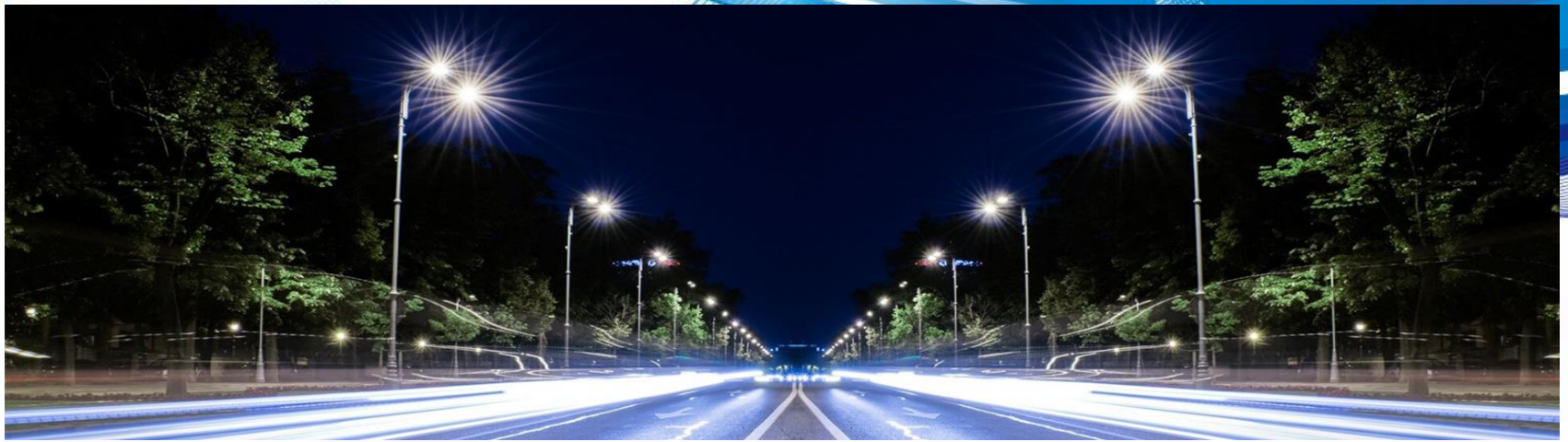
MCDOT

Montgomery County Department of Transportation

2023

Streetlight Standards & Developmental Guidelines

Streetlight Spacing and Photometrics

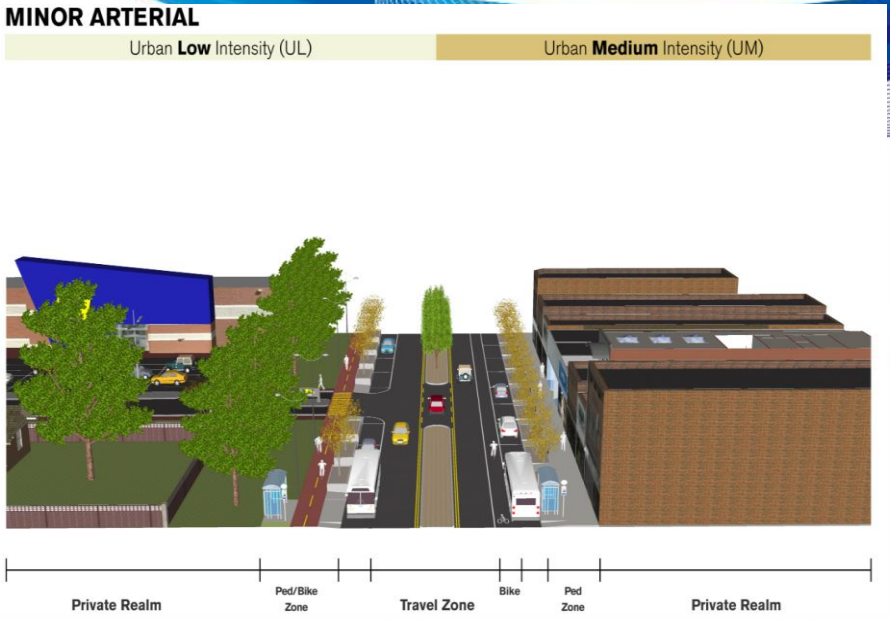


The new MCDOT streetlight design guidelines introduces updated standards for streetlight spacing and photometrics. Streetlights play a crucial role in enhancing safety, visibility, and the overall ambiance of urban and suburban areas.

The new MCDOT streetlight design guidelines introduces updated standards for streetlight spacing and photometrics. It emphasizes the importance of properly spacing streetlights to ensure adequate illumination and visibility.

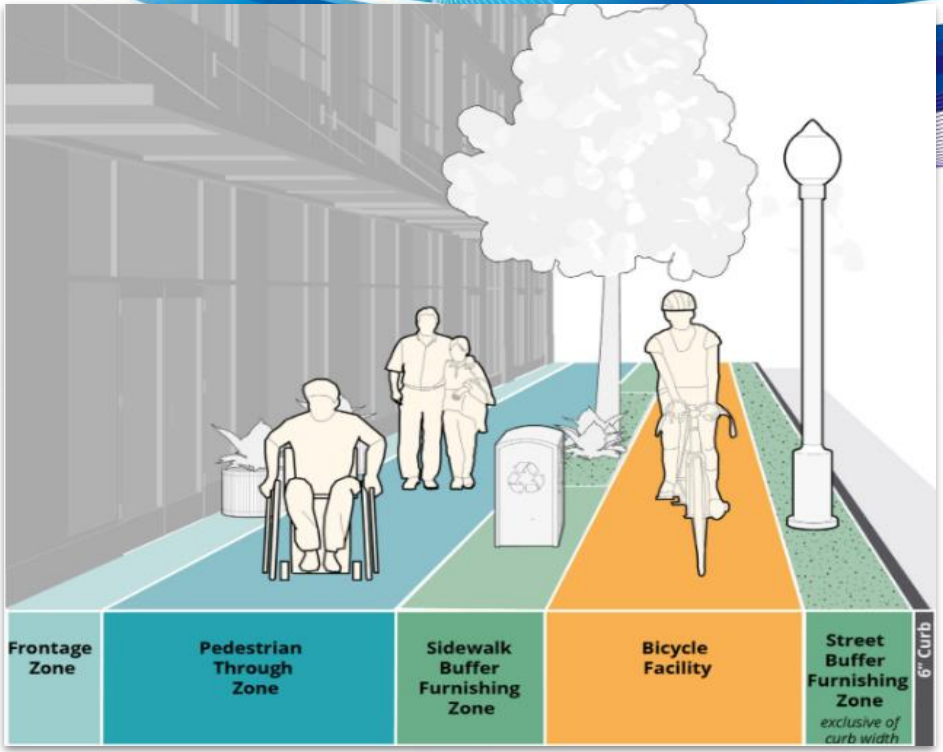
Functional Road Classification vs. Street Typology Classification

- In contrast to older standard road classification systems, the new guideline document incorporates a more comprehensive approach by introducing street typology classification.
- This classification considers various factors such as land use, traffic volume, and pedestrian activity to categorize roads into different typologies.
- It provides a more nuanced understanding of the unique characteristics and design requirements of each street type.



Roadway Classification vs. Street Zone Classification

- The new streetlight design guideline document emphasizes a shift from traditional roadway classification to street zone classification.
- Rather than solely focusing on vehicular traffic flow, street zone classification takes into account the needs of all users, including pedestrians, cyclists, and public transport users.
- It encourages the creation of safe and accessible street zones that cater to the diverse needs of the community.

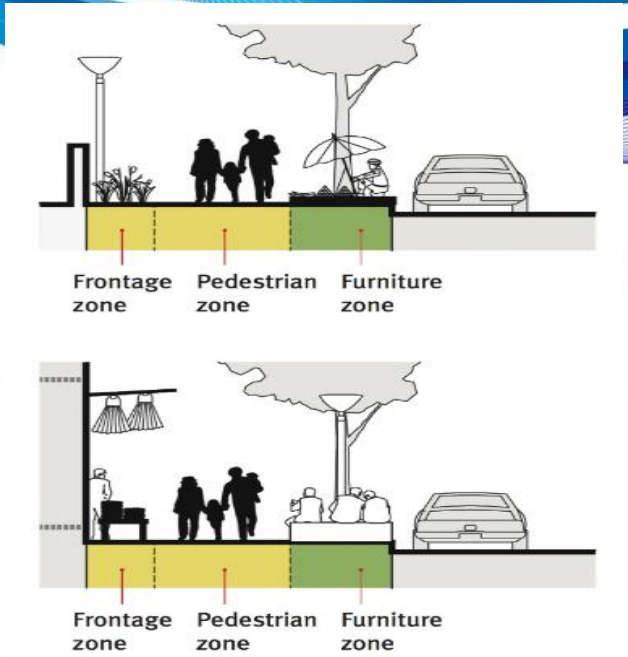


Pedestrian Zone Classification vs. Active Zone Classification

- Recognizing the importance of promoting walkability and active transportation, the new guideline document introduces a distinction between pedestrian zone classification and active zone classification.

- While pedestrian zone classification focuses on creating pedestrian-friendly environments with appropriate amenities and infrastructure, active zone classification extends the concept to include spaces for recreational activities and non-motorized transportation.

- This encourages the integration of active living into urban design.



Standard Street Light Spacing

- Standard streetlight spacing is a traditional method of determining how far apart to place streetlights along a road or in an outdoor area. It typically relies on rules of thumb, historical practices, or regulations that specify a fixed distance between each streetlight. MCDOT previously determind spacing by calculating photometrics for a given wattage, pole height, and distribution pattern that resulted on a set of spacings accordingly.

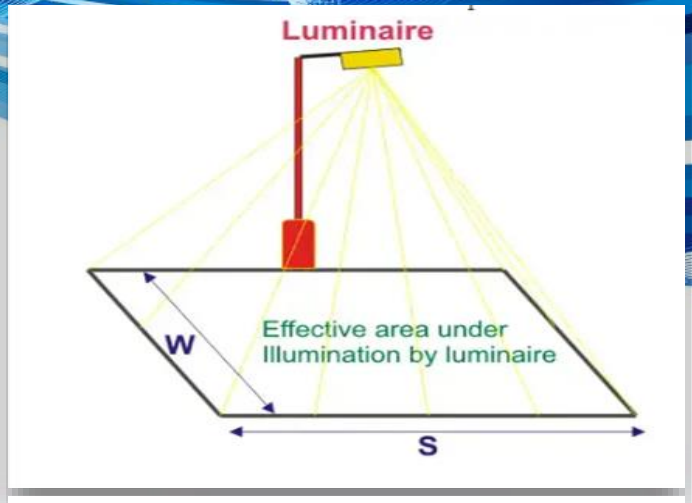
New Photometric Analysis

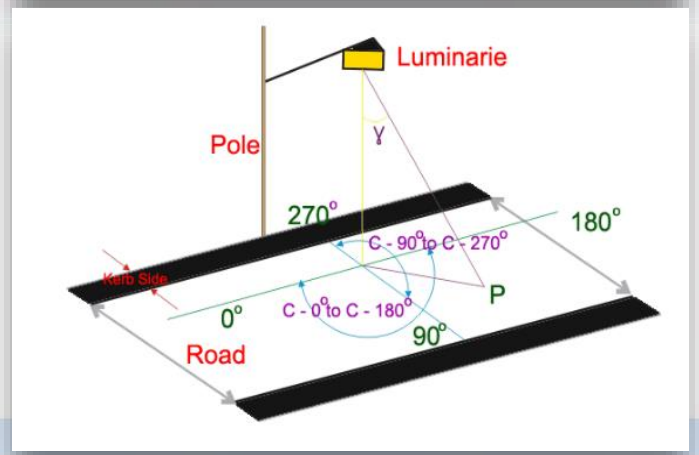
- Photometric analysis evaluates illumination levels, measuring distribution based on real-world environment conditions.

- Photometric analysis for street lighting is a crucial and beneficial aspect of designing a roadway plan.

- Some key advantages are:

- Optimized visibility and safety (Vision Zero Initiative)
- Reduced light pollution
- Energy Efficiency
- Cost Savings
- Compliance and Standards
- Public Perception

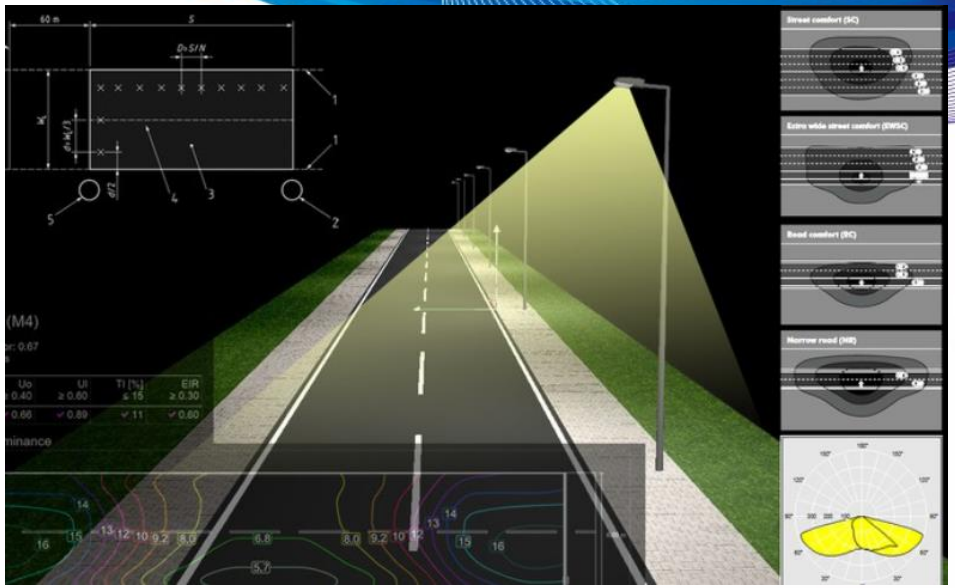




Comparison: Old vs. New Streetlight Placement Guidelines

- While standard streetlight spacing focuses primarily on the physical placement of lights, photometrics takes a more holistic approach by considering the quality, efficiency, and distribution of light. Photometric design aims to provide better visibility, enhance safety, and reduce energy consumption, making it a more comprehensive and effective approach for modern streetlighting

- The scientific application in photometric analysis ensures optimal illumination, reducing energy waste and enhancing safety.



Functional Road Classification

- The older method of road classification was purely functional, categorizing them based on the anticipated traffic volume and flow. It was less considerate of factors like street usability and pedestrian welfare.

Principal Arterial

Minor Arterial

Collector

Local Street

New Street Typology Classification

- Unlike traditional methods, new classification systems consider street’s character, context & human-scale factors. They encourage multimodal usage, promote non-motorized transportation and meet users' diverse needs.

Street typology,Human-scale factors,Multimodal transportation

Comparison: Old vs. New Road Classification

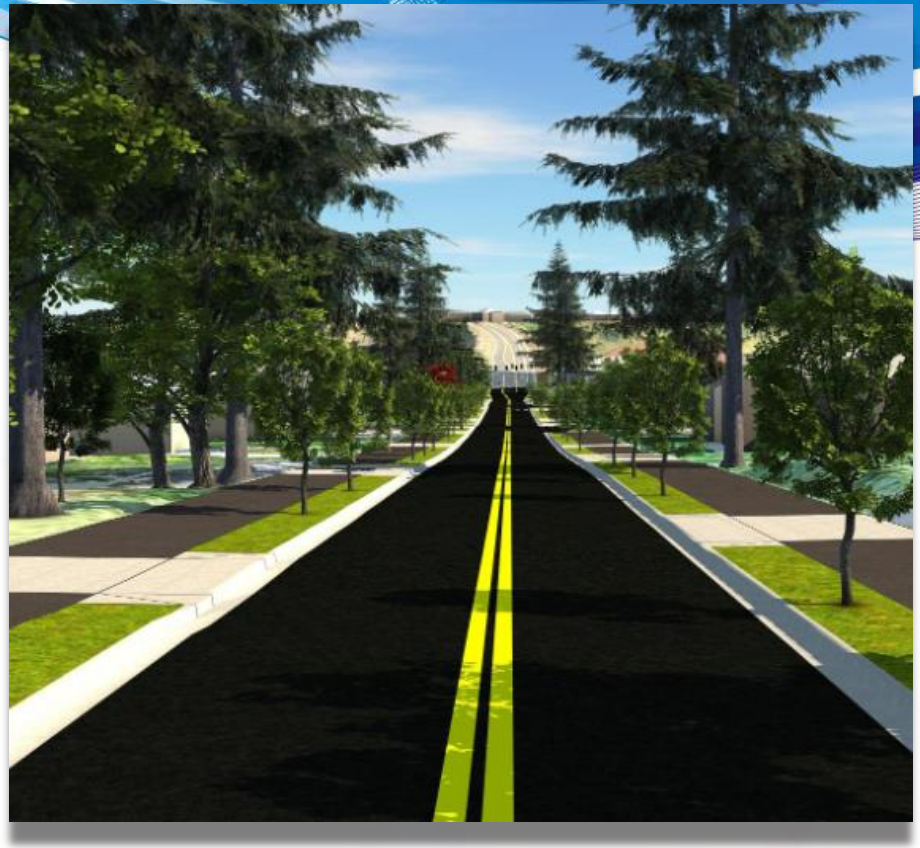
- The switch from functional to typological road classification caters better to assorted lighting design needs.
- It acknowledges the role of all streets as public spaces, not just isolating the roadway classification specifically for motorists.

Road Classification,Public spaces,User needs

Roadway Classification

- Traditional roadway classifications were based on anticipated vehicular use only.

- These classifications often overlooked the role of streets as public spaces and pedestrian safety.



Old roadway classification,Vehicular use,Roadways

Street Zone Classification

- The up-to-date street zone classification broadens the perspective, allowing streets to be representative as built environment entities.

- It promotes mixed-use, enhancing pedestrian safety, and favors community interaction.

Street zone classification,Built environment,Mixed use

Comparison: Old vs. New Roadway Classification

- The transition from old roadway to new street zone classification redefines the purpose of streets.

- It promotes livability, functionality, safety and encourages communal, pedestrian concerns to be integrated into urban planning.

Pedestrian Zone Classification

- Pedestrian zone classification considers factors such as the absence of vehicular traffic, pedestrian-oriented amenities (such as seating, landscaping, and public art), walkway width, and accessibility. It aims to create environments that prioritize pedestrians over vehicles.

- Common pedestrian zone classifications include pedestrian streets, pedestrian malls, and pedestrian plazas. These areas are intended to be attractive, safe, and inviting for walking, shopping, dining, and socializing.

Active Zone Classification

- Active zone classification is focused on categorizing areas within an urban environment based on the level of activity, vibrancy, and the range of uses or activities occurring in those areas. It considers the social and economic aspects of public spaces and the intensity of human interaction. It aims to identify areas where people are actively engaged in various activities, both indoors and outdoors.

Comparison: Old vs. Active Zone Classification

- The shift from rigid pedestrian zones to dynamic active zones acknowledges all street users. It symbolizes a transition towards unifying vehicular and pedestrian needs in contemporary urban design.

Pedestrian zones,Active zones,Urban design

Summary: Streetlights play a crucial role in enhancing safety, visibility, and the overall ambiance of urban and suburban areas. Effective streetlight design is essential to meet the unique needs of different locations, roadways, and communities.

Our revised standards and guidelines aim to provide a comprehensive explanation of various factors that influence streetlight design guidelines, emphasizing main factors such as photometrics, street typology classification, street zone classification and active zone classification.

Questions?