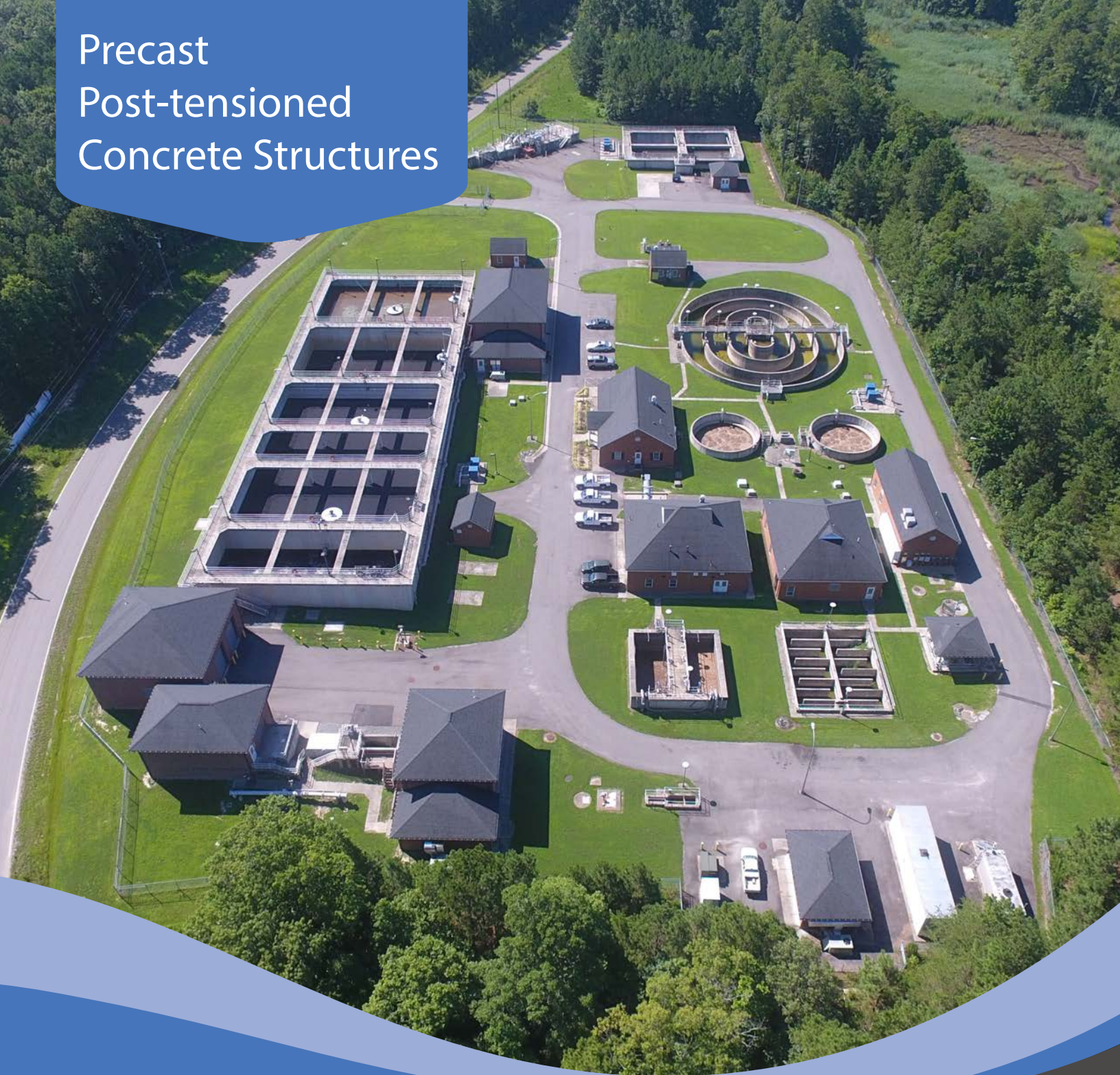


Precast  
Post-tensioned  
Concrete Structures



# Dutchland

INCORPORATED

*Engineered Concrete Environmental Solutions*





## OUR COMPANY

Dutchland is a proven leader in the design, manufacturing and construction of precast post-tensioned tanks of unprecedented quality. For more than forty years, Dutchland has been building circular, rectangular, elliptical and custom designed water and wastewater plants using our state-of-the-art technology. All Dutchland tanks are built in accordance with ACI 350 and/or AWWA D115 to ensure long-term performance, durability and reliability.







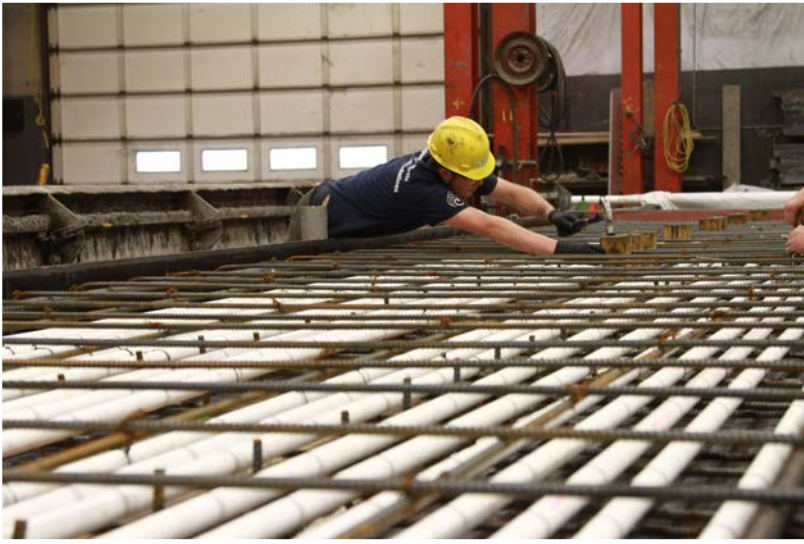
## CUSTOM SOLUTIONS

Every Dutchland precast structure is custom designed by our experienced engineering team to meet the specific needs of each project. Dutchland tanks are the perfect solution for many types of liquid containment including: potable water, wastewater treatment, storm water retention, and more.

Our precast tanks can be constructed as simple or complex structures, buried, partially buried, or above ground, as well as either circular, rectangular, or elliptical in configuration to accommodate project needs and site constraints.



# SUPERIOR QUALITY



In a controlled plant environment, Dutchland's precast manufacturing facility is able to achieve consistency in temperature, moisture and ideal curing conditions, as well as form control, that is not possible in cast-in-place or on-site precast concrete.

Precast pieces are cast horizontally in steel forms, resulting in far better consolidation than vertically poured cast-in-place or on-site precast concrete.



Dutchland produces its own concrete with materials that come from nearby quarries and from suppliers we utilize year after year to assure predictable results.

Highly trained employees:

- ACI-certified
- PTI-certified
- OSHA 10
- OSHA 30



# GREATER DURABILITY

Dutchland uses self-consolidating concrete (SCC) with fly ash to produce dense and durable concrete.

Dutchland tanks are designed for 5,000 - 6,000 psi at 28 days.

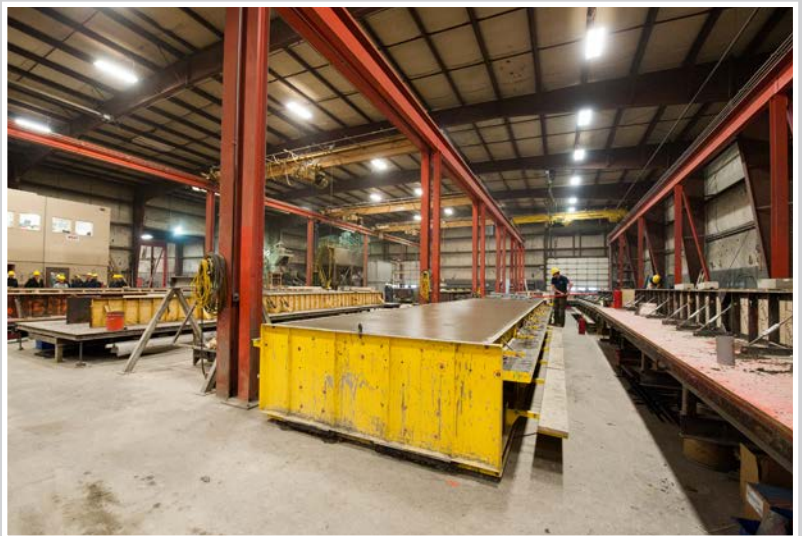
Dutchland's standard concrete far surpasses industry standards.

The Dutchland precast post-tensioned tank design provides active reinforcing which results in significantly less cracking and greater longevity.

A low water-to-cement ratio, in addition to ideal curing conditions, ensures a dense, highly durable, watertight structure.

Dutchland employs a very comprehensive QA/QC program:

- Concrete testing every 20 yards for unit weight, air entrainment, spread, temperature, and compressive strength
- Pre-pour and post-pour checks on every piece
- Strip strength testing
- Aggregate testing

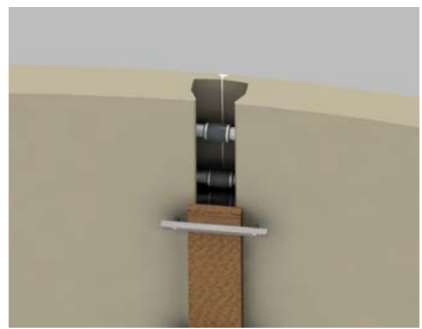




# STATE-OF-THE-ART TECHNOLOGY

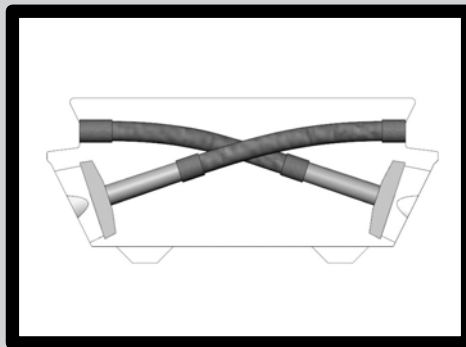
Dutchland tanks are dynamically reinforced with post-tensioning tendons to maintain a high residual compression in the walls, even when the tank is full. This method actively reinforces the structure and significantly enhances the watertightness and durability of the precast structure.

**WALL PANEL DETAIL**



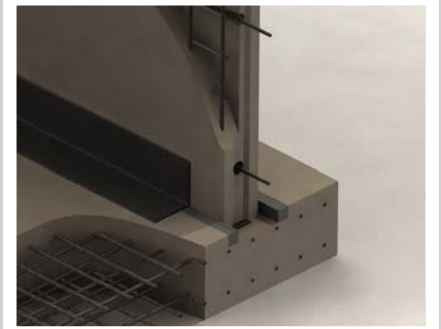
Duct couplings isolate tendon ducts from wall joints and ensure watertight ducts.

**BUTTRESS PANEL DETAIL**

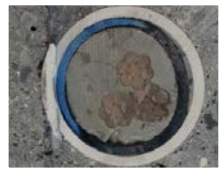


Tendons are terminated and tensioned at buttress panels. Crossing tendons ensures the entire tank is under compression.

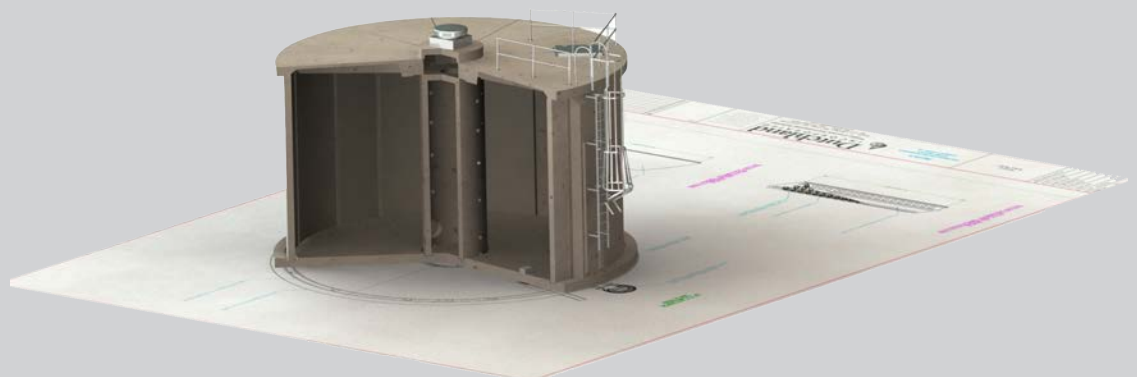
**WALL-TO-BASE DETAIL**



After the walls are tensioned, they are grouted into keyways in the base slab and sealants are applied to the wall/base slab interface.



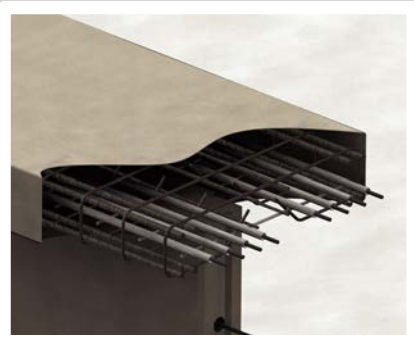
Cross-section of multi-tendon conduit



# STATE-OF-THE-ART TECHNOLOGY

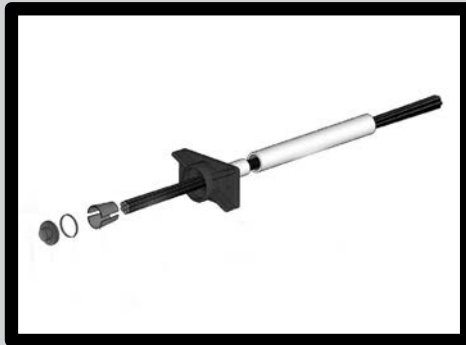
With Dutchland's post-tensioning technology, changes in precast concrete caused by shrinkage occur before the tank is erected. Therefore, the total movement in a precast tank is significantly less than in a cast-in-place tank, resulting in less cracking and greater longevity.

## WALKWAY DETAIL



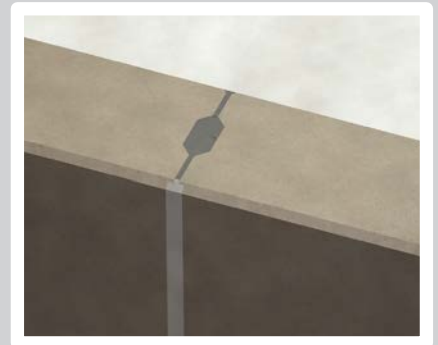
Walkways are structural components of rectangular tanks and are post-tensioned with sheathed tendons.

## POST-TENSIONING DETAILS

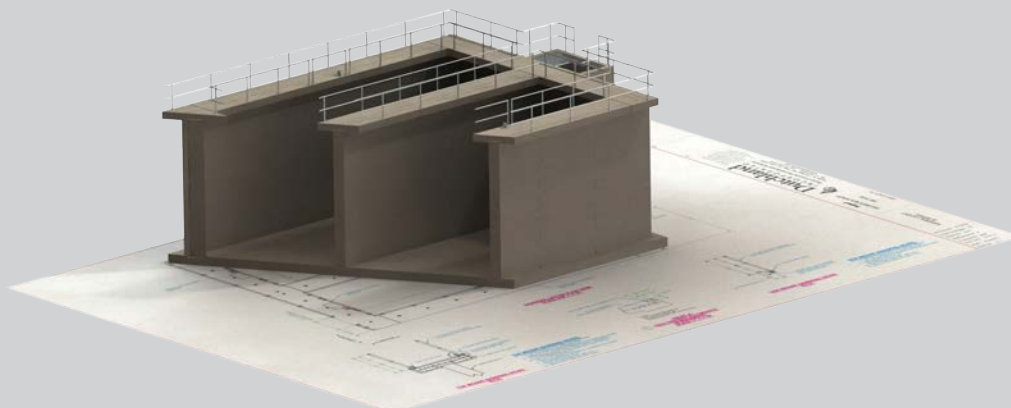


Tendons are encapsulated in high density polyethylene sheathing inside a grout-filled plastic duct. The anchor is also completely encapsulated, including the cut end of the tendon.

## WALL-TO-WALL DETAIL



Wall panels are grouted and sealed with an elastomeric sealant.



Anchor pocket with single strand tendon & wedge set

# EFFICIENT CONSTRUCTION

Dutchland offers unmatched economy and speed to complete your project on time and on budget:

- Dutchland is able to start the design process and manufacturing prior to beginning on-site construction.
- Dutchland has year-round unimpeded manufacturing and erection capabilities.







Dutchland precast has many advantages at the jobsite:

- Minimizing installation time
- Ensuring a precise fit
- Minimizing waste
- Reduced environmental impact (noise, truck traffic, pollution)
- Erecting in all weather conditions
- Elimination of fabrication at the construction zone

All of which improve logistics and contribute to environmental stewardship.

Choosing Dutchland precast concrete results in a much shorter overall project schedule because off-site precast operations at the Dutchland facility occur simultaneously with on-site work, such as excavation and the installation of deep foundations.



# VERSATILE WASTEWATER EXPERIENCE

**Client:** Alexandria Renew Enterprises  
**Project:** 18 MG Combined Sewer Overflow Tank  
**Location:** Alexandria, VA  
**Project Details:** Structure footprint 415' long by 256' wide, 18 month project schedule, 3 main levels plus building integrated into tank, center pipe gallery buried 50', 1,665 total precast pieces, over 2,500 cu.yd. concrete  
**Engineer:** KCE Structural Engineers, PC



**Client:** Milton Regional Sewer Authority  
**Project:** Wastewater to Energy Project  
**Location:** Milton, PA  
**Project Details:** Two 7.5 MG AWWA D115 Circular Anaerobic Digester Tanks (diameter: 206'-8")  
One 3.4 MG Rectangular VLR Tank (241'-2" by 68'-4")  
Two 1.3 MG AWWA D115 Circular Clarifier Tanks (diameter. 90')  
**Engineer:** HRG



**Client:** Moorefield WWTP  
**Project:** 4.1 MGD Advanced Nutrient Facility  
**Location:** Moorefield, WV  
**Project Details:** Oxidation Ditch: 275'-6" by 126'-6"  
Two Primary Clarifiers (diameter: 64' )  
Two Final Clarifiers (diameter: 95' )  
Leachate Storage Tank (diameter: 34' )  
Dewatering Tank/Building  
**Engineer:** Triad Engineers, Inc.





# VERSATILE WASTEWATER EXPERIENCE

Client: City of Lock Haven  
Project: 3.75 MGD Biological Treatment  
Location: Lock Haven, PA  
Project Details: Biological Treatment Facility (250'-7" by 202'-11") using 4 SBRs and 4 aerobic digesters, also includes a building for pumps, blowers, equipment, employee locker room, etc.  
Engineer: Larson Design Group



Client: Oxford WWTP  
Project: 1.25 MGD Extended Aeration WWTP  
Location: Oxford, PA  
Project Details: Elliptical tank configuration to realize cost savings, designed for future denitrification and expansion to 2.5 MGD in the future  
Engineer: Rettew Associates, Inc.



Client: West Hanover Township WWTP  
Project: 0.83 MGD SBR-Digester Tank  
Location: West Hanover, PA  
Project Details: SBR-Digester tank: 93' by 66'  
Screening building attached to tank: 32' by 19'  
Engineer: RK&K Engineers



# VERSATILE WASTEWATER EXPERIENCE

Client: United States Military Academy  
Project: Potable Water Storage  
Location: West Point, NY  
Project Details: 500,000 Gallon AWWA D115 Circular Tank  
500,000 Gallon AWWA D115 Circular Tank  
250,000 Gallon AWWA D115 Circular Tank  
250,000 Gallon AWWA D115 Circular Tank  
Engineer: HDR  
EDM Consultants, Inc.  
QPK Design Architecture



Client: Knouse Foods  
Project: Water Storage  
Location: Biglerville, PA  
Project Details: 2.5 MG AWWA D115 Circular Tank  
Engineer: William F. Hill & Associates, Inc.



Client: The Greenbrier Sporting Club  
Project: Water Storage Tank and Pump House  
Location: White Sulphur Springs, WV  
Project Details: 0.3 MG AWWA D115 Rectangular Tank  
Engineer: Draper Aden Assoc.





# VERSATILE WASTEWATER EXPERIENCE

Client: Lonaconing Koontz Run Reservoir  
Project: Water Storage  
Location: Lonaconing, MD  
Project Details: 3 MG AWWA D115 Rectangular Tank  
Engineer: RK&K Engineers



Client: Garrett County  
Project: Potable Water Storage  
Location: Oakland, MD  
Project Details: 1.013 MG AWWA D115 Circular Tank  
0.5 MG AWWA D115 Circular Tank  
0.156 MG AWWA D115 Circular Tank  
0.025 MG AWWA D115 Circular Tank  
Engineer: Potomac Engineering & Surveying  
Greenhorne & O'Mara; Thrasher Engineering  
Mountain View Engineering & Surveying, Inc.



Client: City of Salisbury  
Project: Water Storage  
Location: Salisbury, MD  
Project Details: 1 MG AWWA D115 Circular Tank  
Engineer: GMB



# EXPERIENCED PARTNER



Dutchland has designed and built over 1,000 structures and wastewater treatment plants for a remarkable range of clients. This breadth of experience equips us to tackle any project challenge, large or small. However diverse our projects may be, the results are one and the same:

On schedule,  
On time,  
Superior quality  
and Long-term durability.





# TESTIMONIALS

"After using precast, post-tensioned concrete tanks for multiple complex, time and budget sensitive projects, I recommend this approach versus cast-in-place concrete structures. Furthermore, I would recommend Dutchland to manufacture and assemble my structures without reservation."

Keith, Stafford County

"On every project, Dutchland demonstrated diligent planning and stringent quality control that resulted in structures built for long-term performance that far exceeded our expectations."

Robert, RK&K Engineers

"Dutchland's on-site crew is highly skilled, efficient, diligent, and hard-working. Their can-do attitude has enabled them to adhere to their original schedule despite setbacks. Their employees are professional and well trained. It is evident that Dutchland strongly values an attention to detail, safety, teamwork and communication."

Jeff, Clark Construction

# CLIENTS

- IBM
- United States Military Academy
- United States Air Force
- Baxter
- Alexandria Renew Enterprises
- Furmano's
- PA American Water
- MillerCoors Brewing Company
- Perdue Farms
- GlaxoSmithKline
- Sanofi Pasteur
- The Hershey Company
- Army National Guard
- Ken's Foods
- United States Army Corps of Engineers
- Baltimore-Washington International Airport



## Amazing Facts About Us

Since the 1980's, Dutchland has been specializing in the design, manufacturing and construction of precast post-tensioned concrete structures for water and wastewater applications. Our reputation was built on designed custom solutions of unprecedented quality to ensure long-term performance, durability and reliability.



CALL NOW: 1-717-442-8282



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