Salt Storage

AN
ENGINEER'S
AND
FABRICATOR'S
PERSPECTIVE OF
USING PRECAST
CONCRETE FOR
SALT STORAGE

Presenters

- Matt Cooper, P.E. – Bernier, Carr & Assoc.
- Bob Siver – Jefferson Concrete Corp.

An Engineer's Perspective of Using Precast Concrete for Salt Storage

Presented

By

Matt Cooper, P.E.

Why Salt Storage?

- Environmental Protection
- Product Loss
- Efficiency of Operation
- Economics of Salt Purchase

Facility Considerations

- Capacity
- Salt / Sand Storage
- Mixing
- Indoor Dumping/ Loading
- Budget

Construction Materials

Walls

- Precast Concrete
- Cast in Place Concrete
- Wood

Roof

- Steel Structure with Fabric Cover
- Wood Structure with Steel Roofing or Asphalt Shingles

Advantages of Precast Concrete

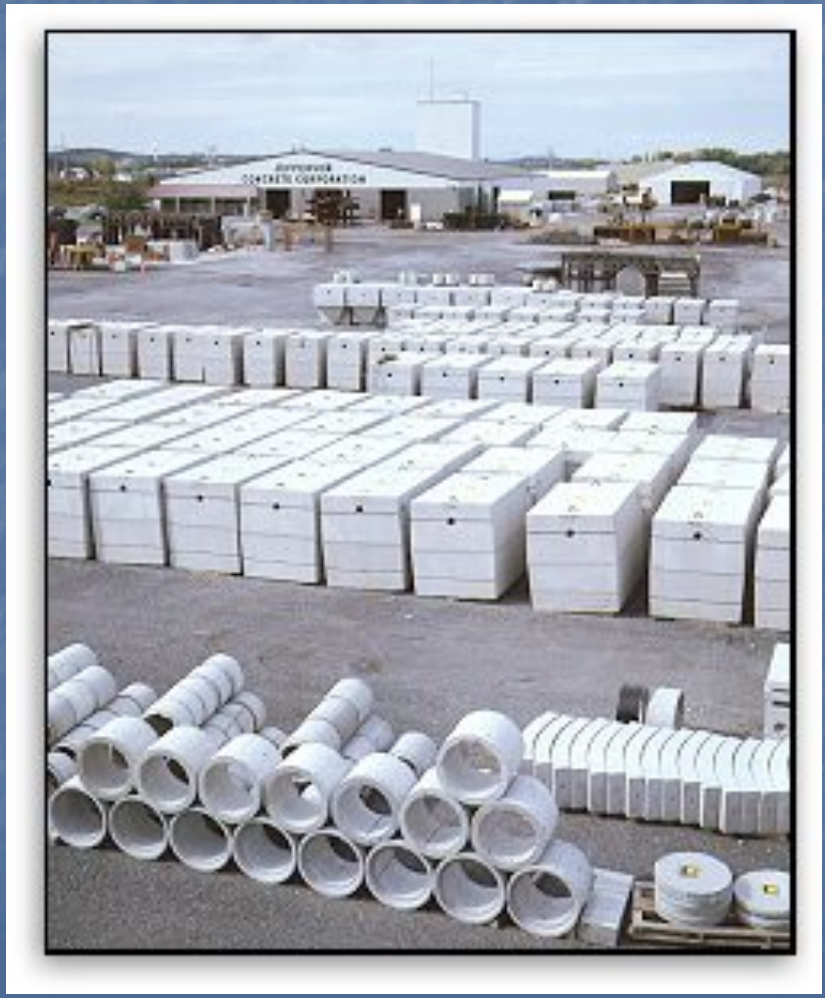
- Controlled Conditions
- Quality Assurance
- Design
- Cost

Controlled Conditions

- Temperature
- Humidity
- Rain/Sun
- Lighting
- Wind

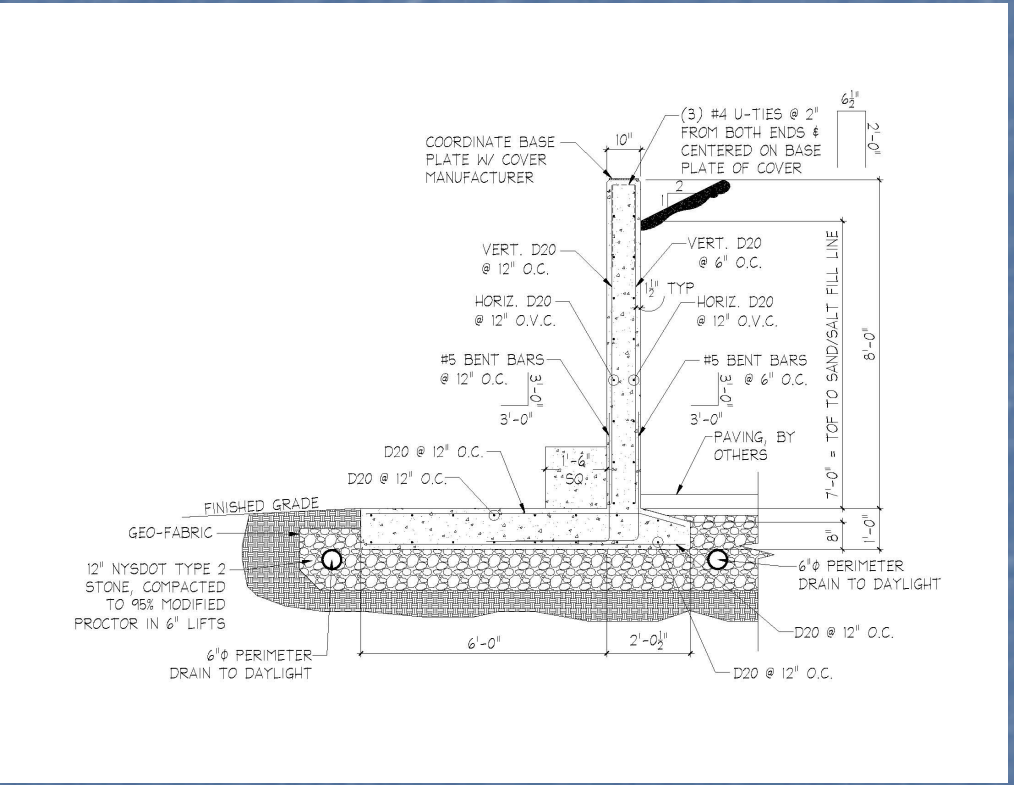
Quality Assurance

- NPCA Plant Certification Program
- Experience
- Repetition
- Equipment
- Material Storage
- Material Delivery
- Facility



Design

- Reinforcement Placement
- Less Concrete Cover Develop Higher Flexural Strength
- Forms
- Concrete Placement
- Curing



Typical Costs

- Precast Concrete Walls $500/lf
- Cast in Place Concrete Walls $500-600/lf
- Fabric Cover $15-$20/sf
- Wood Frame w/ Steel Roof $30-$35/sf
- Engineering Variable
- Site Work Variable

Town of Redfield

- Owner
  - Town of Redfield
- Engineer
  - Bernier, Carr & Assoc.
- Contractors
  - GC - MTL Designs
  - Precast Concrete Supplier – Jefferson Concrete
  - Fabric Cover – Calhoun Superstructure
- Project Cost - $163,455 plus in-kind services

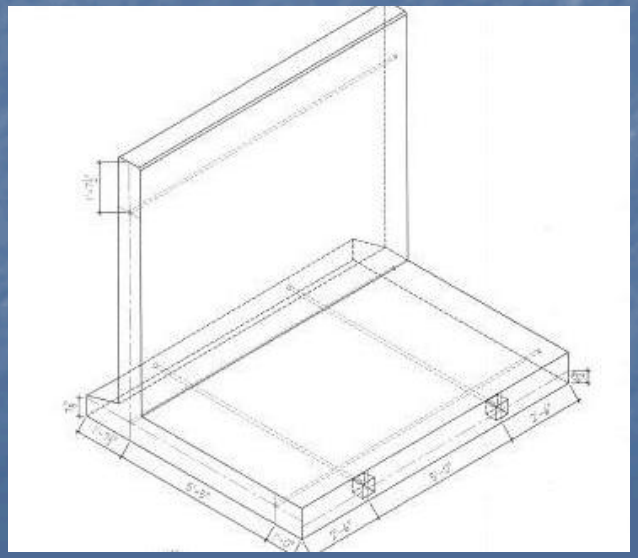
Salt Storage

Presented by

Jefferson
CONCRETE CORP.
Watertown, NY

Foundation

- Each Salt Storage unit can be designed for different lengths and widths.
  - The standard dimensions of Each Wall Section



- Length 10’ – 0”
- Inside Height 8’ – 0”
- Outside Height 9’ – 0”
- Wall Thickness 0’ – 10”
- Base Thickness 1’ – 0”

Types of Structures

Wood Frame Structure

Town of LeRay, Jefferson County, NY

“Fabric” Frame Structure

Town of Cape Vincent, Jefferson County, NY

Tensioning

- Post-Tensioning of wall sections help keep Structure secure while keeping each piece independent in case of breakdown.

- Waterproofing and Corrosion inhibitor admixtures can be added to the concrete mix for additional protection of the finished product

Entrance and flooring

- Big opening for easy access to large loaders and trucks
- Structures allows for either an asphalt or concrete floor
- Tension cables run across the whole internal floor structure to prevent outward movement of the walls

Precast Concrete Advantages

- Meet Basic Design Guidelines & Standards
  - Pre-engineered systems in place
  - Proven designs
  - Standard shapes and sizes for fast track work

- Cost Savings (Time)
  - Product pre-inspection
  - No forming malfunctions
  - Tighter scheduling
  - Minimizes Davis–Bacon Act exposures
  - Less implication from inclement weather

- Confidence
  - NPCA certified
  - ACI certified – Quality Control Technicians

- Long Life Cycle of Product
  - Controlled curing process
  - Mix design quality control assurances
  - Controlled environment for casting

Summary

- Minimizes unexpected cost overruns
- “Factory” produced concrete yielding higher strength
- Higher Quality Control
- Less complicated scheduling
- Faster completion times

Contact Information

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