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Vice President - Engineering
DN Tanks - Prestressed Concrete Tanks



Storage Tanks in Water Applications



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300,000 Gallon Water Storage Reservoir Saipan

Storage Tanks in Wastewater Applications



Livingston, California
(2) 2.3 MG Aerobic Digesters
(2) 1.3 MG Clarifiers
1.0 MG Anoxic Reactor
0.25 MG Aerobic Reactor



San Diego, California
two 0.5 MG receiving tanks
two 1.4 MG anaerobic digesters
three 3.1 MG anaerobic digesters



Indianapolis, Indiana | 1.35 MG storm water tank



El Segundo, California | two 5 MG recycled tanks



Richmond, California | 5 MG EQ tank



Hillsboro, Oregon | twin 1.5 MG modified-egg digesters



Carson, California | twenty-three 4 MG digesters



Why Did We Get Into Wastewater as a Profession?

Wastewater =

Wastewater = FAME!



Wastewater = FAME!



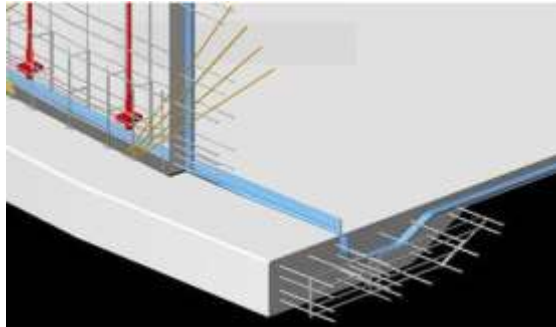
Wastewater = FAME!

Considerations Wastewater Applications

- Floor Considerations



Flat Floor / Sloped to Edge



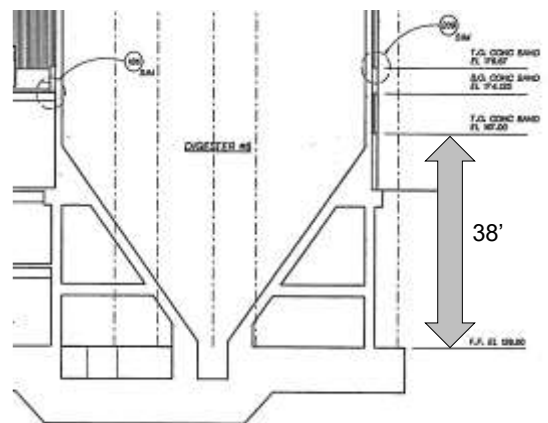
Flat Floor / Sloped to Edge



Subgrade Supported Conical Floor



Structurally Supported Conical Floor



Considerations Wastewater Applications

- Floor Considerations
- Roof Considerations

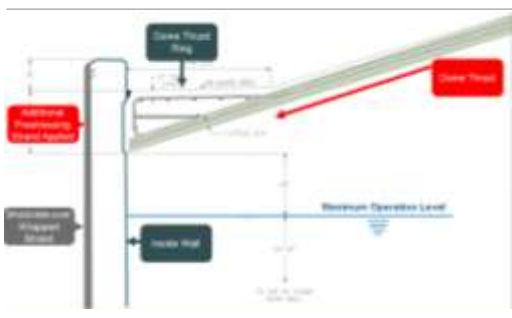


OPTIONS

Round Column Construction – Flat Slab Roof



Free Spanning Dome Roof



Circumferential Prestressing



- › Resist Hydrostatic Loads
- › Resist Structural Load from Roof
- › Resist Hydrodynamic Load (seismic)

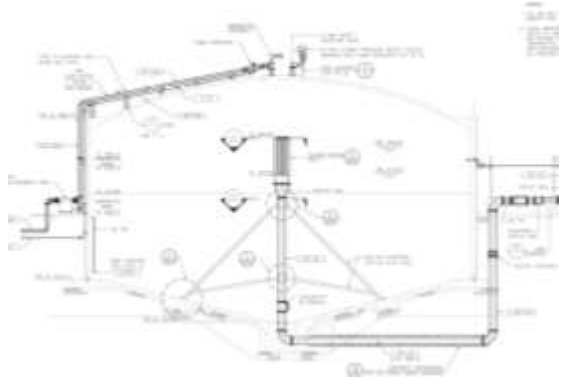
Construction – Stressing Head



- › 7-wire galvanized strand
- › Wraps at 14,950 pounds (70% MUS)
 - › Instantaneous Force Application Correction
 - › ±2% tolerance
- › Differential gear gripping head
 - › Controls Force
 - › Controls Spacing

Considerations Wastewater Applications

- Floor Considerations
- Roof Considerations
- Interior Considerations



Indio, CA – 1.0 MG Digester w/ Sludge Mixing



odor control and jet mix



interior coating

**Side Note - #1
Rehabilitation - Repairs**

Two photographs showing floor repairs around a column base. The left image is a close-up of a square-shaped repair area around a column base, showing a dark, possibly epoxy or concrete, repair material. The right image shows a wider view of the same area, showing the column base and the surrounding floor area with several similar repair patches.



Interior Lining – Wall Penetrations



Interior Lining



Interior Lining



Interior Lining

Side Note - #2 NSF Compliance

- 5 Year Study Conducted
- New Regulation Passed March 2017 for Potable Water Storage
 - NSF Testing not Required >350,000 Gallons
 - NSF Admixtures Still Required
 - If structure is <350,000 Gallons Testing Procedures Redefined.

Considerations Wastewater Applications

- Floor Considerations
- Roof Considerations
- Interior Considerations
- Exterior Appurtenances



stairs and landing



catwalk



pipng on roof

Considerations Wastewater Applications

- Floor Considerations
- Roof Considerations
- Interior Considerations
- Exterior Appurtenances
- Cleaning Features



water cannon



DN Tanks Automatic Washdown System



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