Tank Work Nearing Completion

Completion of steel erection work on the town of Millwood's new $81,452.53 standpipe water tank at the east end of Millwood park will be completed by Thanksgiving Day, Ralph Donaldson, foreman for the American Pipe & Construction Co. of Portland, Ore., disclosed yesterday.

The tank, 35 feet in diameter and 108 feet tall, will hold 800,000 gallons of water.

Work on the tank, which joins the nearby Inland Empire Paper Co.'s elevated tank (120 feet high, 75,000 gallons) on the Millwood skyline, has attracted its share of "sidewalk superintendents." And, in this instance, onlookers have sometimes come away with stiff necks from gazing skyward.

The construction process—unusual to the layman, perhaps, but nonetheless "old hat" to tank builders—has been in this fashion:

Sections of steel sheet measuring 10x27 feet (and varying in thickness from 9/16" to ¼") that were rolled into the proper curvature at American Pipe's Portland plant are stood on end, with four sections completing a full circle. The sections are "tacked" (welded) together for rigidity after placement, then permanently welded.

A sky-scraping crane has been utilized in the construction process. After the first two (or "course") of sheets were in place to form the base of the tower, the work got tricky.

"We use the crane to hoist the sections into place," Donaldson told the Spokane Valley Herald yesterday. "The first of the four sheets is clamped into place at the lower corners, then the next one is brought into place. It is clamped at the top to the first section, then the third and fourth sections are placed."

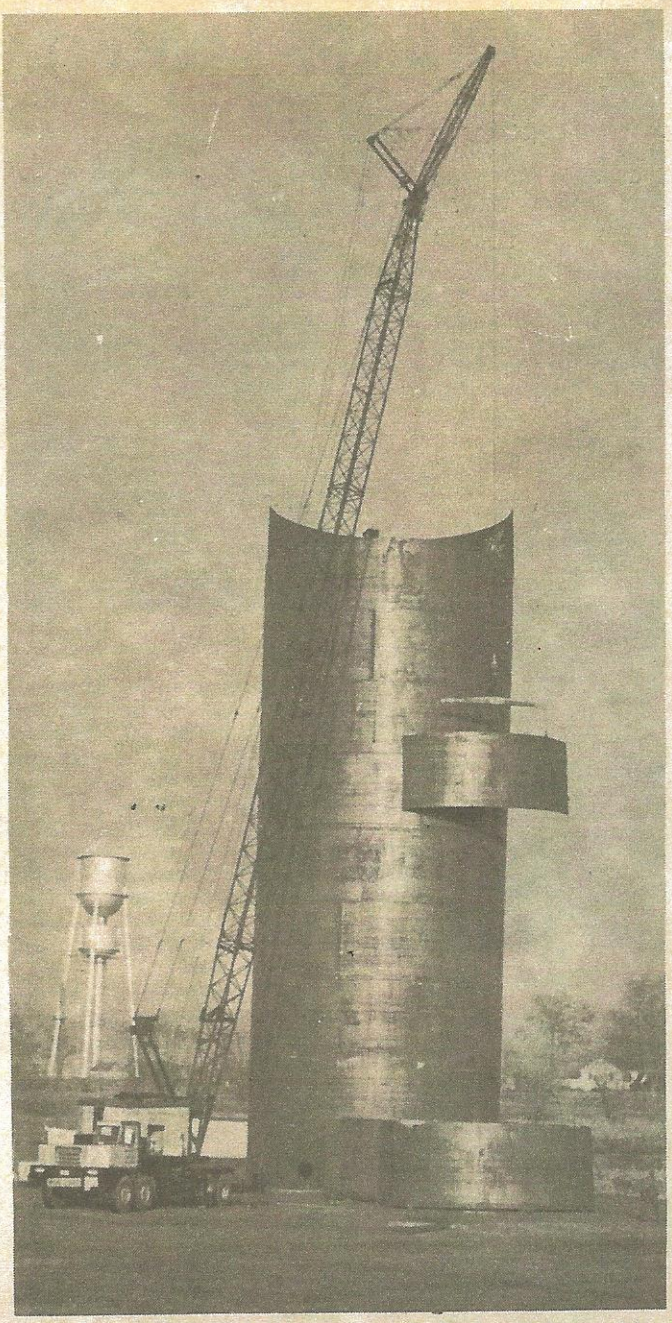
Small spacers are placed between the horizontal edges of the sections and through the use of an exterior pin and an interior bull pin (a tapered devise about 18 inches long), the lower (in-place) section and the upper (being placed) section are aligned. The seams of the vertical joints are hand-welded; an air-operated "bull fitter" is used to further align the horizontal joints and the spacers are knocked out as the bull trimmer circles the tank.

"The horizontal seam is tacked about every foot or so as the fitter moves along," Donaldson said. "Once all the spacers are out, the weight of the new course holds it in place. Then we use an automatic, self-propelled 'submerged arc' welder to weld the horizontal seam."

The interior horizontal seam is welded; the welding devise is then hoisted outside into a cage and the exterior seam is welded. Hand welders are then used to weld the exterior vertical seams.

Donaldson said the thickness of the sections vary from 9/16-inch at the bottom (where added strength is needed because of the weight of the water) to ¼-inch at the top. The 9/16-inch sections weighted about six tons each; the weight of a ¼-inch section is about 2,700 pounds.

Donaldson, who operates the automatic welder as well as supervises the work, said the devise moves along at a rate of 42 inches per minute—enabling him to make a complete circumference of the tank in 36 minutes. The weather in recent weeks has been good and the "welding has moved right



Going up—a 10x27-foot sheet of ¼-inch steel weighing about 2,700 pounds is hoisted skyward for placement on the ninth course of the 800,000-gallon standpipe water tank at the east end of Millwood city park. Steel work on the $81,452.53 project by the American Pipe & Construction Co. of Portland, Ore., is scheduled for completion by Thanksgiving Day. At left rear stands the 120-foot high elevated water tank of the Inland Empire Paper Co.

added, the platform is raised into a new set of brackets.

All exterior work must be done from the cages, which are fitted with rollers that rest on the top edge of the section just placed. Through the use of a chain and pulley within the cages, the welders literally pull themselves from one location to another as the work proceeds.

Because the crane seldom moved, two-way radio between the crane operator and the foreman atop the tower is frequently used—when traditional line-of-sight hand signals cannot be used. Donaldson said workers frequently use hammers—rapping on the steelwork—as signaling devises.

With the 10 courses of the main tank now in place, the remaining major step will be the placement of the tank's 10-foot-high umbrella roof.

"The roof will come here from Portland in pie-shaped sections," Donaldson said. "We'll weld it together on the ground and lift it up in one 6-ton piece. There won't be any place to stand once the roof is on, so we'll weld it on the outside from the cages, hanging at the end of the crane."

The roof must be welded from the inside too. Then workers will clean up the inside of the tower, remove the platform brackets and polish up the welding. Huge floodlights will come into play at this stage in that the only access to the inside of the tank is a 2-foot porthole at the bottom—and it does not admit much light.

Once the work of Donaldson and his crew of five is complete, the painters will take over—first sandblasting the exterior and giving it a primer coat. West Valley high school has asked the Millwood town council if the tank could be painted in the school colors—orange and black—but a decision in that regard has not yet been made.

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A Spokane firm has made periodic X-ray tests of the welding being done on the tank. An X-ray technician, hoisted skyward in a sling-type chair by the crane, tapes X-ray plates to the exterior of the tank, then exposes the film from inside the tank. The X-rays are employed to insure what Donaldson said was "a 100 per cent weld," which is required in specifications for the tank.

When the X-rays reveal a fault, the fault is gouged out with a special devise and rewelded.

An ingenious scaffolding inside the tank enables workers to function at the top of the tank as it climbs upward. The platform is hooked into brackets welded onto the insides of the sections; as the sections are