

## THE DEPRESSION-ERA STATE GEODETIC SURVEY

In the depth of the Great Depression, the Federal Emergency Relief Administration created the Civil Works Administration to provide work for 4 million people during the winter of 1933-34. The FERA asked the U.S. Coast & Geodetic Survey to undertake a geodetic control project which would provide employment for 15,000 people, primarily engineers and surveyors. Formal approval of the C&GS project was given on November 27, 1933. Within a week, skeleton organizations were set up and functioning in each state, instruments and equipment were assembled and survey crews organized. With little more than a month, 10,000 people were at work.

To administer the project in each of the 48 states, the C&GS, with the assistance of the American Engineering Council, selected an outstanding engineer in each state and asked that person to take charge of the state's project. In South Carolina, the C&GS chose T.C. Hamby, a consulting civil engineer in Columbia. He directed the project until its termination on December 31, 1936.

Mr. Hamby contacted South Carolina CWA authorities to obtain the necessary personnel, organized the surveying crews and decided where surveys were to be run. He also made arrangements to borrow surveying instruments and vehicles because CWA funds were to be spent on salaries. Instruments were borrowed from railroads, construction companies, highway departments, municipalities, engineering and surveying firms and schools which were not using their instruments because of the Depression. Vehicles were borrowed from individuals and businesses. The government agreed to maintain the vehicles and to accept responsibility for accidents, providing the accidents were not caused by careless driving. Mr. Hamby's office was in the state CWA headquarters at 1246 Main Street in Columbia.

The C&GS planned for 420 people to be employed in South Carolina. All personnel would be engineers, surveyors, rodmen and chainmen. Apparently, the maximum number of people employed was 252, the number on a C&GS analysis of personnel employed on January 1, 1935. Salaries for hired from the relief rolls ranged from \$7.50 (unskilled) to \$18.80 (technical) per 24-hour week. People from non-relief sources earned from \$25.00 to \$37.50 per week, depending on the position held. As state representative for the project, Mr. Hamby's salary was within the latter range.

The C&GS designed the work to supplement fundamental horizontal and vertical control surveys performed by the C&GS. Traverse and level lines were run along highways or railroads. Monuments were established at intervals not greater than two miles along traverses.

Traverses for horizontal control had specifications for what was considered second-order accuracy in 1934, that is, a check of 1 part in 10,000 in distances surveyed from established stations. Today, this is third-order accuracy. Some CWA stations had closure between 1 part in 5,000 and 1 part in 10,000. These were specifically noted as third-order. The leveling for vertical control was accomplished with a check between established bench marks with an distance in miles. This is third-order accuracy, the same as today.

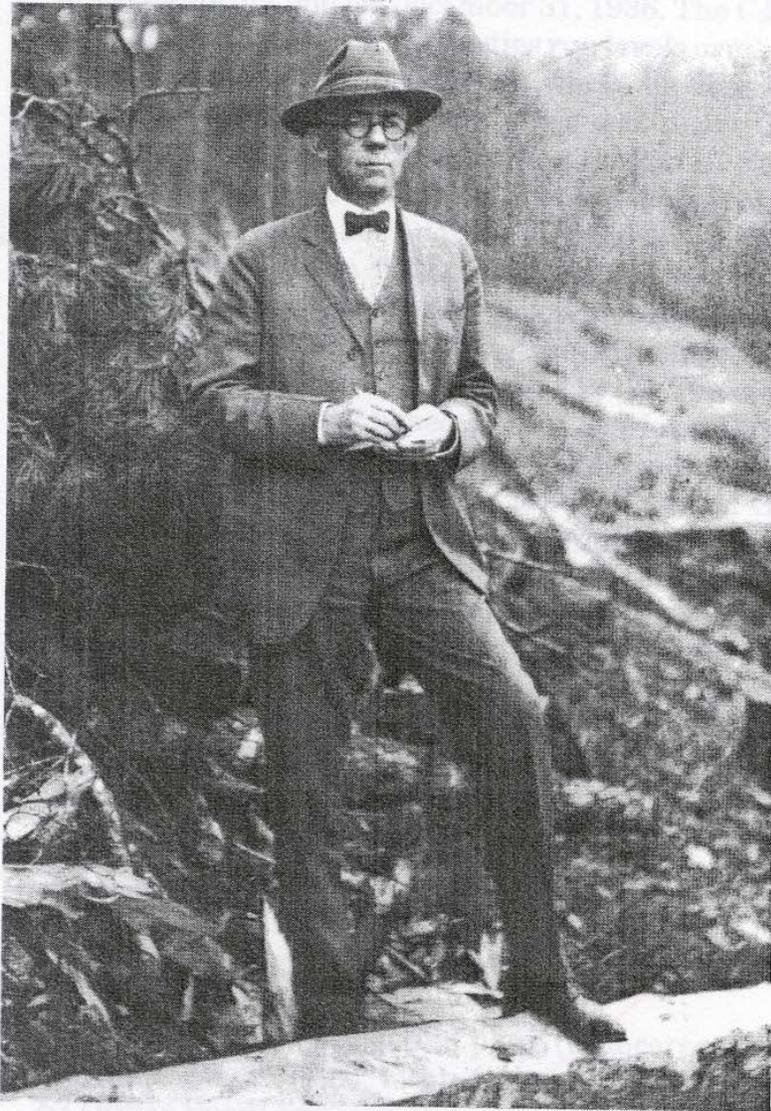
On February 15, 1934, Congress passed a law which extended the CWA but prohibited participation of federal agencies in a CWA program after that date. If a state wanted to use part of its allotted CWA funds for geodetic work, the state was allowed to continue its project under its own CWA program. South Carolina elected to continue, as did 43 other states. The C&GS continued to act in an advisory capacity to ensure that results met accepted standards.

The CWA ended March 31, 1934. Relief measures were continued under the Work Relief Plan of the State Emergency Relief Administration.

WRP employment and work restrictions were such that geodetic field work could not be done efficiently. Applicants had to be destitute and on the relief rolls. Engineers and surveyors usually were not found on such rolls. Also, the authorized number of hours of work per week for a person varied between six and eight. Most states, therefore, stopped their geodetic work.

South Carolina and 14 other states continued the work although on a small scale. In these states, the key employees - the engineers and surveyors - were classified as supervisors and not subject to the employment restrictions. South Carolina continued its geodetic control program until a telegram received in late December stated that the work was to be terminated December 31, 1936.

Field notes were computed and adjusted to



Theodotus Capers Hamby, born on March 15, 1877, grew up in Georgetown, South Carolina. He earned a civil engineering degree at N.C. A&M College (now N.C. State University). Mr. Hamby directed the CWA geodetic work in South Carolina. During his career, Mr. Hamby also was resident engineer during the construction of the Dreher Shoals dam (Lake Murray), had done preliminary work on the Santee-Cooper power project and laid out most of the boundaries for South Carolina counties created during his career. Mr. Hamby died in Columbia on October 4, 1938. Photo courtesy of Mary Hamby Clarkson and Lottie Hamby.

some extent in South Carolina during the project. Final computations and adjustments and manuscript preparation were done in the New York Computing Office of the C&GS. Although the intent was to include the CWA control in the national geodetic network, this was not done in a systematic way. Consequently, only a small number of the monuments tied to the geodetic network are included in the National Spatial Reference System. Also, when the geodetic monumentation was readjusted to create the North American Datum of 1983, the CWA stations were not included because the field notes apparently had disappeared. Today, the S.C. Geodetic Survey's policy is to describe and collect data for CWA monuments recovered in good condition. These stations with accuracies determined by the type of survey done by the SCGS are incorporated by the NGS in the National Spatial Reference System.

The geodetic work done in South Carolina was substantial. Completed, as of January 1935, were 4,500 miles of second-order traverse run over nearly all of the hard-surface highways of the state. The lines, spaced 10 to 30 miles apart, formed a well-distributed network throughout the state. Also, the position and elevation of 6,000 permanent monuments had been determined. There is no known record of the work accomplished during 1935 and 1936.

Several hundred monuments were set in South Carolina for which no control was done because of project's abrupt end on December 31, 1936. The C&GS intended to have its survey parties run levels over such marks later so every monument would be described and have data. Unfortunately, this was never done and the descriptions of these monuments in South Carolina from the CWA program state, "No elevation or coordinates have been determined for this station."



The U.S. Coast & Geodetic Survey furnished three-inch bronze disks to set in concrete monuments. These disks had "U.S. COAST & GEODETIC SURVEY AND STATE SURVEY" cast on the face. This disk, from a destroyed monument, was Station K157 in Kershaw County located off U.S. Highway 521 about 5.7 miles south of the 1935 Camden post office.

The geodetic data for South Carolina was issued in six pamphlets. Positions are given in feet expressed on the State Plan Coordinate System, developed from 1933-35 (North American Datum of 1927). The elevations are given in feet based on the "Sea-level Datum of 1929 through the Medium of the Southeastern Supplementary Adjustment of 1936" (National Geodetic Vertical Datum 1929). The stations are listed in numerical and alphabetical order in county lists. The county sketches indicate the localities where the stations are grouped. The S.C. Geodetic Survey has copies of the CWA geodetic control data. When no other monumentation is available, these CWA stations often will suffice for projects needing only low-order accuracies.