Attachment 1

Outdoor Lighting

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March 8, 2006

Emily Cameron
Town of Chapel Hill

Subject: Attached lighting report

Dear Ms. Cameron,

Photometric measurements were taken on the evening of June 15, 2005 to evaluate the current lighting levels concentrating on the 100 block of East Franklin and North Columbia Streets. On site measurements indicate a close correlation between the previously established design parameters and the actual light levels.

Light levels, both calculated and measured, are based on ground level foot-candle valves. The primary difference between calculated values and observed measurements were due to obstructions between the light source and the ground level plane. These obstructions include trees, building canopies and grade variations which are not included in the calculated values.

This survey concludes that the street and sidewalk lighting installed in the study area is consistent with the design criteria as set forth in the objectives set by the Downtown Streetscape Lighting Plan.

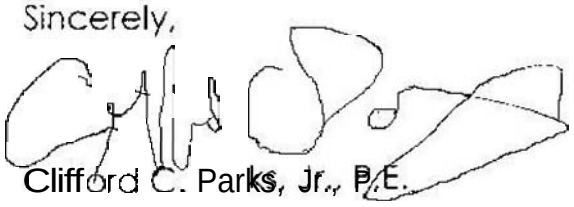
Determining lighting levels is a very subjective process and expectations of outdoor lighting have greatly increased during the past decade. Typical commercial development lighting levels are now expected to be at utilization and task levels for security and effect.

Recommendations to improve the light levels ranged from simply adding more lights or changing the fixtures on the existing structures (owned by Duke Power) to partnering with the merchants and landlords to provide additional storefront lighting. There are significant obstacles to providing building mounted light through a common electrical source and would require energy costs for this type of lighting to be paid by the building owner or occupant.

The quality of the existing lighting on the streets and sidewalks meets expected levels. Lighting consistency can be improved by eliminating obstructions, adding directional lighting fixtures and working with merchants and building owners to enhance ambient lighting from building frontage adjacent to the public right of way.

Please contact me if I can provide clarification or additional information.

Sincerely,



Clifford C. Parks, Jr., P.E.

Downtown Chapel Hill
November 2005

To determine the current light levels, photometric measurements were taken downtown after dark on the evening of June 15, 2005, primarily concentrating on the 100 blocks of East Franklin and North Columbia Streets where custom lighting was installed in 2003 and 2004. The readings were taken at the sidewalk and roadway levels and indicate a close correlation between the existing light levels and the previously established design parameters.

Analysis

The overall quality of lighting on the streets and sidewalks in the study area is consistent with the objectives set by the Downtown Streetscape Lighting Plan, with more light being provided from the streetlights than from the sidewalk lights. Darker areas are evident where pedestrian lights are not functioning at full capacity and where light is obscured by awnings and tree canopies along the sidewalk, for example at the former Gap store location on the south side of East Franklin Street where the sidewalk is covered by a structure extending from the building. Other dark spots were noted in front of vacant businesses and where alleys intersect the right-of-way.

Recommendations

Altering the existing pattern of light distribution by adding new poles for additional fixtures would require removal and replacement of portions of the sidewalk and changes to the underground conduit system. Given the expense and potentially disruptive nature of such a proposal, other approaches are recommended at this time. There are several options for addressing uneven light distribution without changing the spacing of the fixtures. Any additions or changes to the existing poles and fixtures would be subject to review and approval of the Town's Specialty Lighting Requests by Duke Power Company. Proposed revisions to street lighting on Franklin and Columbia Streets also require approval by the NC Department of Transportation.

Streetlights –

1. Change the cut-off style cobra head fixture to a drop-lens fixture to increase the quantity of light distributed over a wider area. What would be considered light spillage from drop-lens fixtures in another setting would be contained by the buildings lining Franklin Street.

   Duke Power Company offers a drop-lens cobra head fixture as one of its standards; therefore, the time and expense to make the change would be minimal.

2. Increase the wattage of the existing cobra head fixtures from 250 watts to 400 watts. Similarly, Duke Power offers increased wattage fixtures up to 1000 watts in the cut-off style fixture. The result would be brighter light directed down onto the street and sidewalk at a relatively low cost. However, this option increases only the intensity of the existing light sources; it does not increase the spread or distribution of light; and/or

3. Where feasible, install additional fixtures on top of streetlight poles. A floodlight style fixture could be proposed so that the direction and spread of additional light could be controlled to illuminate building faces, the street, the sidewalk, crosswalks, alleys, or parking areas. Dark areas could also be targeted. Whether existing underground conduits could be used for additional wiring must be determined in order to evaluate the merit of this option. The appearance of the streetlight poles would change by removing the ball finial on top to install additional fixtures.

Pedestrian Lights –

1. Change the cut-off lens in the Domus fixture to a sag lens or drop lens to allow light to reach a larger area of the sidewalk. In addition to the lens, the housing inside the fixture must be replaced so that the lamp extends below the bottom of the domed cover. Increasing the spread of the pedestrian lights would begin to reduce dark areas and improve the consistency of lighting on the sidewalk. As with the drop lens in the streetlight fixture, glare might be perceived as a problem to pedestrians and traffic.

2. Replace the existing Domus fixtures with similar luminous fixtures in the Domus series that allow light to shine though the domed portion or through a smaller ring between the dome and the top that connects to the mounting arm. The effectiveness of this option would be considered minimal in relation to costs because the additional light from luminous fixtures would be directed up into the sky or in tree tops and out onto buildings, not down onto the streets or sidewalks.

Additional Ambient Lighting -

Each of the proposals listed below would result in additional energy costs and possibly installation expenses for the merchants or building owners. Because participation by the merchants and building owners would be optional, the results may be inconsistent.

1. Encourage merchants to leave store lights on a timer after business hours until 2:00 or 3:00 a.m. Lights in front widow displays adjacent to the sidewalk could in some cases provide sufficient lighting in lieu of interior lights left on over main floor areas. This option alone would not address dark locations near street corners or alley entrances;

2. Request that owners of vacant buildings leave exterior and/or window display lights on overnight for security purposes, particularly where awnings or overhead structures block street and pedestrian lighting from reaching the sidewalk in front of the building. For example, one of the darkest areas was identified at the former Gap store at 108 East Franklin Street where a canopy supported by columns extends into the right-of-way over the sidewalk for a distance of 25 feet. The canopy contains eight recessed light fixtures that are not functioning, presumably because the store is vacant. Energy costs potentially could be offset by leasing lighted window display space for seasonal or downtown event announcements or partnering with the building owner to provide power and maintain these fixtures.

3. Work with merchants to install lights on building facades and under awnings to direct light toward the street and sidewalks. For optimal results, this option would require

coordination of styles and placement to achieve the desired effect. Merchants who choose to participate would be responsible for installation costs, electrical permits, and requests for inspections. We believe that lighting installed on buildings is one solution to address alley entrances.

Maintenance -

1. Monitor lights for dimming and outages. This on-going effort will require regular night work for Public Works staff or that the Town contract with a private maintenance service to check the lights only. Repairs and relamping are performed by Duke Power Company. Typically, lamp manufacturers recommend relamping and cleaning HID fixtures every two years.

2. Trim tree canopies as needed to avoid conflicts with lights. Frequently conflicts with lighting arise when mature trees are preserved during a sidewalk replacement project. Accommodating one or more 35-foot tree canopies within 75 to 80-foot light pole increments often presents a design challenge. We recommend that determining which trees to prune be done at night while pruning can be accomplished in early morning hours before businesses open.

   Priorities for shading the sidewalk also compete with the need to safely light the same area. We further recommend to the extent possible, that the design staff continue to select and locate new trees and site new light poles so as to minimize conflicts as newly planted trees mature.

Summary

The quality of the existing lighting on the streets and sidewalks meets expected levels. Lighting consistency can be improved by eliminating obstructions, adding directional lights, and working with merchants and building owners to enhance ambient lighting from adjacent buildings.