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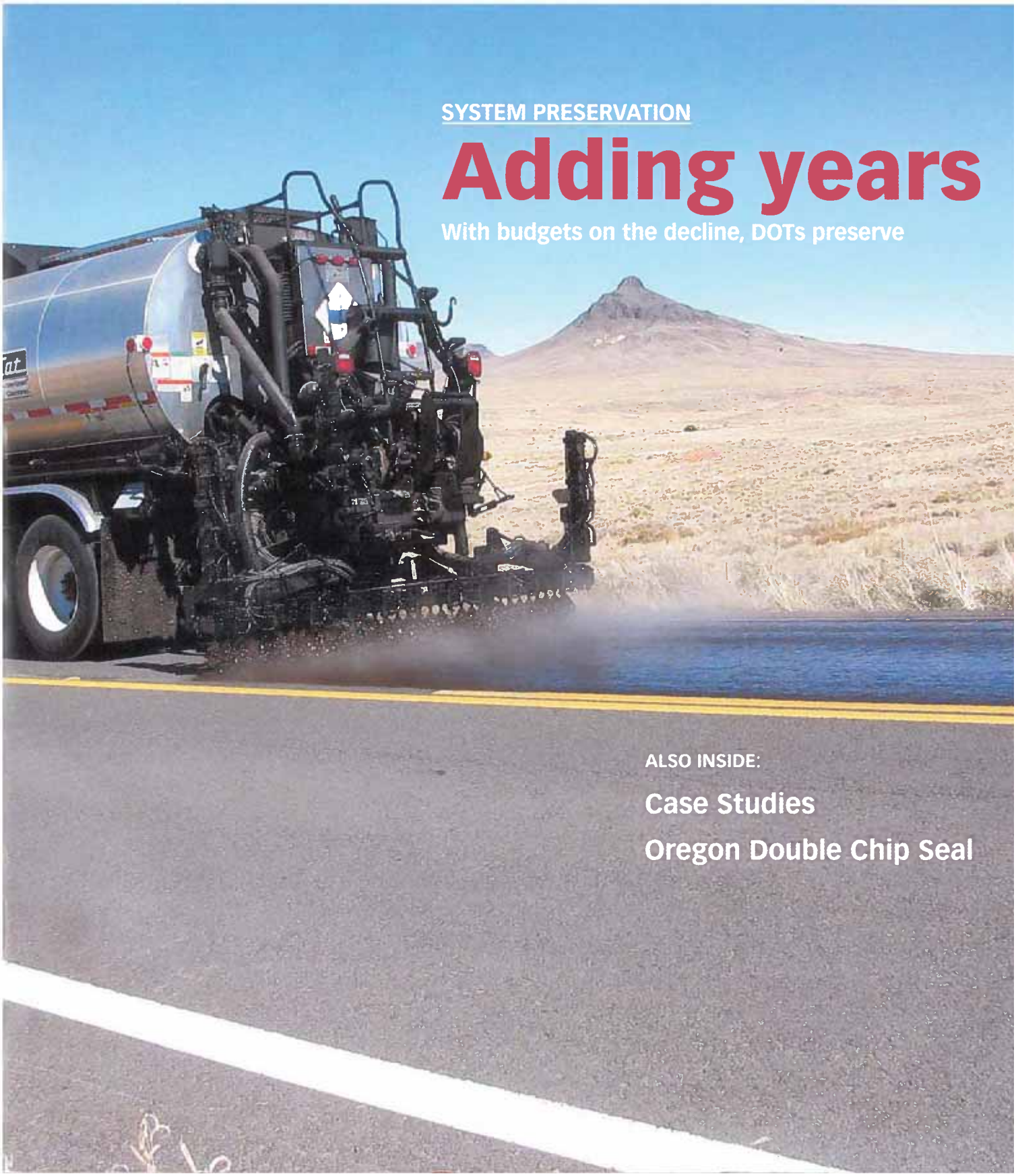

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Contributing Author

Stronger magnet

Buffalo successful in aim to improve Main Street

Main Streets are often both economic engines and magnets for activity and traffic.

Buffalo's Main Street, where it runs through the historic University and Central Park districts, both active business and residential areas, was in disarray.

Over 25,000 vehicles per day moved at either breakneck speed or in long, idling lines competing with heavy pedestrian and bicycle traffic. Crosswalks were few. Sidewalks heaved and buckled. Multilegged, skewed intersections created confusion and safety issues for both pedestrians and motorists. Landscaping was practically nonexistent. In some areas there were seven lanes of traffic. Not a pretty situation for a main thoroughfare, but not uncommon for other Main Streets around the country.

A recently completed seven-year, $31 million project led to the redesign and reconstruction of this crucial artery and the resolution of many of these issues for Buffalo.

From the beginning, state and city officials realized that public involvement in the design was crucial to the project's success. An advisory group worked with the design team and provided important input on numerous facets of the design. A variety of North Buffalo concerned constituencies surrounding the site—block clubs, community organizations, bicycle clubs, elected officials, business owners and the university community—all took an active part in discussions and meetings. Through these meetings the project team received vital insights into the needs of the community. For example, many local business leaders were concerned that construction would be detrimental as it disrupted commercial traffic. Therefore, the project was designed in numerous small phases to limit active construction operations. In addition, the timing of the phases was designed to avoid construction in front of schools and community centers during their active periods.

Creating separation

What resulted, after design, was a three-phase construction project. Each of the two roadway reconstruction phases covered

approximately half of the project's 3.3-mile length to help minimize disruption. However, most major urban roadway projects invariably involve more than transportation issues, and this area was no exception. Before roadwork began, all utility work—water main, storm water and sanitary sewer upgrades—was completed.

A portion of the initial utility phase involved separating the combined storm water and sanitary sewage in the century-old North Buffalo system. In order to accomplish the separation, it was necessary to create an outlet for the storm water within the project corridor. An intersecting street at midpoint in the project proved to be the ideal outlet. Preliminary design for the outlet sewer included using a robotic camera to visually determine the condition of the existing sewer and laterals; investigating the subsurface extensively to determine soil, pavement and rock conditions; and excavating test pits to accurately determine existing utility-line locations.

The final sewer project provided 2,180 linear ft of new 60-in.-diam. and 970 linear ft of 36-in.-diam. storm-water mains. Smaller-diameter storm-water drains were provided at all side streets to facilitate future storm-water/sewer-separation projects. Special design consideration was required to complete the installation of the new sewer below an early 1900s-vintage 36-in.-diam. water main that services North Buffalo. A 72-in. concrete floor was constructed at this location while maintaining flow through the existing water main and supporting the main with a cradle system. The new storm-water lines expanded the capability of the system in North Buffalo and provided an outlet for the new storm drains.

By the thousand

With preliminary public-utility phases completed, reconstruction of the roadway commenced. Construction work was divided into approximately 1,000-ft segments. In these segments, one-half of the street was excavated down to the subgrade. Curbing, light poles, sidewalks, signage and appurtenances were all removed. The section was then reconstructed up to the asphalt binder course. Once completed, the same sequence was repeated on the other half of the segment. Limiting the section's length allowed construction to proceed rapidly. In general, it took approximately two weeks to complete work on one-half of the roadway. This was quite an accomplishment, considering the number of features to be constructed and the number of facilities to be maintained during construction.

Major intersections were reconstructed with concrete pavement instead of asphalt to increase the service life in these high-impact zones. The intersections were completed in four steps that coincided with whatever side of the adjoining road was under construction. The asphalt top-course paving was completed after the entire street was constructed.

On similar projects the relocation of underground private utilities was a notorious schedule killer. On Main Street, numerous private utility companies owned aged duct banks and service vaults within the roadway construction zone. If these companies completed separate construction phases to relocate

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their facilities, construction within a segment would have dragged on for weeks.

Therefore, an alternative was developed. Through advance planning it was decided that the private utility companies would relocate their facilities after the contractor had removed the existing road surface. Constant coordination and cooperation was required to allow all parties to work together in the confined space. To minimize disruptions, utility companies pre-ordered and stockpiled concrete vault roofs in order to facilitate their quick replacement. Where feasible, top conduit runs of duct banks were "rolled" to the side instead of installing new ducts. Frequent coordination meetings helped move the project along according to schedule.

Traffic was managed and funneled to the open side of the road. In most cases, one lane of traffic in each direction remained open. Temporary signals, relocated signal heads and extensive signage helped guide traffic through the new travel patterns. At major intersections, left-turn lanes were created and in some cases given separate signal phases. The short length of each segment under construction kept disruption to a limited area. Street lighting was maintained on at least one side of the street at all times to enhance vehicular and pedestrian safety. Variable message signs in advance of the construction zones warned drivers to seek other routes to avoid delays. In addition, the project team worked with local media to notify the public and urge them to use alternative routes.

Problem intersections

While the actual roadway work was fairly routine, several intersections proved to be more challenging. The intersection of Main Street with Kenmore Avenue, the University Plaza Driveway and the entrance to the University of Buffalo formed a multilegged intersection with sharp skews, dangerous uncontrolled crosswalks and excessive delays. Problems at this intersection were compounded by the existence of a bus turnaround and driver facility on one intersection leg.

The design solution divided the existing multilegged intersection into two separate intersections. The Kenmore Avenue intersection was shifted westward and tied to Main Street with a new T-intersection. The Plaza and University entrances were shifted to the east to create a new four-leg intersection. The bus turnaround was relocated, and a new driver facility was constructed at that location. This solution created two intersections that provided much improved levels of service and pedestrian crossings with marked crosswalks, refuge islands, call buttons and visual/audio indicators. In addition, a pocket park was developed on land previously used by the relocated roadways.

The second problematic intersection—Main Street with Parker Avenue, Vernon Place and Fillmore Avenue—was a jumble of three separate Wye intersections with individual traffic signals, little refuge for pedestrians and a transit facility on one of the intersection legs. The

solution was to realign the Parker Avenue approach and change the operation of Vernon Place to one-way. The Parker and Fillmore avenue approaches were combined into a single phase and closely coordinated with a nearby signal. A new pocket park also was developed at this location on land previously used by the relocated roadways.

Computer simulated

Uncoordinated signalization along this stretch of roadway contributed to traffic congestion and inefficient traffic flow for the normal traffic volume of over 25,000 vehicles. Engineers developed detailed computer simulations to find the best way to move traffic safely and efficiently through the corridor. They installed a state-of-the-art traffic-control system, together with improved turning lanes at major intersections, channelizing islands, lane reconfigurations and numerous traffic-calming measures, which moved traffic at a slower overall speed but also reduced intersection delays. These features significantly lowered travel time while improving safety and air quality.

Dressing it up

The advisory group felt that existing conditions on Main Street were not conducive to walking or biking and did not draw attention to this vibrant neighborhood. The solution was multifaceted. All sidewalks were replaced using an exposed aggregate mix, which lends a historic texture to walkways. Snow-storage strips were replaced with red-tinted concrete with a block stone pattern and gray release. Crosswalks were replaced and in some locations newly installed with stamped concrete in a red brick pattern. Project street lighting used period-style poles with short arms placed closer together. The greater number of poles promoted increased use of banner arms and hanging basket fixtures as well as improved lighting levels for pedestrians. The curb lanes on Main Street were widened to provide a shared lane for bicyclists, and bicycle-safe grates were installed on all drainage inlets. The creation of the two new pocket parks, installation of numerous bicycle racks, benches, planters and message kiosks added to walkability and community aesthetics.

This project was a great example of cooperation and communication among the owner, designer, contractor and community. Had one of the four parties not cooperated in its successful completion, it likely would not have been completed, as it was, ahead of schedule.

Furthermore, since the completion of the project in 2011, new buildings have been constructed, once-vacant storefronts thrive with new businesses, and pedestrians and bicyclists have found a safe haven. The street not only has become less of a challenge for drivers, it also now is an inviting catalyst for growth in the area. It is a Main Street revived. **R&B**

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