

THE SURVEY CREW EXPERIENCE – PART I OREGON AND WASHINGTON, 1959-1969

FROM AN INTERVIEW WITH ED BUSCH, SEPTEMBER 2010

Construction of a road begins with a survey, and for many people, a career in road construction has often begun with working on a survey team.



Like many other people when **Ed Busch** went to work for the Bureau of Public Roads (BPR), he didn't have a highway-related career path in mind. He said he hadn't planned to go to work "on a survey crew, but I just fell into it." That was the summer of 1959, and he said it turned out to be "something I liked....I probably worked six months that first (year) when I first started working."

When he came back to work the next spring, he was assigned to a crew led by **Elmer Barkus** and sent to a project in southwestern Washington. "We built a road up to the base of Mt. St. Helens, and a parking lot. Eventually, they were talking about putting a ski lodge up there," he said. He remembers **Harry Truman**, the long-term resident of Spirit Lake Lodge who refused to leave when it became clear that the long-dormant

volcano was coming back to life. "He had a restaurant there," Ed recalled, "and I used to eat breakfast in his lodge; talked to him regularly.

"Years later when it erupted, all that work just disappeared. It just blew up." He remembered the boats, the lodge, and the other buildings on beautiful Spirit Lake: "That of course is under a couple of hundred feet of water now."

During the 1960's he was sent down to southwestern Oregon "on the Umpqua Highway and worked for **Lyle Mulvanny**." While surveying areas around Crater Lake, they began to find remnants of another famous volcanic eruption. When Mount Mazama erupted 7,700 years ago, "this pumice was blown into the air....We were doing construction through one mountain hillside," he recalled, and found pumice that "was so thick

Top: A construction photo of Crater Lake and Wizard Island from a 1935-36 project shows one of few points on Rim Road where motorists can take in the lake directly ahead of the car rather than through the side window. Final Construction Report PEC-7-C1, Unit 2 Grading. WFLHD Archives.

and there was so much of it we had 40 foot cuts of pumice....There (were) holes in the ground where the pumice was evidently so hot that it burned the trees completely out.”

The holes created by those burned-out trees, often as big as “four feet in diameter,” put unacceptable hazards in the paths of the crew. “You’d be walking along and a hole would open up,” he said, “so we had to spend about two days looking for these holes so someone wouldn’t fall in.” Eventually, Ed remembered, when “we took the material out of the cuts for the fill we found pure grade charcoal where the trees had been burnt. You could probably use it for barbecuing.”



Widening a pumice cut on Rim Road: A 75-HP caterpillar and LaTourneau at work near Station 920 during a 1935-36 construction project. Final Construction Report on Rim Road, PEC-7-C1, Unit 1 Grading & PEC-7-B, 7-C, Widening. WFLHD Archives.

The cuts they made in that area caused another set of problems as well. “The hillsides (were) washing out because we cut past the lava flows, down...ten feet into lava flows. So they brought a guy in with seismic equipment.” Ed was sent along to assist him and, he recalled “we’d go out and set up recorder phones on the construction line. (Then) we’d set up dynamite charges and it would record where the lava flow was.” The data was sent back to the Design staff in Portland and they used it to determine the road grade “so we wouldn’t go so far down into the lava that it would cause a wash-out.”

There were other unique challenges in those days, challenges to which modern technology has

since found convenient solutions. “We didn’t have any kind of Electrotapes,” Ed pointed out. At Toketee Falls, also along the Umpqua Highway in the Umpqua National Forest, the design called for a bridge and they had to determine the “distance across from one rock face to another....There was no way of getting down and up the other side,” he said, so they had to use their own ingenuity and whatever non-traditional surveying tools they could lay their hands on. “One guy brought a bow and arrow one day,” he said. “We tied a line on, and we shot a line across that was long enough.” Then they measured that line against one of their 300-foot survey chains to come up with the final measurement for the bridge.

Ed noted that he remained in that part of the state and “worked on the Lake of the Woods Highway for Lyle Mulvanny in 1964 and 1965....We did some grading and slope staking and stuff like that. I spent a quite a bit of time with him.”

After that, he took a few years’ hiatus from the Federal Lands Program, then came back to BPR in 1969, and spent a summer working “on North Cross State Highway in northern Washington.” They were preparing a quarry site, he remembered, and the blasting contractor “failed to check his battery on his detonator. When we shot the quarry site, we ended up with rocks that were bigger than semi trucks....and it blew out a whole bunch of trees on this viewpoint.” That rock was eventually brought down to “the quarry site...for crushing,” he said, “for road base for asphalt pavement. We found live wires and they’d wire them up and shoot them again.” That incident, he observed, was one of those “foolish things that you hope wouldn’t happen, but did.” The contractor, he recalled “basically went broke because they had to re-drill everything....The guy failed miserably....

“They had a construction crew up the canyon, too,” Ed remembered, and after the road had been built, he recalled there had been “a lot of glacier runoff and avalanches.” One day, he said, “I was eating lunch, and sitting by a creek, a culvert, and I could see the ground” was settling. He walked over to the culvert site, and it was “running dirty water and then clean water, dirty water then clean water.” That evening after work, he talked to the project engineer. “I said I think

something's going on there, we better...take a look at it. Well, it turned out (that) overnight a dam had broken the pipe, so it was running water underneath the road the whole time. I don't know how many thousand yards we had to redo: the pipe, the whole fill."

In that part of the project there were three bridges and "one of the mountains had to be pinned...it was like a fault line," he said. "They had to drill steel into the mountain and pin...the whole mountain to keep it from sliding..."

It was on that part of the project that "I almost got killed on that job," Ed recalled. "I was working on one of the bridges...where they had drilled in some rebar and they were grouting it in for the wing walls on the east side of this one bridge." He was standing on the road, talking with the contractor's superintendent, "and this kid drove up the hill past us with a compressor (behind) a pickup." Ed didn't give much thought to the passing truck, but when the driver parked and "unhooked the compressor from the pickup...he didn't block the wheels on the compressor..."

"My back was to him, (but) the superintendent was...looking...that way." The driver got out of the truck "and it came rolling down the hill." The contractor's man took off running, and "I just instinctively... ran the same (direction).

"It had rolled right into where I was standing" only a moment before, he said. "It went into the ditch (and) rolled a quarter of a turn...If it would have been another quarter of a turn, it would have run right over the side of the canyon. "I had to have a cup of coffee after that."

That incident underscored one of the most important lessons he learned on the job. "You had to always be on your toes," he said. "That was the closest...I ever came to getting injured or killed." He stressed that it was essential to remain vigilant when moving through the construction site while the heavy equipment was operating. "A lot of guys would get so busy that they wouldn't look around," he said, but to be safe, "you had to stop and let them find (you) and see you."

Ed recalled that "The North Cross State was one of the last jobs (where) they had a tent camp and you had to pack in (on) horses. By the time he was assigned to the project, however, "most every one of the guys lived out of a trailer and had their families with them. They had hauling rigs: they could hook onto the trailer and pull it themselves.



Engineering Camp at Tunnel Creek during a 1930's era reconstruction and surfacing project. Final Construction Report, Columbia Falls-Glacier Park, Section 13-F1. WFLHD Archives.

So I was just at the very end of the tent camp thing," he said. It came to an end "about a year before I started."

The end of the tent camp era was just one of many changes he noticed during his BPR career. The enactment of the Environmental Protection Act in 1969 brought about other changes. "There are some things that we did before the environmental impact statements," he said, remembering in particular the project he'd worked on in Southern Oregon for Lyle Mulvanny. "On the Umpqua River," he recalled, "we had a rock that was in the river when we built the fill....

"You did things...that made the road conditions" better he explained, and in the case of this rock, removing it would improve the alignment, and therefore the safety of the road. "They loaded it with dynamite. I stood behind a tree when they blew it and I took pictures of it. There was no rock left, there was just a ripple." Another project that would require proper environmental documentation today was one he worked on near Riddle in Douglas County, Oregon. "The Forest Service had wanted us to build this road along Cow Creek," Ed recalled. By following an old railroad grade beside the creek, the project would be only about three miles long instead of the eleven miles that would be required if they were to take the road "up over the mountain...So we staked the job, and we had the contractor working on it." They immediately began to find insulators from the old railroad days and evidence that Chinese conscripts had been brought in to do the work. "You could see the old signs on the rocks saying '5-cent cigars,' and we found...snuff boxes brought by Chinese laborers."

The railroad company had eventually moved their grade to the other side of the creek, he said, and “when we got in there...we had this one place...where we started to take the cut out and the mountain started to slide.” They had to modify the plans, which added several miles to the project, “clear up over, eight miles up the mountain,” he said. “We had to (leave) a big hump in the road...to keep it from sliding,” he added, “because it was counterbalancing that hillside.” They added riprap, but unfortunately what was used was “a little smaller riprap than they planned on.

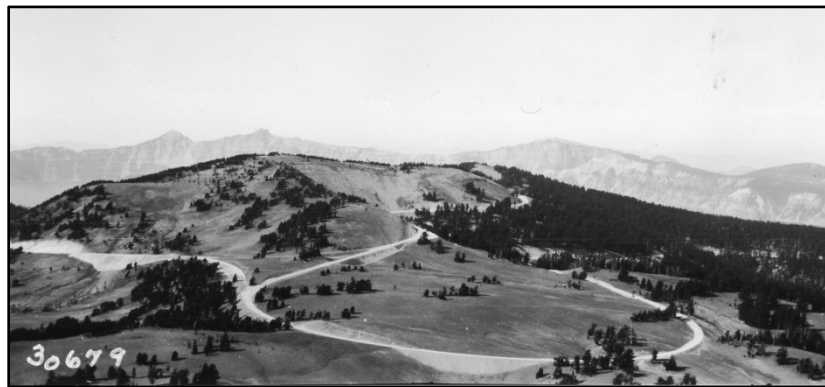
“I left the job shortly after,” he said, but when “we had the 1965 flood...it washed out that three miles of road that we had put in there because it was not big enough rip rap to protect the road. “That was one of the things that was interesting” about putting a road through that area, he added. “The railroad encountered the same thing we did, and that’s the reason why they moved the railroad across the river. We found that out after we got into it.”

Just like the tent camps that once housed them, the large crews of surveyors are also now a

thing of the past. Ed recalled that in the 1960’s BPR might have “350 guys in the field doing the survey. Now it’s down to maybe one guy walking around.” He recalled that sometime in the late 1960’s or early 1970’s, “there was talk (that) BPR/FHWA was going to hand us over to the state, and that’s one reason probably why I left.” Ed took a job with Washington County Oregon, “because I wasn’t sure what was going to happen.”

His new employer didn’t measure up to the standards he’d developed while at FHWA, however. “I got nervous working for them because they took too many coffee breaks...they’d go and have a coffee break, then pack up and go have lunch, then pack up and go have another coffee break. I just couldn’t handle it.”

He left the County after six months on the job: it was just not the work culture to which he’d grown accustomed. “At FHWA or BPR you were expected to work and you were expected to do so many miles a day, and you did your work...I was always proud to get my paycheck from the FHWA. I worked hard.”



A 1935-36 view from the top of Mount Scott with Crater Lake just outside the lower left corner. Rim Road to Kerr Notch runs off to the left; Rim Road to the West Rim is on the right. The center road leads to Cloudcap view point. Final Construction Report on Rim Road, PEC-7-B, 7-C Surfacing. WFLHD Archives.

Ed Busch learned about BPR from a neighbor and eventually moved from a summer appointment to full time. After leaving FHWA and his short stint at Washington County, he did some work in finish carpentry for awhile before putting his FHWA materials testing experience to work at Carlson Testing in Tigard, Oregon.

Stories in this series have been developed by Marili Reilly from interviews and correspondence. Retirees who would like to share their memories may email marili.reilly@dot.gov.