

PACIFIC WAGON ROADS.

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EL PASO AND FORT YUMA WAGON ROAD.

Report of N. H. Hutton, engineer, to James B. Leach, superintendent.

WASHINGTON, D. C., January 29, 1859.

SIR: I have the honor to submit the following hurried report upon the improvements effected in grade, alignment, &c., on the route of the wagon road from El Paso, Texas, to Fort Yuma, California; together with a few suggestions as to future improvements, and a brief memoir of the country passed through.

The region of country traversed by this route lies almost entirely within that territory recently acquired from Mexico and termed the "Gadsden Purchase," which, previous to the construction of the present wagon road, was traversed by a route opened at different periods by the parties of Colonel Cook, Messrs. Nugent and Hayes, the Mexican Boundary Commission, and Lieutenant J. G. Parke, United States Topographical Engineers. This route, opened as it was by different parties, with different objects in view, and merely "in transitu," could hardly be expected to have been either located on the most direct lines, or to have received much improvement of surface or in facilities for obtaining water. Particular attention was, therefore, given on the new road to such a location as would increase not only its directness, but the facilities for obtaining wood, water, and grass; without which no route, however level in surface or direct in alignment, could be made available for emigration.

The old road, leaving El Paso at the lower end of the "Gorge of the Rio Grande," passed, for seven (7) miles, through these narrows over the rolling rocky spurs of the Organ mountains, and debouching

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The old road, leaving El Paso at the lower end of the "Gorge of the Rio Grande," passed, for seven (7) miles, through these narrows over the rolling rocky spurs of the Organ mountains, and debouching thence proceeded up the wide valley of the river, over an elevated bottom, well timbered and with light clay and sand soil. Crossing near Fort Fillmore to the right bank of the river, it passed through the town of La Mesilla, and thence over a low, rich, well cultivated bottom to the village of the Picacho, where it ascended the bounding "mesa" of the river by a steep rocky hill and turned its course toward Cook's Spring, passing over an elevated plateau region having a fine gravelly surface, covered in places with small fragments of porphyry and basalt, and which is traversed by three low volcanic ranges of hills, the wide open passes of which, however, offered but slight impediment to the passage of loaded wagons. This plateau ceasing within twelve (12) miles of the spring, the road descended, with an easy grade, into a low, flat, plain with a red clay and loam soil, sloping southward and extending westward to Cook's spring, (situated amid the foot hills of the western slope of the Mimbres mountains.)

Leaving this spring the road ascended a long, narrow valley, a distance of about one and a half mile, and crossing the Mimbres mountains by a favorable pass descended over a rolling slope to the Mimbres river, crossing it by a ford; and thence over a gradually

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With regard to the route from the Piloncillo Pass westward, the instructions from the department were, if possible, to construct the road through Parke's Railroad Pass; thence down the Playa de los Pimos, and Arrivaypa valleys to the San Pedro, and down the latter to the Gila; this last, of course, being then followed to its junction with the Colorado—thus effecting a great saving of distance over any other possible route, and securing the greatest combination of directness, wood, water, and grass that the territory afforded. If this was not found practicable, it then devolved upon the persons in charge to select such a route as they might deem most favorable.

In pursuance of these instructions, careful and thorough explorations were made of the Arrivaypa cañon and creek; of all the available passes through the San Calisto mountains between the Playa de los Pimos and the San Pedro; of the valley of the Gila from the mouth of the San Pedro down to the Pimo villages; and of the region of country lying between the Gila and San Pedro rivers below their junction.

The Arrivaypa valley, for about twelve (12) miles of its length, was found to cañon in such a manner as to forbid the construction of a wagon road through it, though the obstacles would not be such as to prove it impracticable for a railroad.

The valley of the Gila below the mouth of the San Pedro was found to present expensive obstacles to a wagon road in the form of rocky spurs, abutting closely on the river banks, besides being a considerable increase in distance over an economically practicable and almost air line between the mouth of the Arrivaypa and a point on the Gila just below its debouchment from the last cañon of the upper Gila.

The valley of the San Pedro having been found practicable, the following location was adopted from the western end of the Piloncillo Pass:

Leaving the old road at the western foot of the mountains the line proceeds nearly west over a gradually sloping plain, with a clay and gravel surface, to the Rio San Domingo, (or Sauz,) crossing this stream about three miles below the old road, and where it has a width of about

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Leaving the old road at the western foot of the mountains the line proceeds nearly west over a gradually sloping plain, with a clay and gravel surface, to the Rio San Domingo, (or Sauz,) crossing this stream about three miles below the old road, and where it has a width of about three (3) feet and an average depth of eight (8) inches; thence over a gradually ascending plain, with a firm surface, generally of reddish clay, to the Sycamore spring about three miles east of the summit of Parke's Railroad Pass, and situated near the base of the foot hills of the Chiricahui mountains; thence over a rolling surface, across the long sloping spurs of the before mentioned mountains to the wide, open divide of the Railroad Pass; through this pass, over a gently descending slope, it enters the valley of the Playa de los Pimos, and reaches the Croton springs, situated at the northern end of the main playa. Leaving these springs, the road ascends, with a light grade, a wide plain with a compact clay surface for several miles, and entering a gradually ascending smooth arroyo, it attains the low summit of Nugent's Pass. Thence descending a long, wide, gently sloping water drain, it crosses the main arroyo from Nugent's Pass, running to the San Pedro, and proceeds in a direct line from the summit to the latter stream, crossing an intervening rocky spur from the San Calisto mountains and descending to the San Pedro over a wide, uninterrupted, and sloping plain, intersects that river about thirteen (13) miles below

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the old road crossing; and thence turning northward, down stream, follows along the right bank of the river to the mouth of the Arrivaypa creek.

On the first twenty miles of the route down the San Pedro river, the narrowness of the valley and the infringing spurs, rendered necessary frequent side hill locations, though no hills were encountered offering very serious obstacles to a reduction of grade. The soil was generally a loose clay and gravel, or cobble stones, easy of removal, preserving its stability with steep side slopes, and consolidating readily and firmly in embankment. Below, in the remaining thirty miles of the river valley, the principal obstacle to the opening of the road was found to be heavy mesquit timber and brush.

Opposite the mouth of the Arrivaypa creek, the road crosses the San Pedro, having a width of twelve feet and flowing in a clear stream about eight inches deep over a pebbly bottom. Leaving the San Pedro, the road ascends a large arroyo or water drain, three miles to a spring, where it turns to the right up a branch valley, having a gradually ascending slope, with a light clay and sand surface, to the divide of the Santa Catarina, between the waters of the San Pedro and those flowing into the Gila river. Passing for several miles over the gently rolling surface of this high divide, it then enters a long drain descending to the Gila; follows it with a gentle slope to within eight miles of that river to another spring, and, thence turning to the left, ascends the bounding mesa of the arroyo and proceeds toward the Gila river over a gradually descending plain, with a firm surface of red clay and fine gravel, intersecting the river fifteen and six-tenth miles above the old road from Tucson, and proceeding thence down the left bank of the stream to the Maricopa wells, over the elevated bottom lands of the river. Thence crossing the "Little Desert," the line of the old road is followed generally, the only exceptions being in the ascents to two or three of the table lands passed over, and the avoidance of one or two others, together with the straightening of several

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By this change of location between the Piloncillo Pass and the Pimos villages on the Gila, a saving in distance was effected of thirty-five and one-tenth (35.1) miles; an increase of over seventy (70) miles along running water made, and the second best valley of the territory opened to the inspection of the emigrant, who otherwise might have passed through the country without dreaming of its existence. The entire amount of saving effected in distance, by the new location, between El Paso and Fort Yuma, is forty-seven and sixty-four-hundredth (47.64) miles.

The improvements effected upon the line of location consist of two kinds: the improvement of surface and the reduction of grades, and the increase and improvement of watering places. I would preface my remarks upon this subject by stating that the road, in excavation and embankment, was constructed with a width of eighteen (18) feet on straight lines, and twenty-five (25) feet on curves, and in all clearings of timber, brush, and rock, was opened to a uniform width of

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twenty-five (25) feet, allowing ample room for the management of ten mule teams, in common use in that country.

The improvements, both as to grade and watering facilities will be taken up as they occur upon the road from El Paso going west.

Through the gorge of the Rio Grande for about seven (7) miles the road was constructed by side hill cuttings and embankment, along and around the ends of the spurs on the left bank, requiring the excavation of 5,330 cubic yards of earth, which was deposited in embankment, forming half the width of roadway, and 3,900 cubic yards of rock, which was principally employed in forming the embankment and retaining wall on a short curve about three miles above El Paso. The earth excavated consisted of a compact clay and gravel, frequently requiring blasting for its economical removal, and the rock (which was encountered at only one point) was a hard metamorphic conglomerate. By the execution of this work all the hills of the gorge, with one exception, were avoided, and this one, having an ascending grade of about 1' in 10', and one descending of 1' in 20', was freed from all loose rock and stones, levelled up, and drained, materially reducing the labor of its transit.

Next in order is the road between Mesilla and the village of the Picacho, (the point of departure of the road from the Rio Grande valley.) The line here follows up the valley for six (6) miles through a low, rich bottom, thickly studded with cornfields and intersected by numerous ascequias or irrigating canals. To avoid the injurious effects of rain and the frequent overflowing of the ascequias on the heavy loam along this portion of the route, it was found necessary for about three (3) miles to isolate the road bed by ditches on either side, and to raise the surface by the material thus excavated; also to construct bridges over five of the ascequias, all requiring embanked approaches, from the fact that the water to be crossed is always higher than the surrounding country. These bridges were of the simplest description, having from eight to ten feet span, and consisting of cottonwood logs (obtained along the river bank) as stringers, and similar smaller ones as cross pieces, the whole being covered with a

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The arroyo, along the base of the Picacho, leading to the table lands, was the next point improved. The work consisted principally of very light side-hill cuttings and a clearance of loose rock from the road, which was not measured. The results obtained were a shorter ascent to the "mesa" and the avoidance of a very steep incline of rock on the old road. In addition to this road, by way of the Picacho, another was improved which ascended the mesa directly west of La Mesilla, and striking for the pass in the former road through the first range of hills west of the river, proceeding over a gently undulating and grass covered plain, with a loose red clay and sand soil, intersecting the first road at the above mentioned pass, twelve (12) miles from the Picacho. The work upon this route consisted of the ditching of the road bed in two low places, each about fifty yards long, and

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