

# Central West End Midtown Development

## Taylor Avenue Pedestrian Lighting

609 EAST LOCKWOOD AVE.

SUITE 201

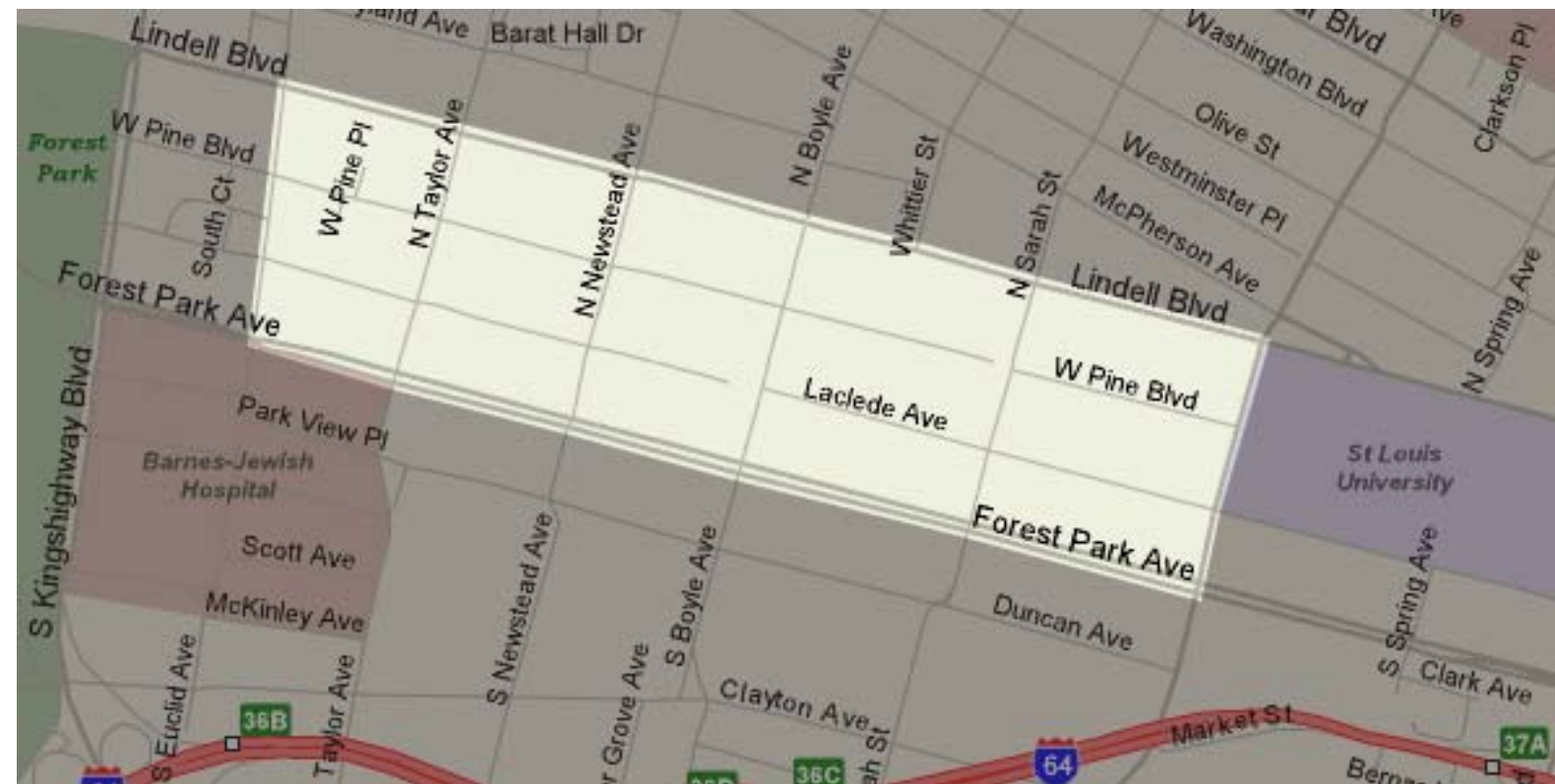
ST. LOUIS, MISSOURI 63119

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RANDY  
BURKETT  
LIGHTING  
DESIGN

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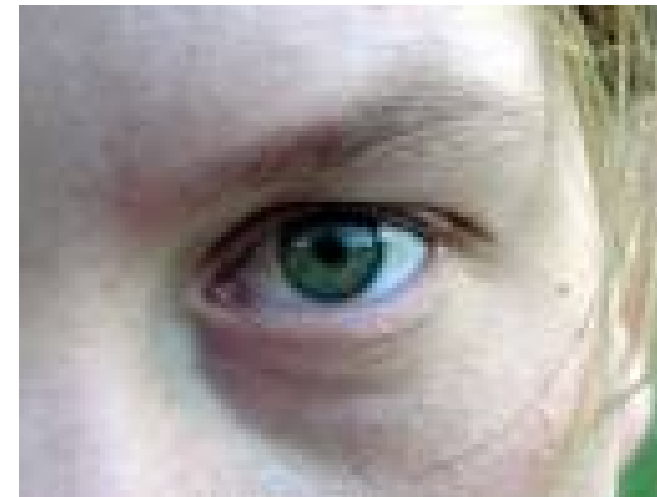
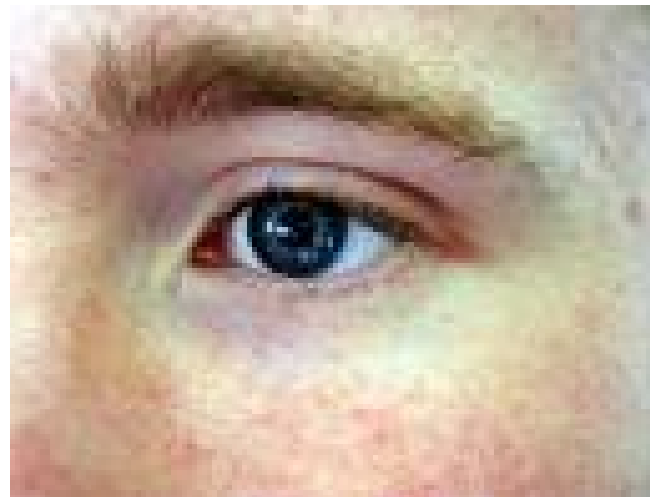
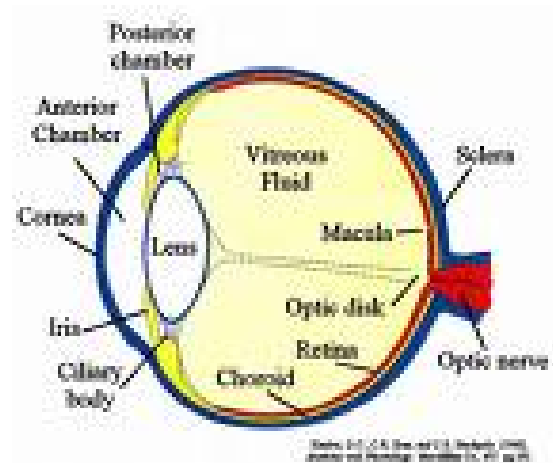


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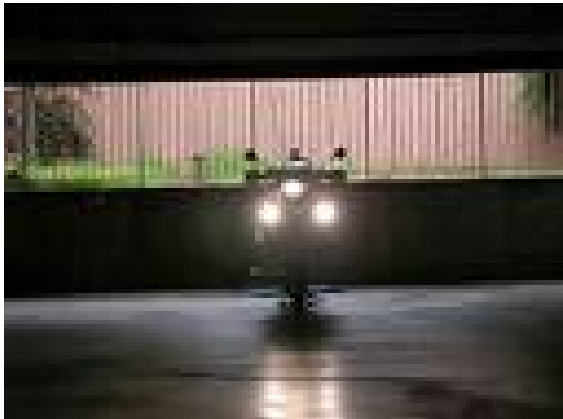
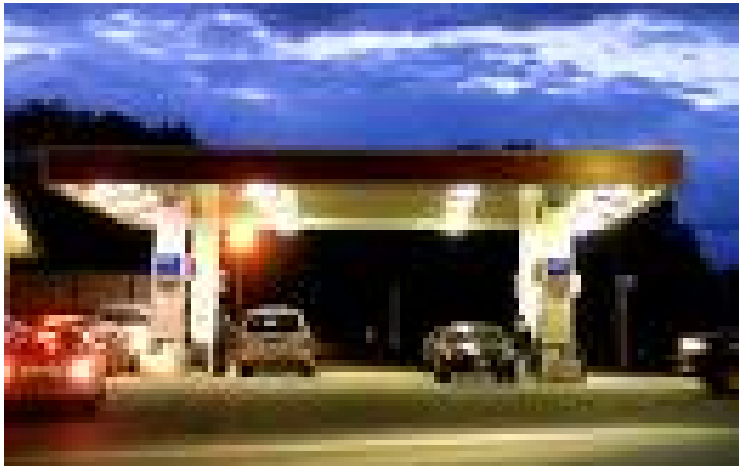
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# It is About Vision

- Objective Measures
- Subjective Reasoning



# ADAPTATION



# What About the Central West End?

## Key Terms and Definitions

Color Rendering Index – An index rating from 0-100 (100 being the best) indicating a lamp source's ability to accurately render color.

Cutoff Luminaire – A luminaire with minimal or no upward directed light.

Footcandle – A measurement of illuminance.

Glare – The sensation produced by brightness within a person's visual field that is significantly greater than what the eye has adapted to, which causes annoyance, discomfort, or loss in visual performance and ability.

Illuminance - The quantity of light incident on a surface.

Light Pollution – Light that is directed upward to the sky or reflected from surfaces that interferes with the appreciation of the night sky.

Light Trespass – Unwanted light that falls beyond the property line or area intended to be illuminated.

Luminaire – A complete lighting unit consisting of lamps together with the parts designed to distribute the light, to position, and protect the lamp.

Luminance – For the context of this document luminance will refer to the sensation of brightness. This sensation is determined by both the surface brightness and the state of adaptation of the eye.

Reflector – A device used to redirect light from a source.

Refraction – The process by which the direction of a ray of light changes as it passes from one medium to another.

Refractor – A device used to redirect light from a source through the process of refraction.

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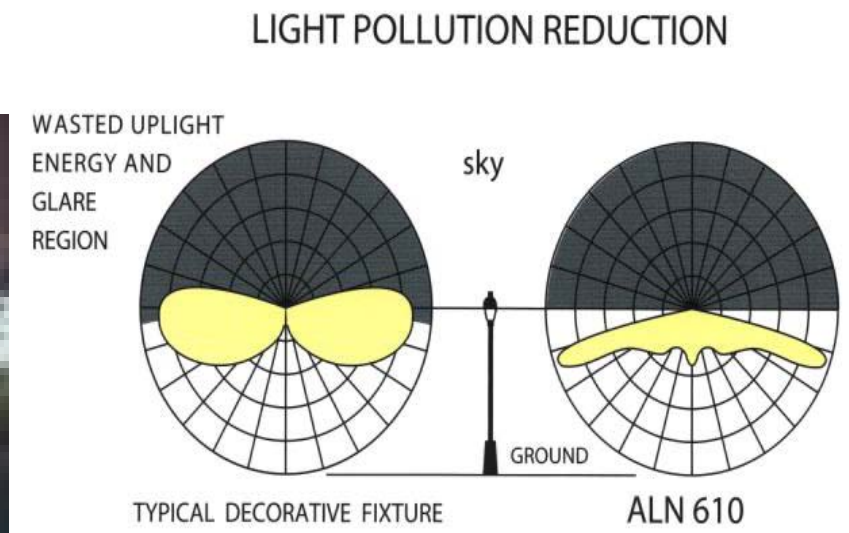
The Illuminating Engineering Society of North America (IESNA) has established consensus recommended design practice guidelines for outdoor pedestrian areas, which include illuminance levels (in foot-candles). These levels are as follows:

Pathways in heavy commercial activity zones	0.5 Foot-candles average
Pathways in light commercial activity and residential zones	0.2 Foot-candles average
Minimums in darker, low activity zones	0.1 Foot-candles
Uniformity of illumination (Maximum: minimum ratio)	10:1

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# Central West End Midtown Development – Taylor Avenue Pedestrian Lighting



- Glare vs. Glitter
- Light Trespass
- Safety/Security



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There are (4) four primary lighting conditions that exist within the bounded area of the study. Generally described they consist of:

Condition 1: Sidewalks illuminated by street lighting (cobra head only). Streets with this condition would include portions of Laclede Avenue and West Pine Boulevard.

Condition 2: Sidewalks illuminated by street lighting and decorative luminous acorns atop aggregate poles. Streets with this condition would include Lindell Boulevard and Sarah Street.

Condition 3: Sidewalks illuminated by street lighting and Victorian style "gas lights" with cutoff optics atop decorative poles. This occurs along portions of West Pine Boulevard.

Condition 4: Sidewalks illuminated by luminous globes atop simple poles. Streets with this condition include portions of Laclede Avenue and Newstead Avenue.

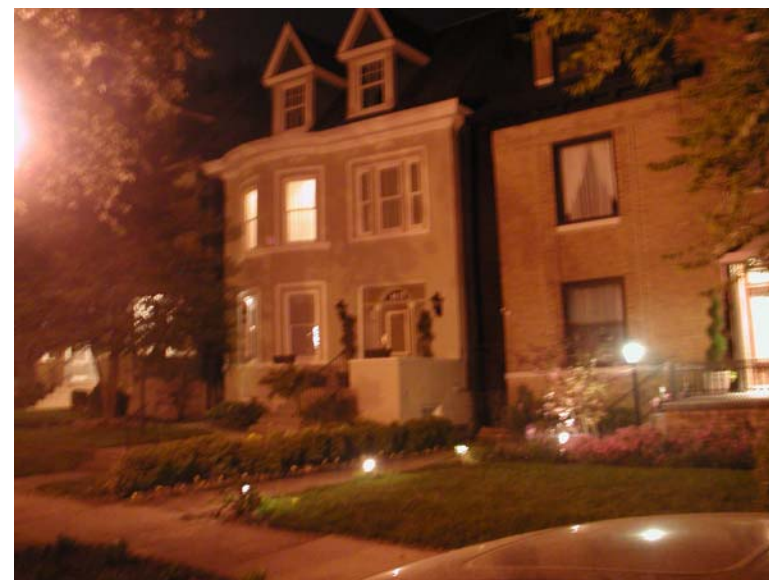
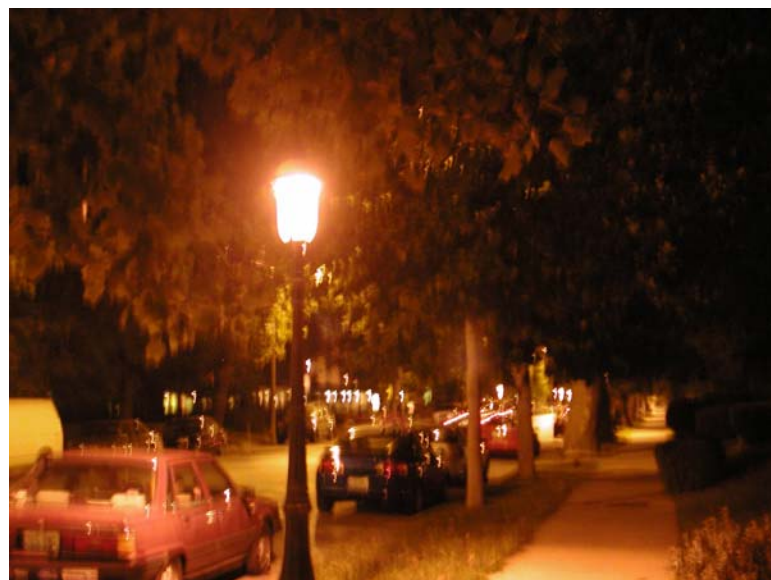
Condition 5: Sidewalks illuminated by a refractor covered by an acrylic acorn diffuser. This occurs on and around Euclid and McPheerson.



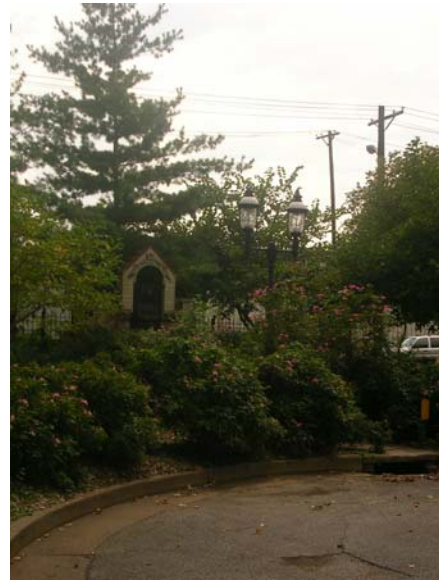
## Illuminance Measurements

Illuminance (footcandle(FC)) measurements were taken after nightfall but during hours where normal, daily activity was still occurring. Measurements outlined include maximum and minimum footcandle readings found, extrapolated average, and uniformity ratios.

	<u>Condition #1</u>	<u>Condition #2</u>	<u>Condition #3</u>	<u>Condition #4</u>	<u>Condition #5</u>
Maximum FC	1.3 FC	2.5 FC	3.5 FC	1.8 FC	0.9 FC
Minimum FC	0.1 FC	1.4 FC	0.03 FC	0.2 FC	0.1 FC
Average FC	0.5 FC	2.1 FC	0.6 FC	0.9 FC	0.4 FC
Uniformity	13/1	1.8/1	117/1	9/1	9/1



## Central West End Midtown Development – Taylor Avenue Pedestrian Lighting



Pole Lighting – Existing Conditions (Daytime)

## Subjective Considerations Moving Forward

- Architectural and/or historic suitability to its surroundings.
- The visual appeal or aesthetic of the pole and luminaire design.
- Pole height and scale. Luminaire scale.
- Nighttime lighted contrast between the luminaire and its surroundings
- Color appearance and color rendition of the light source.
- Visual contribution to functional and aesthetic illumination in the public area.
- State of operation.
- Maintainability and sustainability (including energy consumption).

# Central West End Midtown Development – Taylor Avenue Pedestrian Lighting

## Recommendations - Objective

Based upon site surveys, experience, and conversations with residents, we would recommend the following guidelines for the pedestrian areas in the Central West End Mid-Town Development (IES Recommendations in parenthesis).

<u>Ave. Illuminance</u>		<u>Uniformity (max:min)</u>
<b>Commercial Zone</b>	<b>1.0FC (0.5)</b>	<b>6:1 (10:1)</b>
<b>Residential Zone</b>	<b>0.5FC (0.2)</b>	<b>10:1 (6:1 Would be ideal.)</b>

Note: The average illuminance ratio between commercial zones and residential zones should not exceed 3:1.

Lamping: It is recommended that fixtures in the Central West End Mid-Town Development Area be lamped with ceramic arc tube metal halide lamps with warm color temperatures (3000K). Standard high pressure sodium lamps should not be acceptable.

Fixtures: Fixtures should incorporate one of three optical packages. IES Type III or II optics should be considered for use.

Option #1: Fixtures must use IES cut-off optics. A light frost or sandblast on acorn style globes to increase surface brightness is acceptable as long as the cutoff optic is not significantly compromised.

Option #2: Fixtures using indirect optical packages.

Option #3: Fixtures using refractor technology may be considered for areas that are primarily commercial. Refractive fixtures should not be considered for residential streets. Refractors must include features eliminating upward directed light.

It is also suggested that, when reviewing pole and fixture options, that consideration be given to the character of the fixture design. It is all too common for many city historical districts to select the ubiquitous acorn style luminaire. When this occurs these districts homogenize and deny themselves the possibility of further defining their own unique character.

## Notes:

Pedestrian lighting standards shall be selected and designed for pathway lighting only. Fixtures should not be considered for roadway lighting. Where roadway lighting is deemed necessary or required then city standard poles with cutoff cobra heads should be installed.

When considering the design and specification of a pedestrian lighting plan, the services of a lighting designer or qualified electrical engineer with expertise in lighting application should be engaged, independent of contractor selection.

**Central West End Midtown Development – Taylor Avenue Pedestrian Lighting**



Option A1



Option A2



**Central West End Midtown Development – Taylor Avenue Pedestrian Lighting**



Option B



**Central West End Midtown Development – Taylor Avenue Pedestrian Lighting**



Option C



**Central West End Midtown Development – Taylor Avenue Pedestrian Lighting**



Option D



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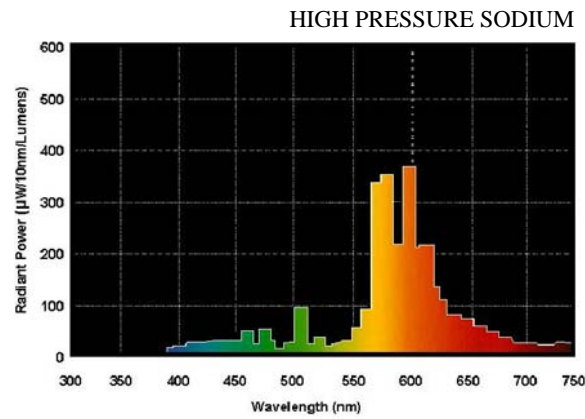


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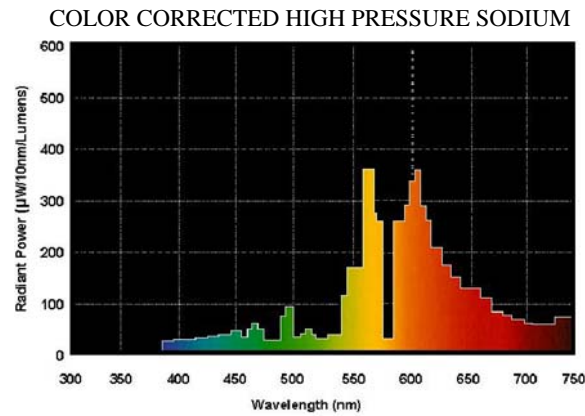
## Light Source and Color Information



High Pressure Sodium

Benefits-  
Deficits-

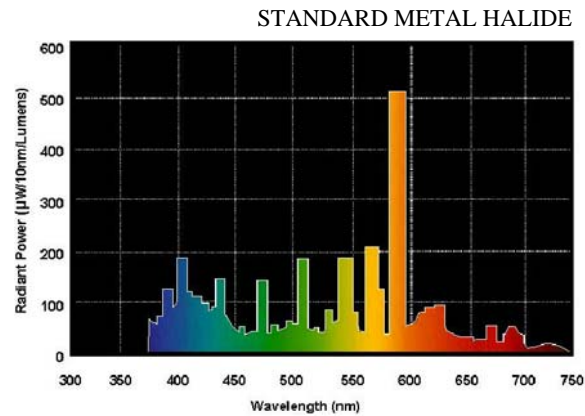
Long lamp life, high efficacy (lumens per watt), low cost  
Poor color rendering (CRI of 20 to 30), orange cast



Color Corrected High Pressure Sodium

Benefits-  
Deficits-

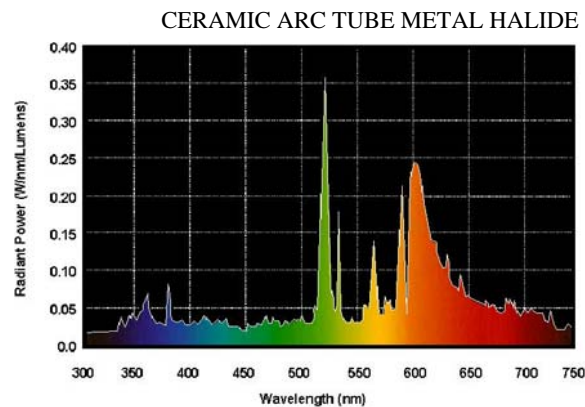
Good color rendering (CRI of 60 to 70), good efficacy, long lamp life  
Higher cost, easy to relamp with standard high pressure sodium



Standard Metal Halide

Benefits-  
Deficits-

Long lamp life, good efficacy, low cost, good color rendering (CRI of 65 to 75)  
Life not as long as high pressure sodium, cool color



Ceramic Arc Tube Metal Halide

Benefits-  
Deficits-

Long lamp life, good efficacy, excellent color rendering (CRI of 85 to 95)  
Higher cost, easy to relamp with standard metal halide in some cases  
life not as long as high pressure sodium.

## Lamp Color Characteristics

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**Central West End Midtown Development – Taylor Avenue Pedestrian Lighting**



Option A1



Option A2



Option B



Option C



Option D



Option E