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memorandum



Date: February 25, 2014 Project: 40 Thorndike Re-positioning
To: Ms. Maria Schroeder Job 00
Company: Elkus Manfredi Architects From: Michael Castelli
Subject: Building Interior Tenant Lighting Impact

REMARKS:

Dear Ms. Schroder:

This memo is intended to outline the methodology and outcome of our nighttime illumination study, as follows:

A. METHODOLOGY

1. A 3-dimensional model of the building form, curtainwall optical attributes, and interior fit-out was created in AGI32 (the industry standard lighting analysis software) and analyzed
2. All tenant fitout floors above the podium were modeled to have complete lighting systems installed for the target occupancy types.
3. The modeled luminaires are fully lensed with no exposed lamp, and represent a plan that is considered a mainstream contemporary workspace lighting solution; design light levels are in the low-40fc range on the taskplane.
3. Lighting system modeled to adhere to the USGBCs LEED Certification criteria for light spill
4. The output considered 50% of the entire lighting along the façade is energized at 100%.
5. Existing light levels were measured on site, on a clear sky.



B. ASSUMPTIONS

1. Building glazing of 70% transmission and NO dirt degradation
2. Interior workspace with light finishes (reflectance values: 80% ceiling, 50% walls, and 20% floor) and designed to 45fc average maintained light levels at the 30" off taskplane.
3. No other artificial lighting contributing

C. CONCLUSIONS

1. Artificial lighting produces a peak of 8% additional lighting compared to the current peak light levels at the sidewalk; and a maximum of 0.25fc in areas where no measurable light was recorded.

2. The additional light levels in practice are expected to be less than what is modeled due to:

- i. the glass façade will not be 100% clean, and this will directly and significantly impact light transmission through the curtainwall
- ii. in a multi-tenant building, the varying work and cleaning hours will limit the number of floors that are energized simultaneously.
- iii. energy codes require occupancy sensors and timeclocks that limit the active times of lighting – off hours lighting will be correlated to building occupancy.

Thank you