

mitted to the Secretary of War for his approval.

"This Act also provides that the bridge, at the option of the corporation building the same, may be built as a drawbridge, with a pivot or other form of draw, or with unbroken continuous spans; provided, that if the same shall be made of unbroken continuous spans, it shall not be of less elevation in any case than fifty (50) feet above extreme high-water mark, nor shall the spans of said bridge be less than three hundred and fifty (350) feet in length. That if a bridge shall be built under this Act, as a drawbridge, the same shall be constructed as a pivot drawbridge, with a draw over the main channel at an accessible and navigable point; and with spans of not less than one hundred and sixty (160) feet in length in the clear on each side of the central or pivot pier of the draw, and the next adjoining spans to the draw shall not be less than two hundred and fifty (250) feet, and said spans shall not be less than thirty (30) above low water mark and not less than ten feet above high water mark."

In selecting a location for the bridge much scope was not allowed to the engineer, as the terms of his instructions required that the bridge be placed within the limits of the corporation of the city of St. Joseph.

These restrictions gave a distance of only about $2\frac{1}{2}$ miles, in which to select the best location for the bridge.

More extensive surveys were, however, required in order to obtain a knowledge of the river, with a view to controlling its movement, and to compel it to follow a permanent course through the bridge.

Within the above described limits, soundings, and borings to rock, were made upon several trial lines, and finally a location was made, on the east side of the city, within the corporation boundary, and at a point where, in the opinion of the chief engineer, a bridge could be constructed more economically than at any other point within the fixed limits, and where it was considered that the natural formation of the river offered greater facilities than at any other point in the neighborhood or within some miles.

The location of the bridge was fixed at this point for the following reasons:

1st. That the channel, both at high or low water, was more narrow than at any other point.

2nd. That the bed rock was found at a less depth than elsewhere; and in very regular form, varying from 45-ft. to 48-ft. below ordinary water.

3rd. That the permanency of the banks was greater than at any other point embraced in that portion of the river surveyed in connection with this work.

4th. That at this point the channel had, for a great many years, followed the same course, hugging the east bank, and unaffected by the many changes taking place in the stretch of the river above.

The width of channel at the place chosen for the bridge, was, at ordinary high water, only 1500 ft, and at ordinary low water, 350 ft.; the depth at low water being from 15-ft. to 20-ft.