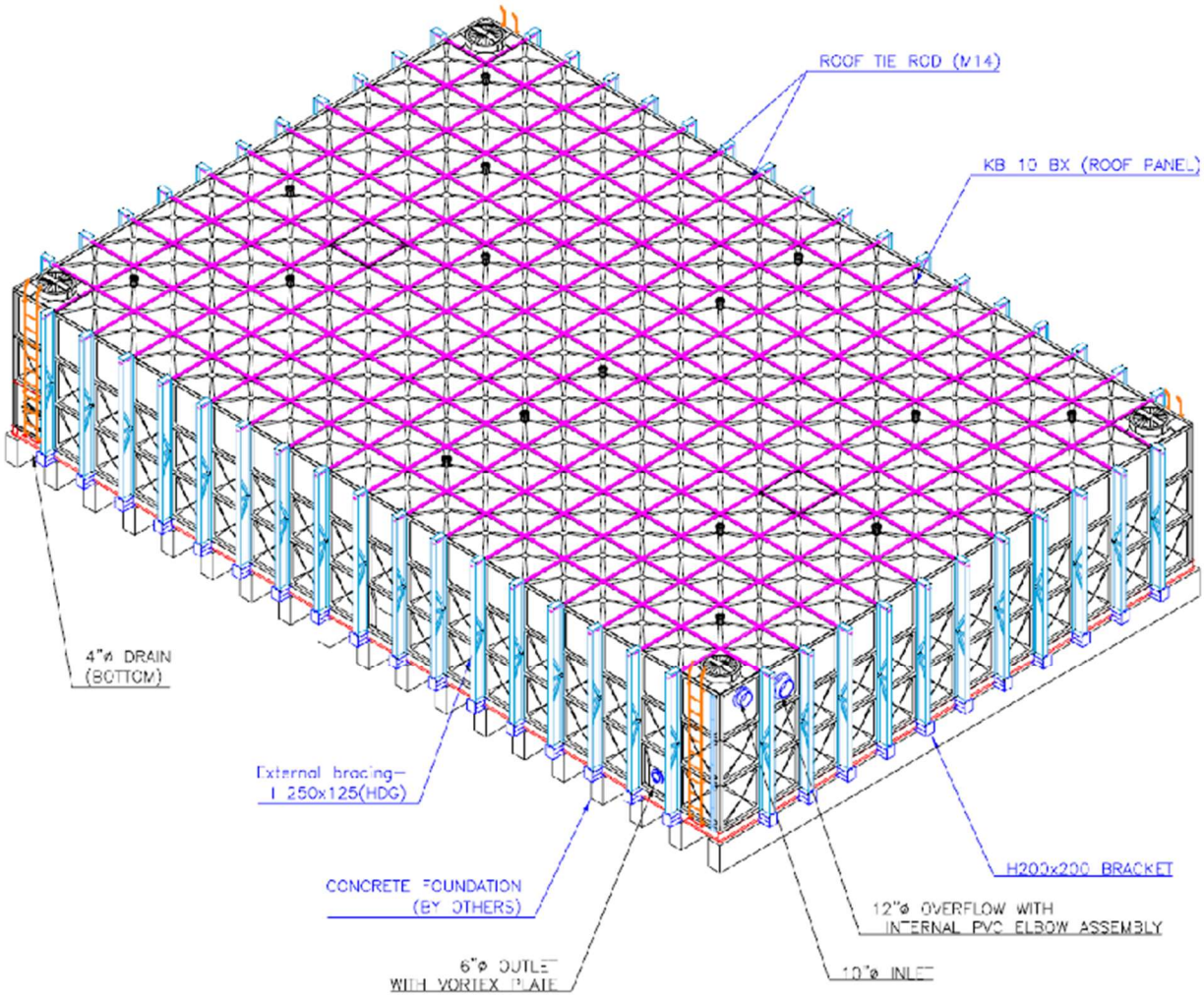
Seismic and Cold-Weather-Optimized Fire Suppression Tank for Marshdale Elementary School, Evergreen, Colorado



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INTRODUCTION

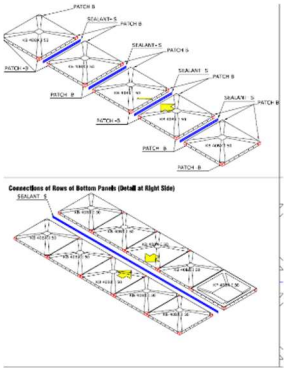
Marshdale Elementary School in Evergreen, Colorado, required a fire suppression tank designed to meet multiple unique challenges, including high seismic activity and extremely cold temperatures. In addition, the project faced transportation challenges due to the remote location and road conditions. FTC Tanks was chosen for its modular design, which could be palletized for easier transportation, and for its ability to provide customized solutions tailored to both the seismic and temperature-related needs of the site.

THE CHALLENGE

The Marshdale Elementary School project presented several unique challenges:

Seismic Activity: The site is in a seismic activity zone, requiring the tank to meet strict seismic standards.

Extreme Cold Temperatures: With recorded temperatures dropping as low as -38°F, the tank needed to be insulated to prevent freezing while minimizing energy costs.



Transportation Limitations: The road conditions and remote location made traditional large, pre-assembled tanks impractical, requiring a solution that could be easily transported in pieces and assembled on-site.

Snow Load: The tank needed to be strong enough to handle heavy snow loads due to the region's winter climate.

Fire Suppression Capacity: The school required a reliable fire suppression tank that could store a significant volume of water.

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THE SOLUTION

FTC Tanks developed a custom solution to meet these challenges:

Seismic Design for High Activity:
FTC Tanks supplied one of its three seismic class design -Class C-, which covers **seismic** conditions with **S1 ≤ 1.5 and Ss ≤ 3.5**, ensuring the tank could withstand the seismic forces at the site. This design was essential for ensuring the long-term stability and safety of the fire suppression system in a region known for seismic activity.

Modular, Palletized Design for Easy Transport:
Due to the challenging road conditions, FTC's **modular design** was shipped in palletized form, allowing for easier transportation to the remote location. This flexibility made it possible to deliver the tank components safely and assemble them efficiently on-site.

Pre-Insulated Panels for Extreme Cold:
The tank was constructed using **pre-insulated 2-inch panels** with an R-value of 12.26 to maintain water temperature and minimize heating costs. Given the worst recorded temperature of **-38°F**, the insulation, combined with the use of small submersible heaters, ensured that the water temperature inside the tank remained above 42°F, even in the coldest conditions.

Snow Load Capacity:
FTC customized the tank's design to handle the region's significant snow loads, ensuring that the structure would remain safe and functional during heavy snowfall.

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Fire Suppression Capacity and Custom Overflow System:
The tank was sized at **18 x 12 x 3 meters or 59.04 x 39.36 x 9.84 feet**, providing a **usable capacity of 145,000 gallons**. To achieve this capacity, FTC Tanks implemented an internal elbow-up overflow system, reducing the freeboard from 19 inches to 12 inches without compromising the tank's efficiency or integrity.

BROADER APPLICATION

FTC Tanks' modular and customized design solutions are not only suited for schools but can also be applied to other critical facilities in regions facing seismic activity, extreme weather conditions, and transportation challenges. Our ability to tailor solutions to site-specific requirements ensures that any building—whether a school, hospital, or commercial site—can benefit from reliable water storage solutions that are easy to transport, install, and maintain.

RESULTS

FTC Tanks successfully delivered a fire suppression tank that met Marshdale Elementary School's unique seismic, climate, and capacity needs. The **145,000-gallon tank**, with its Class C seismic design, pre-insulated panels, and customized snow load capacity, ensured that the **school** would have a reliable and energy-efficient water supply for fire suppression, even in extreme conditions. The

modular design allowed for easy transportation and on-site assembly, overcoming logistical challenges and ensuring a timely installation.

CONCLUSION

The Marshdale Elementary School project demonstrates FTC Tanks' expertise in delivering custom, site-specific solutions that meet the needs of high-seismic, cold-weather regions. By providing a seismic-rated, insulated, and snow-resistant

fire suppression tank, FTC Tanks ensured that the school was equipped with a robust and efficient system for emergency water storage. Our ability to adapt to the challenging environmental and logistical conditions makes FTC Tanks a trusted partner for critical infrastructure projects across diverse environments.