

INNOVATIVE SMART TRANSPORTATION INFRASTRUCTURE

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BY TOM KLEMENS

BURNS ENGINEERING

APEX DESIGN

HDR

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Driverless Passenger Service

PROJECT: AUTONOMOUS SHUTTLE STUDY
LINCOLN, NEBRASKA

FIRM: HDR
OMAHA, NEBRASKA

The city of Lincoln, Nebraska, and HDR are collaborating on an Autonomous Shuttle Study that may soon provide driverless passenger service in the downtown area. Designed to support the city's continued growth, the project is enhancing mobility, reducing traffic congestion and improving air quality through the integration of new technologies. The initial study involved identifying how the service should operate, how it should serve the community and the framework for the city to begin implementation.

The concept for the project includes four autonomous shuttles deployed dynamically along a 2.6-mile downtown route chosen based on the anticipated origins and destinations of passengers. The project is intended to bridge the gap between

traditional fixed-route transit operations and new transportation network company models that provide on-demand service.

"The system would be demand responsive, which differentiates it from other pilot projects that are popping up around the country," says Ralph Batenhorst, senior project manager for HDR. The city was not interested in having shuttles circulate on a fixed route, stopping at every station regardless of whether or not there were riders. Rather than moving constantly, the vehicles will remain in staging areas until a user requests a ride—using a smartphone app or a standing kiosk—and the shuttle then will go to the stop nearest to that person.

"The autonomous shuttle drives in a travel lane on a street, just like other cars, operating in what is known as mixed traffic," says Batenhorst. "It will be going through intersections, stopping at red lights and stop signs."



Ralph Batenhorst
Senior Project Manager
HDR

For the Lincoln pilot project, the shuttle connects the University of Nebraska, the state Capitol and other government buildings, and an entertainment district in the downtown area known as the Haymarket. Although the shuttle uses a fixed route, shortcut options built into the system enable system optimization

to ensure people are on the shortest route possible. Future deployments could include circulator routes; replacements for short, existing transit lines with low ridership; and first- and last-mile connections for high-capacity transit lines.

In the summer of 2018, more than 1,500 stakeholders and the general public had the opportunity to ride the shuttle and participate in surveys, mapping exercises, educa-

tion sessions, focus groups and in-depth interviews.

"One of the questions the city asked the public and the stakeholders was, 'Is there any part of this that you fear?' In general, the answer was 'no,'" says Batenhorst. "As long as it is safe, convenient, efficient and priced right, they were onboard."



The public was invited to try out an autonomous shuttle in July and August 2018 as it navigated a course set up in Lincoln, Nebraska, parking lot.