

North Fork Bridge has a span of 308ft., length of 943ft.....

and profile of embankment and during construction, maintained inspectors on the entire project. After the state turned the completed subgrade over to the Western Pacific, the railroad's gangs took five months to complete the new railroad.

From long experience in the mountainous areas of the state, Western Pacific engineers knew pretty much what to expect in the way of slides after such alignment was completed. In several instances, state engineers had been overly confident and unwisely conservative, with the result that several severe slides occurred. The line is now becoming seasoned with the hope of all movements of Mother Earth passed. One slide, however, forced the moving of the tracks a maximum of 130 ft for nearly a quarter of a mile. Some 60,000 cu yd of material slipped into the subgrade area; a second slide at the same location brought an additional 25,000 cu yd of hillside down upon the new alignment. Western Pacific engineers then found it necessary to take over from the state's engineers to solve this earthmoving problem. The cost to clean up the slide, flatten the slope, and move the track ran to some \$200,000.

Special Foundation Material Prevents Water Damage

Another serious problem developed in the two longest tunnels. A 10-in. concrete floor had been placed on selected granular material. By mistake, decomposed granite was substituted for crushed rock material in floor backfill. Hydraulic action of water appeared to float out the decomposed granite material in this foundation. Failures of the tunnel concrete inverts appeared in many locations. Before serious damage resulted, interrupting operation

of trains, Western Pacific engineers recreated the foundation under train traffic by the use of high-pressure concrete grouting methods. Good results were obtained using a 1-to-1 neat cement mix with a one percent fluid additive of Bentonite, which served to lubricate the grout so it would penetrate all of the crevices which the foundation had leached away and as a cement mass joined the remaining aggregate together. Following the pressure grouting, engineers utilized a diamond drill to check the penetration of the grout and the restoration of the foundation.

Longest culvert in the project is a 126-in. diameter, 4406-ft Armco pipe placed some 300 ft west of Tunnel No. 7. This was assembled in place and coated with an asphaltic material.

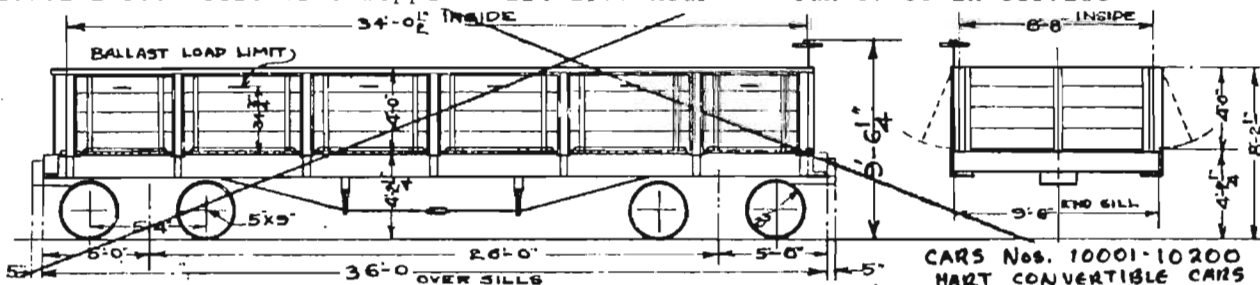
Largest culvert is 174 in. in diameter and 152 ft long. Nine concrete boxes, 14x14-ft, were installed primarily for local roadways and underpasses; however, in several places, they serve as safety "valves" for storm sewers.

Only portion of the old line to remain in use is a connection between Oroville (or an assembly yard known as Zephyr) and the dam site. This will serve the power house after completion of the dam and after the contractor's removal of all haul roads south or west of Zephyr.

The Oroville line change is one of the largest of its kind in years and the first of any major size on the Western Pacific since the construction of the railroad in the early 1900's. Completion of the \$40 million State of California financed project brought to a close some thirteen years of locating, surveying, planning, negotiating, and constructing. ■

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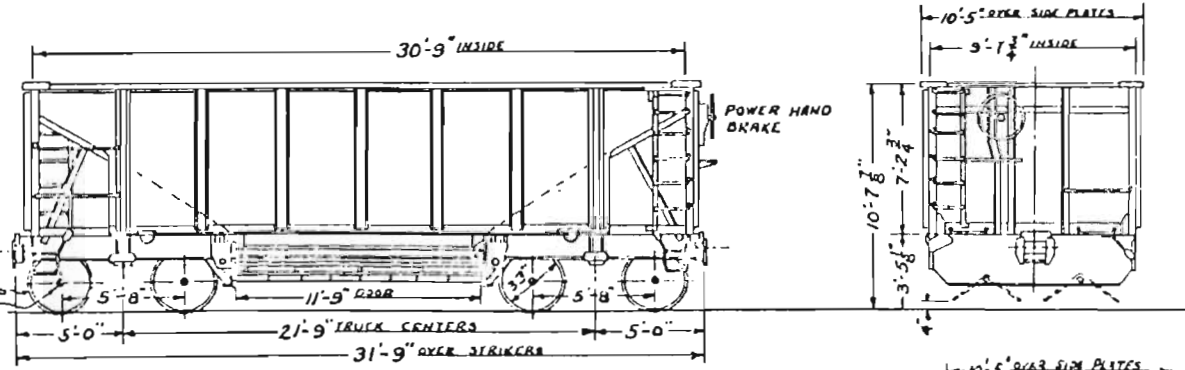
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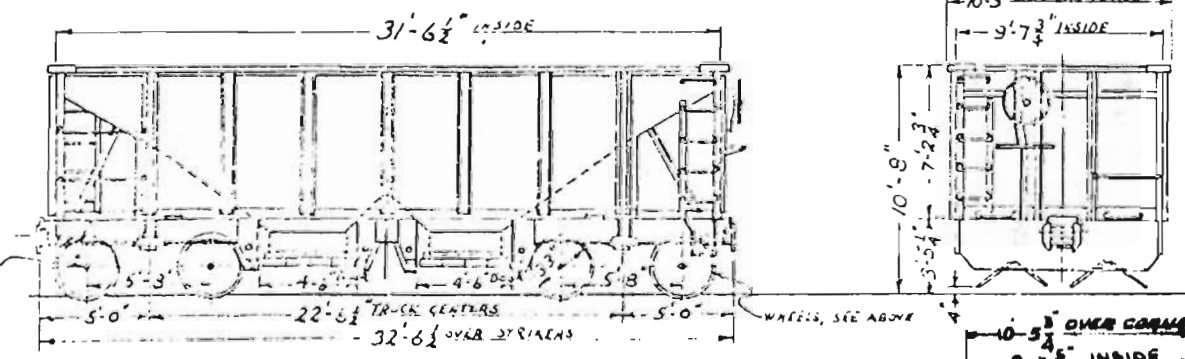
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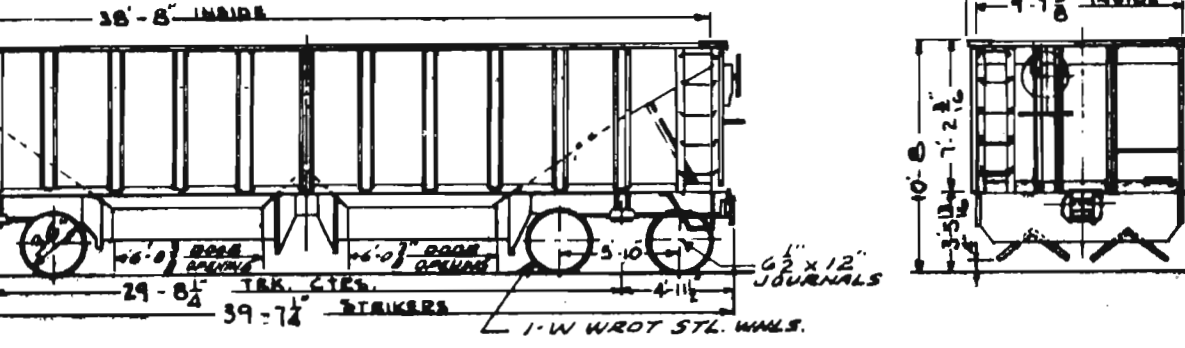
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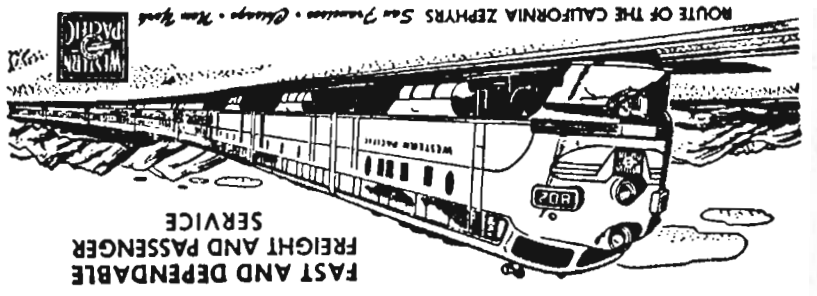
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