

Appendix B-2

Light and Glare Analysis – Peninsula Project Component



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EXTERIOR LIGHTING AND GLARE STUDY

Prepared for: Dudek

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1. INTRODUCTION

The San Diego State University (SDSU) Peninsula Component Exterior Lighting Study (Study) is prepared by Francis Krahe & Associates Inc. to analyze the potential lighting impacts to adjacent sensitive properties from proposed new exterior building and site lighting associated with the redevelopment of the San Diego State University Peninsula Project (Project) located within the San Diego State University Campus in San Diego, California. San Diego State University proposes to demolish all existing structures and site improvements within the Project site to allow for redevelopment of six (6) up to thirteen story student housing apartment towers, landscaping, internal roads, fire access road, parking, pedestrian pathways, and seating areas. The proposed Project would include exterior lighting for safety, security, and use of the Project facilities and site at night.

This Study reviews the parameters that affect Light Trespass and Glare (each as defined in Section 4 below), reviews relevant lighting metrics and regulations pertaining to exterior artificial lighting, examines the existing lighting conditions within and surrounding the Project site, and evaluates the Project's artificial exterior lighting at two phases of the proposed Project development schedule to identify the potential lighting environmental impacts.

The methods of analysis utilized for this Study are based upon the recommended practices established by the Illuminating Engineering Society of North America (IESNA) for the practice of illumination engineering design and application, and the actual measurements of light sources and illuminated surfaces. IESNA reference publications include: American National Standards Institute (ANSI)/Illuminating Engineering Society (IES) OL-IM-01 Lighting Science Standards; ANSI/IES OL-IM-02 Lighting Practice Standards; ANSI/IES OL-IM-03 Lighting Applications Standards; ANSI/IES OL-IM-04 Lighting Measurements and Testing Standards; and ANSI/IES OL-IM-05 Lighting Roadway and Parking Facilities Standards. The ANSI/IES Standards replace the IESNA 10th Edition Handbook and all various references published by IESNA prior to 2011.

2. PROJECT DESCRIPTION

The Proposed Project is the construction and development of new student housing, dining, and auxiliary uses on and adjacent to SDSU's main campus. The Proposed Project is comprised of two components - the Peninsula Component, which would be located adjacent to the main SDSU campus at the northern terminus of 55th Street; and the University Towers East Component, which would be located east and immediately adjacent to the existing University Towers on Montezuma Road.

The proposed Peninsula Component would be located on an approximately 10.3-acre site adjacent to the northwest portion of campus, just south of Interstate-8 (I-8) and west of Canyon Crest Drive. Development of the Peninsula Component would include demolition of all 13 existing buildings, which presently provides housing for 702 students, and the phased development of one 9-story student housing building and five student housing buildings up to 13 stories in height that would contain a total of approximately 4,450 student beds.

This Study examines the lighting associated with the Peninsula Component.

The Project site sits on a topographic mesa and is surrounded by undeveloped canyon areas owned by SDSU to the west, north, and east. SDSU campus buildings exist to the south. Residential properties exist further to the west of the Project site and north of the I-8 freeway. Figure 1 below illustrates the Project site and surrounding context.

The existing conditions at the Project site include two and three story student housing apartment buildings with associated existing exterior lighting, including street lights within 55th Street, site lights for the on site access drives and parking, exterior building entrance lights, and security lights.

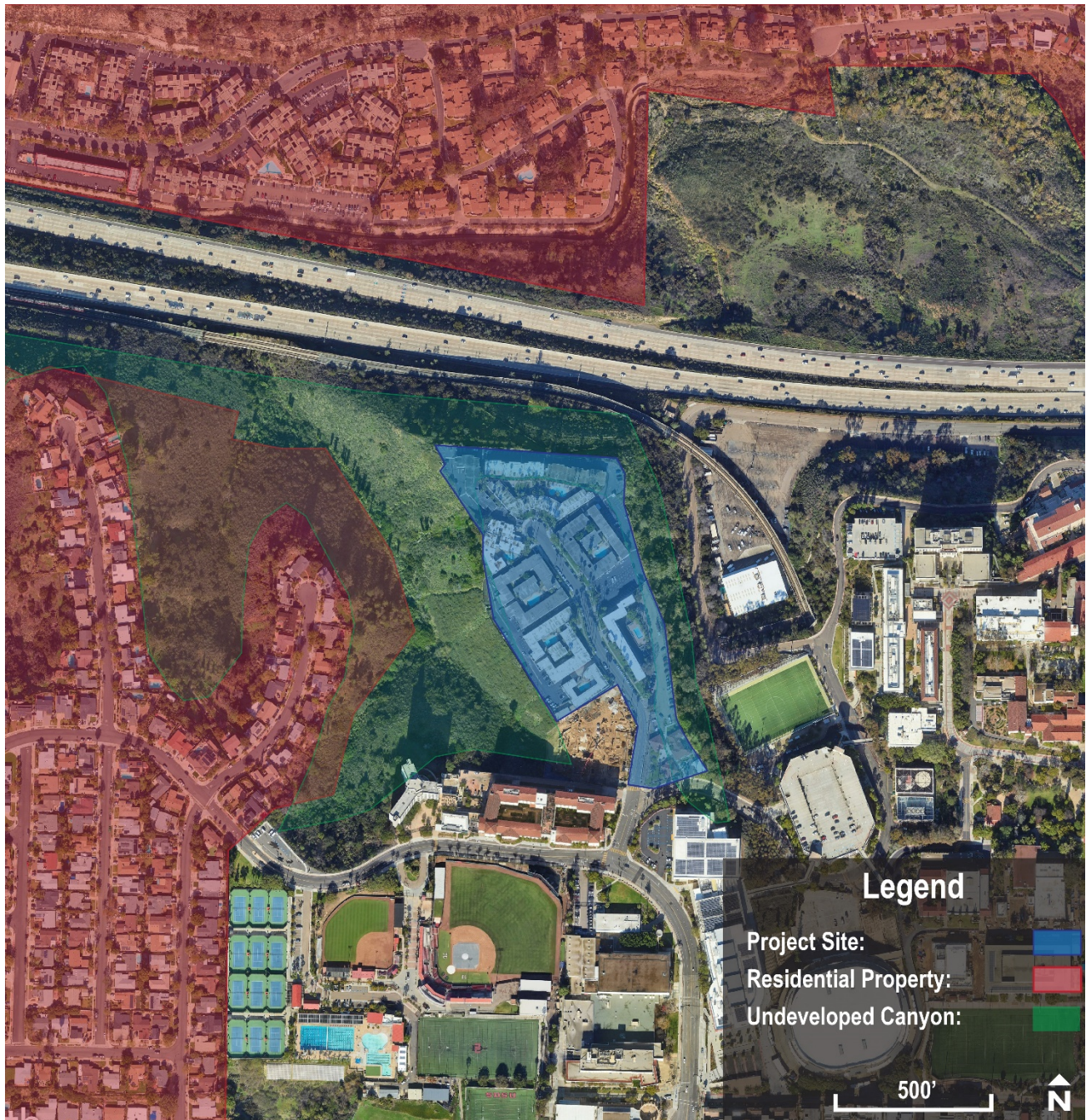


Figure 1: Project Site Diagram

The Project includes the proposed exterior building and site lighting as illustrated in the Conceptual Project Exterior Lighting Plan (Appendix A), which includes the installation of exterior building and site lighting throughout the Project site. This Study includes analysis of Project phasing of construction as follows:

Project Phase 1 through Phase 4 includes demolition of all existing structures and site improvements, construction of up to four of the six proposed up to thirteen story student housing apartment towers and associated site improvements including exterior landscaping, pedestrian pathways, outdoor seating areas,

internal vehicular and fire access roads, parking, and outdoor sports fields including illuminated sports fields. This Study assumes the most conservative condition of the sports fields being constructed several years in advance of the construction of Phase 5 and Phase 6 which would ultimately require the eventual demolition of the sports fields.

Project Phase 5 through Phase 6 includes demolition of the outdoor sports fields constructed in prior phases and construction of the remaining proposed up to thirteen story student housing apartment towers and associated site improvements including exterior landscaping, pedestrian pathways, and outdoor seating areas.

The Project would include the following Project Design Features relating to exterior lighting to specifically control Light Trespass and Glare at adjacent sensitive properties:

PDF-1: All Project site exterior light fixtures will be installed in such manner to be aimed away from the Project site perimeter, and shielded to prevent backlight toward the Project site perimeter, to limit Light Trespass at the adjacent undeveloped canyon areas.

PDF-2: Sports Field Lighting will be installed in such manner to be shielded and or aimed to limit maximum surface luminance visible from any residential use to 100 cd/m² to prevent Glare.

PDF-3: All Project site exterior light fixtures at the perimeter of the property will comply with CALGreen Backlight, Uplight, and Glare (BUG) requirements, including the use of backlight shields, and installed in such manner to limit maximum surface luminance visible from any residential use to 100 cd/m² to prevent Glare.

3. SUMMARY OF LIGHT TRESPASS AND GLARE ANALYSIS

This Study evaluates potential environmental impacts from the Project's exterior lighting that would be authorized by approval of the proposed Project, and are identified within the Conceptual Project Exterior Lighting Plan included as Appendix A and as noted in the Project Design Features above. Light from the Project may affect the environmental conditions at surrounding properties with respect to Light Trespass or Glare. For this Study, light from the Project is analyzed at sensitive properties where additional light from the Project may substantially impact the use of these properties. Sensitive properties are defined in this Study as residential use properties and or sensitive natural habitats. Other sensitive properties may include outdoor dining facilities, hotel properties, or hospitals, which are not present in the vicinity of the Project site. Commercial use properties, such as office buildings or retail stores are not considered sensitive properties because additional light at these property uses does not adversely affect the use of the property. Properties within the SDSU campus are not considered sensitive properties in this Study. The closest sensitive properties adjacent to the Project are evaluated. Light intensity decreases exponentially with distance¹. Therefore, more distant properties would receive much less light from the Project.

Environmental impacts from the Project at sensitive properties are evaluated with respect to Light Trespass and Glare; These two terms are defined and described in Section 4 Lighting Glossary, below. Light Trespass occurs when light from the Project leaves the Project site and reaches a sensitive property. Glare occurs where the Project lighting is visible and the Project light source luminance is substantially brighter than the background luminance when viewing the Project from a sensitive property. Glare describes the discomfort or reduced visibility from very bright surfaces. Glare may occur either during the day or night, while Light Trespass occurs only at night.

¹ Inverse Square Law

3.1 Light Trespass

This Study demonstrates the Project would not create a significant impact from Light Trespass at adjacent sensitive residential properties to the west and north of the Project site. Although regions of the Project site developed area perimeter may experience high illuminance (greater than the 0.74 fc maximum defined by the California Green Building Code), the illuminance from the Project at all sensitive residential properties is less than 0.74 fc, and is not significant.

This Study evaluates the proposed Project exterior lighting with respect to Light Trespass at the boundary of the sensitive natural habitat within the undeveloped canyon areas within the Project property. This Study concludes the Project would not create a Light Trespass threshold impact as currently proposed, with exterior lighting fixtures aimed away from the undeveloped canyon area boundary within the Project site as per Project Design Feature PDF-1 described in Section 2 above. This Project Design Feature includes the requirement that all light fixtures be shielded and aimed away from the undeveloped canyon area boundary which prevents any potential Light Trespass impact.

3.2 Glare

This Study analyzes the proposed Project exterior lighting and the visibility of light fixtures from sensitive residential properties surrounding the Project site. The analysis concludes the site and sports field lighting will be visible from sensitive residential properties during Phase 1 through Phase 4 of the Project development schedule. However, the site and sports field lighting luminance is limited to 100 cd/m² by CALGreen and Project Design Features PDF-2 and PDF-3. Therefore, the Project proposed exterior lighting in Phase 1 through Phase 4, will not present high contrast conditions with Contrast Ratios exceeding 30:1 (See Table 7). The Contrast Ratio compares the maximum Project luminance to the existing average luminance measured at the Monitoring Sites which are adjacent to the sensitive properties, and are defined below in Section 7.1a and analyzed in Section 8. Therefore, the Project Phase 1 through Phase 4 exterior lighting will not create a significant impact due to the introduction of new high contrast Glare conditions.

This Study demonstrates the Project Phase 5 through Phase 6 will not create a significant source of Glare because the Project will not create a new high contrast condition visible at adjacent residential properties. The Project Phase 5 through Phase 6 development plan does not include sports field lighting and will include site light fixtures with source brightness no greater than 100 cd/m² as required by CALGreen and Project Design Feature PDF-3. The proposed building and site improvements have been analyzed, and the visibility of the Project lighting fixtures from the adjacent residential properties surrounding the Project site considered. The site lights will be visible, and will not present a high contrast condition with greater than 30:1 Contrast Ratio. The Contrast Ratio compares the maximum Project luminance to the existing average luminance measured at the Monitoring Sites which are adjacent to the sensitive properties, and are defined below in Section 7.1a and analyzed in Section 8. Therefore, the Project Phase 5 through Phase 6 will not create a new Glare condition at adjacent sensitive residential properties.

Light intensity degrades exponentially with distance. Therefore, sensitive properties which are more distant than the locations analyzed in this Study will receive substantially less light from the Project and will not have a direct view of the exterior site lighting or the sports field lighting as noted above. Therefore, the Project will not create contrast ratios exceeding 30:1 and there will be no Light Trespass or Glare impacts at locations more distant than the Monitoring Sites.

4. LIGHTING GLOSSARY

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

Brightness:	The magnitude of sensation that results from viewing surfaces from which light comes to the eye. This sensation is determined partly by the measurable luminance of the source and partly by the conditions of observation (Context), such as the state of adaptation of the eye. For example, very bright lamps at night appear dim during the day, because the eye adapts to the higher brightness of daylight.
BUG Rating:	A luminaire classification system established in <i>IES TM-15-11</i> , BUG Ratings Addendum that provides for uniform assessment of the directional characteristics of illumination for exterior area lighting. BUG is an acronym composed of Backlight, Up light, and Glare. BUG ratings are based on a zonal lumen calculation for secondary solid angles defined in <i>IES TM-15-11</i> .
Candela:	Measure of light energy from a source at a specific standard angle and distance. Candela (cd) is a convenient measure to evaluate output of light from a lamp or light fixture in terms of both the intensity of light and the direction of travel of the light energy away from the source.
Contrast:	Calculated evaluation of high, medium and low contrast of visible light sources or surfaces within the Property by a ratio of luminance. Contrast is the ratio of one surface luminance to a second surface luminance or to the field of view. Contrast exceeding 30 to 1 are usually deemed uncomfortable; 10 to 1 are clearly visible; and less than 3 to 1 appear to be equal.
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:	The sensation produced by luminances within the visual field that are sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort, or loss in visual performance or visibility. 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. The human eye processes brightness variations across a very broad spectrum of intensities. The range of brightness generated by direct noon sun versus a

moonlight evening is over 5000 to 1. Human eyes are capable of accommodating to this range of intensities given adequate time to adjust. However, the eye cannot process brightness ratios of more than 30 to 1 within a view without discomfort. See IESNA 10th Edition Handbook, Section 4.10.1, Discomfort Glare and Section 10.9.2 Calculating Glare.

Also see definitions for "Disability Glare", "Blinding Glare", "Discomfort Glare", "Discomfort Glare Rating", "Direct Glare", "Reflected Glare".

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

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

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

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

Illuminance:

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

High Illuminance: Illuminance greater than 0.74 footcandles.

Medium Illuminance: Illuminance less than 0.74 footcandles and greater than 0.09 footcandles.

Low Illuminance: Illuminance less than 0.09 footcandles.

Horizontal Illuminance:

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

Vertical Illuminance:

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

Inverse Square Law:

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

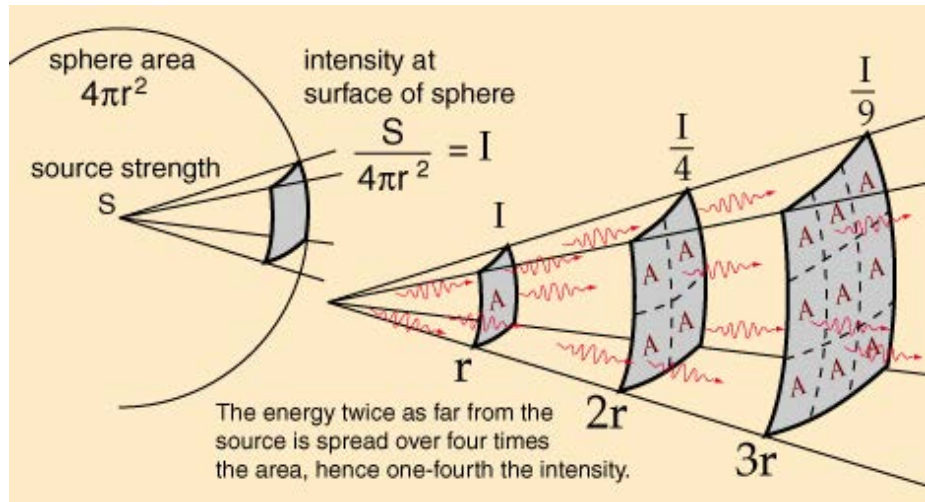


Figure 2: Inverse square law diagram (hyperphysics.phy-astr.gsu.edu)

Output Direction:

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

Lighting Array:

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

Light Source:

Device which emits light energy from an electric power source.

Light Trespass:

The encroachment of light, typically across property boundaries, causing annoyance, loss of privacy, or other nuisance.

Lighting Zone (LZ):

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

Lighting Zone LZ3:	Outdoor areas of human activity where the vision of human residents and users is adapted to moderately high light levels. Lighting is generally desired for safety, security and/or convenience.
Luminaire:	A complete lighting unit consisting of a light source together with the parts designed to distribute the light, to position and protect the light source, and to connect the light source to the power supply. Also referred to as a Light Fixture.
Luminance:	Luminance is a measure of emissive or reflected light from a specific surface in a specific direction over a standard area. Luminance is measured in footlamberts (fL) ($1/\pi$ Candela per square foot) or cd/m^2 (Candela per square meter). $1\text{fL} = 3.43 \text{ cd}/\text{m}^2$. Whereas Illuminance indicates the amount of Luminous Flux falling on a given surface, Luminance describes the brightness of an illuminated or luminous surface. Luminance is defined as the ratio of luminous intensity of a surface (Candela) to the projected area of this surface (m^2 or ft^2).
Luminous Flux:	Mean value of total Candelas produced by a light source. Luminous Flux describes the total amount of light emitted by a light source. The unit for measuring Luminous Flux is Lumen (lm). This radiation could basically be measured or expressed in watts. This does not, however, describe the optical effect of a light source adequately, since the varying spectral sensitivity of the eye is not taken into account. To include the spectral sensitivity of the eye the Luminous Flux is measured in lumen. Radiant Flux or 1 W emitted at the peak of the spectral sensitivity (in the photopic range at 555 nanometers produces a Luminous Flux of 683 lumen). The unit of lumen does not define direction.
Monitoring Sites:	Monitoring Sites are locations selected for observation and field lighting measurements to evaluate the views to the Project site from adjacent sensitive properties and to determine the extent and intensity of existing light sources within and surrounding the Project site. The Monitoring Sites are within the public right of way and may be adjacent to sensitive sites. These locations are representative of the view to the Project from the vicinity of the sensitive sites surrounding the Project site to the north, south, east and west. Figure 4 below illustrates the Monitoring Site locations.

5. REVIEW OF LIGHTING REGULATIONS AND REFERENCE STANDARDS

Exterior lighting regulations that apply to this Project are the California energy and building codes including the California Green Building Standards Code (CALGreen), and the California Energy Code (CEC). Reference standards include model lighting ordinances provided by the Illuminating Engineering Society of North America (IESNA) and the International Dark Sky Organization. Various aspects of these reference standards are included in regulations to improve the outcomes of any approved project and avoid future disputes or legal challenges to proposed exterior building and site lighting. The lighting standards summarized below balance the requirements of property owners for sufficient brightness, with minimizing the off-site negative effects of

Light Trespass and Glare. Lighting sections relevant to the present analysis are summarized and discussed for the City of San Diego Multiple Species Conservation Program.

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

Title 24 of the California Code of Regulations (CCR), also known as the California Building Standards Code, consists of regulations to control building standards throughout the State. The following components of Title 24 include standards related to exterior building and site lighting:

2022 Building Energy Efficiency Standards (Title 24, Part 6)

The 2022 Building Energy Efficiency Standards, also referred to as the California Energy Code (CEC), stipulates allowances for lighting power and provides lighting control requirements for various lighting systems, with the aim of reducing energy consumption through efficient and effective use of lighting equipment.

2022 California Green Building Standards Code (Title 24, Part 11)

The 2022 California Green Building Standards Code, which is Part 11 of Title 24, is commonly referred to as the CALGreen Code. Paragraph 5.106.8, (included herein as Appendix B) Light pollution reduction, requires that all non-residential outdoor lighting must comply with the following requirements:

"The minimum requirements in the CEC for Lighting Zones 1 – 4 as defined in Chapter 10 of the California Administrative Code; and

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

Further requirements and exceptions are defined in 2022 Building Energy Efficiency Standards, Title 24 Part 6, Section 140.7 PRESCRIPTIVE REQUIREMENTS FOR OUTDOOR LIGHTING. Section 140.7 (see Appendix C) includes the following exceptions which apply to the Project exterior lighting:

"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 for the lighting power for that luminaire shall be exempt from Section 140.7:

....

"4. Lighting for sports and athletic fields, and children's playgrounds."

"9. Landscape lighting."

The 2022 Building Energy Efficiency Standards, Title 24 Part 6 includes the following requirements which apply to Glare in Section 130.2 Outdoor Lighting Controls and Equipment (Appendix D):

Section 130.2 OUTDOOR LIGHTING CONTROLS AND EQUIPMENT

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

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

Project light fixtures with less than 6,200 lumens are exempt from the requirements of Section 130.2.

5.2 California Energy Code Lighting Zone LZ3

The Project site and surrounding properties are within a suburban, institutional, and residential zone with extensive nighttime use, including the existing student housing apartment buildings, nearby residences to the west and north, and nearby SDSU facilities. Current best practices for lighting standards recognize the unique issues related to night time use adjacent to light sensitive locations. The California Administrative Code Table 10-114-A (Appendix E) includes designations for Lighting Zones (LZ) 1 through 4, which correspond to the Light Trespass Illuminance recommendations published by IESNA. The IESNA recommendations (Appendix F) for Light Trespass Illuminance vary based upon the extent of night time human activity and the extent of natural habitat.

All urban areas within California are designated Lighting Zone 3 as default under the CEC, which stipulates a maximum Light Trespass illuminance of 8 lux (0.74 footcandles). Per the California Administrative Code, Table 10-114-A, the designations for outdoor lighting zones in urban areas are as designated by the 2010 U.S. Census.

The Project site is within the geographic area corresponding to the definition of Lighting Zone 3. In addition, the IESNA defines Lighting Zone 3 as: "areas with moderately high lighting levels. These typically include commercial corridors, high intensity suburban commercial areas, town centers, mixed use areas, industrial uses and shipping and rail yards with high night time activity, high use recreational and playing fields, regional shopping malls, car dealerships, gas stations, and other nighttime active exterior retail areas".

IESNA Table 26.5, lists a Pre-curfew 8 Lux (0.74 footcandles) maximum at the location where trespass is under review for Lighting Zone 3. The California 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.

5.3 IESNA Recommended Practices

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

The IESNA Standards define Outdoor Lighting Zones relative to a range of human activity versus natural habitat. LP-11-20, Environmental Considerations for Outdoor Lighting pages 11 & 12, establishes the Zone designation for a range of existing lighting conditions, from low or no existing lighting to high light levels in urban areas. These lighting zone definitions are referenced by the California Administrative Code as noted above in relation to allowable energy use for outdoor lighting. In addition, the IESNA standards define recommended Light Trespass limits (Appendix F) relative to the Outdoor Lighting Zones. The recommended Light Trespass illuminance limits define the maximum Light Trespass values in Lux and footcandles at the location where trespass is under review.

The existing conditions surrounding the Project site are best described as Lighting Zone 3. IESNA lists a Pre-curfew 8 Lux (0.74 footcandles) maximum at the location where Light Trespass is under review for Zone 3.

The IESNA recommendations listed above are not a regulatory requirement and are overridden by the applicable California State University requirements for Light Trespass at sensitive properties.

6. SIGNIFICANCE THRESHOLDS

Appendix G of the California Environmental Quality Act (CEQA) Guidelines (Title 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 following questions pertain to Light Trespass and Glare as follows:

Would the project:

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

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

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

The extent to which exterior lighting from the Project would spill off the Project site and affect adjacent sensitive properties.

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

Light Trespass illuminance from the Project exceeds 0.74 fc at a residential property line, and therefore adversely changes the ambient light level at adjacent properties.

Or, the Project creates Glare with new high contrast conditions with contrast ratio greater than 30:1, visible from a field of view from a sensitive residential property.

Or, the Project lighting is unshielded and aimed toward the adjacent undeveloped canyon areas.

7. METHODOLOGY

7.1 Existing Conditions Procedures

Existing conditions lighting observations were conducted following recommended practice procedures defined by the IESNA in RP-33-00 Lighting for Outdoor Environments, 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



Figure 3: Minolta LS-100 luminance meter

vector are perpendicular. The least illuminance will result when the surface and vector are parallel. In the field conditions, where there are multiple sources of light originating from varied positions, illuminance measurements are recorded horizontally with the photosensor facing up at 3 feet above grade, and vertically with the photosensor facing the Project as per IESNA standards. These measurements document the total horizontal illuminance received at a Monitoring Site as well as the direction and intensity of light converging on the Monitoring Site from the direction of the Project site. Since most of the Monitoring Sites are located at distances from the Project site greater than 500 feet, as noted in Table 2 below, the vertical illuminance represents a plane perpendicular to the light sources. Under these conditions, there is little difference between the vertical and perpendicular plane, and the vertical plane analysis that is conducted in this Study would be equal to or greater than the measured luminance from a precisely perpendicular plane analysis. Therefore, this Study utilizes a vertical illuminance analysis. The existing Illuminance is measured with a Minolta T-10A Illuminance meter.

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

a. Existing Conditions Monitoring Sites

Monitoring Sites are utilized to describe and evaluate the existing lighting conditions at and surrounding the Project site to determine the maximum potential impacts that may result from light or Glare onto adjacent sensitive properties surrounding the Project. All Monitoring Site locations are within proximity of the Project and may have views of the Project. Monitoring Sites are located within the public right of way at existing residential properties or are directly adjacent to existing residential properties.

The following criteria were used to select the Monitoring Site locations:

Project Light Visibility – Monitoring Sites were analyzed that provide direct view of the areas of greatest light intensity from the Project.

Proximity – Monitoring Sites at the least distance to the Project are analyzed. These locations are selected because light intensity decreases exponentially with distance. Locations at a greater distance will experience less light from the Project than those that are near. This Study includes six Monitoring Sites to document and evaluate the existing conditions including the views from light sensitive properties surrounding the Property



Figure 4: Monitoring Site Locations

and the extent of existing lighting at these sensitive site locations. Figure 4 diagrams the Monitoring Site locations adjacent to the Project site. The Project site is shaded blue, residential properties are shaded red, and undeveloped canyon areas are shaded green.

Monitoring Site M-N1: Monitoring Site M-N1 is north of the Project property to evaluate the Project north elevation from adjacent residential properties.

Monitoring Site M-W1: Monitoring Site M-W1 is west of the Project property, to evaluate the Project west elevation from adjacent residential properties

Monitoring Site M-W2: Monitoring Site M-W2 is west of the Project property, to evaluate the Project west elevation from adjacent residential properties.

Monitoring Site M-W3: Monitoring Site M-W3 is west of the Project property, to evaluate the Project west elevation from adjacent residential properties.

Monitoring Site M-W4: Monitoring Site M-W4 is west of the Project property, to evaluate the Project west elevation from adjacent residential properties.

Monitoring Site M-W5: Monitoring Site M-W5 is west of the Project property line, to evaluate the Project west elevation from the boundary of the adjacent undeveloped canyon area.

Table 1. Existing Conditions Lighting Criteria

Criteria	Metric	Procedure
Light Trespass - Illuminance	Measured illuminance (footcandles) documented at each Monitoring Site.	Measured illuminance recorded each Monitoring Site with Minolta T-10A 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 LS-100 luminance meter. Day and night photographs to record the view to the Project site from the Monitoring Site in terms of Project visibility, prominent light sources, and lighted surfaces.

7.2 Lighting Analysis Method

This analysis of the Project exterior lighting includes evaluation of the Light Trespass at the nearest sensitive properties adjacent to the Project, and an evaluation of light from the Project visible at sensitive properties to determine whether the Project would introduce a new source of Glare. This Study presents a conservative analysis with respect to Light Trespass and Glare as described below. This Study evaluates the Project exterior lighting defined by the Conceptual Project Exterior Lighting Plan (Appendix A). The Study analyzes this lighting plan to evaluate the maximum possible exterior light intensity within the Project site. Lighting locations are represented in the Conceptual Project Exterior Lighting Plan and product data defines the lighting characteristics of the light fixtures proposed.

a. Light Trespass Analysis

Light Trespass is the artificial light produced from the Project that falls on an adjacent property. Light Trespass is measured in terms of illuminance (footcandles or metric units lux), and can be measured at any point and in any direction. Where Light Trespass is evaluated, the illuminance is measured perpendicular to the source of light, toward the source of light, at the property line.

Light Trespass illuminance is calculated at the location where lighting is under review through the illumination modeling software program AGI32. This software utilizes the 3-dimensional architectural computer model, which includes topography, massing of surrounding context buildings and the proposed Project, and lighting locations, orientation, and dimensions to generate an accurate prediction of future illuminance from the Project at adjacent sensitive properties. The calculations simulate light meters at a vertical surface extending from grade to the height of the tallest adjacent sensitive property or the maximum Project height, whichever is greater. Figure 5 illustrates the vertical plane locations where Light Trespass is calculated and analyzed.



Figure 5: Calculation Plane Locations

The Project exterior lighting analyzed is as defined in and as illustrated in the Conceptual Project Exterior Lighting Plan (Appendix A) and as described by the Project Design Features in Section 2 above. The analysis assumes all lighting operating at full brightness, simultaneously. This analysis presents a conservative evaluation of the Project's potential to create offsite Light Trespass illuminance.

The calculated Light Trespass illuminance from Project exterior lighting is evaluated relative to the thresholds identified in Section 6 Significance Threshold, which defines a maximum Light Trespass illuminance of 0.74 fc at the nearest residential property line. Light Trespass from the Project which do not exceed the threshold will not create a Light Trespass impact. See Section 9 below for analysis of the Project exterior lighting Light Trespass.

b. Glare Analysis Methodology

Glare from the Project² may occur where the Project light sources are visible at night from nearby sensitive properties. At locations where the Project lighting is visible, the Glare from the Project is determined by the contrast ratio, which equals the maximum Project exterior lighting luminance divided by the measured average existing luminance within the visual field from the Monitoring Sites toward the Project. The measured average existing luminance is identified in the field survey of existing conditions (see Section 8 below).

The Project exterior site lighting is required to comply with the backlight, uplight, and glare (BUG) ratings included in CALGreen and listed in Section 2 as PDF-3. The BUG ratings limit light fixture maximum zonal lumens of any light fixture based upon the location of the light source and the distance from the Project property line and elevation above grade. Fixture luminance of sports field lighting is limited by Project Design Feature PDF-2 described in Section 2. This Study assumes a worst case scenario with regard to light source brightness allowed by CALGreen, PDF-2, and PDF-3 to determine the maximum potential Project exterior lighting luminance. Calculation of the maximum Project exterior lighting luminance used is provided in Section 9 for visible site and sports lighting fixtures. The calculated maximum Project exterior lighting luminance is compared to measured average existing luminance from the monitoring sites in Table 3 within Section 8 below. Contrast ratios greater than 30:1 are considered "High" and potential Glare conditions.

8. PROJECT EXISTING CONDITIONS

The existing lighting conditions within the Project site and at surrounding properties are defined by the observed and measured existing conditions summarized in this section below. The analysis of the existing lighting conditions at the Project site includes the evaluation of the the visibility of the Project exterior lighting from each Monitoring Site, with photographs of the view from the Monitoring Sites to the Project during the day and at night. Existing illuminance at each Monitoring Site is measured at night with the illuminance meter aimed toward the Project Site. Existing luminance is measured within the field of view from the Monitoring Site to the Project.

Monitoring Site locations were selected for observation and field lighting measurements to evaluate the views to the Project from adjacent residential properties and to determine the extent and intensity of existing light sources within and surrounding the Project. The Monitoring Sites are within the public right of way, adjacent to residences or at the Project Site boundary. The Monitoring Site locations are representative of the view to the Project from the vicinity of the sensitive properties surrounding the Project to the north and west.

8.1 Visibility Analysis

The visibility of the Project at each Monitoring Site is evaluated during field surveys during the day and at night. Visibility of the Project from the each Monitoring Site is analyzed in Table 2 below.

The distance from the Project site to adjacent sensitive properties varies from a minimum of 565 feet at Monitoring Site M-W2 directly west of the Project site, to a maximum distance at 1,360 feet at Monitoring Site M-N1 to the north of the Project site.

² Luminance and or Glare is not cumulative. Therefore, this Study evaluates the potential Glare impact from the proposed Project Exterior Lighting and not existing light sources.

Table 2. Project Visibility From Monitoring Sites

Monitoring Site	M-Site Location	Distance to Project Site	Visibility from Monitoring Site
M-N1	5661 Adobe Falls Rd. (vantage point is within the public street in front of this residence)	1,360 ft	Existing two-story apartments are visible at the top of the hill.
M-W1	5475 Redding St. (vantage point is within the public street in front of this residence)	1,220 ft	Very limited view of Project west elevation between houses.
M-W2	5457 Hewlett Dr. (vantage point is within the public street in front of this residence)	565 ft	Limited view of west elevation of Project.
M-W3	5441 Hewlett Dr. (vantage point is within the public street in front of this residence)	677 ft	Limited view of Project west elevation between houses.
M-W4	SDSU parking lot 10A	945 ft	Full view of west elevation of Project.
M-W5	SDSU Project site parking stall #248 (next to fence)	0 ft	Full view of west elevation of Project.

All Monitoring Sites have varying degrees of visibility toward the Project. Although the view of the Project site is obscured at the Monitoring Sites within the public right of way, the adjacent residential properities have more extensive views to the Project site. Therefore, this Study assumes a full direct view from all Monitoring Sites to the west and north of the Project site. Further analysis is presented below to evaluate the Project exterior lighting potential for Light Trespass and or Glare at these Monitoring Sites, which are used to predict the view of the Project from nearby sensitive properties.

8.2 Monitoring Site Night Survey Data

The existing lighting conditions at night surrounding the the Project site include existing streetlights, parking pole lighting and area lights, and Project exterior lighting. The observations and measurement at each Monitoring Site of the existing lighting conditions within and surrounding the Project site are summarized below.

a. Measured Existing Illuminance:

The illuminance data listed in Table 2, summarize the measured illuminance at each Monitoring Site. For this Study the measured illuminance greater than 0.74 fc is evaluated as high illuminance, from 0.09 fc to 0.74 fc is evaluated as medium illuminance, and less than 0.09 fc is evaluated as low illuminance.

The Project site currently includes lighting for the existing parking lot, roadway, and buildings. The area surrounding the Project site adjacent to the nearest residential properties includes areas of vegetation with no existing lighting. Streets and buildings nearby the Project site have limited exterior lighting. The areas surrounding the Project site are characterized as a dim lighting environment with existing illuminance ranging from medium to low. The measured illuminance is consistent with a low density suburban lighting condition.

The highest existing horizontal illuminance level was recorded at Monitoring Site at M-W5 with 0.60 fc, while the lowest horizontal illuminance was recorded at Monitoring Sites M-N1 and M-W2 at 0.01 fc. The highest existing vertical illuminance was recorded at Monitoring Site M-W5 at 0.28 fc, while the lowest vertical illuminance was recorded at Monitoring Site M-N1 and M-W2 at 0.01 fc.

Table 3. Measured Illuminance (fc) at Monitoring Sites

Monitoring Site	Illuminance (fc)		Evaluation
	Horizontal	Vertical	
M-N1	0.01	0.01	Low horizontal illuminance, Low vertical illuminance
M-W1	0.15	0.06	Medium horizontal illuminance, Low vertical illuminance
M-W2	0.01	0.01	Low horizontal illuminance, Low vertical illuminance
M-W3	0.35	0.02	Medium horizontal illuminance, Low vertical illuminance
M-W4	0.41	0.04	Medium horizontal illuminance, Low vertical illuminance
M-W5	0.60	0.28	Medium horizontal illuminance, Medium vertical illuminance

b. Measured Existing Luminance:

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 properties nearby. Contrast is the ratio of one surface luminance to the average luminance in the field of view. Contrast exceeding 30 to 1 are usually deemed uncomfortable and evaluated as high; contrast less than 30 to 1 but greater than 10 to 1 is evaluated as medium; contrast less than 10 to 1 is evaluated as low.

For this Study, the following luminance criteria are applied to measured and calculated luminance: luminance below 10 cd/m² is evaluated as low luminance; luminance greater than 10 cd/m² and less than 100 cd/m² is evaluated as medium luminance; luminance greater than 100 cd/m² is evaluated as high luminance. The measured luminance recorded at the Monitoring Sites within the field of view to the Project includes prominent, high brightness sources, and illuminated surfaces, such as streetlights, and flood lighted areas, as well as lower brightness surfaces such as sidewalks, parking lots, and unilluminated walls and landscape areas.

The existing Project site includes multiple residential buildings with exterior building and parking lot lighting. Ambient brightness adjacent to the residential properties to the west and north of the Project site are generally less bright than the existing lighting within the Project site, as evidenced by the measured luminance data. The range of recorded luminance is summarized in Table 4. The highest average luminance was recorded at Monitoring Site M-W5 at 534.0 cd/m² which is evaluated as High, while the lowest average luminance was measured at Monitoring Site M-W2 at 3.6 cd/m², which is evaluated as Low luminance. Therefore, the average measured luminance range is from Low to High luminance.

The highest maximum luminance was recorded at Monitoring Site M-W3 with 8,999.0 cd/m², while the lowest maximum luminance was measured at Monitoring Site M-W2 at 40.3 cd/m². The measured maximum luminance at Monitoring Site M-W2 is evaluated as Medium luminance (greater than 10 cd/m² and less than 100 cd/m²). All other Monitoring Sites are evaluated as High luminance (greater than 100 cd/m²).

The calculated Contrast Ratio (maximum luminance / average luminance) varies from a minimum of 11.2 to 1 at Monitoring Site M-W2 to a maximum of 24.5 to 1 at Monitoring Site M-W4. The calculated existing Contrast Ratio at all six Monitoring Site locations is evaluated as Medium Contrast (less than 30 to 1, and greater than 10 to 1).

Table 4. Measured Luminance, (cd/m²) at Monitoring Sites

Monitoring Site	Luminance (cd/m ²)		Contrast Ratio Max / Average)	Evaluation
	Average	Maximum		
M-N1	14.5	174.0	12.0 : 1	Medium Average luminance, High Maximum luminance, Medium Contrast
M-W1	70.5	1,200.0	17.0 : 1	Medium Average luminance, High Maximum luminance, Medium Contrast
M-W2	3.6	40.3	11.2 : 1	Low Average luminance, Medium Maximum luminance, Medium Contrast
M-W3	478.6	8,999.0	17.1 : 1	High Average luminance, High Maximum luminance, Medium Contrast
M-W4	153.8	3,776.0	24.5 : 1	High Average luminance, High Maximum luminance, Medium Contrast
M-W5	534.0	8,438.0	15.8 : 1	High Average luminance, High Maximum luminance, Medium Contrast

8.3 Monitoring Site Data

a. Monitoring Site M-N1:

The existing lighting conditions at M-N1 are low horizontal and low vertical illumination from adjacent Project exterior lighting located above the Monitoring Site. Prominent light sources visible in the field of view from M-N1 to the north side of the Project site include exterior building lighting, and parking lot lighting



Figure 6: M-N1 – 01/2023 (Google)



Figure 7: M-N1 – 08/20/2024, 9:31 pm

b. Monitoring Site M-W1:

The existing lighting conditions at M-W1 are low horizontal / low vertical illumination from City streetlights and residential porch lights. Prominent light sources visible in the field of view from M-W1 to the west elevations of the Project site include residential porch lights, and parking lot lighting in the distance between the residents



Figure 8: M-W1 – 08/20/2024, 3:48 pm



Figure 9: M-W1 – 08/20/2024, 8:26 pm

c. Monitoring Site M-W2:

The existing lighting conditions at M-W2 are low horizontal / low vertical illumination from residential porch lights. Prominent light sources visible in the field of view from M-W1 to the west elevations of the Project site include residential porch lights, and parking lot lighting in the distance between the residents.



Figure 10: M-W2 – 08/20/2024, 3:40 pm



Figure 11: M-W2 – 08/20/2024, 8:17 pm

d. Monitoring Site M-W3:

The existing lighting conditions at M-W3 are medium horizontal / low vertical illumination from streetlights, and residential porch lights. Prominent light sources visible in the field of view from M-W1 to the west elevations of the Project site include residential porch lights, and parking lot lighting in the distance between the residents.



Figure 12: M-W3 – 08/20/2024, 3:39 pm



Figure 13: M-W3 – 08/20/2024, 8:11 pm

e. Monitoring Site M-W4:

The existing lighting conditions at M-W4 are medium horizontal / medium vertical illumination streetlights, and parking lot lights. Prominent light sources visible in the field of view from M-W4 to the west elevations of the Project site include residential lighting in the distance, dorm lighting. Parking lot lighting on Project site.



Figure 14: M-W4 – 08/20/2024, 3:33 pm



Figure 15: M-W4 – 08/20/2024, 8:04 pm

f. Monitoring Site M-W5:

The existing lighting conditions at M-W5 are medium horizontal / medium vertical illumination from residential parking lot lights. Prominent light sources visible in the field of view from M-W5 to the west elevations of the Project site include residential lights, and parking lot lighting.



Figure 16: M-W5 – 08/20/2024, 3:28 pm



Figure 17: M-W5 – 08/20/2024, 8:35 pm

9. PROJECT LIGHTING ANALYSIS

The Project would introduce new exterior lighting as shown in Appendix A and as described by the Project Design Features in Section 2 above.

To analyze the Project's exterior lighting impacts, the Project lighting is compared to the applicable thresholds identified within Section 6 Significance Threshold above with respect to Light Trespass and Glare:

- Project exterior lighting trespass illuminance must not exceed 0.74 fc at the property line of adjacent residential properties.
- Project exterior lighting is unshielded and aimed toward the adjacent undeveloped canyon.
- Project exterior lighting luminance visible from residential properties must be less than high contrast conditions, i.e., less than 30 to 1 contrast ratio.

9.1 Light Trespass Analysis

Project Light Trespass illuminance from Project exterior lighting is evaluated by way of the calculated illuminance (fc) as per the methodology defined in Section 7, at the vertical calculation plane locations where lighting is under review. As noted above, this Study evaluates the Light Trespass illuminance from Project with respect to the regulations defined by CALGreen at the nearest residential property line. This Study analyzes the proposed Project exterior lighting as illustrated in the Conceptual Project Exterior Lighting Plan (Appendix A) for both Phase 1 through 4 development plan, and Phase 5 and 6 development plan, which defines the lighting fixtures, locations, dimensions, and orientation. Project Design Features PDF-1 described in Section 2 above is included as part of the analysis of the Projects Light Trespass.

The vertical calculation planes for the Project exterior lighting Light Trespass analysis are located at the adjacent residential property line, as illustrated in Figure 5. Light Trespass illuminance is evaluated within vertical planes extending from grade to the maximum Project building elevation above grade as defined above in Section 7. The vertical planes are located to capture light traveling from the Project site toward surrounding properties, which may fall onto, and illuminate, adjacent sensitive properties.

This Study Analyzes the Light Trespass illuminance (fc) with respect to the Threshold of 0.74 fc at the nearest adjacent residential property line. Calculated Light Trespass data for vertical planes located at the adjacent residential properties is presented in Table 5 for Phase 1 through 4, and Table 6 for Phase 5 through Phase 6. Complete Light Trespass illuminance calculated data is presented in Appendix H.

a. Project Phase 1 Through 4 Light Trespass Analysis

Project Phase 1 through 4 exterior lighting is analyzed in this Study conservatively with all Project exterior lighting operating simultaneously at the maximum light output as noted above. This configuration will produce the maximum possible amount of Light Trespass and therefore represents a conservative analysis. The information in the Conceptual Project Exterior Lighting Plan (Appendix A) and as described in Section 2 Project Description including the Project Design Features are utilized to calculate the Project's Light Trespass illuminance in this Study.

The maximum calculated Light Trespass illuminance in Table 5 varies from a minimum of 0.30 fc at vertical plane VP-N1 to a maximum of 0.60 fc at vertical plane VP-W1. The calculated Light Trespass illuminance from the Project exterior lighting is below the maximum of 0.74 fc threshold established by CALGreen to the north and west of the Project site. Therefore, the Project Project exterior lighting will not create a Light Trespass impact at nearby residential properties.

Table 5: Phase 1 through 4, Calculated Light Trespass Illuminance (fc)

Vertical Plane	Illuminance (fc)			CALGreen Analysis (0.74 fc threshold)
	Max	Min	Avg	
VP-N1	0.30	0.00	0.05	Below threshold
VP-W1	0.60	0.00	0.13	Below threshold

b. Project Phase 5 through Phase 6 Light Trespass Analysis

Project Phase 5 through Phase 6 exterior lighting is analyzed in this Study conservatively with all Project exterior lighting operating simultaneously at the maximum light output as noted above. This configuration will produce the maximum possible amount of Light Trespass and therefore represents a conservative analysis. The information in the Conceptual Project Exterior Lighting Plan (Appendix A) and as described in Section 2 Project Description and the Project Design Features are utilized to calculate the Project's Light Trespass illuminance in this Study.

Table 6: Phase 5 and 6, Calculated Light Trespass Illuminance (fc)

Vertical Plane	Illuminance (fc)			CALGreen Analysis (0.74 fc threshold)
	Max	Min	Avg	
VP-N1	0.30	0.00	0.06	Below threshold
VP-W1	0.60	0.00	0.08	Below threshold

The maximum calculated Light Trespass illuminance in Table 6 varies from a minimum of 0.30 fc at vertical plane VP-N1 to a maximum of 0.60 fc at vertical plane VP-W1. The calculated Light Trespass illuminance from the Project exterior lighting is below the maximum of 0.74 fc threshold established by CALGreen to the north and west of the Project site. Therefore, the Project exterior lighting will not create a Light Trespass impact at nearby residential properties.

The maximum calculated Light Trespass at vertical planes VP-N1 and VP-W1 is the same during Project Phase 1 through 4 and Project Phase 5 through 6, indicating that the maximum Light Trespass is created primarily from the exterior site lighting, which is present in all phases. The calculated average Light Trespass varies in each phase as a result of additional building massing, which may block or reflect light from the Project, and sports field lighting omitted in Phase 5 through 6. Specifically, the calculated average Light Trespass at VP-N1 to the north of the Project site increased slightly during Phase 5 though 6 due to reflected light from the additional building massing. The calculated average Light Trespass at VP-W1 to the west of the Project site is reduced in Phase 5 through 6 due to the omission of sports field lighting.

This Study also analyzes the Light Trespass impacts to sensitive natural habitat areas within the Property at the undeveloped canyon areas. The undeveloped canyon areas to the west and north of the Project site are considered sensitive natural habitat areas in this Study. The Project Design Features includes stipulations to aim and orient all light fixtures away from the undeveloped canyon areas to minimize Light Trespass. Therefore, the Project exterior lighting does not orient or aim light fixtures toward the undeveloped canyon

areas. Furthermore the Project Design Features include requirements to include shields on the light fixtures to prevent Light Trespass from entering the undeveloped canyon areas. Therefore, the Project would not create a Light Trespass impact at sensitive natural habitat areas to the west and north of the Project Site.

Light Trespass from the Project's exterior lighting is less than the 0.74 fc threshold at the residential property lines to the west and north of the Project site where Light Trespass is under review, and will therefore not create a light trespass impact at sensitive residential properties. Furthermore, the Project Design Feature PDF-1 orients exterior light fixtures near the perimeter of the Project site away from the undeveloped canyon areas and includes shielding to prevent backlight. Therefore, the Project will not create Light Trespass impact with respect to the adjacent habitat. All properties or sensitive natural habitat areas more distant from the Project site than the locations studied will receive less Light Trespass due to the increased distance (See "Inverse Square Law" above).

9.2 Glare Analysis

The evaluation of High, Medium, and Low Contrast describes the perception of how bright a visible object appears in comparison to the surrounding objects within any given field of view. The "luminance ratio" is the ratio of the maximum Project luminance as compared to the Average Luminance within the field of view visible at an observer position. This ratio is referred to as "contrast", and is determined by the variation of luminance. "High," "Medium," and "Low" contrast are terms used to describe effect of the contrast ratios (the ratio of maximum luminance to the average within a field of view) of greater than 30:1, between 10:1 and 30:1, and below 10:1, respectively. Luminance contrast ratios above 30:1 are generally uncomfortable for the human eye to perceive. High Contrast, greater than a 30:1 Contrast Ratio, indicate a potential Glare condition.

The existing lighting conditions at night within and surrounding the Project site and visible within the field of view from the Monitoring Sites were evaluated on August 20th, 2024. Measurements of the existing luminance at night within the field of view from the Monitoring Sites are summarized in Section 8.2 and Table 4 above.

Potential Glare from the Project exterior lighting is evaluated by calculating the Contrast Ratio, which is the ratio of the maximum Project exterior lighting luminance to the existing measured average luminance. Tables 7 and 8 summarize the measured average luminance at each Monitoring Site (from Table 4) for Project Phase 1 through Phase 4 and for Phase 5 through Phase 6, respectively, along with a calculation of the Contrast Ratio by comparison of the proposed Project exterior lighting maximum luminance to the existing measured average luminance.

a. Project Phase 1 Through Phase 4 Glare Analysis

The Project Phase 1 through Phase 4 exterior roadway light poles and sports field lighting will be visible from the adjacent residential sensitive properties to the west and north of the Project site. Figure 18 illustrates the topography of the Project site and the elevation of the light poles within the Project site relative to the elevation of the residential properties to the west of the Project site. This section view demonstrates the light sources located at the top of the light poles for perimeter roadway and sports fields lighting will be visible from the residential sensitive properties to the west. Similar elevation conditions exist to the north and perimeter roadway light poles will be visible from the north as well. The visible perimeter roadway light poles and sports fields light poles are evaluated for Glare.

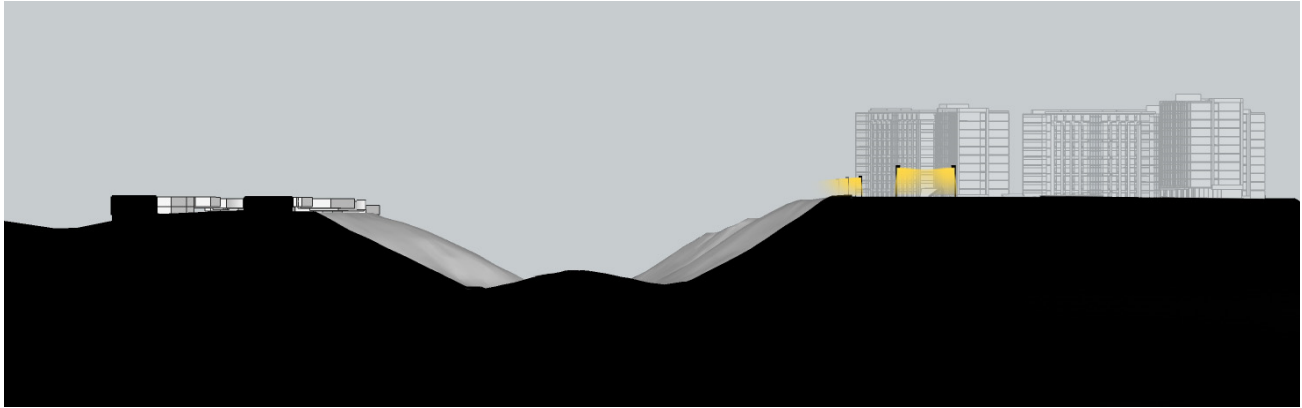


Figure 18: Site Section Viewing North

Project Phase 1 through Phase 4 includes exterior site lighting fixtures, which are specified with more than 6,200 lumens each, and are therefore subject to the requirements of CALGreen Section 5.106.8, which stipulates limits for off-site Glare by compliance with IES TM-15-11. The Project lighting must comply with the requirements of CALGreen, and therefore the site lighting fixtures must have luminaire luminance of no more than 100 cd/m² visible from any location offsite. The Project Phase 1 through Phase 4 site lighting within the Project site will be visible from the sensitive residential properties to the west and north, and are evaluated with a maximum luminance of 100 cd/m², which results in Low to Medium Contrast conditions. Although these lights will be visible, they will not create a source of Glare, and will not create a significant Glare impact.

The Project Phase 1 through Phase 4 exterior lighting also includes sports field lighting fixtures with varying mounting heights and aiming angles and high Luminous Flux. The Project includes Project Design Features which require all sports field lighting to be installed in such a manner that the source is shielded or aimed to limit the maximum surface luminance visible from any sensitive residential use to 100 cd/m². Sports field lighting is exempt from the requirements of CALGreen Section 5.106.8 for off-site Glare, via exception under CEC Section 140.7 (exemption no. 4, "lighting for sports and athletic fields, and children's playgrounds"). However, to present a conservative analysis of Glare, the sports field lighting is included in this analysis and evaluated with a maximum luminance of 100 cd/m².

The Contrast Ratios from the Project lighting vary from Low to Medium Contrast at all Monitoring Sites (See Table 7). The highest Contrast Ratio of 27.9 to 1 occurs at Monitoring site M-W2, which is evaluated as Medium Contrast (greater than 10:1 but less than 30:1). Contrast Ratios at all other Monitoring Sites are less than 10 to 1 and are evaluated as Low Contrast. Although the Project Phase 1 through Phase 4 exterior site and sports field lighting will be visible, they will not create a new source of Glare visible to sensitive residential properties, and will not create a significant Glare impact.

Table 7: Project Phase 1 through Phase 4 Exterior Lighting Contrast Ratio

Monitoring Site	Existing Measured Luminance		Project Luminance		Evaluation
	Average	Maximum	Maximum	Contrast Ratio	
M-N1	14.5	174.0	100.0	6.9 : 1	Low Contrast, no Glare
M-W1	70.5	1,200.0	100.0	1.4 : 1	Low Contrast, no Glare
M-W2	3.6	40.3	100.0	27.9 : 1	Medium Contrast, no Glare
M-W3	478.6	8,999.0	100.0	0.2 : 1	Low Contrast, no Glare
M-W4	153.8	3,776.0	100.0	0.7 : 1	Low Contrast, no Glare
M-W5	534.0	8,438.0	100.0	0.2 : 1	Low Contrast, no Glare

This Study demonstrates the Project Phase 1 through Phase 4 will not introduce a new source of Glare, i.e., new high contrast conditions visible at sensitive residential properties adjacent to the Project site. This Study analyzed the proposed building and site improvements, and the visibility of the sports field and site lighting fixtures from the adjacent sensitive residential properties surrounding the Project site and concludes site lighting fixtures will be visible from sensitive residential properties to the west and north. The Project sports field lighting will be visible only from sensitive residential properties to the west. However, all Project lighting luminances will be no greater than 100 cd/m², and will result in Contrast Ratios less than 30:1 at all Monitoring Sites. Therefore, the Project Phase 1 through Phase 4 will not create significant impact by introducing a new Glare condition at adjacent sensitive residential properties to the west or north of the Project site.

b. Project Phase 5 through Phase 6 Glare Analysis

The Project Phase 5 through Phase 6 development plan includes exterior roadway and site lighting fixtures, which are specified with more than 6,200 lumens, and are therefore subject to the requirements of CALGreen Section 5.106.8, which stipulates limits for off-site Glare by compliance with IES TM-15-11. Compliance with these CALGreen requirements results in luminaire luminance of no more than 100 cd/m². The Project Phase 5 through Phase 6 perimeter roadway light poles within the Project site will be visible from the residential sensitive properties to the west and north, and are evaluated with a maximum luminance of 100 cd/m², which results in Low Contrast conditions. The Project Phase 5 through 6 development plan does not include sports field lighting. Although the Project site light fixtures will be visible, they will not create a source of Glare, and will not create a significant Glare impact.

This Study demonstrates the Phase 5 through 6 Project will not create Glare, i.e., will not create a new high contrast condition visible at adjacent residential sensitive properties. This Study analyzed the proposed building and site improvements, and the visibility of the Project lighting fixtures from the adjacent residential properties to the west of the Project site, and concludes these lights will be visible, and will not present a high

contrast condition with greater than 30:1 contrast ratio. The Contrast Ratio compares the maximum Project luminance to the existing average luminance measured at the Monitoring Sites which are adjacent to the sensitive residential properties, and are defined below in Section 7 and 8. Therefore, the Phase 5 through 6 Project will not create a new Glare condition at adjacent sensitive residential properties.

Table 8: Project Phase 5 and Phase 6 Exterior Lighting Contrast Ratio

Monitoring Site	Existing Measured Luminance		Project Luminance		Evaluation
	Average	Maximum	Maximum	Contrast Ratio	
M-N1	14.5	174.0	100.0	6.9 : 1	Low Contrast, no Glare
M-W1	70.5	1,200.0	100.0	1.4 : 1	Low Contrast, no Glare
M-W2	3.6	40.3	100.0	27.9 : 1	Medium Contrast, no Glare
M-W3	478.6	8,199.0	100.0	0.2 : 1	Low Contrast, no Glare
M-W4	153.8	3,776.0	100.0	0.7 : 1	Low Contrast, no Glare
M-W5	534.0	8,435.0	100.0	0.2 : 1	Low Contrast, no Glare

10. CONCLUSIONS

This Study reviews the parameters that affect Light Trespass and Glare, reviews relevant lighting metrics and regulations pertaining to exterior artificial lighting, examines the existing lighting conditions within and surrounding the Project site, and evaluates the Project's exterior lighting at two phases of the proposed Project development schedule to identify the potential lighting environmental impacts.

Light Trespass from the Project was analyzed for development Phase 1 through Phase 4 and Phase 5 through Phase 6. This Study demonstrates that with the proposed Project would not create Light Trespass greater than the 0.74 fc threshold defined by CALGreen. Therefore, the Project would not create a significant impact with respect to Light Trespass at adjacent sensitive residential properties to the west and north of the Project site.

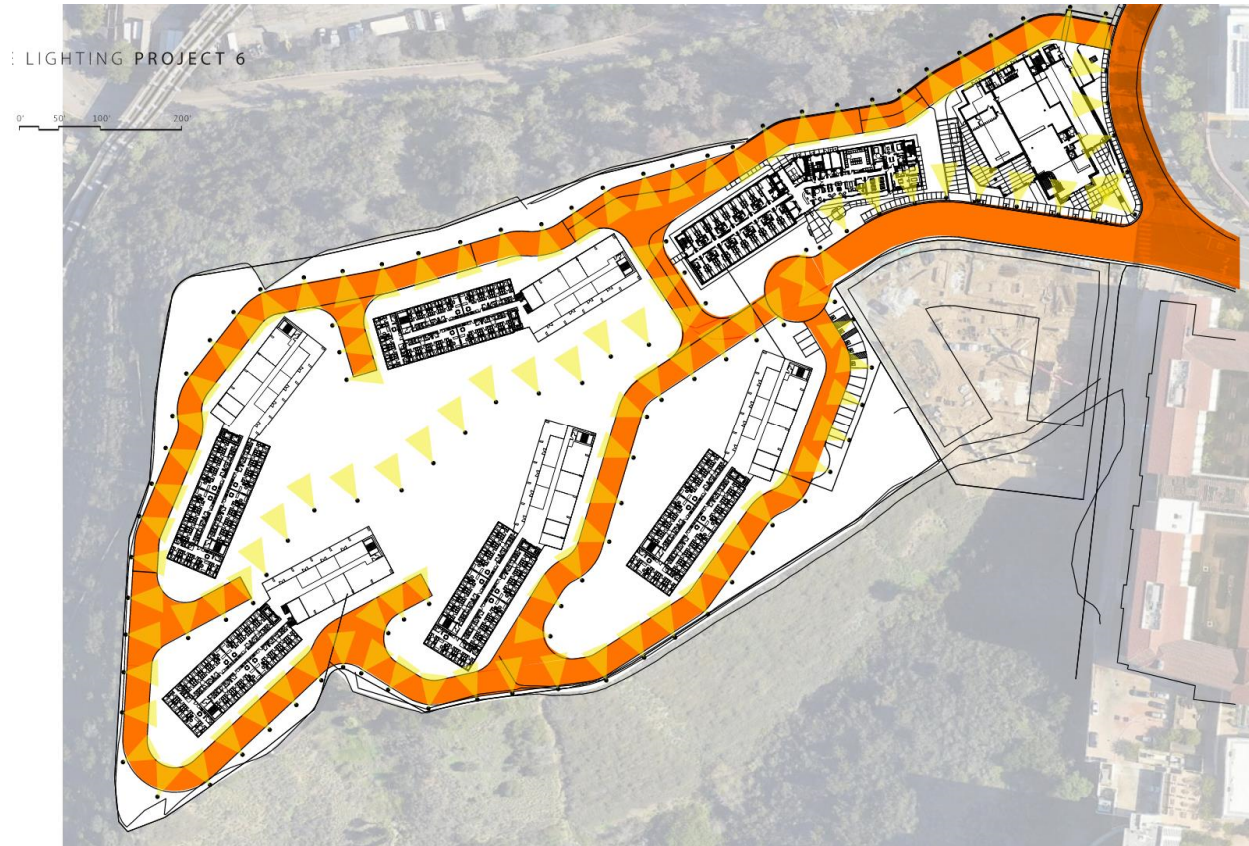
In addition, Light Trespass of proposed Project exterior lighting was evaluated at boundary of the sensitive natural habitat within the undeveloped canyon areas within the Project property. This Study concludes the proposed Project, including Project Design Feature PDF-1, would not create a Light Trespass impact, with exterior lighting fixtures shielded and aimed away from the undeveloped canyon area boundary. Therefore, Light Trespass at the sensitive natural habitat within the undeveloped canyon areas would be less than significant.

This Study demonstrates the Project site lighting will be visible from the sensitive residential properties to the west and north of the Project site during development Phase 1 through 4 and Phase 5 through 6. In addition, Project sports field lighting proposed during Project Phase 1 through 4 the will be visible from sensitive residential properties to the west of the Project site. However, Project Design Features PDF-2 and PDF-3 stipulate that all light fixture luminances visible from sensitive residential properties will be less than 100 cd/m^2 , which will not create High Contrast conditions (greater than 30:1). Therefore the Project exterior lighting will not create a significant source of Glare at sensitive properties.

Light intensity degrades exponentially with distance. Therefore, sensitive properties which are more distant than the locations analyzed in this Study will receive substantially less light from the Project. Therefore the Project will not create Light Trespass or Glare impacts at locations more distant than the locations studied.

APPENDIX A: CONCEPTUAL PROJECT LIGHTING PLAN

SITE LIGHTING PLAN – ALL PHASES



Pathway Poles



RSX3 LED Area Luminaire

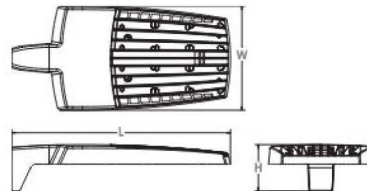


Catalog Number	
Notes	
Type	

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA (ft ² @0°):	0.70 ft ² (0.07 m ²)
Length:	33.8" (85.9 cm) (SPA mount)
Width:	16.1" (40.9 cm)
Height:	3.0" (7.6 cm) Main Body 7.2" (18.3 cm) Arm
Weight (max):	48.0 lbs (21.8 kg)



Introduction

The new RSX LED Area family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSX3 delivers 25,000 to 41,000 lumens allowing it to replace 400W to 1000W HID luminaires.

The RSX features an integral universal mounting mechanism that allows the luminaire to be mounted on most existing drill hole patterns. This "no-drill" solution provides significant labor savings. An easy-access door on the bottom of mounting arm allows for wiring without opening the electrical compartment. A mast arm adaptor, adjustable integral slipfitter and other mounting configurations are available.



Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details



Ordering Information

EXAMPLE: RSX3 LED P4 40K R3 MVOLT SPA DDBXD

Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSX3 LED	P1 P2 P3 P4	30K 3000K 40K 4000K 50K 5000K	R2 Type 2 Wide R3 Type 3 Wide R3S Type 3 Short R4 Type 4 Wide R4S Type 4 Short R5 Type 5 Wide ¹ R5S Type 5 Short ¹ AFR Automotive Front Row AFRR90 Automotive Front Row Right Rotated AFRL90 Automotive Front Row Left Rotated	MVOLT (120V-277V) ² HVOLT (347V-480V) ³ XVOLT (277V-480V) ⁴ (use specific voltage for options as noted) 120 ² 277 ⁵ 208 ² 347 ⁵ 240 ² 480 ⁵	SPA Square pole mounting (3.0" min. SQ pole for 1 at 90°, 3.5" min. SQ pole for 2, 3, 4 at 90°) RPA Round pole mounting (3.2" min. dia. RND pole for 2, 3, 4 at 90°, 3.0" min. dia. RND pole for 1 at 90°, 2 at 180°, 3 at 120°) MA Mast arm adaptor (fits 2-3/8" OD horizontal tenon) IS Adjustable slipfitter (fits 2-3/8" OD tenon) ⁶ WBA Wall bracket WBASC Wall bracket with surface conduit box AASP Adjustable tilt arm square pole mounting ⁴ AARP Adjustable tilt arm round pole mounting ⁴ AAWB Adjustable tilt arm with wall bracket ⁴ AAWSC Adjustable tilt arm wall bracket and surface conduit box ⁴

Options		Finish	
Shipped Installed		Shipped Installed	
HS	House-side shield ⁷	*Standalone and Networked Sensors/Controls (factory default settings, see table page 9)	
PE	Photocontrol, button style ^{8,9}	NLTAIR2 PIRHN	nLight AIR generation 2, with Networked Bi-Level motion/ambient sensor ^{9,12,13,14}
PER7	Seven-wire twist-lock receptacle only (no controls) ^{8,10,11}	BAA	Buy America(n) Act and/or Build America Buy America Qualified
SF	Single fuse (120, 277, 347) ³	CCE	Coastal Construction ¹⁵
DF	Double fuse (208, 240, 480) ³	*Note: PIRHN with nLight Air can be used as a standalone or networked solution. Sensor coverage pattern is affected when luminaire is tilted.	
SPD20KV	20KV Surge pack (10KV standard)	Shipped Separately (requires some field assembly)	
FAO	Field adjustable output ⁹	EGS	External glare shield ⁷
DMG	0-10V dimming extend out back of housing for external control (control ordered separate) ⁹	EGFV	External glare full visor (360° around light aperture) ⁷
		BS	Bird spikes ¹⁶
		DDBXD	Dark Bronze
		DBLXD	Black
		DNAXD	Natural Aluminum
		DWHXD	White
		DDBTXD	Textured Dark Bronze
		DBLBXD	Textured Black
		DNATXD	Textured Natural Aluminum
		DWHGXD	Textured White



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Pathway Poles

Ordering Information

Accessories

Ordered and shipped separately.

RSXHS U	RSX3 House side shield (includes 3 shields)
RSXHS4FR U	RSX3 House side shields for AFR rotated optics (includes 3 shields)
RSX3EGS (FINISH) U	External glare shield (specify finish)
RSX3EGFV (FINISH) U	External glare full visor (specify finish)
RSXRPA (FINISH) U	RSX Universal round pole adaptor plate (specify finish)
RSXWBA (FINISH) U	RSX WBA wall bracket (specify finish) ¹
RSXSCB (FINISH) U	RSX Surface conduit box (specify finish, for use with WBA, WBA not included)
DLL1227 1.5 JU	PhotoCell -SSL twist-lock (120-277V)
DLL347F 1.5 CUL JU	PhotoCell -SSL twist-lock (347V) ¹⁷
DLL480F 1.5 CUL JU	PhotoCell -SSL twist-lock (480V) ¹⁷
DSHORT SRK U	Shorting cap ¹⁷

NOTES

- Any Type 5 distribution, is not available with WBA.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
- XVOLT driver operates on any line voltage from 277V-480V (50/60 Hz).
- XVOLT not available with fusing (SF or DF) and not available with PE.
- Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- Maximum tilt is 90° above horizontal.
- It may be ordered as an accessory.
- Requires MVOLT or 347V.
- Two or more of the following options cannot be combined including PE, DMG, PER7, FAO and NLTAIR2 PIRHN. (Exception: PE and FAO can be combined; also PE and DMG can be combined.)
- Compatible with standard twist-lock photocells for dusk to dawn operation or advanced control nodes that provide 0-10V dimming

- signals. Wire 4/Wire 5 wired to dimming leads on driver. Wire6/Wire7 capped inside luminaire. Twistlock photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
- For units with option PER7, the mounting must be restricted to +/- 45° from horizontal arm per ANSI C136.10-2010.
 - Must be ordered with PIRHN.
 - Requires MVOLT or HVOLT.
 - Must be ordered with NLTAIR2. For additional information on PIRHN visit [here](#).
 - CCE option not available with WBA, WBASC, AASP, AARP, AAWB, AAWBSC, EGS, EGPV and BS.
 - Must be ordered with fixture for factory pre-drilling.
 - Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields



House Side Shield



External Glare Shield

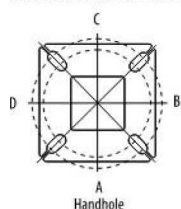


External 360 Full Visor

Pole/Mounting Information

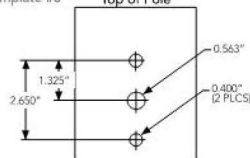
Accessories including bullhorns, cross arms and other adaptaters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit [Accessories](#).

HANDHOLE ORIENTATION

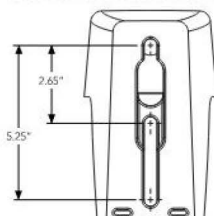


RSX POLE DRILLING

Template #8



RSX STANDARD ARM & ADJUSTABLE ARM



Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 @ 180°	2 @ 90°	3 @ 120°	3 @ 90°	4 @ 90°
2-3/8"	RPA, AARP	AS3-5190	AS3-5280	AS3-5290	AS3-5320	AS3-5390	AS3-5490
2-7/8"	RPA, AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	RPA, AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Drill/Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180°	2 @ 90°	3 @ 120°	3 @ 90°	4 @ 90°
#8	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	Drill Nomenclature	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSX3 - Luminaire EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

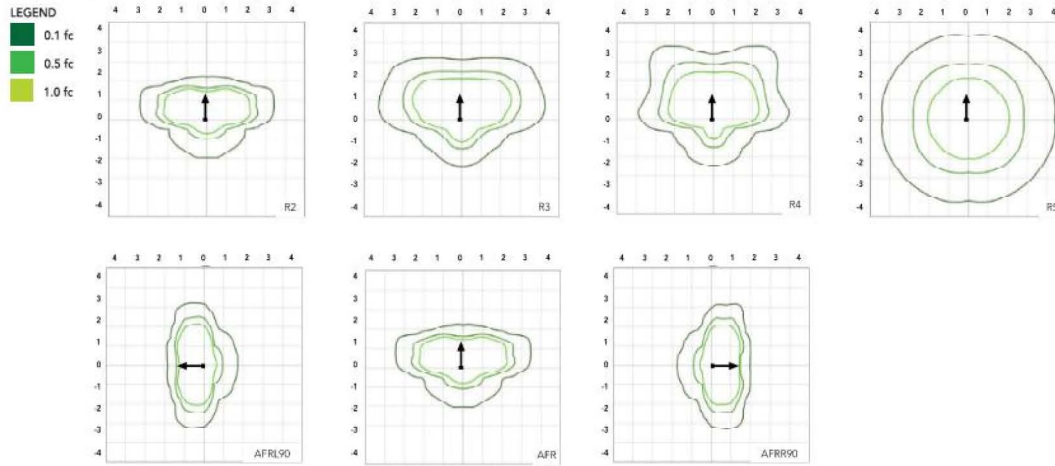
Fixture Quantity & Mounting Configuration		EPA (ft²)							
		Single	2 @ 90°	2 @ 180°	3 @ 90°	3 @ 120°	4 @ 90°	2 Side by Side	3 Side by Side
Mounting Type	Tilt	0°	10°	20°	30°	40°	50°	60°	70°
	0°	0.7	1.32	1.37	2	1.76	2.62	1.39	2.09
	45°	0.75	1.37	1.47	2.1	1.86	2.72	1.44	2.19
	60°	0.62	1.24	1.21	1.84	1.6	2.46	1.31	1.93
IS - Integral Slipfitter AARP/AASP - Adjustable Arm Square/Round Pole	0°	0.7	1.32	1.37	2	1.76	2.62	1.39	2.09
	10°	0.96	1.85	1.84	2.76	2.4	3.64	1.92	3.84
	20°	1.34	2.58	2.64	3.83	3.35	5.11	2.68	5.36
	30°	2.04	3.52	3.79	5.2	4.7	7.03	4.09	8.16
	40°	3.12	4.54	5.23	6.6	6.33	9.02	6.23	12.48
	45°	3.72	5.05	6.12	7.35	7.15	10.01	7.45	14.88
	50°	4.01	5.49	6.6	7.87	7.81	10.88	8.02	16.04
	60°	4.72	6.36	7.69	9.09	9.11	12.61	9.44	18.88
	70°	4.9	7.01	8.05	10.02	9.78	13.94	9.80	19.6
	80°	4.95	7.4	8.23	10.61	10.26	14.75	9.90	19.8
	90°	4.91	7.55	8.34	10.88	10.54	15.05	9.82	19.64

Pathway Poles

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's [RSX Area homepage](#).

Isofootcandle plots for the RSX3 LED P4 40K. Distances are in units of mounting height (30').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

Ambient	Ambient	Lumen Multiplier
0°C	32°F	1.05
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97
45°C	113°F	0.96
50°C	122°F	0.95

Electrical Load

Performance Package	System Watts (W)	Current (A)					
		120V	208V	240V	277V	347V	480V
P1	194W	1.61	0.92	0.80	0.69	0.56	0.40
P2	222W	1.85	1.06	0.92	0.80	0.63	0.45
P3	266W	2.22	1.27	1.10	0.95	0.76	0.55
P4	312W	2.60	1.49	1.29	1.11	0.89	0.64

Projected LED Lumen Maintenance

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.97	>0.95	>0.92

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.



COMMERCIAL OUTDOOR

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Pathway Poles

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

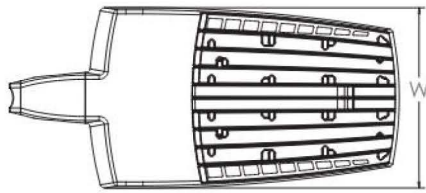
Performance Package	System Watts	Distribution Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	194W	R2	24,920	3	0	2	128	27,379	3	0	2	141	27,379	3	0	2	141
		R3	24,832	3	0	4	128	27,283	3	0	4	141	27,283	3	0	4	141
		R3S	25,494	3	0	3	131	28,010	3	0	3	144	28,010	3	0	3	144
		R4	25,157	3	0	4	130	27,639	3	0	4	142	27,639	3	0	4	142
		R4S	24,272	3	0	3	125	26,667	3	0	3	137	26,667	3	0	3	137
		R5	25,494	5	0	4	131	28,010	5	0	4	144	28,010	5	0	4	144
		R5S	26,171	4	0	2	135	28,754	4	0	2	148	28,754	4	0	2	148
		AFR	24,886	3	0	2	128	27,342	3	0	2	141	27,342	3	0	2	141
		AFRR90	25,123	4	0	3	129	27,602	4	0	3	142	27,602	4	0	3	142
		AFRL90	25,229	4	0	3	130	27,718	4	0	3	142	27,718	4	0	3	142
P2	222W	R2	27,570	3	0	2	124	30,291	3	0	2	136	30,291	3	0	2	136
		R3	27,473	3	0	4	124	30,185	3	0	4	136	30,185	3	0	4	136
		R3S	28,206	3	0	3	127	30,990	3	0	4	139	30,990	3	0	4	139
		R4	27,833	3	0	4	125	30,579	3	0	4	138	30,579	3	0	4	138
		R4S	26,854	3	0	3	120	29,504	3	0	3	132	29,504	3	0	3	132
		R5	28,206	5	0	4	127	30,990	5	0	4	140	30,990	5	0	4	140
		R5S	28,955	4	0	2	130	31,813	5	0	3	143	31,813	5	0	3	143
		AFR	27,533	3	0	2	124	30,251	3	0	2	136	30,251	3	0	2	136
		AFRR90	27,795	4	0	3	125	30,538	5	0	3	137	30,538	5	0	3	137
		AFRL90	27,912	4	0	3	125	30,667	5	0	3	138	30,667	5	0	3	138
P3	266W	R2	32,285	3	0	3	121	35,471	3	0	3	133	35,471	3	0	3	133
		R3	32,172	3	0	4	121	35,346	3	0	5	133	35,346	3	0	5	133
		R3S	33,030	3	0	4	124	36,289	3	0	4	136	36,289	3	0	4	136
		R4	32,593	3	0	4	123	35,809	3	0	5	135	35,809	3	0	5	135
		R4S	31,446	3	0	4	118	34,550	3	0	4	129	34,550	3	0	4	129
		R5	33,030	5	0	4	124	36,289	5	0	4	136	36,289	5	0	4	136
		R5S	33,907	5	0	3	127	37,253	5	0	3	140	37,253	5	0	3	140
		AFR	32,242	3	0	3	121	35,424	3	0	3	133	35,424	3	0	3	133
		AFRR90	32,549	5	0	4	122	35,761	5	0	4	134	35,761	5	0	4	134
		AFRL90	32,686	5	0	3	123	35,911	5	0	4	135	35,911	5	0	4	135
P4	312W	R2	36,945	3	0	3	118	40,591	3	0	3	130	40,591	3	0	3	130
		R3	36,815	3	0	5	118	40,448	3	0	5	130	40,448	3	0	5	130
		R3S	37,797	3	0	4	121	41,527	3	0	4	133	41,527	3	0	4	133
		R4	37,297	3	0	5	120	40,978	3	0	5	131	40,978	3	0	5	131
		R4S	35,985	3	0	4	115	39,537	3	0	4	127	39,537	3	0	4	127
		R5	37,797	5	0	4	121	41,527	5	0	5	133	41,527	5	0	5	133
		R5S	38,801	5	0	3	124	42,630	5	0	3	137	42,630	5	0	3	137
		AFR	36,896	3	0	3	118	40,537	3	0	3	130	40,537	3	0	3	130
		AFRR90	37,247	5	0	4	119	40,923	5	0	4	131	40,923	5	0	4	131
		AFRL90	37,403	5	0	4	120	41,095	5	0	4	132	41,095	5	0	4	132

Note: XVOLT configurations only for all RSX3 LED P4 — Inputs watts is reduced by 9% to 285W. Delivered lumens reduced by 8% for all published values under P4.
IES files for RSXF3 LED P4 with XVOLT are available on Acuitybrands.com.

Pathway Poles

Dimensions

RSX3 with Round Pole Adapter (RPA)



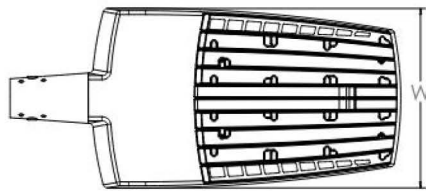
Length: 34.8" (88.4 cm)
Width: 16.1" (40.9 cm)
Height: 3.0" (7.6 cm) Main Body
7.2" (18.3 cm) Arm



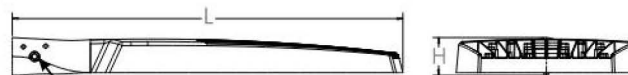
NOTE:
RPA - Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.



RSX3 with Mast Arm Adapter (MA)

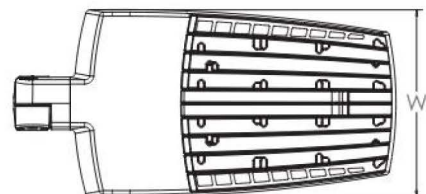


Length: 35.1" (89.1 cm)
Width: 16.1" (40.9 cm)
Height: 3.0" (7.6 cm) Main Body
3.5" (8.9 cm) Arm

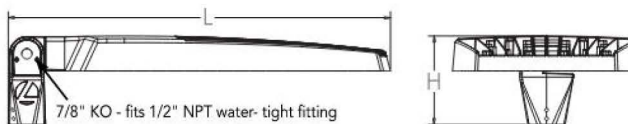


7/16" locking thru bolt/nut provided

RSX3 with Adjustable Slipfitter (IS)



Length: 32.8" (83.3 cm)
Width: 16.1" (40.9 cm)
Height: 3.0" (7.6 cm) Main Body
7.6" (19.3 cm) Arm

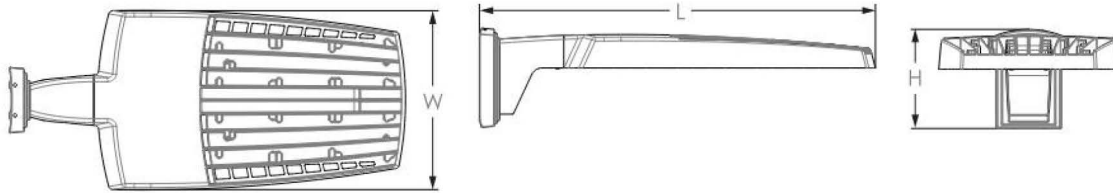


7/8" KO - fits 1/2" NPT water-tight fitting

Pathway Poles

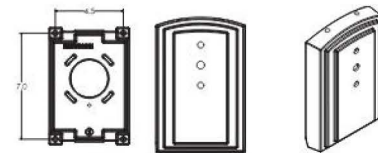
Dimensions

RSX3 with Wall Bracket (WBA)

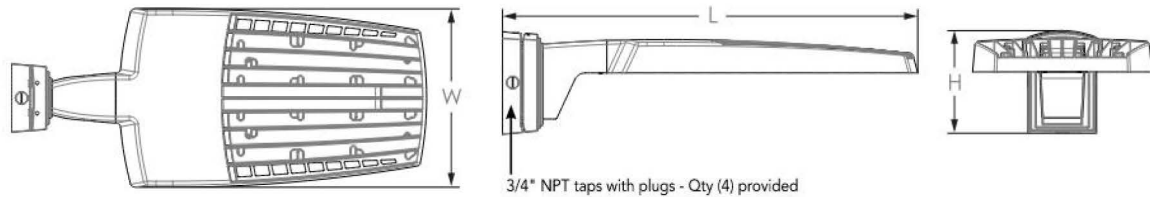


Length: 35.5" (90.2 cm)
Width: 16.1" (40.9 cm)
Height: 3.0" (7.6 cm) Main Body
8.9" (22.6 cm) Arm

Wall Bracket (WBA) Mounting Detail

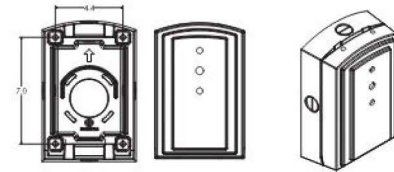


RSX3 with Wall Bracket with Surface Conduit Box (WBASC)



Length: 37.4" (95.0 cm)
Width: 16.1" (40.9 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

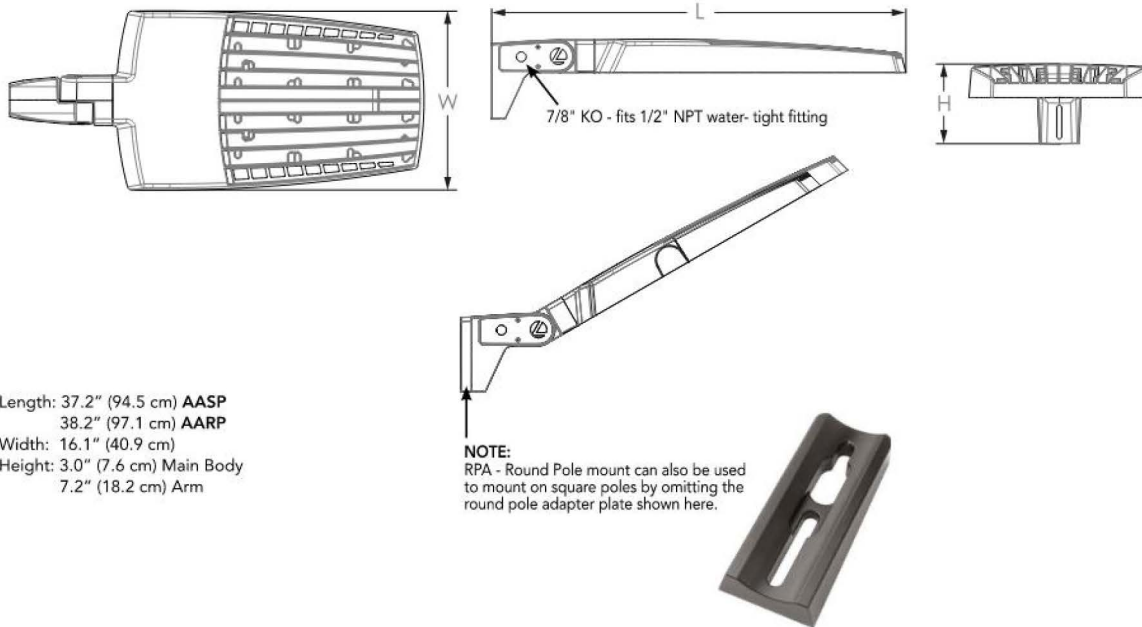
Surface Conduit Box (SCB) Mounting Detail



Pathway Poles

Dimensions

RSX3 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)

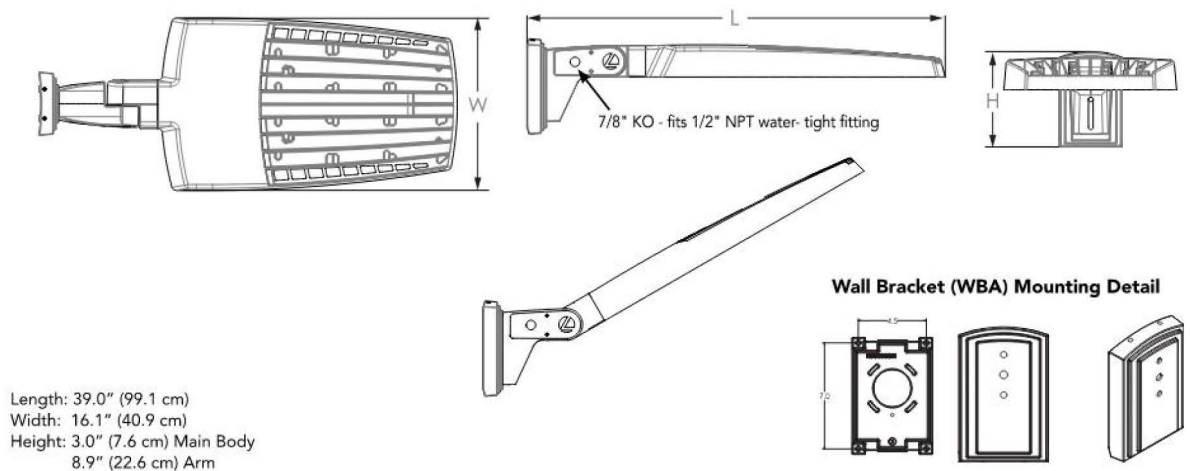


Notes

AASP: Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°. Requires 3.0" min. square pole for 1 at 90°.

AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

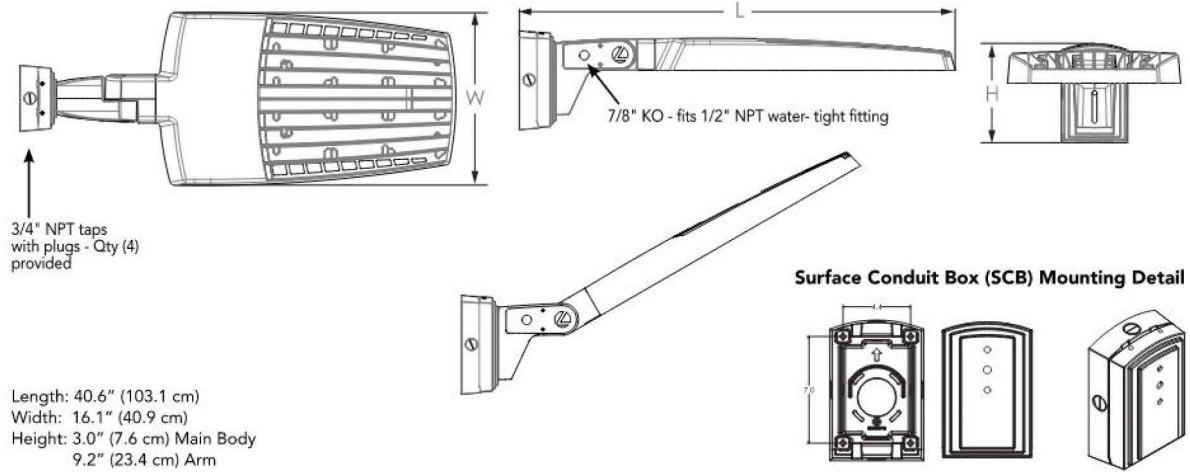
RSX3 with Adjustable Tilt Arm with Wall Bracket (AAWB)



Pathway Poles

Dimensions

RSX3 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)



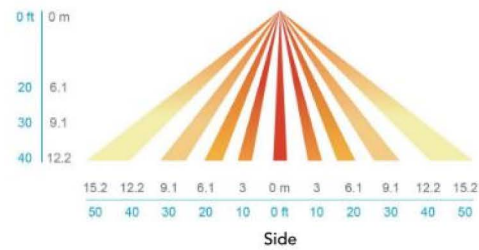
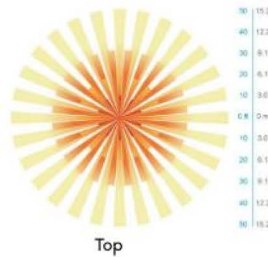
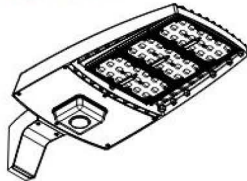
Automotive Front Row - Rotated Optics (AFRL90/R90)



Pathway Poles

nLight Control - Sensor Coverage and Settings

PIRHN nLight Sensor
Coverage Pattern
nLight PIRHN



Motion Sensor Default Settings - Option PIRHN						
Option	Dimmed State (unoccupied)	High Level (when occupied)	Photocell Operation	Dwell Time (occupancy time delay)	Ramp-up Time (from unoccupied to occupied)	Ramp-down Time (from occupied to unoccupied)
PIRHN	Approx. 30% Output	100% Output	Enabled @ 1.5FC	7.5 minutes	3 seconds	5 minutes

*Note: PIRHN default settings including photocell set-point, high/low dim rates, and occupancy sensor time delay are all configurable using the Clarity Pro App.

FEATURES & SPECIFICATIONS

INTENDED USE

The RSX LED area family is designed to provide a long-lasting, energy-efficient solution for the one-for-one replacement of existing metal halide or high pressure sodium lighting. The RSX3 delivers 25,000 to 41,000 lumens and is ideal for replacing 400W to 1000W HID pole-mounted luminaires in parking lots and other area lighting applications.

CONSTRUCTION

The RSX LED area luminaire features a rugged die-cast aluminum main body that uses heat-dissipating fins and flow-through venting to provide optimal thermal management that both enhances LED performance and extends component life. Integral "no drill" mounting arm allows the luminaire to be mounted on existing pole drillings, greatly reducing installation labor. The light engines and housing are sealed against moisture and environmental contaminants to IP66. The low-profile design results in a low EPA, allowing pole optimization. Vibration rated per ANSI C136.31: 3G Mountings: SPA, RPA, MA, IS, AASP and AARP rated for 3G vibration. 1.5G Mountings: WBA, WBASC, AAWB and AAWSC rated for 1.5G vibration.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures superior adhesion as well as a minimum finish thickness of 3 mils. The result is a high-quality finish that is warranted not to crack or peel.

COASTAL CONSTRUCTION (CCE)

Optional corrosion resistant construction is engineered with added corrosion protection in materials and/or pre-treatment of base material under super durable paint. Provides additional corrosion protection for applications near coastal areas. Finish is salt spray tested to over 5,000 hours per ASTM B117 with scribe rating of 10. Additional lead-times apply.

OPTICS

Precision acrylic refractive lenses are engineered for superior application efficiency, distributing the light to where it is needed most. Available in short and wide pattern distributions including Type 2, Type 3S, Type 4, Type 4S, Type 5, Type 5S, AFR (Automotive Front Row) and AFR rotated AFR90 and ARFL90.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted on metal-core circuit boards and aluminum heat sinks to maximize heat dissipation. Light engines are IP66 rated. LED lumen maintenance is >192/100,000 hours. CCT's of 3000K, 4000K and 5000K (minimum 70 CRI) are available. Fixtures ship standard with 0-10v dimming driver. Class 1 electronic drivers ensure system power factor >90% and THD <20%. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The RSX LED area luminaire has a wide assortment of control options. Dusk to dawn controls include MVOLT and 347V button-type photocells and NEMA twist-lock photocell receptacles.

nLIGHT AIR CONTROLS

The RSX LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing with photocell functionality and is suitable for mounting heights up to 40 feet. No commissioning is required when using factory default settings that provide basic stand-alone motion occupancy dimming that is switched on and off with a built-in photocell. See chart above for motion sensor default out-of-box settings. For more advanced wireless functionality, such as group dimming, nLight AIR can be commissioned using a smartphone and the easy-to-use CLAIRITY app. nLight AIR equipped luminaires can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclipse. Additional information about nLight Air can be found [here](#).

INSTALLATION

Integral "no-drill" mounting arm allows for fast, easy mounting using existing pole drillings. Select the "SPA" option for square poles and the "RPA" option to mount to round poles. Note that the RPA mount can also be used for mounting to square poles by omitting the RPA adapter plate. Select the "MA" option to attach the luminaire to a 2 3/8" horizontal mast arm or the "IS" option for an adjustable slipfitter that mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box offering easy installation. Can be tilted up to 90° above horizontal. Additional mountings are available including a wall bracket, adjustable tilt arm for direct-to-pole and wall and a surface conduit box for wall mount applications.

LISTINGS

CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/DLP to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only. US Patent No. D882, 146S

GOVERNMENT PROCUREMENT

BAA – Buy America(n) Act: Product with the BAA option qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product with the BAA option also qualifies as manufactured in the United States under DOT Buy America regulations. BABA – Build America Buy America: Product with the BAA option also qualifies as produced in the United States under the definitions of the Build America, Buy America Act. Please refer to www.acuitybrands.com/buy-america for additional information.

WARRANTY

5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at:

www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.



COMMERCIAL OUTDOOR

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Lithonia RSX3 Area LED
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Volleyball and Bocce Poles



Catalog #: _____ Project: _____ Type: _____
Prepared By: _____ Date: _____

ZONE™ Medium (ZNM)

Outdoor Sports Light



OVERVIEW	
Lumen Package (lm)	24,000 - 55,000
Wattage Range (W)	176 - 401
Efficacy Range (LPW)	122 - 150
Weight lbs (kg)	30 (13.6)
Control Options	IMSBT, ALB, ALS, 7-Pin, PCI



QUICK LINKS

[Ordering Guide](#)
[Performance](#)
[Photometrics](#)
[Dimensions](#)

FEATURES & SPECIFICATIONS

Construction

- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 37 lbs in carton.

Optical System

- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated seal.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types CT, 4, FT, LC and RC.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 95%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377.
- Minimum CRI of 70
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical

- High-performance driver features overvoltage, under-voltage, short-circuit and over temperature protection.
- 0-10V dimming (10% - 100%) standard.

- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L90 Calculated Life: >100k Hours (See Lumen Maintenance chart)
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 42L, 48L lumen packages rated to +40C. 55L lumen package rated to +35C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance and complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls

- Optional integral passive infrared Bluetooth™ programmable motion and photocell sensor. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- LSI's AirLink wireless control system options allow for programming and group control while reducing energy and maintenance costs and optimizing light quality (see controls section for more details).

Installation

- Designed to mount to square or round poles.

- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block (accepts up to 12 ga. wire) and 5' dimming and power leads extended to the housing exterior.
- Utilizes LSI's B3 drill pattern for easy fastening of LSI products.

Warranty

- LSI luminaires carry a 5-year limited warranty. Refer to <https://www.lsicorp.com/resources/terms-conditions-warranty/> for more information.

Listings

- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- Dark Sky compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP66 rated Luminaire per IEC 60598-1.
- 3G rated for ANSI C136.31 high vibration applications applications are qualified.
- IK08 rated luminaire per IEC 60622 mechanical impact code.
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- Patented Silicone Optics (US Patent NO. 10,816,165 B2) product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.



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Volleyball and Bocce Poles

ZONE™ Medium (ZNM) Outdoor Sports Light

 Have questions? Call us at (800) 436-7800

Type:

ORDERING GUIDE

[Back to Quick Links](#)

TYPICAL ORDER EXAMPLE: ZNM 48L CT UNV 50 ALBMR2LR BLK IH					
Prefix	Output	Distributions	Orientation	Voltage	Color Temperature
ZNM - Zone Medium	24L - 24,000 lms	CT - Court Optic	(Blank) - Standard (no rotation)	UNV - Universal Voltage (120-277V)	50 - 5,000 CCT
	30L - 30,000 lms	4 - Type 4	L - Optics rotated left 90°	HV - High Voltage (347-480V)	40 - 4,000 CCT
	36L - 36,000 lms	FT - Forward Throw	R - Optics rotated right 90°		30 - 3,000 CCT
	42L - 42,000 lms	LC - Left Corner			
	48L - 48,000 lms	RC - Right Corner			
	55L - 55,000 lms				
	Custom Lumen Packages ¹				
Controls			Finish	Options	
(Blank) - None			BLK - Black BRZ - Dark Bronze GPT - Graphite MSV - Metallic Silver PLP - Platinum Plus GRN - Green WHT - White	(Blank) - None	
Wireless Controls System				IH - Integral Half Louver (Moderate Spill Light Cutoff)	
ALSC - AirLink Synapse Control System ⁴				IL - Integral Louver (Sharp Spill Light Cutoff)	
ALSCS02 - AirLink Synapse Control System with 12-20' Motion Sensor ⁴					
ALSCS04 - AirLink Synapse Control System with 20-40' Motion Sensor ⁴					
ALBMR1LR - AirLink Blue Long Range Wireless Motion & Photo Sensor Controller (8-24' mounting height) ^{3,5}					
ALBMR2LR - AirLink Blue Long Range Wireless Motion & Photo Sensor Controller (25-40' mounting height) ^{3,5}					
Stand-Alone Controls					
EXT - 0-10v Dimming leads extended to housing exterior					
CR7P - 7 Pin Control Receptacle ANSI C136.41 ²					
IMSBTL1 - Integral Bluetooth™ Motion and Photocell Sensor max 8-24' mounting height ^{3,5}					
IMSBTL2 - Integral Bluetooth Motion and Photocell Sensor max 25-40' mounting height ^{3,5}					
 Need more information? Click here for our glossary.			Have additional questions? Call us at (800) 436-7800 		

Accessory Ordering Information⁴

CONTROLS ACCESSORIES		FUSING OPTIONS ⁵		EXTERNAL SHIELDING OPTIONS	
Description	Order Number				
Twist Lock Photocell (120V) for use with CR7P	122514	Single Fusing (120V)	See Fusing Accessory Guide	3" External Shield	See Shielding Guide
Twist Lock Photocell (208-277V) for use with CR7P	122515	Single Fusing (277V)		6" External Shield	See Shielding Guide
Twist Lock Photocell (347V) for use with CR7P	122516	Double Fusing (208V, 240V)			
Twist Lock Photocell (480V) for use with CR7P	225180	Double Fusing (480V)			
Shorting Cap for use with CR7P ¹	149528	Double Fusing (347V)			

¹ Custom lumen and wattage packages available, consult factory. Values are within industry standard tolerances but not DLC listed.
² Control device or shorting cap must be ordered separately. See Accessory Ordering Information.
³ Motion sensors are field configurable via an app that can be downloaded from your smartphone's native app store. See controls section for more details.

⁴ Accessories are shipped separately and field installed.
⁵ Fusing must be located in hand hole of pole. See [Fusing Accessory Guide](#) for compatibility.
⁶ Not available with SSL Lumen Package when 347-480V is specified.

Volleyball and Bocce Poles

ZONE™ Medium (ZNM) Outdoor Sports Light

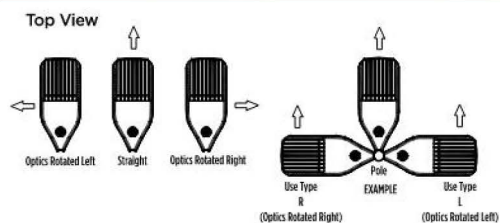
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Type:

ACCESSORIES

MOUNTING ACCESSORIES		SHIELDING, POLES & MISC. ACCESSORIES		
Side Arm	Universal Mounting Bracket Mounts to $\approx 3"$ square or round (tapered/straight) poles with (2) mounting hole spaces between 3.5" to 5"	Shielding	Integral Louver Field Install Integral Louver provides maximum backlight control by shielding each individual row of LEDs	
	Part Number: BKA UMB CLR		Part Number: 690981	
	Quick Mount Plate True one person installation to existing/new construction poles with hole spaces between 2.4 to 4.6"		Integral Half Louver Field Install Integral Half Louver provides great backlight control without impacting front side distribution.	
	Part Number: BKS PQM B3B5 XX CLR		Part Number: 743415	
Tenon / Splitter	15° Tilt Quick Mount Plate True one person installation to existing/new construction poles with hole spaces between 2.4 to 4.6"	Poles	External Shield External shield blocks view of light source from any side of luminaire, additional shielding configurations available	
	Part Number: BKS PQ15 B3B5 XX CLR		Part Number: 785970BLK (3") / 785962BLK (6")	
	B5 to B3 Retrofit Adapter Bracket Allows to seamlessly integrate LSI luminaires from B5 drill pattern to more modern and smaller B3 pattern.		Square Poles 14 - 39" steel and aluminum poles in 4", 5" and 6" sizes for retrofit and new construction	
Wall Mount / Wood Pole	Part Number: BKA B5B3 CLR	Round Poles 10 - 30" steel and aluminum poles in 4" and 5" sizes for retrofit and new construction	Part Number: 45Q/55Q/65Q	
	Adjustable Splitter Mounts onto a 2" (51mm) ID 2.375" (60mm) O.D. tenon and provides 180° of tilt (max 45° above horizontal)	Part Number: 4RP/SRP	Tapered Poles 20" - 39" steel and aluminum poles for retrofit and new construction	
	Part Number: BKA ASF CLR	Part Number: RTP	Bird Spikes 10" linear bird spike (3" recommended per luminaire) silicone adhesive (covers approximately 25" linear fee of bird spike) and application tool	
	Square Tenon Top Mounts onto a 2" (51mm) ID 2.375" (60mm) O.D. tenon and allows for mounting up to 4 luminaires	Part Number: BKA XNM *	Spike Part Number: 751631 Adhesive Part Number: 751632 Caulk Gun Part Number: 751636	
Wall Mount / Wood Pole	Square Internal Splitter Mounts inside 4" or 5" square pole and allows for mounting up to 4 luminaires			
	Part Number: BKA X_ISF * CLR			
Wall Mount / Wood Pole	Wall Mount Bracket Mounts onto vertical wall surface (hardware/anchors not included)			
	Part Number: BKS XBO WM CLR			
Wall Mount / Wood Pole	Wood Pole Bracket Mounts onto wooden poles (6" minimum OD, hardware/anchors not included)			
	Part Number: BKS XBO WP CLR			
ACCESSORIES/OPTIONS				
Integral Louver (IL) and House-Side Shield (IH)				
Integral louver (IL) and half louver (IH) accessory shields available for improved backlight control without sacrificing street side performance. LSI's Integral Louver (IL) and Integral House-Side Shield (IH) options deliver backlight control that significantly reduces spill				

OPTICS ROTATION



ACCESSORIES/OPTIONS

Integral Louver (IL) and House-Side Shield (IH)

Integral louver (IL) and half louver (IH) accessory shields available for improved backlight control without sacrificing street side performance. LSI's Integral Louver (IL) and Integral House-Side Shield (IH) options deliver backlight control that significantly reduces spill light behind the poles for applications with pole locations close to adjacent properties. The design maximizes forward reflected light while reducing glare, maintaining the optical distribution selected, and most importantly eliminating light trespass. Both options rotate

Luminaire Shown with Integral Louver (IL)



Luminaire Shown with IMSBT Option



7 Pin Photoelectric Control

7-pin ANSI C136.41-2013 control receptacle option available for twist lock photocontrols or wireless control modules. Control accessories sold separately. Dimming leads from the receptacle will be connected to the driver dimming leads (Consult factory for alternate wiring).

Luminaire Shown with CR7P



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Volleyball and Bocce Poles

ZONE™ Medium (ZNM) Outdoor Sports Light

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Type:

PERFORMANCE

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Delivered Lumens*												
Lumen Package	Distribution	CRI	3000K CCT			4000K CCT			5000K CCT			Wattage
			Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	Delivered Lumens	Efficacy	BUG Rating	
BOCCEE CT. 24L	CT	70	24939	156	B3-U0-G2	25891	162	B3-U0-G2	25855	161	B3-U0-G2	160
	FT		24994	156	B3-U0-G3	25948	162	B3-U0-G3	25911	162	B3-U0-G3	
	4		24396	152	B3-U0-G5	25600	160	B3-U0-G5	25457	159	B3-U0-G5	
	LC/RC		25885	162	B3-U0-G4	25885	162	B3-U0-G4	25310	158	B3-U0-G4	
30L	CT		31166	147	B4-U0-G3	32356	153	B4-U0-G3	32310	152	B4-U0-G3	213
	FT		31234	147	B4-U0-G4	32426	153	B4-U0-G4	32380	152	B4-U0-G4	
	4		30631	144	B3-U0-G5	32141	151	B3-U0-G5	31961	150	B3-U0-G5	
	LC/RC		32498	153	B3-U0-G5	32498	153	B3-U0-G5	31777	149	B3-U0-G5	
VOLLYBALL CT. 36L	CT		36523	144	B4-U0-G3	37918	150	B4-U0-G3	37864	149	B4-U0-G3	254
	FT		36603	144	B4-U0-G4	38000	150	B4-U0-G4	37946	149	B4-U0-G4	
	4		35403	139	B3-U0-G5	37148	146	B3-U0-G5	36941	145	B3-U0-G5	
	LC/RC		37561	147	B3-U0-G5	37561	147	B3-U0-G5	36727	144	B3-U0-G5	
42L	CT		42389	135	B4-U0-G3	44007	140	B4-U0-G3	43945	140	B4-U0-G4	314
	FT		41084	131	B4-U0-G4	42652	136	B4-U0-G4	42592	136	B4-U0-G4	
	4		41453	132	B4-U0-G5	43497	139	B4-U0-G5	43254	138	B4-U0-G5	
	LC/RC		43981	140	B4-U0-G5	43981	140	B4-U0-G5	43004	137	B4-U0-G5	
48L	CT		46622	127	B4-U0-G3	48402	133	B4-U0-G3	48333	132	B4-U0-G3	366
	FT		46723	128	B4-U0-G5	48507	133	B4-U0-G5	48438	132	B4-U0-G5	
	4		46006	126	B4-U0-G5	48275	132	B4-U0-G5	48005	131	B4-U0-G5	
	LC/RC		48812	133	B4-U0-G5	48812	133	B4-U0-G5	47728	130	B4-U0-G5	
55L	CT		52223	119	B4-U0-G3	54216	124	B4-U0-G3	54139	124	B4-U0-G3	438
	FT		50539	115	B4-U0-G5	52468	120	B4-U0-G5	52394	120	B4-U0-G5	
	4		51635	119	B4-U0-G5	54181	125	B4-U0-G5	53878	124	B4-U0-G5	
	LC/RC		54113	124	B4-U0-G5	54113	124	B4-U0-G5	52912	121	B4-U0-G5	

*LEDs are frequently updated therefore values are nominal

Electrical Data*							
Lumen Package	Wattage	120V	208V	240V	277V	347V	480V
24L	160	1.33	0.77	0.67	0.58	0.46	0.33
30L	213	1.77	1.02	0.89	0.77	0.61	0.44
36L	254	2.12	1.22	1.06	0.92	0.73	0.53
42L	314	2.62	1.51	1.31	1.13	0.90	0.65
48L	366	3.05	1.76	1.53	1.32	1.05	0.76
55L	438	3.65	2.10	1.82	1.58	1.26	0.91

*Electrical data at 25C (77F). Actual wattage may differ by +/-10%.

Recommended Lumen Maintenance 0-25°C					
Ambient Temp	Lumen Multiplier				
	0 hrs. ⁸	25K hrs. ⁹	50K hrs. ⁹	75K hrs. ¹⁰	100K hrs. ¹⁰
C					
24L-48L	101%	93%	86%	79%	72%
55L	100%	91%	82%	74%	67%

Recommended Lumen Maintenance 0-40°C					
Ambient Temp	Lumen Multiplier				
	0 hrs. ⁸	25K hrs. ⁹	50K hrs. ⁹	75K hrs. ¹⁰	100K hrs. ¹⁰
C					
24L-48L	101%	90%	81%	72%	64%

⁸ Lumen maintenance values at 40C are calculated per TM-21 based on LM-80 data and in-situ testing.

⁹ In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times the IESNA LM-80-08 total test duration for the device under testing.

¹⁰ In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times the IESNA LM-80-08 total test duration for the device under testing.



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ZONE™ Medium (ZNM) Outdoor Sports Light

Type:

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PHOTOMETRICS

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Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

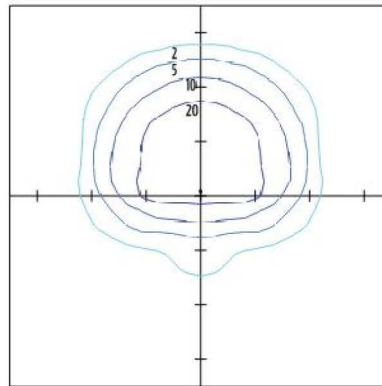
See the individual product page on <https://www.lsicorp.com/> for detailed photometric data.

ZNM-48L-CT-40

Luminaire Data	
Wide Distribution	
Description	4,000 Kelvin, 70 CRI
Delivered Lumens	48,211
Watts	400
Efficacy	121
IES Type	Type III - Very Short
BUG Rating	B4-U0-G3

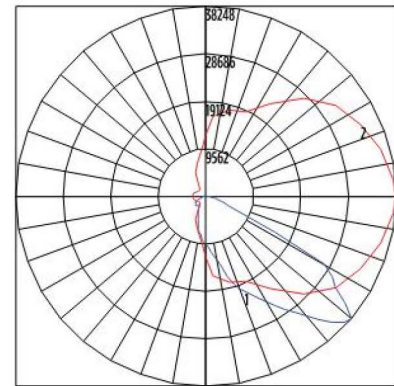
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	9897	21%
Medium (30-60°)	32201	67%
High (60-80°)	5593	12%
Very High (80-90°)	520	1%
Uplight (90-180°)	0	0%
Total Flux	48211	100%

ISO Footcandle



20' Mounting Height / 15' Grid Spacing
 20 FC 10 FC 5 FC 2 FC

Polar Curve



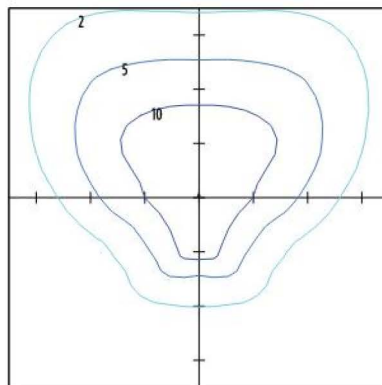
Vertical Plane Horizontal Cone

ZNM-48L-FT-40

Luminaire Data	
Wide Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	48,055
Watts	400
Efficacy	120
IES Type	Type IV - Short
BUG Rating	B4-U0-G5

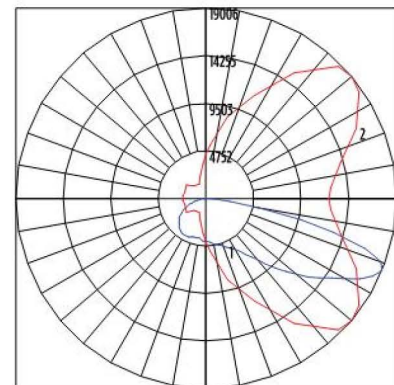
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	6199	13%
Medium (30-60°)	20250	42%
High (60-80°)	20684	43%
Very High (80-90°)	922	2%
Uplight (90-180°)	0	0%
Total Flux	48055	100%

ISO Footcandle



20' Mounting Height / 15' Grid Spacing
 20 FC 10 FC 5 FC 2 FC

Polar Curve



Vertical Plane Horizontal Cone



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Volleyball and Bocce Poles

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Type:

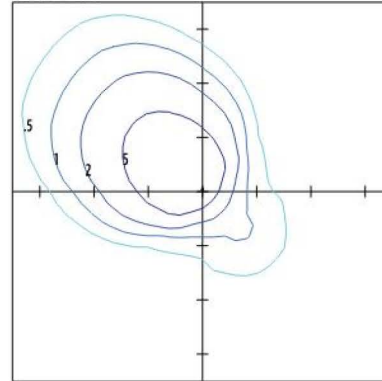
PHOTOMETRICS

ZNM-30L-SIL-LC-40-70CRI

Luminaire Data	
Left Corner Distribution	
Description	4,000 Kelvin, 70 CRI
Delivered Lumens	32,498
Watts	213
Efficacy	153
IES Type	N/A
BUG Rating	B3-U0-G5

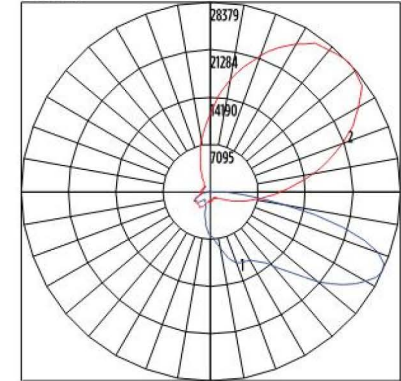
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	5083	16%
Medium (30-60°)	14808	46%
High (60-90°)	11603	36%
Very High (90-180°)	1005	3%
Uplight (90-180°)	0	0%
Total Flux	32498	100%

ISO Footcandle



25' Mounting Height / 25' Grid Spacing
 5 FC 2 FC 1 FC 0.5 FC

Polar Curve



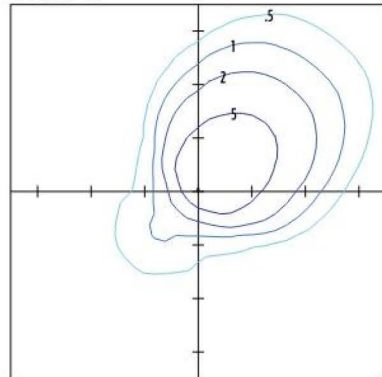
Vertical Plane Horizontal Cone

ZNM-30L-SIL-RC-40-70CRI

Luminaire Data	
Right Corner Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,498
Watts	213
Efficacy	153
IES Type	N/A
BUG Rating	B3-U0-G5

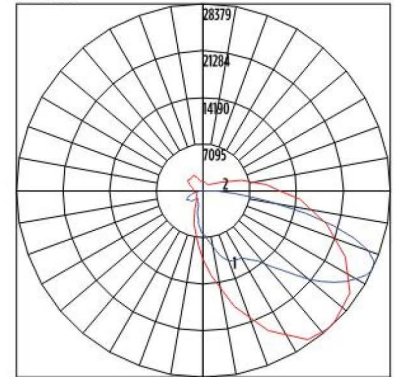
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	5083	16%
Medium (30-60°)	14808	46%
High (60-90°)	11603	36%
Very High (90-180°)	1005	3%
Uplight (90-180°)	0	0%
Total Flux	32498	100%

ISO Footcandle



25' Mounting Height / 25' Grid Spacing
 5 FC 2 FC 1 FC 0.5 FC

Polar Curve



Vertical Plane Horizontal Cone



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 SPEC.1117.A.0323

Volleyball and Bocce Poles



Catalog #: _____ Project: _____ Type: _____
Prepared By: _____ Date: _____

PHOTOMETRICS

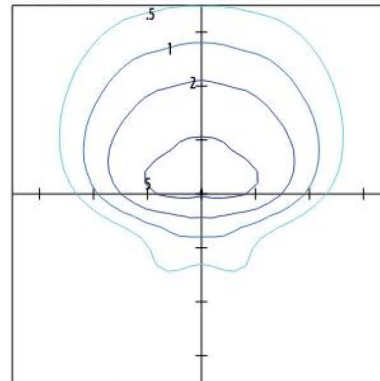
[Back to Quick Links](#)

ZNM-30L-SIL-4-40-70CRI

Luminaire Data	
Type 4 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,141
Watts	213
Efficacy	151
IES Type	Type IV - Very Short
BUG Rating	B3-U0-G5

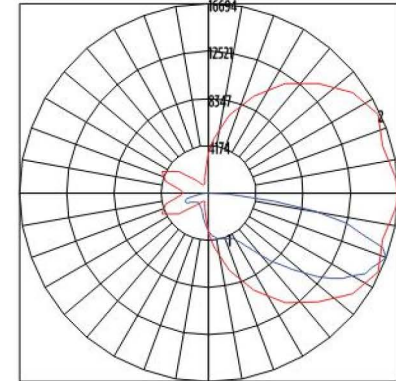
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	3119	10%
Medium (30-60°)	13569	42%
High (60-80°)	13649	42%
Very High (80-90°)	1804	6%
Uplight (90-180°)	0	0%
Total Flux	32141	100%

ISO Footcandle



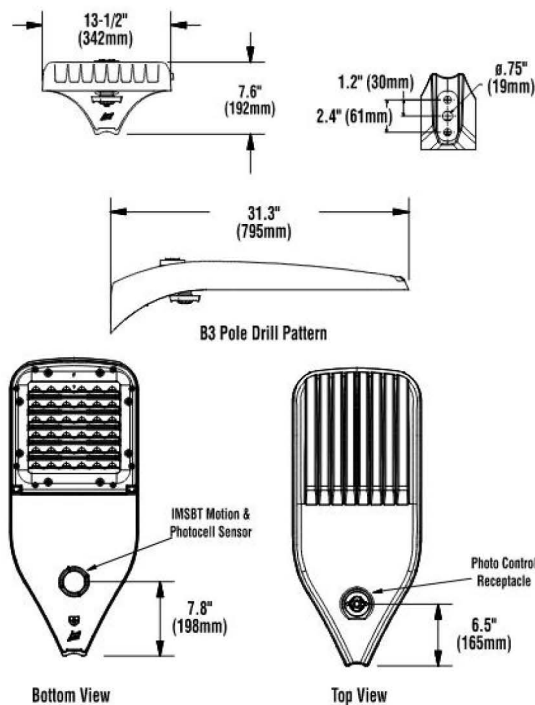
Z5' Mounting Height / Z5' Grid Spacing
■ 5 FC ■ 2 FC ■ 1 FC ■ 0.5 FC

Polar Curve



■ Vertical Plane ■ Horizontal Cone

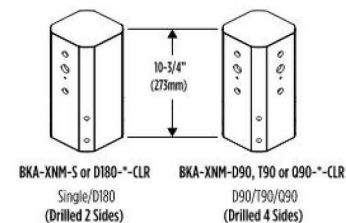
PRODUCT DIMENSIONS



Luminaire EPA Chart

Tilt Degree	0°	15°	30°	45°
Single	0.5	1.0	1.5	1.9
D180°	1.0	2.0	2.6	3.4
D90°	0.8	2.0	2.6	3.4
T90°	1.0	2.2	2.8	3.4
TN120°	1.0	2.5	3.6	4.4
O90°	1.0	2.2	2.8	3.4

TENON BRACKETS (with 3" Reduced Drill Pattern)
BKA-XNM-CLR - Tenon mount fitter slip-fits 2-3/8" O.D. tenon (2.0 pipe tenon).



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Volleyball and Bocce Poles

ZONE™ Medium (ZNM) Outdoor Sports Light

 Have questions? Call us at (800) 436-7800

Type:

CONTROLS

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Integral Bluetooth™ Motion and Photocell Sensor (IMSBTxL)

Slim low profile sensor provides multi-level control based on motion and/or daylight. Sensor controls 0-10 VDC LED drivers and is IP66 rated for cold and wet locations (-40°F to 167°F). Two unique PIR lenses are available and used based on fixture mounting height. All control parameters are adjustable via an iOS or Android App capable of storing and transmitting sensor profiles.

[Click here to learn more details about IMSBT](#)



LEVITON App



Apple



Android

AirLink Blue (ALBMRxLR, ALBCSx)

Wireless Bluetooth Mesh Outdoor Lighting Control System that provides energy savings, code compliance and enhanced safety/security for parking lots and parking garages. Three key components; Bluetooth wireless radio/sensor controller, Time Keeper and an iOS App. Capable of grouping multiple fixtures and sensors as well as scheduling time-based events by zone. Radio/Sensor Controller is factory integrated into Area/ Site, Wall Mounted, Parking Garage and Canopy luminaires.

[Click here to learn more details about AirLink Blue](#)



AirLink Blue App



Apple

Sensor Sequence of Operations

Standard Programming	On Event	Off Event	On Light Level	Dim Light Level	Daylight Harvesting	Delay To Off	Sensitivity
OMSBTxL/IMSBTxL	Motion	No Motion	100%	N/A	On; Auto Calibration	20 minutes	High
OMS	Motion	No Motion	N/A	N/A	N/A	30 seconds	Auto

Operation	Description
On Event	Trigger that activates lights to turn on; either automatic via motion detected or manually activated via push of button.
Off Event	Trigger that activates lights to turn off; either automatic via no motion detected or manually activated via push of button.
On Light Level	The light level that the fixtures will turn on to when ON EVENT occurs.
Dim Light Level	The light level that the fixtures will dim down to when no motion is detected.
Delay to Dim	The amount of time after which no motion is detected that the fixtures will be triggered to dim down. This sequence is optional, and sensor can be programmed to only trigger the fixture to turn off by entering 100% in this field.
Delay to Off	The amount of time after which no motion is detected that the fixtures will be triggered to turn off. If delay to dim is part of the programmed functionality, this is the amount of time after which no motion is detected after the fixture have already dimmed down.
Sensitivity	The sensitivity can be set to high, medium, low, or auto where applicable. High will detect smaller, simple motions. Low will only detect larger more complex motions. Auto temperature calibration adjusts the PIR sensitivity as ambient temperature rises to increase detection of heat movement through the field of view.



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Soccer Poles



Catalog #: _____ Project: _____ Type: _____
Prepared By: _____ Date: _____

Zone Sports Flood (ZNF)

Outdoor Sports Flood Light



FC CE IP66 IK08



OVERVIEW	
Lumen Package (lm)	75,000 -110,000
Wattage Range (W)	433 - 783
Efficacy Range (LPW)	137 - 170
Fixture Weight lbs (kg)	36.4 (16.5)
EPA	2.8

QUICK LINKS

[Ordering Guide](#)
[Performance](#)
[Photometrics](#)
[Dimensions](#)

FEATURES & SPECIFICATIONS

Construction

- Rugged die-cast aluminum housing.
- Driver is separated from light engines increasing driver and LED life
- Die-cast electrical compartment can be integral or remote to fixture
- Mounting Brackets are 12 ga. formed steel
- Fixtures are finished with polyester powder coat finishing process to withstand extreme weather changes without cracking or peeling
- 9 ft. power cord included with the fixture
- Shipping weight (in carton) - 40.8 lbs

Optical System

- State-of-the-Art sports flood optics available in 5 unique NEMA flood distributions
- Optional glare shield visor is formed aluminum to reduce high angle glare
- Available in 5000K CCT
- Minimum CRI of 70

Electrical

- 0-10V dimming (10% - 100%) standard.
- Universal Voltage (120-277 VAC) Input 50/60 Hz or High Voltage (347-480 VAC).
- Operating temperature: -40°C to +45°C (-40°F to +113°F).
- L80 Calculated Life: >100K Hours

- Total harmonic distortion: <20%
- High-performance driver features overvoltage, under-voltage, short-circuit and over temperature protection.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 20kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation for long life
- Driver is fully encased in potting material for moisture resistance and complies with FCC standards.

Controls

- LSI's AirLink wireless control system options allow for programming and group control while reducing energy and maintenance costs and optimizing light quality (see controls section for more details).
- Dynamic Behaviors allow you to create and save scenes for events like scoring, player introductions, halftime shows and other special events.

Installation

- Heavy duty yoke mounting to standard sports bracket with 3/4" bolt
- Integral driver units come with rear handle design for ease of installation and carrying

- Stepless horizontal and vertical adjustment for precise aiming. Optional laser sight for enhanced aiming accuracy
- Optional adjustable slip fitter for mounting to 2 3/8" tenons

Warranty

- LSI luminaires carry a 5-year limited warranty. Refer to <https://www.lsicorp.com/resources/terms-conditions-warranty/> for more information.

Listings

- Listed to UL 1598 and UL 8750
- Suitable for wet locations
- IP66 rated Luminaire per IEC 60598-1
- Meets Buy American Act requirements
- DLC Pending



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Soccer Poles

Zone Sports Flood (ZNF) Outdoor Sports Flood Light

Type:

 **Have questions?** Call us at (800) 436-7800

ORDERING GUIDE

[Back to Quick Links](#)

TYPICAL ORDER EXAMPLE: ZNF 110L MF UNV 50 BLK						
Prefix	Output	Distributions	Voltage	Color Temperature	Finish	Options
ZNF - Zone Sports Flood	75L - 75,000 lumens 90L - 90,000 lumens 110L - 110,000 lumens ² Custom Lumen Outputs Available ¹	VNF - 2x2 Very Narrow Flood NF - 3x3 Narrow Flood MF - 4x4 Medium Flood MWF - 5x5 Medium Wide Flood WF - 6x6 Wide Flood	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)	50 - 5000K	BLK - Black	CR7P - 7 Pin Control Receptacle ANSI C136.411 ALSDC - AirLink Integral Controller ² ALSDC DB - AirLink Synapse Integral Controller and Dynamic Behaviors Drivers ² RD - Remote Drivers ³ NM - No Mounting (for use with tenon/slip fitter mounting accessories)



Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800



ACCESSORY ORDERING INFORMATION

Part Number	Description
831028	Laser Sight
831029	Glare Shield Visor
831030	Tenon Top Adapter / Slip Fitter (Specify No Mounting)
79269003	ZNF 2/3 Light Wood and Steel Pole Bracket
79269005	ZNF 4/5 Light Wood and Steel Pole Bracket
137105BLK	2 Light Tenon Top Bracket (Black Finish)
137107BLK	3 Light Tenon Top Bracket (Black Finish)
137108BLK	4 Light Tenon Top Bracket (Black Finish)



CONTROLS ACCESSORIES ORDERING INFORMATION⁴

Part Number	Description
122514	Twist Lock Photocell (120V) for use with CR7P
122515	Twist Lock Photocell (208-277) for use with CR7P
122516	Twist Lock Photocell (347V) for use with CR7P
1225180	Twist Lock Photocell (480V) for use with CR7P
661409	AirLink 5 Pin Twist Lock Controller
661410	AirLink 7 Pin Twist Lock Controller
149328	Shorting Cap for use with CR7P
ALSSM WIFI-VER-CEL	AirLink Synapse Central Base Station
ALS RMT ACCESS	AirLink Synapse Remote Access 12 mon th subscription
ALS DYN SCENE	AirLink Synapse Dynamic Behavior Software



REMOTE DRIVER ACCESSORIES ORDERING INFORMATION³

Part Number	Description
831031	35' Extension Cord
831032	60' Extension Cord

1. Not available with remote driver option. Control device or shorting cap must be ordered separately. See accessory ordering information.

2. AirLink Synapse central base station, remote access subscription and/or dynamic behavior software must be ordered separately.

3. Remote driver/back housing ships separately from front housing and yoke mount. Extension cord and/or remote driver/distribution box must be ordered separately.

4. Accessories are shipped separately and field installed.



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Soccer Poles

Zone Sports Flood (ZNF) Outdoor Sports Flood Light

Type :

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PERFORMANCE

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DELIVERED LUMENS *							
Lumen Package	Distribution	NEMA	Field Angle H x V	5000K CCT			Wattage
				Delivered Lumens	Efficacy	Max Beam Candlepower	
75L	VNF	2x2	28x28	73,693	170	778,954	433
	VNF-GS	2x2	28x27	71,023	164	793,224	
	NF	4x4	40x40	68,526	149	375,488	
	NF-GS	4x4	40x49	65,784	158	375,678	
	MF	4x4	56x56	77,401	146	204,067	469
	MF-GS	4x4	55x53	71,716	165	207,123	
	MWF	5x5	87x87	74,180	153	91,424	
	MWF-GS	5x5	84x81	68,377	158	92,470	
	WF	6 x 6	118 x 118	72,855	146	56,178	
WF-GS	6 x 6	109 x 105	65,184	155	56,722		
90L	VNF	2x2	28x28	87,215	139	930,394	532
	VNF-GS	2x2	28x27	84,055	158	938,772	
	NF	4x4	40x40	81,100	152	444,387	
	NF-GS	4x4	40x49	77,855	146	444,613	
	MF	4x4	56x56	92,329	140	244,990	584
	MF-GS	4x4	55x53	85,547	158	245,189	
	MWF	5x5	87x87	88,487	148	109,056	
	MWF-GS	5x5	84x81	81,517	151	110,240	
	WF	6 x 6	118 x 118	86,906	139	67,013	
WF-GS	6x6	109 x 105	77,756	149	67,662		
110L	VNF	2x2	28x28	111,765	133	1,200,380	752
	VNF-GS	2x2	28x27	107,715	153	1,203,020	
	NF	4x4	40x40	103,622	147	569,478	
	NF-GS	4x4	40x49	99,770	130	569,277	
	MF	4x4	56x56	115,561	148	308,603	783
	MF-GS	4x4	55x53	107,073	142	308,792	
	MWF	5x5	87x87	110,752	136	136,358	
	MWF-GS	5x5	84x81	102,029	148	137,625	
	WF	6 x 6	118 x 118	108,774	137	83,822	
WF-GS	6 x 6	109 x 105	97,321	124	84,687		

*LEDs are frequently updated therefore values are nominal

ELECTRICAL DATA*							
Lumen Level	Watts	120V	208V	240V	277V	347V	480V
75L	450	3.75	2.16	1.88	1.62	1.30	0.94
90	550	4.58	2.64	2.29	1.99	1.59	1.15
110L	750	6.25	3.61	3.13	2.71	2.16	1.56

*Electrical data at 25°C (77°F). Actual wattage may differ by +/-10%.

RECOMMENDED LUMEN MAINTENANCE (MF, MWF, WF) ¹					
Ambient Temp C	Initial ²	25K hr ²	50K hr ²	75K hr ²	100K hr ²
0-25 C	100%	100%	99%	98%	98%

RECOMMENDED LUMEN MAINTENANCE (VNF, NF) ¹					
Ambient Temp C	Initial ²	25K hr ²	50K hr ²	75K hr ²	100K hr ²
0-25 C	100%	95%	90%	85%	80%

- Lumen maintenance values at 25°C are calculated per TM-21 based on LM-80 and in-situ testing.
- In accordance with IESNA TM-21-11, projected values represent interpolated value based on time durations that are within six times the IESNA LM-80-08 total test duration for the device under testing.
- In accordance with IESNA TM-21-11, calculated values represent time durations that exceed six times the IESNA LM-80-08 total test duration for the device under testing.



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Soccer Poles

Zone Sports Flood (ZNF) Outdoor Sports Flood Light

Type:

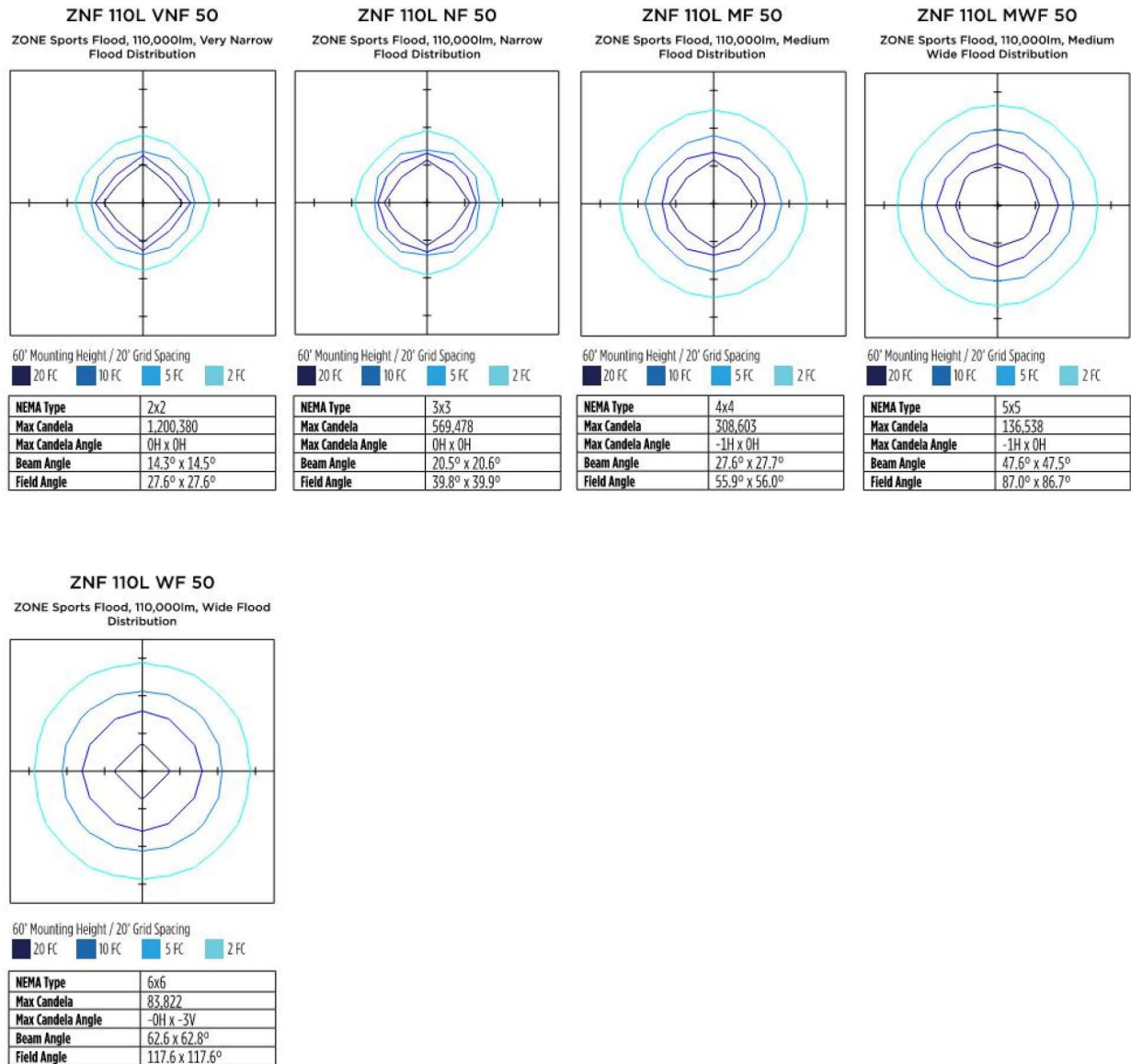
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PHOTOMETRICS

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Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

See the individual product page on <https://www.lsicorp.com/> for detailed photometric data.



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Zone Sports Flood (ZNF) Outdoor Sports Flood Light

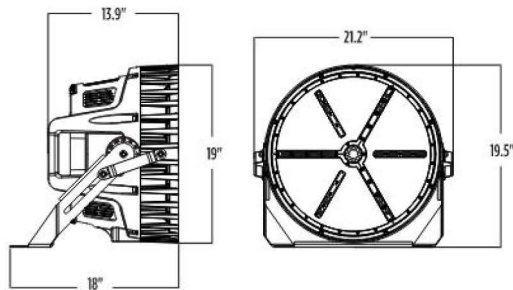
Type:

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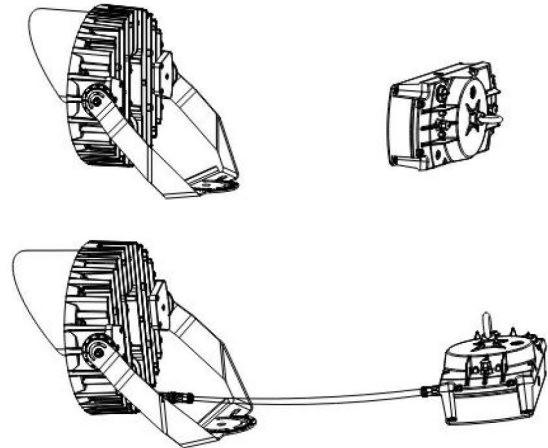
PRODUCT DIMENSIONS

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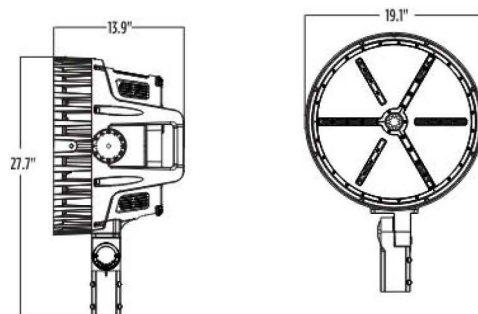
INTEGRAL DRIVER



REMOTE DRIVER



SLIP FITTER MOUNT



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Soccer Poles

Zone Sports Flood (ZNF) Outdoor Sports Flood Light

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Type:

ADDITIONAL INFORMATION

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INTEGRAL DRIVER



REMOTE DRIVER



Central Base Station (ALS CBS WIFI VER CELL)



Embedded Light Controller and Dynamic Behaviors Driver *(ALSC) **(ALSC DB)



Wireless Digital Lighting Controller (Factory installed in luminaire)

The Central Base Station can be installed anywhere you need wireless push-button lighting control, such as municipal ballparks, hockey arenas, basketball facilities, and other multi-use complexes. The heart of the Central Base Station is the AirLink Synapse Site Manager, contained in the NEMA 4X enclosure. A bank of 5 buttons enables manual access to the site lighting controls. The Central Base Station makes it easy for electricians to quickly install the site controller and enables quick and simple access to a switch station that can be programmed to meet the needs of the end-user.

The ALSC is a California Title 24 compliant lighting controller that provides real-time light monitoring and control with utility-grade power monitoring. It includes a 24V sensor input and power supply to connect up to two (2) sensors into the outdoor AirLink wireless lighting system.



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APPENDIX B: TITLE 24, PART 11, SECTION 5.106.8

Chapter 5 Nonresidential Mandatory Measures

5.106.8 Light pollution reduction.

[N] Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the *California Energy Code* for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the *California Administrative Code*; and
2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8);
3. Uplight and Glare ratings as defined in *California Energy Code* (shown in Tables 130.2-A and 130.2-B in Chapter 8) and
4. Allowable BUG ratings not exceeding those shown in Table 5.106.8 [N], or

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

Exceptions:

1. Luminaires that qualify as exceptions in Sections 130.2(b) and 140.7 of the *California Energy Code*.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the *California Energy Code*, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.
5. Luminaires with less than 6,200 initial luminaire lumens.

TABLE 5.106.8 [N] MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS^{1,2}

ALLOWABLE RATING	LIGHTING ZONE LZ0	LIGHTING ZONE LZ1	LIGHTING ZONE LZ2	LIGHTING ZONE LZ3	LIGHTING ZONE LZ4
Maximum Allowable Backlight Rating (B)					
Luminaire greater than 2 mounting heights (MH) from property line	N/A	No Limit	No Limit	No Limit	No Limit
Luminaire back hemisphere is 1 – 2 MH from property line	N/A	B2	B3	B4	B4
Luminaire back hemisphere is 0.5 – 1 MH from property line	N/A	B1	B2	B3	B3
Luminaire back hemisphere is less than 0.5 MH from property line	N/A	B0	B0	B1	B2
Maximum Allowable Uplight Rating (U)					
For area lighting ³	N/A	U0	U0	U0	U0
For all other outdoor lighting, including decorative luminaires	N/A	U1	U2	U3	U4
Maximum Allowable Glare Rating (G)					
Luminaire greater than 2 MH from property line	N/A	G1	G2	G3	G4
Luminaire front hemisphere is 1 – 2 MH from property line	N/A	G0	G1	G1	G2
Luminaire front hemisphere is 0.5 – 1 MH from property line	N/A	G0	G0	G1	G1
Luminaire front hemisphere is less than 0.5 MH from property line	N/A	G0	G0	G0	G1

1. IESNA Lighting Zones 0 are not applicable; refer to Lighting Zones as defined in the *California Energy Code* and Chapter 10 of the *California Administrative Code*.

2. 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.

3. General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaires located in these areas shall meet U-value limits for "all other outdoor lighting."

APPENDIX C: TITLE 24, PART 6, SECTION 140.7

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.

APPENDIX D: TITLE 24, PART 6, SECTION 130.2

SECTION 130.2 – OUTDOOR LIGHTING CONTROLS AND EQUIPMENT

Nonresidential and hotel/motel buildings shall comply with the applicable requirements of Sections 130.2(a) through 130.2(c).

(a) **Reserved.**

(b) **Luminaire shielding requirements.** All outdoor luminaires of 6,200 initial luminaire lumens or greater shall comply with backlight, uplight and glare (BUG) in accordance with ANSI/IES TM-15-20, Annex A requirements in accordance with Title 24, Part 11, Section 5.106.8.

Exception 1 to Section 130.2(b): Signs.

Exception 2 to Section 130.2(b): Lighting for building facades, public monuments, public art, statues and vertical surfaces of bridges.

Exception 3 to Section 130.2(b): Lighting not permitted by a health or life safety statute, ordinance or regulation to be a cutoff luminaire.

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

Exception 5 to Section 130.2(b): Replacement of existing pole mounted luminaires in hardscape areas meeting all of the following conditions:

- A. Where the existing luminaire does not meet the luminaire BUG requirements in Section 130.2(b); and
- B. Spacing between existing poles is greater than six times the mounting height of the existing luminaires; and
- C. Where no additional poles are being added to the site; and
- D. Where new wiring to the luminaires is not being installed; and
- E. Provided that the connected lighting power wattage is not increased.

Exception 6 to Section 130.2(b): Luminaires that illuminate the public right of way including publicly-maintained or utility-maintained roadways, sidewalks and bikeways.

Exception 7 to Section 130.2(b): Outdoor lighting attached to a hotel/motel building and separately controlled from the inside of a guest room.

(c) **Controls for outdoor lighting.** Outdoor lighting shall be independently controlled from other electrical loads, and the controls for outdoor lighting shall meet the following functional requirements:

Exception 1 to Section 130.2(c): Outdoor lighting not permitted by a health or life safety statute, ordinance or regulation to be turned OFF or reduced.

Exception 2 to Section 130.2(c): Lighting in tunnels required to be illuminated 24 hours per day and 365 days per year.

1. **Daylight availability.** All installed outdoor lighting shall be controlled by a photo control, astronomical time-switch control, or other control capable of automatically shutting OFF the outdoor lighting when daylight is available.
2. **Automatic scheduling controls.**
 - A. Automatic scheduling controls shall be installed for all outdoor lighting. Automatic scheduling controls may be installed in combination with motion sensing controls or other outdoor lighting controls.
 - B. Automatic scheduling controls shall be capable of reducing the outdoor lighting power by at least 50 percent and no more than 90 percent, and separately capable of turning the lighting OFF, during scheduled unoccupied periods.

APPENDIX E: TITLE 24, PART 1, TABLE 10-114-A

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.~~

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

Zone	Ambient Illumination	State wide 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	<u>Rural areas, as defined by the 2010 U.S. Census. These areas include: single or dual family residential areas, parks, and agricultural zone districts.</u> Developed 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. <u>Retail stores, located in a residential neighborhood, and rural town centers, as defined by the 2010 U.S. Census, can be designated as LZ2 if the business operates during hours of darkness.</u>	Not applicable.
LZ2	Moderate	Rural areas Urban clusters, as defined by the 2010 U.S. Census. <u>The following building types may occur here: multifamily housing, mixed use residential neighborhoods, religious facilities, schools, and light commercial business districts or industrial zoning districts.</u>	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 <u>rural mixed-use residential area or city center.</u>	Special districts and government designated parks within a default LZ2 zone may be designated as LZ1 by the local jurisdiction, <u>for lower illumination standards</u> , without any size limits.
LZ3	Moderately High	Urban areas, as defined by the 2010 U.S. Census. <u>The following building types may occur here: high intensity commercial corridors, entertainment centers, and heavy industrial or manufacturing zone districts.</u>	Special districts within a default LZ3 may be designated as a 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.

NOTE: 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 F: IESNA TABLE 26.5, LIGHT TRESPASS

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 G: OMITTED

APPENDIX H: LIGHT TRESPASS ILLUMINANCE CALCULATION DATA

Project exterior lighting illuminance data presented below is derived from the lighting illuminance calculations prepared as per the methods described in Section 9 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 Project to the vertical plane where Light Trespass illuminance is under review. Grid data is displayed at ten feet on center, vertical and horizontal.

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Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	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	0.00	0.00	0.00
	105	0.00	0.00	0.00	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	0.00	0.00	0.00
	85	0.00	0.00	0.00	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	0.00	0.00	0.00
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	15	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

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Horizontal (ft)		115	125	135	145	155	165	175	185	195	205	215
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	105	0.00	0.00	0.00	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	0.00	0.10	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	0.10	0.10	0.10
	75	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

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Horizontal (ft)		225	235	245	255	265	275	285	295	305	315	325
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	155	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	135	0.00	0.10	0.10	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	0.10	0.10	0.10
	115	0.10	0.10	0.10	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	0.10	0.10	0.10
	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
	55	0.10	0.10	0.10	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	0.20	0.20	0.20	0.20	0.20
	35	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	25	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	15	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	5	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00

VP-N1
Phase 1 - 4

Horizontal (ft)		335	345	355	365	375	385	395	405	415	425	435
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	185	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10
	95	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	85	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30
	35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
	25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
	15	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N1
Phase 1 - 4

Horizontal (ft)		445	455	465	475	485	495	505	515	525	535	545
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	205	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.20	0.20	0.20	0.20	0.20
	105	0.10	0.20	0.20	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	0.20	0.20	0.20
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.20
	45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	35	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	25	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



VP-N1
Phase 1 - 4

Horizontal (ft)		555	565	575	585	595	605	615	625	635	645	655
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	95	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	35	0.30	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



VP-N1
Phase 1 - 4

Horizontal (ft)		665	675	685	695	705	715	725	735	745	755	765
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	345	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	335	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.00
	45	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



VP-N1
Phase 1 - 4

Horizontal (ft)		775	785	795	805	815	825	835	845	855	865	875
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	345	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	335	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N1
Phase 1 - 4

Horizontal (ft)		885	895	905	915	925	935	945
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.10	0.10	0.10	0.10	0.10	0.10	0.00
	345	0.10	0.10	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.10	0.10	0.00	0.00	0.00	0.00	0.00
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	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	0.10
	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	0.00	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
	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

VP-W1
Phase 1 - 4

Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105
Vertical (ft)	295	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	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	0.00	0.00	0.00
	105	0.00	0.00	0.00	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	0.00	0.00	0.00
	85	0.00	0.00	0.00	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	0.00	0.00	0.00
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		115	125	135	145	155	165	175	185	195	205	215
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	135	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	125	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	115	0.00	0.00	0.00	0.00	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	0.10	0.10	0.10
	95	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		225	235	245	255	265	275	285	295	305	315	325
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	175	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	135	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	125	0.10	0.10	0.10	0.10	0.00	0.00	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.10
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		335	345	355	365	375	385	395	405	415	425	435
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		445	455	465	475	485	495	505	515	525	535	545
Vertical (ft)	295	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	285	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	275	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	265	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	255	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	245	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	235	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	225	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
	135	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
	125	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	115	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	105	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	95	0.10	0.10	0.10	0.10	0.10	0.10	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	0.20	0.20	0.20
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
	65	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.00	0.00	0.00	0.00	0.20	0.20	0.20	0.20	0.20	0.30	0.30
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.30	0.20
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		555	565	575	585	595	605	615	625	635	645	655
Vertical (ft)	295	0.30	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	285	0.30	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	275	0.20	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	265	0.20	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.40	0.40
	255	0.20	0.20	0.30	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	245	0.20	0.20	0.30	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	235	0.20	0.20	0.20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	225	0.20	0.20	0.20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	215	0.20	0.20	0.20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	205	0.20	0.20	0.20	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
	195	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	185	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	175	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	165	0.10	0.20	0.20	0.30	0.30	0.20	0.30	0.30	0.30	0.30	0.30
	155	0.20	0.20	0.20	0.30	0.30	0.20	0.30	0.30	0.30	0.30	0.30
	145	0.20	0.20	0.20	0.30	0.30	0.20	0.30	0.30	0.30	0.30	0.30
	135	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	125	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	115	0.20	0.20	0.20	0.40	0.40	0.30	0.40	0.40	0.40	0.30	0.30
	105	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30
	95	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	85	0.20	0.20	0.20	0.30	0.30	0.40	0.40	0.30	0.30	0.30	0.30
	75	0.20	0.20	0.20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	65	0.20	0.20	0.20	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50
	55	0.20	0.30	0.40	0.60	0.60	0.60	0.50	0.50	0.50	0.50	0.40
	45	0.30	0.20	0.30	0.30	0.30	0.20	0.20	0.30	0.30	0.30	0.30
	35	0.20	0.20	0.10	0.20	0.20	0.20	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	0.00	0.00	0.00
	15	0.00	0.00	0.00	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	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		665	675	685	695	705	715	725	735	745	755	765
Vertical (ft)	295	0.50	0.50	0.50	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	285	0.50	0.50	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	275	0.50	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	265	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	255	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	245	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	235	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	225	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30
	215	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30
	205	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	195	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	185	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	175	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	165	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	155	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	145	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	135	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20
	125	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.30	0.30
	115	0.30	0.30	0.30	0.30	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	0.30	0.30	0.30
	95	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	85	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20
	75	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
	65	0.50	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.40	0.40	0.40
	55	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
	45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.30
	35	0.30	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	25	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		775	785	795	805	815	825	835	845	855	865	875
Vertical (ft)	295	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
	285	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
	275	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.20
	265	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.20
	255	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.20	0.20
	245	0.40	0.40	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	235	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	225	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20
	215	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	205	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	195	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	185	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	175	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	165	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10
	155	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10
	145	0.20	0.20	0.20	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	0.20	0.20	0.20	0.20	0.10
	125	0.20	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	115	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20
	105	0.30	0.30	0.30	0.30	0.30	0.30	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	0.20	0.20	0.20
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.40	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	55	0.30	0.40	0.40	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10
	15	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		885	895	905	915	925	935	945	955	965	975	985
Vertical (ft)	295	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	285	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	275	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	265	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	255	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	245	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	235	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10
	225	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10
	215	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	205	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	195	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	115	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10
	105	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	95	0.20	0.20	0.20	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	0.10	0.10	0.10
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.10	0.10
	35	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.10	0.10	0.10	0.10

VP-W1
Phase 1 - 4

Horizontal (ft)		995	1005	1015	1025	1035	1045	1055	1065	1075	1085	1095
Vertical (ft)	295	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.10	0.00

VP-W1
Phase 1 - 4

Horizontal (ft)		1105	1115	1125	1135	1145	1155	1165	1175	1185	1195	1205
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00
	175	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	135	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	125	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	115	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	105	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00
	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00

VP-N1

Phase 5 & 6

Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	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	0.00	0.00	0.00
	105	0.00	0.00	0.00	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	0.00	0.00	0.00
	85	0.00	0.00	0.00	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	0.00	0.00	0.00
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	15	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

VP-N1

Phase 5 & 6

Horizontal (ft)		115	125	135	145	155	165	175	185	195	205	215
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	105	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	95	0.00	0.00	0.00	0.00	0.00	0.10	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	0.10	0.10	0.10
	75	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	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	0.10	0.10	0.10

VP-N1

Phase 5 & 6

Horizontal (ft)		225	235	245	255	265	275	285	295	305	315	325
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	155	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	135	0.00	0.10	0.10	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	0.10	0.10	0.10
	115	0.10	0.10	0.10	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	0.10	0.10	0.10
	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
	55	0.10	0.10	0.10	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	0.20	0.20	0.20	0.20	0.20
	35	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	25	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	15	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	5	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00

VP-N1

Phase 5 & 6

Horizontal (ft)		335	345	355	365	375	385	395	405	415	425	435
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	185	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10
	95	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	85	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30
	35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
	25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
	15	0.20	0.20	0.20	0.30	0.20	0.30	0.30	0.30	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



VP-N1

Phase 5 & 6

Horizontal (ft)		445	455	465	475	485	495	505	515	525	535	545
Vertical (ft)	405	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	335	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	215	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	105	0.10	0.20	0.20	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	0.20	0.20	0.20
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20
	45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	35	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	25	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



VP-N1

Phase 5 & 6

Horizontal (ft)		555	565	575	585	595	605	615	625	635	645	655
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	345	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	335	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	115	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	105	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	95	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	35	0.30	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



VP-N1

Phase 5 & 6

Horizontal (ft)		665	675	685	695	705	715	725	735	745	755	765
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	345	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	335	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	325	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	315	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.00
	45	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



VP-N1

Phase 5 & 6

Horizontal (ft)		775	785	795	805	815	825	835	845	855	865	875
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	345	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	335	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	325	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	315	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-N1

Phase 5 & 6

Horizontal (ft)		885	895	905	915	925	935	945
Vertical (ft)	405	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	395	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	385	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	375	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	365	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	355	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	345	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	335	0.10	0.10	0.10	0.10	0.10	0.00	0.00
	325	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	315	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	305	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	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	0.10
	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	0.00	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
	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

VP-W1

Phase 5 & 6

Horizontal (ft)		5	15	25	35	45	55	65	75	85	95	105
Vertical (ft)	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	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	0.00	0.00	0.00
	105	0.00	0.00	0.00	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	0.00	0.00	0.00
	85	0.00	0.00	0.00	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	0.00	0.00	0.00
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		115	125	135	145	155	165	175	185	195	205	215
Vertical (ft)	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	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	0.00	0.00	0.00
	105	0.00	0.00	0.00	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	0.00	0.00	0.00
	85	0.00	0.00	0.00	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	0.00	0.00	0.00
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		225	235	245	255	265	275	285	295	305	315	325
Vertical (ft)	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	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	0.00	0.00	0.00
	105	0.00	0.00	0.00	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	0.00	0.00	0.00
	85	0.00	0.00	0.00	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	0.00	0.00	0.00
	65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		335	345	355	365	375	385	395	405	415	425	435
Vertical (ft)	295	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	285	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	275	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	265	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	255	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
	115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	105	0.00	0.00	0.00	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	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		445	455	465	475	485	495	505	515	525	535	545
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10
	145	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	135	0.00	0.10	0.10	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	0.10	0.10	0.10
	115	0.10	0.10	0.10	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	0.10	0.10	0.10
	95	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20
	75	0.10	0.10	0.10	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	0.20	0.20	0.20
	55	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.00	0.00	0.00	0.00	0.20	0.20	0.20	0.20	0.20	0.30	0.30
	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.30	0.20
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		555	565	575	585	595	605	615	625	635	645	655
Vertical (ft)	295	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	285	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	275	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	265	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	255	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	245	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	235	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	115	0.10	0.10	0.10	0.20	0.20	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	0.20	0.20	0.20
	95	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	85	0.20	0.20	0.20	0.30	0.40	0.40	0.40	0.30	0.30	0.30	0.30
	75	0.20	0.20	0.20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	65	0.20	0.20	0.20	0.40	0.40	0.50	0.50	0.50	0.50	0.60	0.60
	55	0.20	0.30	0.40	0.60	0.60	0.60	0.50	0.50	0.50	0.50	0.40
	45	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.30	0.40	0.40	0.40
	35	0.20	0.20	0.10	0.20	0.20	0.20	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	0.00	0.00	0.00
	15	0.00	0.00	0.00	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	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		665	675	685	695	705	715	725	735	745	755	765
Vertical (ft)	295	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	285	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	275	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	265	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	255	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	245	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	235	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	225	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	215	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	115	0.20	0.20	0.20	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	0.20	0.20	0.20
	95	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20
	85	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20
	75	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
	65	0.60	0.50	0.40	0.40	0.40	0.40	0.40	0.30	0.40	0.40	0.40
	55	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30	0.30
	45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.30
	35	0.30	0.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20
	25	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		775	785	795	805	815	825	835	845	855	865	875
Vertical (ft)	295	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	285	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	275	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	265	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
	255	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10
	245	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10
	235	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	225	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	215	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	115	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	105	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	95	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	75	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.40	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	55	0.30	0.40	0.40	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.20
	45	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.20
	35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.20
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10
	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		885	895	905	915	925	935	945	955	965	975	985
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	175	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	165	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	155	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	145	0.10	0.10	0.10	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	0.10	0.10	0.10
	125	0.10	0.10	0.10	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	0.10	0.10	0.10
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10
	75	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	65	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
	45	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.10	0.10
	35	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	5	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.10	0.10	0.10	0.10

VP-W1

Phase 5 & 6

Horizontal (ft)		995	1005	1015	1025	1035	1045	1055	1065	1075	1085	1095
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	275	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	265	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	255	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	245	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	235	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	225	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	215	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	205	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00
	195	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
	185	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	175	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	135	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	125	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	115	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00
	105	0.10	0.10	0.10	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	0.10	0.10	0.10
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10
	25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10
	15	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.10	0.00

VP-W1

Phase 5 & 6

Horizontal (ft)		1105	1115	1125	1135	1145	1155	1165	1175	1185	1195	1205
Vertical (ft)	295	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	285	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00
	275	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00
	265	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00
	255	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	245	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	235	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	225	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	215	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	205	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	195	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	185	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	145	0.00	0.00	0.00	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	0.00	0.00	0.00
	125	0.00	0.00	0.00	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	0.00	0.00	0.00
	105	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	95	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
	85	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00
	75	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	65	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	55	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	45	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	35	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	25	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00
	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00