

# Goldstick Lighting Design, Ltd.

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## The City of Peekskill – Downtown Lighting Assessment

### Lighting Analysis Report

On February 22, 2011, Goldstick Lighting Design, Ltd. visited The City of Peekskill downtown in accordance with the Professional Services Contract dated February 15, 2011 and signed by Richard Finn, City Manager on February 22, 2011. The purpose of this visit was to evaluate the existing lighting conditions from a pedestrian perspective in the areas designated by the City of Peekskill, South Street from Depew Street to S. Division Street, S. Division from South Street to Elizabeth Street, Brown Street from S. Division to Elizabeth Street and Esther Street, slated to be upgraded. This survey took place between 5:00 pm and 7:00 pm under night time conditions.

### Existing Conditions – Exterior Lighting Evaluation

There are six (6) types of light fixtures currently used in the downtown area.

- Type A** The oldest existing pedestrian light fixtures are a Hadco “Acorn” Victorian style post-top acrylic lensed luminaire with a small top reflector and house side shield on a 12’ fluted cast iron pole in a dark green finish. The specifications, provided by Aery Lighting who supplied the fixtures to The City of Peekskill, call out a 175W metal halide (MH) lamp and Type III distribution. These fixtures are the predominant pedestrian fixture downtown (cut sheet included).
- Type B** Along E. Main Street the existing pedestrian light fixtures are a Hadco “Acorn” Victorian style post-top acrylic lensed luminaire with a metal cap, full top reflector and house side shield on a 12’ fluted cast iron pole in a dark green finish. The specifications, provided by Aery Lighting who supplied the fixtures to The City of Peekskill, call out a 150W MH lamp and Type III distribution (cut sheet included).
- Type C** There was also a test installation of two new LED pedestrian light fixtures of a Hadco “Acorn” Victorian style post-top acrylic lensed luminaire with a metal cap on a 12’ fluted cast iron pole in a dark green finish. The specifications, provided by Aery Lighting, call out 80 LEDs consuming 100W total with a 5500 lumen package and Type III distribution (cut sheet included).
- Type D** The newest existing vehicular light fixtures are a Hadco “Acorn” Victorian style single arm teardrop with a long acrylic lens, decorative flat brim canopy and scrollwork arm bracket on a 25’ smooth aluminum pole in the same dark green finish. Specifications from Aery Lighting call out a 150W MH lamp and Type III distribution (cut sheet included).

**Type E** Existing cobra head vehicular light fixtures were not surveyed as part of this project and would be replaced by new lighting recommendations (cut sheet not included).

**Type F** Pedestrian fixtures along the walkway through Pugsley Park are different in that they appear to have high pressure sodium (HPS) lamps rather than the standard metal halide. HPS lamps are known for their yellow appearance as compared to the “white” light of metal halide (MH) lamps (cut sheet not included).

*Note: One or two additional pedestrian fixtures downtown also had a yellow appearance. These lamps may be either high pressure sodium lamps or metal halide lamps at the end of life which need to be replaced. Metal halide lamps may change color as they approach the end of their life cycle.*

## **Illumination**

The older pedestrian fixtures are currently installed approximately 60’ on center in tandem along both sides of N. Division Street and some surrounding downtown streets not in the upgrade zone. The E. Main Street pedestrian fixtures are also installed at approximately 60’ on center on one side of the street. Illumination levels measured on E. Main Street, N. Division Street and South Street showed 1.0 footcandle on the sidewalk uniformly between fixtures and under fixtures.

## **Recommendations to Existing Conditions**

**Type A** These fixtures are the proper scale for the area in both height and position along the street. It is typical to see pedestrian lighting fixtures flanking both sides of the street in tandem and is a frequently used lighting solution especially in downtown storefront areas the scale of Peekskill. Metal halide lamps (15,000 hour life) are the preferred source for street lighting because of their color rendering (65 CRI) as compared to previously relied upon high pressure sodium (24,000 hour life and 21 CRI). The ability to render colors accurately and the life cycle of metal halide lamps while shorter than HPS, make them the most appropriate choice for downtown Peekskill. The Type A fixtures are suitable for this application and do not require any change.

**Type B** These fixtures with capped globes along one side of E. Main Street meet the same criteria as the older fixtures outlined in above. Scale, lamp source and location are appropriate for this application and do not require any change.

**Type C** The LED mock up fixtures on the corners of S. Division and South Street have the same appearance and light output as the Type A and Type B fixtures. The reduced wattage used to supply the same light level is a bonus but the payback in years based on energy (at 4.6 cents per KWH) and maintenance savings for 40 new fixtures is approximately 11 years. A calculated simple ROI (return on investment) is 5¼% (worksheet included). The payback period is too long a time period to make economic sense especially considering that LED technology is relatively new, changing continually, and will likely be less costly in the future. It is not recommended that The City of Peekskill move to LED lighting at this time.

*Note: The 50,000 hour life cycle of LED replacement fixtures running 12hours per day, 365 days per year would require replacement at 11.4 years.*

**Type D** These fixtures are also the proper scale for the area in both height and position along the street. It is recommended that additional vehicular fixtures be placed at the intersections of S. Division and South Street, Brown Street and Esther. From a design standpoint, the taller Type D fixtures would accentuate intersections that are currently dark. All three existing intersections would benefit from using Type D fixtures for illumination in lieu of additional Type A, B or C fixtures. This would also light the surrounding sidewalk allowing the shorter pedestrian fixtures to be used along the street between intersections which is a preferred design strategy.

**Type E** Existing Cobra Head fixtures would be removed and replaced with the combination of new Type G and Type D fixtures.

**Type F** The yellow appearance of some of the pedestrian fixtures should be addressed. It's recommended that Peekskill determine whether there is a HPS lamp in the fixtures or a decaying metal halide lamp and provide new lamps for the fixtures. If the yellow fixtures are HPS and these fixtures have corresponding HPS ballasts, then it is recommended that the luminaires be retrofit or replaced with metal halide to provide better color rendering and continuity to the downtown atmosphere.

## **Illumination**

The spacing of all the existing pedestrian fixtures of 60' on center provide the Illuminating Engineering Society (IES) recommended light levels for Commercial area sidewalks of 1.0 footcandle. The City of Peekskill downtown falls within the Intermediate to Commercial classification for roadway lighting design as described in Chapter 24 of the IES Lighting Handbook. Figure 24-10 *Recommended Average Maintained Illuminance Level for Pedestrian Ways*, suggests that sidewalks maintain an average of 0.6-1.0 footcandles for Intermediate to Commercial areas. Commercial areas are the most stringent in the guideline for pedestrian walkways along an existing roadway.

## **Recommendations for New Installation**

**Type G** This is the recommended new pedestrian fixture, same as Type B fixtures along E. Main Street, with caps to reduce light pollution and in conformance with current LEED quality lighting installation standards as best practice (cut sheet included). Goldstick Lighting Design recommends that the existing spacing of 60' on center be maintained for the new Type G installation areas. The only difference between the existing Type B and the new Type G is the lamp. All new pedestrian pole fixtures should be pulse start metal halide, 150W, with internal top reflector and house side shield. Pulse start is standard and required by law under the EISA Energy Independence & Security Act of 2007 for MH lamps over 150 watts and is a more energy efficient technology than standard MH.

**Type D** It is recommended that one vehicular pole fixture be placed at the intersections of S. Division and South Street, Brown Street and Esther (total of three poles). From a design standpoint, the taller Type D fixtures would accentuate these intersections providing more light in addition to the proposed new Type G fixtures.