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Inflatable dam helps Marysville, Ohio, meet project schedule and budget

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As a city grows in population, upgrades to public services become necessary—new schools, more police and fire protection, additional community programs—but the most vital upgrade is to water services. To meet the needs of its expanding population and as a response to existing and future development, the City of Marysville, Ohio, embarked on a project to upgrade its water storage and delivery system.

With a total budget of \$24 million, the Marysville Upground Reservoir Project consisted of four contracts to construct a complete system to capture water from Mill Creek, pump it to the new reservoir and ultimately deliver the water to the Marysville Water Plant. Although the existing system included a well and a diversion from Mill Creek, there was no real storage capacity for water, so the new reservoir was especially important for the city.

One of the four contracts encompassed the construction of a dam, intake structure and a pump station building, in addition to the installation of an inflatable dam that was to be purchased under a separate contract. The inflatable dam system monitors water flow and levels in Mill Creek, and adjusts the amount of water diverted to the new reservoir to maintain environmentally friendly flow conditions. In addition to monitoring stream flows and water levels at the dam, the pump



The inflatable dam has individual bladders that are used to raise and lower the structure. The contract encompassed the construction of a dam, intake structure, an inflatable dam, and a pump station building.

station's control center also monitors reservoir water levels via remote solar-powered transmitters, maintains historical data, and sends reports back to the main water plant. Depending on the flow rates and water levels in Mill Creek, the pump station can provide up to 26 million gallons of water daily to the reservoir.

Finding an alternate dam

The project faced almost immediate challenges: Product delivery delays

meant that the inflatable dam originally selected wouldn't be ready in time to comply with the construction timeline, so the City was forced to find an alternate product. The resulting solution—a system from Obermeyer Hydro that features an inflatable bladder covered by steel gates to protect the bladder from the elements and from floating debris and ice—was not only more efficient, but also less expensive than the original system and could be delivered to complete the project on time. While

original designs called for a dam that could be either completely inflated or completely deflated, such a system would limit the City's control over water diversion and potentially impede their compliance with environmental requirements. The Obermeyer system's four independently-operating bladders allow for much more precise control over the pool elevation behind the dam. In addition, the Obermeyer Hydro system allows the city to compile reports and track historical data. The system is also more aesthetically pleasing since, when the dam is completely deflated, the rubber dam is covered by the curved steel gates, which are flush with the creek bed. Additionally, while the dam is inflated, a minimum flow over the dam will be maintained and residents downstream from the dam will still see water flow in the creek.

Fixing the spec changes

Although the replacement dam ultimately improved the project's design, making the late switch did bring up other challenges. Because the size and configuration of the new dam was physically different from what was originally specified, many portions of the original inflatable dam system's specifications could not be used, as the new system had different components

that would not fit the original design. To accommodate the new dam, the building layout was revised to reflect a new design for the concrete structure that the bladders and steel gates would attach to, and modifications were made within the control systems. Careful coordination with the general trades' contractor ensured that all design changes were completed in advance of the inflatable dam's installation, thereby avoiding any costly rework.


Keeping the public happy

Due to the project's proximity to a park and a residential subdivision, it was also crucial that the surrounding area not be disrupted during construction. To keep the public informed of construction progress and activities, a project website and e-mail address were set up, and flyers were passed out regularly. All con-

struction work was done during regular hours, and care was taken to ensure that no personal property was damaged. To alleviate dust conditions, the surrounding area was continually watered, and roads were cleaned often to remove mud tracked in by construction vehicles. Because the reservoir was also close to a school, large deliveries were closely monitored to avoid traffic congestion and maintain pedestrian safety.

The new dam and reservoir

Not only does the new dam allow the City of Marysville to have greater control over the water level and flows on both sides of the dam, thanks to the multi-part inflatable-bladder system, but the area around the dam has been improved as well. The creek that runs through the park behind the nearby houses has been made even more appealing, and a walking path was added along the top of the embankment around the reservoir. Even with multiple design setbacks, inclement weather and the addition of a fire suppression system in the pump station, the project was completed on schedule in April 2009.

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Inflatable dam bladder and gate slightly down

