

Date: 23 February 2021

To: City of La Crosse Common Council

From: Michael DiBlasi, Mike Libby

RE: City of La Crosse Historical Lighting

Dear Council Members:

Thank you for enlisting Schuler Shook to review and provide recommendations for decorative pedestrian lighting within your historic residential district. We understand the important role that, thoughtful, lighting design plays in enhancing community pride, while creating safe and comfortable community spaces.

We met with Randy Turtenwald and Matt Gallagher from the City of La Crosse to better understand the goals and opportunities of this project and the existing lighting systems and standards in the City. We have also had correspondence with Councilperson Kris Kahlow and have received background information on this effort, to date, as well as the draft resolution regarding lighting in the historic district.

Existing Conditions

We understand the City of La Crosse does not have comprehensive lighting standards and the lighting approach varies throughout the City.

PARTNERS

Michael DiBlasi
Todd Hensley
Jim Baney
Jack Hagler
Michael Burgoyne
Emily Klingensmith
Giulio Pedota
Joshua Grossman
Kimberly Corbett Oates

FOUNDERS

Duane Schuler
Robert Shook

219 Main Street SE
Suite 200
Minneapolis, MN
55414 USA

+1 612 339 5958

We do understand the following precedents:

- Most residential areas are illuminated, at intersections only, by LED roadway lighting on wood poles owned and maintained by Xcel energy. We understand that these fixtures have a Correlated Color Temperature (CCT) of 4000K.
- Some commercial districts and main city streets (excepting state and federal highways), such as Market Street, are illuminated by Cree Edge post top fixtures which are owned and maintained by the City. These fixtures have a CCT of 4000K.
- A recent project installed Holophane Taft LED post-top lighting in the historic district of 10th Street and Cass St. We understand these fixtures have a, warmer, CCT of 3000K.
- Other fixture types have been deployed in areas throughout the city, as well.



Opportunities and Goals

We understand that creating a safe and comfortable lighting system that honors the historic nature of the neighborhood is the main goal of this project. Through communication with Councilperson Kahlow and reviewing the draft resolution, we understand the following parameters, set forth by the Neighborhood Association, for the lighting:

- Ornamental post-top fixtures with a 12' pole should be used.
- The fixtures should have a Correlated Color Temperature (CCT) of 2700K to provide a warm, historic presence.
- The lighting should be neighborhood-focused, rather than street-focused.
- The fixture layout should be staggered with relation to the street.
- The layout should provide 0.1 horizontal footcandles minimum/ 0.5 horizontal footcandles average on the surface of the sidewalk.

In addition to the parameters above, we see the following opportunities:

- Provide diffused/comfort optics and lower fixture wattages to minimize the glare that is associated with street lighting. Refer to the attached page "Optical Characteristics for Discussion" for more information regarding the types of fixture optics available.
- Balance the use of diffused optics with a goal of limiting lighting trespass into residences.
- Careful placement of lighting at intersections to allow the removal of the Xcel-owned fixtures in these locations.

Recommendations

Refer to the attached page, "Proposed Fixture Options", for fixture options. Note that each fixture has a variety of additional optical options, lumen outputs, decorative elements (finials, etc.) and pole options that can be finalized once a fixture concept has been chosen. On the same page, "Variations" shows several fixtures from different manufacturers that can be considered once a direction has been chosen.

Refer to the attached pages, "Preliminary Calculations", for our initial photometric analysis of layouts using the Proposed Fixtures. These analyses were performed to confirm each fixture's suitability for this application at different spacings. Also included is a calculation with the Holophane Taft fixtures that were installed in the Cass and 10th district, for your reference and comparison.

Once a direction has been determined, it will be important to verify the final selections and optical options with further calculation. Since it is difficult to visualize the light quality of a fixture from photos and calculations, we also recommend installing a mockup fixture for final review before finalizing the design and construction documents.

The attached calculation drawings also show a representation of the how well each fixture prevents light trespass that can spill into adjacent residences. Due to the proximity of residences to the sidewalk, some trespass is to be expected with any option, but these will provide a basis to compare each fixture. We can discuss this item further to help clarify this issue.



We recommend reducing the spacing of the fixtures from 150', as noted in the Draft Resolution, down to 80-100'. This spacing works well for a 355' block (the basis for our calculation). The final spacing will be adjusted, as necessary for blocks of different lengths and obstructions encountered along the sidewalk.

You will also note that we placed the first pole 10' away from the sidewalk curb cut/crosswalk. It is a good practice to locate a fixture near the crossing to help motorists see pedestrians stepping off the curb. This location can be adjusted to coordinate with other items at the intersection and how procedures such as snow plowing/piling impact fixture location.

Option 1 (Lumec MetroScape) is the best, optically. It has a wide distribution and comfort optics yet minimizes light trespass into residences. It has a less "bulky" appearance than many others but maintains historical styling.

The other options are viable choices, as well.

- Option 2 (Sternberg Carson City) is the best match to historical photos and has good distribution. The frosted lenses will create some light trespass. Also, the lightest frost (used in calculations) may not fully conceal the LED's. A heavier frost, which will shorten the distribution and increase light trespass, may be preferred after you review a mockup.
- Option 3 (Lumca Cosmo) minimizes light trespass very well and will be comfortable with a frosted lens, however, has a shorter throw than Option 1. Its appearance is "transitional", blending contemporary and historical styling.
- Option 4 (Holophane Granville) provides a very wide and comfortable distribution and will conceal its use of LED. The downside is that it will provide more trespass than the previous options. It maintains historical styling.
- Option 5 (Holophane Taft with lens) follows the Cass Street precedent and historical styling, while concealing the LED and providing a wide and comfortable distribution. However, as with the Granville, it will provide more light trespass.

Please review these recommendations and reach out with further questions or comments.

We look forward finalizing this design and moving forward.

Sincerely,

Michael DiBlasi

Mike Libby



La Crosse Historic Reference Photos

PROPOSED FIXTURE OPTIONS



Option 1:
Lumece Metroscop
Comfort Optic



Option 2:
Sternberg Carson City
Lightly Frosted Cage Lens



Option 3:
Lumca Cosmo
Frosted Flat Lens



Option 4:
Holophane Granville
Prismatic Lens,
Reduced-Uplight Optics



Option 5:
Holophane Taft
Prismatic Lens

Photometric layouts for Options 1 through 5 in, both, 6 fixtures and 8 fixtures per 355' block are included below.

VARIATIONS



Holophane Taft (flat lens)
installed on Cass Street.



OPTICAL CHARACTERISTICS FOR DISCUSSION



Frosted/Comfort Optics

- Reside in top of fixture
- Maintains light cutoff and limits light spill into windows since source is tucked-up into top of fixture.
- Not precisely controlled: some spill into street and yards. Creates a round “blob” of light
- Can require tighter spacing than “high performance optics” depending on the density of the frost
- Provides diffused light that is more comfortable when pedestrians look up into the fixture



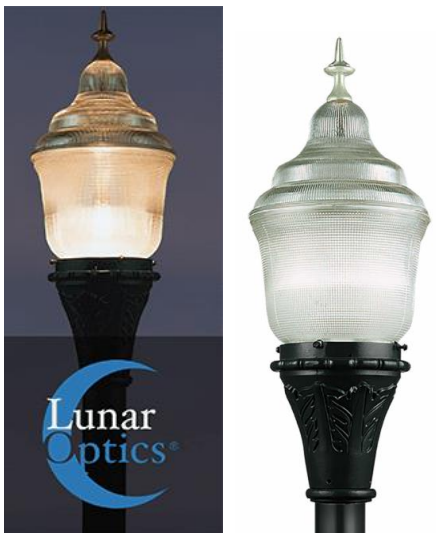
High Performance Optics

- LEDs with a clear lens reside in top of fixture
- Maintains light cutoff and can achieve minimal light spill into windows when house-side shields are used
- The optics limit the light to the sidewalk reducing spill into street and yards
- Can provide longer spacing
- Light can be harsh when pedestrians look up into the fixture
- Some manufacturers have options to provide a frosted flat lens over the array to soften the output and glare.



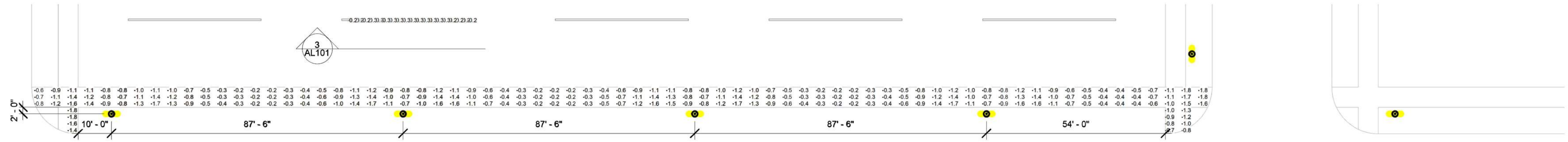
Cage Lens Options

- Fixtures without a lens will maintain the intended light distribution the best and will not add additional spill light.
 - Limits the accumulation of dirt. Cobwebs can be rinsed out from the ground, if needed.
 - Loses some of the historical look
- Frosted or Prismatic lenses will modify the light distribution
 - Most options will cause some spill light into residences and makes the fixture more visible
 - Fixture will no longer be full-cutoff but many have options available to minimize up-light
 - The fixture will have a strong presence, but the sidewalk will appear darker
- Clear or lightly seeded options affect the light distribution less.
 - Dust accumulation can make the fixture appear dirty.
 - Insects that get into fixture may be visible and require disassembly to remove.
 - Sidewalk will be well-illuminated and the lens will give the fixture some presence.

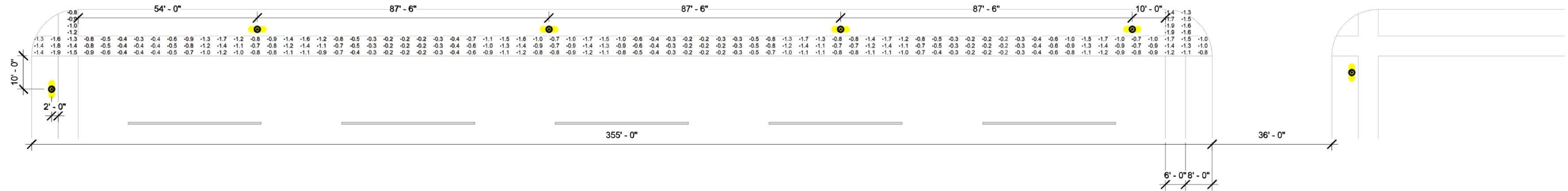


All-Glass/Acrylic Globes

- Up-light Limiting Optics
 - While having a solid fixture top is one way to limit up-light spill, there are options to use an all-glass globe while limiting the up-light spill of the fixture through the use of internal shielding.

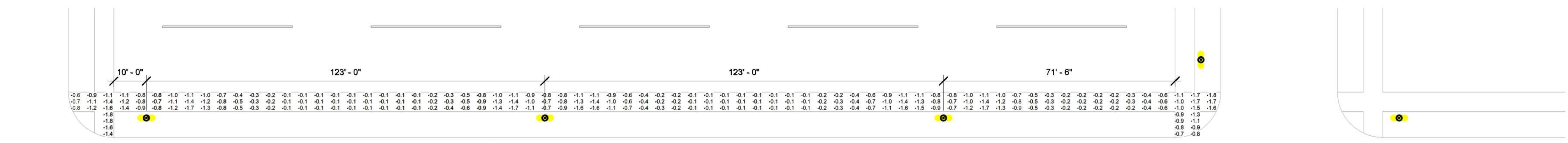


OPTION 1A: LUMEC: METROSCAPE TYPE 1, 2597LM, COMFORT OPTIC

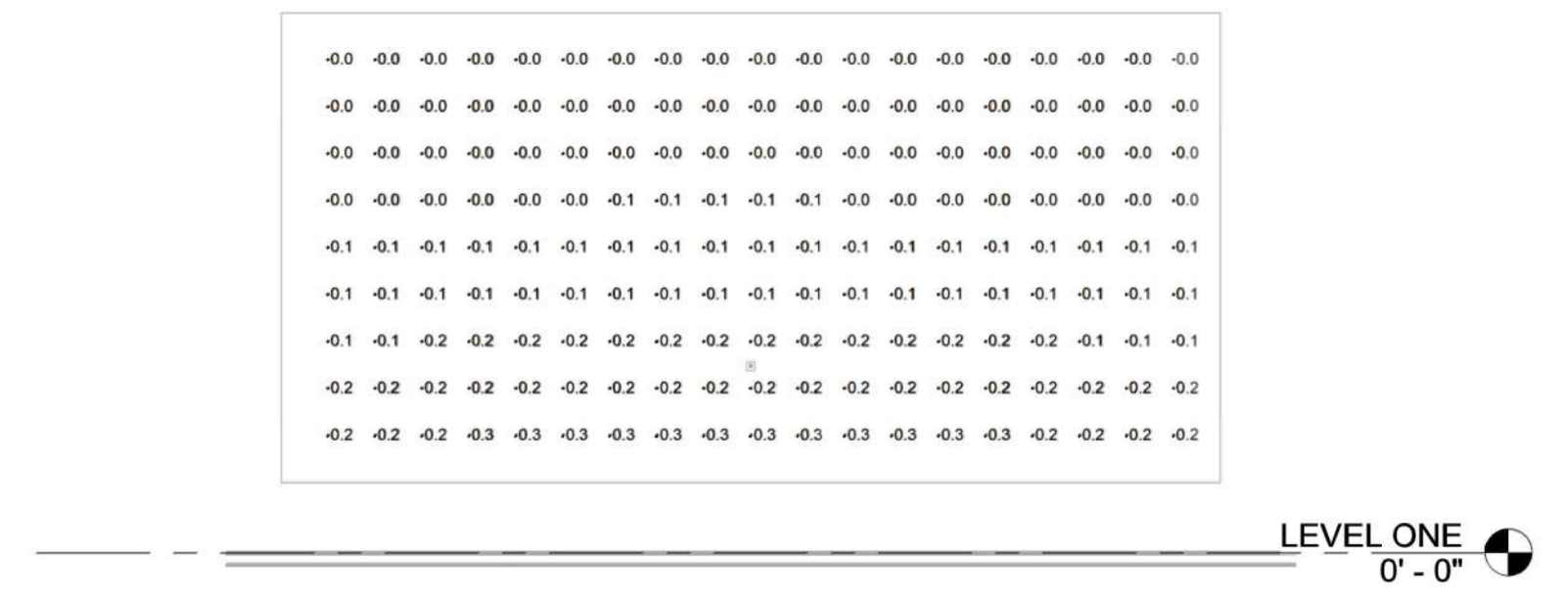


OPTION 1B: LUMEC: METROSCAPE TYPE 1, 2597LM, COMFORT OPTIC

1 SIDEWALK LIGHTING OPTION 1A (8 FIXTURES PER BLOCK)
SCALE: 1" = 20'-0"



2 SIDEWALK LIGHTING OPTION 1B PLAN (6 FIXTURES PER BLOCK)
SCALE: 1" = 20'-0"



SIDEWALK ILLUMINANCE			
Calculation Points Name	Average	Maximum	Minimum
CASS FIXTURE A : (8) POLES PER BLOCK	1.2 fc	2.8 fc	0.2 fc
CASS FIXTURE B : (6) POLES PER BLOCK	1.0 fc	2.8 fc	0.1 fc
OPTION 1A : (8) POLES PER BLOCK	0.8 fc	1.9 fc	0.2 fc
OPTION 1B : (6) POLES PER BLOCK	0.7 fc	1.9 fc	0.1 fc
OPTION 2A : (8) POLES PER BLOCK	1.5 fc	3.0 fc	0.3 fc
OPTION 2B : (6) POLES PER BLOCK	1.2 fc	3.0 fc	0.1 fc
OPTION 3A : (8) POLES PER BLOCK	1.3 fc	6.4 fc	0.1 fc
OPTION 3B : (6) POLES PER BLOCK	1.0 fc	6.4 fc	0.0 fc
OPTION 4A : (8) POLES PER BLOCK	0.6 fc	1.1 fc	0.3 fc
OPTION 4B : (6) POLES PER BLOCK	0.4 fc	1.1 fc	0.1 fc
OPTION 5A : (8) POLES PER BLOCK	0.6 fc	1.0 fc	0.3 fc
OPTION 5B : (6) POLES PER BLOCK	0.5 fc	1.0 fc	0.2 fc

SIDEWALK LIGHTING - GENERAL NOTES

- A INSTALLATION SHALL CONFORM TO ALL APPLICABLE NEC, UL, STATE AND LOCAL CODES.
- B FIXTURE LAYOUT IS FOR A 355' LONG BLOCK. DESIGN SHALL BE ADJUSTED TO ACCOMMODATE FOR DIFFERENCES IN BLOCK LENGTH AND OBSTRUCTIONS.
- C IT IS RECOMMENDED THAT THE CITY PROCURE AND INSTALL A MOCKUP FIXTURE FOR REVIEW PRIOR TO ORDERING ALL FIXTURES FOR FINAL VERIFICATION OF OPTIONS AND OPTICAL CONTROLS.
- D DRAWINGS INDICATE PRELIMINARY CALCULATIONS TO COMPARE FIXTURE OPTIONS AND AID OWNER IN MAKING A FIXTURE SELECTION. ONCE A FIXTURE SELECTION IS MADE, INCLUDING FINAL PHOTOMETRIC DISTRIBUTION AND LENS OPTIONS, FINAL CALCS SHALL BE PERFORMED TO CONFIRM DESIGN.

3 VERTICAL LIGHT ON ADJACENT RESIDENCES
SCALE: 1/8" = 1'-0"



THIS DRAWING INDICATES LIGHTING EQUIPMENT LAYOUT AND DESIGN OF LIGHTING SYSTEMS. REVIEW BY A QUALIFIED ENGINEER IS NECESSARY TO ASSURE SAFETY AND CODE COMPLIANCE.

FOR REFERENCE ONLY

REFER TO E-SERIES DRAWINGS FOR ELECTRICAL FEEDS, DISCONNECT SWITCHES, CONDUIT, AND WIRE FOR ALL LIGHTING EQUIPMENT. DIVISION 26 CONTRACTOR SHALL PROVIDE AND INSTALL ALL LIGHTING EQUIPMENT AND CONTROL WIRING FOR A COMPLETE AND OPERABLE SYSTEM.

PRELIMINARY
NOT FOR CONSTRUCTION

Schuler Shook
THEATRE PLANNERS / LIGHTING DESIGNERS
219 MAIN STREET SE, SUITE 200
MINNEAPOLIS, MN 55414
T 612 339 5956 F 612 337 5097
schulershook.com

Federal copyright laws protect the intellectual property of designers by giving copyright protection to plans and designs. The use of these plans and specifications shall be restricted to the original site for which they were prepared and publication thereof is expressly limited to such use. Reproduction, publication, or reuse by any method, in whole or in part, is prohibited. Plans cannot be modified or redrawn without the copyright owner's written approval. Title to the plans and specifications remain with Schuler Shook without prejudice.

THIS DRAWING INDICATES GENERAL LIGHTING LAYOUT AND DESIGN OF LIGHTING SYSTEMS. REVIEW BY A QUALIFIED ENGINEER IS NECESSARY TO ASSURE SAFETY AND CODE COMPLIANCE.

PRELIMINARY CALCULATIONS

NEIGHBORHOOD LIGHTING HISTORIC DISTRICT

Owner:
City of La Crosse

Scale: As indicated
Layout By: MAL
Date: 02-23-2021

No.	Description	Date

SIDEWALK LIGHTING OPTION 1

AL101

