

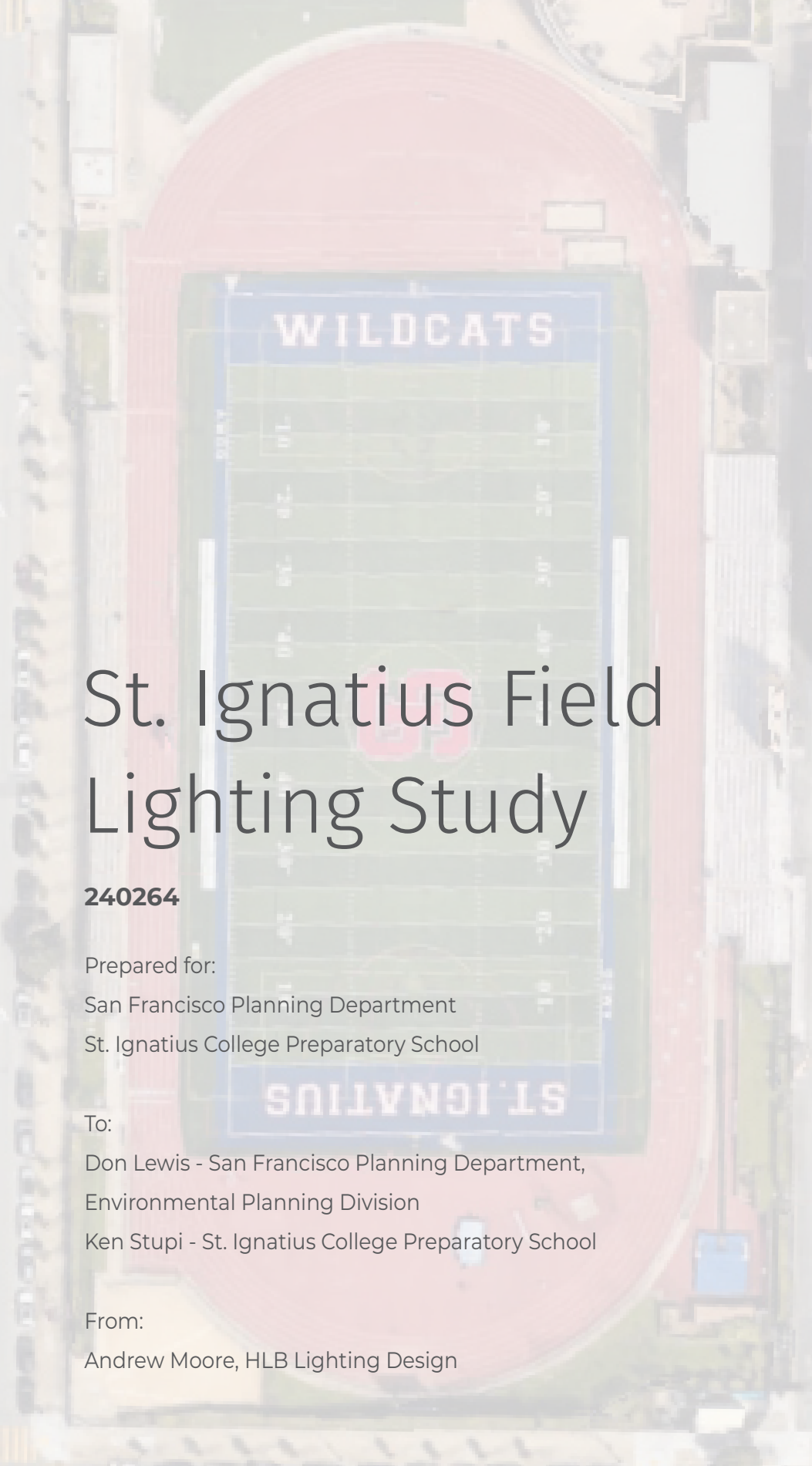
APPENDIX D

ST. IGNATIUS FIELD LIGHTING STUDY

ST. IGNATIUS FIELD LIGHTING PROJECT

PLANNING DEPARTMENT CASE NO. 2018-012648ENV-02

THIS PAGE INTENTIONALLY LEFT BLANK



HLB

St. Ignatius Field Lighting Study

240264

Prepared for:

San Francisco Planning Department

St. Ignatius College Preparatory School

To:

Don Lewis - San Francisco Planning Department,
Environmental Planning Division

Ken Stupi - St. Ignatius College Preparatory School

From:

Andrew Moore, HLB Lighting Design

Field Lighting Study
27 October 2025

HLB Lighting Design

New York | San Francisco | Los Angeles | Boston | Miami | Denver | Austin

Table of Contents

01 Executive Summary

02 Survey Conditions and Methods

03 Applicable Codes and Standards

04 Appendix A: Illuminance Light Meter Results

05 Appendix B: HDRI Measurement Results

Executive Summary

HLB Lighting Design was engaged by St. Ignatius College Preparatory School to survey electric lighting conditions related to their existing sports lighting system for J.B. Murphy Field. The school had received comments from the community related to its perception of negative impacts the lighting system was having on its properties and the school was seeking recommendations on how to address these comments. To these ends HLB Lighting Design performed an initial survey of lighting conditions on and around J.B. Murphy Field during the evening of 13 May 2024. Based on the findings from this survey HLB Lighting Design recommended that the manufacturer of the sports lighting system, Musco Lighting, visit the site to develop and implement solutions to address community comments. Musco Lighting visited the site the week of 12 August 2024 and during its visit made minor adjustments to the aiming of luminaires and added additional glare shielding.

HLB Lighting Design visited the school again the evening of 14 August 2024 to evaluate the effectiveness of the remediation efforts performed by Musco Lighting and found that light trespass and glare conditions had been improved. A field verification survey was performed to evaluate if the results of the recent work achieved lighting conditions that align with industry standards. This evaluation included Rivera Street and 39th Avenue which are adjacent to J.B. Murphy Field. A finding of the survey was that the contribution of to vertical illumination levels along the residential property line caused by the sports lighting system were consistently below the maximum limit recommended in CIE (International Commission on Illumination) Guide 150:2017 Maximum Values of Vertical Illuminance when set to both full output (100%) and low output (40%).

On 15 October 2025, HLB Lighting Design conducted a follow-up survey at the school to assess glare conditions from selected viewpoints with field lighting set to 60% output. Variations in luminance values captured during this survey relative to previous measurements may be attributed to factors such as weather conditions, gradual depreciation of fixture output over time, and minor shifts in viewpoint positioning.

Refer to Appendix A of this report for observed illumination values and calculations of illumination added by the sports lighting system.

Luminance evaluation in the HDR images indicate that the sports light luminaires cause potential glare when in direct view in limited scenarios. As seen in the false color images in Appendix B of this report, values that are in red circles are considered high luminance and exceed the CIE's thresholds found in CIE 150 Table 3 - Maximum values for luminous intensity of luminaires in designated directions (see table in HDRI analysis methodology). The assessment of spill light through luminances of the residential facades also show the impact of the field lighting as indicated by the difference of values as the light output ranges from 100% to 0%. After maintenance and improved shielding of the luminaires by Musco, the luminance values for direct view of the field as well as spill light towards the residential properties improved compared to the readings taken in the initial site survey.

Lastly, since the 2022 California Building Energy Efficiency Standards, Title 24, Part 6, Section 140.7(a) includes an exception for the lighting of sports and athletic fields, the lighting for J.B. Murphy Field is exempt from the light pollution reduction requirements of the California Green Building Code, Title 24, Part 11, also known as CALGreen.

Survey Conditions & Methods

The lighting surveys were conducted under the following conditions and using the following methods:

Site Conditions:

The survey was conducted on 14 August 2024 from 9 PM to 11 PM with overcast sky conditions. Another survey was conducted on 15 October 2025 from 7 PM to 9 PM with clear sky conditions.

A. Illuminance Spill Light Analysis

Documentation Process:

A illuminance light meter was used to measure both horizontal and vertical illuminances at the locations indicated later in this document. The light meter was mounted to a tripod for measurements at 5'-0" AFG. For all measurements at 0'-0" AFG, the light meter was placed directly on the ground. A luminance light meter was used to measure the luminance of existing light sources. HDR images were captured with a digital camera mounted on a tripod set at eye level.

Equipment used included:

Illuminance Meter:
Sekonic Speedmaster L-858D-U



Survey Conditions & Methods

B. High Dynamic Range Image Analysis

Documentation Process:

Each scene is a composite of 15-25 separate photographs taken with the widest bracketing of shutter speeds, to capture the extremes of luminances (measured in cd/m² or nits) in the scene. The images are post-processed to create a high resolution map of luminance values at each scene. The corresponding “False Color” images included are a graphic method to show the range of luminances in each view and predict visual comfort based on source, intensity, area, location, and contrast ratio with the overall scene luminance.

Glare thresholds applied to the analysis are based on CIE 150:2017 Table 3 (see below). The threshold is the relationship of view and the luminaire, which includes the approximate distance (*d*) of the observer from the glare source and size of the glare source in square meters. Refer to calculated thresholds for each luminaire at each view on subsequent pages.

The images were processed using a combination of Photosphere and the “wxfalsecolor.exe” plug-in for Diva with Radiance.

Light Technical Parameter	Application Conditions	Luminaire group (projected area A_p in m ²)				
		$0 < A_p \leq 0,002$	$0,002 < A_p \leq 0,01$	$0,01 < A_p \leq 0,03$	$0,03 < A_p \leq 0,13$	$0,13 < A_p \leq 0,50$
Maximum luminous intensity emitted by luminaire (<i>I</i> in cd)	Environmental Zone E0 Pre-curfew: Post-curfew:	0 0	0 0	0 0	0 0	0 0
	Environmental Zone E1 Pre-curfew: Post-curfew:	$0,29 \cdot d$ 0	$0,63 \cdot d$ 0	$1,3 \cdot d$ 0	$2,5 \cdot d$ 0	$5,1 \cdot d$ 0
	Environmental Zone E2 Pre-curfew: Post-curfew:	$0,57 \cdot d$ $0,29 \cdot d$	$1,3 \cdot d$ $0,63 \cdot d$	$2,5 \cdot d$ $1,3 \cdot d$	$5,0 \cdot d$ $2,5 \cdot d$	$10 \cdot d$ $5,1 \cdot d$
	Environmental Zone E3 Pre-curfew: Post-curfew:	$0,86 \cdot d$ $0,29 \cdot d$	$1,9 \cdot d$ $0,63 \cdot d$	$3,8 \cdot d$ $1,3 \cdot d$	$7,5 \cdot d$ $2,5 \cdot d$	$15 \cdot d$ $5,1 \cdot d$
	Environmental Zone E4 Pre-curfew: Post-curfew:	$1,4 \cdot d$ $0,29 \cdot d$	$3,1 \cdot d$ $0,63 \cdot d$	$6,3 \cdot d$ $1,3 \cdot d$	$13 \cdot d$ $2,5 \cdot d$	$26 \cdot d$ $5,1 \cdot d$
NOTE 1 <i>d</i> is the distance between the observer and the glare source in metres. NOTE 2 A luminous intensity of 0 cd can only be realized by a luminaire with a complete cut-off in the designated directions. NOTE 3 For further information, please refer to Annex C.						

CIE 150:2017 Table 3 - Maximum values for luminous intensity of luminaires in designated directions

Equipment used:

Luminance Meter:
Konica Minolta Luminance Meter LS-160



DSLR Camera:
Nikon DSLR Camera D90



Applicable Codes & Standards

A variety of international standards and state codes are relevant to this study:

The California Building Standards Commission (CBSC) sets the California Green Building Code, Title 24, Part 11, for the State of California, also known as CALGreen. Referenced in the lighting pollution reduction portion of CALGreen are the exceptions listed in Section 140.7(a) of the 2022 California Building Energy Efficiency Standards, Title 24, Part 6, one of which is lighting for sports and athletic fields. Thus, the lighting in question is exempt from the light pollution reduction requirements of CALGreen.

The International Commission on Illumination (CIE) is a body that sets international standards for illumination in the built environment. Per CIE 150:2017 Maximum Values of Vertical Illuminance, lighting in Environmental Zone E3 (for which the St. Ignatius site falls in) is considered obtrusive when in excess of 10 lux (0.93 footcandles) at the property line pre-curfew and 2 lux (0.19 footcandles) post-curfew. CIE 150:2017 also outlines the maximum values for luminous intensity of luminaires in designated directions (Table 3). It provides luminance thresholds for pre-curfew and post-curfew.

In IES LP-11-20 Lighting Practice: Environmental Considerations for Outdoor Lighting the following guidance is provided relating to the lighting of sports & athletic facilities in an urban environment:

“It is important to note that since light trespass is extremely subjective, there is no single set of values or limits that will work in every situation. Therefore, while these recommendations serve to reduce serious light trespass, their implementation is not a guarantee against objections. In some situations, such as a sports field in a small park closely surrounded by residences, no methods and combinations of lighting design, aiming, or control can provide for both safe play and satisfy some neighbors’ desires for limited light trespass. Consensus solutions involving field locations, curfews to restrict the hours of nighttime use, glare abatement, and/or landscape screens should be reached by all the parties involved.”

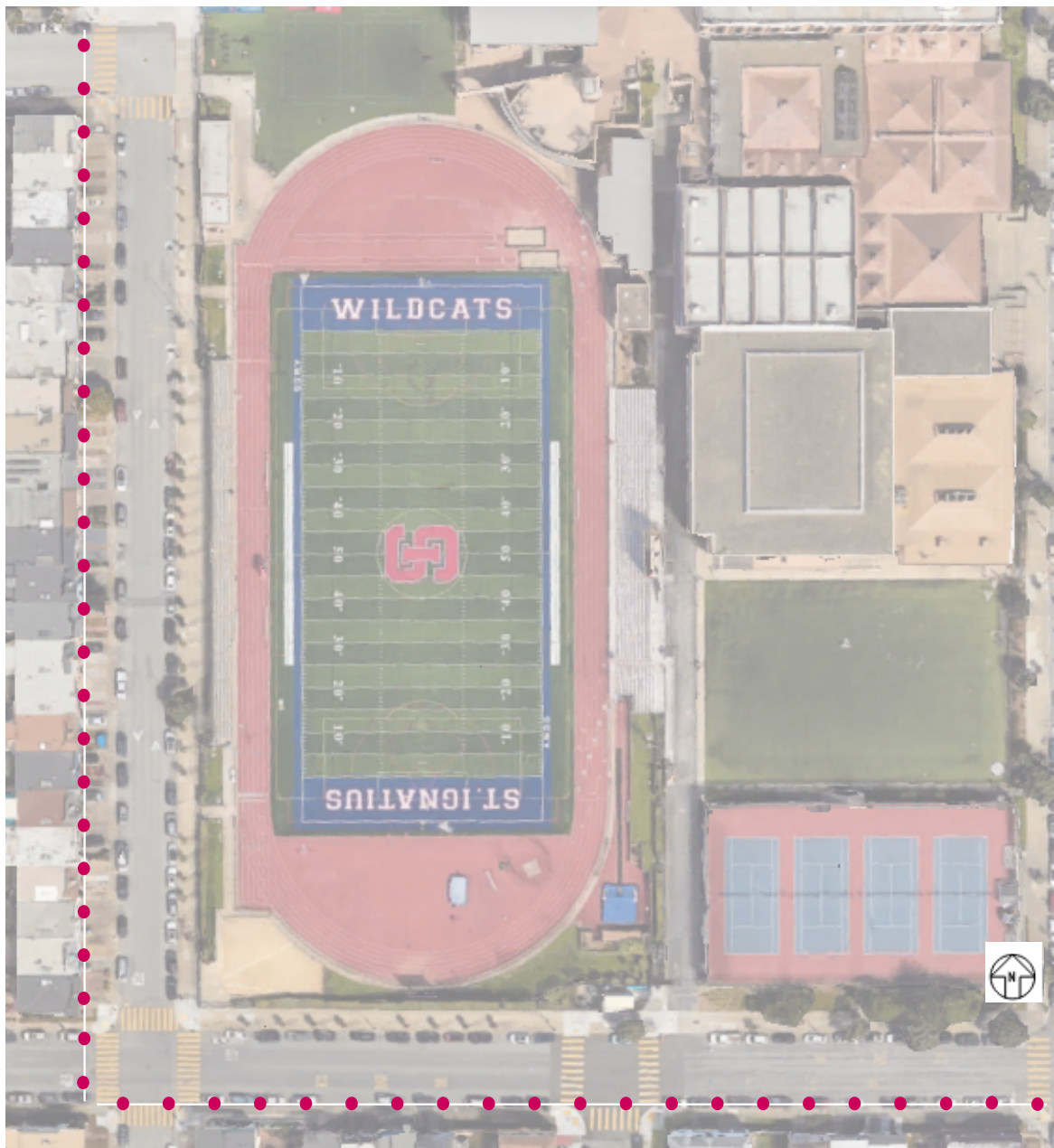
Appendix A:

Illuminance Light Meter Results

Appendix A: Illuminance Light Meter Results

The following pages indicate the illuminance light meter readings that were collected during the August 2024 survey. For the light levels indicated along 39th Avenue and Rivera Street, light meter readings were collected horizontally at 0'-0" AFG and vertically at 5'-0" AFG. Measurements were gathered along the residential property line, 30' on-center. These readings were taken multiple times with the sports lighting set at full output (100%), low output (40%) and off.

Light Measurement Locations



Illuminance Light Meter Results

LOCATION: RESIDENTIAL PROPERTY LINE

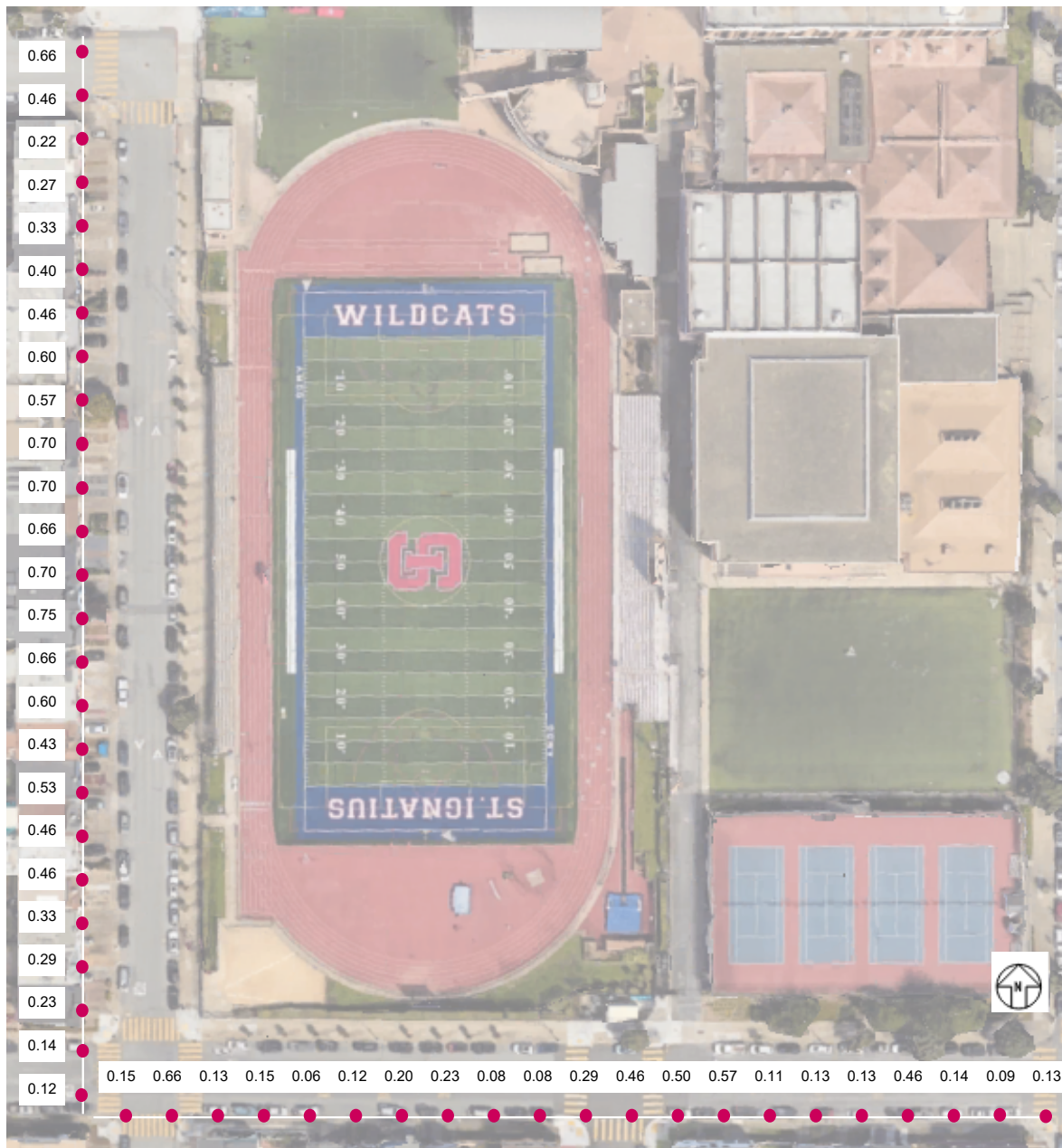
HEIGHT: 0'-0" AFG

ORIENTATION: HORIZONTAL

SPORTS LIGHTING OUTPUT SETTING: FULL (100%)

POINTS: 30' SPACING, 46 POINTS

UNITS: FOOTCANDLES



Not To Scale

Illuminance Light Meter Results

LOCATION: RESIDENTIAL PROPERTY LINE
HEIGHT: 5'-0" AFG
ORIENTATION: VERTICAL
SPORTS LIGHTING OUTPUT SETTING: FULL (100%)
POINTS: 30' SPACING, 46 POINTS
UNITS: FOOTCANDLES



Not To Scale

Illuminance Light Meter Results

LOCATION: RESIDENTIAL PROPERTY LINE
HEIGHT: 0'-0" AFG
ORIENTATION: HORIZONTAL
SPORTS LIGHTING OUTPUT SETTING: LOW (40%)
POINTS: 30' SPACING, 46 POINTS
UNITS: FOOTCANDLES



Not To Scale

Illuminance Light Meter Results

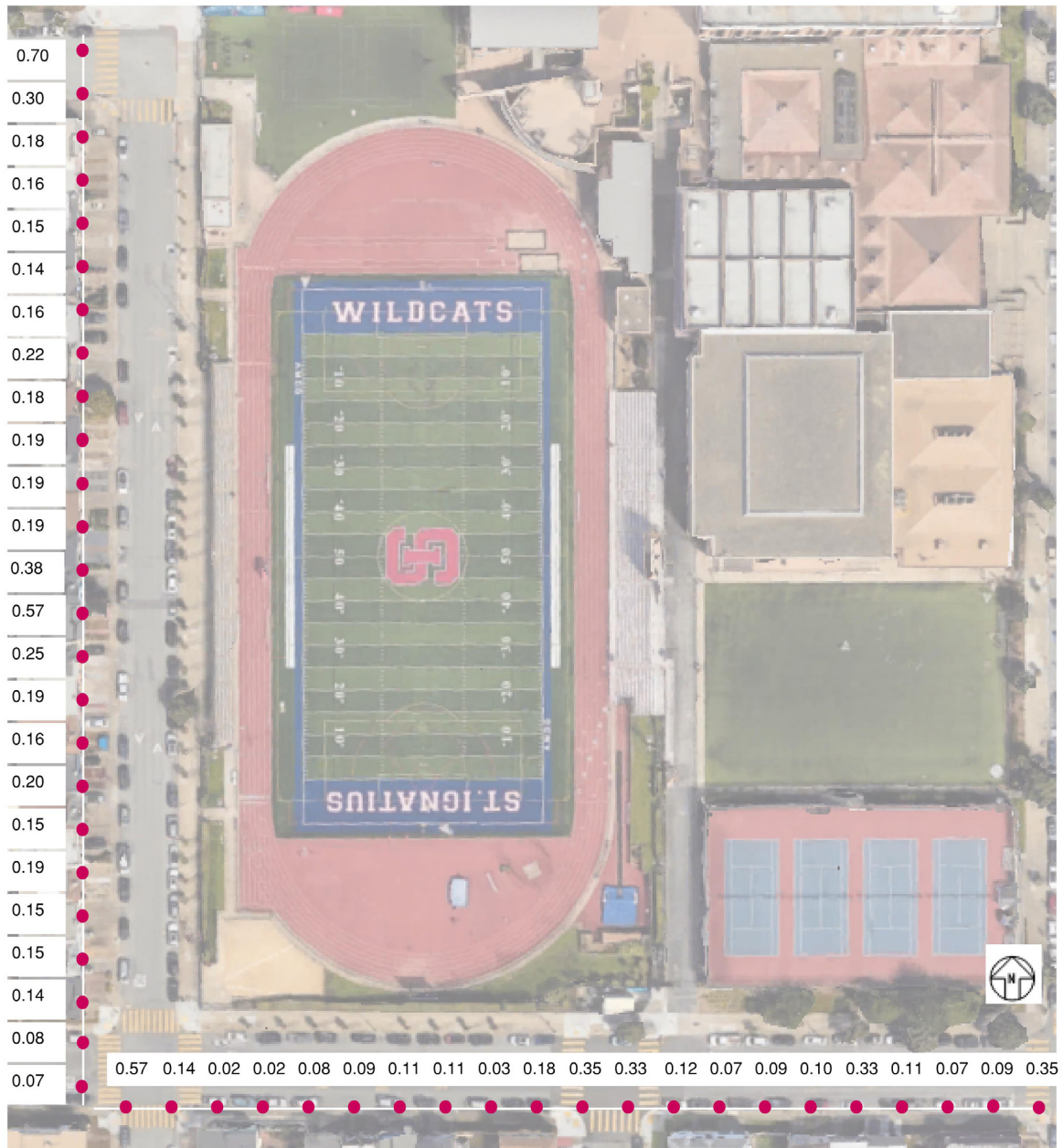
LOCATION: RESIDENTIAL PROPERTY LINE
HEIGHT: 5'-0" AFG
ORIENTATION: VERTICAL
SPORTS LIGHTING OUTPUT SETTING: LOW (40%)
POINTS: 30' SPACING, 46 POINTS
UNITS: FOOTCANDLES



Not To Scale

Illuminance Light Meter Results

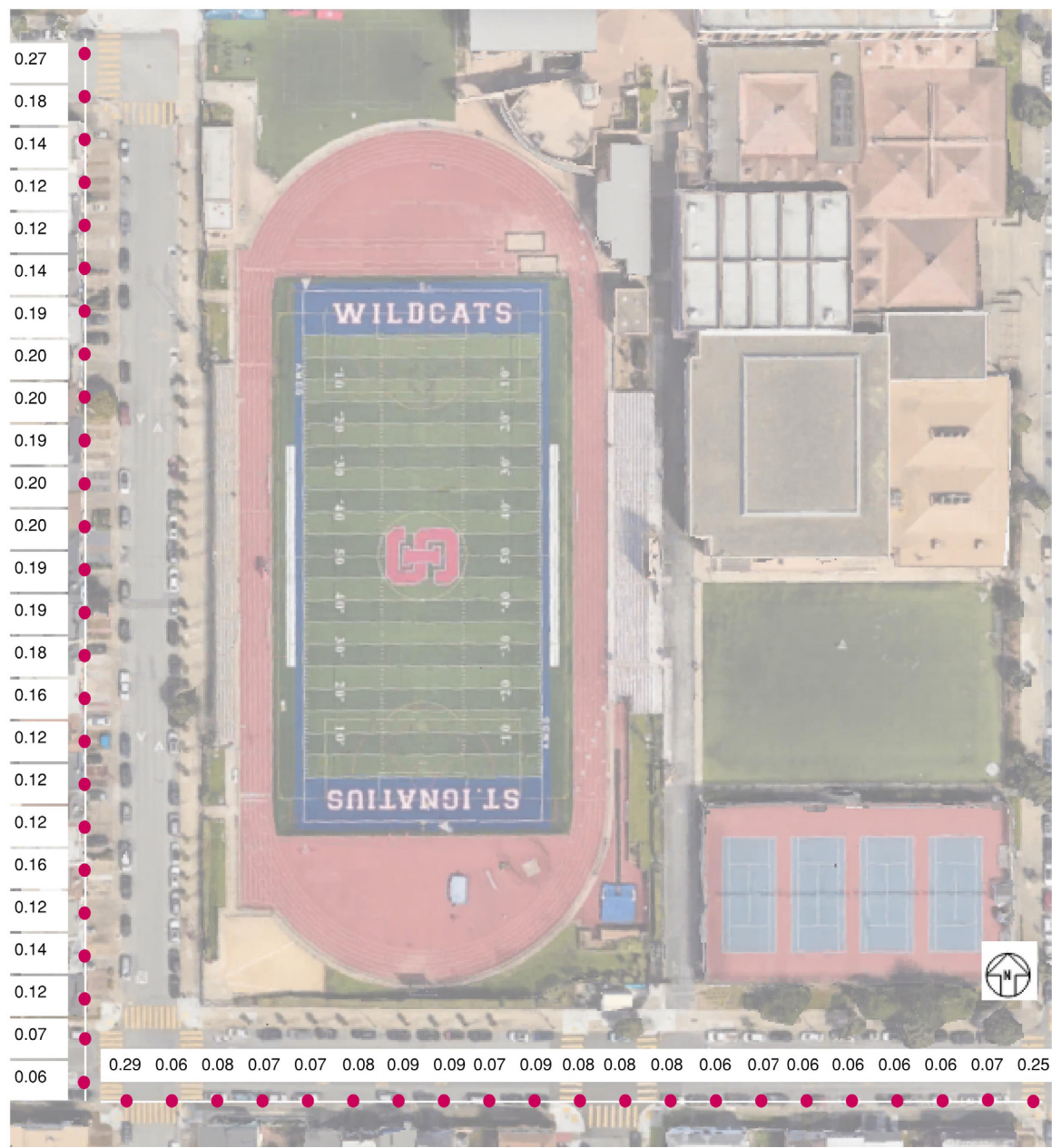
LOCATION: RESIDENTIAL PROPERTY LINE
HEIGHT: 0'-0" AFG
ORIENTATION: HORIZONTAL
SPORTS LIGHTING OUTPUT SETTING: OFF
POINTS: 30' SPACING, 46 POINTS
UNITS: FOOTCANDLES



Not To Scale

Illuminance Light Meter Results

LOCATION: RESIDENTIAL PROPERTY LINE
HEIGHT: 5'-0" AFG
ORIENTATION: VERTICAL
SPORTS LIGHTING OUTPUT SETTING: OFF
POINTS: 30' SPACING, 46 POINTS
UNITS: FOOTCANDLES



Not To Scale

Illumination Contribution of Sports Lighting

LOCATION: RESIDENTIAL PROPERTY LINE

HEIGHT: 5'-0" AFG

ORIENTATION: VERTICAL

DIFFERENCE BETWEEN 40% AND OFF SETTINGS

POINTS: 30' SPACING, 46 POINTS

UNITS: FOOTCANDLES



Not To Scale

Illumination Contribution of Sports Lighting

LOCATION: RESIDENTIAL PROPERTY LINE

HEIGHT: 5'-0" AFG

ORIENTATION: VERTICAL

DIFFERENCE BETWEEN 100% AND OFF SETTINGS

POINTS: 30' SPACING, 46 POINTS

UNITS: FOOTCANDLES



Not To Scale

Illumination Contribution of Sports Lighting

LOCATION: RESIDENTIAL PROPERTY LINE

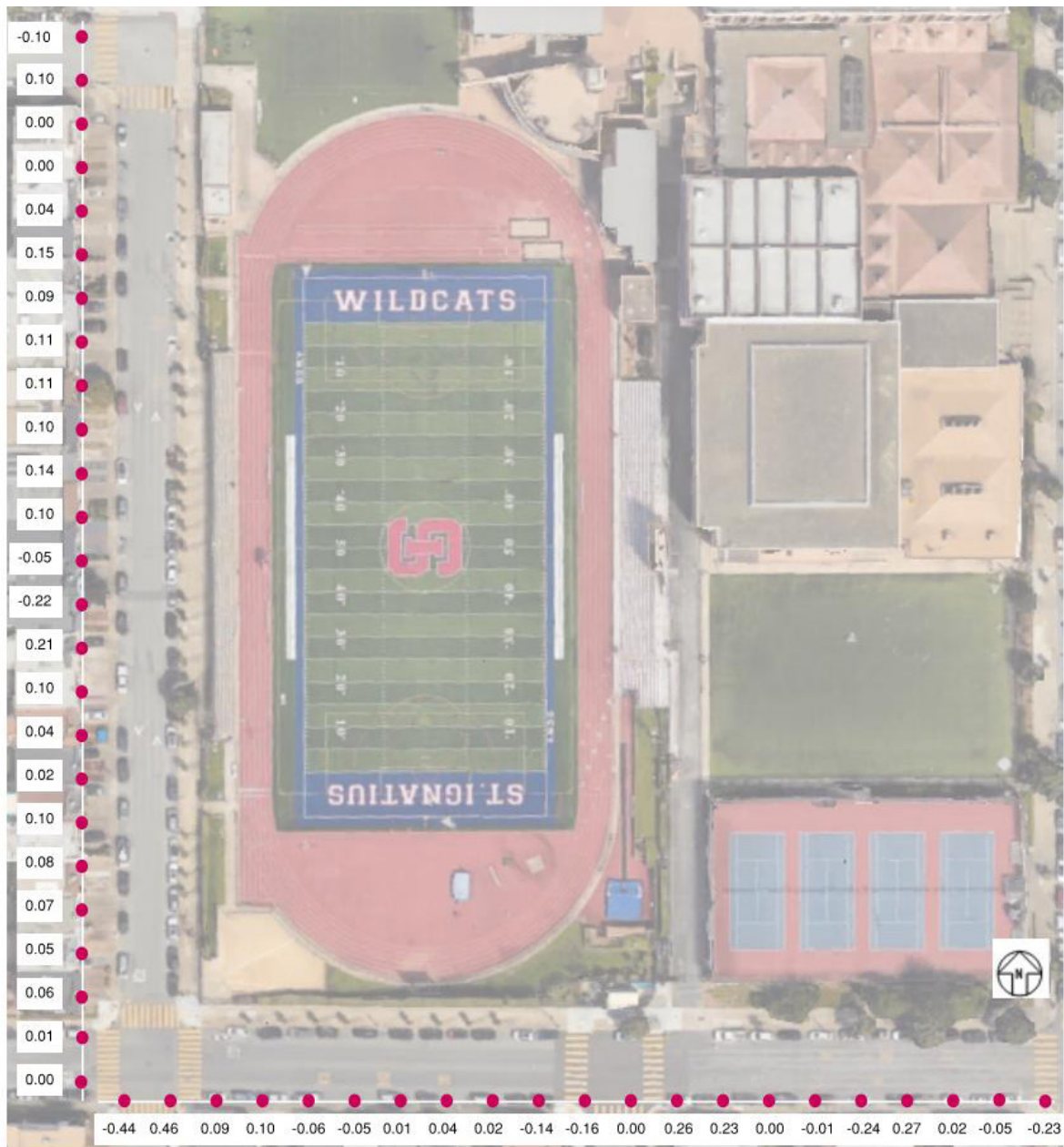
HEIGHT: 0'-0" AFG

ORIENTATION: HORIZONTAL

DIFFERENCE BETWEEN 40% AND OFF SETTINGS

POINTS: 30' SPACING, 46 POINTS

UNITS: FOOTCANDLES



Not To Scale

Illumination Contribution of Sports Lighting

LOCATION: RESIDENTIAL PROPERTY LINE

HEIGHT: 0'-0" AFG

ORIENTATION: HORIZONTAL

DIFFERENCE BETWEEN 100% AND OFF SETTINGS

POINTS: 30' SPACING, 46 POINTS

UNITS: FOOTCANDLES



Not To Scale

Appendix B:

HDRI Measurement Results

Appendix B: HDRI Measurement Results

The images in the following pages were created using HDRI photographic techniques. The corresponding false color image is a graphic method that maps the range of luminances (measured in cd/m² or nits) in each scene.

As shown in the map below, the photographs were taken along 39th Avenue and Rivera Street. The first part of this section are views of the J.B. Murphy Field that capture the extremes of luminances of light sources (at 100%, 60%, and 40% output levels) as seen from the residential side of the street.

The second part of this section are views of the residential area and the measured luminances to evaluate the spill light caused by surrounding light sources at different output levels (100%, 40% and 0%).

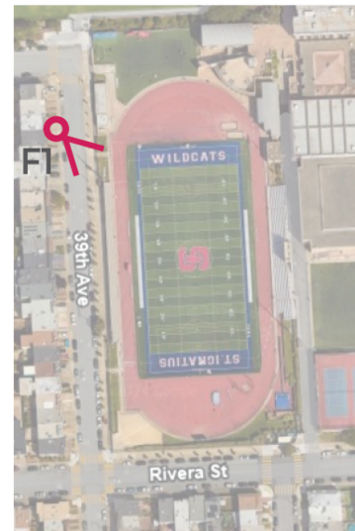
HDRI Measurement Locations



Not To Scale

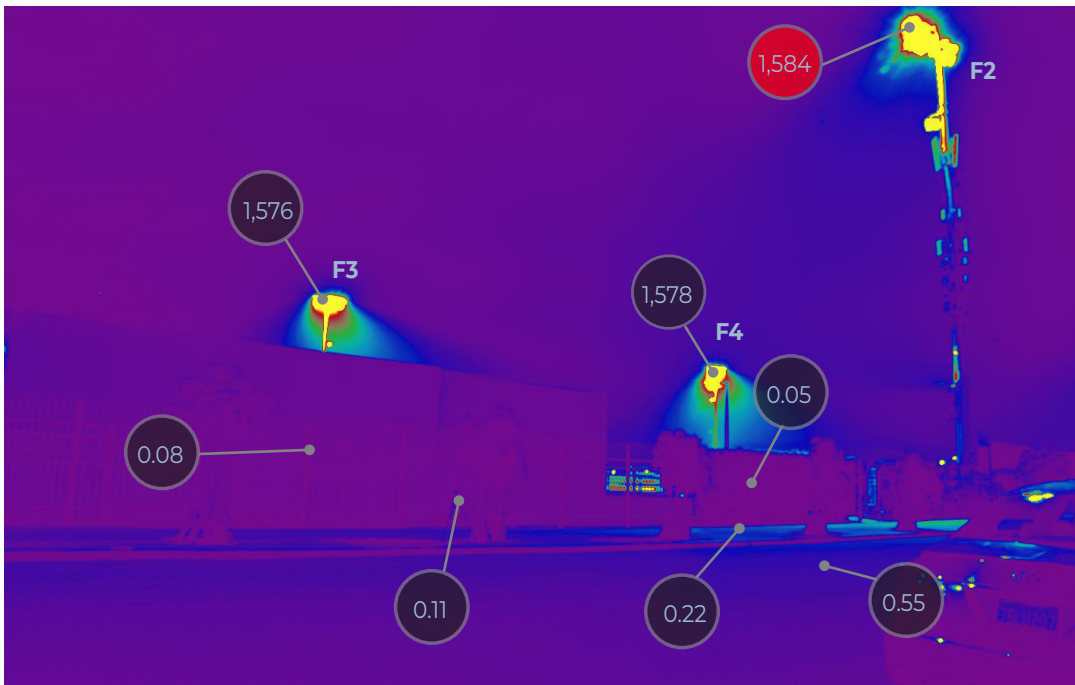
HDR Images

VIEW F1A - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 100%)

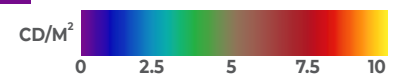


Not To Scale

VIEW F1A - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F1A - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F2	819	279	1,584
F3	1,814	617	1,576
F4	2,501	850	1,578

Value exceeds glare threshold* (cd/m^2)

Value within glare threshold* (cd/m^2)

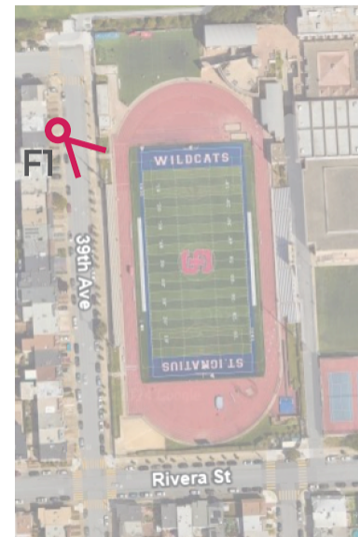
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 21

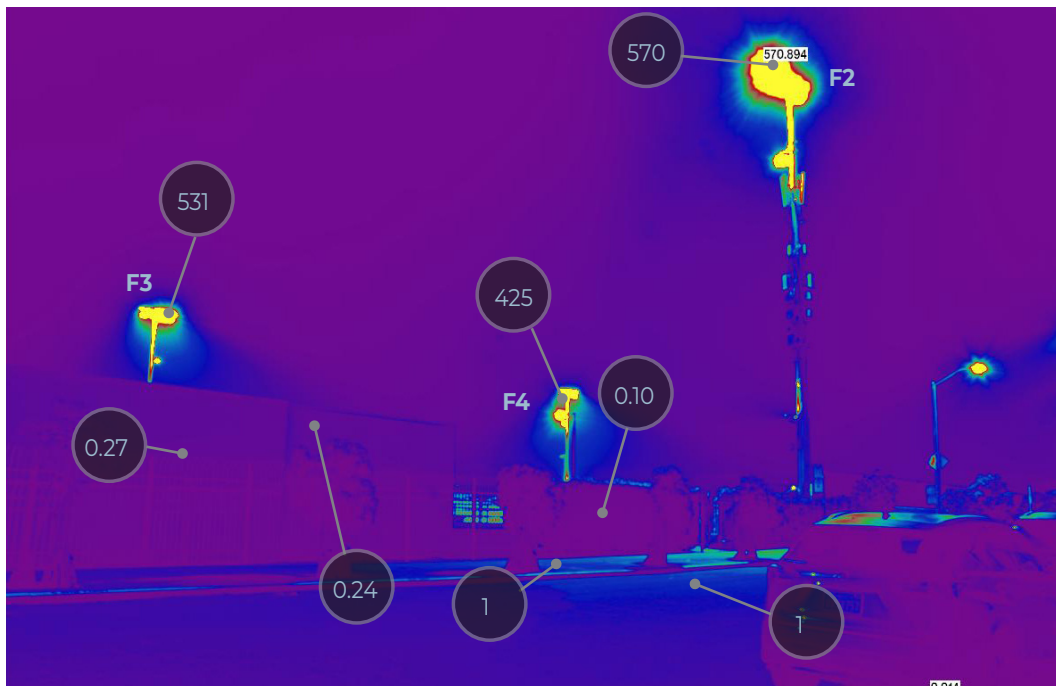
HDR Images

VIEW F1B - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 60%)

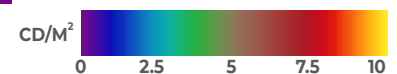


Not To Scale

VIEW F1B - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F1B - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F2	819	279	570
F3	1,814	617	531
F4	2,501	850	425

x Value exceeds glare threshold* (cd/m^2)

x Value within glare threshold* (cd/m^2)

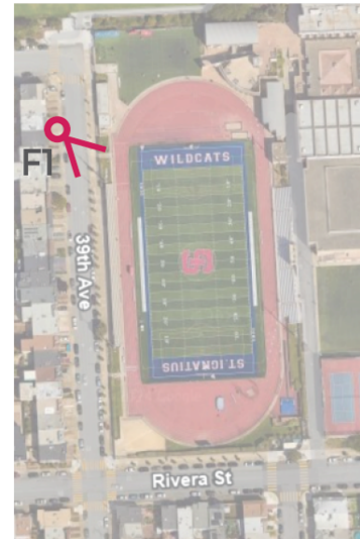
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 22

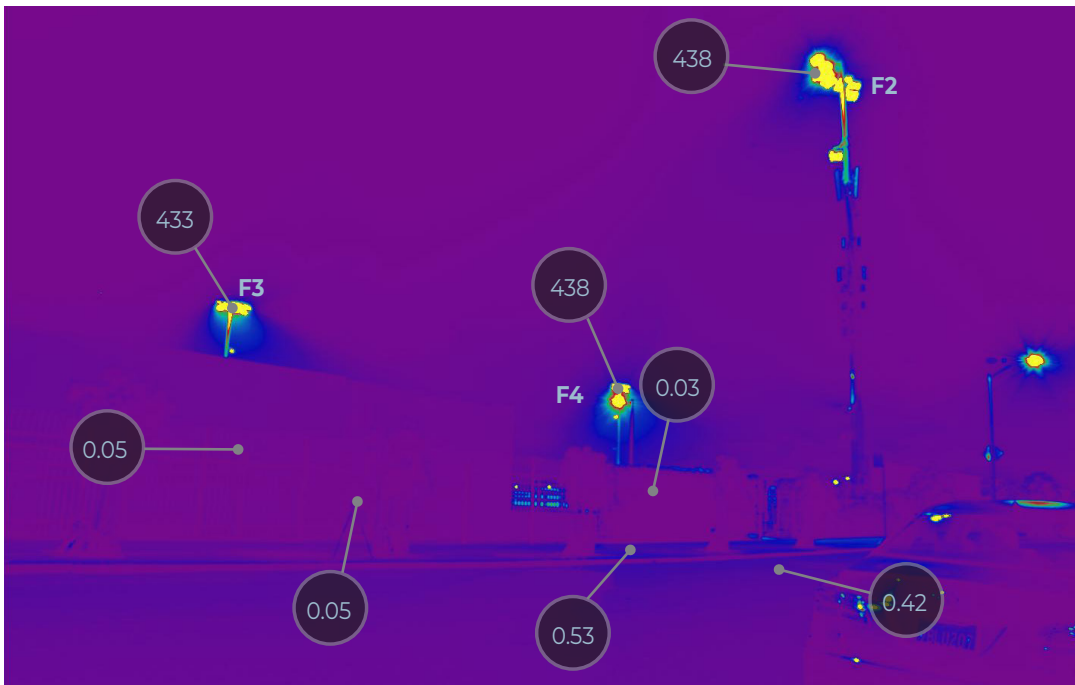
HDR Images

VIEW F1C - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 40%)

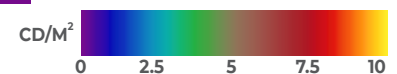


Not To Scale

VIEW F1C - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F1C - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F2	819	279	438
F3	1,814	617	433
F4	2,501	850	438

Value exceeds glare threshold* (cd/m^2)

Value within glare threshold* (cd/m^2)

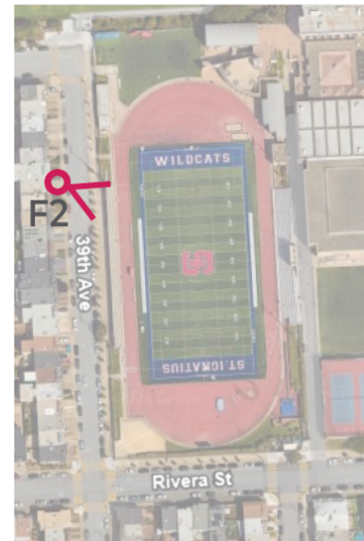
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 23

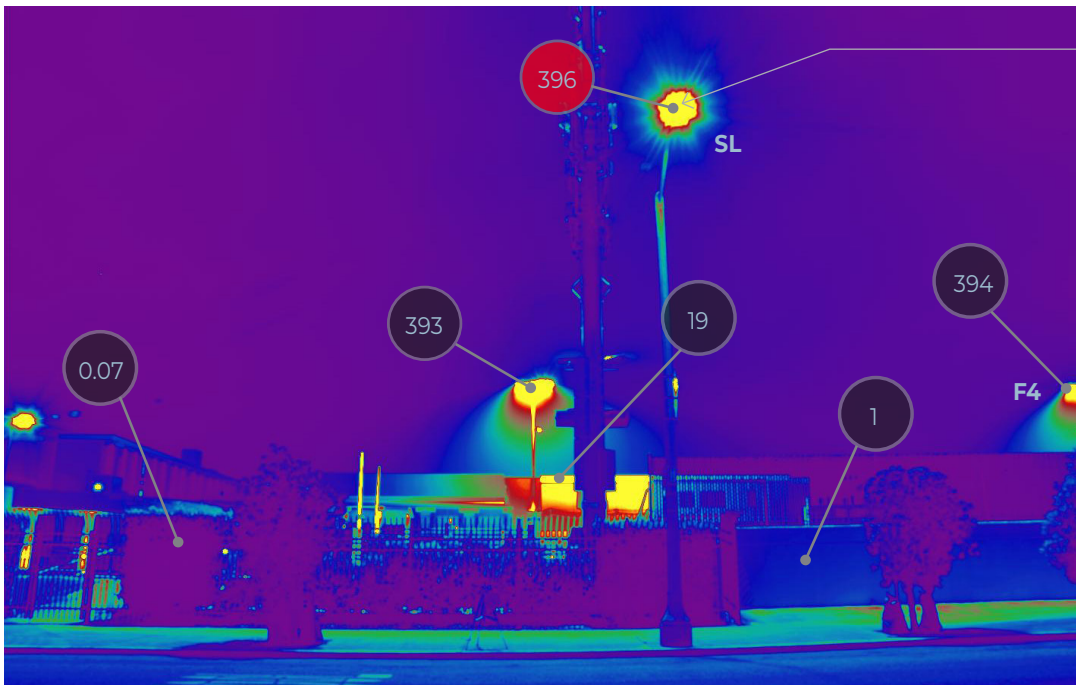
HDR Images

VIEW F2A - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 100%)



Not To Scale

VIEW F2A - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD

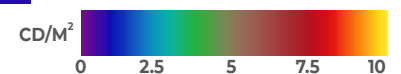


street lighting

VIEW F2A - HDR LUMINANCE MAP

GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m ²)	Post-curfew threshold per CIE 150 (cd/m ²)	Measured values (cd/m ²)
F3	1,707	580	393
F4	2,096	712	394
SL	252	86	396



Value exceeds glare threshold* (cd/m²)

Value within glare threshold* (cd/m²)

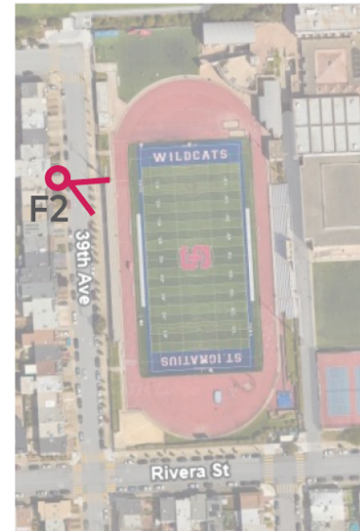
*(based on CIE 150:2017 Table 3)

St. Ignace Field Lighting Study

HLB Lighting Design | 24

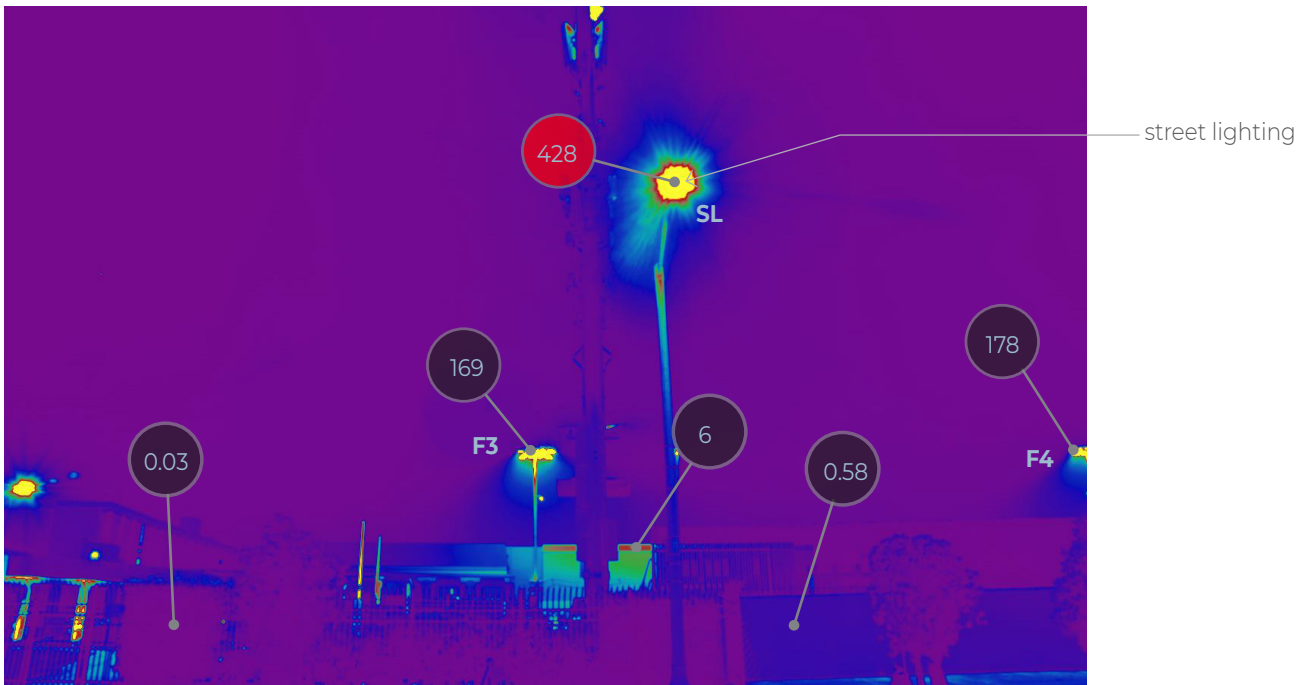
HDR Images

VIEW F2B - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 40%)

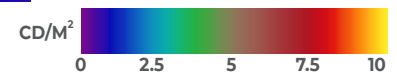


Not To Scale

VIEW F2B - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F2B - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F3	1,707	580	169
F4	2,096	712	178
SL	252	86	428

Value exceeds glare threshold* (cd/m^2)

Value within glare threshold* (cd/m^2)

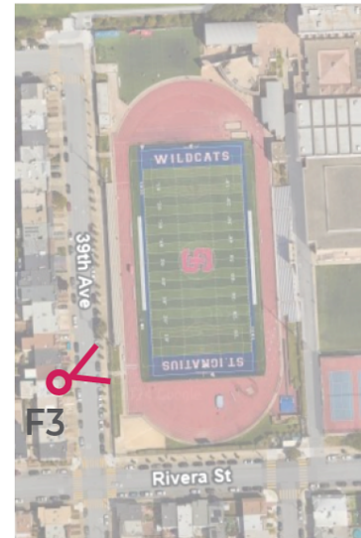
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 25

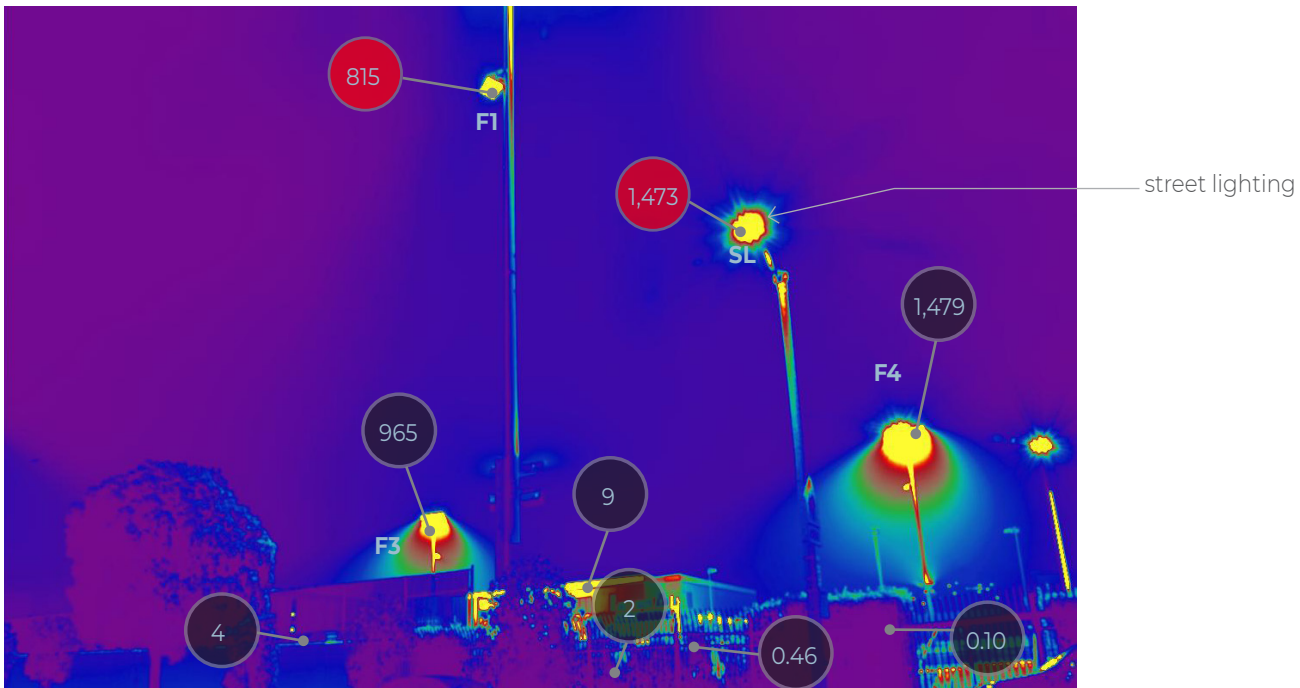
HDR Images

VIEW F3A - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 100%)



Not To Scale

VIEW F3A - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F3A - HDR LUMINANCE MAP

GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m ²)	Post-curfew threshold per CIE 150 (cd/m ²)	Measured values (cd/m ²)
F1	497	169	815
F3	2,244	763	965
F4	1,720	585	1,479
SL	252	86	1,473

Value exceeds glare threshold* (cd/m²)

Value within glare threshold* (cd/m²)

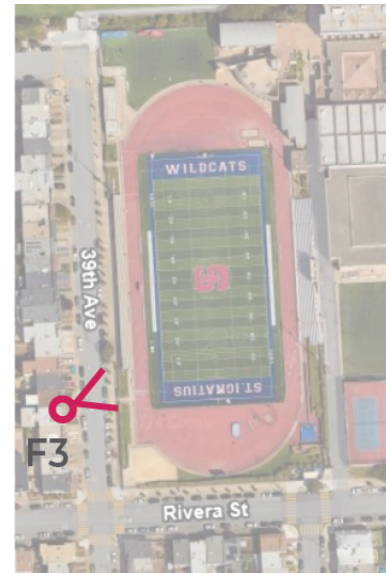
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 26

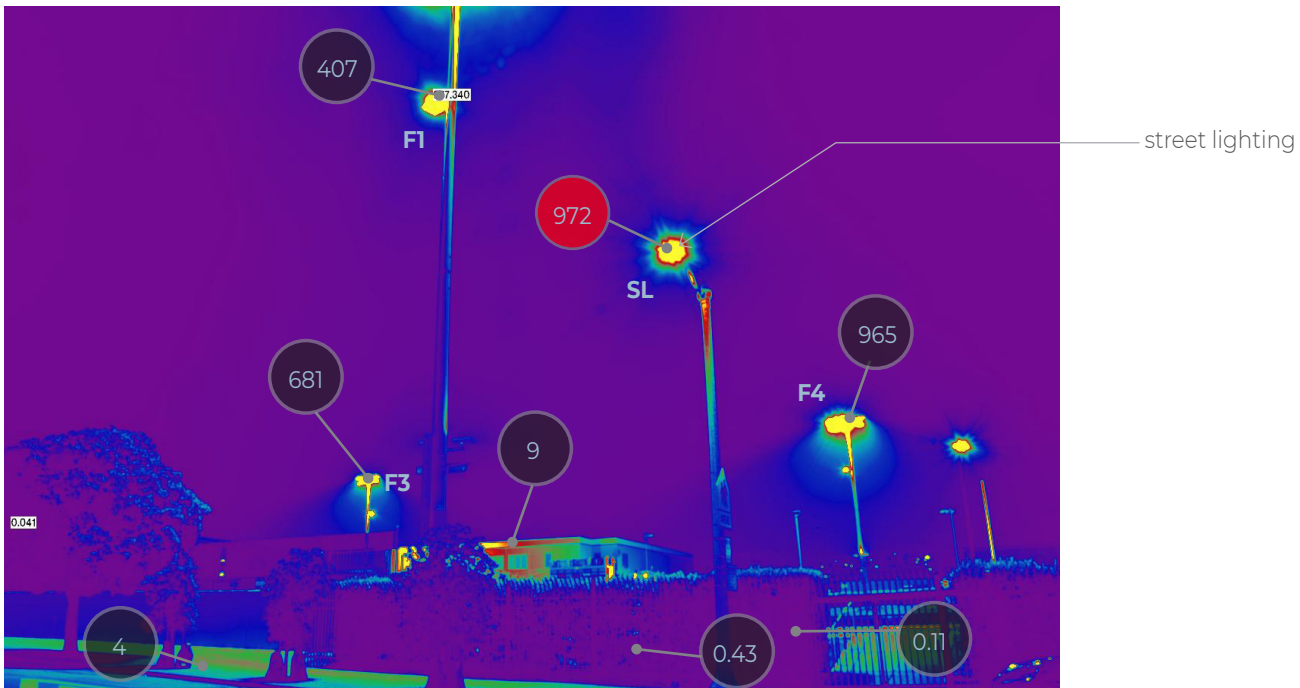
HDR Images

VIEW F3B - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 60%)



Not To Scale

VIEW F3B - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F3B - HDR LUMINANCE MAP

GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F1	497	169	407
F3	2,244	763	681
F4	1,720	585	965
SL	252	86	972



Value exceeds glare threshold* (cd/m^2)

Value within glare threshold* (cd/m^2)

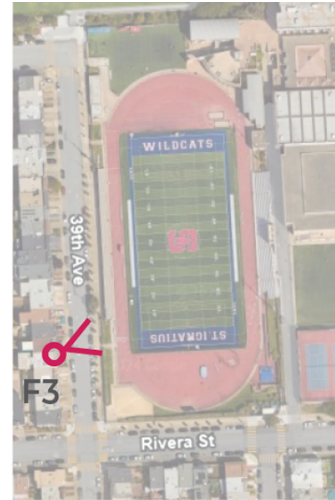
*(based on CIE 150:2017 Table 3)

St. Ignace Field Lighting Study

HLB Lighting Design | 27

HDR Images

VIEW F3C - 39TH AVE FIELD VIEW (FIELD LIGHTING AT 40%C

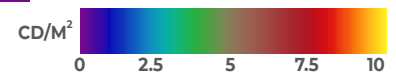


Not To Scale

VIEW F3C - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F3C - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m ²)	Post-curfew threshold per CIE 150 (cd/m ²)	Measured values (cd/m ²)
F1	497	169	199
F3	2,244	763	570
F4	1,720	585	936
SL	252	86	935

Value exceeds glare threshold* (cd/m²)

Value within glare threshold* (cd/m²)

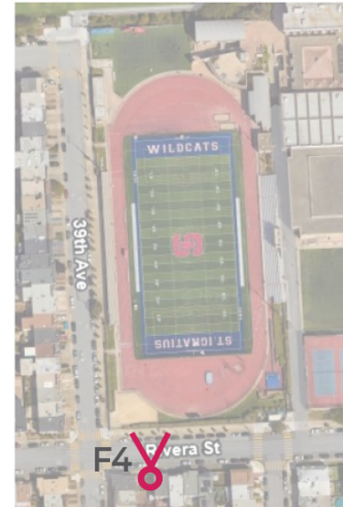
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 28

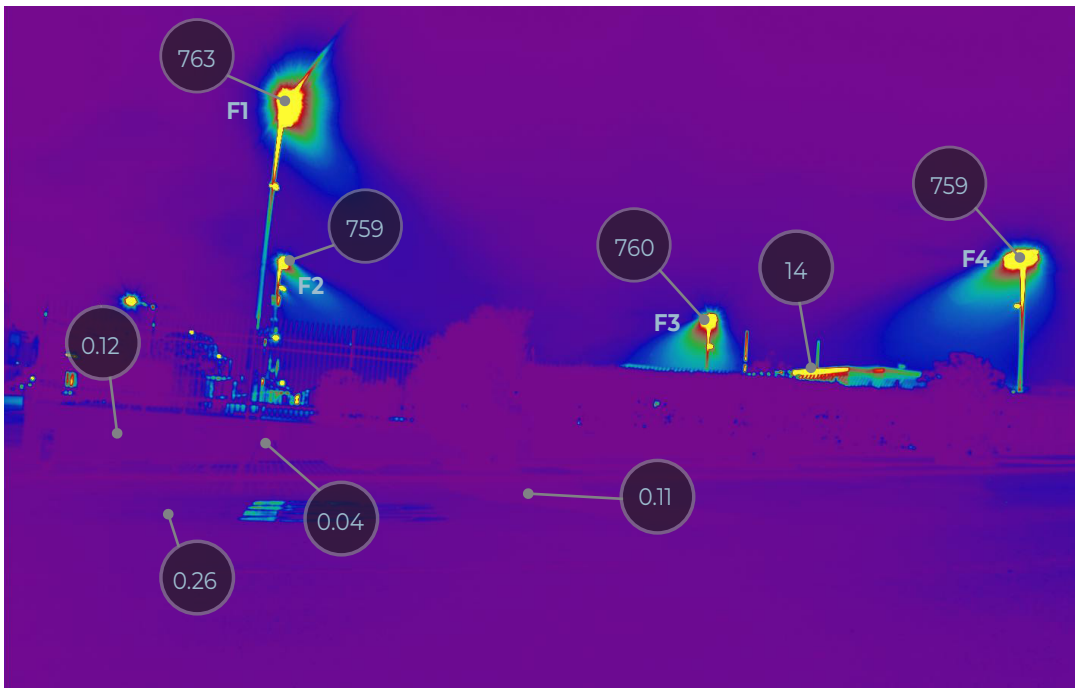
HDR Images

VIEW F4A - RIVERA ST FIELD VIEW (FIELD LIGHTING AT 100%)

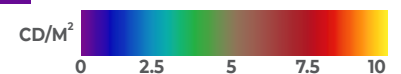


Not To Scale

VIEW F4A - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F4A - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m ²)	Post-curfew threshold per CIE 150 (cd/m ²)	Measured values (cd/m ²)
F1	1,193	406	763
F2	2,386	811	759
F3	2,695	916	760
F4	1,760	598	759

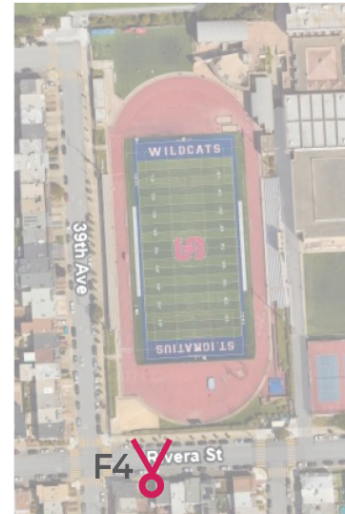
Value exceeds glare threshold* (cd/m²)

Value within glare threshold* (cd/m²)

*(based on CIE 150:2017 Table 3)

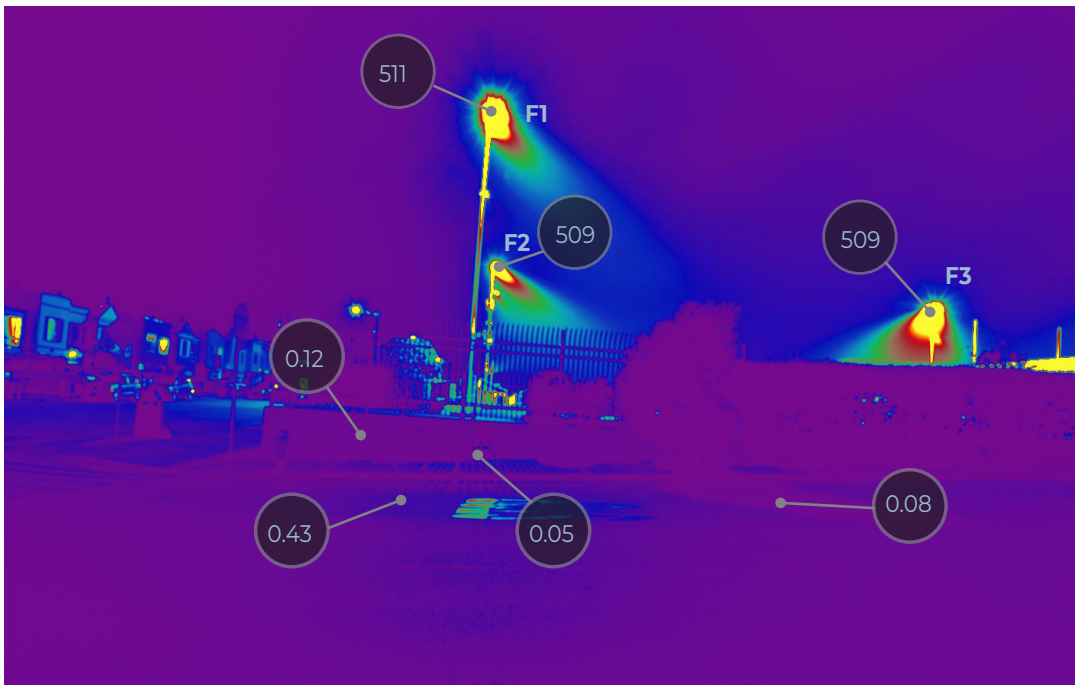
HDR Images

VIEW F4B - RIVERA ST FIELD VIEW (FIELD LIGHTING AT 40%)

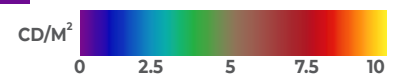


Not To Scale

VIEW F4B - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F4B - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F1	1,193	406	511
F2	2,386	811	509
F3	2,695	916	509

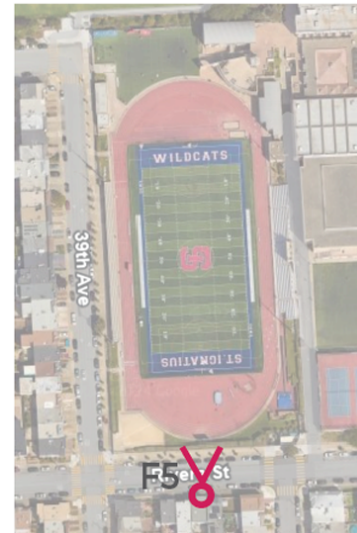
X Value exceeds glare threshold* (cd/m^2)

X Value within glare threshold* (cd/m^2)

*(based on CIE 150:2017 Table 3)

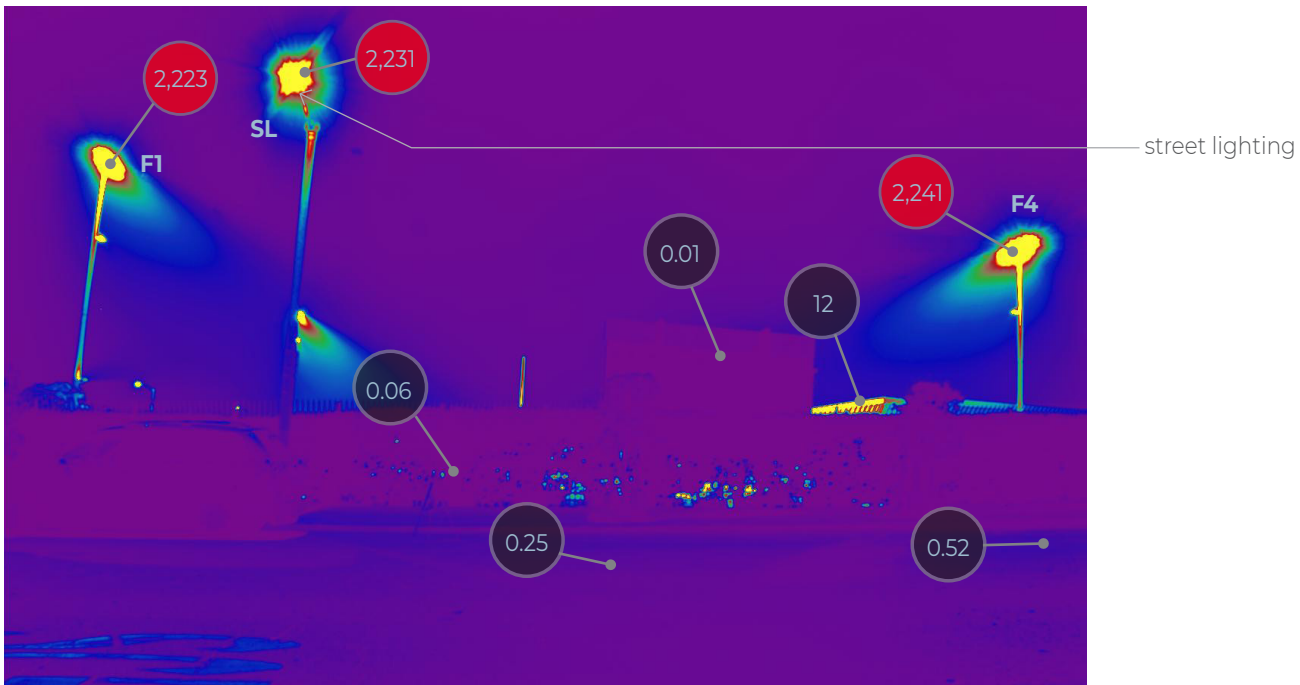
HDR Images

VIEW F5A - RIVERA ST FIELD VIEW (FIELD LIGHTING AT 100%)

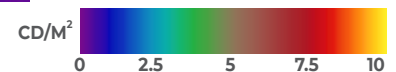


Not To Scale

VIEW F5A - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F5A - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F1	1,319	448	2,223
F4	1,432	487	2,241
SL	289	98	2,231

x Value exceeds glare threshold* (cd/m^2)

x Value within glare threshold* (cd/m^2)

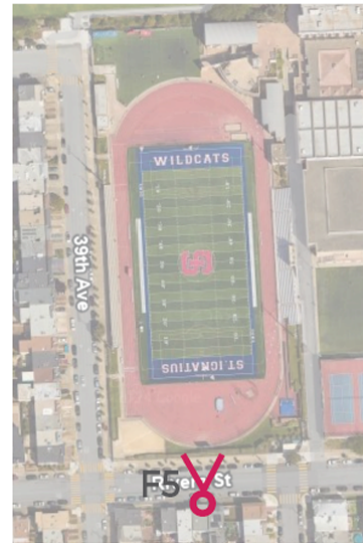
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 31

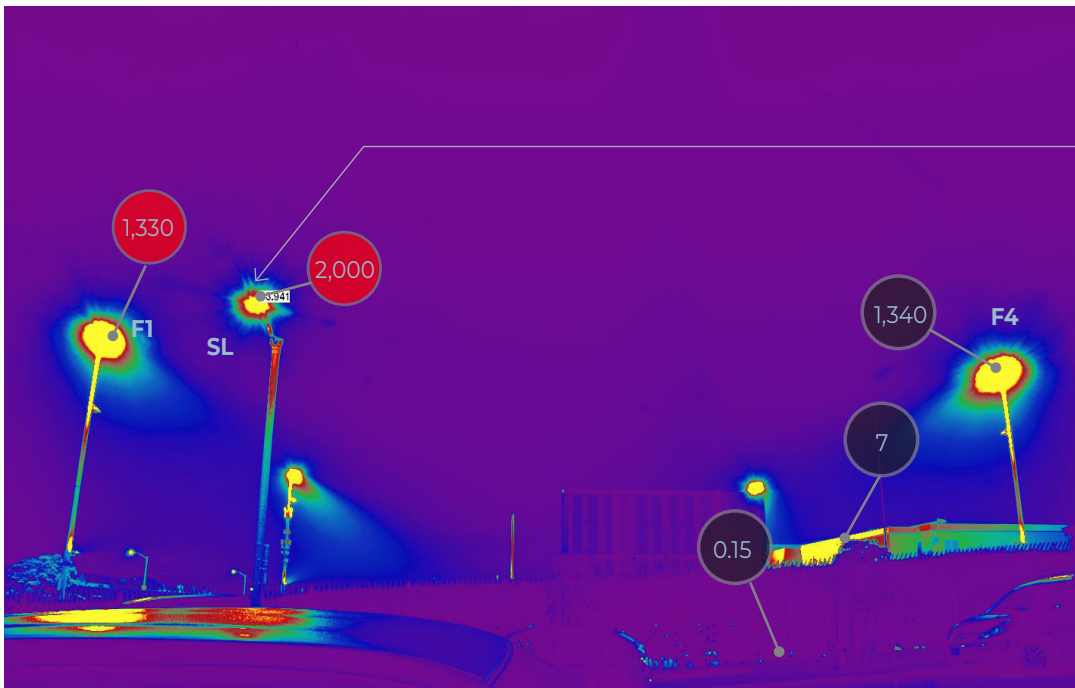
HDR Images

VIEW F5B - RIVERA ST FIELD VIEW (FIELD LIGHTING AT 60%)



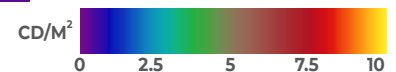
Not To Scale

VIEW F5B - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



street lighting

VIEW F5B - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m ²)	Post-curfew threshold per CIE 150 (cd/m ²)	Measured values (cd/m ²)
F1	1,319	448	1,330
F4	1,432	487	1,340
SL	289	98	2,000

Value exceeds glare threshold* (cd/m²)

Value within glare threshold* (cd/m²)

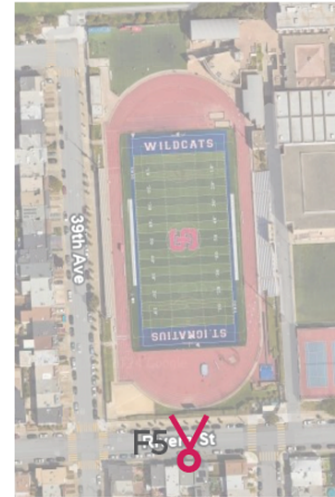
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 32

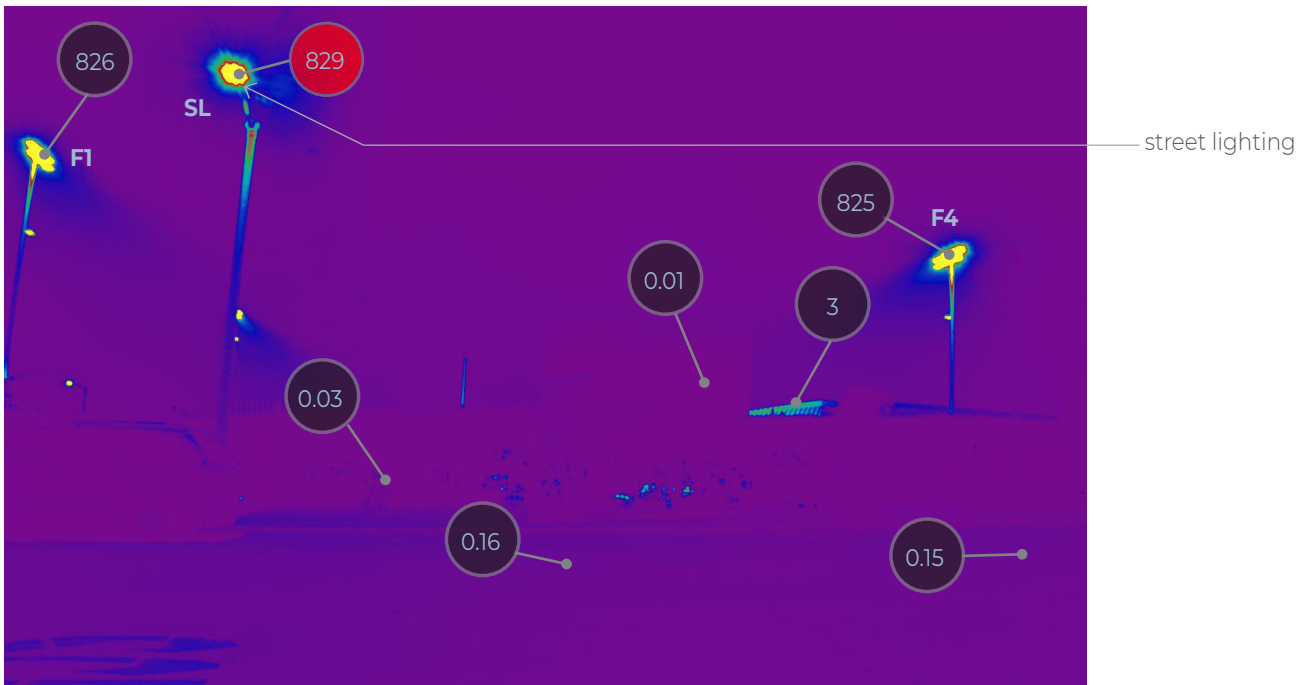
HDR Images

VIEW F5C - RIVERA ST FIELD VIEW (FIELD LIGHTING AT 40%)



Not To Scale

VIEW F5C - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F5C - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m^2)	Post-curfew threshold per CIE 150 (cd/m^2)	Measured values (cd/m^2)
F1	1,319	448	826
F4	1,432	487	825
SL	289	98	829

Value exceeds glare threshold* (cd/m^2)

Value within glare threshold* (cd/m^2)

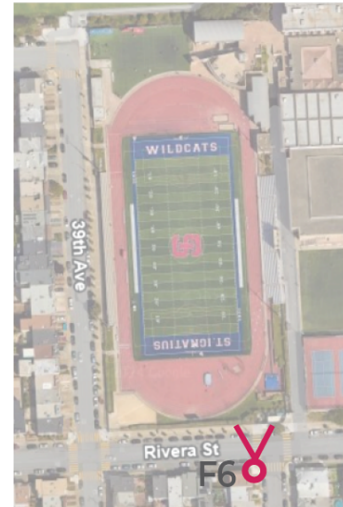
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 33

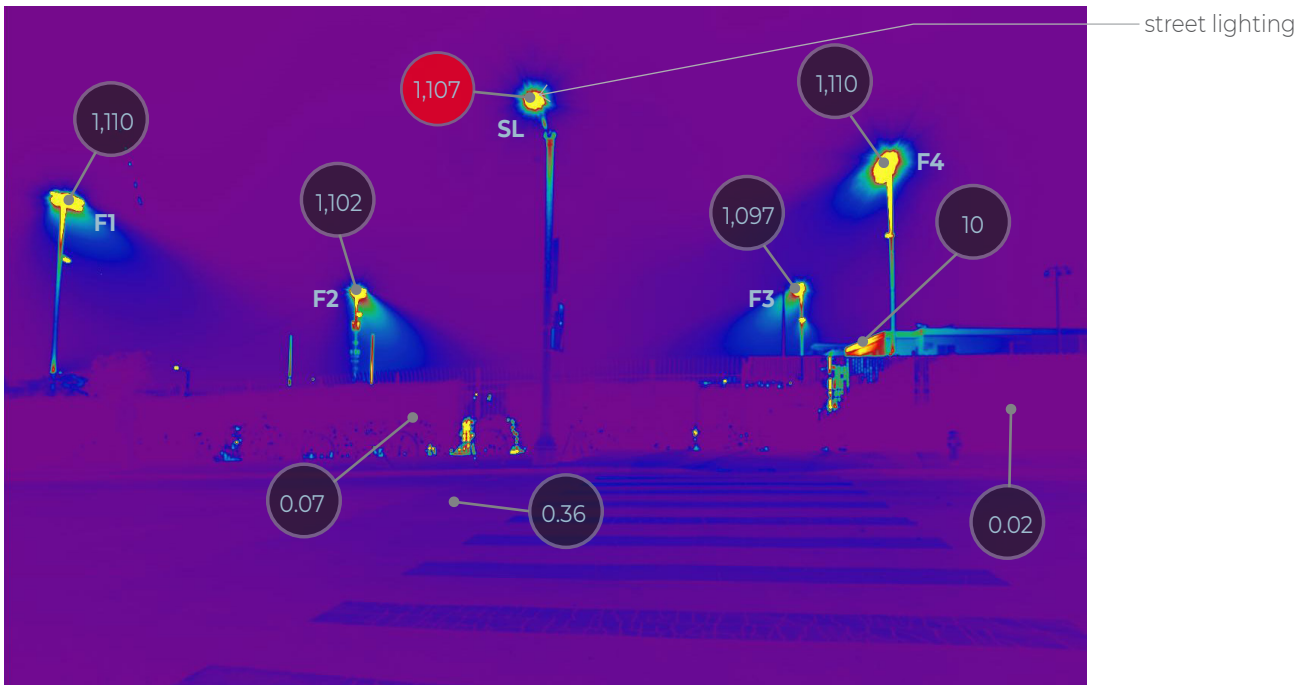
HDR Images

VIEW F6A - RIVERA ST FIELD VIEW (FIELD LIGHTING AT 100%)



Not To Scale

VIEW F6A - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



VIEW F6A - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m ²)	Post-curfew threshold per CIE 150 (cd/m ²)	Measured values (cd/m ²)
F1	1,604	545	1,110
F2	2,602	885	1,102
F3	2,393	813	1,097
F4	1,228	417	1,110
SL	276	94	1,107

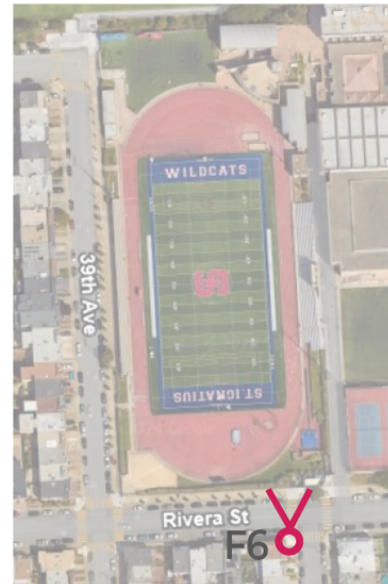
Value exceeds glare threshold* (cd/m²)

Value within glare threshold* (cd/m²)

*(based on CIE 150:2017 Table 3)

HDR Images

VIEW F6B - RIVERA ST FIELD VIEW (FIELD LIGHTING AT 40%)



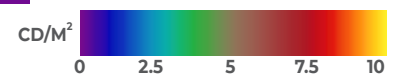
Not To Scale

VIEW F6B - RESIDENTIAL VIEW TOWARDS FOOTBALL FIELD



street lighting

VIEW F6B - HDR LUMINANCE MAP



GLARE ANALYSIS

Fixture in view	Pre-curfew threshold per CIE 150 (cd/m ²)	Post-curfew threshold per CIE 150 (cd/m ²)	Measured values (cd/m ²)
F1	1,604	545	508
F2	2,602	885	509
F3	2,393	813	509
F4	1,228	417	512
SL	276	94	512

Value exceeds glare threshold* (cd/m²)

Value within glare threshold* (cd/m²)

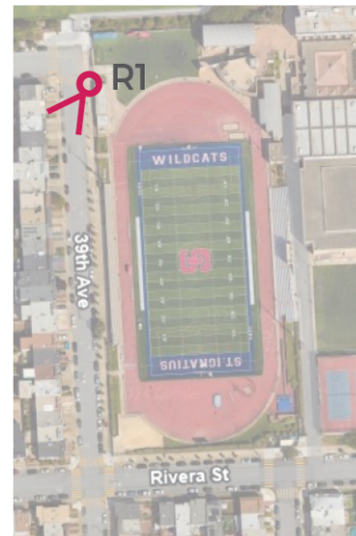
*(based on CIE 150:2017 Table 3)

St. Ignatius Field Lighting Study

HLB Lighting Design | 35

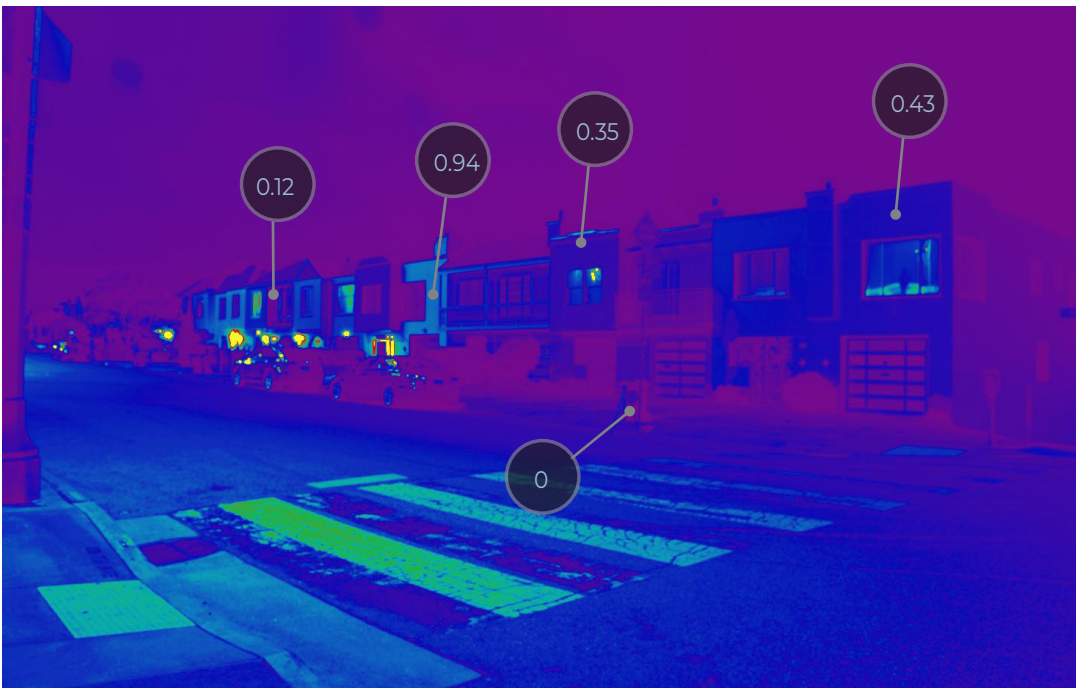
HDR Images

VIEW R1E - 39TH AVE RESIDENTIAL VIEW (FIELD LIGHTING AT 100%)



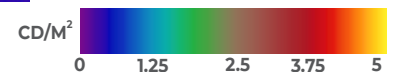
Not To Scale

VIEW R1E - VIEW TOWARDS RESIDENTIAL AREA



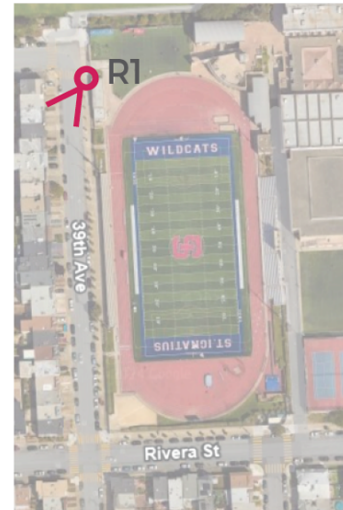
VIEW R1E - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



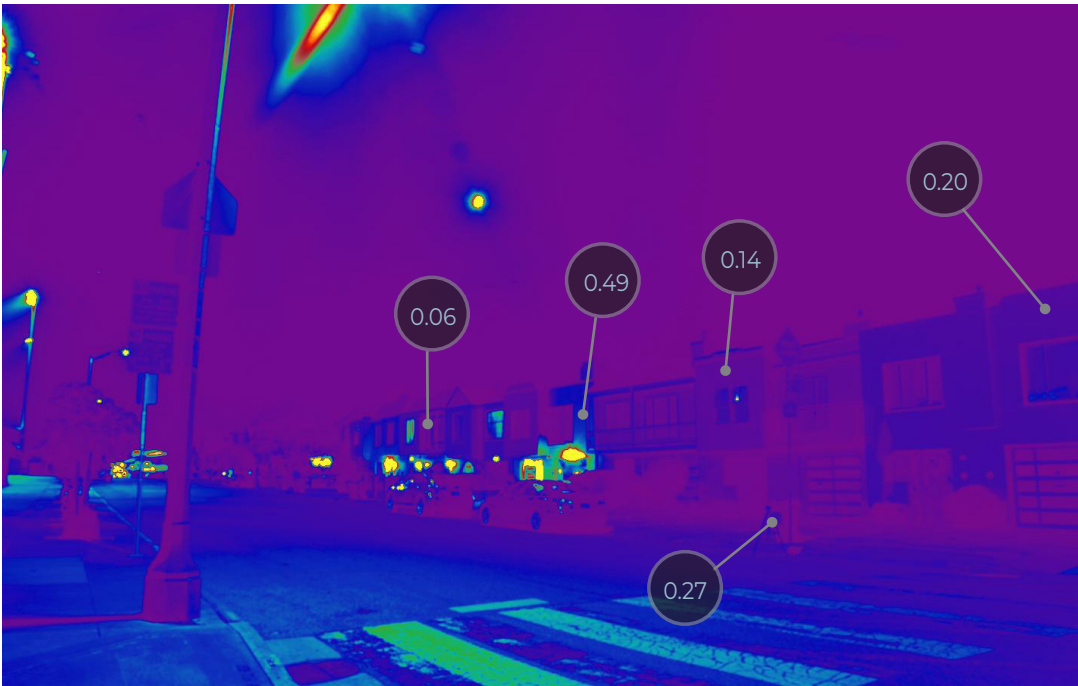
HDR Images

VIEW R1F - 39TH AVE RESIDENTIAL VIEW (FIELD LIGHTING AT 40%)



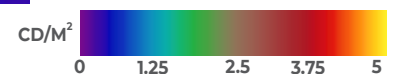
Not To Scale

VIEW R1F - VIEW TOWARDS RESIDENTIAL AREA



VIEW R1F - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*

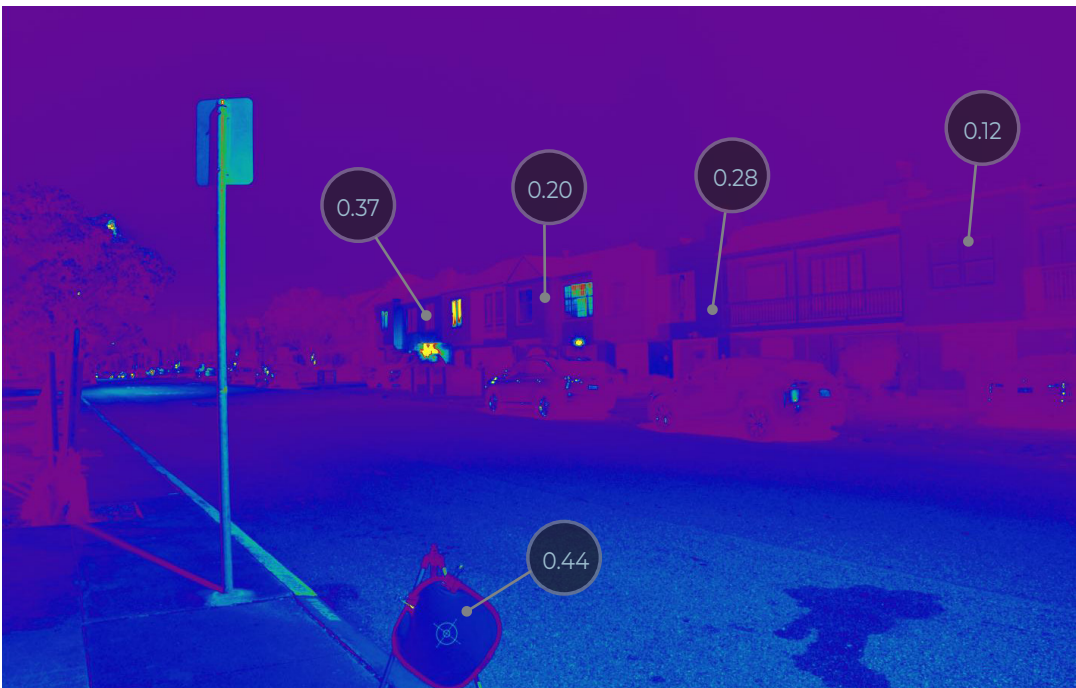


HDR Images

VIEW R1D - 39TH AVE RESIDENTIAL VIEW (FIELD LIGHTING AT 0%)

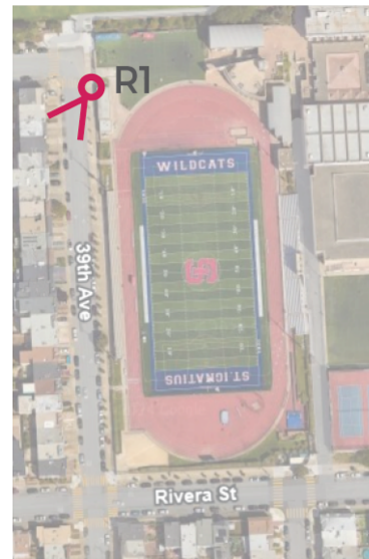


VIEW R1D - VIEW TOWARDS RESIDENTIAL AREA

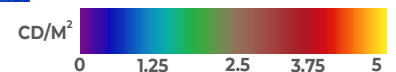


VIEW R1D - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



Not To Scale



HDR Images

VIEW R2E - 39TH AVE RESIDENTIAL VIEW (FIELD LIGHTING AT 100%)



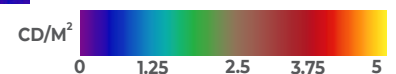
Not To Scale

VIEW R2E - VIEW TOWARDS RESIDENTIAL AREA



VIEW R2E - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



HDR Images

VIEW R2F - 39TH AVE RESIDENTIAL VIEW (FIELD LIGHTING AT 40%)



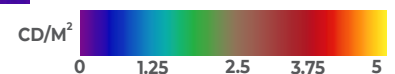
Not To Scale

VIEW R2F - VIEW TOWARDS RESIDENTIAL AREA



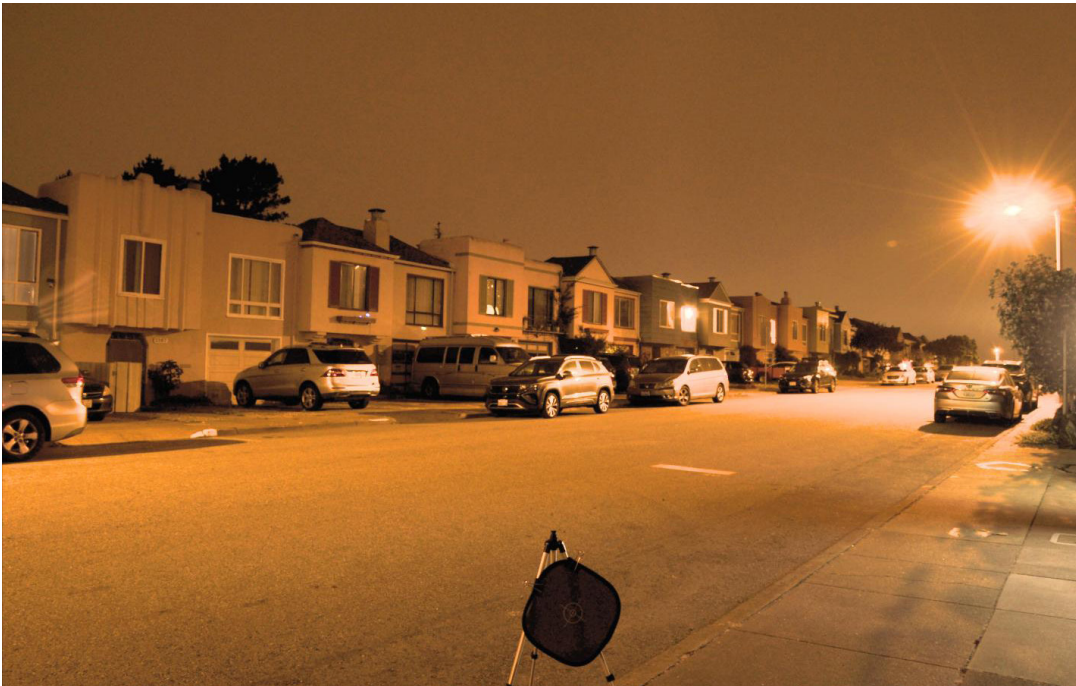
VIEW R2F- HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



HDR Images

VIEW R2D - 39TH AVE RESIDENTIAL VIEW (FIELD LIGHTING AT 0%)



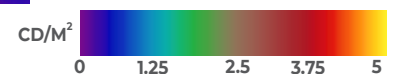
Not To Scale

VIEW R2D - VIEW TOWARDS RESIDENTIAL AREA



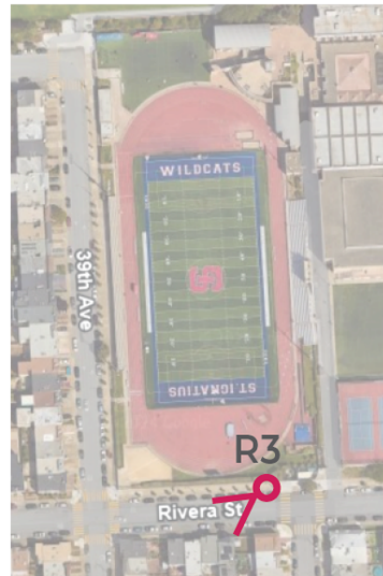
VIEW R2D - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



HDR Images

VIEW R3E - RIVERA ST RESIDENTIAL VIEW (FIELD LIGHTING AT 100%)



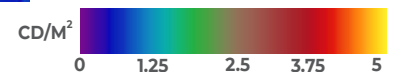
Not To Scale

VIEW R3E - VIEW TOWARDS RESIDENTIAL AREA



VIEW R3E - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



HDR Images

VIEW R3F - RIVERA ST RESIDENTIAL VIEW (FIELD LIGHTING AT 40%)



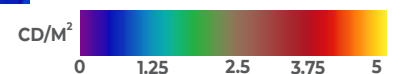
Not To Scale

VIEW R3F - VIEW TOWARDS RESIDENTIAL AREA



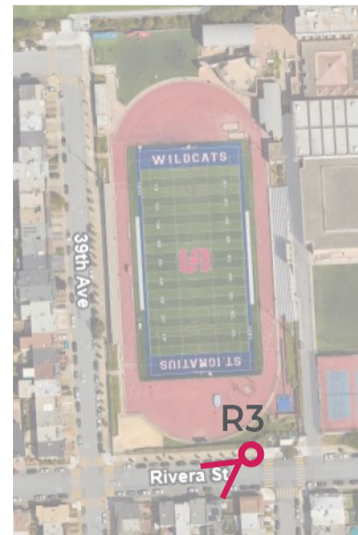
VIEW R3F - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



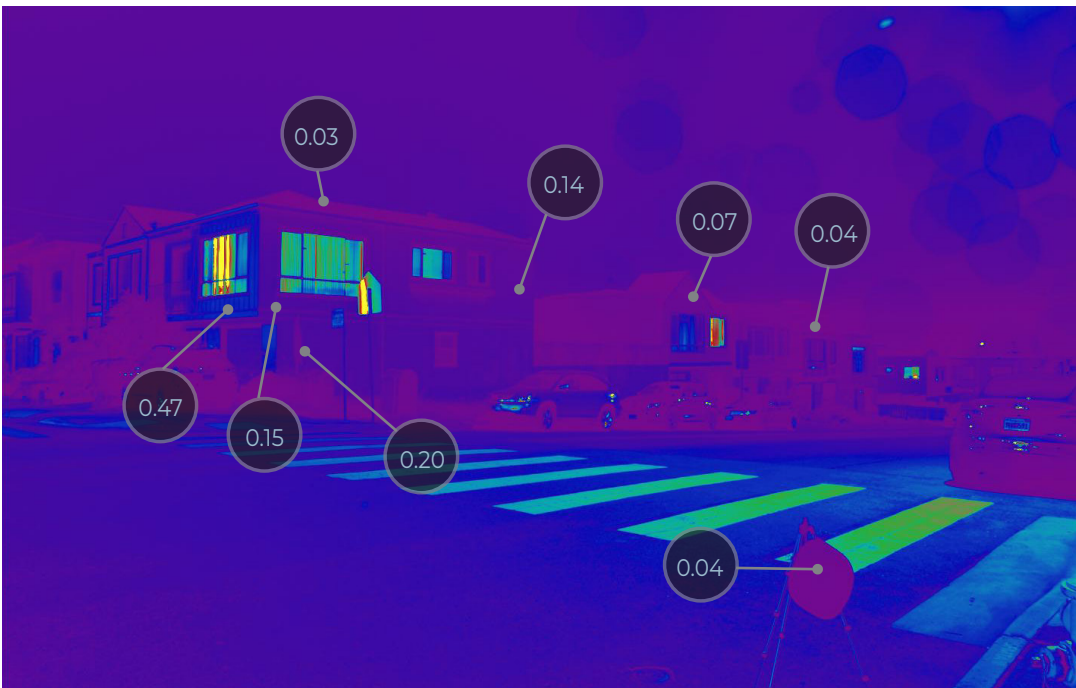
HDR Images

VIEW R3D - RIVERA ST RESIDENTIAL VIEW (FIELD LIGHTING AT 0%)



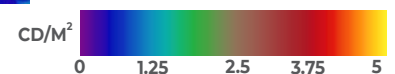
Not To Scale

VIEW R3D - VIEW TOWARDS RESIDENTIAL AREA



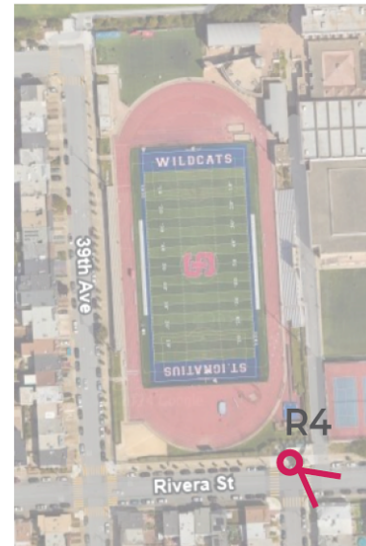
VIEW R3D - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



HDR Images

VIEW R4E - RIVERA ST RESIDENTIAL VIEW (FIELD LIGHTING AT 100%)



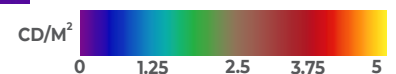
Not To Scale

VIEW R4E - VIEW TOWARDS RESIDENTIAL AREA



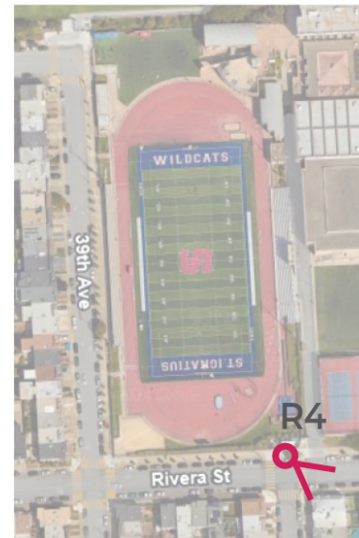
VIEW R4E - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



HDR Images

VIEW R4F - RIVERA ST RESIDENTIAL VIEW (FIELD LIGHTING AT 40%)



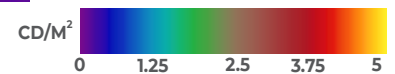
Not To Scale

VIEW R4F - VIEW TOWARDS RESIDENTIAL AREA



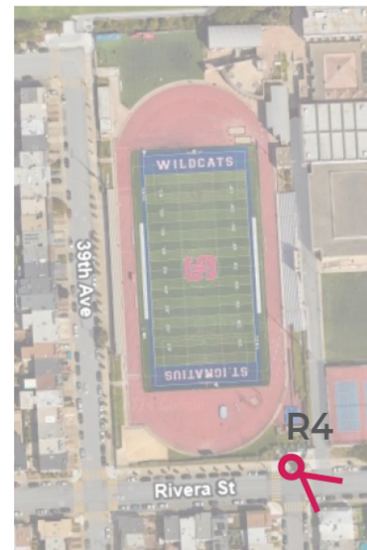
VIEW R4F - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*



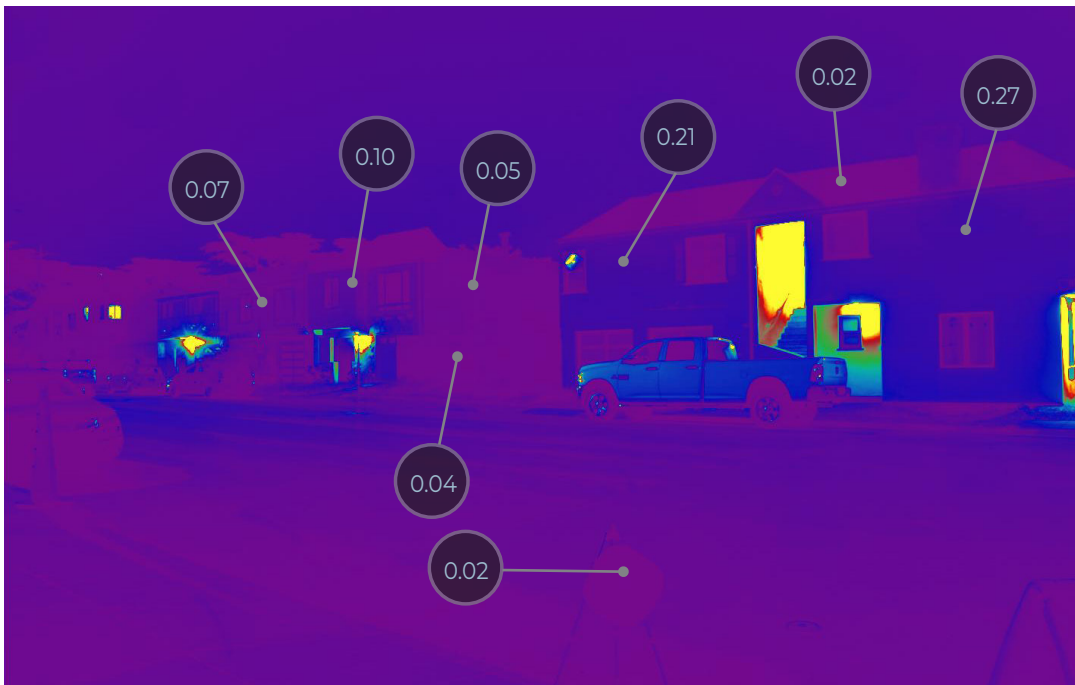
HDR Images

VIEW R4D - RIVERA ST RESIDENTIAL VIEW (FIELD LIGHTING AT 0%)



Not To Scale

VIEW R4D - VIEW TOWARDS RESIDENTIAL AREA



VIEW R4D - HDR LUMINANCE MAP

**views are included for context/informational purposes only and are not intended to be used as part of any analysis.*

