

CASE STUDY:

Conventional GSHP – Isabella Stuart Gardner Museum

Presented by:

Stephen A. Sakakeeny, LSP, LEP, CHMM, CPG

SAK Environmental, LLC

www.sakenvironmental.com

Isabella Stewart Gardner Museum Addition



Isabella Stewart Gardner Museum

Addition:

Project Summary

- ◆ 70,000 s.f. new wing
- ◆ Total project cost: \$114M
- ◆ Calderwood Performance Hall
- ◆ Special exhibition gallery
- ◆ 1,650 s.f. greenhouse
- ◆ Conservation labs and archival storage
- ◆ Café & Museum Shop
- ◆ LEED Gold certification

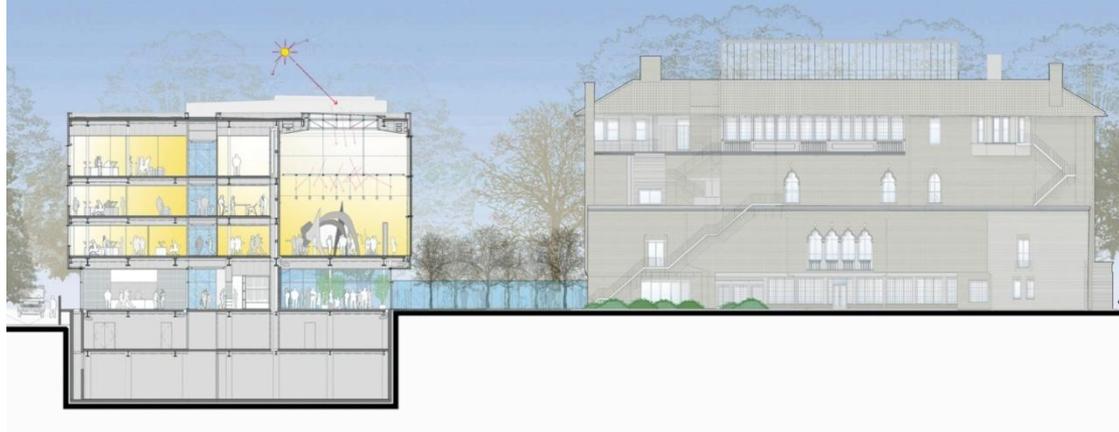
Isabella Stewart Gardner Museum

Addition:

Project Team

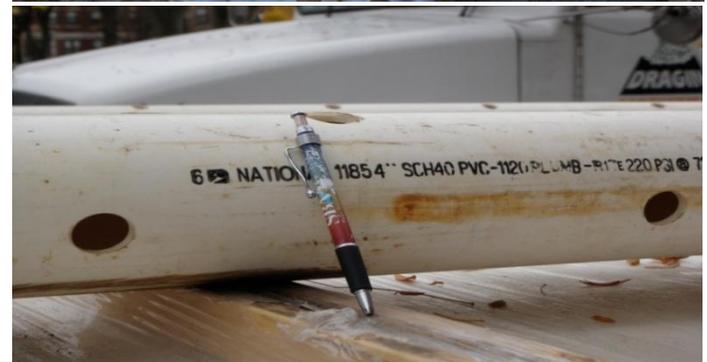
- ◆ Owner – Isabella Stewart Gardner Museum
- ◆ OPM – Paratus Group, NYC
- ◆ Design Architect – Renzo Piano Building Workshop, Genoa, Italy
- ◆ Architect of Record – Burt Hill
- ◆ MEP – Buro Happold
- ◆ CM – Shawmut Design & Construction
- ◆ Total project cost - \$114M
- ◆ Opened January 2012

Isabella Stewart Gardner Museum Addition



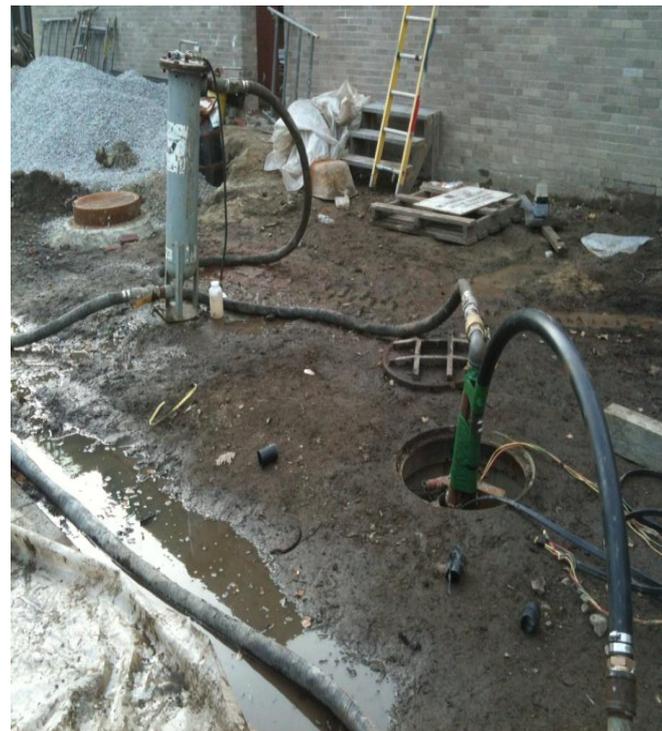
Geothermal System

- ◆ Eight 1,500 ft Standing Column Wells
- ◆ 170 ton cooling capability
- ◆ 2.0M Btu/hr heating capability
- ◆ Four 2-well loops each w/ heat exchanger
- ◆ No Bleed
- ◆ Bag filtration
- ◆ Well field cost = \$550,000
- ◆ Mechanical cost = \$100,000



Problem Solving

- ◆ Soft rock zone - PVC sleeves installed for stabilization
- ◆ Waste water treatment - stone dust
- ◆ Space restraints ...affected construction sequence.....affected initial well performance
- ◆ Filter clogging
- ◆ Pump burnout
- ◆ Well clogging



Solutions

- ◆ Review well logs, aquifer tests, development reports
- ◆ Enhanced waste water treatment
- ◆ Differentiate natural from avoidable conditions
- ◆ CORs for \$275,000 avoided
- ◆ System startup in June 2011