

**CASE STUDY**

# Complete Street Design Improves Livability and Connectivity

With continued economic and residential growth, Leawood, Kansas, needed to improve its roads. Pursuing a complete street design transformed a minor arterial road into a bright, open environment that supports multimodal transportation.



## Challenge

The southern region of the Kansas City metro area has seen consistent growth since the early 2000s. Increasing traffic caused by new residential and commercial developments put additional pressures on road capacity and maintenance. The City of Leawood, Kansas, wanted to invest in an arterial road to improve the flow of traffic and support multimodal transportation for the growing residential base. An existing two-lane road did not support increasing travel demand and residents would need a road that enhanced access to single-family residential neighborhoods, commercial developments, schools and city facilities. To meet its goals, the city turned to Burns & McDonnell for assistance.

Before 2014, 143rd Street had two lanes and an open-ditch section. The street was lined with utilities overhead and below ground across the entire length. The city wanted to pursue a complete street design to promote walking and bicycling along the corridor in addition to providing a safer roadway.

## Project Stats

### Client

City of Leawood, Kansas

### Location

Johnson County, Kansas

**2****NEW TRAFFIC LANES BUILT****10****FOOT-WIDE TRAIL BUILT****5****PUBLIC MEETINGS**

## Solution

Using federal funding administered through the Kansas Department of Transportation's Local Public Agency program, the City of Leawood pursued upgrades and complete street development along 143rd Street in two phases. The first phase was a 1-mile stretch between Nall Avenue and Windsor Street. Our team provided the conceptual, preliminary and final designs for the street improvements, which incorporated curbing, on-street bike lanes, enclosed storm sewers, culvert design, landscaping, a multipurpose trail, a traffic signal and a continuous light-emitting diode (LED) street light system.

The second phase of the project focused on extending those improvements another 0.75 mile to Kenneth Road and the city limits. The second phase started in 2016, during which time Burns & McDonnell provided design services for curbing, enclosed storm sewers, culverts, landscaping, and bicycle and pedestrian facilities.

One of the project's major challenges was coordination with local utilities. During the first phase of this project, the team coordinated a utility relocation with dedicated corridors while avoiding a major petroleum transmission line running the length of the project. Overhead power and telecommunication facilities along the existing roadway were buried into dedicated utility corridors. During both phases of the project, the team shared grading plans and spot elevations with a local electrical utility to establish foundation elevations for transformers and sectionalizers. The designs for both phases eliminated the need for costly relocation of the petroleum transmission line. Utilities that previously had secured their own private easements were identified early, because relocation costs for the operators was borne by the project and accounted for in the budget.

The team coordinated planning and design for this project with a local school district and impacted homeowners



**Figure 1:** Integrating bike lanes into the street design enhances neighborhood aesthetics, promotes healthy leisure activities and provides new transportation options.

associations. To minimize disruption to nearby elementary and middle schools, the project team conducted traffic studies to evaluate access and circulation at each school during morning drop-off and afternoon pick-up sessions. Designs for the roadway improvement included a new fully actuated traffic signal at the intersection located right next to both schools.

During the second phase of the project, the team had to address a traverse grade differential from south to north, and a 7% longitudinal profile grade running west to east. The profile grade needed to accommodate the petroleum transmission line. Specifically, the team incorporated the pipeline's location into the design model, so its presence and location were evaluated in relation to a retaining wall, driveway profiles and general grading.

Stakeholder engagement was essential during the second phase of this project. The road serves multiple residential and commercial developments and the project affected traffic flow during construction. Our team led engagement activities, including the development of informational materials and a project website, while administering dedicated social media accounts. These efforts provided regular updates to businesses and residents regarding project progress, benefits and opportunities for input.

## Results

The first phase of the project was completed in 2016 and the second phase was completed in October 2020. The improvements made along 143rd Street enhance a minor arterial road for the cities of Leawood and Overland Park, Kansas. The addition of on-street bike lanes and a 10-foot multiuse trail enhances mobility for the citizens of Leawood. This infrastructure project transformed a two-lane roadway with limited lighting and overhead utilities into a bright and open environment with overhead LED lighting, four travel lanes and buried private utilities. In addition to the bike lanes and trail, this improved street now has ADA-compliant traffic signals and an improved drainage system. These features not only improve the aesthetics of the road, but also promote biking, walking and multimodal transportation options.

## About Burns & McDonnell



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