



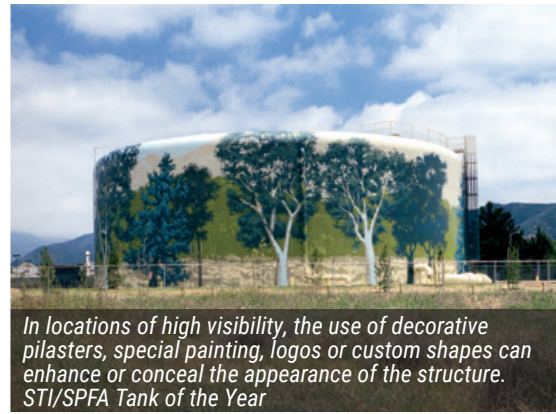
# Reservoirs and Standpipes

WATER STORAGE

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**MCDERMOTT**

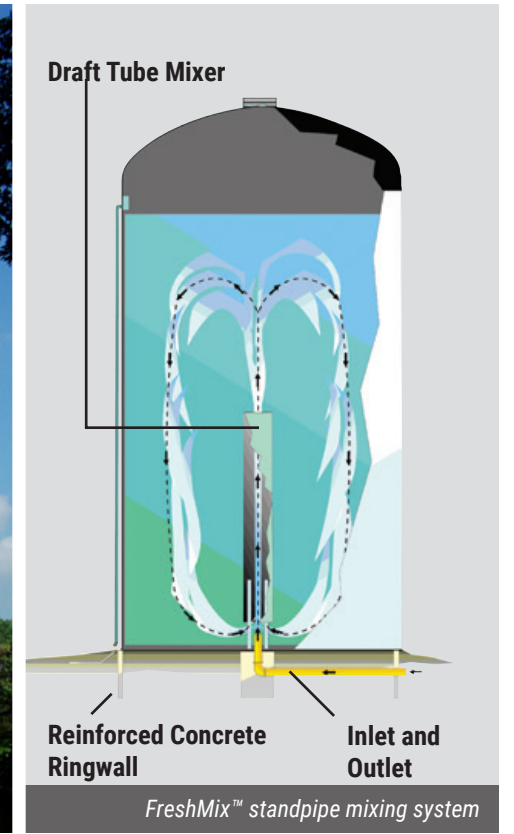
**CB&I  
STORAGE  
SOLUTIONS**



In locations of high visibility, the use of decorative pilasters, special painting, logos or custom shapes can enhance or conceal the appearance of the structure. STI/SPFA Tank of the Year



STI/SPFA Tank of the Year



## Why welded steel reservoirs and standpipes?

Reservoirs and standpipes are ground level water storage tanks available in nearly any capacity and dimension to meet design, economic or aesthetic needs. These storage tanks are available in a broad range of sizes. CB&I Storage Solutions has designed and built reservoirs ranging from less than 100,000 gallons to as large as 34,000,000 gallons.

Reservoirs have a greater diameter than height. They offer very economical and effective storage, especially when located on high ground. Their lower profile allows them to be easily hidden by foliage.

Standpipes have a greater height than diameter. Their taller design typically allows water above the operating range to provide gravity-fed pressure. The water below the operating range provides reserve storage.

One of the greatest advantages of welded steel tanks is their zero leakage tolerance. Properly maintained and operated, welded steel tanks offer an extremely long life, with some structures exceeding one hundred years of service. They have a proven record of reliable, durable service and are particularly advantageous in high seismic zones or in high wind load applications.

## Health, safety and environmental

Ensuring the health and safety of our employees, our customers and the public is a core value of McDermott. Our efforts center on the fundamental belief that all accidents are preventable. This principle drives our ultimate safety goal: zero incidents.

We uphold this value in the same way we ensure the quality of our work – by implementing rigorous controls through every phase of our projects. Training and focus on leading indicators are key to preventing accidents and incidents. Our employees receive extensive training on how to perform their jobs safely, properly and in compliance with environmental regulations.

Our HSE processes and employee training have enabled McDermott to achieve one of the best safety performance benchmarks in the industry. We have executed thousands of projects without a single lost workday or recordable incident. Our projects have garnered numerous safety awards from customers, industry associations and safety organizations.

## Selecting a reservoir or standpipe

We provide sample specifications and detail drawings for engineers and owners who are planning reservoir or standpipe projects. Contact McDermott's regional sales force to receive guidance on specifying your tank or view standard specifications and drawings on our website at [www.mcdermott.com/water](http://www.mcdermott.com/water).

### Aesthetics

- Optional curved roof transition
  - Smooth, pleasing appearance
- Optional decorative pilasters
  - Attractive architecture
  - Encloses ladder, overflow pipe and antennae cables
  - Community acceptance
- Reservoir's low profile
  - Blends into surroundings
  - Easily concealed by foliage

### Maintenance

- Optional curved roof transition
  - Reduces localized corrosion
  - Facilitates paint application
- Self-supporting roofs
  - Reduce maintenance
  - Minimize icing damage

## Safety and security

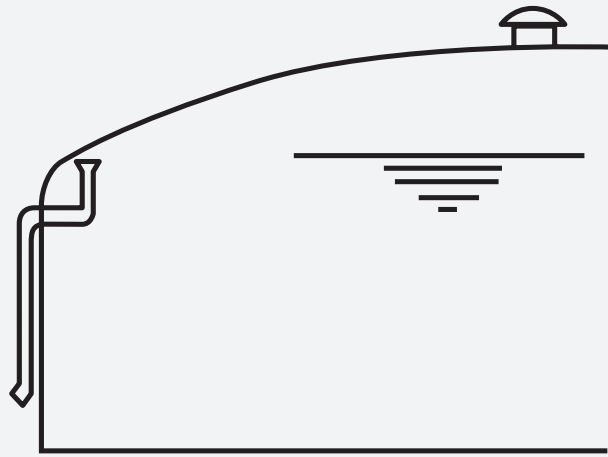
- Optional decorative pilasters can enclose ladder
  - Provides secure, easy access
  - Minimizes vandalism
  - Minimizes unauthorized tank access
  - Facilitates climbing during inclement weather
- Optional balcony
  - Safe 360° access to roof
  - Permits easy inspection

## Economics

- All-welded-steel composition
  - Zero leakage tolerance as required by AWWA D100
  - Cost-effective life cycle
  - All-steel composition permits cost-effective, year-round construction
- Turnkey supply of foundation and painting offers cost and schedule savings
- Ellipsoidal and toriconical roofs hold water
  - Reduces height for a given capacity if seismic design allows

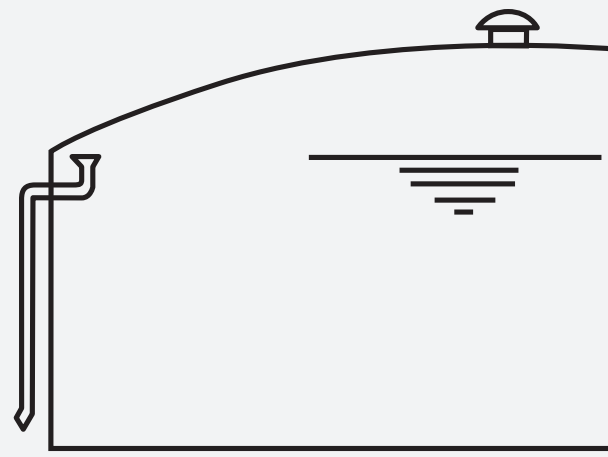
## FreshMix standpipe mixing system

Our patented FreshMix system is an economical means of eliminating taste and odor problems that may result from stagnation. The FreshMix system helps ensure that fresh water and chlorine residual are maintained uniformly throughout.



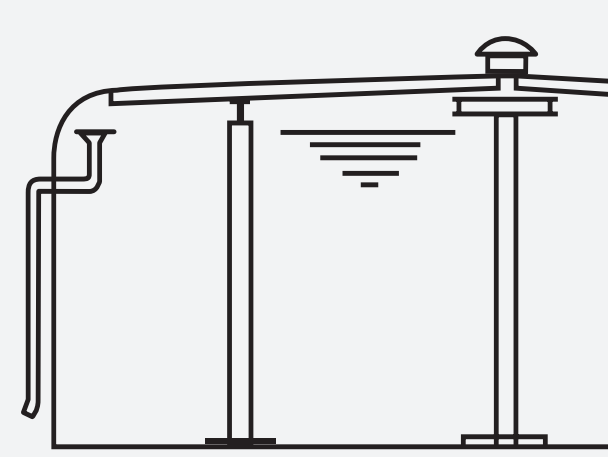
### Ellipsoidal

This is a self-supporting roof free of internal structural members for ease of painting and maintenance. For structural and aesthetic benefits, it has a curved transition from the shell to the roof that is butt welded. Also if seismic design allows, the high water line may be in this transition.



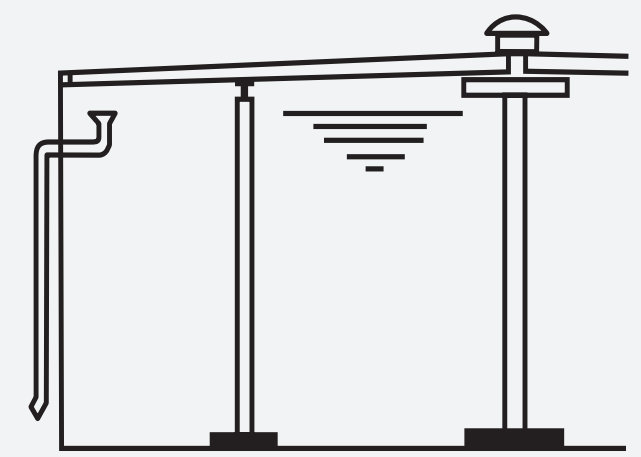
### Dome or umbrella

This roof is self-supporting and is free of internal structural members for ease of maintenance and painting. Plates are butt welded or lap welded and are supported directly on the top angle, compression ring or shell plate. Internal structural stiffeners may be used on large diameter roofs to avoid excessive plate thickness.



### Toriconical

This roof is supported by both columns and rafters and has a low profile with a typical slope of  $\frac{3}{4}$  inches to 12 inches, but differs from a cone roof by providing a curved transition from the shell plate to the roof plate. The curved roof transition improves appearance and eases maintenance. Also if seismic design allows, the high water line may be in this transition.



### Cone

This roof is supported by both columns and rafters and has a low profile with a typical slope of  $\frac{3}{4}$  inches to 12 inches. The high water line is below the rafters.

### Standard features

- Manholes
- Overflow to grade
- Painted ladders
- Safety devices on ladders as required by state and federal regulations
- Anti-climb guards
- Roof handrails
- Fail-safe roof vents
- Inlet/outlet with silt stop

### Options

- Lettering, logos and decorative graphics
- Decorative pilasters
- FreshMix circulation system
- Safety cages
- Balconies
- Seal welding underside of roof
- External security or decorative lighting
- FAA lighting
- Instrumentation
- Telemetry
- Cathodic protection
- Lightning protection
- Antennae penetrations and supports

### Typical reservoir dimensions

Capacity U.S. Gallons	Diameter (ft-in)	Height to Top of Shell (ft-in)	Diameter (ft-in)	Height to Top of Shell (ft-in)
1,000,000	75 - 0	32 - 0	67 - 0	40 - 0
2,000,000	105 - 0	32 - 0	94 - 0	40 - 0
3,000,000	129 - 0	32 - 0	115 - 0	40 - 0
5,000,000	166 - 0	32 - 0	148 - 0	40 - 0
7,500,000	203 - 0	32 - 0	181 - 0	40 - 0
10,000,000	235 - 0	32 - 0	209 - 0	40 - 0
15,000,000	287 - 0	32 - 0	256 - 0	40 - 0
20,000,000	332 - 0	32 - 0	296 - 0	40 - 0

### Typical standpipe dimensions

Capacity U.S. Gallons	Diameter (ft-in)	Height to Top of Shell (ft-in)	Diameter (ft-in)	Height to Top of Shell (ft-in)
1,000,000	47 - 0	79 - 0	49 - 0	72 - 0
2,000,000	51 - 0	132 - 0	63 - 0	87 - 0
3,000,000	64 - 0	126 - 0	76 - 0	89 - 0
5,000,000	89 - 0	108 - 0	92 - 0	102 - 0
7,500,000	104 - 0	119 - 0	107 - 0	112 - 0



Columbus, Ohio – 5,700,000 gallons ornamental; STI/SPFA Tank of the Year Award



Austin, Texas – 34,000,000 gallons umbrella roof



Joliet, Illinois – 3,000,000 gallons ellipsoidal roof



Orange County, California – 2,000,000 gallons cone roof



Darien, Illinois – 1,500,000 gallons; STI/SPFA Tank of the Year Award



Orange Beach, Alabama – 6,000,000 gallons



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McDermott's storage business, CB&I Storage Solutions, is the world's leading designer and builder of storage facilities, tanks and terminals. With more than 59,000 structures completed throughout our 130-year history, CB&I Storage Solutions has the global expertise and strategically located operations to provide our customers world-class storage solutions for even the most complex energy infrastructure projects.

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