

# Custom Aluminum Covers

For All Water and Wastewater Applications

**CST**

**OptiDome®**



ALUMINUM DOMES | ODOR CONTROL COVERS | RESERVOIR COVERS



» ALUMINUM COVER SOLUTIONS



Largest  
Wastewater  
Treatment Plant  
in Europe

## ➤ The Worldwide Leader in Custom Aluminum Covers



CST Industries, Inc., formerly Temcor/Conservatek, has supplied over 19,000 covers in more than 90 countries worldwide. CST is recognized for its innovative clear-span aluminum covers for wastewater process and water storage tanks that help control odorous emissions and prevent water intrusion.

CST's aluminum domes and flat panel covers provide the strength, durability, odor control and protection characteristics unavailable in steel, plastic, fabric or any other materials of construction.

### CST's Competitive Advantage:

- Quality Reputation — Unparalleled reputation for quality products and customer service.
- Unmatched Experience — Temcor and Conservatek have 90+ years of combined experience in the design, fabrication and installation of aluminum cover systems.
- In-House Manufacturing — CST operates its own manufacturing facility to provide fabrication flexibility and ensure on-time deliveries.
- Increased Coverage — With multiple offices across the country, CST is poised to provide the best and most timely customer service regardless of the location of the project.
- Quality Control — All CST facilities are ISO 9001:2015 certified.
- Aluminum Advantage — All CST structures are all-aluminum construction providing benefits unsurpassed by other materials used in the industry.

## All-Aluminum Flush Batten Dome Roof

The flush batten OptiDome® is a next generation aluminum geodesic dome from CST. Its new, innovative and optimized design has features that result in a simple and unequaled new choice to fulfill customer needs.

- > Structural Design
- > Batten Seal Technology
- > Aesthetics

Combining premium features and incorporating the engineering experience and heritage of Temcor and Conservatek, OptiDome sets a new standard in engineered aluminum cover technology.

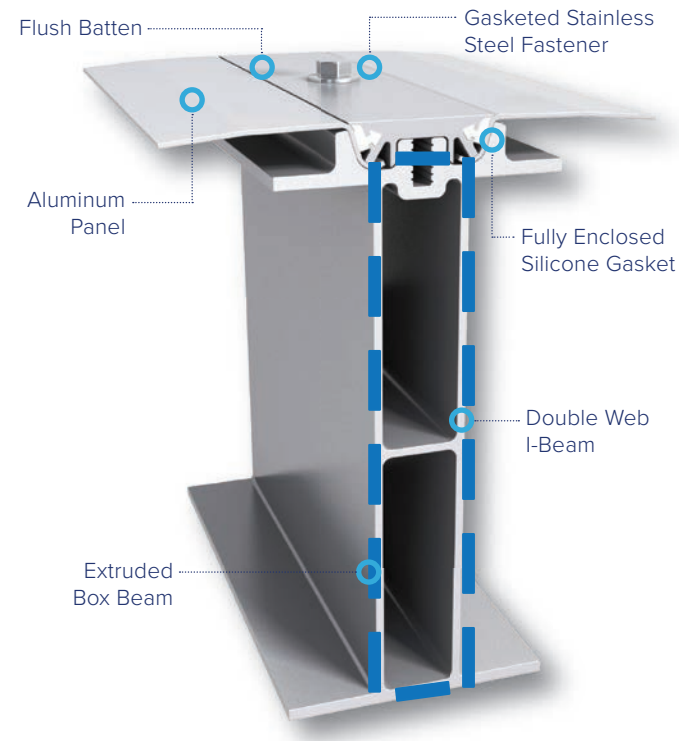
### » Structural Design

CST's advanced OptiDome design efficiently complies with torsional buckling requirements which have been adopted by Eurocode, 2015 Aluminum Design Manual and International Building Code 2015. The Double Web I-Beam, combined with aluminum's excellent strength-to-weight ratio, provides reliable performance under the most stringent environmental conditions including heavy snow loads and high wind speeds.

OptiDome is designed to meet the latest design codes including: Eurocode, Aluminum Association's 2015 Aluminum Design Manual, IBC 2015, AWWA D108 and API 650G. The unique properties of OptiDome make it far superior to other materials and alloys used for covers due to its:

- > **Corrosion Resistance** — Aluminum is inherently corrosion resistant compared to other materials. It will last the lifetime of the structure and will not need to be painted or repainted for protection from the elements.
- > **Low Lifetime Maintenance Cost** — With no need to maintain a protective finish to prevent corrosion over time, there are little-to-no maintenance costs associated with an aluminum dome.
- > **Clear-Span Capability** — Aluminum's lightweight characteristics allow for larger clear-span cover capability than structures utilizing steel, concrete and other materials.
- > **Fast & Low-Cost Construction** — Creative design and lightweight components provide for installation in 1/3 the time it takes to install other cover systems. Less time, labor and equipment needs combine for a low total cost of installation.
- > **Design Flexibility** — Aluminum's excellent strength-to-weight ratios and creative component designs yield covers and structures that cannot be achieved with other materials.
- > **Aluminum is a "Green Material"** — Not only are aluminum cover systems recyclable after their service life, but more than 50% of the aluminum used in the cover systems is made from recycled aluminum.

Every CST aluminum cover is custom designed to meet the specific requirements of each project and engineered for any snow, wind or suspended load capacity, as well as span-to-rise-ratio.



## OptiDome Batten Seal Technology

At the core of OptiDome is its superior batten seal technology. This system increases water shedding and eliminates ponding, even on a low profile design, while providing a water-tight cover solution.

Featuring an enclosed gasket design, the batten protects against ultra-violet exposure and sealant degradation. Since battens are flush with dome panels, it eliminates ponding. They are easy to install and require less sealant than typical geodesic domes.

### OptiDome Batten Seal Technology

- > Gasketed stainless steel fasteners
- > Flush batten bar
- > Eliminates ponding
- > Easy to install
- > Protection from UV and sealant degradation

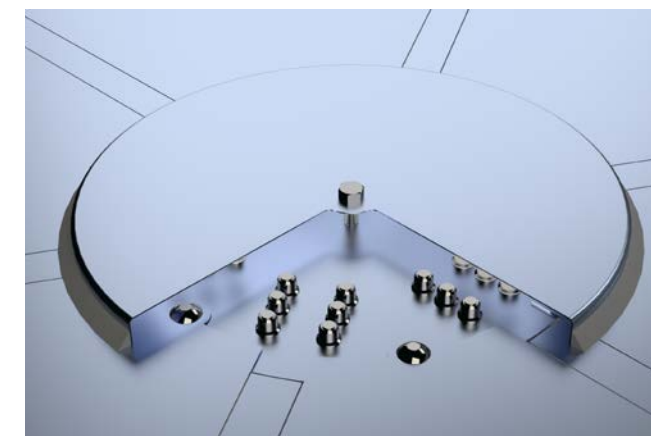
### » Aesthetics

Efficient in Design.  
Distinctive in Appearance.  
Unsurpassed in Quality and Value.

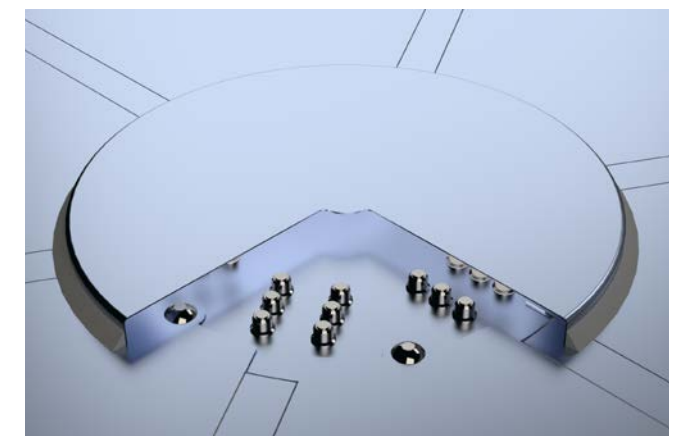
CST has combined proven dome design with modern engineering and materials to produce a flush batten aluminum geodesic dome that offers significant economic advantages.

In addition to the optimized design and superior seal technology, the OptiDome has a smooth, sleek appearance. OptiDome utilizes proven, water-tight technology and customers get the most functional, longest lasting dome solution in the industry.

### » Optional Gusset Cover Designs



» Gusset cover with bolt



» Gusset cover without bolt

## » Non-Welded Shoe Assemblies

### Steel Tank Options



Low Capacity Shoe



High Capacity Shoe

### Concrete Tank Options



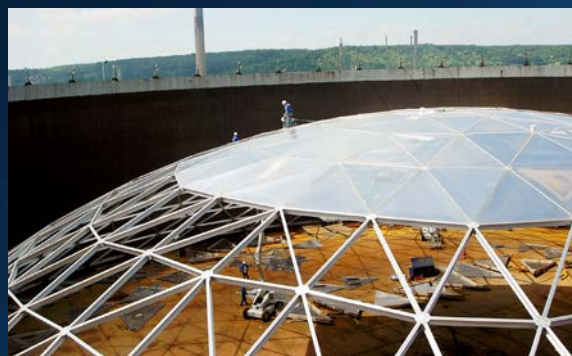
Low Capacity Shoe



High Capacity Shoe

## » Dome Construction

With the tightest manufacturing tolerances in the industry, CST's OptiDome can be constructed in a variety of methods. The most common are outside-in, used mainly with jack constructed storage tanks and inside-out, where the dome is constructed from the center outwards and is lifted into place. Certain specialty covers are constructed with proprietary jacking and crane systems specifically designed for fast, easy and safe construction of your aluminum dome.



### Inside-Out Cover Installation

1. Inner frames and panels are constructed and raised by a pole crane
2. Remaining frames and panels are constructed outward until dome is complete



### Outside-In Cover Installation

1. Outside frames and panels are constructed directly on the walls of the structure
2. Frames and panels are constructed inward until dome is complete

## OptiDome Installations



» Port Arthur Water Treatment Plant  
Port Arthur, Texas – 202' Diameter



» Forbes Hill Reservoir  
San Rafael, California – 151' x 203'



» National Water Company  
Makkah, Saudi Arabia – 361' Diameter



» Thomasville NC Water Department  
Thomasville, North Carolina – 85' x 126'



» Fayetteville Utilities  
Fayetteville, Tennessee – 42' Diameter



» Golden State Water Company  
Huntington, California – 60' Diameter

# Clear-Span Aluminum Reservoir Covers

As legislation is enacted to address the public's growing concern about water quality, more and more water storage facilities are being required to cover finished water reservoirs.

CST designs innovative aluminum roof systems that offer cost-effective, long-term solutions for covering water reservoirs. When you face regulatory and fiscal challenges covering your water storage reservoir, look to CST. We offer cost-effective, long-term solutions for the protection of water quality.

Large water basins and reservoirs are often a challenge to cover. Our team of experienced engineers specializes in custom solutions for new construction or retrofitted systems. CST is the clear choice for covering large and complex reservoir systems.

Geodesic dome engineering principles and aluminum components from CST allow lightweight, durable and corrosion resistant covers to meet the demands of all reservoir system requirements.



## Reservoir Installations



» Alderwood Water & Wastewater District  
Lynnwood, Washington – 375' Diameter



» City of San Diego Water District  
Rancho Bernardo, California – 250' x 320'



» Carpinteria Valley Water District  
Carpinteria, California – 340' x 340'



» Linden Reservoir  
Riverside, California – 200' x 500'



» Laguna Beach Water District  
Laguna Beach, California – 162' x 262'



» Almaden Valley Reservoir  
San Jose, California – 294' x 300'

## Odor Control Flat Panel Covers

Municipal wastewater treatment facilities everywhere face many new challenges. Among them are the need to conform to a growing list of tough environmental regulations, and the need to do so while maintaining tight control of operating costs.

At CST, we design innovative clear-span aluminum cover systems that help wastewater facility owners and operators meet environmental and fiscal challenges.

Solutions from CST are fast becoming the preferred choice to cover clarifier tanks, aeration basins and other process basins of all sizes and shapes. Aluminum is vapor-compatible with everything from sewage to most process chemicals and treatment processes. For example, hydrogen sulfides and mercaptans don't attack aluminum. In short, its corrosion resistance makes it the ideal material for most municipal wastewater applications. That's why CST specializes in all-aluminum structures.

## » Panel Designs

CST's innovative clear-span aluminum flat cover roof systems can help wastewater and other facilities control odors and provide a safe working environment for operators. They are built to withstand harsh, humid treatment plant environments. CST's flat cover roof systems require little to no maintenance and can be easily retrofitted with an array of appurtenances that allow them to interface—not interfere—with plant equipment and operations. They can be manufactured in a wide variety of shapes and sizes without compromising their precise fit and performance.

Our flat panel covers are designed to be self-supported (clear-span) or supported with beams and trusses. CST has multiple design configurations to choose from depending on your application.

## Formed Flat Panel Covers

CST's formed flat panel covers design is available in clear-spans up to 30 feet (9.14 m) and custom designed to meet your project's specific functional and design loading requirements. By using high-quality aluminum panels and structural members, CST ensures ultra-low maintenance for the life of the cover.



» **Winnipeg, Canada**  
**(2) 52' Diameter**

## Extruded Flat Panel Covers

CST's extruded flat panel covers design is available in clear-spans up to 16 feet (4.88 m) and custom designed to meet your project's specific functional and design loading requirements. The all-aluminum design, aluminum structural members and specified extrusions ensures quality, durability and longevity. The extruded aluminum panels offer an integral non-skid, low deflection walking surface.



» **San Marcos, California**  
**(2) 30' x 165'**

## Design Options

For large clear-spans with minimal horizontal forces, CST's extruded and formed panel covers are engineered with a truss supported design. Hence, no foundation reinforcement is normally required.

Where clear-spans are not a requirement, CST's column-supported products provide economical solutions. Contact us for more information.



» **Charlotte, North Carolina**  
**(2) 50', (2) 130', (4) 131' and (2) 137' Diameter**

# Extruded Flat Covers Design

## STRUCTURAL FASTENERS

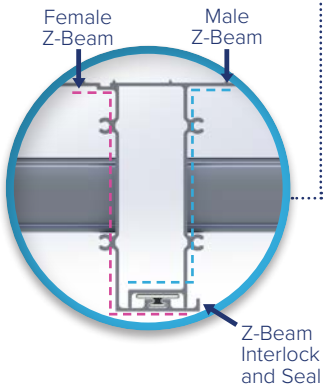
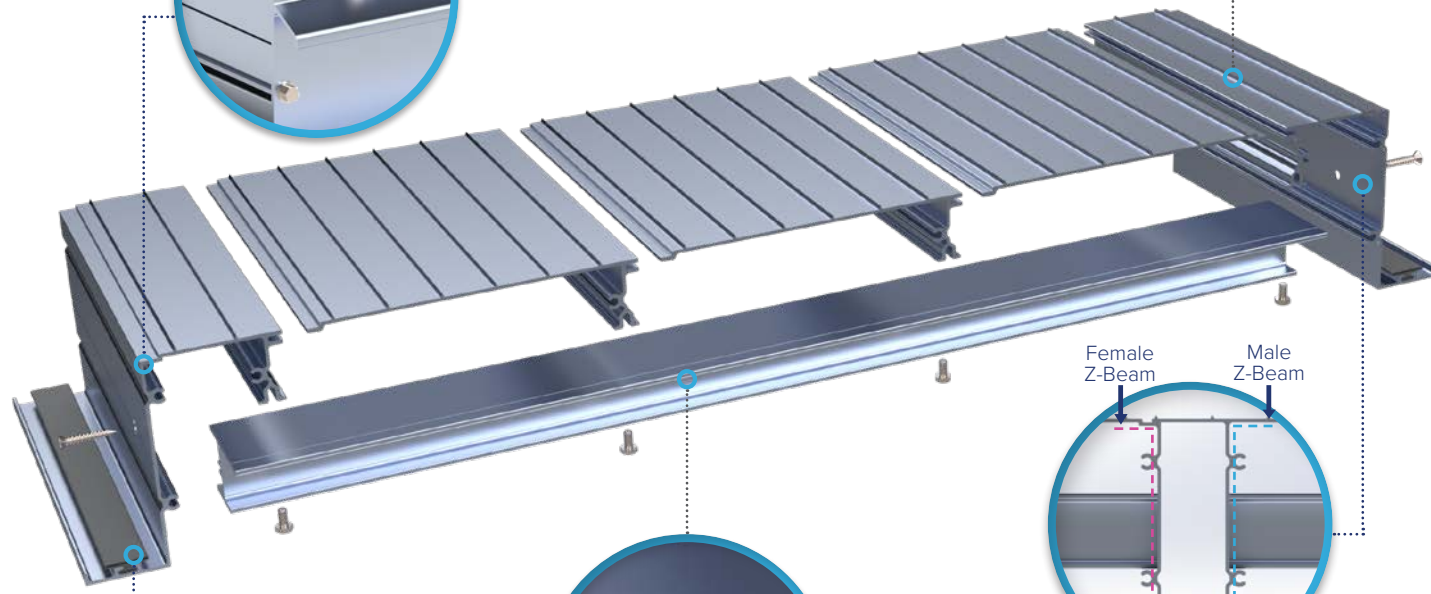
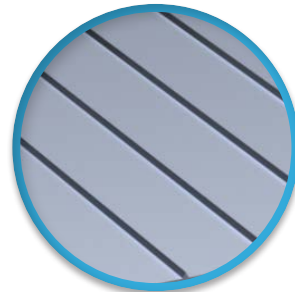
CST utilizes gasketed stainless steel fasteners to provide extra security for water-tight connections and corrosion prevention.



## MODULAR PLANKS

CST modular planks are a sub-member that accommodates a variety of panel widths and provide an integral slip-resistant walking surface, resulting in a safe structure with more basin access and stability for the operator.

CST panels arrive on site 100% shop assembled and ready to install without the need for additional field assembly, saving time and money.

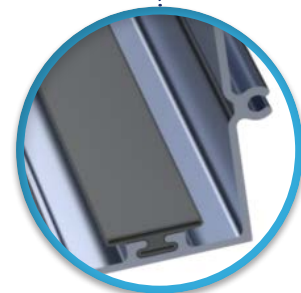
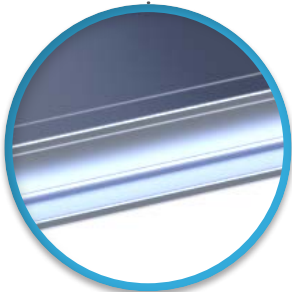


## INTEGRAL Z-BEAMS

(2) Two Z-Beams built into each panel allows for longer clear-spans, larger clear openings to the basin area, and a safe, rigid walking surface.

## CROSSBEAM

2-way stiffening action provides direct support to the planks ensuring a more robust design and rigid walking surface.



## NEOPRENE BULB GASKET

Neoprene provides excellent compatibility and resistance to H<sub>2</sub>S, a typical wastewater by-product. CST's bulb design promotes a water-tight seal inside the interlock areas between every panel, and at every panel endcap.

# Flat Panel Cover Installations



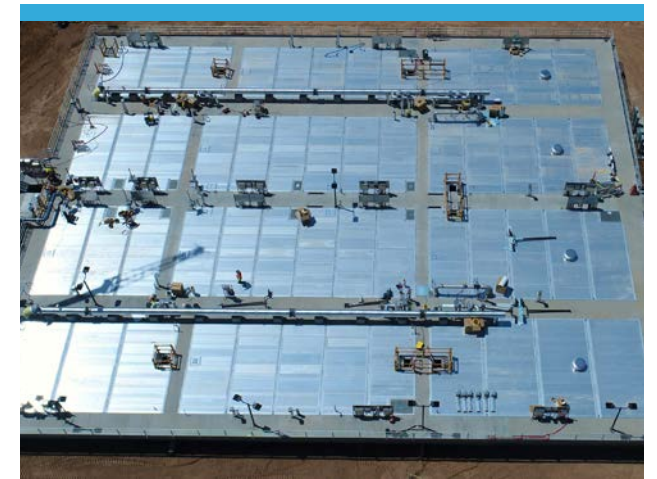
» Beckton Sewage Treatment Works  
United Kingdom – Approximately 600,000 sq. ft.



» Encina Wastewater Authority  
Carlsbad, California – (8) 35' x 300'



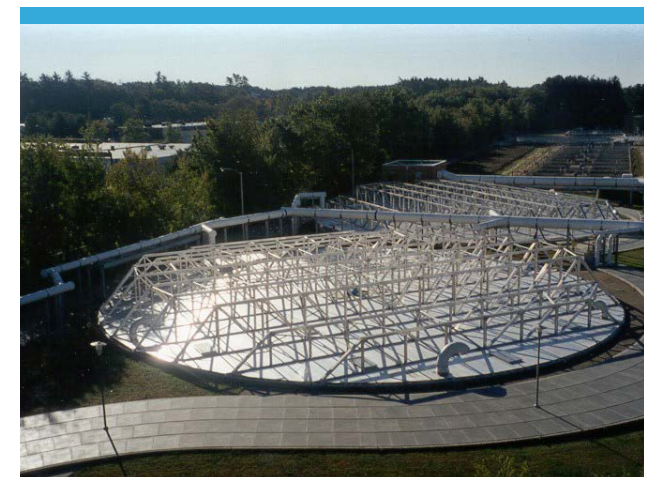
» Howdon Wastewater Treatment Works  
United Kingdom – Approximately 136,000 sq. ft.



» Greenfield Water Reclamation Plant  
Gilbert, Arizona – 240' x 297'



» Brick Township, New Jersey  
(6) 106' Diameter



» Manchester, New Hampshire  
(3) 130' Diameter

# Product Selection

CST's aluminum covers are suitable for a wide variety of water and wastewater applications. To help determine what cover is right for your application, please refer to the accompanying table.

|   | OPTIDOME | OPTIDOME LOW-PROFILE | RESERVOIR COVERS | FORMED FLAT PANEL COVERS | EXTRUDED FLAT PANEL COVERS |
|---|----------|----------------------|------------------|--------------------------|----------------------------|
| Resistant to corrosion from water/wastewater processes          | ✓        | ✓                    | ✓                | ✓                        | ✓                          |
| Suitable for odor control applications                          | ✓        | ✓                    |                  | ✓                        | ✓                          |
| Easily customized to accommodate penetrations or appurtenances  | ✓        | ✓                    | ✓                | ✓                        | ✓                          |
| Watertight enclosure  | ✓        | ✓                    | ✓                |                          |                            |
| Substantially airtight, low profile                             |          |                      |                  | ✓                        | ✓                          |
| Energy saver, reduced air volume for reduced air handling costs |          | ✓                    | ✓                | ✓                        | ✓                          |
| Equipment above cover to reduce confined space entry            |          | ✓                    |                  | ✓                        | ✓                          |
| Headroom for access beneath cover                               | ✓        |                      |                  |                          |                            |
| Maintenance friendly with easy to remove panels                 |          |                      |                  | ✓                        | ✓                          |
| Heavy duty (low-deflection, integral non-skid) walking surface  |          |                      |                  |                          | ✓                          |

\*Extruded flat panel covers are recommended for applications where heavy foot traffic and frequent access to center equipment is required.

## » Services

CST's aluminum domes, reservoirs and flat covers are the most robust, rigid, structurally sound and competitively priced aluminum covers made for both the water and wastewater markets. CST offers the longest clear-spans in the industry due to CST's modular unitized beam and plank structure in combination with beams or trusses supporting spans well over 250 feet ( 76.2 m).

CST aluminum domes and specialty covers are substantially air and water-tight, visually appealing, chemically resistant, energy saving, maintenance friendly, and easy to install. CST aluminum covers can be used to replace various cover types, fiberglass, checker-plate metal, and bent sheet metal covers. Whether the application requires domes, extruded or formed panels, circular or rectangular basins, self-supported or structurally supported, odor control or weather protection, we have the right engineered solution to match each application. Get all this from one turnkey manufacturer – CST.

## » Who We Are

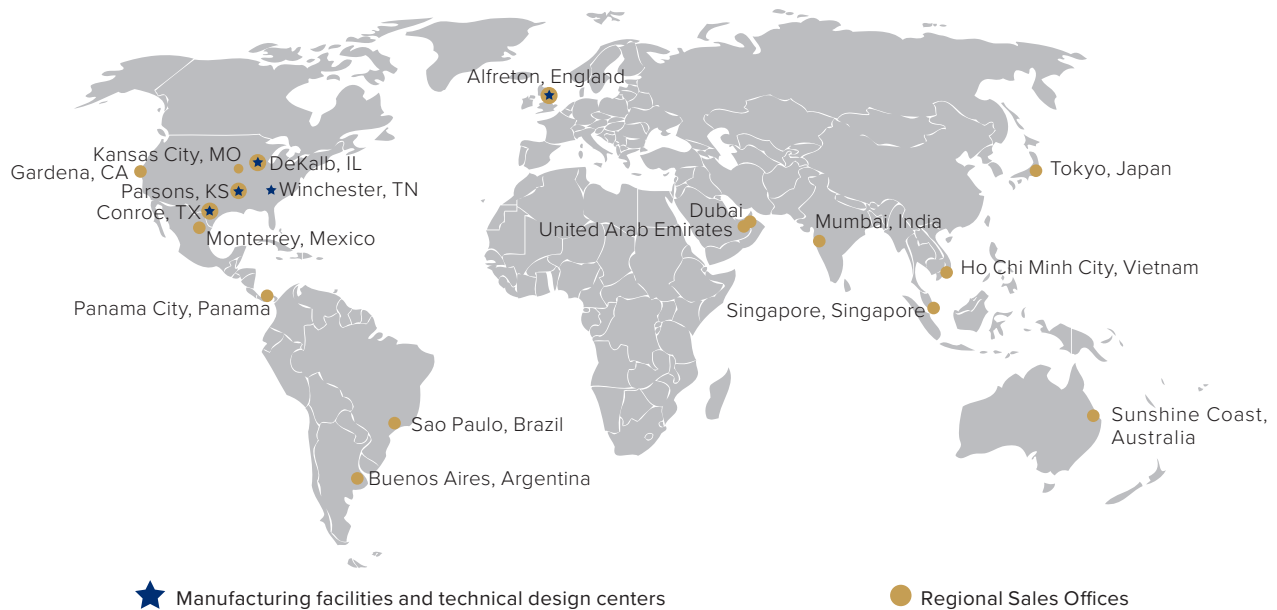
We are a solution provider for all your water and wastewater storage and cover needs. We design, fabricate, install and provide service long after the sale. Our qualified Service Technicians, inspect, maintain, repair and train. All CST products are USA manufactured in ISO 9001:2015 certified facilities while using LEAN manufacturing.



Wastewater Treatment Plant  
Halton Region Ontario, Canada  
(10) 140' Diameter Aluminum Domes



CST is committed to providing its customers with the highest engineered quality, best service, longest product life and greatest value for every storage and cover solution we supply.



### Certifications and Capabilities:

- ISO 9001:2015
- Aluminum Association's 2015 Aluminum Design Manual
- IBC 2015
- AWWA D108
- API 650G

For more information, call +1 844-44-TANKS or visit us online at [cstindustries.com](http://cstindustries.com)

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