68TH CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
2d Session } { No. 1242

BRIDGE ACROSS THE COLORADO RIVER NEAR LEE FERRY, ARIZ.

JANUARY 17, 1925.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed

Mr. HAYDEN, from the Committee on Indian Affairs, submitted the following

REPORT

[To accompany H. R. 4114

The Committee on Indian Affairs, to whom was referred the bill (H. R. 4114) authorizing the construction of a bridge across the Colorado River near Lee Ferry, Ariz., having considered the same, report thereon with a recommendation that it do pass with the following amendments:

Line 11, page 1, strike out the word "Western."

Line 12, page 1, strike out the comma and the word "Arizona."

Line 13, page 1, strike out the words "lands and."

Your committee is informed by the Bureau of Indian Affairs that the Navajo Indians of Arizona and New Mexico consider themselves to be one tribe residing on one reservation and have asked that no distinction be made with respect to Indians who reside in different administrative divisions. The committee is of the opinion that there is no practical means of enforcing a lien against the lands of the Navajo Indians and that a lien upon their funds is ample security for the reimbursement of this appropriation. Oil in paying quantities has been discovered on the Navajo Reservation and it is known that large deposits of coal also exist, in addition to which there is considerable merchantable timber.

The bill was referred to the Secretary of the Interior for report, and its enactment is recommended in the following letter:

WASHINGTON, *January 15, 1924.*

Hon. HOMER P. SNYDER,
Chairman Committee on Indian Affairs,
House of Representatives.

MY DEAR MR. SNYDER: Reference is had to your letter of December 24, transmitting for report, among others, H. R. 4114, authorizing the appropriation of $100,000 to be expended under the direction of the Secretary of the Interior

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

for the construction of a bridge and approaches thereto across the Colorado River at a site 6 miles below Leed's Ferry, Ariz., to be reimbursed from any funds to the credit of the Indians of the Western Navajo Reservation in that State.

The matter of the construction of this bridge has been under consideration for some time, and thorough investigations have been made of all its phases by representatives of the Indian Service and by Col. Herbert Deakyne, Corps of Engineers, United States Army. A copy of Colonel Deakyne's report, which goes into the technical aspects of the matter in some detail, is inclosed herewith.

The cost of the construction of the proposed bridge has been placed at approximately $200,000, and the local representative of the Indian Service has recommended that that service bear half of the cost, which would seem to be an equitable division thereof. The proposed bridge will connect the Western Navajo Indian Reservation with the public domain on the west of the Colorado River and will furnish an important and permanent outlet for the Indians of that reservation, facilitating their communication with the whites, and assisting them in their progress toward a more advanced civilization. The benefit which will accrue to the white persons residing in that vicinity and to the general traveling public will be great and will probably be equal to the benefit which will be derived by the Indians. This bridge will make at all times the only possible north and south route between the Salt Lake Railway on the west and the road north from Gallup, N. Mex., on the east. An immense country lies between this railway and the town of Gallup, and the proposed bridge will be an absolute necessity to the proper development of that section.

In view of the fact that the Indians of the Western Navajo Reservation will derive great benefit from the erection of the proposed bridge, estimated to be equal to the benefit which will be derived by the white settlers, it would appear reasonable that the $100,000 which it is proposed to appropriate from public funds for the payment of half of the cost of construction be made reimbursable to the United States from any funds now or hereafter placed to the credit of such Indians and to remain a charge upon the lands and funds of such Indians until paid.

It is recommended that H. R. 4114 receive the favorable consideration of your committee and of the Congress.

Very truly yours,

HUBERT WORK, *Secretary.*

The report of Col. Herbert Deakyne, of the Army Engineer Corps, to which Secretary Work refers, is as follows:

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
San Francisco, Calif., March 21, 1922.

From: The District Engineer, First District, San Francisco, Calif.
To: Mr. Stephen Janus, superintendent Leupp Indian School, Leupp, Ariz.
Subject: Colorado River bridge.

1. Referring to previous correspondence and to our recent visit to the site of the proposed bridge across the Colorado River near Lee's Ferry, I wish to express the following views in regard to the engineering features of the problem. The act of Congress (41 Stat. p. 1233), authorizes an investigtion of the necessity for the bridge, together with surveys, plans, reports, and estimated limit of cost, with recommendation as to what proportionate part of the cost shall be borne by the United States. I assume that you will make the necessary presentation of facts relative to the necessity for the bridge and the part of the cost that should be paid by the United States, and I am therefore not touching upon those phases of the matter.

2. *Location.*—The act specifies the location as at or near Lee's Ferry. From what I saw of the river at Lee's Ferry there appears to be no argument for placing the bridge at or above the ferry site. The matter of approaches alone on the high and steep sides of the gorge above the ferry and on the left bank at the ferry is sufficient to cause rejection of any plan for a bridge in that location. The roads on both banks follow close to the river for several miles downstream from the ferry. There is no road on either side above the ferry. Therefore, for every mile that the bridge is placed below the ferry there will be a saving of the maintenance of about 2 miles of road. In addition, the road on the left bank for some 3 miles below the ferry, known as the "Dugway," is dangerous to travel and difficult and expensive to maintain. It appears unquestionably advisable to place the bridge below the "Dugway."

3. From a study of the report made to you by Capt. J. B. Wright, county engineer of Coconino County, Ariz., January 21, 1921, from my examination of the site, and from discussion with Captain Wright, I am of the opinion that the site selected by him about 6 miles downstream from Lee's Ferry is the best known site for the bridge. A bridge at this point will save the maintenance of some 12 miles of road, will afford reasonably easy approaches on both sides, and will require a structure short enough to be within practicable limits of construction.

4. The river at this point flows through a box canyon varying somewhat in dimensions, but generally about 400 feet deep and 600 feet wide. At the selected point the width measured by Captain Wright is 575 feet and the depth from the rim of the canyon to low water level is about 423 feet. The rise of the river in extreme floods is probably somewhere around 30 feet. The banks are of solid rock.

5. *Type of structure.*—The types of bridge to be considered at this site are the suspension bridge, the horizontal steel truss, and the arched steel truss. It is evident that any bridge supported on piers in the river is out of the question, as this would involve piers more than 400 feet high. The bridge must be a single span from bank to bank. A stone or concrete arched bridge is considered impracticable on account of the heavy construction and the costly false work that would be required for such a long span.

6. The Colorado River is crossed between Topock, Ariz., and Needles, Calif., by a highway bridge with two short shore spans and a three-hinged steel arched center span said to be 592 feet long. However, at this point the banks of the river are low and the bridge was erected on false work supported by piles. This method would be impracticable at the Lee's Ferry site and if a structure similar to the Topock bridge were to be built there it would have to be supported by suspension cables during erection. In other words, a suspension bridge would have to be built first and used as a temporary support on which to build the steel arched bridge. The same method of construction would have to be adopted for the horizontal steel trussed bridge.

7. From these considerations it appears that the only practicable type of structure for this location is the suspension bridge. The problem is similar to that of crossing the Little Colorado River at Cameron, Ariz. This crossing is made by a suspension bridge with a stiffening truss on each side of the roadway. This bridge is 660 feet long and was built in 1911 by the Midland Bridge Co., of Kansas City, Mo., under contract with the Bureau of Indian Affairs. The bridge appears to be a satisfactory structure, except that it might better have been built on a level instead of on a decided grade, and that better bracing should have been provided to resist the lifting effect of wind. The plans for this bridge are undoubtedly on file in the Bureau of Indian Affairs. As it was built over 10 years ago, it would probably be too light for the heavy traffic now using the public highways. From a short examination of it, I judge that it was probably designed to carry a load of 10 tons. In preparing a detailed design for the Lees Ferry Bridge it would be well to provide for carrying a loaded truck weighing 20 tons.

8. *Cost.*—The cost of the Little Colorado River Bridge at Cameron is reported to have been $85,000. This bridge is about 54 miles from the railroad at Flagstaff, Ariz. The Lees Ferry Bridge site is about 130 miles from the same railroad point. The roads over which the material must be hauled are in large part mere tracks through the desert, crossing many depressions with steep pitches at the sides, undergoing some 4,000 feet of change in elevation, blocked at times in winter by snow, and having scanty and infrequent sources of water in the summer. The load that can be hauled by truck or team will be seriously limited by these conditions. Considering that the proposed bridge will need to be heavier than the Little Colorado River Bridge, that the haul is more than twice as long, and that prices of materials and labor have risen since 1911, I am of the opinion that a satisfactory bridge at the Lees Ferry site will cost about $200,000.

9. *Plans.*—It is my understanding that nothing more is desired now in the way of plans than a map showing the location selected and a sketch showing the general design. Captain Wright has a map on a larger scale than any I have, and the location can best be shown on that. I am inclosing a sketch showing the general design that I recommend.

HERBERT DEAKYNE,
Colonel, Corps of Engineers.

The proposed bridge will be located about 15 miles south of the Utah-Arizona boundary line and the site is described by E. C. La Rue, hydraulic engineer of the United States Geological Survey, as follows:

Automobile and wagon travel between the Flagstaff region in Arizona and points in northern Arizona and southern Utah passes over the road which crosses Colorado River at Lees Ferry. Perhaps 50 per cent of this road is good and the remainder is passable. The cost of building a first-class graded road would not be excessive.

The bridge site is located about 3 miles below Paria River and 4 miles below the present crossing at Lees Ferry. Twelve miles of the present road would be eliminated by the construction of the bridge. At the bridge site the walls are composed of limestone and sandstone, almost vertical from the river banks. The box canyon at this point is about 450 feet deep and between 600 and 700 feet wide at the top. This site is easily accessible from the north and south.

The following letter from the Director of the National Park Service shows the importance of this bridge from the standpoint of the national parks:

NATIONAL PARK SERVICE,
Washington, December 8, 1924.

MY DEAR MR. HAYDEN: In reference to our conversation about a bridge across the Colorado River at Lees Ferry, Ariz., I am glad to give you my views as to the advantages of such a project.

At the present time people from that portion of Arizona north of the Colorado River, known as The Strip, and visitors to the Zion National Park, in order to reach by a safe road the greater portion of Arizona, including the major portion of the Grand Canyon National Park, must make a long detour through California and Nevada, or a still longer detour through Colorado and New Mexico. A road crossing the Colorado at Lees Ferry seems to be the only feasible route connecting the strip country and the rest of the State and would shorten the present distance between the Grand Canyon and Zion National Parks to approximately one-third the distance it is now necessary to traverse in going from one to the other. When this road is built it will be possible to go from the north rim of the Grand Canyon to the south rim in a day.

For the past two years there have been over 100,000 visitors to the Grand Canyon Park annually, the travel for 1924 exceeding that for 1923 in spite of the restrictions against the hoof-and-mouth epidemic, and this travel will continue to grow from year to year. When the two rims are joined by a good road and bridge a still further increase will undoubtedly follow. It will be hard to find any road in the United States that will offer to the traveler so many diversified scenic features, and these features should be made accessible as soon as possible.

Even more important, from the point of view of the State, is the fact that residents of that section north of the Colorado River will have direct access to other parts of the State. The development of the area north of the Colorado River should not and can not be delayed much longer, and such a road would do more to develop that section than any other one thing.

Not alone would residents of Arizona be benefited by the opportunity to reach easily any portion of the State, but the entire State would benefit from the stream of tourist travel that now, after visiting the wonderful Zion and southern Utah country and the north rim of the Grand Canyon, turns back through Utah and on to California from there. Last year 8,400 people visited Zion Park and nearly 4,000 went to the north rim, and each year the numbers increase. If easy access were afforded visitors to Zion and the north rim to cross over to the south rim, most of them, instead of retracing their way, would continue on to southern Arizona on their way to the coast.

I believe that the importance of a connecting road between the strip section of Arizona and the remainder of the State can not be too strongly emphasized. It would be a boon to the State of Arizona, as well as to the traveling public. I know that from the standpoint of the national parks it is vitally important.

Sincerely yours,

STEPHEN T. MATHER, *Director.*

Hon. CARL HAYDEN,
House of Representatives.

Under date of December 13, 1924, J. R. Eakin, superintendent of the Grand Canyon National Park, also writes:

The construction of a modern highway to the north rim by way of a bridge near Lees Ferry would open up an immense market for Indian products, which is now practically denied them. Undoubtedly, a vast amount of their handiwork would be taken over this route and stocked in various stores for sale to the tourist public. Of equal importance would be the vast stream of auto tourists that would, in traveling this road, pass four trading posts in order to reach the canyon, and many autoists would, of course, visit the Rainbow Bridge country near which is the Betatakin ruin, and thus come in contact with many other trading posts, where the principal articles of sale are Navajo rugs and jewelry, and Hopi baskets, pottery, etc.

The construction of such a road and bridge would greatly increase the demand for products of the Navajo and Hopi Reservations, and while it would greatly increase travel to this country and thus aid the general prosperity of the State, the Indians, I believe, would be benefited more than the whites.

Under the terms of the bill it will be necessary for the State of Arizona to pay one-half of the cost of this bridge. The Governor of Arizona in his message to the State legislature on January 12, 1925, has recommended that such an appropriation be made. It will also be necessary for the State to improve the approach road from Flagstaff for a distance of about 130 miles, over half of which is within the Navajo Reservation. The road north of the Colorado River to Fredonia will also require State funds for its construction.

The bill, as amended, reads as follows:

A BILL Authorizing the construction of a bridge across the Colorado River near Lee Ferry, Arizona

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, not to exceed the sum of $100,000, to be expended under the direction of the Secretary of the Interior, for the construction of a bridge and approaches thereto across the Colorado River at a site about six miles below Lee Ferry, Arizona, to be available until expended, and to be reimbursable to the United States from any funds now or hereafter placed in the Treasury to the credit of the Indians of the Navajo Indian Reservation, to remain a charge and lien upon the funds of such Indians until paid: *Provided,* That no part of the appropriations herein authorized shall be expended until the Secretary of the Interior shall have obtained from the proper authorities of the State of Arizona satisfactory guaranties of the payment by said State of one-half of the cost of said bridge, and that the proper authorities of said State assume full responsibility for and will at all times maintain and repair said bridge and approaches thereto.

O