



CASE STUDY

Route 460 Southgate Interchange

Blacksburg, Virginia

CHALLENGE

In the spring of 2015, the Salem District of the Virginia Department of Transportation (VDOT) looked at replacing the signalized, three-way intersection of U.S. Route 460 Bypass and Southgate Drive in Blacksburg, Virginia. This intersection served as the primary access point for Virginia Tech with over 32,000 students, faculty, employees, and visitors traveling in and out of campus each day. As the heaviest-used entrance to Virginia Tech, the intersection was the site of frequent collisions and would significantly back up with traffic during special events such as football games, graduation, and student move-in days. In addition to Virginia Tech, the intersection was utilized by the Virginia Tech Montgomery Executive Airport, more than 180 businesses located in the Corporate Research Center, and residents of the town of Blacksburg.

VDOT was looking to address safety and traffic flow issues by improving operations for this primary access point – the only signalized intersection along a 37-mile section of Route 460. Their proposed new gateway would feature a modified diverging diamond intersection with two architecturally significant bridges

over Route 460. The diverging diamond interchange was an innovative design solution implemented to ease the crash-prone, congested intersection. A diverging diamond interchange is a fairly unique concept – the fourth of its kind in Virginia and only the second in the western portion of the state.

All stakeholders involved in this project also wanted the design to facilitate future development and growth. The planned future alignment would include two roundabouts, aesthetic treatments, and relocation of Research Center Drive and the Huckleberry Trail for an adjacent airport extension. The 2.5-mile Huckleberry Trail work would include two pedestrian underpasses and would extend a third underpass. The new partial interchange would also allow for the potential future widening of Route 460 and Southgate Drive, and the interchange design would enable the addition of a fourth leg to complete the future planned bypass at Prices Fork Road.

Because of its frequent use and proximity to campus, this was a high-profile project and successful completion would involve extensive coordination and the involvement of many stakeholders. MBP was brought on early in the process to provide construction management, construction engineering, and inspection services for the \$38.6 million project.

SOLUTION

Due to the project's scale, MBP recognized that continual risk management, constructability analysis, and partnering would be essential for success. From the start, coordination with VDOT, the project team,

and its primary user, Virginia Tech, was extensive. The MBP team served as a conduit for keeping the University administration, faculty, and students aware of the changing dynamics of the project. To keep all stakeholders informed, MBP presented semi-annual, executive-level updates to Virginia Tech's administration throughout construction.

To further Virginia Tech's academic mission and outreach, MBP facilitated and led approximately seven project tours for engineering and construction classes. MBP also supported VDOT and Virginia Tech Transportation Construction Management Institute's (TCMI) efforts with presentations to VDOT's LEAD program, a leadership development program, and two presentations to the TCMI, a statewide industry program for emerging leaders.

MBP provided turnkey construction engineering and inspection and construction project management supporting VDOT's Area Construction Engineer. The MBP team was organized by scopes of work: the construction project manager – leadership and engineering support, the project inspector – field operations, the bridge lead, the grading lead, the project records manager, and two inspectors flexed to oversee peak operations with twelve or more crews.

RESULT

The goal was to reach substantial completion by December 31, 2018. Due to a consistent focus on communication, prioritization, risk management, and effective project controls by the MBP team, the project came in under budget and achieved substantial completion on October 31, 2018, 61 days ahead of schedule. In order to accomplish this, MBP processed submittals and RFI's expeditiously and supported the Contractor's active management of the schedule to address the challenges and maintain flow. MBP also actively integrated risk management and constructability analysis into progress meetings throughout construction. By addressing over 80 different plan errors, omissions, or conflicts throughout the project, MBP provided cost and time savings for VDOT. While there were four Notices of Intent to file claim (NOI), just over 20 change orders, and three change orders pending for betterments, only one NOI remains unresolved to date. MBP's efforts resulted in over \$147,000 in direct cost savings on change orders. Overall, MBP's efforts directly saved VDOT over \$530,000 by partnering effectively with the contractor, the design engineer, and internal staff.

“MBP communicated and partnered effectively with the contractor, our design engineer, and internal staff resulting in a total change order amount that is anticipated to end up at less than one percent of the original contract value, and kept overruns within 0.5 percent of the original contract value. Through proactive project management, we realized project savings in the excess of \$500,000. ”

