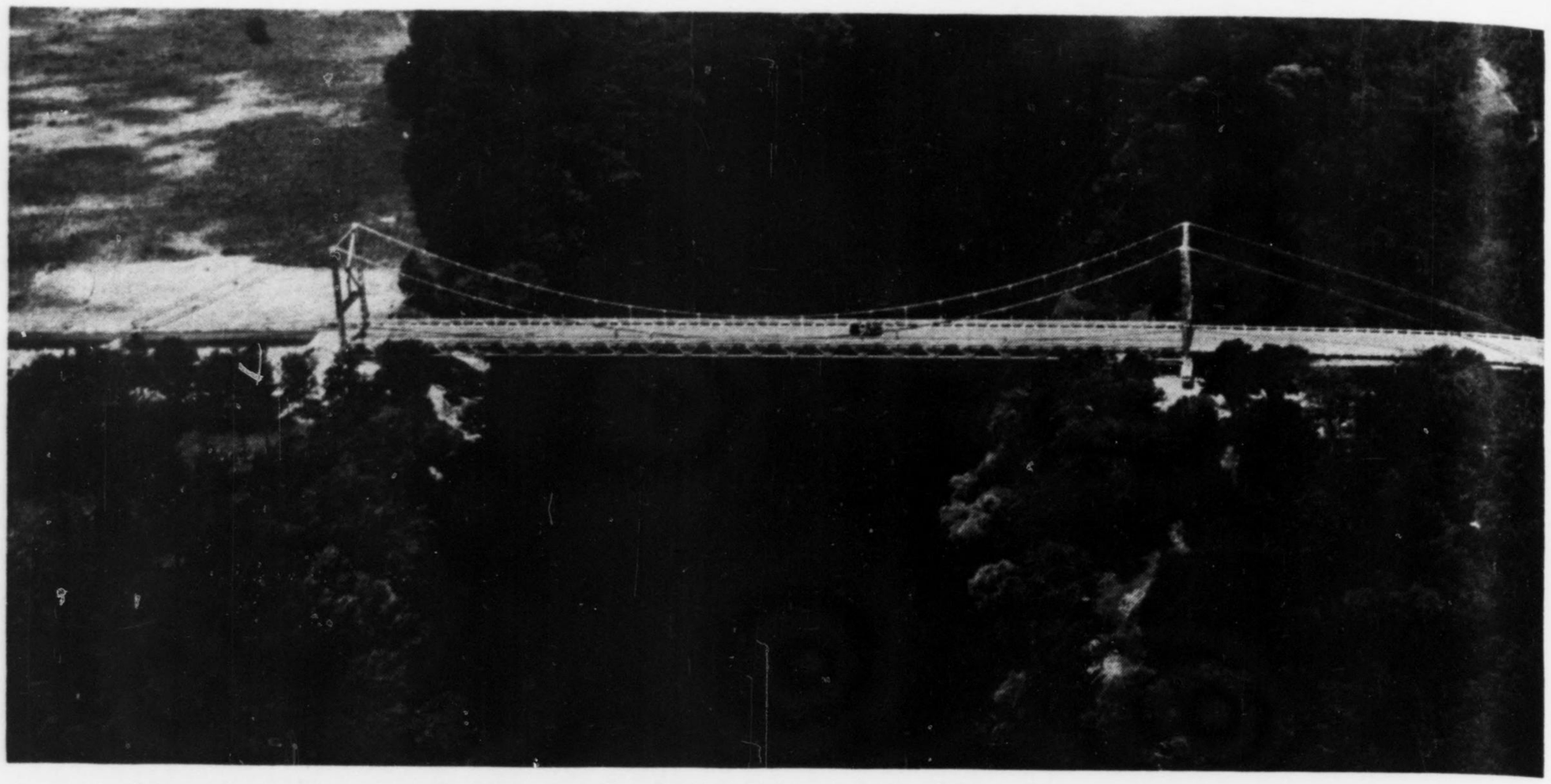


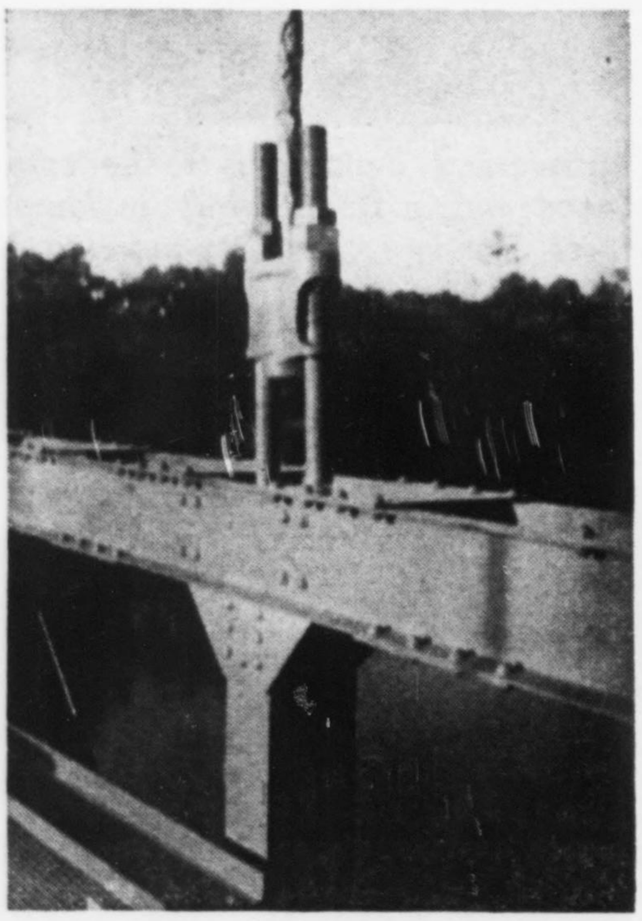
"Way down upon the Suwannee River," Florida recently completed this 420-ft. suspension bridge

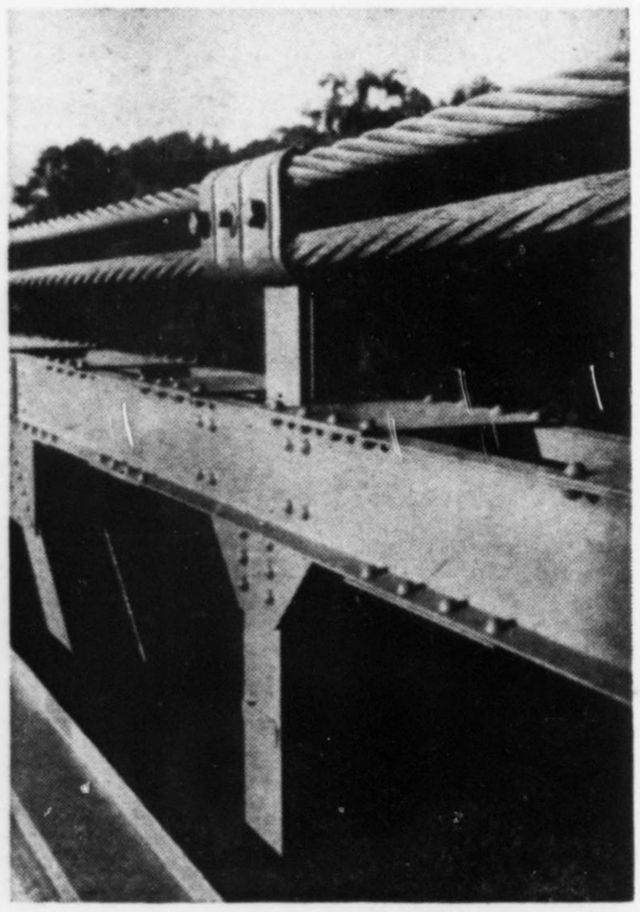
Florida's First Suspension Bridge in Service

The first suspension bridge ever built by the Florida State Roads Department—a graceful, 420-ft. span over the dark waters of the Suwannee River near Mayo, Fla.—has now completed five months of service.

Part of a project for improvement of State Route 69, north of Mayo, the structure is distinguished by the relatively great depth of the stiffening trusses, and the use of a design calling for high rigidity against wind forces. It provides a 26-ft. roadway for vehicular traffic.

At its location a good foundation is available on both banks of the stream, while borings indicated that cavities as deep as 20 ft. would be encountered in building piers in the main channel. Moreover, at the center of the river velocities of 6 ft. per sec. or over occur during high water. Since a suspension bridge would avoid the need for piers in the main channel, and since the cost of this type of crossing compared favorably with other designs, a suspension bridge designed for an H15-S12 loading was decided upon by the engineering staff.





***Suspenders** connecting the stiffening trusses and the cables are of two types shown above. For the longer members, a single 1½-in. diameter cable is used (at left), while each short suspender on the new bridge consists of two 7 x 1-in. steel plates (at right).*

Each of the main cables consists of six parallel wire 2¾-in. dia. ropes without central cores. A 1/10 sag: span ratio is used. The south anchorage for the cables is a cellular reinforced-concrete block filled with earth and measuring 26 x 40 ft. in plan. Built of 450 cu. yd. of concrete, the block is located about 130 ft. from the south tower. It is anchored by 78 steel piles, one-half battered toward the bridge and half in the opposite direction. The piles penetrate a soft rock formation.

The north anchorage is of much the same design but it is located at a much lower elevation and about 230 ft. from the north tower. However, the slope of the main cables between this block and the north tower is the same as at the south end. Height of the towers is 51 ft. 4½ in. above the roadway level and each tower is supported on rockers.

Deep stiffening trusses

For the main span, Warren type stiffening trusses 7 ft. 6 in. deep are used. This depth is rather great when compared with the length of the main span. The panel length of the trusses, which are supported on rollers at each

end, is 17 ft. 6 in. Suspenders connecting the trusses and the main cables are used at every panel point. For the longer suspenders a single 1½-in. dia. cable is used, while the shorter suspenders each consist of two 7 x 1-in. steel plates.

A 33-in. 130-lb. floorbeam is provided at each panel point, and these members support seven lines of 14-in. 34-lb. stringers to which they are welded to provide continuity. Inasmuch as the steel grating roadway is welded to the stringers, a deck of high rigidity results.

To increase further the stability of the structure against wind forces, the 2 ft. of the roadway grating nearest the 18-in. high safety curbs is open grid, as is 4 ft. of the grating along the center line of the roadway. The remainder of the grating is filled with concrete, forming a 9-ft. wide traffic lane of solid floor at each side of the centerline.

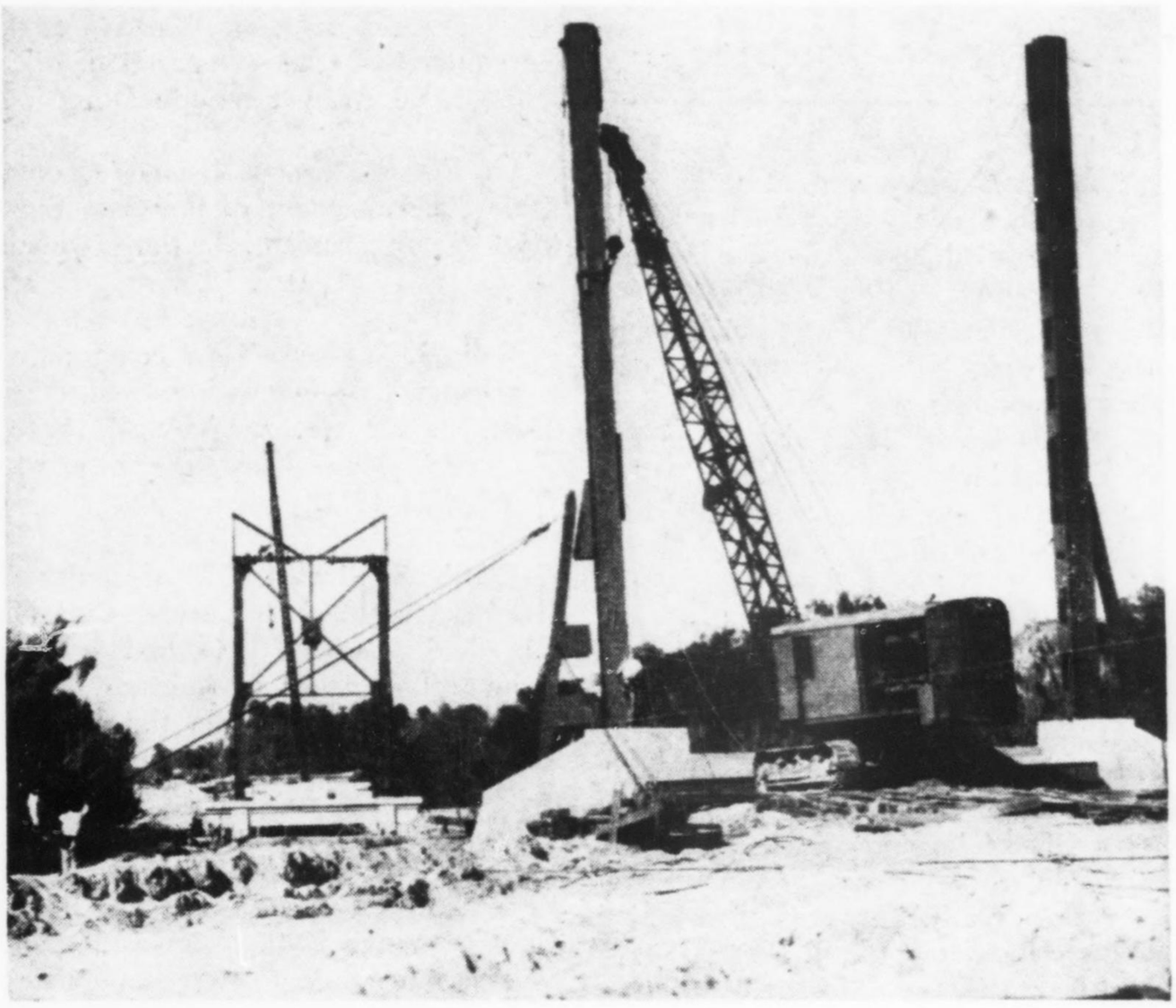
Construction was rapid

The towers were erected by a crawler crane, each tower requiring less than half a day once actual erection started. The 2¾-in. wire ropes for the main cables were delivered to the job full length and the ropes were pulled over the towers by a light line as the cable was fed out from the delivery spools.

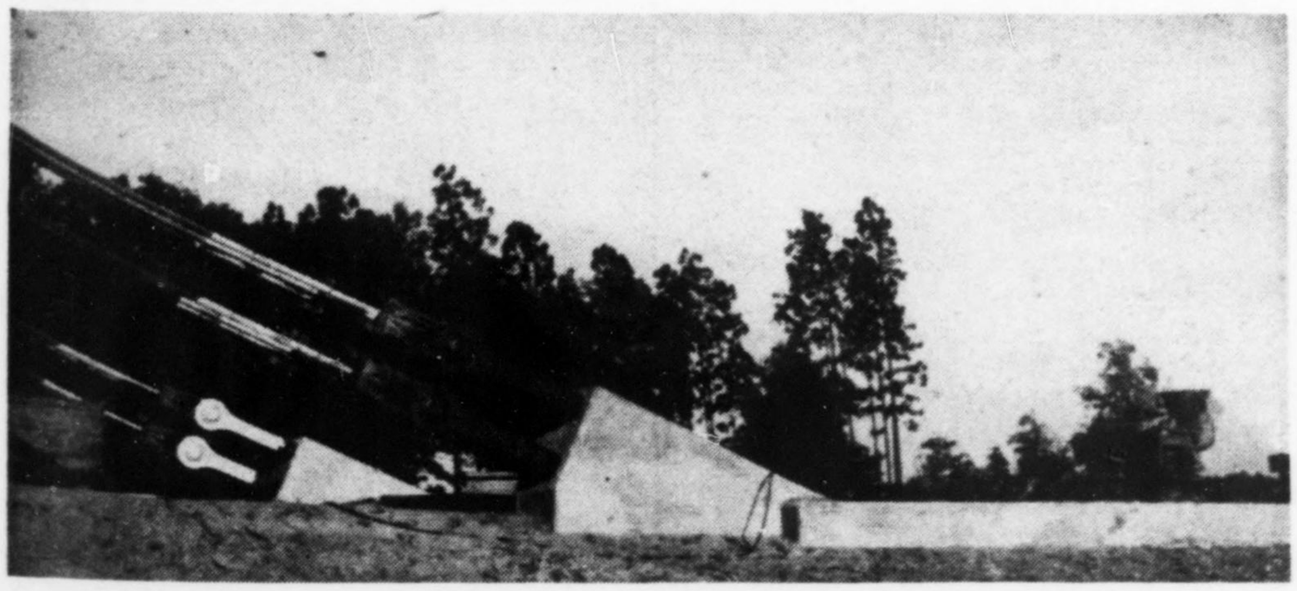
Erection of the stiffening trusses and the roadway system was accomplished primarily by working from the main cables, although this operation included use of a floating rig supported on steel pontoons of the type used so widely by the Navy during the war. A total of only nine days was required to erect both main cables, all the suspenders, the stiffening trusses, and the floorbeams. After seventeen days the floor was in place.

Cost of the new crossing, including both approaches, is about $275,000. L. J. and W. L. Cobb, Inc., Tampa, was the general contractor for the new bridge. Nashville Bridge Co., Nashville, Tenn., fabricated the stiffening trusses and towers. John A. Roebling Son's Co., Trenton, N. J., fabricated the cables and attachments for the main span and erected all the steel for the suspension span. The Tennessee Coal, Iron and Railroad Co., supplied the steel grating for the roadway.

The bridge was designed under the supervision of E. S. Fraser, bridge engineer for the Florida State Road Department. On construction, John R. Slade as division engineer at Lake City was in general charge and Wallace James was project engineer. For the Roebling firm, H. W. Hills was field engineer.



***Erection** of the towers was readily accomplished with a crawler crane. Both towers are supported on rockers, and side-braced with buttresses. Steel for stiffening trusses was delivered on pontoons, and a section of both trusses, complete with floorbeam, was hoisted into place as a unit.*



***The south anchorage** for the main cables is located at roadway level, and consists of a cellular reinforced concrete block. At the anchor blocks, the fitting at the end of each rope of the main cables was attached to two large-diameter steel bolts, which have been left exposed.*

Cascade tunnel project remains a live issue

Terming "ridiculous" an unfavorable report on potential traffic through a proposed Cascade Mountains tunnel on Snoqualmie Pass, (*ENR* June 19 vol. p. 972) Gov. Mon C. Wallgren of Washington has indicated he considers the proposed tunnel far from being a dead issue.

The governor said the report, prepared by the traffic survey firm of Cloverdale & Colpitts, estimated no automobiles would be passing through the tunnel during the seven summer months but instead would take the present route because of its scenic value. During the five winter months, according to the report 216,000 automobiles would use the tunnel, Wallgren said. State Highway Department estimates place the potential traffic at a much higher rate, the governor added.

The 1947 state legislature indefinitely postponed a measure providing for a $17,000,000 bond issue by the State Toll Bridge Authority to finance the 2.03-mi. tunnel. The governor has ben hoping to find means of constructing the tunnel without legislative authorization.