

NY-GEO Top Job Competition April 2019



All-American Self Storage
Chelmsford, MA





Last year, Lloyd called me an Interloper with my Red Sox Cap.

I want you to know I have roots in New York.

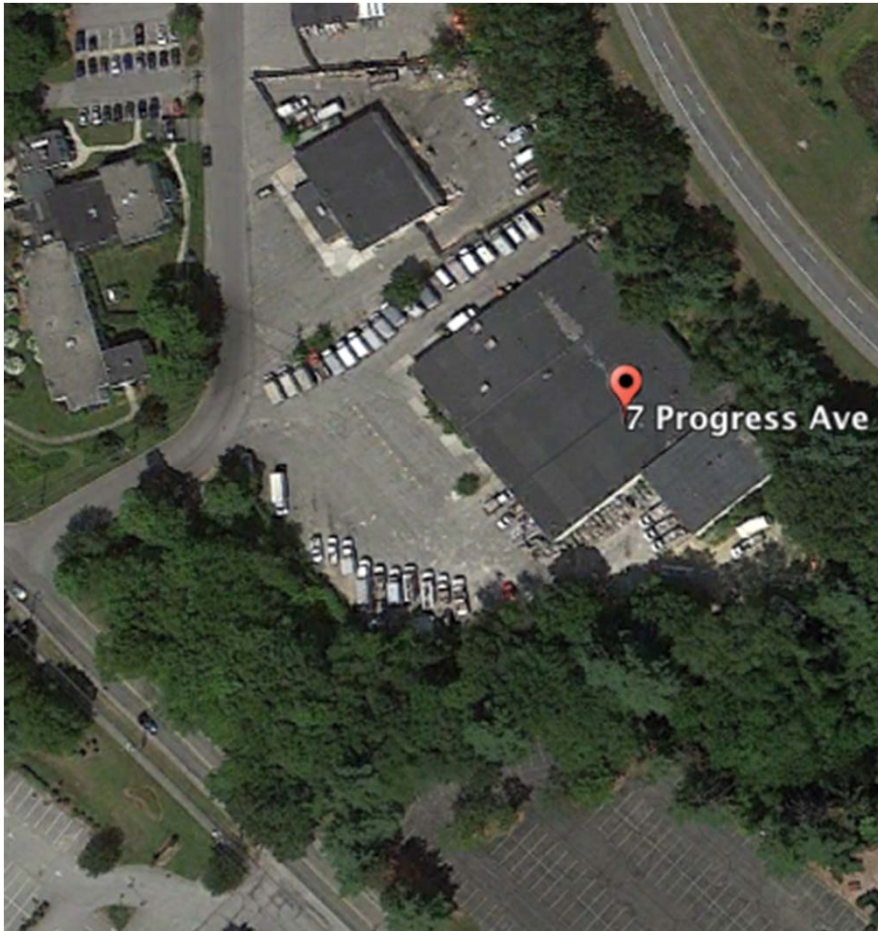
I am Colgate Geology Class of 1985



Project Site and Scope



Building and Vicinity 2015



New Building 2019





Why was Geothermal Selected?

- Low Operating Cost = Higher Value for Facility
- High efficiency and Low Carbon Footprint
- Ability to service multiple zones on one AHU/GSHP
- Client thinks Geo is Cool
- Straightforward monitoring, remote control and remote configuration
- ✱ Client trusted us based on prior project



Project Parameters

- 130,000 Square Foot Building
- Vertical Closed Loop - 18 Borings to 420'
- Design relies on Bentonite/Graphite Grout with a Thermal Conductivity of 1.6 Btu/hr-ft-°F
- Variable Speed GSHPs
- Variable Speed Circulation in Primary-Secondary Configuration
- Remote Monitoring, Control and Configuration

VCL Construction





Quality Control Matters





QC Checks

- ☑ Bedrock Type Confirmed During Drilling
- ☑ Boring Depths Confirmed
- ☑ Formation Thermal Conductivity Test - 1.73 Btu/hr-ft-°F
- ☑ Grout TC Test at Test Boring averaged: 1.56 Btu/hr-ft-°F
- ☐ Grout TC Testing during VCL Install averaged: 0.861 Btu/hr-ft-°F
 - ▶ Installed 2 additional borings (TC 1.634) for field average of 0.969 Btu/hr-ft-°F.
- ☑ Borings located via Total Station Survey and via Drone Images
 - ▶ Site contractor hit piping twice making location information important



Completed Project



All-American Self Storage 2019





Why is All-American Self Storage the Top Job?

- ☐ Scope of Project: 130,000 square feet
- ☐ High Performance, Variable Speed Equipment
- ☐ Designed with Low Borehole Thermal Resistance
- ☐ Redundant Systems
- ☐ Support of multiple zones on one GSHP
- ☐ Use of monitoring system to optimize efficiency
- ☐ Last but not least: Quality Control saved the day



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