

PHOTOGRAMMETRY SAVES TIME FOR STATE HIGHWAY DEPARTMENT*

PHOTOGRAMMETRY—the science of making surveys with a camera—is saving time and dollars for Virginia's State Highway Department.

By employing aerial photography for difficult road location studies, the department is saving time for its engineers, dollars for road improvement.

Take, for instance, the case of U. S. Route 58 between Martinsville and Stuart.

Between these Southwest Virginia communities lies a 30-mile stretch of rugged, broken country. The road winds laboriously through mountainous terrain. Grades are steep and the alignment is snake-like.

When the highway department embarked on a long-range program of modernizing the route, the first step was clearly indicated—a study to determine if there was a better route than that followed by the present road.

In order to settle on the most practical and economical location, it would be necessary to study all possible routes, prepare cost estimates and weigh the relative merits of each.

Engineers turned to existing maps, but the scales were too small. Over an area covering 32 square miles, sufficient detail was lacking for cost studies and estimates. Needed were large-scale topographic maps, showing ground contours, forest areas, utility lines, houses, roads and other features.

Preliminary reconnaissance indicated that it would require months of rough work and cost thousands of dollars to obtain the necessary maps by ordinary methods of ground survey. That's where photogrammetry entered the picture.

In the Fall of 1949, the highway department sought bids for mapping the area from aerial photographs. The low bid amounted to \$638 per square mile—approximately one dollar per acre for a map scales one inch to 200 feet.

By way of comparison, the department noted that several years ago—when a dollar went farther than it does today—it had cost \$5.04 per acre to prepare similar maps by ground surveys.

Mindful of the four-dollar per-acre saving, the department promptly awarded contracts. Aerial photographs were secured during the past Fall, after the trees had lost their leaves.

Maps currently are being prepared from the aerial photographs.

When over-lapped and viewed through a stereoscope, aerial photos afford a three-dimensional view of the earth's surface. Ground contours can be clearly discerned. Modern instruments make it possible to measure with accuracy the height of the hills and the depth of the hollows. By color contrast, engineers can determine soil types and drainage features.

Photogrammetry doesn't entirely eliminate ground surveys. To prepare the maps with accuracy, scattered elevations must be taken and distances measured between certain control points. Then, after the maps are completed and the best route is chosen, a ground survey is required to prepare right-of-way and construction plans. But, by eliminating tedious ground mapping, aerial surveys are making a major contribution to highway progress—to say nothing of saving precious time and scarce road dollars.

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