

Aug 7

Return to
General Files

REPORT
ON
COLUMBIA HIGHWAY
HOOD RIVER CO.
1914

J.A. Elliott

REPORT
ON
COLUMBIA HIGHWAY
HOOD RIVER COUNTY
1914

J.A.Elliott.

October 2, 1913 the County Court of Hood River County asked for a survey to be made of that portion of the Columbia Highway passing through Hood River County. The general route for this survey was up the Columbia River through the Cascade Mountains and therefore over a rough and broken country. The beginning point was the Multnomah County line, this being approximately the summit of the Cascade Range. In the sixties the old Military Road was built through here but has been abandoned for many years. Traces and portions of this road can still be seen in many places through the county. When the Oregon Railroad and Navigation Company built down the river, they tore out or rendered impassable many sections of this road without providing a new one. The high water of 1894 washed out the old road and also the track below Cascade Locks. In rebuilding the railroad all available ground at the foot of the hills was utilized leaving no room for the wagon road from a point one mile west of Cascade Locks.

On October 11, 1913 the survey actually started, continuing until February 5th when the field work was completed. The location begins at the Multnomah County line about two and one half miles west of Cascade Locks and extends up the river for a distance of twenty two miles to the town of Hood River.

This country near the county line, especially the railroad cut just east, is moving. The topography is very broken, being composed of many slides and sinks.

Many evidences of the movement of this country can be

seen. Trees are leaning in all directions and in many places are growing in a curve, the top always pointing up while the base is sliding out tending to fall the trees. Figure 1 is a picture of some of these trees. In the movement, the moun-

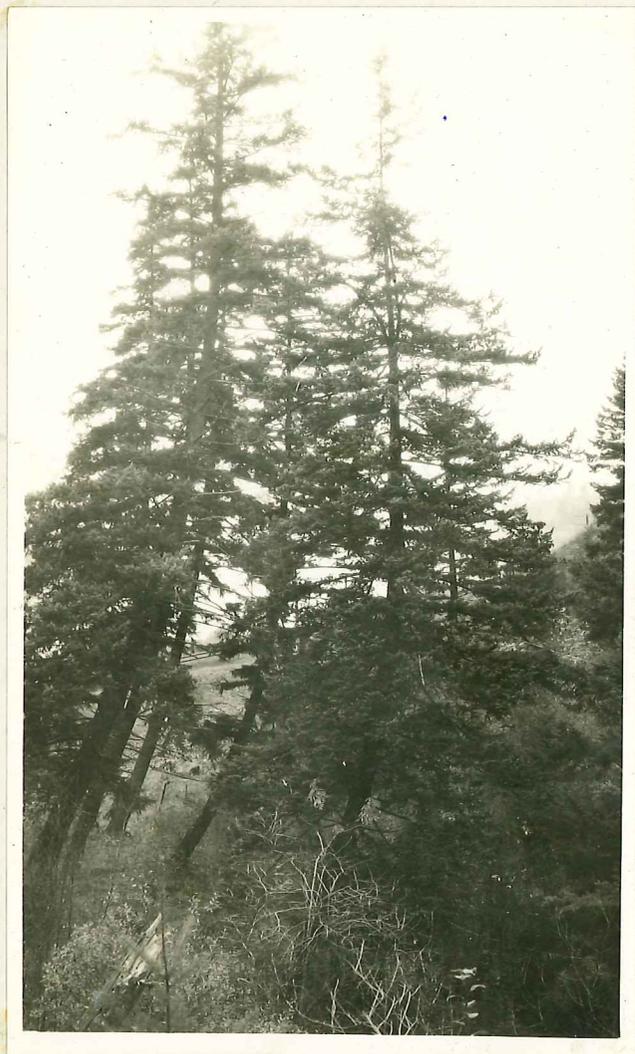


Fig. 1. Showing Effect of Slide Upon Growth of Trees.

tain side has broken away and slidden down, and numerous lakes have formed between the slide and the river. One of these lakes on the Oregon side formed about 400 feet back from the railroad track and for years the railroad company was troubled by the settlement of its roadbed. Believing the water from this lake to be seeping down to the soapstone layer beneath and washing out the soil, thereby causing the ground above to settle, the railroad company put in a cut, to drain this lake. Since doing this, the trouble has been consid-

erably less.

To avoid these slides, was the first problem in locating the new highway. It was found the worst part of this to be missed by starting back in Multnomah County and climbing up a draw a

quarter of a mile back from the river, and descending in another draw back of the slide.

One mile west of Cascade Locks the location connects with the present county road and then follows it in a general direction for about four miles, mostly over level country, to Fairley's place. At Hermann Creek, 1.5 miles east of Cascade Locks, the present road crosses the railroad on grade and recrosses by an under-crossing. Both these are eliminated on the location by paralleling the railroad on the south side, which also gives additional height for a bridge. This will avoid the trouble experienced by the County each spring at time of high water in maintaining the present creek crossing and grade approach in the overflow area.

At Fairley's place, the present road swings to the south and goes over what is known as the Eden Hill, a hill about 600 feet in elevation, between Cascade Locks and Wyeth. The grade on this for some distance is as high as 15 %. The new location swings around the face of this hill, above the railroad track, which presents a good supporting hillside all the way with very little of the maximum grade, that is, 5 %. At Wyeth the location joins the present road and follows it a distance of about half a mile, the end of the road.

At Wyeth considerable trouble is given the railroad company every winter by Gorton Creek in the way of flooding the track. After trying piling, bulkheads and channel changes with no favorable results, they now let the creek flood and take care of the track the best way possible. The upper part of this creek flows through a box canyon, being very narrow

and the sudden rise in the creek is undoubtedly due to the log jams in this canyon, which, breaking, bring down logs and boulders. The water rolls rocks 6 inches in diameter along like grains of sand in an ordinary creek. To provide clearance and avoid any danger from these freshets, the location was swung up the creek where the banks are good and it is possible to put in a span.

From Wyeth to Viento Hill, one mile west of Viento, no wagon road exists. Shell Rock Mountain, Lindsey and Cabin Creek, which will be mentioned later in more detail, are parts of this section which is four and a quarter miles long. Here it was necessary to follow very close to the rail road at several points. The line was located with a maximum clearance of twelve feet between the center line of the Oregon-Washington Railroad and Navigation Company's track and the edge, slope or wall of the highway.

From Viento to Mitchell Point, the general course of the present road is followed, being in and out around many rock points projecting to the river from the mountains above. At Mitchell Point the present road in a distance of half a mile, climbs to an elevation of 400 feet, crossing through the saddle of the Point and descending in the same distance on the east side. To cross in the same place on a five per cent grade would require one and a half miles of line through a rough and broken country to reach the saddle, and then a mile and a half of construction down on the other side, most of which would be across the face of a shellrock slide.

The location leaves the old road near the foot of the hill, climbs to an elevation of 185 feet and passes along the

face of the point.

From Mitchell Point the old road runs along the bottom, making a grade crossing to the north side of the railroad and then recrossing by an overhead trestle to the south side of the track at Ruthton. From Ruthton to the top of Ruthton Hill the present road has some very heavy grades, climbing 225 feet in about a third of a mile.

The Columbia Highway from Mitchell Point follows the old road for half a mile, then swings south, thus eliminating both railroad crossings, and climbing on an average three per cent grade, joins the present road at the top of Ruthton Hill. From here into Hood River the highway follows in general the old road, with changes in alignment where necessary.

From the Multnomah County line to Hood River on the route of the present road, three bad hills are ascended on grades as high as fifteen per cent. The Columbia Highway will eliminate two of these and climb the third, Ruthton Hill, on an average three per cent grade. Two grade crossings, one overhead and one under-crossing of the railroad are avoided.

Several cliffs with a shellrock slide below are encountered along the route. Where these are not high and it is impracticable or impossible to build below, the line has been run near the foot of the cliff, thus avoiding danger from future slides and where the amount of material ~~of material~~ to be moved for a roadbed is a minimum.

The material to be moved is mostly rock in the form of shell, loose or solid. Where earth exists it is generally mixed with shellrock or boulders. The formation changes very rapidly, often two rock cuts being joined by a fine silt cut. The loose

material is usually shell rock and loose rock which, broken from the cliffs several hundred feet above by weathering, has been rolling down for ages until it has acquired a 1 1-4 to 1 slope. On some of these slides the interstices have become filled with earthy material and in this brush and timber have grown; on others the rock is clean and no vegetation exists. Although the original slope of these earth filled slides appears to be 1 1-4 to 1, they can be excavated without danger of future slides to a slope of 1 to 1 as is shown by some of the old railroad cuts.

In several places the railroad follows along the toe of the slides with the river on the north side. This made it necessary to locate the Columbia Highway between the railroad and the mountain.. By contract with the railroad company, entered into on August 17, 1914, we are allowed to construct on their right-of-way with clearance of twenty-five feet from the center of the track to the slope, wall or edge of the road bed, in some places sixteen feet and in others twelve feet. These low clearance figures necessitate considerable dry wall both as a retaining wall to hold the road bed and a face wall to hold the hillside above.

At Mitchell Point the location follows around the face of the point, undercutting the cliff, tunneling two small ribs then crossing by concrete viaduct a slide into a tunnel 435 feet long. Providing this rock proves suitable about one half of this tunnel will be open on the side, the openings being large arch windows with heavy natural columns between and a four foot wall in front. This, when completed, will make one of the rare pieces of road construction. Figures 2, 3 and 4 show the proposed line of construction around this point.



Fig. 2 Showing General View Of Mitchell Point from the West and Location of Highway.

On the point above Ruthton the location skirts around the top edge of the rock 200 feet above the railroad track, from which a very fine view of the river both up and down stream is obtainable.

Shellrock Mountain, as the name implies, is a mountain of shellrock extending in a uniform slope for about 1500 feet above the river and being 4000 feet around on the highway. The O-W.R.R. & N. Co. track is located at the foot of this mountain. At the west end the railroad company operated a steam



Fig. 3 Showing Cliff to be Under Cut and Entrance to Tunnel No.1.

shovel for some time excavating the toe. Here there is ample clearance for both railroad and highway. In 1400 feet this clearance decreases to that specified by contract, namely, 16 feet from center line of railroad to slope or wall of the highway. It was for building a road around this mountain that Mr.

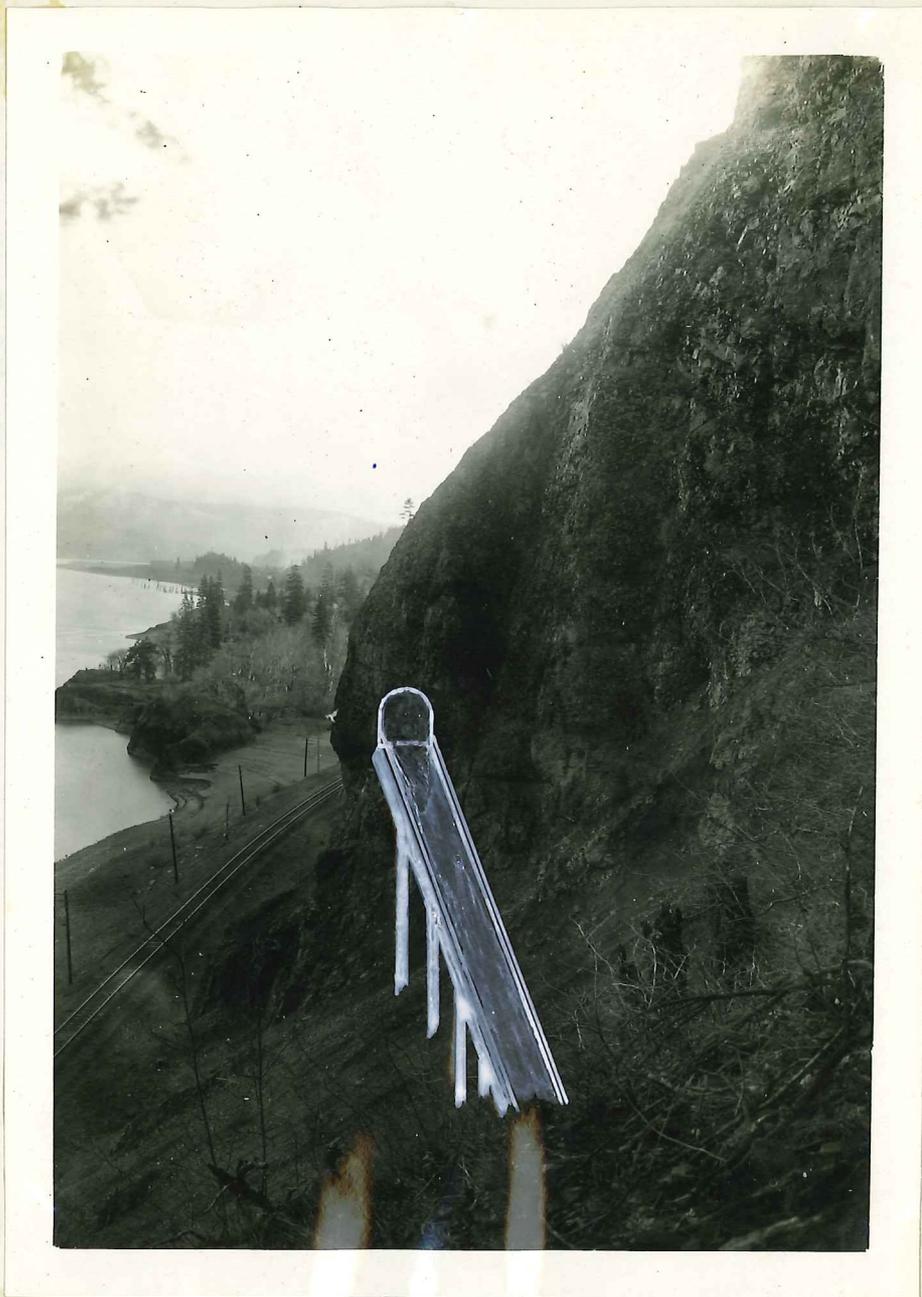


Fig. 4 Showing Viaduct and Entrance to Tunnel No.3.
Taken over site of tunnel No.2.

S.Benson gave to the county \$10000.00. This money was expended for work by convicts. The class of work was of the poorest type giving no evidence of any engineering except a few stakes and hubs. The roadbed was built only 14 feet wide in places with no definite width prevailing. The maximum grade was 1% and the maximum curve a 50-foot radius with outside curves as sharp

as inside. A borrow was made in one place to make a fill instead of widening the 14 foot road bed about 100 feet distant. The wall construction was a poor handplaced rip rap. No hammers were used and the wall was layed as loose as possible with the apparent idea of making each rock go as far as it would. Figure 5 shows the end construction of this wall , and figure 6 how the foundation for a twenty foot wall was prepared. A section of this

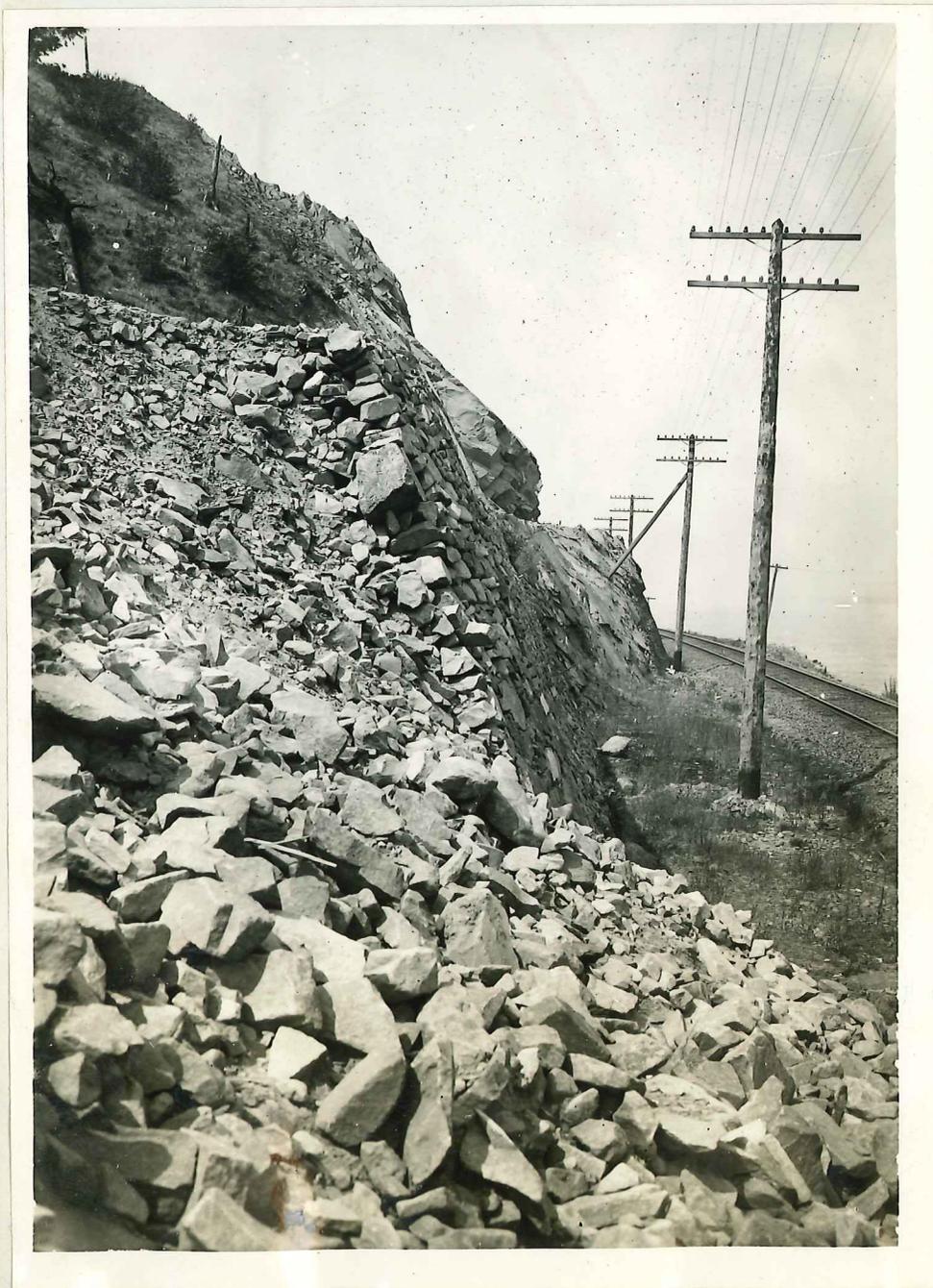


Fig. 5 Showing Type of Construction of Convict Wall.



Fig. 6 Showing Foundation for a 20-foot Convict Wall.

fell six months after being built and before the road received any traffic. Figure 7 is a view of the failure. Many places an excess of wall was built over that which was necessary for safer construction. Figure 8 shows cross sections of the old and present roadbed as being built.



Fig. 7 Showing Section of Convict Wall After Failure.

The convict work besides being poor in quality increases the cost of the present construction materially. New walls have to be built where the old ones stand necessitating the removal of the old one and fill behind it before the new wall can be started. In some places, particularly on the west end of the convict road, the tearing down of the old wall has been avoided by building toe walls outside the old for the slope to catch on. This feature is shown in figure 8 also. Figure 9 shows the West end of the convict work which will be rebuilt as shown by figure 8 .

At Lindsey the location parallels the main line of the O.W.R.R.& N. in the same cut. In order to get the required



Fig. 9. Showing West End of Convict Work.

clearance it was necessary for the railroad company to move its tracks north, which it agreed to do. The change is about 1800 feet long and with a maximum movement of twenty feet. This necessitated a fill estimated at 6500 yards for the new railroad bed. The county agreed to make this fill and pay one half the cost of shifting the ballast and track under the contract previously mentioned.

From Station 700 to 725 an old slide is crossed which has grown up with timber. This is the Cabin Creek section. Here the railroad clearance as set by contract is twelve feet. The

railroad company has excavated the toe of this slide and the building of the highway between the railroad and the mountain presents a piece of heavy wall construction. In order to avoid dangerously high walls, that is anything over thirty feet, a construction of a retaining wall for the roadbed and a face wall for the mountain has been adopted.

Figure 10 is a table of estimated quantities to be handled for each mile on the survey from the Multnomah County line to Hood River, twenty-two miles.

In the interest of this road Mr. S. Renson made a written guarantee to the people of Hood River County that if they would vote \$75000.00, that being the State Highway Engineer's estimate, he would pay all in excess of the \$75000.00 necessary to make a passable road from the county line to Hood River, that is, 1.4 miles from the county line east and about 4 miles between Wyeth and Viento, and further, would pay the cost of the location survey. On July 15, by a vote of 1502 to 425 the county voted \$75000.00 in bonds to build these sections. August 17th, bids for the bonds were opened and sold to Mr. S. Benson. August 26th, bids for the construction of these sections were opened and the contract awarded to The Newport Land & Construction Co. of Hermiston, Oregon.

Work was begun on September 18th. On November 1st, practically all the clearing is completed and the grading well started. The 92-foot rock cut at Benson Point has been shot. Figure 11 shows the Point before and figure 12 the Point after shooting. Some new wall has been laid replacing the old convict wall. Figure 13 shows a section of this completed wall with the old wall just behind. Figure 14 shows the end construction of this wall. Compare these pictures with those of the old wall figures 5, 6 and 7.

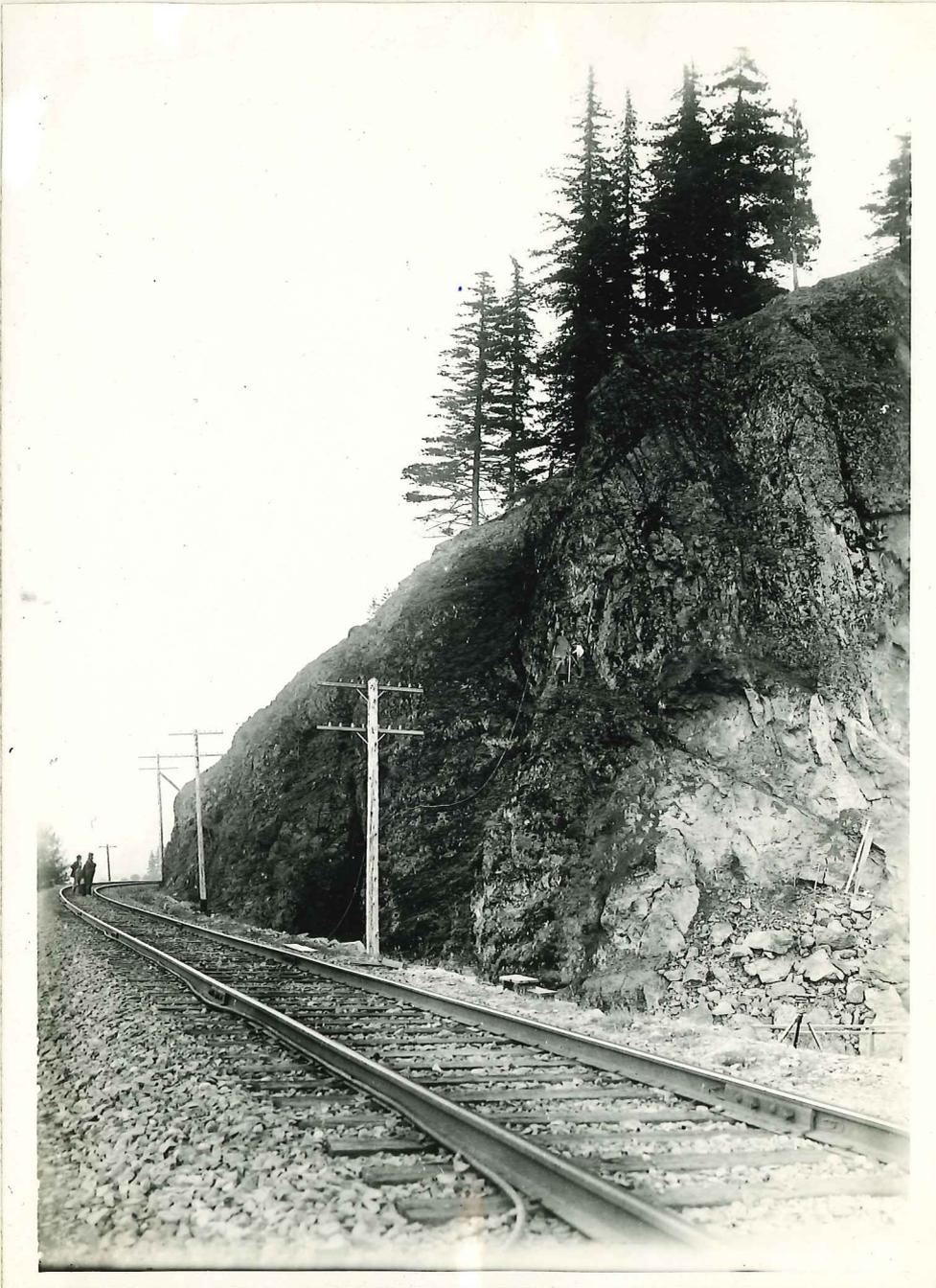


Fig. // Showing Benson Point, the Site of the 92 Foot Rock Cut.



Fig. 12. Showing Benson Point After Shooting 92 Foot Rock Cut.

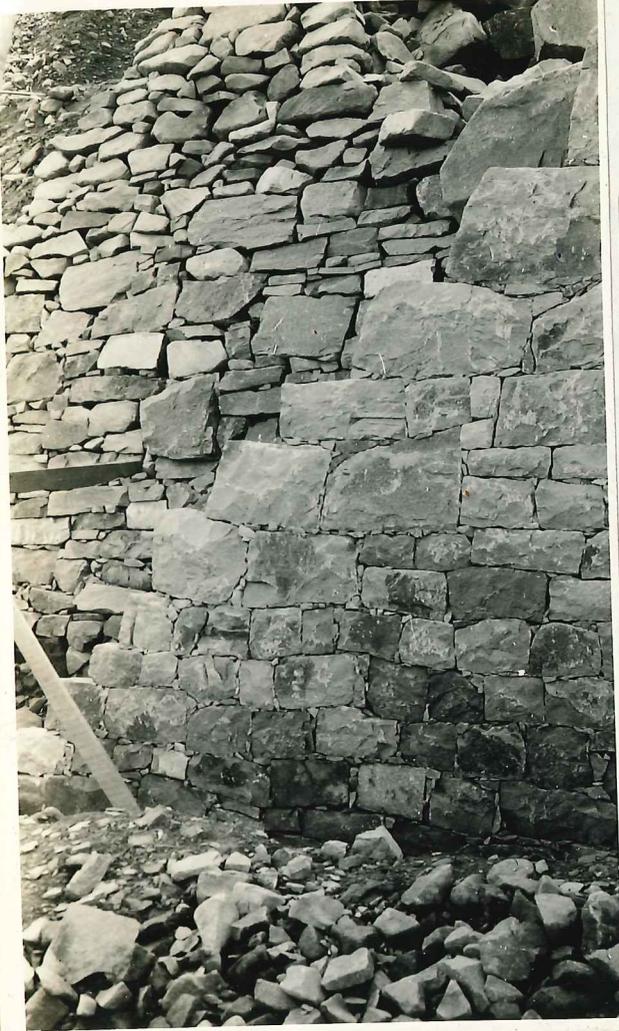


Fig. 13 Showing New Wall Being Built and the Old Wall Behind.

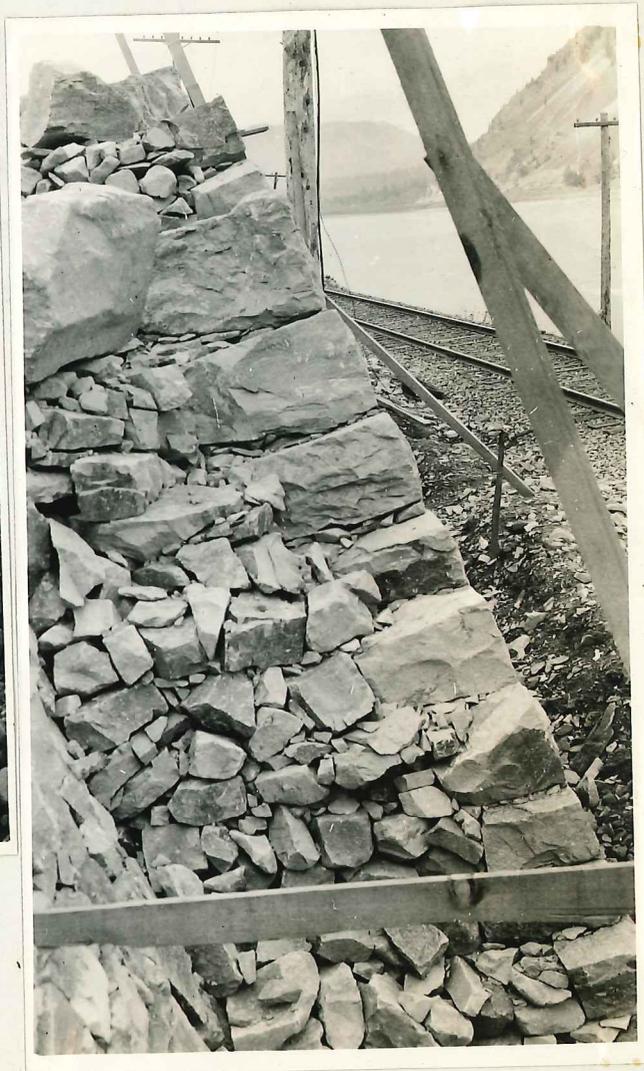


Fig. 14 Showing Type of Construction of the New Wall.

The fill for the railroad change at Lindsey is practically completed. Figure 15 shows this fill nearing completion. This fill has been made with dump carts loaded by men shoveling.

Figure 16 shows the 82-foot cut from which the material was taken.

Figure 17 is a rock cut 48 feet deep on one side and a fill 40 feet high on the other . This picture was taken two days after the cut was shot. Figure 18 is a view taken up the grade during construction and figure 19 is a section of roadbed practically finished. Figure 20 is a piece of road bed just west of Shellrock Mountain. The placing of face walls in the shell rock slides has been very successful. By building the wall up close behind the excavation no large amount of material has come down. A very little obstruction is necessary to hold this shell rock up as the action of the shell rock slide is from top down - a rolling action- as differing from earth which moves in a mass from the bottom.

FIG. 10 ESTIMATE OF QUANTITIES PER MILE OF SURVEY.

Mile	Clearing Acres	Grubbing Acres	GRADING CUBIC YARDS						Borrow	CULVERES LIN.FT.					Span	Concrete Girder lin ft	Tunnels lin.ft.	Viaduct lin.ft.	Dry Wall Sq.Yds.
			Earth	Loose Rock	Shell Rock	Solid Rock	Hard pan	Overhaul		Pipe			Concrete						
										12"	18"	24"	2x2	2x4					
1	7.21	3.24	8767	4942	5310	1205	2867	14563		145	223				6x20				
2	7.17	3.23	11763	9216		114		13805		104	105	44							
3	8.0	0.36	7768	140				400		32		25	32						
4	1.76	0/25	4297			288		5200						3x25					
5	4.46	0.71	11105	1242				11675							100				
6	5.97	2.24	4774	1172				21785		44	125								
7	7.33	3.53	7524	4624				5020		62			134						
8	7.27	3.42	4223	4054	2350			2190		181	176		68						
9	6.85	3.15	4721	6561	1756					96	58								
10	3.89	1.76	3510					1370		116	68			5x12	100				
11		2.11	5203	479	345			600		28	44								
12	3.14	1.45	7959	3506				8747		98				3x12					784
13	1/41	0.59	23099		19			47755			41	90			2-30'				
14	4.72	2.12	4591	1950	17949			2405		32				4x6					860
15	6.01	2.92	4069	2007	2123			13410		140	40	50		4x12					
16	6.58	2.87	4517	2942	5377			5670		211	70								
17	7.31	3.29	9586					4790		100	46		40						
18	3.05	1.36	11809	3979	302			20525	1050	199	50	29				28	583	205	110
19	7.34	3.42	9684	61	148			16785	1700	109	123								
20	7.29	3.20	6368	7774				8330	1000	226	48	88							
21	7.13	3.15	4415	3287				8830	8900	55	88			4x20					
22	5.97	2.73	6968					28960		38									
Totals	112.66	51.10	166720	57936	35679	106861	2867	242615	12650	1978	1305	364	234	40		28	583	205	1754



Fig. 15 Railroad Fill at Lindsey Nearing Completion.



Fig. 17 48-foot Rock Cut and 40-foot Fill.

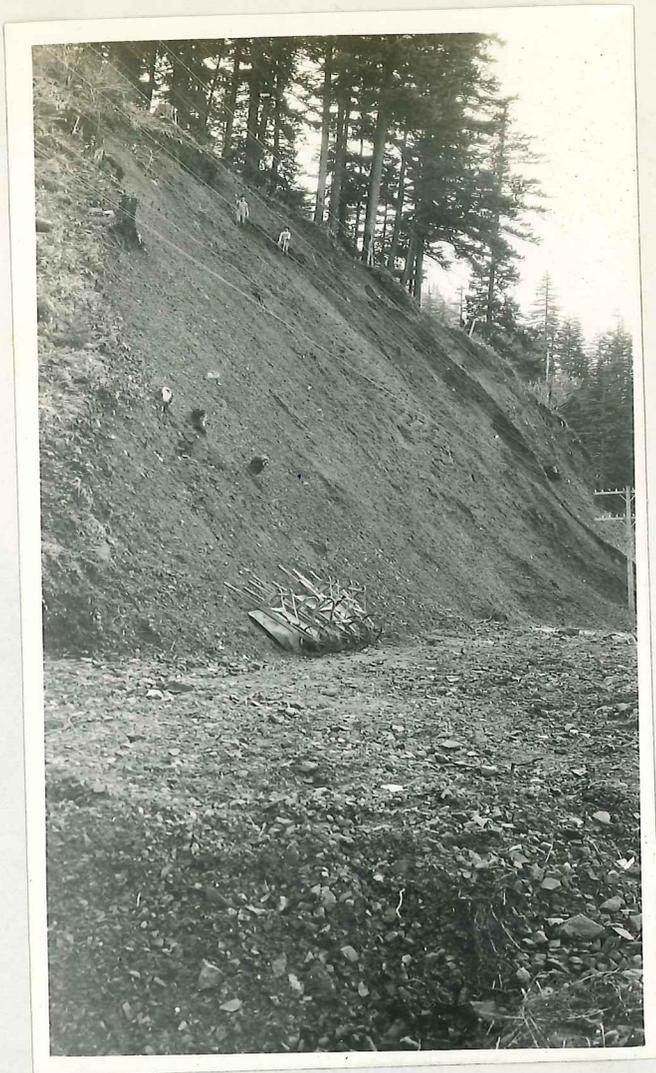


Fig. 16 82½ foot cut for railroad fill and roadbed.



Fig. 17 Section of roadbed practically completed.



Fig. 18 Section of the Highway Under Construction.



Fig. 70 Section of Highway West of Shellrock.



Fig. 71 Sidehill after clearing Fig. 77 Station work Sta. 90.



Clearing on Section 1.



Deadman Creek Falls over which
the Highway Crosses.



Views from the Columbia Highway, Hood River County.



