

# *Aerial Photogrammetry as Used by the Ohio Department of Highways\**

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## ABSTRACT

THE Ohio Aerial Engineering Section is a complete unit. It has its own airplane, exposes and processes the photography, prepares maps and detail construction plans by Aerial Photogrammetric methods.

Ohio makes its reconnaissance from existing maps and aerial photography available from U. S. Department of Agriculture, U. S. Geological Survey and Counties.

From this material along with other data such as traffic etc., the most likely areas for the proposed highway are chosen.

The considered locations are flown at a scale of  $800' = 1''$ . The final location is determined from the photographs and mosaic or when necessary from a  $200' = 1''$  map with 5 foot contours prepared with the Kelsh Plotter. This flight makes available information such as existing profiles, grades, land use, soil conditions, drainage, intersections and estimates to enable the preliminary engineer to select the best location for the highway.

The selected center line is then staked on the ground and signalized for the low level flight to provide photography at a scale of  $200' = 1''$ . The bench marks are established and the profile run. This line is necessary for construction and the purchase of right of way. It is staked at this time to provide control and increase accuracy for the map and cross sections.

From the  $200' = 1''$  photography a planimetric map at  $50' = 1'$  is prepared with the Kelsh Plotter for the line sheets of our Construction plans. The data for cross sections is taken direct from the plotter before the models are removed.

Site plans for structures and interchange areas are prepared at a scale of  $20' = 1''$  with 2 ft. contours by means of the Kelsh

Plotter and Copy Camera.

In level country aerial photography is used for developing construction plans for widening and resurfacing projects without the use of the plotter.

The existing highway is flown at a scale of  $200' = 1''$  after a ground crew has signalized the center line and noted the structures that need widening. This photography is enlarged to  $50' = 1'$  with the scale controlled, and traced on cloth for line sheets in the Construction plans. The pay item for earthwork is by station units rather than by cubic yards and the right-of-way secured by strip method rather than by metes and bounds description.

Aerial Photography is also used for study of traffic problems in congested or accident prone areas, pavement conditions, research, erosion and slip areas, and observing the places and types of access of one date for comparison with those of a later date.

During 1955 the Aerial Engineering Section's personnel numbered 66. Detail Construction plans for highways estimated to cost \$18.5 million and approximately 200 bridge site plans were completed. Maps and mosaics were made for various engineering studies and reports.

The program has scheduled for completion in 1956 detail plans for construction estimated at \$28 million and approximately 200 bridge site plans.

Services such as mapping, photography and transportation are also furnished other State Departments.

It seems inevitable that the Aerial Engineering Section will continue to expand and extend its services. Each year the number and variety of requests increase from the various divisions and departments as they gain confidence in the method and learn new ways of applying the technique.

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