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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF PUBLIC ROADS

DISTRICT NO. 2

ROUTE STUDY OF THE PROPOSED  
WESTERN DIVIDE HIGHWAY  
BETWEEN  
GREENHORN SUMMIT AND SOUTH BOUNDARY OF SEQUOIA NATIONAL PARK  
SEQUOIA NATIONAL FOREST  
AND  
PROPOSED EXTENSION TO GIANT FOREST  
IN  
SEQUOIA NATIONAL PARK  
KERN AND TULARE COUNTIES  
CALIFORNIA

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INTRODUCTION:

For a number of years there has been administrative need for a connected system of roads in Sequoia National Forest along the ridge which separates Kern River and San Joaquin Valley water-sheds. Some development roads, or rather truck trails, have already been constructed and others are authorized or proposed. In advance of further construction the Regional Forester has requested a study of the road situation and a reconnaissance of a logical north-south through road in this area.

In 1931 the Park Service made a field study for a possible road from Quaking Aspen in the National Forest to Giant Forest in Sequoia National Park. The general route followed then is similar to the one described in this report though there are variations due to different location standards and other details.

There has been correspondence from the Park Service in reference to a proposed highway into the Mineral King area from the west via the Ash Mountain area. It became evident early in this study for a route through the National Forest that a connection to the north would have to traverse Sequoia Park via the Mineral King area. Therefore a contemporaneous study was made of routes into and out of Mineral King.

This report, therefore, describes a route along the locally known Western Divide in Sequoia National Forest to a connection in the Sequoia National Park with the Generals Highway.

The proposed Western Divide project herein described follows a high ridge from Greenhorn Summit on the easterly slope of Greenhorn Mountains to the Park Boundary south of the Mineral King area. This ridge runs from south to north and is parallel to and divides the drainage of Kern River on the east from that of San Joaquin Valley on the west. The country along the ridge is quite attractive on account of forests, high, cool elevation, various meadows and springs and many views in all directions. There is no known name for this ridge. The name, Western Divide, which has been applied to this project, should not be confused with the Great Western Divide.

## CONCLUSIONS:

Several routes through the Kern River country have been thought of from time to time. The immediate vicinity of Kern River itself would form a natural site for a north-south artery. East of Kern River there is much country which has been considered suitable for highway construction. Even though these routes should be possible and even though they were some day built they would not conflict with the Western Divide route herein described. This is due to the formation of the country and the distinct separation between the high ridge and the lower elevation along the river.

The Glennville-Kernville State and Forest Highway forms one adequate approach system on the south. The Porterville-Nelson State Highway is but 30 miles north and forms another adequate approach. Both of these approaches will be improved should future traffic demand. A third approach via Hot Springs, which is between these two roads, would not merit reconstruction to modern standards until such time as the other two approaches were over crowded.

The 38 mile section from Greenhorn Summit to Quaking Aspen would probably have less opposition from local interests. Were this section constructed a loop recreational highway would be made available for Kern County residents of hot San Joaquin Valley communities.

Considerable opposition may be expected to any construction north of Quaking Aspen since that country is more extensively used by hunting and fishing parties who prefer and make extensive use of pack animals.

Since there is a fast parallel State Highway artery in San Joaquin Valley directly to the west and another through Porterville, the value of a through route and appropriations for its construction might well be questioned or in any event might well be postponed until excessive use of the section south of Quaking Aspen would create a demand for an outlet to the north.

Referring to the two routes north of the East Fork of the Kaweah River, consideration must be given to a route that will adequately serve traffic from the valley to and from Mineral King and back country as well as north-south traffic. Construction of the route via Ash Mountain would undoubtedly best serve local recreational traffic. However, it would force those who desired to travel in higher elevations to avoid the intense heat of the valleys, to make a descent to foothills with greatly added distance and several thousand feet of rise and fall. However, the existing road into Mineral King from the west, with some further improvement and oiling accompanied by adequate maintenance, is worthy of consideration.

GENERAL CONSIDERATIONS:

The entire route is covered with forest though north of Maggie Mountain the timber has no commercial value. Construction of a highway along the ridge would assist timbering operations were they to continue. However, should this use be allowed recreational value of the route would be reduced.

In Sequoia National Forest there is a large pack-trip business. There are many pack outfits distributed over the area and the total saddle and pack animals used this year was 1100. So-called pack stations are along Kern River from Isabella to Fairview, in the Hot Springs vicinity, at Nelson and at Quaking Aspen Meadow, at Mineral King and the Big Meadow area.

There are no power withdrawals along the route.

There is private property along the route at various places, owned by lumbering interests. The Forest Service is now interested in the purchase or exchange of some of these parcels to protect or control cutting. There is no knowledge of any attempt by the Government to obtain the private parcel near Mineral King. In Sequoia National Park there is no privately owned land which would be touched by the route.

Along the route there is ample water at various places, sufficient for all recreational needs. Snow in the area reaches depths of 3 feet in the southern portion to possibly 15 feet in Sequoia Park. General average precipitation is about 50 inches.

The open travel season varies with the distance north and elevation but will average from May 15 to November 15.

At various places along the route there are large sequoia groves of high recreational value which add considerably to the value of the route.

South of Sequoia Park there are summer ranges for cattle. The number of animals is gradually being reduced in order to overcome the harm resulting from previous overgrazing. The number of cattle in the forest is not large. Naturally the cattle people are opposed to highway construction through this area. In fact so much so that the writers carefully refrained from divulging the reason for this reconnaissance.

The packers association is very active in opposition to further roads in this area. At every pack station there is a petition for signatures against further road improvement. This movement was originally principally against the proposed Porterville-Lone Pine State Highway but the feeling is also against any further work which would in any way hurt their business. Supporting the packers are various "Back to Nature" organizations who are primarily concerned with retaining this large scenic country in its primitive state.

**STANDARDS:**

Location standards used for the estimates in the report are:

Roadway width: 24 feet

Minimum curvature:

300' radius for blind curves

200' radius for open curves

Maximum grade: 6% compensated for curvature

In the grading estimates \$2,500 per mile is included to allow oil treatment of the subgrade. Ultimate surfacing cost was estimated at \$10,000 per mile to obtain total probable cost.

ROUTE DESCRIPTION:

From Mile 0 (Greenhorn Summit) to Mile 6.8 (Portuguese Pass)

During the last three years Kern County has been constructing a 5 1/2 mile contour road from Greenhorn Summit to the Tulare County Line at Calf Creek. Simultaneously the Forest Service constructed a 1.1 mile development road from Portuguese Pass south to the County line. Presumably these two roads were to meet, but actually they missed each other by 130 feet in elevation and work was stopped with both roads dead-ending. There is a practically impassable meandering wheel track 0.7 mile in length between the two ends which may be traveled in dry weather. It is probable that the Forest Service, using Kern County equipment, will construct in the near future, a 2000 foot crooked temporary connection on 8% grade between the two roads so that traffic may pass through.

The county road is incomplete and varies in width from 10 feet to 20 feet with an average of about 15 feet overall width. Aside from one 50 foot radius and one 80 foot radius curve, the minimum radius of curvature is 100 feet. No profile has been run over the work but the steepest grade observed was a short stretch of 7% and several long stretches of 6%. Only a few culverts have been placed.

From Mile 0, elevation 6100, the road rises to a sidehill summit at Mile 0.35 (elevation 6170); then descends to a low saddle control at Mile 1.3 (elevation 6100); then rises to a saddle at Mile 3.9 (elevation 6500); then up to Calf Creek, Mile 5.5, elevation 6900. Even though there are steep stretches and some rolls in the present work, the average grade is less than 4%. A relocation on modern standards using 300 foot blind and 200 foot open curvature could probably follow along fairly close to the road and so eliminate in places duplicate scars. The revised location would cut across the points above the present road and cut across the draws below. The county traversed is not steep or badly cut up and substantial fills will readily catch in most cases.

Since the present work is of purely contour type, only a limited return from the existing excavation could be realized were the project reconstructed on higher standards.

From Mile 5.5 to Mile 6.8 (elevation 7250), Portuguese Pass, the location would ascend on about 5% grade. This would be below the present Forest Service development road.

The country rock is a soft granite much of it disintegrated. Were this material oil treated a surface satisfactory for anticipated traffic could be obtained. All grading estimates provide for this treatment at a cost of \$2,500 per mile.

It is estimated that grading costs between Mile 0 and Mile 6.8 for a 24 foot roadway would be \$163,000.

On August 29, 1935 a meeting was held on the ground to decide what to do in order to join the two roads at Mile 5.5. Engineer B.O. Webber represented Kern County, District Ranger Norris the Forest Service and H. A. Alderton the Bureau of Public Roads.

Two connections are possible. One, above described, would be 2000 feet long, would use 8% grade and sharp 75 foot minimum radius curvature and would cost about \$1,500 for a 10 foot roadway. This connection would have a hazardous 75 foot radius switchback at the foot of the Forest Service road.

The second connection would follow on 6% grade from the end of the county road around the east side of a point for 5000 feet to connect with the Forest Service road at a saddle 2/3 mile south of Portuguese Pass. With a 100 foot minimum radius curve, a 10 foot width of road would cost about \$5,000.

Neither one of these connections could be incorporated in future highway work. The \$5,000 connection would afford much safer service to traffic until such time as a highway is built.

Which of these connections to build is a matter of decision between the Forest Service and the local authority. This decision should be based on an estimate of the number of years the connection will be used prior to improvement of the route to modern highway standards.

#### Portuguese Pass(Mile 6.8) to Frog Pass (Mile 13.0)

From Portuguese Pass the Forest Service has constructed a 10 foot development road along near the top of the main ridge to Frog Pass and Frog Ranger Station. This road follows the contour and has grades more fluctuating than would be desirable for a highway location. The location would follow the general vicinity of the present road but in some cases it probably would be higher up on the side of the ridge and so possibly obtain more direct alignment. Prior to survey, study should be made of both sides of the ridge between pass controls. It may be that the side other than the one now used might be more satisfactory. Following is description of route along the side of the ridge now appearing to be best but this is subject to further study on location:

From Portuguese Pass(Mile 6.8, elevation 7250) the location would follow the east side of the ridge, probably above the present road to a pass at Mile 7.9, elevation 7250. A connection should be made to Panorama Public Camp at Mile 7.6, elevation 7200. The east side of the ridge would then be followed to Bull Run Pass, Mile 10.0, elevation 7350.

At Mile 9.2 the location would probably be well above the present road and so reduce the 6% grade ahead. At Bull Run Pass the location should be so placed as to obtain the spectacular views both east and west.

From Bull Run Pass the location would probably follow the west side of the ridge to Tobias Pass, Mile 11.5, elevation 7400. Thence the east side of the ridge to Frog Pass, Mile 13.0, elevation 7500. There is an existing connecting road from Frog Pass to Frog Meadow and the Ranger Station there situated.

It is estimated that construction of this 6.2 miles would cost \$155,000.

Frog Pass (Mile 13.0) to Pack Saddle (Mile 18.5)

Two routes are available in this section. Following is description of the first:

From Frog Pass the location would follow around the east side of the ridge to a saddle (Mile 14.5, elevation 7500) at about the northeast corner of Section 36. The existing road construction ends at Mile 13.5 but cars may drive on to Mile 13.8.

From Mile 14.5 the location would follow in the general vicinity of the trail around the west side of the ridge to a saddle control at Mile 17.6, elevation 6870. Thence along the south side of the ridge to a saddle control at Pack Saddle, Mile 18.5, elevation 6700.

This first route must cross some steep choppy country around the head of Tyler Creek basin between Lion Ridge and Pack Saddle Ridge. Construction in this section would be quite costly. Also construction around this side of the ridge through open country would make a scar visible from the Hot Springs country below.

In order to avoid these two objections a route via the east side of the ridge between Miles 14.5 and 17.6 should be investigated. Such a route, going 1/4 mile south of Speas Camp, would have 1 1/2 miles of north exposure and would have 4 miles instead of 3.1 miles length.

Off-setting these two objections would be the elimination of scar, possible reduced cost, reduced erosion and a big increase in scenic value on account of views available to the east.

Detail study should also be made as to whether the route should follow the south or the north side of the ridge between Miles 17.6 and 18.5. The south side may be necessary in order to obtain sufficient distance for grade standards. Along the north side of the ridge and easterly of Pack Saddle Meadow lies a sequoia grove of some 500 large trees in an area 1/2 mile wide and one mile long. Approach to this grove would be via Pack Saddle.

It is estimated that the first route, following the west side of the ridge, between Mile 13.0 and 18.5, would cost \$250,000.

From Mile 18.5 (Pack Saddle) to Mile 21.5 (Holey Saddle)

From the saddle (Mile 18.5) on top of the ridge just south of Pack Saddle Meadow, the route would follow near the top of the ridge to a saddle at Mile 19.0. Then the west side of the ridge would be followed to Powderhorn Saddle at Mile 20.2. Then the route would continue along the west side of the ridge, passing through a saddle at Mile 20.9, to Holey Saddle at Mile 21.5 where connection would be made to the existing Hot Springs-Double Bunk Road.

In this section a study should be made during survey of both sides of the ridge between saddle controls prior to final choice. Should the Long Meadow route be used then it is probable that the east side of the ridge north of Mile 20.9 should be used and the location might be east and below Holey Saddle at Mile 21.5.

Pack Saddle, Powderhorn, Double Bunk and Holey Meadows all have high recreational value. By placing the highway along the top of the ridge these meadows are left undisturbed and may readily be served by short approach roads.

It is estimated that construction of this 3 miles would cost \$88,000.

From Mile 21.5 (Holey Saddle) to Mile 29.3 (Nobe Young)

From Holey Saddle there is a good trail via Long Meadow to Nobe Young where there is a meadow and guard station. The route would follow in the general vicinity of this trail. Construction costs would be reasonable; grades would be rolling and with 6% maximum in several places to improve the line and reduce costs getting over saddle controls.

It is estimated that construction of this 7.8 miles would cost \$212,000.

Redwood Meadow Grove would be passed through about Mile 24.2. The location would be so placed to avoid any of the big trees yet would pass through the middle of the grove itself. This grove of sequoias (not redwoods) has no commercial value for timber since the wood has little strength and is brittle, but the grove has high recreational value. The ground slope is generally easy and there is water available. Therefore, the grove is of primary importance for public use.

This grove, as well as several sections of adjacent timber land of commercial value, is privately owned. The Forest Service is proposing a timber sale at the present time and hopes to exchange "stumpage" for final Government ownership of the land now privately held. Between Double Bunk and Ice Creek lies the most valuable timber. There are approximately 500,000 M.B.M. which will probably sell for \$2.00 per thousand thus making the market value of this sale approximately one million dollars. The general plan for roads to serve this sale is to have a mill site at a lower elevation with logging roads to it and then the main outlet is planned via Fairview and the existing road along Kern River.

The above described highway route traverses the center of this area which will be logged off. A highway there would have commercial value for the logging operations. However, if a wide strip was reserved each side of the highway to preserve the virgin timber for aesthetic purposes, as certainly should be done, the size of the timber sale would be reduced considerably and the general logging operations would be disturbed.

A route via Parker Meadow and Bone Meadow to Nobe Young might merit consideration on account of the fact that it would be nearly all on Government land, and being higher on the ridge, would traverse country timbered by fir which is of small commercial value. The route would not go through Redwood Meadow Grove and an approach road about one mile long would be necessary for connection. This Bone Meadow alternate route would be approximately 9.0 miles long instead of 7.8 miles on the Long Meadow Route; would cost approximately \$334,000 instead of \$212,000 to construct; would have a more severe grade system though no more rise and fall; would probably have comparable alignment standards; would traverse country of less recreational value. For these reasons the alternate route is not advocated. However, on the Long Meadow Route there should be adequate logging restrictions adjacent to the highway and around all desirable recreational areas to preserve the fine virgin timber. Should this be cut it would take 50 years to regain the recreational value of the area.

From Mile 29.3 (Nobe Young) to Mile 34.4 (Dome Rock)

From Nobe Young Creek the general vicinity of the existing trail would be followed to Dome Rock Saddle where connection would be made to the existing forest development road. Three miles of maximum grade would probably be necessary in order to reach Dome Rock from Mile 31.4 the line being kept as low as feasible in order to be in flatter, less expensive slopes.

It is estimated that construction of this 5.1 miles would cost \$227,000.

In this section there would be some fine views to the east over Kern River Basin.

From Mile 34.4 (Dome Rock) to Mile 39.0 (Aspen Saddle)

From Dome Rock there is an existing one way forest development road to Grouse Meadow guard station and on to Aspen Saddle. The general vicinity of this road would probably be followed. However, between Mile 34 and Mile 38 study should be made of a shorter route farther west which would hold a more sustained elevation without dropping so low in the Peppermint Creek Basin. It may be that such a route would be through country too choppy to follow at reasonable cost, however.

At Mile 37.9 a control saddle would be crossed. This is at the Needles road junction.

It is estimated that this 4.6 mile section would cost \$119,000 for grading.

From Mile 39.0 (Aspen Saddle) to Mile 43.8 (White Meadow)

From Aspen Saddle the route would follow in general vicinity of the trail along near the top of the ridge to Boulder Creek at Mile 42.0. Generally the line would stay on the west side of the ridge excepting between Mile 39.0 and Mile 40.0 where detail comparison of both sides of the ridge will be necessary prior to survey.

From Boulder Creek, 1.6 miles, maximum grade would be necessary to reach the saddle control at White Meadow, Mile 43.8.

It is estimated that grading of this 4.8 miles would cost \$155,000.

From Mile 43.8 (White Meadow) to Mile 53.6

In this section the route would follow country which drains to the east to Clicks Creek and Mountaineer Creek basins. The country is broken up and though there would be much curvature and though the construction costs would be high, there would be no tight grade controls. There would be several places where north exposure would have to be taken. Two routes are shown on the accompanying map, one keeping low and to the east and the other keeping near the top of the ridge to the west. Which one of these routes would be best is dependent on additional study involving possibly preliminary survey lines on each. There also is a possibility of a route between these two. A route via the west side of Jordan Peak was considered but costs would be prohibitive.

Mile 53.6 would be in a saddle between Mountaineer Creek and Alpine Creek.

It is estimated that the 9.8 miles would cost \$392,000 to construct.

From Mile 53.6 to Mile 61.5 (Park Boundary at Summit Lake)

From the Saddle at Mile 53.6 the route would circle the Alpine Creek Basin to a saddle just south of Pecks Canyon (Mile 56.2); thence via the south side of Pecks Canyon through the Maggie Lake basin to a pass (Mile 60.5, elevation 9500) at the west head of the Peck Canyon basin. From this saddle the route would go north to a saddle northeast of Summit Lake, Mile 61.5, elevation 9400, which is at the Sequoia National Park Boundary.

In this section there is much north exposure and a snow pocket is crossed just south of the saddle at Mile 60.5.

It is estimated that this 7.9 miles would cost \$316,000 for construction.

An alternate route staying higher on Maggie Mountain and nearer to the present main trail was considered. Due to the long climb necessary to get up from the Mowry Meadow control such a route was not practical. The trail climbs 300 feet in 1/2 mile from Mowry Meadow to Alpine Meadow. Since this is too steep for a highway a route through the saddle at Mile 53.6, or at least near it, is obligatory.

An alternate route, which would use the 9750 elevation saddle at the northeast corner of the Pecks Canyon basin was considered. Exposure on such a route, with development up via Maggie Lakes, would be better than on the above described route. Costs south of the boundary would not be far different. However, costs north of the boundary would be higher. There, of course, would be longer maximum grades and 500 feet more rise and fall on the route using the north east saddle. Rather than use the west side of Pecks Canyon a development following the east side was considered. A switchback on the side of the mountain and a reverse curve in the creek bottom would be necessary. Such a route would have better exposure but might be somewhat less costly than the development down the west side from this same 9750 elevation pass.

An alternate route using Windy Gap (elevation 9500) as a control was considered. This Gap is one mile south of Cabin Meadow and is in the Park on the Summit Lake-Quinn Ranger Station trail. Use of this gap would mean a development system in the rocky Hidden Lake basin at the head of Soda Spring Creek. Then the east and south slopes of Sheep Mountain would be followed in order to reach Pecks Canyon. No advantages were seen on this route to justify its use.

A route was considered via Burnt Corral Meadows, elevation 6000, but the country was not sufficiently attractive to justify the additional rise and fall and additional distance involved.

Park Boundary (Mile 61.5 to Horse Creek (Mile 68.5))

Crossing the southerly boundary of Sequoia National Park a short distance east of Summit Lake and passing through a saddle, elevation 9450, the route would follow down Cyclone Creek, a tributary of the South Fork of the Kaweah River. The east side of the river offers better support for a highway grade which will, for short sections, be 6% compensated. Hunter Creek is crossed at Mile 64.7, beyond which flat meadow country is encountered. These meadows, South Fork, Mitchell, Sand and Hockett, are separated by low ridges covered with a thick growth of lodge pole pine. The alignment through this section, to fit the country, would consist of long flat curves with a rolling grade system. Leaving Hockett Meadow at Mile 68 a point is rounded before reaching Horse Creek at Mile 68.5. This meadow section is very beautiful with numerous camping areas available for development. Exposure is excellent excepting for short distances on the ridges between the meadows. The material encountered is decomposed granite with a large percentage of boulders. The cost of grading and drainage structures on this section is estimated to be \$221,000.

The alternate route discussed above which would cross the Park Boundary a short distance east of the Pecks Canyon trail entrance at elevation 9750, continues to Mile 65.5, north of Hunter Creek. This alternate, because of its 250 foot higher summit, requires considerable development through steep country, to descend to the easier slopes at the west end of Cabin Meadow. This route would be one mile longer than the route via Summit Lake and Cyclone Creek.

Horse Creek (Mile 68.5) to East Fork of the Kaweah River (Mile 75.3)

Leaving Horse Creek, elevation 8400, descent on approximately 4% grade was studied to reach the East Fork of the Kaweah River at Mile 75.3, elevation 7200. There is but little choice of routes through this area once the East Fork crossing is fixed. A crossing to the east (upstream) aside from adding to the length of the route, would cause considerable conflict with the Mineral King summer home site area which extends for approximately 2 miles west from Mineral King. The East Fork crossing as selected is located near the mouth of Mosquito Creek. A connection to the Mineral King area can be made from some point in the vicinity of this crossing.

A crossing of the East Fork farther west (downstream) would force the route through the grove of sequoias which extend south up the mountain side from the river between Mile 72 and Mile 74. As it is, the route will skirt the upper edge of this grove. A few trees will be encountered, however, which may necessitate breaking up the grade system somewhat in order to avoid them.

Between Horse Creek and the East Fork crossing there are no recreational possibilities. Side slopes generally do not exceed 50%. However, there are a few sections where slopes are as steep as 90% and 100%. The material encountered is chiefly decomposed granite and boulders with some solid rock on the steeper slopes. Between Mile 68.5 and Mile 71 brush with some timber is found. Between Mile 71 and Mile 75.3 there is heavy timber. At about Mile 72.7 the route crosses the Park Boundary into National Forest land.

West exposure is obtained to Mile 71.2 beyond which direction is changed so as to result in north exposure for a considerable distance before reaching the East Fork. A bridge approximately 150 feet in length is necessary at this crossing. The length of this bridge is not determined by the size of the stream entirely. The site itself is quite scenic, located at the top of a waterfall. A higher, longer bridge would aesthetically be more fitting.

The estimated cost for grading and drainage structures on this section is \$519,000. 2.6 miles of this section is through the National Forest. This 2.6 miles is estimated to cost \$190,000.

#### East Fork Kaweah River - Giant Forest

Between the crossing of the East Fork of the Kaweah River and Giant Forest there are two possible routes. The features of each route are covered in the following descriptions. It is realized that the problem of selecting a route through this area involves many administrative as well as engineering features and for that reason no attempt has been made to make definite selection.

#### East Fork Kaweah River (Mile 75.3) to Giant Forest (Mile 109.5) Via Ash Mountain

This route would follow the general vicinity of the existing Mineral King road which develops down the East Fork of the Kaweah River and makes connection with the Visalia-Sequoia Park State Highway at a point 2.0 miles southwest of the Park entrance. This road has innumerable sharp curves of less than 50 feet in radius and grades as steep as 18%. While considerable widening and improvement work has been carried on in recent years, the road is still a one way road. It has a broken grade system and in between the sections where grades are excessively steep there are some slack and even some adverse grades. Therefore, it is possible to obtain a compensated 6% grade from the East Fork crossing below Mineral King to near Ash Mountain. This would place the location below the existing road at Atwell Mill Ranger Station, Mile 80. It would be crossed at about Mile 84 beyond which point there would be no further connection. The north side of the river would be followed below Oakgrove. A crossing of the Middle Fork of the Kaweah River would be made at about Mile 93. Connection with the existing Generals Highway would be made in

the immediate vicinity of the Ash Mountain Headquarters area. Thence the present road is followed via Hospital Rock to Giant Forest (Mile 109.5). Heavy country is traversed for the entire distance between the East Fork crossing and Ash Mountain. There are many steep ravines and sharp ridges which would require a great amount of minimum curvature. Rise and fall totals 10,700 feet. The length of new construction would be 18.6 miles. Following this route, Sequoia Park is reentered at Mile 79.0. The route is then within the park to about Mile 87. Between Mile 87 and Mile 93 this route would be in the National Forest.

The cost of the Ash Mountain route, exclusive of any reconstruction that may be considered necessary on that portion of the existing road between Ash Mountain and Giant Forest, is estimated at \$1,270,000. Included in this amount is the cost of the two sections outside the park, totaling 9.7 miles in length. The cost of these two sections is estimated at \$695,000.

East Fork Kaweah River (Mile 75.3) to Giant Forest (Mile 101.2)

The route between the East Fork crossing and Paradise Ridge, Mile 79, elevation 8300, is established by grade limitations. A compensated 6% grade is required between these two controls. Steep country is encountered for the first half mile north of the East Fork, beyond which slopes average 50%. Solid granite and boulders form a large percentage of the material with some decomposed granite. The park is reentered at about Mile 78.

Once Paradise Ridge is crossed descent on maximum grade (6% compensated) is necessary in order to secure the most economical route across drainage in the Middle Fork area. Easy country with some meadow land is encountered between Paradise Ridge and Mile 82. Thence the ridge between Castle and Cliff Creeks is rounded and steeper slopes are followed to Cliff Creek crossing, Mile 84.8. Slopes are somewhat flatter beyond Cliff Creek until Redwood Meadow is reached, Mile 87.5. Here the route is held so as to pass to the west of Redwood Meadow proper and thus avoid conflict with many sequoia trees and aesthetic features commonly found in such areas. Passing through a saddle in the ridge immediately north of Redwood Meadow, the route bears to the east and so reaches a crossing of Granite Creek near the mouth of Eagle Scout Creek. To secure satisfactory alignment here, a cut through the ridge between Granite Creek and the Middle Fork is necessary. The Middle Fork is crossed immediately beyond this ridge. 100 foot and 150 foot bridges are necessary at the respective crossings of Granite Creek and the Middle Fork of the Kaweah River.

Continuing beyond the Middle Fork crossing an average grade of approximately 4% is feasible to Merten Creek. However, a broken grade appears advisable in order to take advantage of several short benches between cliffs found in the section immediately below the Middle Fork crossing. Buck Canyon is crossed at Mile 89.6 beyond which slopes are easy to Merten Creek, Mile 91.5.

The material encountered between Paradise Ridge and Merten Creek is made up of a large percentage of decomposed granite with boulders and solid granite on the steeper slopes and at the several stream crossings. Heavy timber exists between Mile 79.0 and Mile 80.0, also between Mile 85.0 and Mile 87.3. For the remaining distance there is a heavy growth of brush. There is good exposure excepting between Mile 82.5 and 84.8.

The Redwood Meadow area while small is very attractive from a recreational standpoint. There is a small area in the vicinity of Sand Meadow, Mile 81.0, where camp grounds could be developed.

Excellent views of the Great Western Divide to the east are obtainable on each side of Paradise Ridge. A route crossing Paradise Ridge approximately 2 miles west of the previously described route was given some consideration but was abandoned. Such a route would affect development for the entire section between the Middle and East Forks of Kaweah River. Lower crossings of both these streams would result. Several solid granite ledges on the north slope of Paradise Ridge would be encountered and there would be considerable conflict with the large grove of sequoia trees up the canyon from Atwell Ranger Station.

The estimated cost for grading and providing drainage structures for this 16.2 mile section between the East Fork and Merten Creek is \$1,064,000. 2.7 miles of this section is in the Sequoia National Forest and that portion is estimated to cost \$179,000.

Beginning at Merten Creek ascent to Giant Forest is begun. Maximum grade, 6% compensated, is required to attain elevation 6730 at Crescent Meadow Saddle, Mile 98.2, a definite control located on the ridge southeast of the Giant Forest Plateau. Between Merten Creek and Crescent Meadow Saddle very steep country is encountered in the Panther Creek Basin. There are innumerable sharp ridges and deep ravines and continuous curvature is required. Two branches of Panther Creek are crossed, each requiring a bridge. A sharp ridge is crossed at Mile 94.3 where a short tunnel may be necessary.

Between Crescent Meadow Saddle and Giant Forest, Mile 101.2, elevation 6500, side slopes are generally quite flat. Alignment and grade through this section would be controlled entirely by aesthetic features. The Crescent Meadow area should be avoided as well as the numerous groups of sequoia trees.

Between Mile 93 and Mile 98.2 the material is chiefly solid rock. On the remainder of this section there is a mixture of decomposed granite, boulders and earth. There is south exposure with heavy brush between Mile 91.5 and Mile 98.2. Between Mile 98.2 and Mile 101.2 the exposure is not so good because of the dense forest cover. Excellent views of the Great Western Divide are obtainable from Mile 98.2.

The estimated cost of grading the section between Merten Creek and Giant Forest is \$1,010,000. This includes the cost of three bridges and an allowance for a number of retaining walls to eliminate long fill slopes.

The total rise and fall between the East Fork crossing and Giant Forest is 6500 feet. This 25.9 mile section requires new construction throughout.

An alternate route was considered which, by use of compensated 7% grade between Merten Creek and Sequoia Saddle located about one mile north of Crescent Meadow Saddle, would by-pass the Giant Forest area. This route would intersect the Generals Highway a short distance north of General Sherman Tree and about 2 1/2 miles north of Giant Forest. It would involve 1.3 miles of additional new construction and 700 feet additional rise and fall as compared with the previously described route. This alternate route would cost \$1,200,000.

GRADING COST ESTIMATE SUMMARY

FOREST SERVICE

Section Limits	Length and Unit Cost	Grading Cost
Mile 0 (Greenhorn Mountain)	6.8 miles at \$24,000	Say \$163,000
Mile 6.8 (Portuguese Pass)	6.2 miles at \$25,000	" 155,000
Mile 13.0 (Frog Pass)	5.5 miles at \$45,450	" 250,000
Mile 18.5 (Pack Saddle)	3.0 miles at \$29,333	" 88,000
Mile 21.5 (Holey Saddle) Via Long Meadow Alternate	7.8 miles at \$27,180	" 212,000
Mile 29.3 (Nobe Young)	5.1 miles at \$44,500	" 227,000
Mile 34.4 (Dome Rock)	4.6 miles at \$25,900	" 119,000
Mile 39.0 (Aspen Saddle)	4.8 miles at \$32,290	" 155,000
Mile 43.8 (White Meadow)	9.8 miles at \$40,000	" 392,000
Mile 53.6 (Saddle between Mountaineer and Alpine Creek)	7.9 miles at \$40,000	" 316,000
Mile 61.5 (Park Boundary at Summit Lake)		
	Total Grading	<hr/> \$ 2,077,000
	Surfacing 61.5 miles at \$10,000 per mile	615,000
	Total Cost Estimate	<hr/> \$ 2,692,000

GRADING COST SUMMARY

PARK SECTION

(ASH MOUNTAIN ROUTE)

(Exclusive of any Improvement on the Generals Highway)

South Park Boundary-Horse Creek Mile 61.5 to Mile 68.5	(\$31,600 per mile)	Say	\$221,000
Horse Creek to East Fork Mile 68.5 to Mile 72.7 (Park)	4.2 miles at \$78,333	"	329,000
Mile 72.7 to Mile 75.3 (Forest)	2.6 miles at 73,030	"	190,000
East Fork to Giant Forest (Mile 75.3 to Mile 79 and (Mile 87 to Mile 93 )	(Forest) 9.7 miles at \$71,650	"	695,000
(Mile 79 to Mile 87 and ) (Mile 93 to Mile 93.9 Ash Mt.)	(Park) 8.9 miles at \$64,600	"	575,000
		Total	\$2,010,000
Ultimate surfacing cost	32.4 miles at \$10,000		<u>324,000</u>
Total cost of Park Section (Inclusive of 12.3 miles in Forest)			\$2,334,000

PARADISE RIDGE-REDWOOD MEADOW ROUTE

South Park Boundary-Horse Creek Mile 61.5 to Mile 68.5	(\$31,600 per mile)	Say	\$221,000
Horse Creek to East Fork Mile 68.5 to Mile 72.7 (Park)	4.2 miles at \$78,333	"	329,000
Mile 72.7 to Mile 75.3 (Forest)	2.6 miles at 73,030	"	190,000
East Fork to Merten Creek Mile 75.3 to Mile 78.0 (Forest)	2.7 miles at \$66,300	"	179,000
Mile 78.0 to Mile 91.5 (Park)	13.5 miles at 65,550	"	885,000
Merten Creek to Giant Forest Mile 91.5 to Mile 101.2	9.7 miles at \$104,000	"	1,010,000
		Total	<u>\$2,814,000</u>
Ultimate surfacing cost	39.7 miles at \$10,000		<u>397,000</u>
Total cost for Park Section (Inclusive of 5.3 miles in Forest)			\$3,211,000

COMBINED ESTIMATE - FOREST AND PARK SECTIONS

(BASED ON ASH MOUNTAIN ROUTE)  
 (Exclusive of any Improvement on the Generals Highway)

FOREST

<u>Mile</u>	<u>to</u>	<u>Mile</u>	<u>Grading</u>	<u>Surfacing</u>	<u>Total</u>
0		61.5	\$2,077,000	\$ 615,000	\$ 2,692,000
72.7		79.0 )	885,000	123,000	1,008,000
87.0		93.0 )			
Sub-total			\$ 2,962,000	\$ 738,000	\$ 3,700,000

PARK

61.5		72.7	\$ 550,000	\$ 112,000	\$ 662,000
79.0		87.0 )	575,000	89,000	664,000
93.0		93.9 )			
Sub-total			\$1,125,000	\$ 201,000	\$ 1,326,000

GRAND TOTALS                      \$4,087,000                      \$ 939,000                      \$ 5,026,000

COMBINED ESTIMATE - FOREST AND PARK SECTIONS

(BASED ON PARADISE RIDGE-REDWOOD MEADOW ROUTE)

FOREST

<u>Mile</u>	<u>to</u>	<u>Mile</u>	<u>Grading</u>	<u>Surfacing</u>	<u>Total</u>
0		61.5	\$2,077,000	\$ 615,000	\$ 2,692,000
72.7		78.0	369,000	53,000	422,000
Sub-total			\$ 2,446,000	\$ 668,000	\$ 3,114,000

PARK

61.5		72.7	\$ 550,000	\$ 112,000	\$ 662,000
78.0		101.2	1,895,000	232,000	2,127,000
Sub-total			\$ 2,445,000	\$ 344,000	\$ 2,789,000
GRAND TOTALS			\$ 4,891,000	\$1,012,000	\$ 5,903,000

## APPROACH ROADS

### Isabella-Greenhorn Summit

Isabella is on the paved Walker Pass State Highway, 49 miles east of Bakersfield. From Isabella there is a 2 way oiled road for 11 miles up Kern River. Beyond this a one way dirt road continues up the Kern River 11 miles more to Fairview.

Three miles north of Isabella and one mile south of Kernville there is the Greenhorn Mountain road junction. From this junction there is an existing two way 20 feet wide second gear dirt road with hairpin turns and probable 10% grade maximum to Greenhorn Summit. From the junction (elevation 2600) it is 12.7 miles to this summit which has elevation of 6100. This indicates an average grade of 5%. The alignment is such that improvement to modern highway standards would realize practically no return from the existing work. There is ample country in which to develop for a revised location and it is estimated that such construction would cost \$35,000 per mile for grading plus \$10,000 per mile for ultimate surfacing. This would give a total grading cost of \$444,500 and a total ultimate cost of \$571,500.

This road is on both the State Highway Secondary System and on the Forest Highway System in which it is a part of Route No. 52.

Greenhorn Mountain County Park development covers about 160 acres which are well timbered. There are picnicing and public camp accommodations as well as facilities for lodge conventions, boy and girl scout meetings and other similar functions. Approximately 5,000 people visited the Park in 1934. Aside from these, there also were many persons who just passed through the Park going to or from Glennville and Kernville. Of the above number, many stay for a week-end, a week and in some cases for a month. The largest number in the Park at any one time was about 300. Most of the people come from Taft (35 miles southwest of Bakersfield and with a population of 3,442) and Bakersfield (population 26,800) and others come from Los Angeles. In the fall many hunters come into the area. This year the Park has frequently been filled to capacity. The high cool area has much appeal to people from the hot low country adjacent. At Alta Sierra there is a summer home site private development. This is one mile east of the Park. There are about 120 private homes which are owned principally by Bakersfield people.

Glennville-Greenhorn Summit

The road from Glennville to Greenhorn Summit is also on the State Secondary System and is a part of the Glennville-Kernville Forest Highway No. 52. This is an oiled 18 foot wide 10% maximum grade road with hairpin turns and contour alignment. The total rise in the 13 miles is 2800 feet but there are rolling and adverse grades. The longest grade is from Cedar Creek to Greenhorn Summit where a rise of 1200 feet is made in 3.3 miles. This indicates an average grade of 6% but the maximum is at least 10%.

It is estimated that reconstruction on modern location standards would cost \$350,000 for grading plus \$130,000 for ultimate surfacing making a total probable cost of \$480,000.

At Fulton Ranger Station, which is 1.7 miles east of Glennville, the Forest Service has been taking a count of the cars going east between 7 a.m. and 9 p.m. The average week day count is 50 and average Saturday or Sunday count is 100. The largest count recorded was 160 cars. Since this is only one way the total traffic would be approximately twice the above figures.

Glennville is 40 miles from Bakersfield over paved highways.

Comment on Glennville-Greenhorn Summit-Isabella Road

As is seen from the above descriptions, the bulk of the traffic to Greenhorn Mountains comes via Glennville. This is logical since the road is better that way from Bakersfield which is the largest user of the area. From Bakersfield to Greenhorn Summit via Glennville is 53 miles whereas via Isabella it is 65 miles.

Should the Western Divide project be built the bulk of the traffic from the southern areas would probably be via Glennville. This road is capable of handling present traffic. However, should traffic increase after the Western Divide project were built then improvement of either the Glennville route or the Isabella Route, with either State or Bureau forces, would doubtless follow. Between now and such time as this improvement is necessary annual traffic counts would determine which route should be improved. There seems small justification for improving both routes.

Rio Bravo Ranch-Ice House

South from Ice House a truck trail follows south along Greenhorn Mountain to Rio Bravo Ranch, about 10 miles east of Bakersfield, on the Walker Pass Highway. This road is closely paralleled on either side by the above described roads via Glennville and via Isabella. No investigation was made of this road or the possibility or need of relocation on highway standards.

Hot Springs Post Office

There are three approach roads to Hot Springs (locally known as California Hot Springs) from the valley and none of them is of satisfactory standards to carry even present traffic demands safely.

It is 59 miles from Bakersfield to Hot Springs P.O. via Woody and Glennville. From Bakersfield oiled roads are available to Glennville, a distance of 40 miles. From a point approximately 2 1/2 miles west of Glennville an oiled two way road then continues 5 miles to Posey Creek. Thence a one-way forest development road is followed for 14 miles via Pine Flat to Hot Springs P.O. This road wanders up and down and is primarily for fire control and not for recreational traffic.

From Porterville it is 33 miles to Hot Springs P.O. via Fountain Springs. From Porterville the 15 miles to Fountain Springs are over two way oiled valley roads. From Fountain Springs there is a two way dirt road through rolling country for 7 miles to the control road junction. From this junction it is 11 miles via either a control road on the left or a wider open road on the right to Hot Springs P.O. These roads are contour roads of low standard with second gear driving necessary in places.

Also from Porterville there is a dirt development road via Deer Creek 30 miles to Hot Springs P.O. Hot Springs P.O. is a resort which has a restaurant, hotel, store, post office and 85 house keeping cottages in which there are accommodations available for 300 people. The summer headquarters of the Forest Supervisor is located here. Recent years, business has fallen off but is now picking up again. However, there is much objection to the poor approach roads and in winter there is practically no trade at all. Adjacent to Hot Springs is the Forest Service Deer Creek District Ranger Station. Two miles east of Hot Springs P.O. is Pine Flat where there is a hotel, store and cottages. It is understood that here also business has fallen off.

From Hot Springs there is a one way second gear Forest development dirt road 16 miles long, which rises from elevation 3100 to elevation 7250 at Portuguese Pass. Also from Hot Springs there is a similar road to Holey Saddle and Double Bunk. In the 14.5 miles to Holey Saddle there is a rise from 3100 to 6500 elevation. There is, however, some adverse grade which increases the average gradient so that second gear is necessary. Beyond Double Bunk there is a wagon road on nearly impassable standards for automobiles to Long Meadow.

The Forest Service is now making a reconnaissance for a two way development road from Hot Springs easterly to replace both these described roads for recreational purposes.

In the season between July 1, 1934 and June 30, 1935 there were the following visitors to the forest in the Deer Creek district, which includes Hot Springs area, Jack Ranch area and the territory along the top of the divide from Portuguese Pass to Double Bunk:

Summer home residents and guests	9050
Hotel and resort guests	2250
Campers	4100
Picnicers	7410
Total	<u>22810</u>

The bulk of these were from Bakersfield except that hunters come from the entire State.

### Nelson

From Porterville, population 5303, elevation 550, a concrete highway goes easterly 14 miles, then an eleven mile two way oiled highway continues through Springville to the Camp Wishon road junction, elevation 2500. Then there is a one way 8 mile control road which is oiled to Nelson, elevation 4700. This 33 mile road is maintained by the State and is on the Porterville-Lone Pine secondary state highway. At Springville is a Forest Service District Ranger Station and a small settlement. At Nelson there is a hotel, store and several summer homes.

From Nelson there is a 9 mile one way Forest development dirt road built by the County and Forest Service to Quaking Aspen Meadow and on to Grouse Creek Ranger Station which has elevation 7100.

### Porterville-Lone Pine

There is a potential highway from Porterville via Nelson and Cottonwood Pass to Lone Pine which is in Owens Valley. The end of the present road is at Grouse Ranger Station as described previously. This highway route is on the State secondary system. No activity is known relative to any further construction plans and in fact there is much pressure among various organizations against any further construction easterly on account of the desire to preserve the primitive area. In 1922 a location was made by a Mr. Skinner along the proposed route of the State highway, which is indicated on the attached map. No further studies have been made as far as are known.

Should this highway ever be built it probably would have no effect on a Western Divide Highway.

### Approach to Mineral King

A general description of this route will be found elsewhere in this report. This road was first constructed prior to designation of Sequoia National Park in 1890. At that time there was considerable mining activity in the area adjacent to Mineral King and the road was built to transport materials to these mines, which have long since closed entirely. This road was later taken over for improvement and maintenance by Tulare County. The section within the Park, 11 miles, has been improved to a certain extent by Park forces.

The Mineral King and Silver City area has considerable importance as a recreational area. The Forest Service has set aside summer home sites and many cabins have been built and are used each season from about June 15 to September 15.

From Mineral King, elevation 7800, trails lead into the high mountainous Kaweah Peaks, Kern River and Mt. Whitney areas. Several pack outfits are located at Mineral King. Mineral King is 56 miles from Visalia, of which distance 24 miles is via the Hammond to Mineral King road. Traffic over this road for the "Park travel year", ending September 30, 1935, totaled 3561 vehicles.

### The Generals Highway

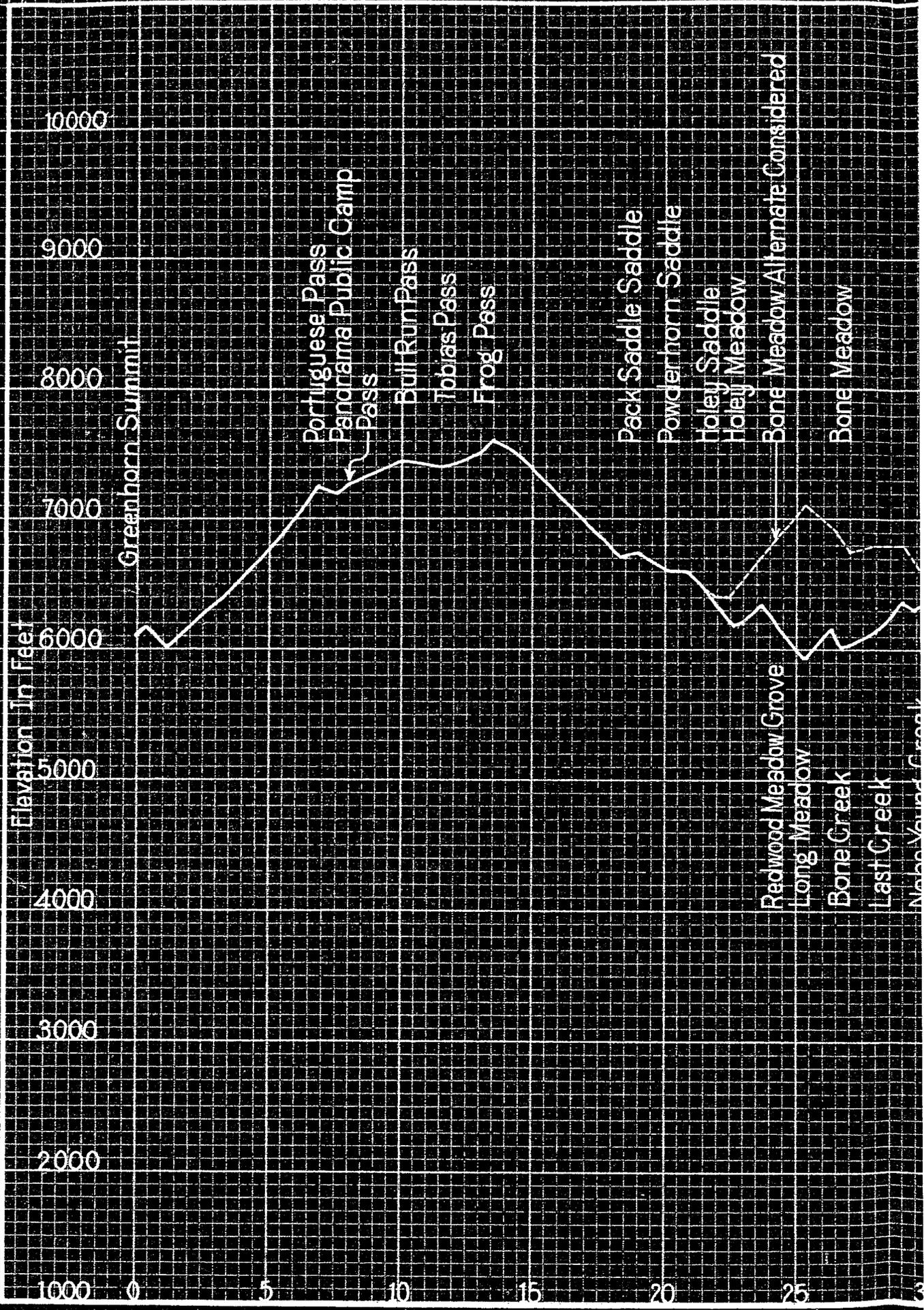
The Generals Highway, beginning at the southwest boundary of Sequoia National Park near Ash Mountain Headquarters serves as the main artery through that Park. At the southwest boundary it connects with the State highway from Visalia. From Ash Mountain the Generals Highway is routed through the Park via Hospital Rock, Giant Forest and

Lodge Pole to the northwest boundary of the Park near Stoney Creek. Giant Forest is 52 miles distant from Visalia. From this boundary the Generals Highway has been constructed across the intervening section of Sequoia National Forest to General Grant National Park. At General Grant Park connection is made by a secondary State highway to Fresno and other valley points to the west. The Generals Highway extends through General Grant Park to its northerly boundary where connection is made to the Kings River State and Forest Highway now constructed for approximately 20 miles toward Kings River Canyon.

The State Highway from Visalia to the southwest boundary of Sequoia Park has, for the major portion, been improved to modern highway standards including bituminous surface treatment. The Generals Highway, excepting the section between Ash Mountain and Giant Forest, has likewise been or is being improved.

During the Park travel year ending September 30, 1935, 46280 vehicles used this road. The greatest number of vehicles for one day totaled 955. This is a one way count and should be doubled to obtain traffic density.

This traffic, since the completion of the Generals Highway between the Parks, is no longer concentrated in the Giant Forest area but continues on to General Grant Park and thence to San Joaquin valley points. The area between the Parks, including the Big Meadow area, is of great importance from a recreational standpoint and is as yet undeveloped.



Elevation In Feet

10000

9000

8000

7000

6000

5000

4000

3000

2000

1000

Greenhorn Summit

Portuguese Pass  
Panorama Public Camp  
Pass

Bull Run Pass

Tobias Pass

Frog Pass

Pack Saddle Saddle

Powderhorn Saddle

Haley Saddle

Haley Meadow

Bone Meadow Alternate Considered

Bone Meadow

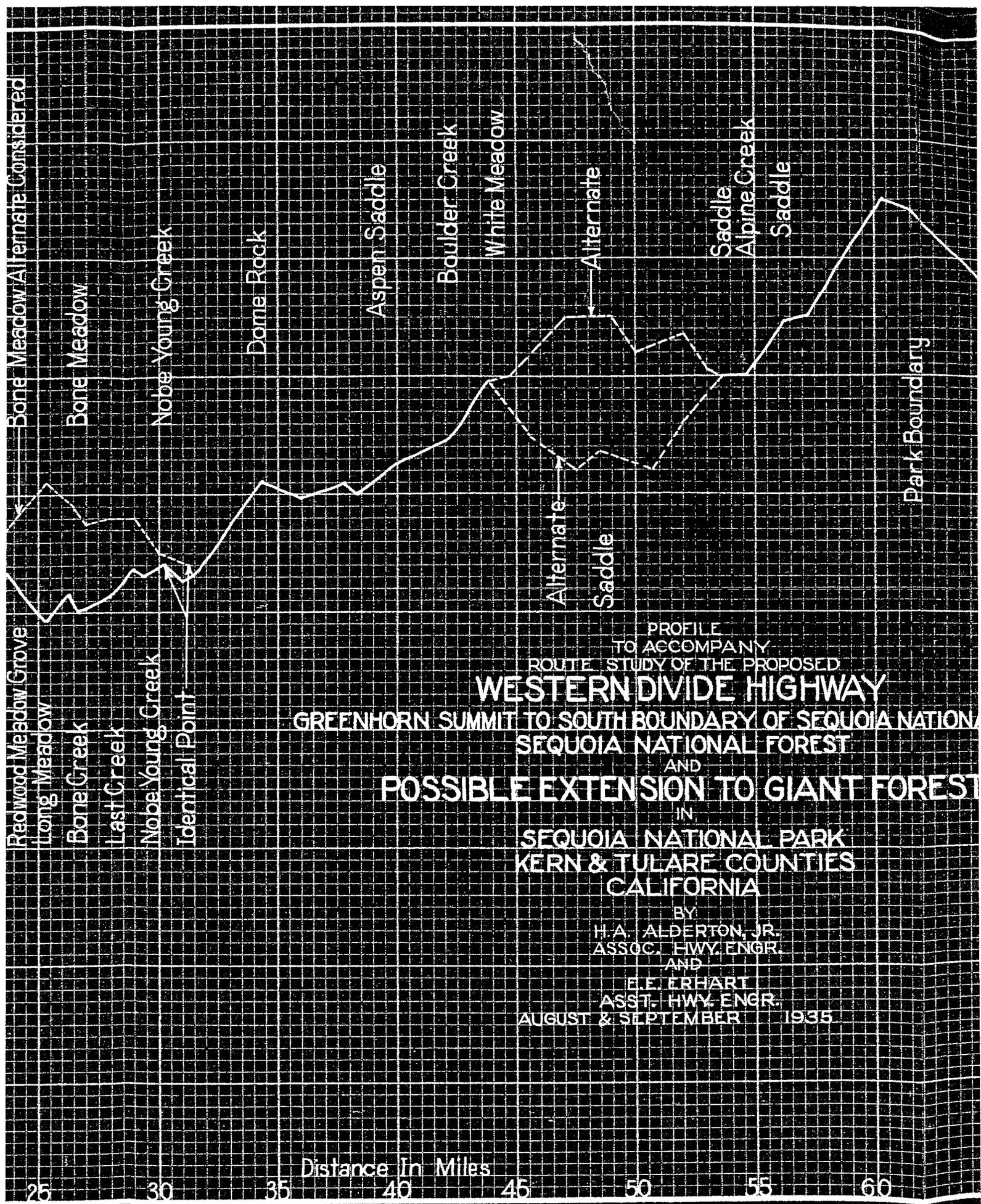
Redwood Meadow Grove

Long Meadow

Bone Creek

Last Creek

Nash Valley Creek



PROFILE  
 TO ACCOMPANY  
 ROUTE STUDY OF THE PROPOSED  
**WESTERN DIVIDE HIGHWAY**  
 GREENHORN SUMMIT TO SOUTH BOUNDARY OF SEQUOIA NATIONAL  
 SEQUOIA NATIONAL FOREST  
 AND  
**POSSIBLE EXTENSION TO GIANT FOREST**  
 IN  
**SEQUOIA NATIONAL PARK  
 KERN & TULARE COUNTIES  
 CALIFORNIA**

BY  
 H. A. ALDERTON, JR.  
 ASSOC. HWY. ENGR.  
 AND  
 E. E. ERHART  
 ASST. HWY. ENGR.  
 AUGUST & SEPTEMBER 1935

Distance In Miles

25 30 35 40 45 50 55 60

Saddle  
Alpine Creek  
Saddle

Via Paradise Ridge and Redwood M

Park Boundary

Mitchell Meadow

Horse Creek

Paradise Ridge

Middle Fork Kaweah River

Merten Creek

THE  
COMPANY  
THE PROPOSED  
HIGHWAY  
BARIETY OF SEQUOIA NATIONAL PARK  
NATIONAL FOREST

TO GIANT FOREST

NATIONAL PARK  
COUNTIES  
CALIFORNIA

TON, JR.  
ENGR.

ART  
ENGR.  
1935

East Fork Kaweah River

Via Ash Mountain

55 60 65 70 75 80 85 90

