Interstate 26

Transportation Project Profile

North Carolina Department of Transportation

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One of the largest projects in NCDOT's history, I-26 opens to traffic summer 2003.

Project Overview

It has been called one of the last great earthmoving projects in the United States—I-26 through North Carolina's Appalachian Mountains. North Carolina Department of Transportation (NCDOT) chose GEOPAK® for this project because of the sheer complexity of the project and its timeline. The I-26 project passes nine miles through some of the most rugged and environmentally sensitive terrain in the Carolinas. Elevations range from 2,500 to 4,000 feet, creating cut sections as deep as 500 feet below existing ground. Using MicroStation® and GEOPAK, NCDOT was able to address unique construction and environmental challenges while creating a cost-effective design. GEOPAK enabled the different NCDOT units to better coordinate the work of all involved parties, as well as verify the day-to-day progress of construction. This six-lane interstate is one of the largest projects in NCDOT's history and will be completed 12 years after design began. It includes the highest viaduct in North Carolina—220 feet high and 880 feet in length.

Project Objectives

- Optimize design to minimize environmental impacts on streams and wildlife, historic sites and wetlands.
- Reduce construction costs while maintaining a tight construction schedule.
- Reduce amount of material excavated and removed and find ways to balance and reuse it.

Fast Facts

- NCDOT explored eight separate alignments in the amount of time formerly required for a single design.
- Criteria files enabled complex rock cut slopes to be revised quickly and easily, reducing costs and environmental impacts.
- Contractors excavated more than 30 million cubic yards of soil and rock - all calculated with GEOPAK.
- 15 million cubic yards of material from the preliminary design were reduced after alignments, slopes and grades were revised with the software.
- GEOPAK's volume calculation capabilities helped analyze subsurface materials impacting construction, determine the amount of rock needed for massive rock buttresses, calculate undercut quantities and identify unsuitable material.
- Extra waste fill was used to create a Welcome Center site and to build up valley crossings.
- With extreme terrain prohibiting conventional methods, NCDOT generated cross sections, earthworks and profiles of existing streams from GEOPAK digital terrain models (DTMs).
- DTMs created during construction from aerial photography were compared to the original model to determine the amount of earthwork for which the contractor was compensated.

Bentley Products Used

MicroStation
GEOPAK Civil Engineering Suite

Organization

North Carolina Department of Transportation

Location

Madison County, North Carolina, USA, through the Blue Ridge Mountains of the Appalachians.

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