

Lewis & Clark College Pedestrian Bridge

When one of the Lewis & Clark College campus bridges was identified with potential structural deficiencies, the bridge was closed to students and they were re-routed around the densely wooded ravine separating the residence halls from the undergraduate campus. The college wanted to restore the regular flow of student traffic as quickly as they could and commissioned **Ella Mills of Biella Lighting Design** (Portland) to serve as the lead lighting designer of a new 188-ft long bridge.

“Our goals for the lighting design were to create a special experience for the users, and subtly emphasize the structure and the materials used for the construction of the bridge, with minimal impact to the surrounding environment,” says Mills, who worked on the project between the spring of 2018 and the winter of 2019. Using a deft touch when choosing and placing fixtures, Mills was able to provide the uniform, unobtrusive illumination requested by the college, while also crafting a path that invites travelers to pause, gather and appreciate the campus’s verdant natural setting.

Source: “A New Expedition” - LD&A Feb. 2021

Location:

Portland, Oregon

Lighting Designer:

Biella Lighting Design (Portland)

Lead Designer:

Ella Mills IES, LEED AP BD+C

Architect:

Minarik Architecture, Doug Minarik,
AIA NCARB | Principal

Specifying Agent:

Harry L. Stearns

Awards:

2020 IES Illumination Award of Merit

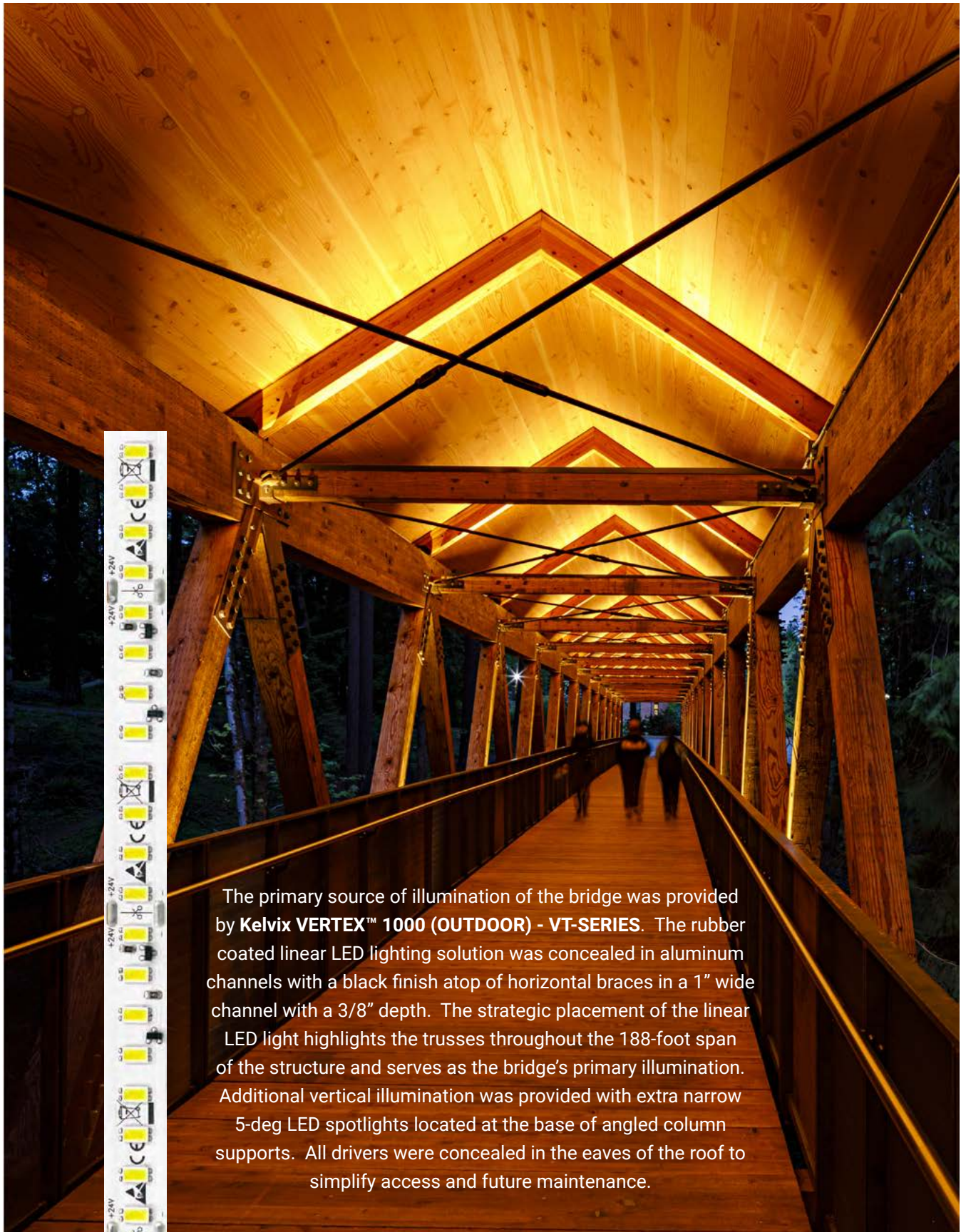
Photos:

Lincoln Barbour



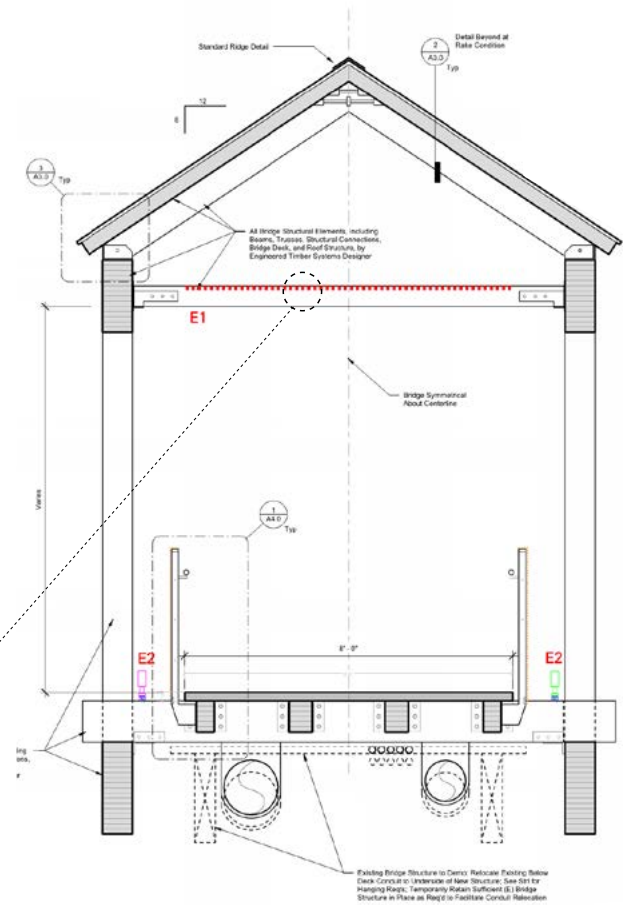
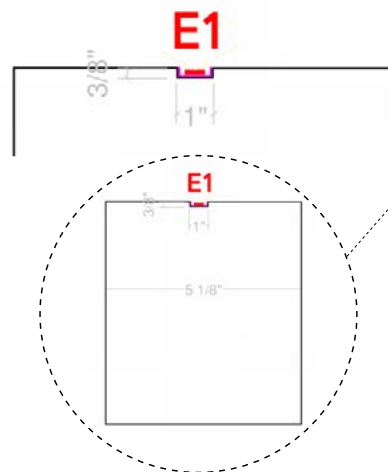
Becoming One with Nature

According to Mills, the client's goal was to use regional materials and construct the bridge using sustainable practices. The cross-laminated timber panels were constructed of locally sourced glulam and provided a solid structural support for the new bridge. The thin profile of the engineered wood not only provided an ideal structure but the material itself blends in nicely into its wooded surroundings. To emphasize the structural elements of the bridge, the design team utilized a more unexpected approach to traditional bridge lighting. *"We used only two types of fixtures to emphasize the structural elements of the bridge, employing the more unexpected approach of highlighting the roof and the wall trusses, rather than continuously uplighting the bridge's span,"* commented Mills.



The primary source of illumination of the bridge was provided by **Kelvix VERTEX™ 1000 (OUTDOOR) - VT-SERIES**. The rubber coated linear LED lighting solution was concealed in aluminum channels with a black finish atop of horizontal braces in a 1" wide channel with a 3/8" depth. The strategic placement of the linear LED light highlights the trusses throughout the 188-foot span of the structure and serves as the bridge's primary illumination. Additional vertical illumination was provided with extra narrow 5-deg LED spotlights located at the base of angled column supports. All drivers were concealed in the eaves of the roof to simplify access and future maintenance.

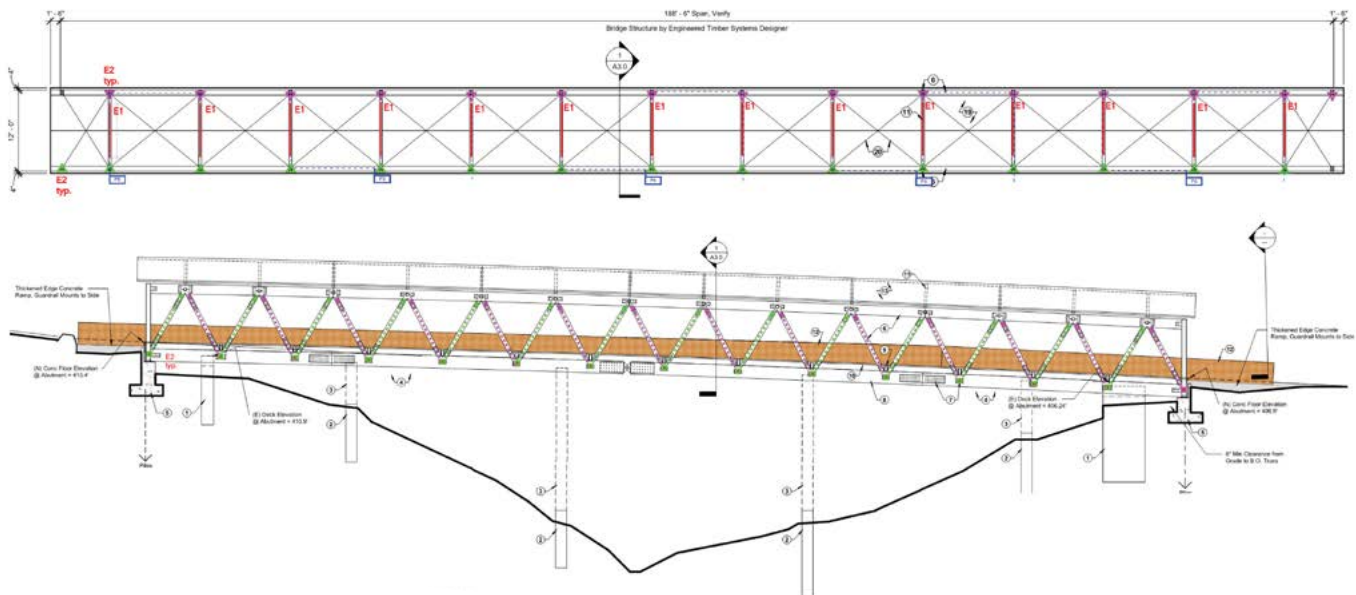
The design team created more visual interest by lighting the vertical trusses connecting the deck and roof while enhancing the natural warmth and beauty of the bridge's wooden structure. With light reflected off the beams and ceiling, the light floods the bridge deck with a warm, even glow that emphasizes the bridge's geometry and creates a rhythm of light and shadow that is consistent in both directions of travel. The lights are controlled by a dusk to dawn photocell system that knits into the campus's existing lighting controls to create a higher level of perceived safety.



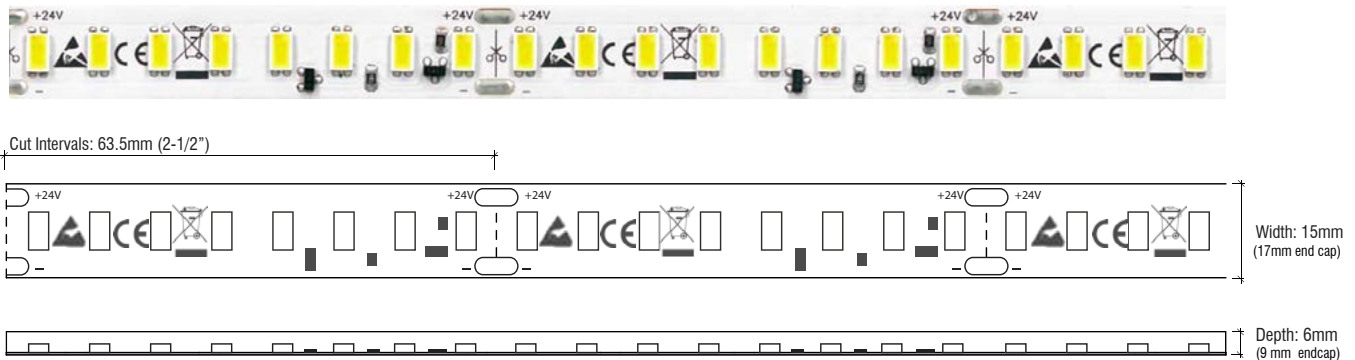


Environmental & Nature Friendly

Due to the ravine’s official classification as an environmental zone, the design had to take the surrounding wildlife into account and avoid light spill outside of the bridge’s footprint, according to Mills. In addition, the design also had to meet Oregon Energy Code requirements and strict dark-sky guidelines. Mills was presented with a challenge of how to combine the environmental restrictions on the design with the higher illumination levels desired by the client. The campus standard color temperature for exterior lighting was 5000K. According to IES guidelines, the recommended light levels along the bridge pathway were far below the 2 footcandles minimum requested by the client.



With careful placement of the **VERTEX OUTDOOR TAPE SERIES** and **small spotlight**, light spill was minimized while still providing ample vertical and horizontal illumination on the bridge. Mills was also able to convince the college to lower the color temperature of the Vertex Linear Tape to 3000K along the bridge. The lower color temperature helps to provide a better environment for the nearby residents of the resident halls and of course the surrounding wildlife. The design also achieved light levels of 3.5 fc on the horizontal surface with a 3.5 max-to-min uniformity ratio and approximately 1 fc of vertical illumination. This overall design approach allowed the team to use a third of the materials and power supplies, helping to lower the overall lighting budget and installation cost, minimize energy consumption and reduce future maintenance costs according to Mills.



“Although the new bridge had to be designed to accommodate the construction logistics and technical requirements caused by the ravine’s environmental zone, it also created an opportunity to heighten the experience of crossing the ravine, celebrating one of Lewis & Clark’s defining natural resources,”

Ella Mills

(Source: “A New Expedition”- LD&A Feb. 2021)

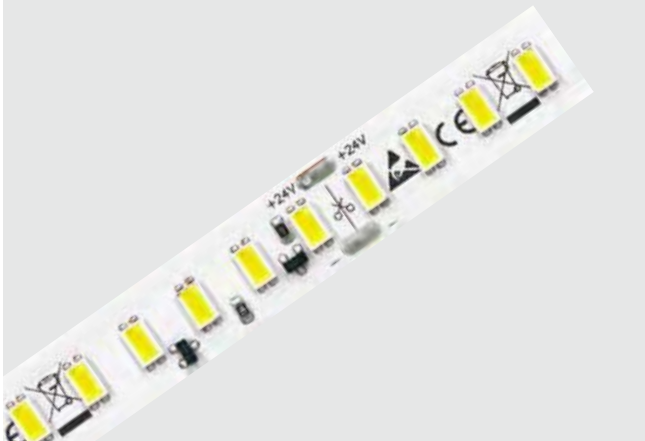
Products Used

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- 2. They offer good quality product at reasonable cost.*
- 3. Products are readily available and allow quick turnaround for my clients.*
- 4. I have not had flicker issues with their drivers.*

Ella Mills, Associate IALD, IES, LEED AP BD+C

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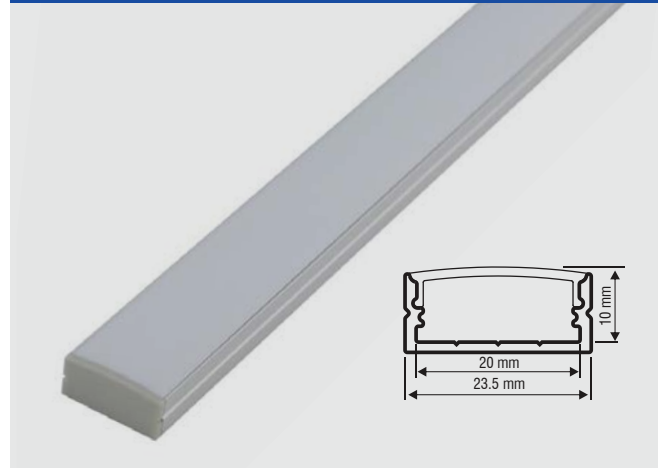
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EXTRUDED ALUMINUM MOUNTING CHANNEL

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