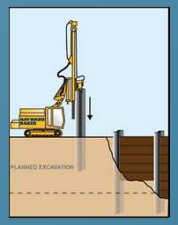
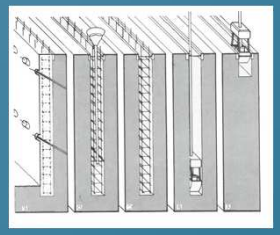
PROVO TABERNACLE TEMPLE FOUNDATION

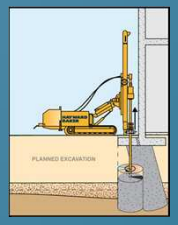
PRELIMINARY DESIGNS



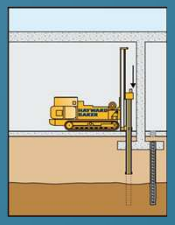
Soldier Wall



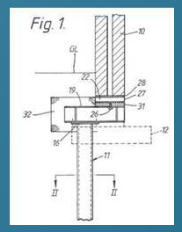
Slurry Wall



Jet Grouting



Micropiles



Underpinning

Construction Dewatering

- Layered Well Point
- Deep Well
- Cutter Soil Mixing

Waterproofing

- Liquid Membranes
- Sheet Membranes
- Built-up Systems
- Bentonite

COST

Micropiles	$50-$70 (per linear foot)	$ 551,000-$826500
Concrete	$200 (per cubic yard)	$ 508,807
Bentonite Sheets	$3 (per square foot)	$ 90,000
Wells/Pumping	$2000 (per well)+$30 (per linear foot)	$ 28,000
	Max Estimated Total	$ 1,453,307

Pictures from Hayward Baker website, Fundamentals of Building Construction (Wiley), and LDS.org

BACKGROUND

On December 17, 2010, the Provo tabernacle was destroyed by fire. The Church of Jesus Christ of Latter-day Saints has decided to rebuild the tabernacle into a temple.

OBJECTIVE

Design a constructible, lasting, and cost efficient foundation for the restoration of the Provo Tabernacle Temple

CONSTRAINTS

Support walls during excavation
Current Foundation is unsuitable
Add 2 basement floors

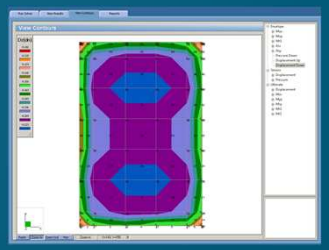
- Preserve space
- Under existing walls

Water table at 15 ft

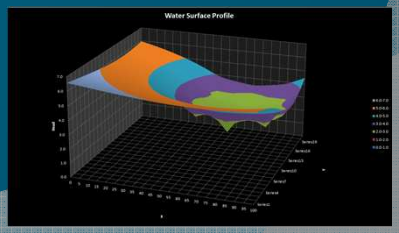
- Dewatering during construction
- Long-term waterproofing/dewatering
- Building uplift

FINAL DESIGN

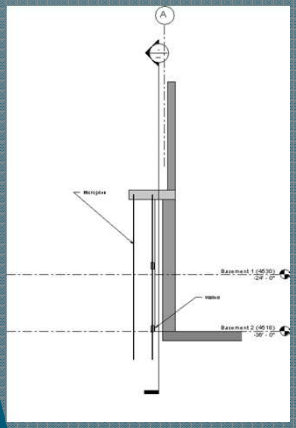
Overall Design View



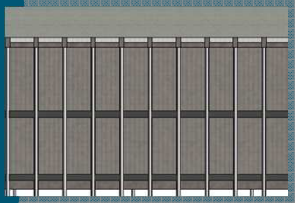
Mat Foundation Design using spMats



Construction Dewatering using Excel Program from Dr. Jones



Cross Section



Soil Retention System

Rehak MSA

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