.90	0.80	0.80	0.80	0.70	0.70
75	0.90	0.90	0.80	0.80	0.80	0.70	0.70
65	0.90	0.90	0.80	0.80	0.80	0.70	0.70
55	0.90	0.90	0.80	0.80	0.80	0.70	0.70
45	0.90	0.90	0.80	0.80	0.80	0.70	0.70
35	0.90	0.80	0.80	0.80	0.70	0.70	0.70
25	0.90	0.80	0.80	0.80	0.70	0.70	0.70
15	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

VP-N4e

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.60
135	0.50	0.50	0.50	0.60	0.60	0.60	0.60	0.60
125	0.50	0.60	0.60	0.60	0.60	0.60	0.60	0.60
115	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.70
105	0.60	0.60	0.60	0.60	0.60	0.60	0.70	0.70
95	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.70
85	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.70
75	0.60	0.60	0.60	0.60	0.70	0.70	0.70	0.70
65	0.60	0.60	0.60	0.70	0.70	0.70	0.70	0.70
55	0.60	0.60	0.60	0.60	0.70	0.70	0.70	0.70
45	0.60	0.60	0.60	0.60	0.70	0.70	0.70	0.70
35	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.70
25	0.60	0.60	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N4e

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
135	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
125	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.60
115	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
105	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
95	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
85	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
75	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
65	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
55	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
45	0.70	0.70	0.70	0.70	0.70	0.70	0.60	0.60
35	0.70	0.70	0.60	0.60	0.60	0.60	0.50	0.50
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N4e

Vertical (ft) \ Horizontal (ft)	165	175	185	195	205	215	225
145	0.60	0.60	0.60	0.50	0.50	0.50	0.50
135	0.60	0.60	0.60	0.60	0.50	0.50	0.50
125	0.60	0.60	0.60	0.60	0.60	0.50	0.50
115	0.70	0.60	0.60	0.60	0.60	0.50	0.50
105	0.70	0.70	0.60	0.60	0.60	0.60	0.50
95	0.70	0.70	0.60	0.60	0.60	0.60	0.50
85	0.70	0.70	0.60	0.60	0.50	0.50	0.50
75	0.70	0.70	0.60	0.50	0.50	0.50	0.50
65	0.70	0.70	0.60	0.50	0.40	0.50	0.50
55	0.60	0.60	0.60	0.50	0.40	0.50	0.40
45	0.60	0.50	0.50	0.40	0.00	0.00	0.40
35	0.50	0.40	0.40	0.30	0.00	0.00	0.30
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N5a

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

VP-N5b

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

VP-N5b

Vertical (ft) \ Horizontal (ft)	85	95
145	0.80	0.80
135	0.90	0.90
125	0.90	1.00
115	1.00	1.00
105	1.00	1.10
95	1.00	1.10
85	1.10	1.10
75	1.00	1.00
65	0.90	1.00
55	0.90	1.00
45	1.00	1.10
35	0.70	0.60
25	0.10	0.10
15	0.00	0.00
5	0.00	0.00

VP-N5c

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.40	0.40	0.30	0.30	0.30	0.30	0.20	0.20
135	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.20
125	0.50	0.40	0.40	0.40	0.30	0.30	0.30	0.20
115	0.50	0.40	0.40	0.40	0.30	0.30	0.30	0.20
105	0.50	0.50	0.40	0.40	0.30	0.30	0.30	0.30
95	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.30
85	0.50	0.50	0.40	0.40	0.40	0.30	0.30	0.30
75	0.60	0.50	0.50	0.40	0.40	0.30	0.30	0.30
65	0.60	0.50	0.50	0.40	0.40	0.30	0.30	0.30
55	0.60	0.50	0.50	0.40	0.40	0.30	0.30	0.30
45	0.50	0.50	0.40	0.40	0.40	0.00	0.10	0.10
35	0.40	0.40	0.30	0.30	0.30	0.00	0.10	0.00
25	0.00	0.00	0.10	0.20	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N5d

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
135	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.60
125	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70
115	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
105	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
95	0.60	0.70	0.60	0.60	0.60	0.60	0.60	0.60
85	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
75	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
65	0.60	0.60	0.60	0.70	0.70	0.70	0.70	0.70
55	0.70	0.70	0.60	0.60	0.70	0.70	0.70	0.70
45	0.00	0.00	0.00	0.50	0.50	0.60	0.60	0.50
35	0.00	0.00	0.00	0.40	0.00	0.00	0.30	0.00
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N5d

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.60	0.60	0.60	0.60	0.60	0.50	0.50	0.50
135	0.60	0.60	0.60	0.60	0.60	0.60	0.50	0.50
125	0.70	0.60	0.60	0.60	0.60	0.60	0.60	0.50
115	0.70	0.60	0.60	0.60	0.60	0.60	0.60	0.50
105	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.50
95	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
85	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
75	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
65	0.70	0.70	0.70	0.60	0.60	0.60	0.60	0.60
55	0.60	0.60	0.60	0.60	0.60	0.60	0.50	0.50
45	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.40
35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N6a

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.03	0.04	0.04	0.04	0.05	0.04	0.04	0.05
135	0.04	0.04	0.04	0.04	0.03	0.03	0.05	0.03
125	0.04	0.02	0.04	0.03	0.03	0.03	0.04	0.04
115	0.03	0.03	0.03	0.02	0.02	0.03	0.03	0.03
105	0.03	0.03	0.04	0.03	0.02	0.03	0.03	0.03
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	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
35	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
15	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

VP-N6a

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.04	0.06	0.04	0.04	0.05	0.04	0.04	0.05
135	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.03
125	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.04
115	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
105	0.03	0.03	0.03	0.04	0.04	0.03	0.04	0.04
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	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
35	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
15	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

VP-N6a

Vertical (ft) \ Horizontal (ft)	165	175	185	195
145	0.05	0.05	0.05	0.05
135	0.04	0.04	0.04	0.04
125	0.04	0.04	0.04	0.04
115	0.04	0.04	0.05	0.04
105	0.04	0.05	0.05	0.04
95	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00

VP-S1a

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	3.50	3.40	3.30	3.20	3.10	2.90	2.70	2.40
135	4.20	4.10	4.00	3.90	3.70	3.30	3.00	2.60
125	5.00	4.90	4.70	4.60	4.30	3.80	3.30	2.90
115	5.90	5.80	5.60	5.40	5.00	4.40	3.80	3.30
105	6.70	6.60	6.30	6.00	5.50	4.80	4.20	3.60
95	7.10	7.00	6.60	6.30	5.80	5.10	4.40	3.80
85	7.60	7.40	7.20	6.70	6.20	5.40	4.70	3.90
75	7.70	7.50	7.30	6.80	6.20	5.40	4.70	3.90
65	7.50	7.20	6.90	6.40	5.90	5.20	4.50	3.80
55	6.80	6.60	6.30	5.90	5.50	4.90	4.20	3.60
45	6.00	5.80	5.50	5.20	4.80	4.40	3.80	3.30
35	5.20	5.00	4.70	4.50	4.10	3.80	3.50	3.10
25	4.50	4.20	3.90	3.60	3.40	3.30	3.00	2.70
15	3.90	3.50	3.20	1.90	1.30	1.20	1.10	1.00
5	3.10	3.10	3.00	0.90	0.30	0.20	0.00	0.00

VP-S1a

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	2.20	1.90	1.80	1.60	1.50	1.30	1.20	1.20
135	2.30	2.10	1.80	1.70	1.60	1.40	1.30	1.20
125	2.60	2.30	2.00	1.80	1.60	1.50	1.40	1.30
115	2.80	2.50	2.10	1.90	1.70	1.60	1.40	1.30
105	3.10	2.60	2.30	2.00	1.80	1.60	1.50	1.30
95	3.20	2.70	2.40	2.10	1.80	1.70	1.50	1.40
85	3.30	2.80	2.40	2.10	1.90	1.70	1.50	1.40
75	3.30	2.80	2.40	2.10	1.90	1.70	1.50	1.40
65	3.20	2.70	2.40	2.10	1.90	1.70	1.50	1.40
55	3.10	2.70	2.30	2.00	1.80	1.60	1.50	1.30
45	2.90	2.50	2.20	1.90	1.70	1.50	1.40	1.30
35	2.70	2.30	2.10	1.80	1.60	1.50	1.30	1.20
25	2.40	2.10	1.90	1.70	1.60	1.40	1.30	1.20
15	1.20	1.50	1.40	1.30	1.30	1.20	1.10	1.10
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S1a

Vertical (ft) \ Horizontal (ft)	165	175	185	195	205	215	225	235
145	1.10	1.00	1.00	0.90	0.80	0.80	0.80	0.70
135	1.10	1.10	1.00	0.90	0.90	0.80	0.80	0.70
125	1.20	1.10	1.00	1.00	0.90	0.90	0.80	0.80
115	1.20	1.10	1.10	1.00	0.90	0.90	0.80	0.80
105	1.20	1.10	1.10	1.00	1.00	0.90	0.80	0.80
95	1.30	1.20	1.10	1.00	1.00	0.90	0.80	0.80
85	1.30	1.20	1.10	1.00	1.00	0.90	0.80	0.80
75	1.30	1.20	1.10	1.00	0.90	0.90	0.80	0.80
65	1.30	1.20	1.10	1.00	0.90	0.90	0.80	0.80
55	1.20	1.20	1.10	1.00	0.90	0.90	0.80	0.80
45	1.20	1.10	1.00	1.00	0.90	0.80	0.80	0.80
35	1.10	1.10	1.00	0.90	0.90	0.80	0.80	0.70
25	1.10	1.00	1.00	0.90	0.80	0.80	0.70	0.70
15	1.00	1.00	0.90	0.80	0.80	0.80	0.70	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S1a

Horizontal (ft)		245	255	265
Vertical (ft)	145	0.70	0.60	0.60
	135	0.70	0.70	0.60
	125	0.70	0.70	0.60
	115	0.70	0.70	0.60
	105	0.70	0.70	0.60
	95	0.70	0.70	0.60
	85	0.70	0.70	0.60
	75	0.70	0.70	0.60
	65	0.70	0.70	0.60
	55	0.70	0.70	0.60
	45	0.70	0.70	0.60
	35	0.70	0.60	0.60
	25	0.60	0.60	0.60
	15	0.00	0.00	0.00
	5	0.00	0.00	0.00

VP-S1b

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

VP-S1b

Vertical (ft) \ Horizontal (ft)	85	95
145	0.70	0.80
135	0.80	0.90
125	0.90	1.00
115	0.90	1.00
105	1.00	1.10
95	1.10	1.30
85	1.20	1.40
75	1.30	1.50
65	1.30	1.50
55	1.40	1.60
45	1.40	1.70
35	1.40	1.70
25	1.40	1.70
15	1.40	1.60
5	1.40	1.50

VP-S3a

Horizontal (ft)		5	15	25	35	45
Vertical (ft)	145	0.40	0.40	0.40	0.40	0.30
	135	0.40	0.40	0.30	0.30	0.30
	125	0.40	0.40	0.30	0.30	0.20
	115	0.40	0.30	0.20	0.20	0.20
	105	0.40	0.30	0.30	0.20	0.20
	95	0.40	0.30	0.30	0.20	0.20
	85	0.40	0.30	0.30	0.20	0.20
	75	0.40	0.30	0.30	0.20	0.20
	65	0.40	0.30	0.30	0.20	0.20
	55	0.40	0.30	0.30	0.20	0.20
	45	0.40	0.30	0.30	0.20	0.20
	35	0.40	0.30	0.30	0.20	0.20
	25	0.40	0.30	0.20	0.20	0.20
	15	0.30	0.30	0.20	0.20	0.20
	5	0.00	0.00	0.00	0.00	0.00

VP-S3b

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
135	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
125	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
115	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10
105	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
95	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
75	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
55	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
35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S3b

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.20	0.30	0.20	0.30	0.30	0.40	0.20	0.30
135	0.20	0.20	0.20	0.30	0.30	0.30	0.20	0.20
125	0.20	0.20	0.20	0.30	0.30	0.30	0.20	0.20
115	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.10
105	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.10
95	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.10
85	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.10
75	0.10	0.10	0.10	0.30	0.20	0.20	0.10	0.10
65	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.10
55	0.10	0.10	0.10	0.30	0.20	0.20	0.10	0.10
45	0.10	0.10	0.10	0.20	0.20	0.20	0.10	0.10
35	0.00	0.10	0.10	0.20	0.20	0.20	0.10	0.10
25	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
15	0.00	0.00	0.00	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

VP-S3b

Vertical (ft) \ Horizontal (ft)	165	175	185	195	205	215	225	235
145	0.30	0.40	0.40	0.50	0.40	0.50	0.50	0.50
135	0.20	0.30	0.40	0.40	0.40	0.40	0.40	0.50
125	0.20	0.30	0.40	0.40	0.40	0.40	0.40	0.40
115	0.10	0.30	0.30	0.40	0.40	0.40	0.40	0.40
105	0.10	0.30	0.30	0.40	0.40	0.40	0.40	0.40
95	0.10	0.30	0.30	0.40	0.40	0.40	0.40	0.40
85	0.10	0.30	0.30	0.40	0.40	0.40	0.40	0.40
75	0.10	0.30	0.30	0.30	0.40	0.40	0.40	0.40
65	0.10	0.30	0.30	0.30	0.40	0.40	0.40	0.40
55	0.10	0.30	0.30	0.30	0.30	0.30	0.40	0.40
45	0.10	0.20	0.30	0.30	0.30	0.30	0.30	0.30
35	0.10	0.20	0.30	0.30	0.20	0.20	0.20	0.20
25	0.10	0.20	0.30	0.30	0.10	0.10	0.10	0.10
15	0.00	0.20	0.20	0.20	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

VP-S3b

Vertical (ft) \ Horizontal (ft)	245	255	265	275	285	295	305	315
145	0.50	0.50	0.30	0.30	0.30	0.60	0.60	0.70
135	0.50	0.50	0.30	0.30	0.30	0.60	0.60	0.60
125	0.50	0.50	0.30	0.30	0.30	0.60	0.60	0.60
115	0.40	0.40	0.30	0.30	0.30	0.50	0.50	0.60
105	0.40	0.40	0.30	0.30	0.30	0.50	0.50	0.60
95	0.40	0.40	0.30	0.30	0.30	0.50	0.50	0.60
85	0.40	0.40	0.20	0.30	0.30	0.50	0.50	0.60
75	0.40	0.40	0.30	0.30	0.30	0.50	0.50	0.60
65	0.40	0.40	0.20	0.30	0.30	0.50	0.50	0.50
55	0.40	0.40	0.20	0.20	0.20	0.50	0.50	0.50
45	0.30	0.30	0.10	0.10	0.10	0.30	0.40	0.00
35	0.20	0.20	0.10	0.10	0.00	0.20	0.30	0.00
25	0.10	0.10	0.00	0.00	0.00	0.10	0.20	0.00
15	0.10	0.10	0.00	0.00	0.00	0.10	0.10	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S3b

Vertical (ft) \ Horizontal (ft)	325	335	345	355	365	375	385	395
145	0.70	0.70	0.70	0.70	0.70	0.70	0.80	0.80
135	0.60	0.60	0.70	0.70	0.70	0.70	0.70	0.70
125	0.60	0.60	0.70	0.70	0.70	0.70	0.70	0.80
115	0.60	0.60	0.60	0.70	0.70	0.70	0.70	0.70
105	0.60	0.60	0.60	0.70	0.70	0.70	0.70	0.80
95	0.60	0.60	0.60	0.70	0.70	0.70	0.80	0.80
85	0.60	0.60	0.70	0.70	0.70	0.70	0.80	0.80
75	0.60	0.60	0.70	0.70	0.70	0.70	0.80	0.80
65	0.60	0.60	0.60	0.70	0.70	0.70	0.80	0.80
55	0.60	0.60	0.60	0.60	0.70	0.70	0.70	0.80
45	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
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S3b

Vertical (ft) \ Horizontal (ft)	405	415	425	435
145	0.80	0.80	0.80	0.80
135	0.80	0.80	0.80	0.80
125	0.80	0.80	0.80	0.80
115	0.80	0.80	0.80	0.90
105	0.80	0.80	0.90	0.90
95	0.80	0.90	0.90	0.90
85	0.90	0.90	0.90	1.00
75	0.90	0.90	0.90	1.00
65	0.80	0.90	0.90	1.00
55	0.80	0.90	0.90	1.00
45	0.00	0.00	0.90	0.90
35	0.00	0.00	0.80	0.80
25	0.00	0.00	0.70	0.70
15	0.00	0.00	0.60	0.60
5	0.00	0.00	0.00	0.00

VP-S3c

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

VP-S4a

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

VP-S4b

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
135	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
125	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
115	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
105	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
95	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
75	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
55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
45	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10
35	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	0.00
15	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

VP-S4b

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.20	0.20	0.20	0.20	0.20	0.30	0.20	0.30
135	0.20	0.20	0.20	0.30	0.20	0.30	0.30	0.30
125	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30
115	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
105	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
95	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
75	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
55	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
45	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
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S4b

Vertical (ft) \ Horizontal (ft)	165	175	185	195	205	215	225	235
145	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
135	0.30	0.20	0.30	0.30	0.30	0.30	0.30	0.30
125	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
115	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
105	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
95	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
75	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
55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
45	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
35	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10
25	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10
15	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10
5	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10

VP-S4b

Vertical (ft)	Horizontal (ft)	245
	145	0.30
	135	0.30
	125	0.30
	115	0.30
	105	0.20
	95	0.20
	85	0.20
	75	0.20
	65	0.20
	55	0.20
	45	0.20
	35	0.10
	25	0.10
	15	0.10
	5	0.10

VP-S4c

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

VP-S4c

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

VP-S4d

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

VP-S4d

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

VP-S5a

Vertical (ft) \ Horizontal (ft)	5	15	25	35	45	55	65	75
145	0.40	0.50	0.50	0.50	0.50	0.50	0.50	0.50
135	0.40	0.50	0.50	0.50	0.50	0.60	0.50	0.50
125	0.50	0.50	0.50	0.60	0.60	0.60	0.60	0.60
115	0.50	0.50	0.60	0.60	0.60	0.60	0.60	0.60
105	0.60	0.60	0.60	0.60	0.60	0.70	0.60	0.60
95	0.60	0.60	0.60	0.70	0.70	0.70	0.70	0.70
85	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70
75	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70
65	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70
55	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70
45	0.60	0.70	0.70	0.70	0.70	0.70	0.70	0.70
35	0.60	0.60	0.70	0.70	0.70	0.70	0.70	0.70
25	0.60	0.60	0.60	0.70	0.70	0.70	0.60	0.60
15	0.50	0.50	0.60	0.60	0.60	0.60	0.60	0.60
5	0.50	0.50	0.50	0.60	0.60	0.60	0.60	0.50

VP-S5a

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.60
135	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.60
125	0.60	0.60	0.50	0.50	0.60	0.60	0.60	0.60
115	0.60	0.60	0.50	0.60	0.60	0.60	0.60	0.70
105	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.70
95	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.70
85	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.70
75	0.60	0.60	0.60	0.60	0.60	0.70	0.70	0.80
65	0.60	0.60	0.50	0.60	0.60	0.70	0.70	0.80
55	0.60	0.60	0.50	0.60	0.60	0.70	0.80	0.80
45	0.60	0.60	0.50	0.60	0.60	0.70	0.70	0.80
35	0.60	0.50	0.50	0.50	0.60	0.70	0.70	0.80
25	0.60	0.50	0.50	0.50	0.60	0.60	0.70	0.70
15	0.50	0.50	0.40	0.50	0.50	0.60	0.50	0.40
5	0.50	0.40	0.40	0.40	0.50	0.50	0.40	0.00

VP-S5a

Vertical (ft) \ Horizontal (ft)	165	175	185	195	205	215
145	0.60	0.60	0.50	0.60	0.60	0.60
135	0.60	0.60	0.60	0.60	0.60	0.60
125	0.60	0.60	0.60	0.60	0.60	0.60
115	0.70	0.70	0.70	0.70	0.70	0.70
105	0.70	0.70	0.70	0.70	0.80	0.80
95	0.70	0.80	0.80	0.80	0.80	0.90
85	0.80	0.80	0.80	0.80	0.90	0.90
75	0.80	0.80	0.80	0.80	0.90	1.00
65	0.80	0.80	0.80	0.80	0.90	1.00
55	0.80	0.70	0.70	0.80	0.90	1.00
45	0.70	0.60	0.60	0.70	0.90	1.00
35	0.60	0.40	0.30	0.40	0.50	0.70
25	0.60	0.40	0.30	0.30	0.50	0.60
15	0.20	0.10	0.20	0.20	0.40	0.60
5	0.20	0.00	0.10	0.10	0.20	0.30

VP-S6a

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

VP-S6a

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
135	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
125	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
115	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
105	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
95	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
85	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
75	0.10	0.10	0.10	0.10	0.20	0.20	0.10	0.10
65	0.10	0.10	0.10	0.10	0.20	0.20	0.10	0.10
55	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10
45	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10
35	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
15	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
5	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10

VP-S6a

Vertical (ft) \ Horizontal (ft)	165	175	185	195
145	0.20	0.10	0.10	0.10
135	0.10	0.20	0.10	0.10
125	0.20	0.10	0.10	0.10
115	0.20	0.10	0.10	0.10
105	0.20	0.10	0.10	0.10
95	0.10	0.10	0.10	0.10
85	0.10	0.10	0.10	0.10
75	0.10	0.10	0.10	0.10
65	0.10	0.10	0.10	0.10
55	0.10	0.10	0.10	0.10
45	0.10	0.10	0.10	0.10
35	0.10	0.10	0.10	0.10
25	0.10	0.10	0.10	0.10
15	0.10	0.10	0.10	0.10
5	0.10	0.10	0.00	0.00

VP-S6b

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

VP-S6b

Vertical (ft) \ Horizontal (ft)	85	95	105	115	125	135	145	155
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	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
35	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
15	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

VP-S6b

Vertical (ft) \ Horizontal (ft)	165	175	185	195	205	215	225	235
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	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
35	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
15	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

VP-S6b

Vertical (ft) \ Horizontal (ft)	245	255	265	275	285	295	305	315
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	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
35	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
15	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

VP-S6b

Vertical (ft) \ Horizontal (ft)	325	335	345	355	365	375	385	395
145	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.10	0.00	0.10	0.10	0.00	0.00	0.10
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.10	0.10	0.00	0.00	0.00	0.10	0.10	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	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
35	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
15	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

VP-S6b

Vertical (ft) \ Horizontal (ft)	405	415	425	435	445	455	465	475
145	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
135	0.10	0.10	0.10	0.00	0.00	0.10	0.10	0.00
125	0.00	0.00	0.10	0.00	0.10	0.10	0.10	0.10
115	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	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
35	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
15	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

VP-S6b

Vertical (ft) \ Horizontal (ft)	485	495	505	515	525	535	545	555
145	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
135	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
125	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
115	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
105	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
95	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
85	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
75	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
65	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
45	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
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-S6b

Vertical (ft) \ Horizontal (ft)	565	575	585	595	605	615	625	635
145	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
135	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
125	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
115	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
105	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
95	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
75	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
55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
45	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.00
35	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
15	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

VP-S6b

Vertical (ft) \ Horizontal (ft)	645	655	665	675	685	695	705
145	0.10	0.10	0.10	0.10	0.10	0.10	0.10
135	0.10	0.10	0.10	0.10	0.10	0.10	0.10
125	0.10	0.10	0.10	0.10	0.10	0.10	0.00
115	0.10	0.10	0.10	0.10	0.10	0.10	0.10
105	0.10	0.10	0.10	0.10	0.00	0.00	0.00
95	0.10	0.10	0.10	0.10	0.00	0.00	0.00
85	0.10	0.10	0.10	0.00	0.00	0.00	0.00
75	0.10	0.10	0.10	0.00	0.00	0.00	0.00
65	0.10	0.10	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
45	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
25	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
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00