

William L. Witmer

# The Cumberland Gap

## Coming Full Circle

**T**he thundering herds of migrating buffalo which once traversed a low point in the Appalachian barrier along what is today the intersecting state lines of Kentucky, Tennessee and Virginia, disappeared centuries ago. Tractor-trailer trucks following the same general route ceased to do so on October 18, 1996. On that date, the opening of a dual-bore tunnel began yet another chapter in the eons of animal/human traffic flow through the imposing Cumberland Gap.

This long-awaited tunnel between Middlesboro, Kentucky, and Cumberland Gap, Tennessee, was an event that allowed the closure of the two-mile-long intervening section of U.S. Route 25E. The surrounding Cumberland Gap National Historical Park was established on June 11, 1940, to promote public understanding and appreciation of the Gap's role during the early years of American westward expansion. Public Law 93-87 (August 13, 1973) authorized the relocation of 25E to permit restoration of the Gap while improving traffic safety via a tunnel. A multi-decade interagency planning, design, and construction effort involving the National Park Service (NPS), the Federal Highway Administration (FHWA), and the Natural

Resources Conservation Service (NRCS), is now moving into the final mitigation phases as required by the 1979 Final Environmental Impact Statement.

The immediate mitigation goals include the deconstruction and removal of the old road surface and base from Route 25E, re-opening the fresh water drainage issuing from Cudjo Cave (which flows under the old roadbed), regrading of the Gap to historic contours of the 1780-1810 initial Kentucky settlement era, and construction of a pedestrian trail which will follow, as much as practical, the Wilderness Road cut by Daniel Boone and his 30 axmen in March 1775.

### *Historic Topography of the Gap*

One NPS staffer undertook the extremely complicated task of arriving at an accurate regrading plan at the Gap proper, from the critical historical timeframe. This effort was successful, such that information has now been incorporated into FHWA contract bid documents.

The short version of the rediscovery process began with gathering of available data, including an 1833 survey, 1862 Civil War photographs, 1903 and 1921 Association Lands maps, 1938 FHWA aerial photographs, plus current mapping from FHWA tunnel-related contracts. In the studio, this assemblage was used to locate and validate the original ridge lines and drainage features, using a combination of survey, mathematical, and graphic art skills. When the studio work had progressed to a certain point, several field trips were made for onsite discovery and verification. Work at the park involved extensive investigation on foot, bushwhacking up and down the mountainsides, additional photography from specific vantage points—including from a helicopter—to emulate the historical photos for comparative purposes. Supplementary survey work came from an interested Middlesboro engineering firm.

Specific coordinate points (northings/eastings and elevations) were determined for old road traces, Indian Rock, and the Daughters of the American Revolution monument on the Kentucky side of the Gap, plus Cudjo Cave, Gap Creek, and the Iron Furnace on the Virginia/Tennessee side. This was instrumental in bringing the various older overlapping surveys into the same scale, and locking them into the correct alignment with present day mapping. Thousands of feet of colored flagging were placed to outline shapes and breaks in ground lines before being

*View from the main park viewpoint (The Pinnacle) to the Gap. Kentucky is on the right; Tennessee and Virginia are on the left. Photo by the author.*



photographed. At each stage of refinement, the vertical, horizontal, and birds-eye perspective information, coupled with painstaking scaled graphic delineation of puzzle-piece remnants of undisturbed topography, were needed to pin down the cross-referenced data. Missing pieces of topography were mechanically reconstructed on paper. The historic mapping, photography, and delineations eventually were merged with present-day mapping. The composite survey data was entered into a computer using AutoCad, Release 14 and Softdesk, Release 8 programs. What resulted were three-dimensional wireframe views of what the entire Gap area topography looked like in 1790. By comparison to today's landforms, the resultant grading plan provided by NPS to FHWA has allowed engineers to calculate the amount of fill needed to be hauled into the Gap from nearby tunnel construction stockpiles. In all, the Saddle is 32 feet lower today than 200 years ago, thanks to the continuum of road improvements. About 215,000 cubic yards (an estimated 165,000 cubic meters) of fill will be provided to return the Gap to historic grades when Daniel Boone and his fellow trailblazers first crossed over into "Kaintucky."

#### ***Finding the Wilderness Road***

As work on the topography progressed, a tandem effort was pursued to locate the original alignment of the Wilderness Road. On the Virginia/Tennessee side, the 1833 survey map was compared with known locations of Cudjo Cave and the Gap. Again delineating topographic remnants, an alignment of the 1790 track emerged and was plotted on paper. At the park, the centerline was cut by hand, surveyed, and staked. During fieldwork, several remnants of the Wilderness Road were found to be intact. Other portions were no longer visible due to roadbuilding and 200 years of erosion. One thing became obvious—although the Wilderness Road crossed Route 25E several times, the historic line did not lie under the present roadbed. As in the 1833 map, the true line was somewhat downhill from today's pavement. Portions of the original alignment are being incorporated into the pedestrian trail.

#### ***Next Steps***

FHWA will contract with a construction firm in 2001 to remove the Route 25E pavement,

re-establish the historic grades, and construct a trail from the Wilderness Road Parking Area in Virginia, through the Gap, to the Thomas Walker Parking Area in Kentucky. Several spur trails will be connected where appropriate, including one to Cudjo Cave to facilitate pre-arranged underground tours. NPS will have an archeologist present during the demolition/removal phase, looking for additional evidence of original topographic features and artifacts related not only to the Boone era, but also to subsequent events such as the Civil War and the 1908 construction of Object Lesson Road, an early experiment in the use of asphalt. NPS will also provide a landscape architect to give technical guidance to FHWA during the regrading operation. NRCS continues to grow native plant materials for what will be a substantial revegetation effort. This will put things back to Boone's era as closely as we could hope to achieve. The final phase of mitigation, scheduled for 2003, includes a modest exhibit pavilion, ranger station, and restrooms in Virginia, numerous interpretive devices along the trails, plus new museum exhibits and a movie for the visitor center in Middlesboro, Kentucky, just downhill from the north portal of the Cumberland Gap Tunnel.

#### ***Conclusion***

Coordinated federal interagency efforts like this come along once in a career. Many meetings, telephone calls, and emails have occurred to ensure that everyone involved has the same understanding of the goals, and the prerequisites to achieve them. Moreover, FHWA has added many more "special" requirements to the contract specifications to guide the contractor. An interesting twist is that gasoline tax funds from the Federal Lands Highway Program, normally used to build roads and bridges, will be used to remove a road and rehabilitate a site in this one instance. The beneficiaries of this effort, the visiting public, will hopefully experience some of the excitement felt by the early settlers, as they moved their families, belongings, and livestock beyond the last wall of eastern mountains to begin a new life in Kentucky.

---

*William L. Witmer is project manager/landscape architect at the NPS Denver Service Center in Colorado, working primarily with FHWA on road and bridge projects in the Southeast.*