

WHITE SULPHUR SPRING FILTRATION PLANT

When a tornado struck White Sulphur Springs, Montana, in 2012, it completely destroyed the city's water filtration building. Only the concrete foundation and portions of the existing water infrastructure remained. For a community that depends on a reliable public water system, rebuilding quickly was essential—but simply replacing the original wood-framed structure wasn't enough.

City officials, the project architect, and Andrew Mazella of Mazzella Construction saw the opportunity to create something better: a facility designed to withstand the severe weather that had already proven to be a recurring threat. By rebuilding with BuildBlock Insulated Concrete Forms (ICFs), the team delivered a stronger, more energy-efficient water treatment facility that will serve the community for decades.

ABOUT

LOCATION: White Sulphur Springs, Montana

PROJECT FINISH DATE: 10/23/2013

SIZE: 2,870 sqft

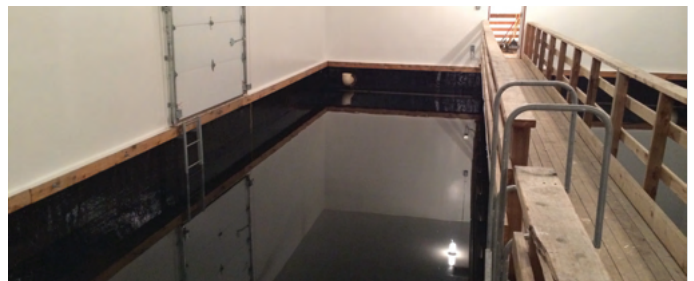
COST: \$252,500

OWNER: City of White Sulphur Springs

ICF INSTALLER: Mazella Construction

HIGHLIGHTS

- Rebuilt after a devastating 2012 tornado destroyed the original wood-framed filtration building.
- 2,870 sqft. municipal water treatment facility constructed with BuildBlock Insulated Concrete Forms (ICFs).
- Designed to provide superior resilience against central Montana's frequent high winds and severe weather.
- Reused the existing concrete foundation, reducing construction costs and material waste.
- Completed in just 75 days, finishing approximately six weeks ahead of schedule while remaining within budget.
- Features reinforced concrete ICF walls, steel roofing, and steel siding for long-term durability.
- Provides a more energy-efficient facility with improved moisture control.
- Demonstrates how BuildBlock ICFs are an ideal solution for critical municipal infrastructure, combining strength, efficiency, and long-term value.



A BETTER SOLUTION THAN REBUILDING WHAT FAILED

The original facility had been constructed using conventional wood framing and asphalt roofing—materials that were unable to survive the tornado. Initially, the insurance carrier planned to fund an identical replacement. However, rebuilding the same structure would have left the city vulnerable to another costly loss.

Working closely with the City of White Sulphur Springs, the State of Montana, and the insurance company, Mazzella Construction showed how the long-term value of constructing the new building with reinforced concrete walls, a heavily reinforced roof truss system, and steel roofing and siding. The investment would provide a far more resilient facility while reducing the likelihood of another complete rebuild after future storms.

The collaborative effort paid off, allowing the project to move forward with a design focused on durability rather than simply replacing what had been lost.



DESIGNING AROUND EXISTING INFRASTRUCTURE

One of the project's greatest challenges was incorporating the existing foundation into the new design. Although the tornado had left the foundation largely intact, it had sustained enough damage that establishing a reliable connection between the old concrete and the new ICF walls became a critical structural consideration.

The design team developed a cedar ledger system that allowed the new walls to be accurately aligned while creating a secure connection to the existing foundation. Reusing the foundation not only reduced construction costs but also minimized material waste and accelerated the rebuilding process.

While the exterior of the building is intentionally straightforward, the interior houses a sophisticated municipal water treatment system. Four concrete filtration bays sanitize gravity-fed mountain water before it enters the city's public water supply, making the facility one of the community's most important pieces of infrastructure.

MEETING UNIQUE ENVIRONMENTAL REQUIREMENTS

Unlike most commercial buildings, the interior environment presented its own set of challenges. Because the facility contains the city's potable water supply throughout much of the year, treated lumber and chemical-based building materials were prohibited anywhere they could come into contact with the water system.

Cedar was selected for all concrete bucks, decking, and trim because of its natural resistance to moisture and decay. Specialty drywall, epoxy coatings, and a dedicated heating and dehumidification system ensure long-term moisture control.



BUILT TO HANDLE MONTANA WEATHER

The replacement facility faces many of the same weather conditions during construction that had destroyed its predecessor.

Located on a hill overlooking White Sulphur Springs, the site is routinely exposed to strong winds. During construction, multiple hailstorms and wind events—including gusts exceeding 40 mph—challenged the crew and threatened progress.

Once the concrete was placed in the ICF walls, however, the primary structure remained solid despite the severe weather. Although roof framing required careful coordination during high winds, the project stayed on schedule and within budget, demonstrating one of the greatest advantages of reinforced concrete construction in challenging environments.

DELIVERING LONG-TERM VALUE

The completed facility provides the City of White Sulphur Springs with a modern, energy-efficient building that is significantly more resilient than the structure it replaced. Constructed entirely with ICF exterior walls and protected by steel siding and roofing, the building is designed to resist the high winds and severe storms common throughout central Montana.

The project was completed in just 75 days—finishing approximately six weeks ahead of the allowable construction schedule—and remained within budget. By reusing the existing foundation and leveraging the speed of ICF construction, the team delivered a durable public facility without increasing overall project costs.

ADVANCING ICF CONSTRUCTION IN MONTANA:

Commercial and government projects specifying ICF construction remain relatively uncommon throughout Montana. For Mazzella Construction, projects of this scale represent only a handful of opportunities each year, making the White Sulphur Springs Water Filtration Plant an important milestone.

More importantly, the project demonstrates that ICFs are not limited to residential construction. They offer a practical solution for municipal infrastructure, commercial buildings, and other facilities traditionally built with wood framing, CMU, or conventional cast-in-place concrete.

By combining structural resilience, energy efficiency, and construction speed without significantly increasing project costs, the White Sulphur Springs Water Filtration Plant stands as an example of how ICF construction can help communities build infrastructure that is designed to last—not simply to be rebuilt after the next storm.