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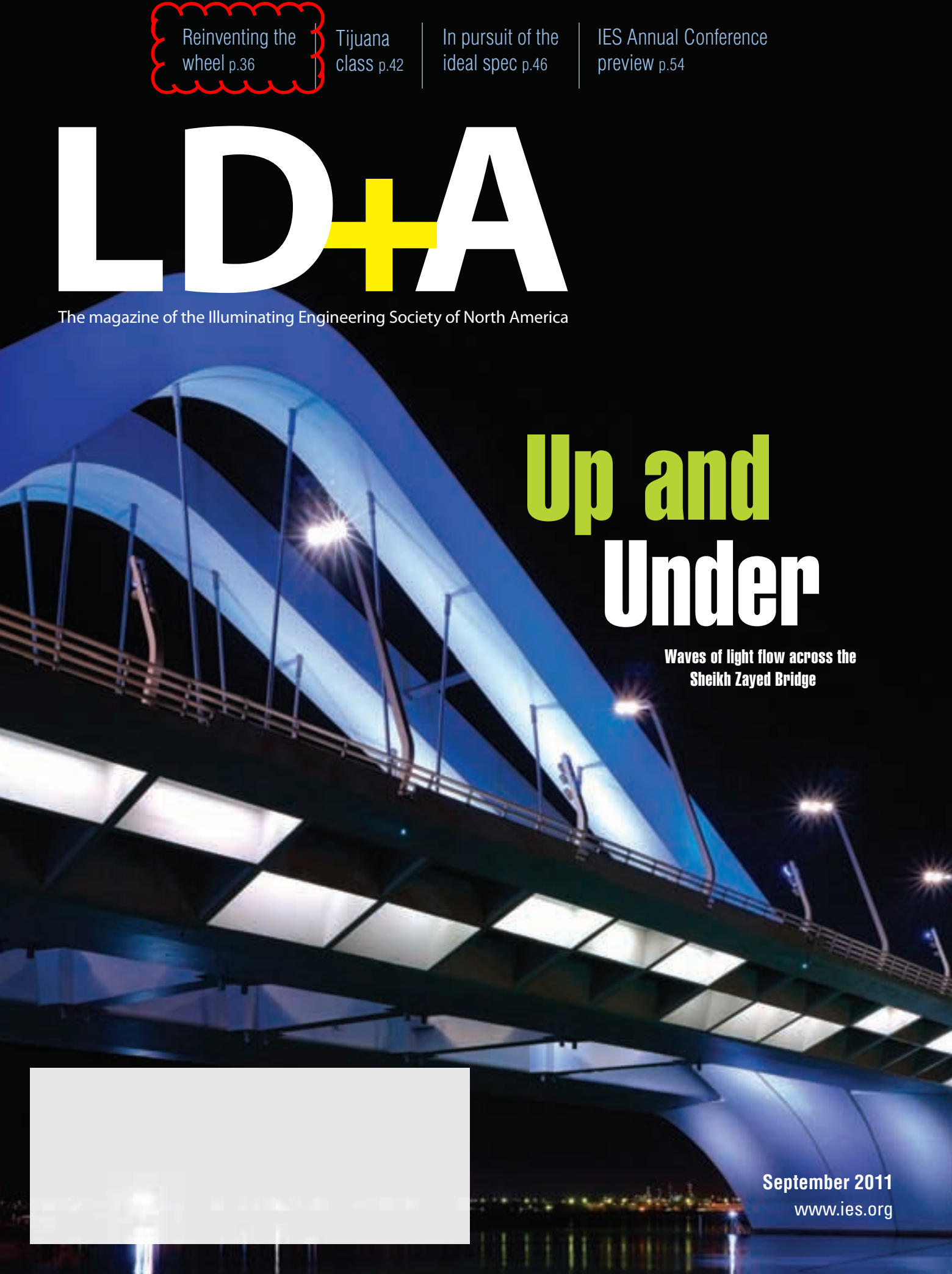

Up and Under

Waves of light flow across the Sheikh Zayed Bridge

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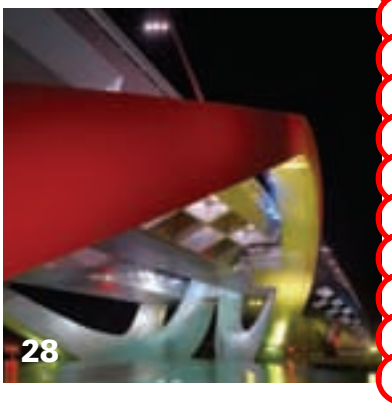

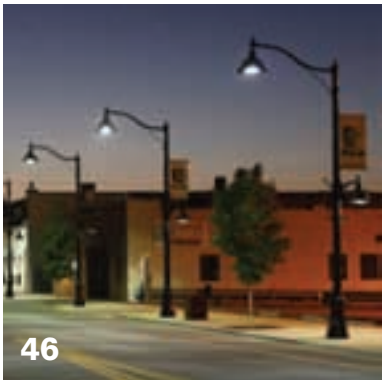

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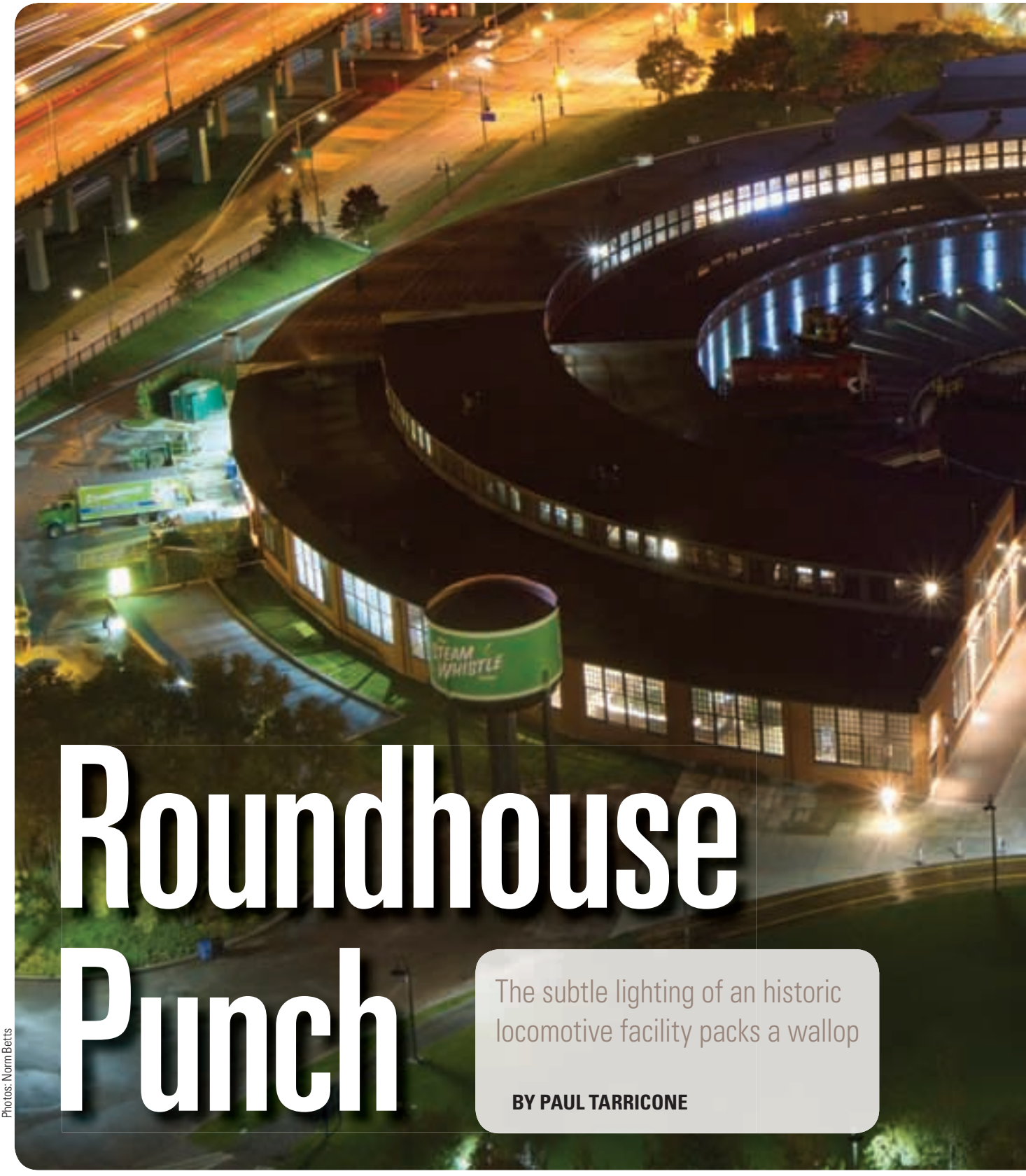
ON THE COVER: Lighting of the arches is supplemented by lighting under the bridge deck (p.28). Photo by Christian Richters.



Roundhouse Punch

The subtle lighting of an historic locomotive facility packs a wallop

BY PAUL TARRICONE

Photos: Norm Betts

Round and round it goes in Toronto, but this circular story has a happy ending.

The story begins with an old circle—an unsightly "black hole" in the form of an abandoned building that had marred the downtown landscape since 1988. The building in question is an historic steam train roundhouse used for repairing and housing locomotives. Today, a new circle has taken shape, as the roundhouse has been transformed from an urban eyesore into a vibrant retail center/railroad museum. And for good measure, one more circle has been added to provide the finishing touch: new façade lighting on the roundhouse that cleverly evokes the wheel of a steam train—spokes and all.

That lighting of the 82-year-old building by Deborah Gottesman, Gottesman Associates, Toronto, packs all the visual impact of, well, a perfectly placed roundhouse

punch. "I love heritage lighting. I find it very inspiring. If you listen to the narrative of the building and pay attention, the design becomes a natural extension of the story," says Gottesman.

Gottesman's design, which earned a 2011 IES Illumination Award of Merit, also includes the lighting of four historic buildings, which were moved to the site to create the museum, the walkways surrounding these buildings, railway artifacts such as tracks and steam trains, and an old coal and sanding tower. Sensitive to how the roundhouse and the other structures would mesh with the urban fabric, Gottesman says the project team didn't want lighting that was "garish or too attention getting. We didn't want to blow it up; it had to be elegant and subdued."

The historic nature of the site demanded such subtlety. Built in 1929 by Canadian Pacific Railway, the John Street Roundhouse was in continuous service until 1988, able to service over 60 engines and train cars a day. Its central steam plant and 120-ft turntable allowed engines to be moved without firing them up. The 100,000-sq ft roundhouse has 32 engine repair bays and was unique for its time in its use of daylighting: continuous clerestory windows extend along both sides of each repair bay. In 1991, the roundhouse was designated a Federal Heritage Building.

Today, it's not steam trains being serviced but the general public. Three tenants occupy the refurbished roundhouse: a brewery/bar; a furniture retailer that caters to the downtown condo market; and the railway museum.

With the site located in the heart of downtown, next to the Rogers Centre, home of Major League Baseball's Toronto Blue Jays, the goal was "to give the site a presence at night," says Gottesman. However, this had to be accomplished without poles or any other structural manifestation of lighting. "There were existing pathways within the site so for liability reasons, there were to be no poles and nothing people could play with, trip over or climb on," says Gottesman. As a result, most of the luminaires on the project are discreetly hidden. And with the city as part owner, cost control was essential; the project ultimately came in 10 percent below budget.

When the roundhouse doors are closed, the in-ground LED luminaires fixtures built into wood poles (inset, left), which cast light away from the

EVERYTHING IS BLACK AND WHITE

Gottesman's concept for the roundhouse was to use the idea of a wheel of a steam train to create visual interest on the black building canvas. Since no luminaires could be mounted on the building, in-ground 18-W LED luminaires (Beta Calco) were positioned between each pair of doors, to highlight the building form, create rhythm and suggest the wheel. Uplight is shielded by the soffit above. The ground here can settle and shift over time, so the luminaires had to be easily accessible and adjustable for aiming and alignment of the light pattern. Almost 800 linear ft of façade is illuminated consuming only 700 watts of light. The clerestory windows (which were replaced during the renovation) are illuminated from interior lights only, highlighting the roundhouse's curvature.

With its large doors and glass curtain wall, the roundhouse takes on one appearance when it's open for business (i.e., when the doors are open) and a different look when it's closed. "When the doors are open, white dominates over black in that there are

(inset, right) create white stripes on a black building, calling to mind the wheel of a steam train. Meanwhile, the "spokes" of the wheel are created by LED façade and on to the ground.

black stripes [the open doors, themselves] on a white building [illuminated from within]," says Gottesman. "When the doors are closed, black dominates over white in that there are white stripes of light from the embedded LEDs on a black building."

The façade is the wheel, but what about the spokes? To create the spokes, a sharp-beam LED optic from an existing luminaire was designed into 4-ft-high custom wood post luminaires. Approximately 3 ft above the ground, the light source faces away from the façade and is aimed at the ground, resulting in the soft stripes of light that symbolize the spokes.

The choice of LEDs for the roundhouse was dictated in part by Toronto's participation in Cree's LED City program, but they were the most logical source, regardless. "Today LEDs would absolutely be used. This project was designed two years ago. LEDs are good in the cold and they worked well at the time; we did a mock up and they did make sense," says Gottesman.

ROLLING INTO TOWN

Gottesman was also responsible for deftly lighting the four orphan buildings (a ticket booth, cabin, shed and station) as well as various "rolling stock" artifacts that were trucked over to the site from around the city. After the four buildings were meticulously re-

Four and 9-W LED downlights tucked under the soffits of the historic buildings highlight the building features and create illuminated walkways around each one.

stored, LED cube downlights (Beta Calco) were tucked under soffits to highlight building features and create an illuminated walkway around each one. Simple metal reflector heritage-style luminaires (TMS Electrical) were also used inside and outside the buildings, lamped with long-life, low-watt, cold-temperature cold cathode lamps. The screw-base cold cathode lamps can be switched out for other sources such as screw-base LED lamps, which were not available at the time of the design.

Another centerpiece of the site is a coal and sanding tower, which represented the only use of floodlighting on the project. A steam train is displayed under the tower—"we wanted the tower to be a bit of an attraction," says Gottesman—and the ceramic metal halide floodlights (elliptipar) are discreetly positioned where the tower's legs and underside meet. The CMH wide-beam and vertical optics capture the details of the train for visitors.

The meticulous nature of this project extended to rigorous mock-ups and product testing. . .weather be damned. "The mock-ups and aiming were done a year apart in February," says Gottesman. "Picture this—we're out there by Lake Ontario and it's 15-20 deg F. We wanted to test everything and we had about 60

Don Station was one of four orphan buildings in Toronto trucked to the site to create a railway museum.

Mock-ups of 60 different products took place from 6:00 p.m. to midnight in frigid February weather.

products for nine applications." The mock-ups were conducted over two nights, from 6:00 p.m. to midnight, and ranged in locale from the snow-covered ground along the façade to an 80-ft lift deployed to test signage lighting above the coal and sanding tower. The team bundled up in layers, says Gottesman, knowing there would be "a lot of standing around and looking around." A small price to pay, however, for a chance to make history. ■

METRICS THAT MATTER

John Street Roundhouse Park
Watts per linear ft: .89 along the façade
Lamp Types: 3
Fixture Types: 5

THE DESIGNER

Deborah Gottesman, P.Eng., MBA, LC, Member IES (1988), is principal lighting consultant at Gottesman Associates in Toronto. She is a Toronto Section past president, and has been a member of IES committees at the Regional and International levels.