

PUGET SOUND & WILLAPA HARBOR RAILWAY

VALUATION SECTION WASHINGTON 1.

The Puget Sound and Willapa Harbor Railway extends about 66 miles in a general westerly direction from a connection with the C. M. & St. P. Railway Company's Grays Harbor line at Maytown, Washington, to Raymond, Washington, which is situated on the tide flats along the Willapa River. The line passes through the important towns of Centralia and Chehalis and serves the rich timber country along the Chehalis and Willapa Rivers.

Records show that a large amount of reconnoissance and survey work was required to produce the line as adopted and constructed. An attempt was made to connect with the C. M. & St. P. Ry. at Helsing Junction, but this line did not develop favorably when surveyed. Seven distinct reconnoissance surveys were made, the first in September 1910, and the last in June 1913, a total of 161 miles being covered. About 120 miles of preliminary survey and 100 miles of location survey were made or about two miles of preliminary, and one and one-half miles of location for each mile of adopted line. The preliminary and location surveys were made between March and August 1913.

Construction prior to track laying was carried on under the supervision of a Chief Engineer with eight Resident Engineers and Parties. After track laying the engineering force was materially reduced, but considerable construction was carried on in the way of widening cuts and embankments, building depots, telephone lines, fence, etc. Construction was begun in August, 1913, and completed for track laying in July, 1915.

Contracts for clearing, grubbing, grading, bridge and culvert work were let to three contractors; Guthrie McDougall & Company having the work on Miles One to Forty-two inclusive, and Miles Sixty-five and Sixty-six; Hans Pederson, Miles Forty-three to Fifty-four inclusive, and the Willapa Construction Company, Miles Fifty-three to Sixty-four inclusive.

The line swings south from Maytown and following no particular drainage travels almost due south over the slightly rolling country on light gradients and easy curvature to Chehalis. Here it swings to the west and the Chehalis River Valley is entered and is from here followed with frequent crossings of tributary streams to Doty, in Mile Thirty-seven. The gradients and curvature for this portion are light, maximum curvature being 6 degrees and gradient 9/10 of 1 per cent. The Elk Creek Valley is entered at Doty and from there followed with frequent side drainage and main stream crossings to a point $1\frac{1}{2}$ miles west of Bedford, where the line swings into the Beaver Creek drainage, which is followed to Sudbury, the summit of the line, being about 400 feet higher than Maytown, point of beginning, and nearly 600 feet higher than Raymond, the terminus.

The curvature on this last named portion is moderate, the maximum being 8 degrees, and the maximum gradient 1 per cent.

Leaving Sudbury a rapid descent is made on a $2\frac{1}{2}$ per cent gradient and with sharp curvature along the steep slopes of East Creek to P. & E. Junction, where Mill Creek Valley is reached and from there followed with several crossings to a point about a mile and a quarter east of Moose. Here the Willapa River Valley is reached and is from here followed until the line reaches the tide flats in Mile Sixty-three. The gradients and curvature on this last portion are moderate.

The line between P. & E. Junction and East Raymond was built by the Pacific & Eastern Railway Company and was acquired by the P. S. & W. H. Company.

Clearing was fairly heavy on the first five miles west from Maytown. From Mile Five to Mile Forty-two, clearing was generally light, although an occasional piece of heavily timbered land was encountered. From Mile Forty-two to Raymond clearing was generally heavy.

The grading work from Maytown to Chehalis was fairly light, running about 13,000 cubic yards per mile, largely classified. About four miles of this section was built on an old U. P. grade, which had been previously constructed and required considerable regrading and dressing up. The work from Chehalis west to Sudbury was fairly heavy side hill development.

The old U. P. grade was used in the construction of about eight miles of this portion, between Miles Fourteen and Twenty-one. The heaviest work occurred in Miles Fifty-three and Fifty-four, near Sudbury, on which about 155,000 and 135,000 cubic yards were removed respectively. Miles Sixteen, Seventeen, Twenty-four, Twenty-six, Twenty-seven,

and Twenty-nine, were quite heavy, also averaging about 55,000 cubic yards per mile. Between Sudbury and P. & E. Junction, the work consists of heavy side hill development with several high trestle bridges. Along Mill Creek the old P. & E. grade is moderately light, and between East Raymond and the terminus the work consists of fairly heavy grading and a large amount of bridge construction. The average for the entire line is about 35,000 cubic yards per mile, of which a large percentage is classified.

Several channel changes were made on the Elk, Beaver, and Mill Creeks to eliminate bridge work.

A steam shovel was used on the east end in Miles One to Five and on the two heaviest cuts at the end of Mile Ten, and beginning of Mile Eleven.

Teams were used for the light grade construction and to redress the old U. P. grade between Miles Five and Twenty-five, with the exception that the rock cuts were let to station men, and a drag line scraper was used on some of the side borrow work. A steam shovel was used to build the grade from West Adna, Mile Twenty-five, to the South Fork crossing in Mile Twenty-eight. A drag line scraper did the grading work on Miles Twenty-nine to Thirty-one. A steam shovel was used for the heavy cuts in Mile Thirty-three, and teams were used on the comparatively light work between there and the Chehalis River crossing, just west of Doty in Mile Thirty-nine. The work up the Elk and Beaver Creek Valleys was a large percent solid rock and was done by station men.

The summit cut at Sudbury was started by station men, but their progress was slow on account of wet material and a steam shovel was installed. This cut is very wet and has caused considerable trouble both during the early construction period and since track has been laid. It has been widened and the material train hauled for bridge filling and bank widening. The work done on the west slope along East Creek was the heaviest work on the line and was done by station men.

The P. & E. roadbed, purchased by the P. S. & W. H. Co. had been constructed previous to the P. S. & W. H. work, three miles being built in 1907, two in 1909, $\frac{1}{2}$ mile in 1910, and three miles in 1913. A large amount of material has been train hauled to this portion for raising and widening embankments and filling bridges since the P. S. & W. H. have started operation. Several channel changes were built to eliminate bridges built by the P. & E. Company.

The line from East Raymond to Raymond was built by the P. S. & W. H. Company, a steam shovel being used for the heavy cut in Mile Sixty-four, and station men in the cut in Mile Sixty-six.

The bridge work was unusually heavy due to the frequent stream crossings and the pile trestle work on the tide flats in Raymond. The important stream crossings were the Skookum Chuck River bridge in Mile Fourteen; the Neuwaukum River crossing in Mile Twenty; the Chehalis River crossings in Miles Twenty-eight, Thirty-four and Thirty-seven; the Elk Creek crossing in Mile Forty-three; the Mill Creek crossings in Miles Fifty-nine and Sixty; the Willapa River crossing in Mile Sixty-three, and the Ellis Lagoon crossing in Mile Sixty-six. These bridges involved the use of timber Howe truss spans varying in length from 150 feet to 72 feet with pile and framed piers and approaches. Several hog rod trusses were used along the Mill Creek Valley, miles Fifty-five to Fifty-nine, for less important stream crossings.

Five high trestles were built between Sudbury and P. & E. Junction, involving the use of about 80,000 F.B.M. and 7,000 lineal feet of piling. The pile trestle work for the main and yard tracks at Raymond involved the use of about 1,000,000 F.B.M. and about 80,000 lineal feet of piling. The ordinary pile and framed trestles were used for the less important water ways, cattle passes, etc.

The material for the trusses was purchased near Mumby, and shipped via the C. M. & St. P. to Maytown where a framing yard was established and the timber cut and framed ready for erection. After the framing the truss material was taken to the sites by work train, the falsework on the spans having been built of sufficient strength to support traffic during track laying. A large part of the piling was purchased locally, and the squared timber from the closest local mills.

The pile bridges, falsework and foundation for the truss spans were built by contract. The spans were framed and erected by Railway Company forces.

The culverts were built principally of timber, those on the east 40 miles being of squared timber and those on the west end of hewn logs.

Track was laid from Maytown to Doty in the summer and fall of 1914, and was finished into Raymond in the summer of 1915. New 65# rail was laid in the main track and lighter material in the sidings. The work was performed with a Roberts Brothers machine. A material yard was established at Maytown for the first few miles of track material, but after track reached Chehalis, the yard was established at that point.

Ballast was obtained from the Essex Pit in Mile Six.

Frequent crossings with other lines of railroad necessitated special frogs, and in the cases of main line crossings interlocking plants. Interlockers were established at the O.W. R. & N. and N. P. crossings in Mile Thirteen, and at the N. P. crossings in Miles Twenty and Thirty-seven.

Material for right of way fence, telegraph lines, and buildings, was distributed by work train after the track was laid. Right of Way fence with the necessary crossing facilities was built except in inaccessible and isolated places.

Framed passenger depots and separate buildings for freight depots were built at Centralia, Chehalis and Raymond, the freight depot at the latter point having rooms for the Superintendent's offices. These buildings at the two former places were set on concrete foundations, but at Raymond they rest on piles. Combination freight and passenger depots were built at Dryad and Doty, and shelter sheds at the less important sidings. Water stations were established at Essex, Chehalis, Dryad, Bedford, Firdale and Raymond. A two stall engine house and a Wye were built at Raymond. Fuel oil tanks have just recently been built at Maytown and Raymond. A 75 foot single track transfer bridge has been built at Raymond and barge service is maintained between Raymond and South Bend.

The usual branch line equipment is used in the operation of the line.

Until December 31st, 1918, the Puget Sound & Willapa Harbor Railway was operated as a separate organization with the C.M. & St. P. Ry. Co. owning all of the outstanding stock. On that date the railway, property and franchises of the Puget Sound & Willapa Harbor Railway Company were conveyed to the Chicago, Milwaukee & St. Paul Co. and it is now operated as a part of the Coast Division.