



DEPARTMENT OF COMMUNITY DEVELOPMENT SERVICES

Planning Division

m e m o r a n d u m

TO: The Urbana Plan Commission

FROM: Robert Myers, AICP, Planning Manager

DATE: September 4, 2009

SUBJECT: Plan Case No. 2110-T-09: sign illumination readings

This memorandum is intended to provide additional information concerning a Zoning Ordinance text amendment to establish sign illumination limits for electronic signs (Plan Case No. 2110-T-09). The purpose of the proposed ordinance is to prevent electronic signs from causing glare and distraction for the public traveling in the public right-of-way. The ordinance is not intended to deal with “light pollution” or overall light levels in a district. The City of Urbana’s lighting ordinance (Section VI-8 of the Zoning Ordinance) deals with overall light limits outside rights-of-way.

At their July 9, 2009 meeting, the Plan Commission asked City staff to conduct fieldwork and present findings to the Plan Commission. Fieldwork was conducted on August 7 and September 2, 2009. As shown in the attached “Electronic Sign Illumination Measurements”, the light cast by three signs showing 11 images were measured, including Burger King (S. Philo Rd.), The Pines at Stone Creek Commons (Windsor Rd./Philo Rd.), and Assembly Hall (Florida Ave., Champaign). The first two signs are located in Urbana and would be subject to the proposed illumination limits. The Assembly Hall sign is on University of Illinois property and located outside the City. Therefore, the Assembly Hall sign would not be subject to City of Urbana regulation, but its light levels are pertinent for comparison purposes.

Based on fieldwork results, the proposed limit of 0.3 footcandles above ambient light appears to be a reasonable benchmark. Based on the subjective view of the City staff person taking the light measurements, at a 100-foot distance from the sign, electronic displays measured below 0.3 footcandles above ambient light did not cause any glare. At 0.4 footcandles, electronic display appeared quite bright and at the margins of glare. At 0.7 footcandles, the display caused considerable glare and eye discomfort. At 1.0 footcandles above ambient, the display caused extreme glare with discomfort, eye squinting, and difficulty looking directly at the sign. Again, based on fieldwork results, the proposed 0.3 footcandles above ambient light appears quite reasonable.

However, fieldwork also showed that how the readings are measured will require minor adjustment in the proposed ordinance. The major problem encountered concerns the requirement that a light reading be taken with an all-white image display. Business managers on night duty

are not necessarily trained to create an all-white image display on their electronic sign. Because displaying an all-white image was not possible at Burger King, the measurements reflect the actual images displayed rather than an all-white image. For the Pines at Stone Creek Commons sign, displaying an all-white image took considerable effort for a skilled operator. Because requiring an all-white display appears to provide an impediment for enforcement, the draft text amendment has been modified as shown below. Essentially, the light measurement would be taken for the images actually displayed rather than for an all-white image.

Section IX-4. General Sign Allowances

C. *Electronic Display.* Freestanding signs and wall signs authorized by this Article in the B-3, General Business Zoning District, may include an element of electronic display when designed and operated to meet the following requirements:

1. *Area.* The maximum area of electronic display shall not exceed 50 percent of any sign area.
2. *Animation.* Electronic displays shall not be animated as defined by this Article, including a minimum display change frequency of no more than once every three minutes.
3. The sign, including electronic display, shall meet all other design standards in this Article.
4. *Illumination.*
 - a. Electronic display signs shall be equipped with automatic dimming technology which adjusts the sign's illumination level based on ambient light conditions.
 - b. The maximum illumination level of an electronic display shall be 0.3 foot candles above ambient light levels, to be measured as follows. First, at least 30 minutes past sunset, and with the electronic display turned on, a light level reading in footcandles will be taken with a light meter aimed directly at the electronic display and at the following distance:

| <u>Electronic sign size</u> | <u>Measurement distance</u> |
|-----------------------------|-----------------------------|
| <u>0-100 square feet</u> | <u>100 feet</u> |
| <u>101-350 square feet</u> | <u>150 feet</u> |
| <u>351-650 square feet</u> | <u>200 feet</u> |

Second, with the electronic display either turned off, showing all black copy, or blocked, the light meter will be used to measure the area ambient light level in footcandles. The difference between the two readings shall be the electronic sign's actual illumination level.

Staff Recommendation

City staff recommends that the Plan Commission recommend **APPROVAL** of the proposed amendment to Section IX-4.C of the Urbana Zoning Ordinance as provided herein, and explicitly referencing the information and findings in the July 2, 2009 City staff memorandum to the Plan Commission.

ELECTRONIC SIGN ILLUMINATION MEASUREMENTS

Robert Myers, AICP
City of Urbana, Illinois

Burger King freestanding sign

Philo Road, Urbana

Fri., Aug. 7, 2009, 9:00 p.m.



Daytime view of Burger King sign from 100 feet

| | <i>Light reading at 100 feet</i> | <i>Complies with proposed standard?</i> | <i>Created perceptible Glare?</i> |
|----------|----------------------------------|---|-----------------------------------|
| Sign off | 0.51 footcandles | NA | NA |
| Sign on | 0.63 footcandles | yes | no |

Notes: “Sign off”. I arranged the test in advance through the business owner. Because the sign operates 24 hours a day, the managers on duty know how to operate the sign but not turn in off. The electric breaker used to turn off the electronic message board also turned off the entire sign, meaning that the “off” light reading was lower than if only the electronic message board had been turned off, as specified in the draft ordinance.

“Sign on”. The manager on duty could not turn the electronic message board to an all-white display. Therefore, the images actually being displayed, rather than an all-white image, were used for the light reading.

Pines at Stone Creek Commons shopping center sign

Windsor Rd./Philo Rd., Urbana

Wed., Sept. 2, 2009, 8:30 p.m.



Daytime view of The Pines shopping center sign.

| | <i>Light reading at 100 feet</i> | <i>Complies with proposed standard?</i> | <i>Created perceptible Glare?</i> |
|----------------------|----------------------------------|---|-----------------------------------|
| Sign off | 0.27 footcandles | NA | NA |
| Milo's display | 0.35 footcandles | yes | no |
| Subway display | 0.36 footcandles | yes | no |
| Frogs display | 0.39 footcandles | yes | no |
| (full white display) | 0.48 footcandles | yes | no |

Notes: Even though a trained sign operator managed the images, changing the images to all-black and then all-white took some effort as these modes are seldom if ever used.

Assembly Hall freestanding sign (not subject to proposed regulations)

Florida Ave., Champaign
 Fri., Aug. 7, 2009, 9:30 p.m.



Daytime view of Assembly Hall sign.

| | <i>Light reading at 100 feet</i> | <i>Complies with proposed standard?</i> | <i>Created perceptible Glare?</i> |
|--------------------|----------------------------------|---|-----------------------------------|
| Sign off | 0.12 footcandles | NA | NA |
| Annie display | 0.50 footcandles | no | no, but bright |
| Dance display | 0.80 footcandles | no (double standard) | yes, substantial |
| Lipizzaner display | 1.09 footcandles | no (triple standard) | yes, extreme, squinted |

Notes:

This sign's light levels were measured for comparison purposes only. "Sign off". The electronic message board went momentarily blank between displays which I used for the "off" reading. An interior-illuminated portion of the sign ("Assembly Hall, University of Illinois") remained on during the blank displays. When I turned the light meter east down Florida Ave., away from the sign, the ambient reading was 0.10 footcandles, meaning that the interior-illuminated portion only cast only about 0.02 footcandles of light at 100 feet.