Novum Structures LLC | W126 N8585 Westbrook Crossing, Menomonee Falls, WI 53051

November 13, 2019

Price-Simms Inc. – Toyota Sunnyvale
898 W. El Camino Real
Sunnyvale, CA 94087

Re: 2019-7248; Toyota Sunnyvale (PLN PRC 2019-7248.3)

NOVUM

Background:
As part of Toyota's Image USAII Program, over one thousand (1,000) illuminated portal installations have been completed on a national basis over the past 14-years to provide a consistent, trademarked brand image for Toyota and their independent Dealer facilities. In this specific instance, the applicant (Toyota Sunnyvale) has been working with the Planning Review Committee (PRC) and the City of Sunnyvale for approval of stated improvements at the facility which include installation of an illuminated entrance portal per national program standards. As part of the review process, the PRC has recommended (1) "... shielding of the light sources to prevent glare or direct illumination on public streets or adjacent properties..." and (2) "... reducing the amount of lighting to a maximum of 0.5 foot-candles at the sidewalk..." (Reference: City of Sunnyvale, PRC Comments - dated 8/21/19)

Portal Engineering/Lighting System:
Specific to PRC recommendation #1 that "... shielding of the light sources (should be incorporated) to prevent glare or direct illumination on public streets or adjacent properties...", we can offer that the custom, engineered lighting solution developed as part of the IMAGE USA II Program for Toyota Motor North America (TMNA) is, in fact, an indirect, cutoff and shielded lighting system. The attached technical information is provided for reference to illustrate development of the custom, white (5600K) diode array that is shielded at the light source. Additionally, when attached to the aluminum light bar assembly, the diodes (or lights) are cutoff/shielded and mounted indirectly (or parallel to the glass plane) to limit light trespass through the custom, glass fabrications which are also designed with a custom filter/core to further limit light trespass on to the public streets or adjacent properties. As a result, we believe the engineered solution for the custom portal lighting meets the intent of the Sunnyvale Citywide Design Guidelines for reduction/prevention of direct illumination on adjacent properties.

Field Study/Light Readings:
Specific to PRC recommendation #2 regarding "... reducing the amount of lighting to a maximum of 0.5Fc (foot-candles) at the sidewalk and no overspill on the adjacent street...", a field study was conducted on the evening of Tuesday, October 29, 2019, to baseline existing light levels along the El Camino Real corridor. Over one hundred (100) light readings were recorded on an overcast/cloudy evening at twelve (12) OEM Automotive and retail locations using an Extech Model LT300 light meter. Readings were recorded adjacent to light sources at the sampled locations in order to provide a representative study of the illuminated areas. Light sources varied in setback distance from the sidewalk and utilized different types of lighting (fluorescent, metal halide, LED, etc.) with some (but not all) identified as cutoff and/or shielded systems. Accordingly, we believe the readings to be a representative yet random sample of the area along the El Camino Real corridor.

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Field Study/Light Readings (continued):

- Sampled Locations:
  - 1176 W. El Camino Real
  - 1124 W. El Camino Real
  - 1048 W. El Camino Real
  - 898 W. El Camino Real
  - 348 W. El Camino Real
  - 170 E. El Camino Real
  - 650 E. El Camino Real
  - 680 E. El Camino Real
  - 750 E. El Camino Real
  - 813 E. El Camino Real
  - 1025 E. El Camino Real

- Field Results:
  - Sidewalk:
    - Average: 12.30Fc
    - Mean: 10.74Fc
    - Median: 12.27Fc
    - Min/Max: 5.09Fc / 27.83Fc
  - Curb:
    - Average: 7.69Fc
    - Mean: 6.56Fc
    - Median: 7.25Fc
    - Min/Max: 2.64Fc / 14.46Fc
  - Street:
    - Average: 4.53Fc
    - Mean: 4.39Fc
    - Median: 4.04Fc
    - Min/Max: 3.02Fc / 6.36Fc

Portal Photometrics:
As presented on the attached Photometric Plan Study (Sheet A7.2) of the Planning Submittal (dated July 25, 2019) by TWM Architects + Planners, the maximum (2.7Fc) and average (2.1Fc) values for anticipated/modeled light levels on the sidewalk at Toyota Sunnyvale are significantly below average, mean and/or median values recorded for existing sites along the El Camino Real corridor.

Site Design/Operational Considerations:
- As presented on the Planning Submittal (dated July 25, 2019) by TWM Architects + Planners, site lighting and the location of the portal at Toyota Sunnyvale are setback from the neighboring sidewalk on El Camino Real to allow for minimal light trespass. This differs from numerous existing locations recorded in the field study where site lighting was located immediately adjacent to the sidewalk.
- As indicated in our meeting with the PRC on October 28, 2019, Toyota Sunnyvale has indicated a willingness to limit operation of the portal lighting during the evening hours.

Referenced Publications:
- Illuminating Engineering Society of North American (IESNA) Lighting Handbook
  Exterior, Safety (Building Exterior): 0.5-2.0Fc
- International Dark Sky Association – Information Sheet 77
  Building Exteriors, Entrances: 1.0-5.0Fc

Conclusion:
The custom, engineered lighting solution developed as part of the IMAGE USA II Program for Toyota Motor North America (TMNA) is, in fact, an indirect, cutoff and shielded lighting system which we believe meets the intent of the Sunnyvale Citywide Design Guidelines for reduction/prevention of direct illumination on adjacent properties. Additionally, while we recognize the PRC's recommendations for further reduction of the lighting levels onto the neighboring sidewalk and adjacent street, we do submit that anticipated light levels as part of the showroom remodel and façade renovations at Toyota Sunnyvale are aligned with recommended lighting levels from the Illuminating Engineering Society of North America (IESNA) for building exteriors and/or active entrances and also will be significantly lower than recorded values as part of the field study at existing neighboring locations along the El Camino Real corridor. Accordingly, we would respectfully recommend and request additional consideration from the City of Sunnyvale for acceptance of the current engineered lighting system which rapidly reduces light levels by providing an indirect, cutoff and shielded lighting solution for the proposal illuminated entrance portal at Toyota Sunnyvale.

Respectfully Submitted,
Steven M. Skowbo, Portal Program Manager
Novum Structures LLC

Attachments
- Appendix A, Field Study/Light Readings
- Entrance Portal Lighting – Technical Information
- TWM Architects + Planners, Photometric Plan Study (Sheet A7.2, dated July 25, 2019)

Appendix A – Field Study/Light Readings:

- Sample Pole Mounted Lighting

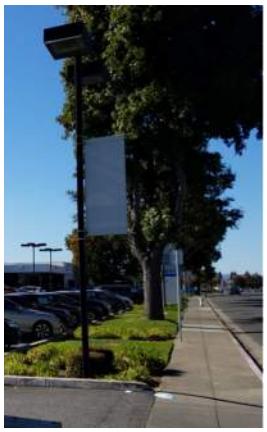







- Sidewalk/Frontage – El Camino Real (Daytime Photos)

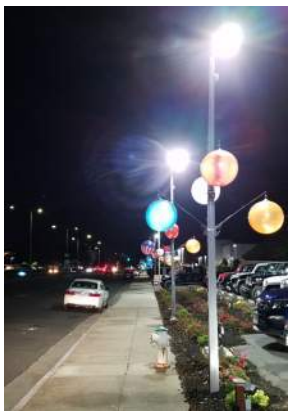
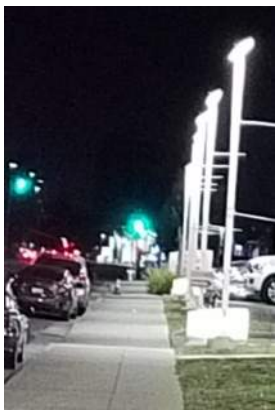


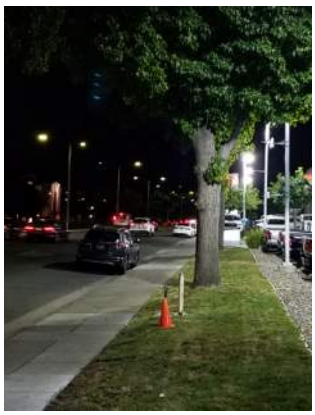
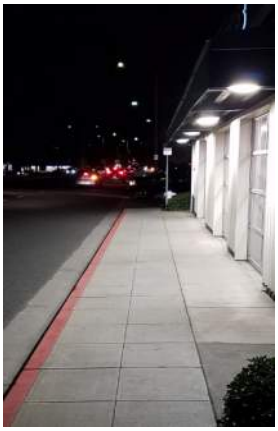
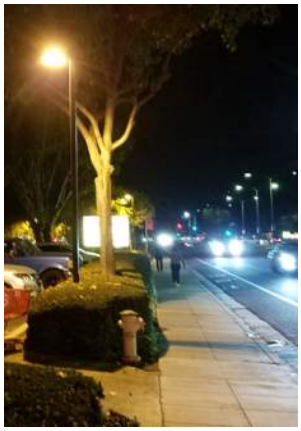


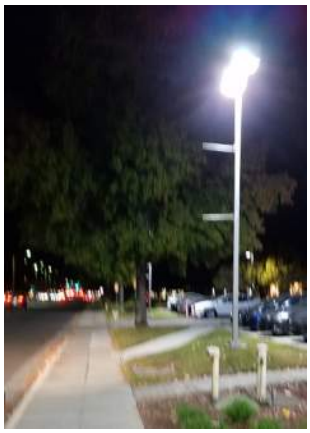


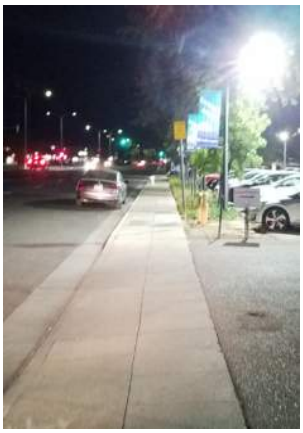
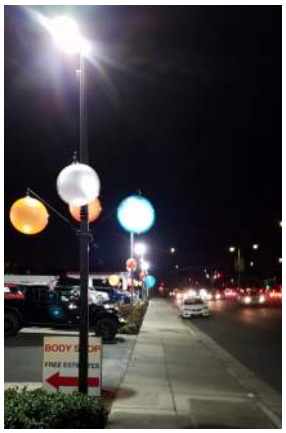

Appendix A – Field Study/Light Readings:

- Sidewalk/Frontage – El Camino Real (Nighttime Photos)

Appendix A – Field Study/Light Readings:

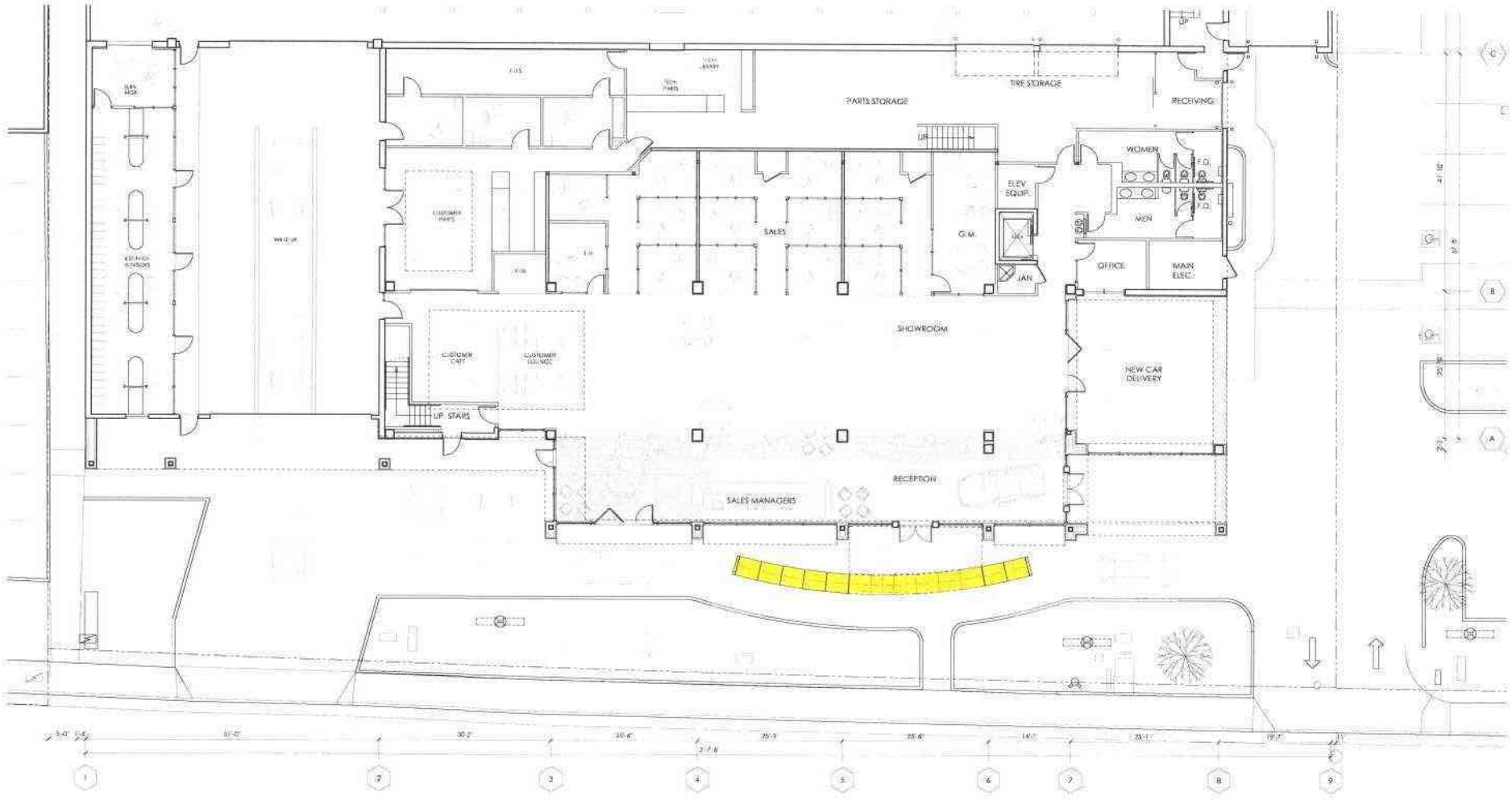
- Sample Light Readings (Sidewalk):

- Sample Light Readings (Curb):

- Sample Light Readings (Street):

Entrance Portal Lighting – Technical Information
(Novum Structures LLC)

Toyota Sunnyvale
(Sunnyvale, CA)



SHOWROOM PLAN

ARCHITECTS +PLANNERS

SHOWROOM REMODEL AND FACADE

TOYOTA SUNNYVALE, 898 WEST EL CAMINO REAL, SUNNYVALE, CA

1470 S.F. ADDITION

SHOWROOM PLAN

A3.2

SCALE: 1/8"=1'-0"
DATE: 10.25.18

TWM NO. 14.107.2
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PLANNING DRAFT (4)

ATTACHMENT 6
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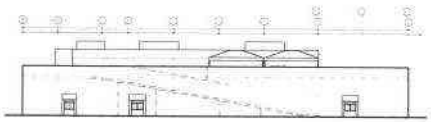
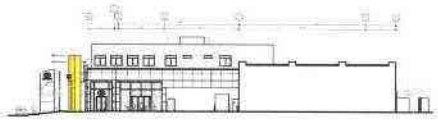
WEST ELEVATION - EXISTING



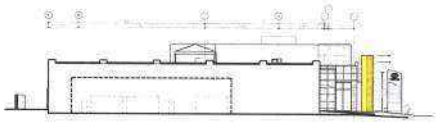
SOUTH ELEVATION - EXISTING

WEST ELEVATION - EXISTING



WEST ELEVATION - PROPOSED

SOUTH ELEVATION - PROPOSED



WEST ELEVATION - PROPOSED

EXISTING EXTERIOR MATERIALS:

1. CEMENT PLASTER - TOYOTA LIGHT GREY
2. SIGNAGE - TOYOTA RED
3. STOREFRONT GLASS - CLEAR GLASS IN CLEAR ALUMINUM SASH
4. ACCENT BAND - TOYOTA RED
5. CEMENT PLASTER ACCENTS - TOYOTA DARK GREY

NORTH ELEVATION - EXISTING

NEW EXTERIOR MATERIALS:

1. CEMENT PLASTER - TOYOTA MEDIUM GREY
2. PORTAL - WHITE GLASS WITH WHITE ALUMINUM TRIM - INTERNALLY LIT
3. ACM (ALUMINUM COMPOSITE MATERIAL) - TOYOTA SILVER WITH TOYOTA RED ACCENT
4. STOREFRONT GLASS - CLEAR
5. SIGNAGE - TOYOTA RED

NORTH ELEVATION - PROPOSED

ARCHITECTS +PLANNERS

SHOWROOM REMODEL AND FACADE

TOYOTA SUNNYVALE, 898 WEST EL CAMINO REAL, SUNNYVALE, CA

ELEVATION COMPARISONS

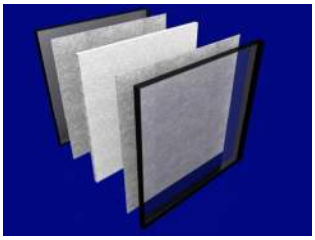
A7

SCALE: 1/16"=1'-0"
DATE: 10-25-18

TWM NO. 14 107.2

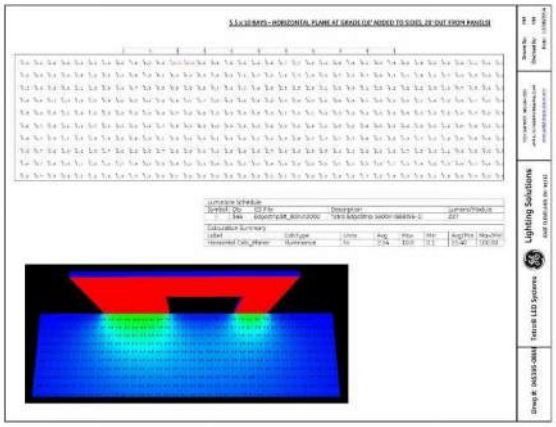
Entrance Portal Program:
LED Lighting System - Information Sheet

- Technology incorporated into portal installations beginning late-2014/2015

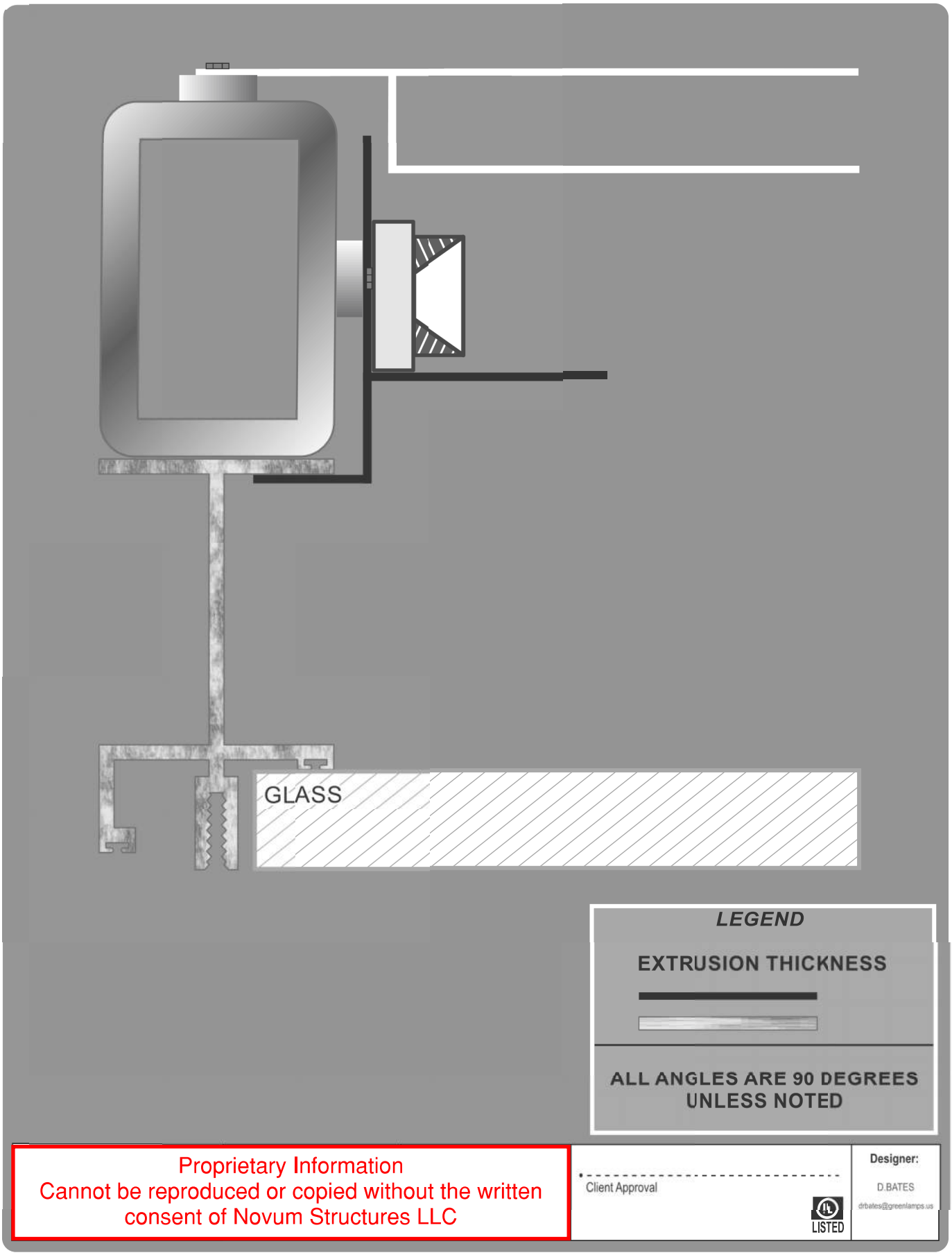


- Custom System Design to Toyota Standards for Color & Uniformity
  - Indirect/Cutoff Lighting at Source (see attached)
  - Custom glass fabrication filters & diffuses light transmittance (see attached)
- Color is in the "bright" white spectrum; however, engineered to dissipate quickly through the custom glass fabrication and to reduce measured light levels on the exterior of the portal element
- System is used in full-depth portal applications or, potentially, in custom light wall applications (+/- 12-inches deep)
- System includes AC/DC power converters (power supplies), low-voltage wiring harnesses, custom LED modules and reflector panels.
- System required to be controlled by Dealer installed/operated timer/controller to limit operation of portal lighting to 12-hours per day (maximum) per warranty terms.
- System is NOT dimmable – factory set to Toyota Standards

- Assistance provided with sample technical packages including:
  - System characteristics
  - Light plots - ground and vertical plane (see attached)



- Modeled and measured portal light levels are typically less than:
  - Light transmitted through the showroom glass
  - Light emitted to ground plane from area (ie. parking lot) lighting



Client Approval

LISTED

Designer:
D.BATES
drbates@greenlamps.us

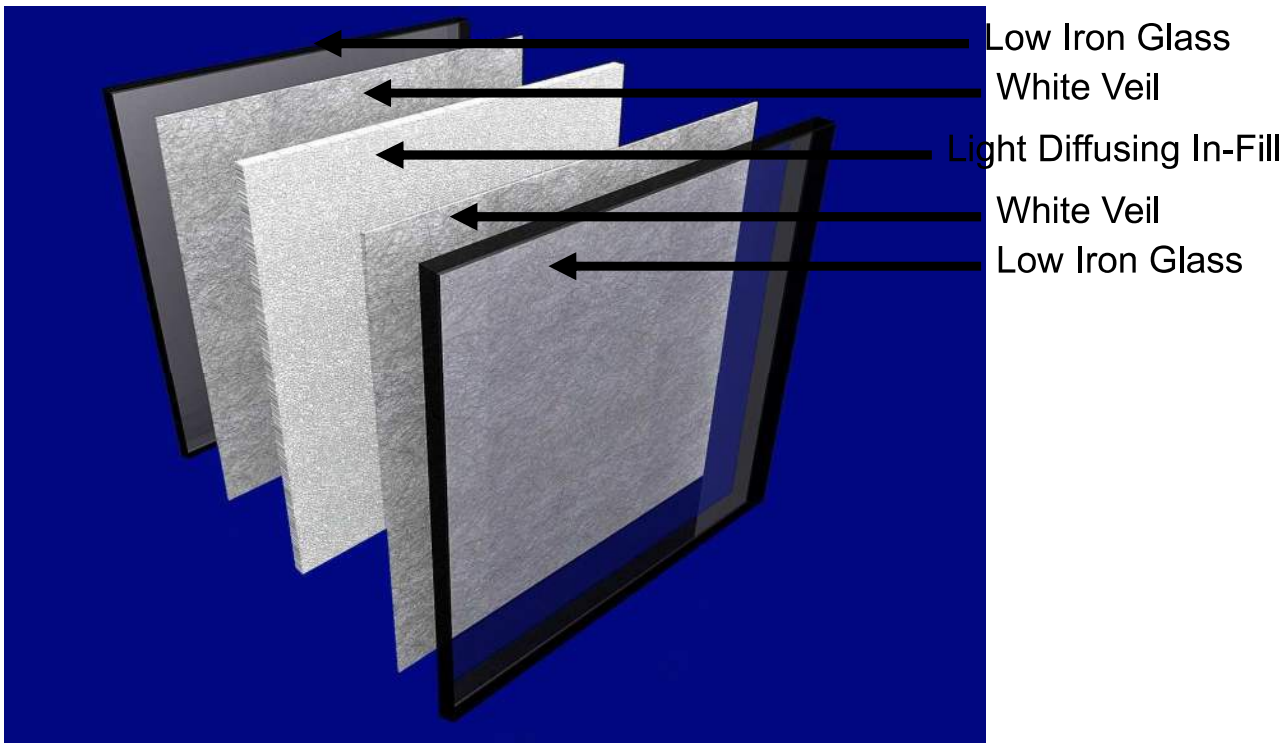
Sample Light Bar Assembly Photos:

Custom Diode/Modules

Light Bar Assembly design allows for light to be fully cutoff and shielded prior to leaving the portal element

Lighting Demonstration

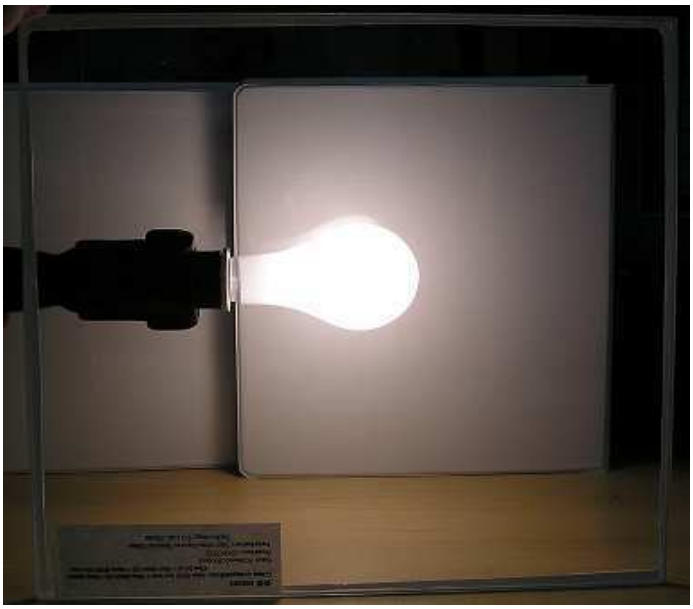
Light Diffusing Glazing Shield



Shielding for Maximum Uniformity

Sample Light-Diffusing Glass Photos:

Light Demonstration



Typical Wattage Bulb Behind
Standard Storefront Glazing

Pre – Engineered Light Mechanism
Behind Light Diffusing Glazing Shield

Light Diffusion

29%	light transmittance for beam incidence	DIN EN 410
24%	light transmittance for diffuse incidence	DIN EN 410
8%	specular light reflectance	DIN EN 410
28%	solar transmittance for beam incidence	DIN EN 410
23%	solar transmittance for diffuse incidence	DIN EN 410
15%	solar absorbance for beam incidence	DIN EN 410
8%	specular solar reflectance	DIN EN 410
33%	total solar energy trans. (TSET, SHGC)	DIN EN 410
27%	TSET for diffuse incidence	DIN EN 410
38%	shading coefficient, SC = g / 0.87	FEMP (2004)
33%	shading coeff. short wave, $SC_{sw} = T_s / 0.87$	FEMP (2004)
5.2%	shading coeff. long wave $SC_{LW} = SC - SC_{sw}$	FEMP (2004)
38%	shading coefficient, SC = g / 0.86	GANA (1997)

Glass Performance Data

(N) LIGHT POLE PHOTOMETRIC DATA

DESCRIPTIVE INFORMATION (From Photometric File)

Cree Inc
OSQ-Arx-4ME-U-57K-ULxxxxx w/OSQ-BLSLF
Cree OSQ Series Area Luminaire, Type IV Medium w/
Backlight Shield, U Input Power Designator, 5700K
MDA

TEMPLATE SPECIFICATION

Horizontal Footcandles
Scale: 1 Inch = 20 Ft.
Light Loss Factor = 1.00
Luminaire Photometric = 20808
Total Initial Lumens = 20808
Mounting Height = 16.00 Ft
Maximum Calculated Value = 26.99 Fc
Arrangement: Twin
Arm Length = 2 Offset = 3 Ft

LUMINAIRE LAYOUT INFORMATION

#	X	Y	Z	Orient	Tilt	Roll	Spin	Tilt Correction
1	2.00	3.00	16.00	0.00	0.00	0.00	0.00	1.00
2	2.00	-3.00	16.00	0.00	0.00	0.00	0.00	1.00

PORTAL PHOTOMETRIC DATA

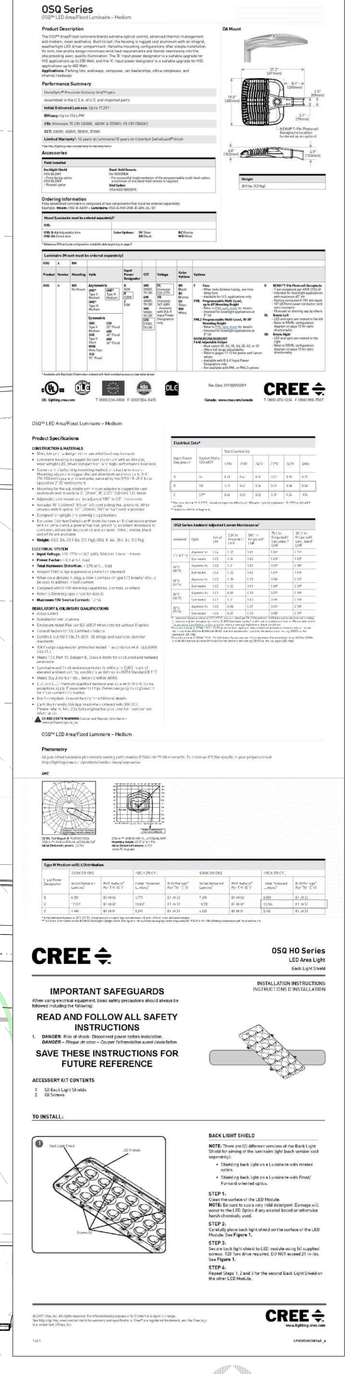
Calculation Summary

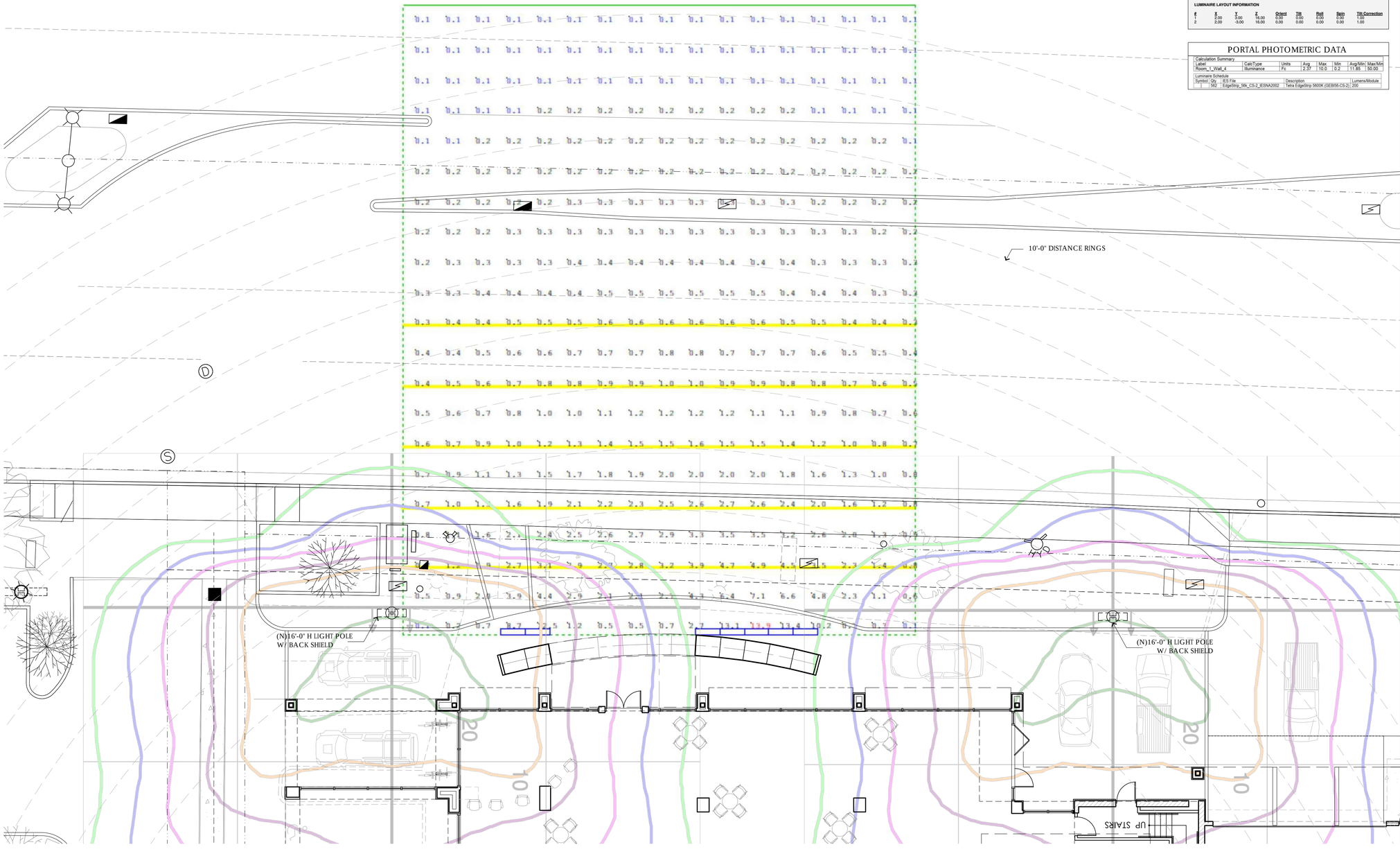
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Room_1 Wall_4	Illuminance	Fc	2.37	10.0	0.2	11.85	50.00

Luminaire Schedule

Symbol	Qty	IES File	Description	Lumens/Module
	960	EdgeSling_36k_CS-2_IESNA2002	Tetra EdgeSling 3600K (SEIB56-CS-2)	200

(N) LIGHT POLE SPEC





PHOTOMETRIC
PLAN STUDY

TWM Architects + Planners
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FAX 415-472-5846
www.twmarchitects.com

SHOWROOM REMODEL AND FACADE

TOYOTA SUNNYVALE, 898 WEST EL CAMINO REAL, SUNNYVALE, CA 94087

PHOTOMETRIC

A7.2

SCALE: 1/8"=1'-0"
DATE: JULY 25 2019

TWM NO: 14-107.2

PLANNING SUBMITTAL (4) - 25 JULY 2019