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THE MARENT GULCH TRESTLE.

The accompanying engraving represents the trestle on the Northern Pacific Railroad that crosses Marent Gulch, ten miles west of Missoula, Montana. The trestle is for a single track, is 226 feet high, and is supported upon eight piers built upon the Howe truss principle, the spaces between the end piers and the summits of the hills being spanned by trestles.

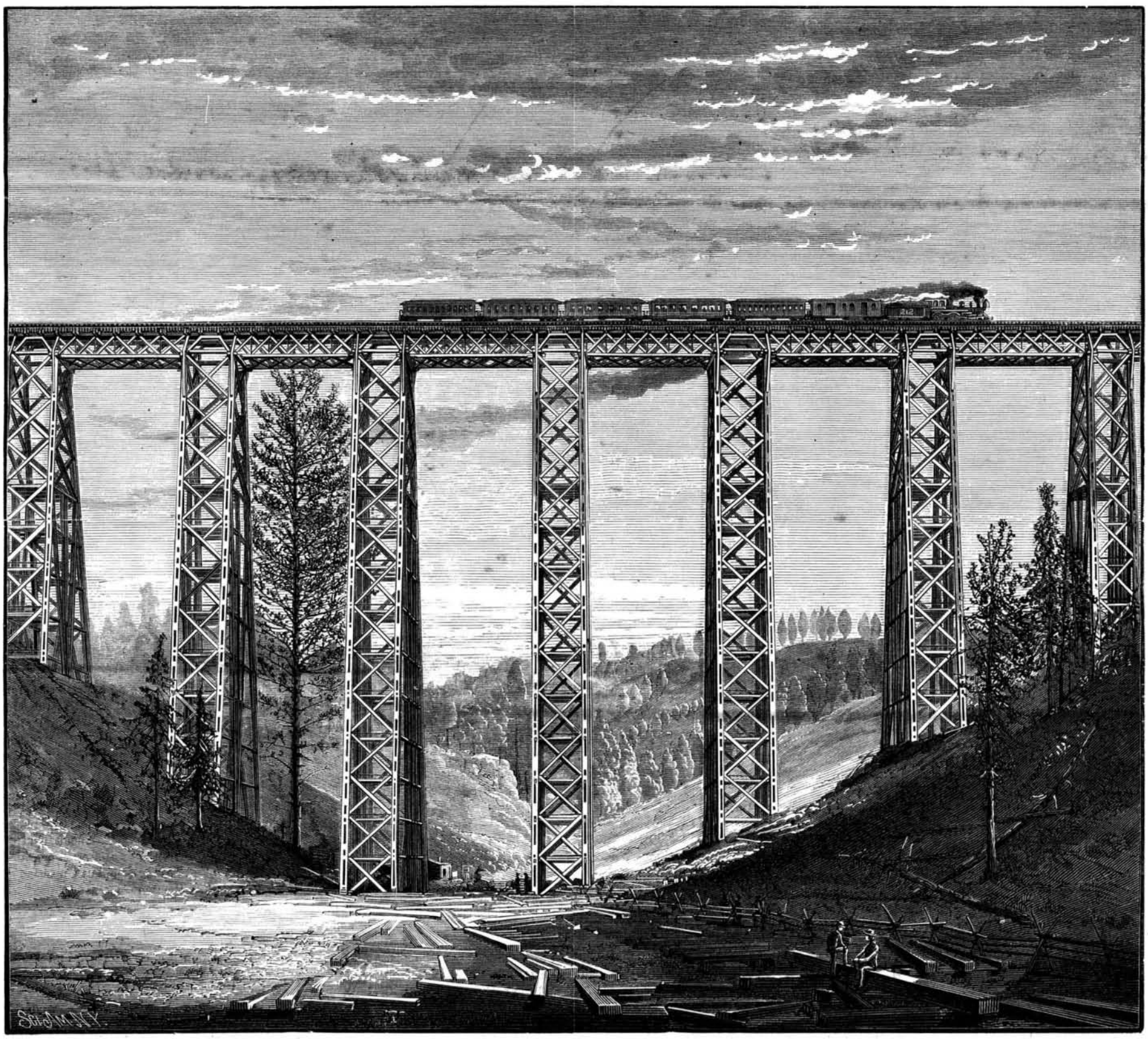
It is built entirely of wood cut from forests in the immediate vicinity, and a good idea can be formed of the magnificent proportions of some of these trees and their special adaptability to the needs of the builders of the trestle by the fine specimen shown in the picture, standing nearly in the center of the gulch, and whose top reached above the rails. The structure was designed to meet the requirements of travel only for the time being, the combustible nature of the material of which it is built prohibiting its permanent use. It was, therefore, so planned that at any future time it could be replaced by one of iron without in any way interfering with the traffic of the road.

No difficulty was experienced in obtaining a foundation for the piers, since one hill was composed of loose and solid rock, and the other of slate rock. The piers are placed 70 feet apart between centers, the distance between the parallel sides, center to center, being 20 feet, and the centers of the tops of the corner posts being 10 feet apart between the sloping sides, which have a batter of 1 in 6, thereby increasing the width of the foundation to about 80 feet, and insuring the stability of the structure. The piers consist principally of four corner posts, each of which is built up of two 10 x 12 inch timbers, placed in a plane parallel with the line of the track and bolted together.

The sloping sides are divided into panels 16 feet in height, the diagonals of which are 6 x 10 inch timbers, tied with iron rods 1½ inches in diameter.

The parallel sides are divided into panels of the same height, but the bracing is more complex. From the bottom of the pier to bottom of the tenth panel extends a center post composed of two 8 x 12 inch timbers bolted together, and from each side of the bottom of this post to each corner of the same panel is a brace of the same size. Parallel with these braces and extending from the foundation to the bottom corners of the seventh panel are others of like dimensions. From the bottom corner of the pier to a point on the last mentioned braces just within the second panel, is a diagonal of two 8 x 10 inch timbers. The panels are formed of 8 x 12 inch pieces whose ends overlap and are bolted to the center post. The three top panels of the parallel sides of the pier are made up of diagonals of two 7 x 7 inch pieces, tied with rods 1¼ inches in diameter, with the exception of the top and next to the top rods, which are 1⅛ and 1⅜ inches, respectively. Horizontally the bottom of the sixth panel is divided into two panels by two sets of 8 x 10 inch timbers connecting the center posts, the diagonals being 8 x 8.

The tops of the piers are connected by truss 10 feet in height and the same in width, the diagonals of which are wood and the tie rods iron. Between the bottom chords and the tops of the piers are transverse beams extending beyond the sides of the piers. The ends of these beams are braced from the sides of the piers, and braces from the ends to the top chords stiffen the truss. The floor beams rest immediately upon the top chords, upon which rest the stringers and above them the ties to which the rails for the single track are spiked. The ends of all the diagonals in the trestle abut against angle blocks. The piers for the iron or permanent trestle will occupy every alternate space between the piers of the present structure. The trestle was designed by C. C. Schneider, C.E., of 35 Wall Street, this city, who also designed the great cantilever bridge at Niagara Falls, which was recently described in this paper, to whose courtesy we are indebted for the loan of drawings from which we obtained the foregoing description.



THE MARENT GULCH TRESTLE ON THE NORTHERN PACIFIC RAILROAD