2025 GeoStar Top Job Presentations

Moderator: **Joanne Coons /** *NY-GEO Member*

Awardees:

1) COMMERCIAL:

- **Ithaca Firehouse, Wendel - Rachel Carpitella, Steve Grgas**

2) MIXED-USE:

- **Alafia, Salas O'Brien - Peter Strupp**

3) MULTIFAMILY

- **Steamboat 20, Aztech Geothermal - Geoff Hoffer**
  (an Albany Housing Authority project)

Thank you to our 2025 Top Job Judges

Name	Info/Bio	Field of Work
Tony Amis	Sr. Vice President, Endurant Energy	Civil Engineering, large foundations, geothermal energy piles
Eric Bosworth	Manager, Clean Technologies at Eversource Energy	Energy expert working in clean tech and utility scale geothermal networks.
Matt Dennis	Senior Home Solutions Expert, Halco Energy	Clean Energy Advisor
Jacquie Scherer	Geothermal system designer since 2005	Design and Project Management
Jim Thomas	Owner, Thomas Geothermal Engineering LLC	New Jersey licensed geothermal HVAC contractor and engineering consultant.

NY-GEO TOP JOBS 2025

PRESENTER (S): Rachel Carpitella

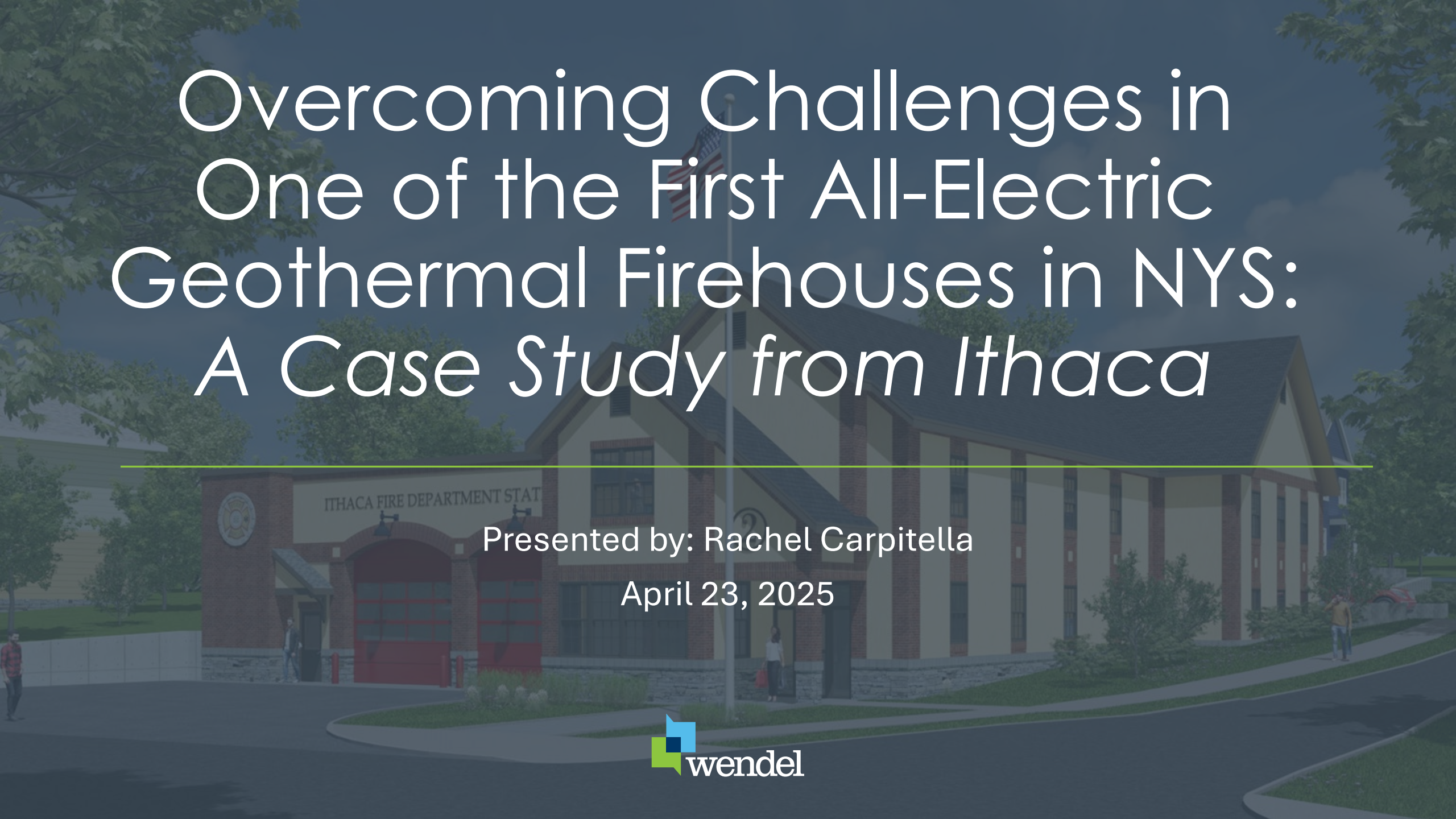
ORGANIZATION (S): Wendel

PROJECT NAME: Ithaca Fire Station

PROJECT LOCATION: Ithaca, NY

wendel

Overcoming Challenges in One of the First All-Electric Geothermal Firehouses in NYS: *A Case Study from Ithaca*

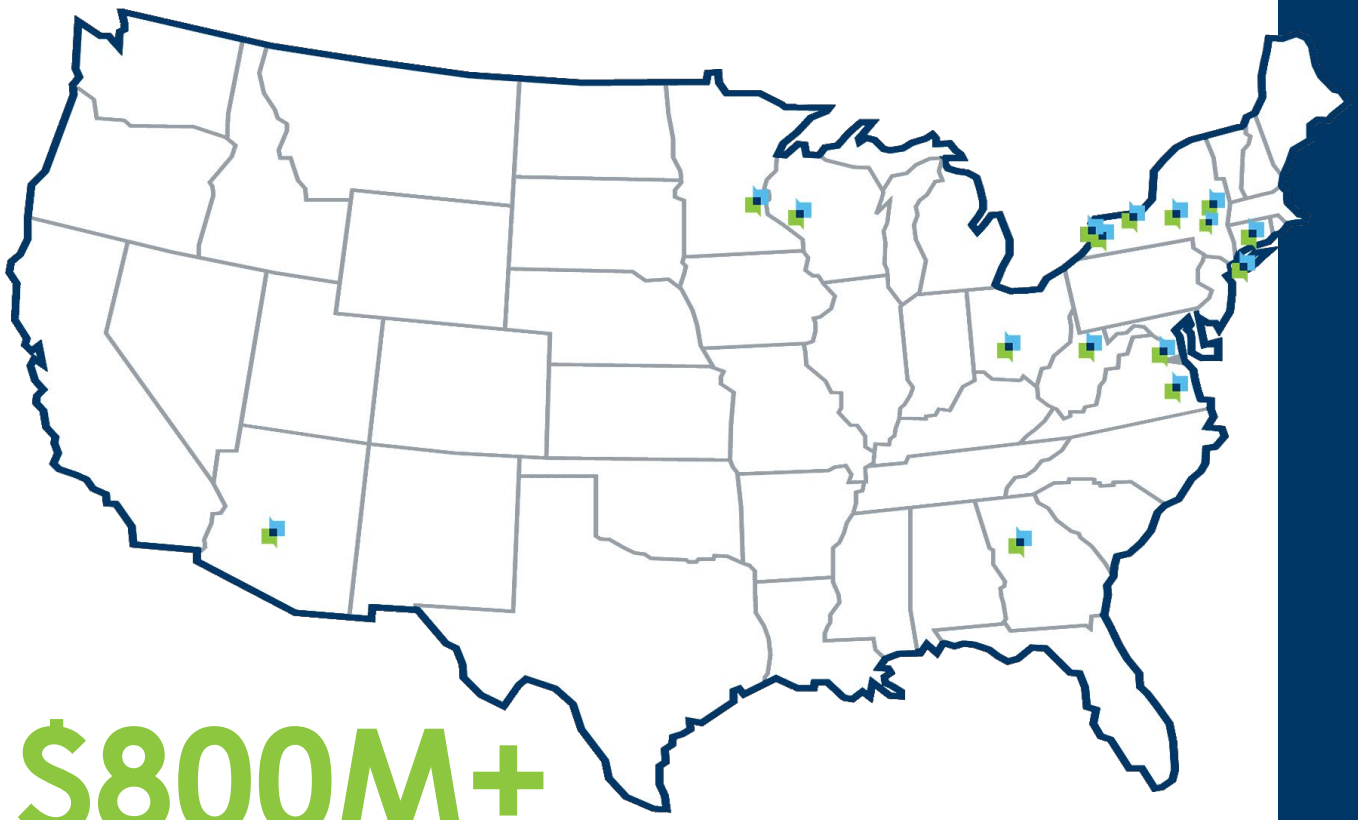


Presented by: Rachel Carpitella

April 23, 2025

wendel

Who is Wendel?



$800M+

Energy Efficiency Projects Since 2001

$350M+

Annual Cost Savings for Clients

85 yrs

in business

16

offices

300+

professionals

- Lighting Improvements
- Photovoltaic Systems
- Site Lighting
- Major HVAC Retrofits
- Chiller/Boiler Plants
- Geothermal
- Heat Pump Systems
- Ventilation system
- Healthcare facilities
- Laboratories
- Dormitory facilities
- Electric vehicle charging stations
- Retro-commissioning

wendel

wendel

Home of the Award Winning

Five Bugles Design + Mitchell Associates Architects

Over 300 programming/ feasibility studies completed

with over 150 emergency services facilities constructed!

Experienced Emergency Services Portfolio

EXPERIENCE:
20 years

ROLE / RELEVANCE:
Business Development

EXPERTISE:
Project Management
Community Engagement
Sustainability Expert
Clean Energy and Building
Decarbonization Strategy Expert

NOTEABLE ACHIEVEMENTS
Advised 100+ Large Buildings
Quadrupled Department Revenue
Secured $15+ M in Grants/Incentives

PROJECT HIGHLIGHTS:
Children's Village Thermal Energy Network
Decarbonization Pre-Feasibility Tool
Advanced Codes and Standards Forum
Clean Energy Careers Job Fair

CLIENT SECTORS
Higher Education
Healthcare
Municipal
K-12
Library
Nonprofit

wendel

Introduction

Overview of the Ithaca Fire Station Project

- **Location**: Ithaca, NY
- **Innovative Focus:** Geothermal heat pump (GHP) firehouse in New York State built to the Ithaca Energy Code
- **Key Features**: Sustainable design, GHP system for heating, cooling, and hot water.

wendel

Ingenuity

Innovative Design Elements

- **Hybrid GHP System**: Combination of water-source Variable Refrigerant Flow (VRF) units and water-to-water heat pumps integrated with geothermal loops.
- **Enhanced Efficiency**: Energy recovery ventilation, improved zoning, and space conditioning.
- **Apparatus Room Heating**: Use of radiant floors powered by GHP for efficient heating and faster warm-up times for first responders.

wendel

Efficiency

Energy & Operational Efficiency

- **GHP System Benefits:**
  - Reduced long-term operational costs.
  - Significant decrease in greenhouse gas (GHG) emissions.
  - More efficient heating, cooling, and water heating (including radiant floors).
- **Site Efficiency:** Addressing challenges like sloping terrain and soil conditions with creative engineering solutions, ensuring minimal project delays.

wendel

Quality

High-Quality Infrastructure & Design

- **Long-Term Performance:** Integration of GHP system ensures high-quality, energy-efficient performance over time.
- **Comfort & Reliability:** Constant and controlled environment in the apparatus room, improving the comfort and effectiveness of first responders.
- **Sustainable Materials & Practices:** Designed in line with Ithaca's Green New Deal, contributing to the city's carbon-neutrality goal by 2030.

wendel

Accessibility

Community Engagement & Coordination

- **Addressing Community Concerns:** Managing noise, traffic rerouting, and maintaining good relationships with local residents.
- **Logistical Coordination:** Effective coordination of multiple stakeholders including developers, engineers, and the city.
- **Workforce Accessibility:** Compliance with prevailing wage requirements, ensuring fairness and equity for workers.

wendel

Financial

Financial Benefits & Considerations

- **Cost-Effectiveness of GHP:** Despite initial investment, the long-term operational savings and energy performance will result in significant financial benefits for the city.
- **Recovery of Lost Time:** Overcoming delays from unforeseen soil conditions led to a 75% recovery of time, optimizing financial resources.
- **Support for Ithaca's Green New Deal:** Aligning with the city's climate goals reduces future financial burdens related to energy and emissions.

wendel

Obstacles Overcome

Challenges & Problem-Solving Strategies

- **Site Challenges:** Small, sloping site with a 25-ft grade change, requiring significant earthwork.
- **Soil Conditions:** Unforeseen soil issues delayed key construction activities like sheet pile installation and GHP well placement.
    - *Solution:* Revised construction schedule and creative solution with a self-contained pump unit for slurry management, recovering 75% of lost time.
- **Coordination Challenges:** Navigating land acquisition delays, working with multiple stakeholders, and addressing logistical concerns such as noise and traffic management.
- **Weather Constraints:** Decision to focus on GHP due to dense tree cover and low winter temperatures, overcoming the feasibility challenges of solar and air-source heat pumps.

wendel

Conclusion

Key Takeaways & Future Implications

- **Innovation in Public Safety Infrastructure:** Demonstrates how GHP systems can be integrated into municipal buildings.
- **Long-Term Benefits:** Cost savings, improved efficiency, and sustainability can set a new benchmark for future projects.
- **Overcoming Obstacles:** Resilience in overcoming site, logistical, and environmental challenges ensures success in pioneering projects.

wendel

Thank you!

wendel

NY-GEO SARATOGA SPRINGS
CONFERENCE – APRIL 2025

Alafia Redevelopment Brooklyn, NY

Top Job Applicant Mixed - Use

Project Details

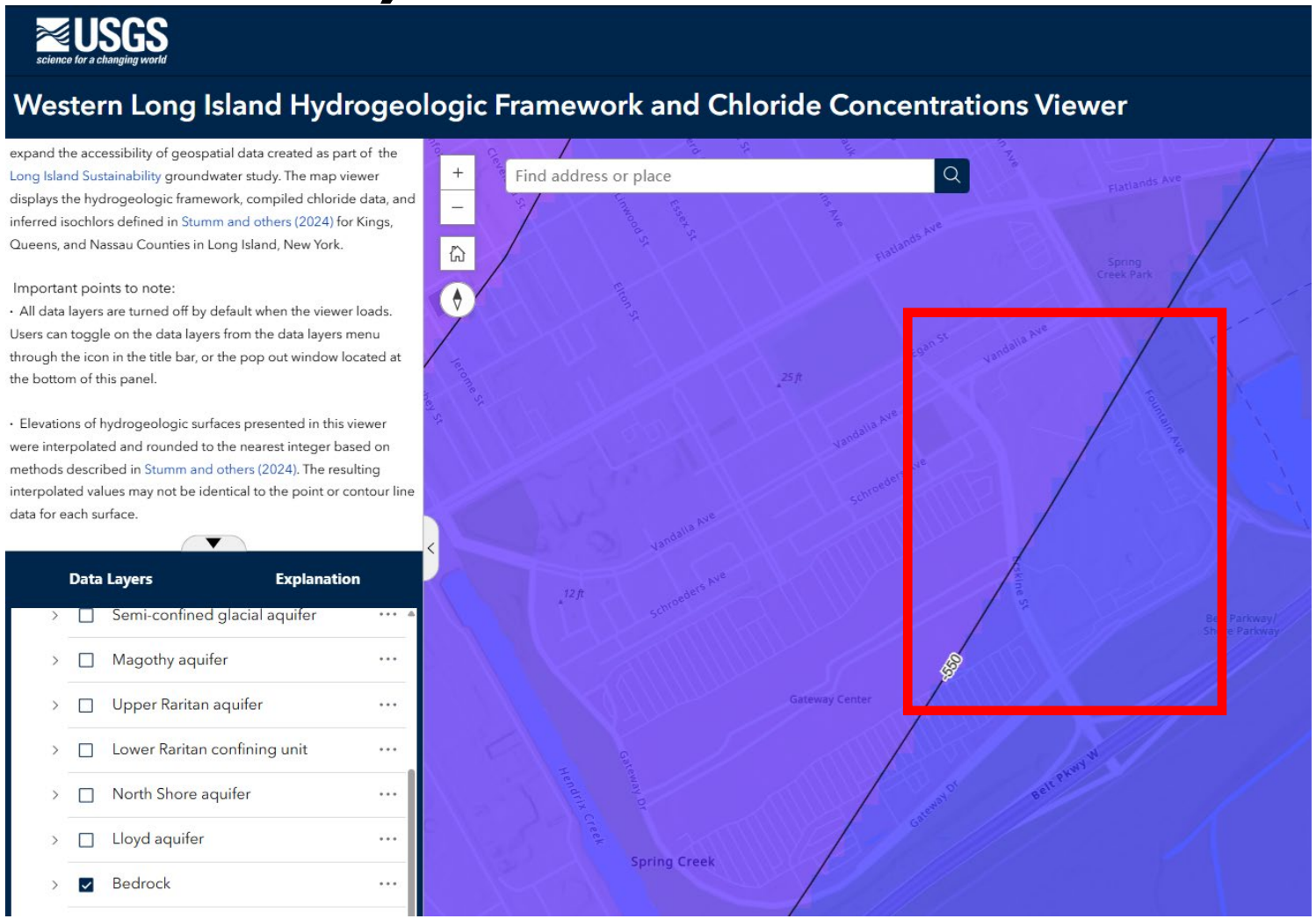
- **Located in East New York/Spring Creek neighborhood of Brooklyn, NYC**
- **2,200,000 square foot mixed use development**
  - 2,400 affordable and supportive housing units, 30,000 sq ft of healthcare space, daycare facilities, fitness spaces, facilities for social and enterprises and healthy food retail space, and urban agriculture gardens.
  - 28-acre community transformation focused on wellness and economic empowerment.
- **Passive house design.** Three (3) construction phases across several buildings
  - Anticipated completion: 2030
- **Energy Assets:**
  - Geothermal (vertical closed loop) – 500’ - 600’ depth, 250 bores designed, 80% installed as of today.
  - Waste water (Sharc & Piranha systems) – A1/A2 & C1/C2 have Sharc, C3 has Piranha
  - Energy recovery ventilators and solar panels on roofs

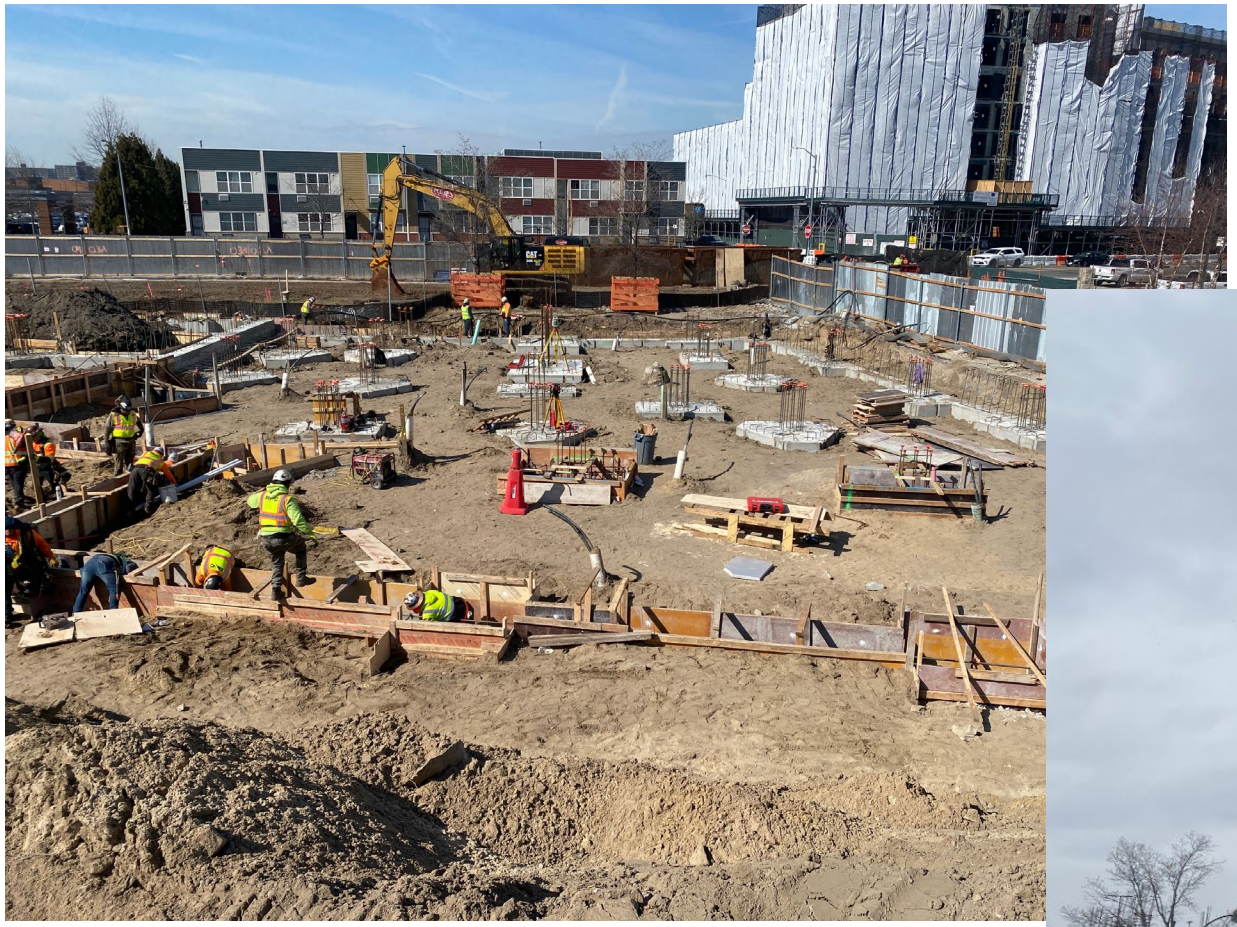
Recognitions

- **L+M Development Partners**
- **Salas O'Brien Energy Modeling Team** - Bill Talbert and Marisa Dunning
  - Geothermal engineering, building energy modeling, test bore and drilling oversight
  - ConEd Clean Heat Participating Contractor and energy modeling
- **American Well & Pump** – Drilling and HDPE Contractor
  - GTD-GT35 drill rigs, track-mounted
  - Geo-Pro Inc grouting products
  - Oil Creek & Centennial Plastics HDPE loops and piping
- **ConEd Clean Heat Program Incentives** - **$5.7M** for 2 of 3 phases
- **Architects –** Dattner, Urban Architectural Initiatives, Marvel
- **Ice Air & Climate Master** – Heat Pump Equipment Providers
- **SHARC & Highmark** - WWHX Equipment Providers

Recognitions (continued)

- New York Geothermal Association, NY-GEO
  - 500’ rule change in 2023
- United States Geological Survey, USGS
  - Western LI Hydrogeologic Framework 2024 update & mapper

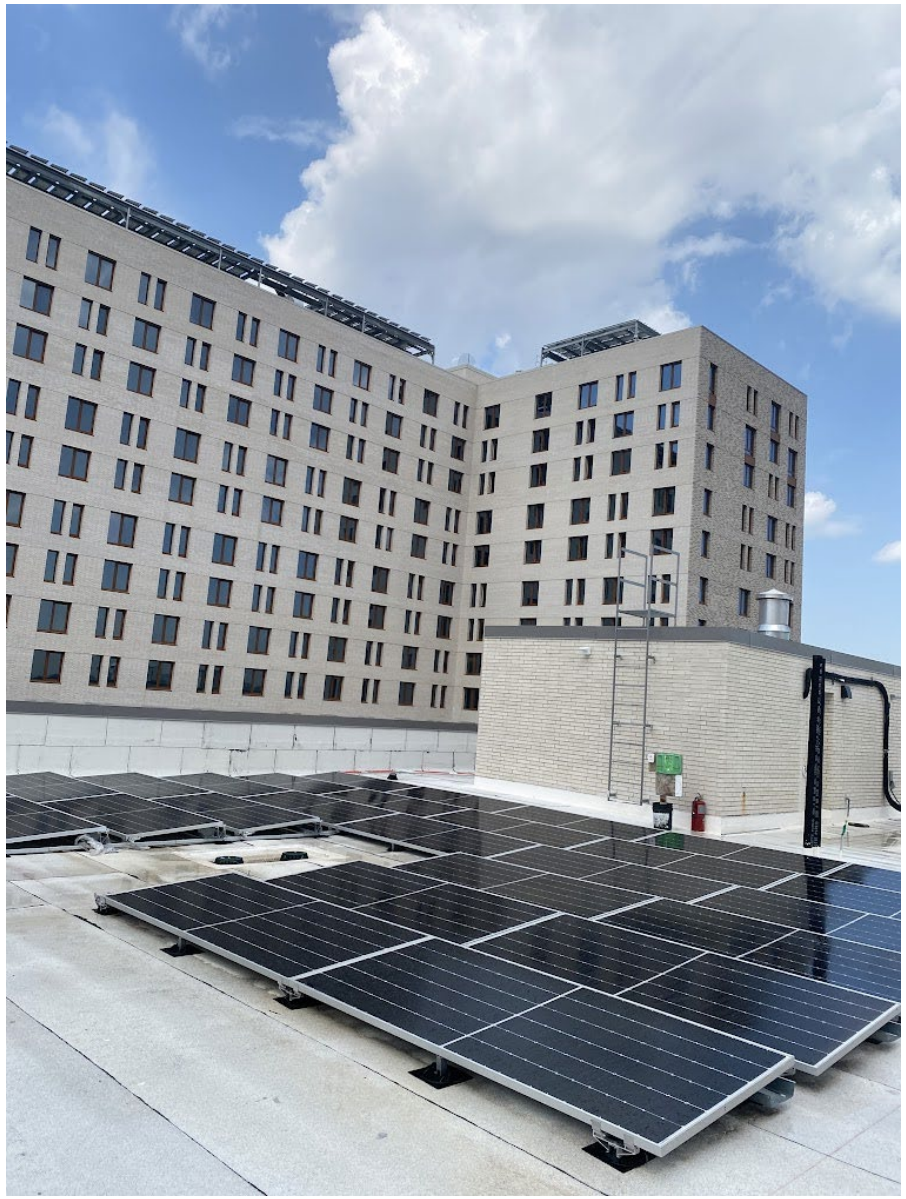





Bobcat
Bobcat
GT35


SHERWIN WILLIAMS
PRO+


COLMAC
WATERHEAT
WARNING
Certus



Thanks!

DAN SERGISON, PE, CGD, CGI

Daniel.Sergison@salasobrien.com

Aztech Geothermal

Steamboat Square – Phases 1 & 2

Equitable Electrification of Public and Affordable Housing

Albany Housing Authority

Historic Steamboat Square

Albany Housing Authority

Since 1946, AHA has been developing and managing affordable housing in the City of Albany.

AHA currently owns and operates over 2,000 multi-family housing units for families, senior citizens and adults with disabilities.

Additionally, AHA administers a HUD Section 8 program that provides rental assistance for 2,200 households throughout the City.

Steamboat Square Homes

Originally constructed in the early 1960's.

The buildings were extensively renovated in the mid 1980's.

ALBANY HOUSING AUTHORITY

Steamboat Square Revitalization - Phase 1

STEAMBOAT SQUARE REVITALIZATION -PHASE 1

- 20 Rensselaer Street is the first phase in the preservation of the Steamboat Square neighborhood.
- 88 one- and two-bedroom apartments.
- **Geothermal Heat Pumps for:**
  - Heating
  - Air Conditioning
  - Domestic Hot Water – with CO2 Refrigerant Heat Pumps!
- **32 closed loop boreholes @ 499 feet deep**
  - 16 borehole under each of the two adjacent parking lots
- **Individual heat pumps for each apartment (heat/cool)**
- **Central CO2 Refrigerant Heat Pumps**
  - Higher temperature capabilities
  - Extremely low Greenhouse Warming Potential (GWP =1)

•NYSHCR - LIHTC & Public Housing Preservation Program

Aztech GEOTHERMAL

www.aztechgeo.com

Steamboat Square Revitalization Project Team

- **Albany Housing Authority** – Owner/Operator & Developer
- **Edgemere Development** – Development Partner
- **MR2 Construction Services -** Owner's Construction Rep
- **SWBR** – Architect **Engineered Solutions** – MEP Engineer
- **AOW Construction –** General Contractor
- **Collett Mechanical –** Mechanical Contractor
- **Claverack Pump Service** – Geothermal Driller
- **Sustainable Comfort** – Green Building Consultant
- **Aztech Geothermal** – Geothermal Consultant

SWBR

A·O·W CONSTRUCTION

Collett

Claverack WELL & PUMP SERVICE

ALBANY HOUSING AUTHORITY

Edgemere Development Inc. Real Estate Development Consulting

cpc Community Preservation Corporation

engineeredsolutions

SUSTAINABLE COMFORT

Aztech Geothermal

MR² CONSTRUCTION SERVICES

ALBANY HOUSING AUTHORITY

Phase 1

Steamboat Square Revitalization

Funding

- NYSHCR - LIHTC & Public Housing Preservation Program
- NYS Homeless Housing and Assistance Program (HHAP)
- NYSERDA/NYSHCR “Clean Energy Incentives”
- NYS Empire State Development
- NYS Attorney General Clean Energy Funds
- National Grid “Clean Heat Incentives”
- City of Albany (HOME Funding)
- Community Preservation Corporation Perm Financing

(Pre-dated Federal IRA Passage for original capital stack)

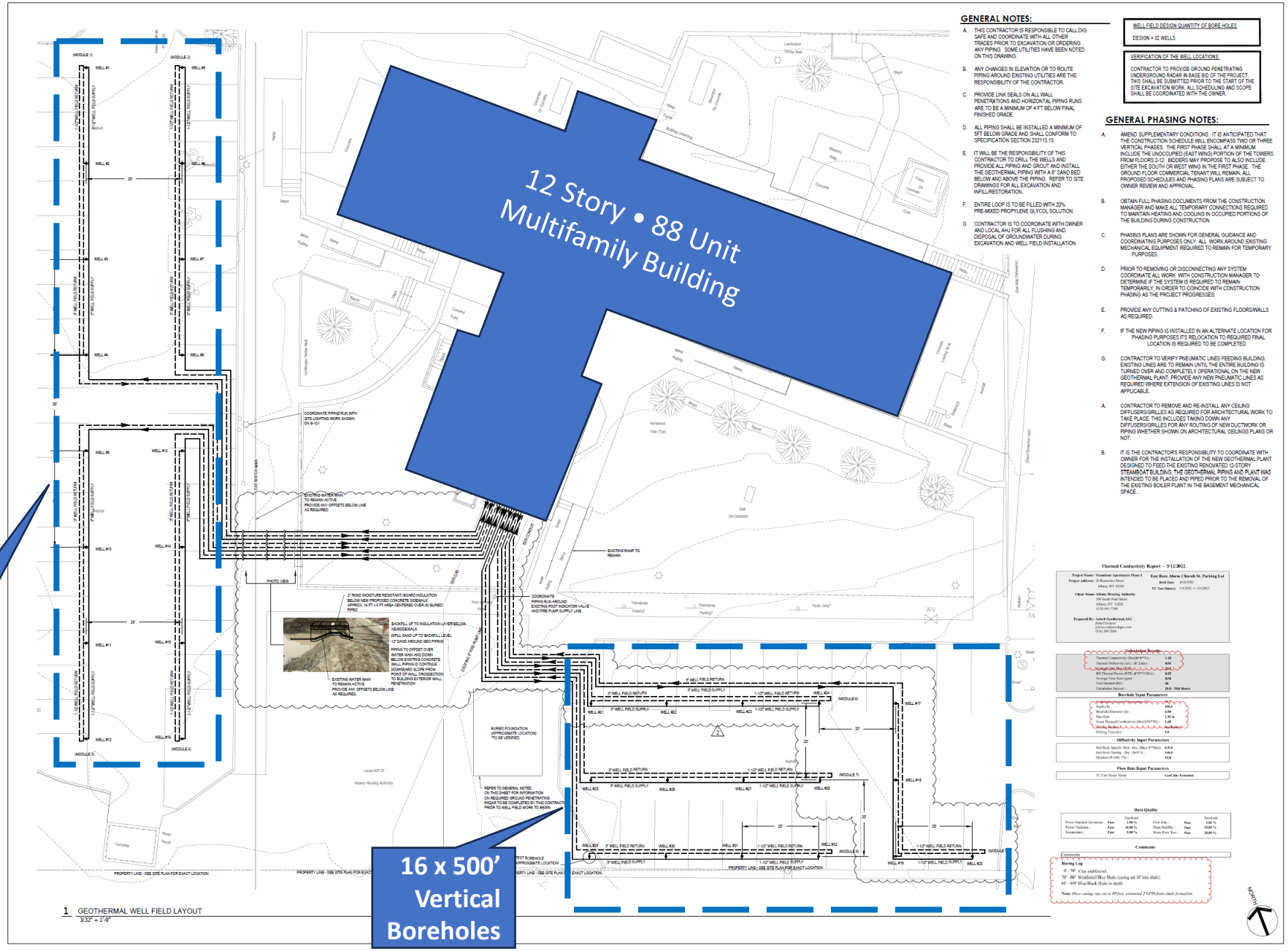
Building Energy Upgrades

- All electric building design
- Ground source heat pump – Rooms and Domestic Water
- Building envelope enhancements
- ERV system
- 40% energy reduction – BTU’s

ALBANY HOUSING AUTHORITY

Ground Heat Exchanger (GHX) Layout

- GHXs under two parking lots
- 32 x 500-foot boreholes



SWBR
engineeredsolutions

AS-BUILT 3.26.24

HCR SHARS NO. : 20210448

Drawn By: FVC
Checked By: FVC
Project Manager: FVC/JK

Revisions
1 08/19/22 Addendum #3
2 05/01/23 ASI 014

Steamboat Square Revitilization - Phase I
SWBR Project Number 21122.00

Albany Housing Authority

M-101
GEOTHERMAL WELL FIELD LAYOUT

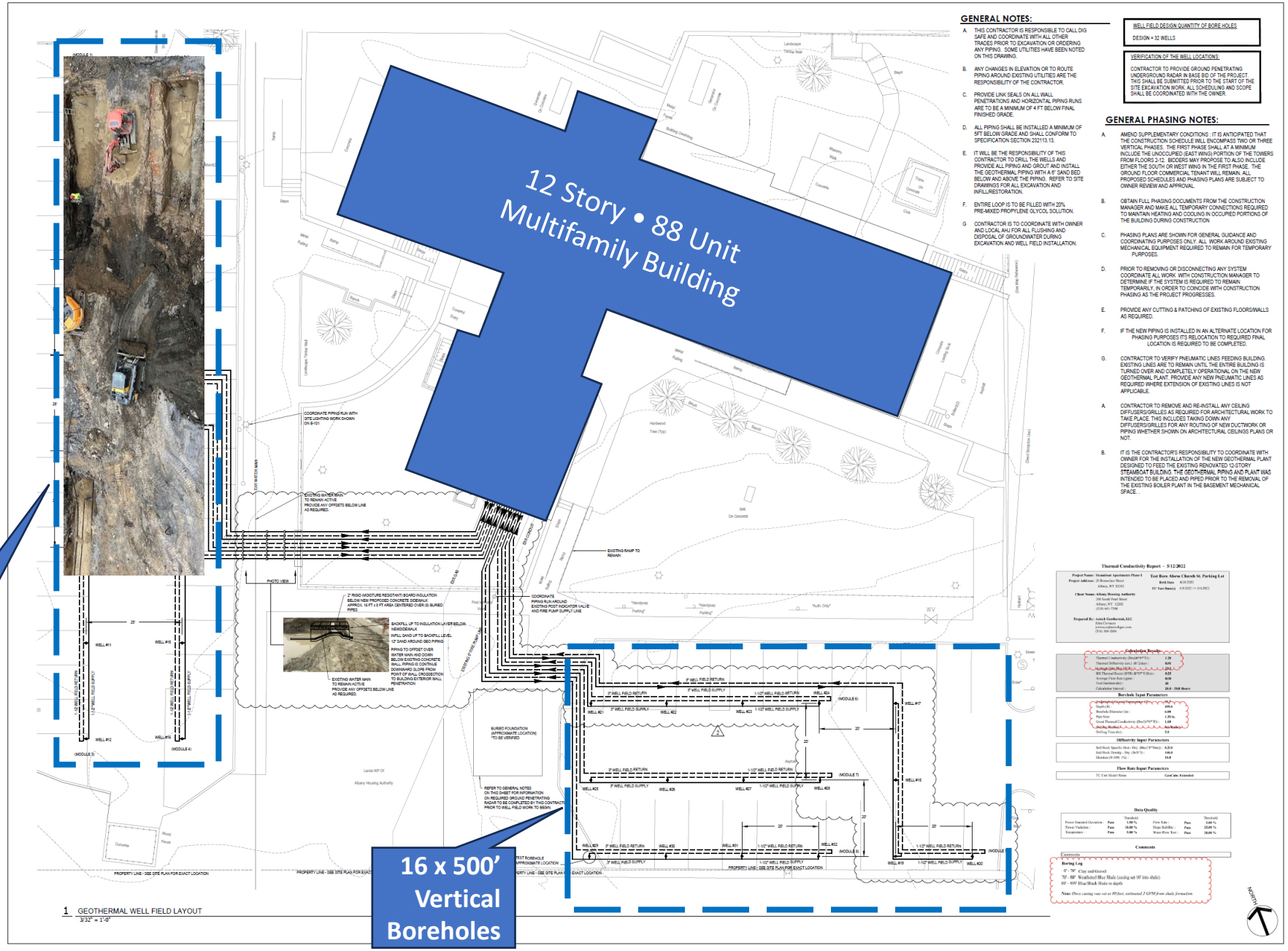
7/26/22
Construction Documents

Aztech GEOTHERMAL

www.aztechgeo.com

Ground Heat Exchanger (GHX) Layout

- **GHXs under two parking lots**
- **32 x 500-foot boreholes**



SWBR
engineeredsolutions

AS-BUILT 3.26.24

HCR SHARS NO. : 20210448

Drawn By: FVC
Checked By: FVC
Project Manager: FVC/JK

Revisions
1 08/19/22 Addendum #3
2 05/01/23 ASI 014

Steamboat Square Revitilization - Phase I
SWBR Project Number 21122.00

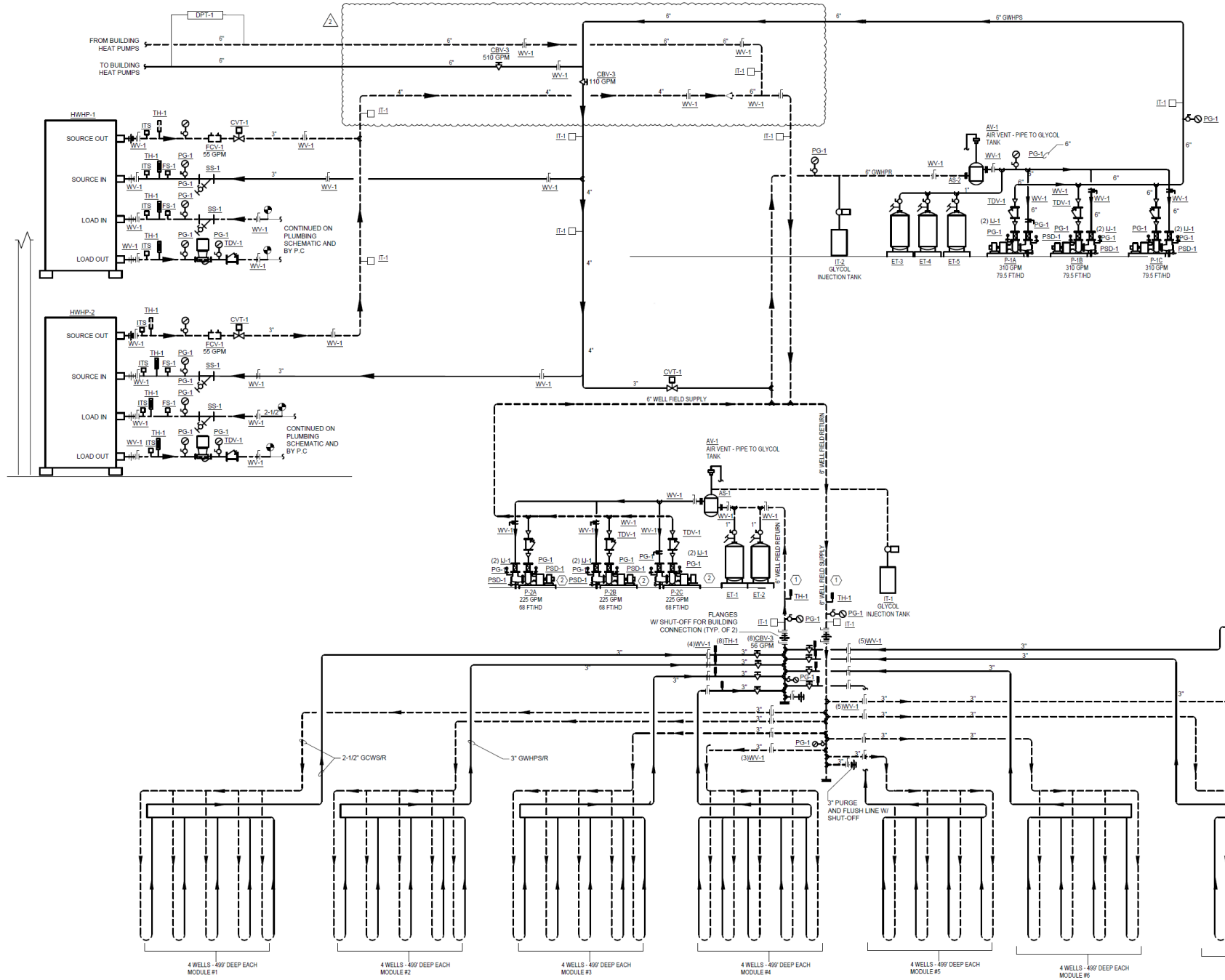
Albany Housing Authority

M-101
GEOTHERMAL WELL FIELD LAYOUT
7/26/22
Construction Documents

Aztech GEOTHERMAL

www.aztechgeo.com

GEOTHERMAL PIPING SCHEMATIC



DRAWING NOTES:

1. REFER TO MANIFOLD DIAGRAMS ON M-704 FOR ADDITIONAL INFORMATION AND DIMENSIONAL REQUIREMENTS.
2. PROVIDE NEW CONCRETE PAD IN EXISTING PIT WHERE ABANDONED STEAM CONDENSATE RECEIVER IS TO BE REMOVED. PUMPS, PIPING AND MANIFOLDS ARE TO BE INSTALLED ON METAL GRATING SYSTEM SUSPENDED ABOVE LOWEST POINT OF MECHANICAL ROOM PIT.

GENERAL NOTES:

A. PROVIDE BALL VALVE OR WAFER VALVE FOR ALL BRANCH PIPING GREATER THAN 2". A SHUT OFF VALVE IS TO BE PROVIDED FOR EACH PIECE OF EQUIPMENT AND AT EVERY BRANCH PIPE THROUGHOUT THE PROJECT.

B. ALL PIPING TO BE WELDED WITHIN THE EAST AND WEST SHAFTS AS WELL AS FROM THE DECKER MECHANICAL TUNNEL TO THE NEW TOWER BASEMENT CEILING LEVEL REGARDLESS OF WHICH ALTERNATE IS TAKEN.

C. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FLUSH ALL PIPING AS MANY TIMES REQUIRED TO COORDINATE WITH ALL PHASING PLANS. THIS MAY REQUIRE FLUSHING OVER NIGHT FOR MULTIPLE DAYS AT A TIME TO KEEP THE DECKER BUILDING OPERATING.

D. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A WATER SAMPLE AND ANALYSIS PRIOR TO PURCHASING ANY HYDRONIC EQUIPMENT AND PROVIDING A WATER TREATMENT AND FILTRATION RECOMMENDATION FROM A CERTIFIED WATER TREATMENT SPECIALIST. THE SPECIALIST'S RECOMMENDATION FOR WATER QUALITY MUST BE INCLUDED IN THE CONTRACTOR'S SCOPE OF WORK AND TO BE SIGNED OFF BY CHILLER, COOLING TOWER, BOILER MANUFACTURER'S PRIOR TO ORDERING.

E. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ACCESS TO VALVES, AND PIPING SPECIALTIES TO BE SERVICED BY FACILITY IN THE FUTURE. THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS DOORS AT EACH LEVEL OF THE SHAFT AND FOR FUTURE ACCESS.

F. CONTRACTOR TO PROVIDE PRE-MIX PROPYLENE GLYCOL FOR ALL LOOPS CALLED OUT TO HAVE GLYCOL ON PLANS. THE CONTRACTOR SHALL INCLUDE VOLUME FOR ALL TANKS, EQUIPMENT, PIPING AND ADDITIONAL TO FILL THE GLYCOL INJECTION TANKS.

G. CONTRACTOR IS RESPONSIBLE FOR CONNECTING TO ANY EXISTING PIPING REQUIRED FOR RE-CONNECTION REGARDLESS OF THE CONDITION OF THE PIPE. THIS MAY REQUIRE SPECIAL SCHEDULING WITH OWNER AND IN SOME CASES HOT TAPPING ANY LIVE PIPING.

H. CONTRACTOR IS TO FLUSH ANY EXISTING AND OR NEW PIPING AS MANY TIMES AS REQUIRED UNTIL ALL PHASING IS COMPLETE. IN SOME CASES THIS MAY INCLUDE MULTIPLE FLUSHINGS FOR A SINGLE GIVEN AREA BASED ON THE THE FINAL PHASING PLAN ACCEPTED BY THE OWNER.

I. THE CONTRACTOR SHALL INCLUDE SHUT OFF VALVES FOR ALL BRANCH PIPING AND TAKE-OFFS. ALL MAINS SHALL HAVE SHUT-OFFS AT EACH EXIT POINT OF MECHANICAL ROOM, SHAFT AND PENTHOUSE.

J. CONTRACTOR TO NOTE CHILLED WATER AND HOT WATER GLYCOL PERCENTAGES FOR EACH PIPING LOOP. GLYCOL PERCENTAGES WILL VARY DEPENDING ON THE APPLICATION.

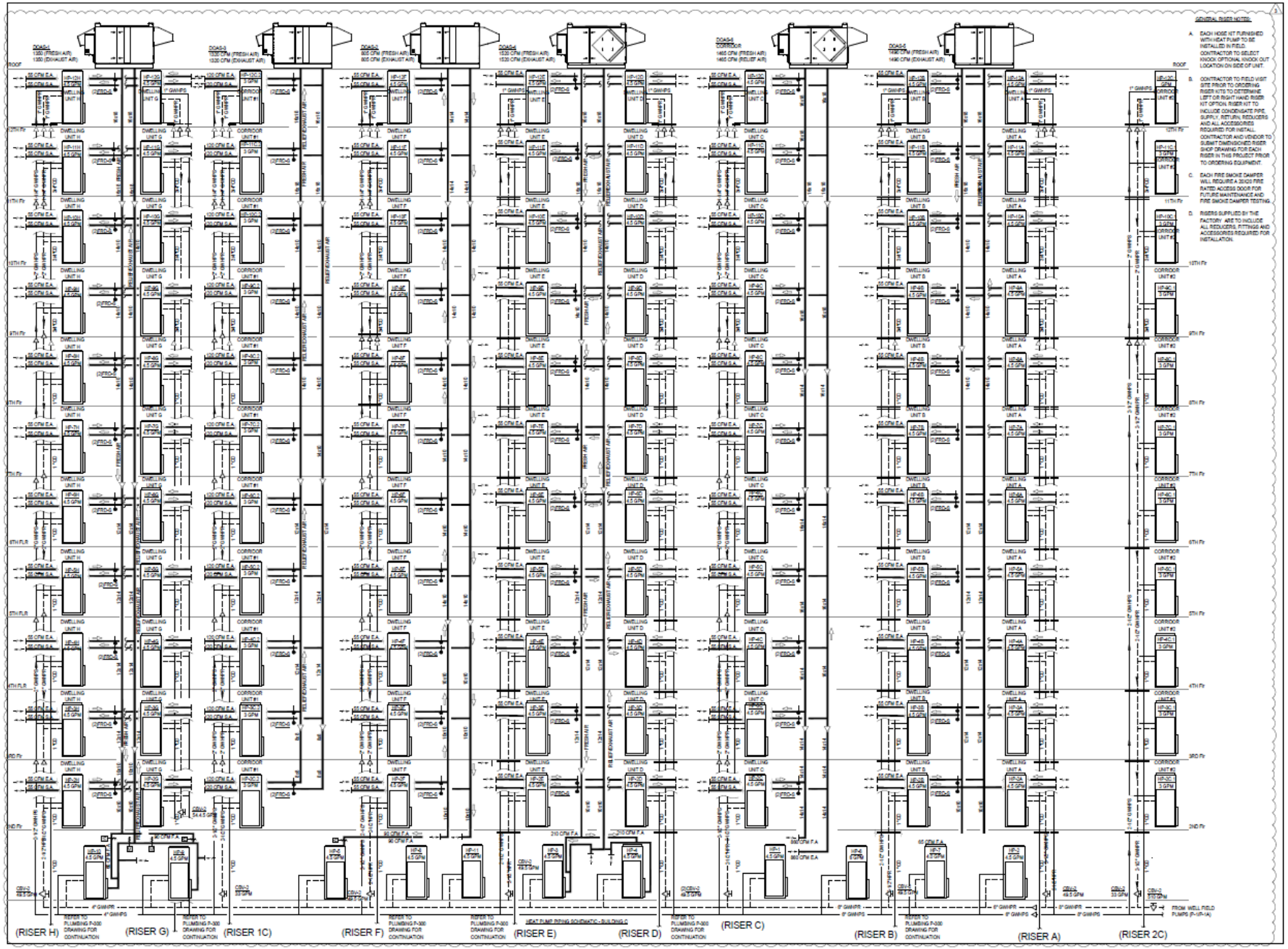
K. PROVIDE NEW SHUT OFF VALVES ON EACH FLOOR OF STEAMBOAT BUILDING FOR PHASING AND FUTURE MAINTENANCE PURPOSES.

1 STEAMBOAT SQUARE - GEOTHERMAL PIPING SCHEMATIC
NO SCALE

Aztech GEOTHE

Heat Pump Riser Diagram

- **Source water from GHX to 88 units + common space HPs**
- **No isolation – same water running through vertical GHXs**



Aztech GEOTHERMAL

www.aztechgeo.com

GeoFease Loop Monitoring

- **Monitoring Ground Loop Temp and Flow Rate**
- **System compares to original design**
  - **Flags Trends**

Aztech GEOTHERMAL

www.aztechgeo.com

GeoFease Loop Monitoring

Geothermal Drilling & Looping

ALBANY HOUSING AUTHORITY

Excavation for Geothermal Piping

ALBANY HOUSING AUTHORITY

Geothermal Circuit Header Piping Trench

(under parking lot)

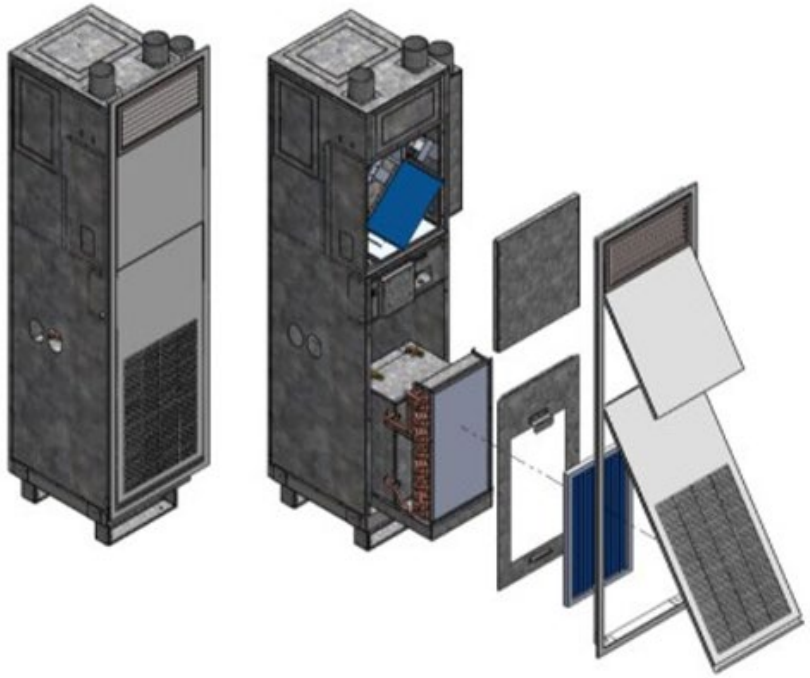
ALBANY HOUSING AUTHORITY

Geothermal Pipes Entering Building – Valves Inside

Pressure Testing

ALBANY HOUSING AUTHORITY

Heat Pump Selections for Building



Omega Vertical Stack Heat Pumps
Ducted supply – Central Return

Installed Vertical Stack in Apartment

CO2 Refrigerant Domestic Hot Water Heat Pump & Storage Tanks

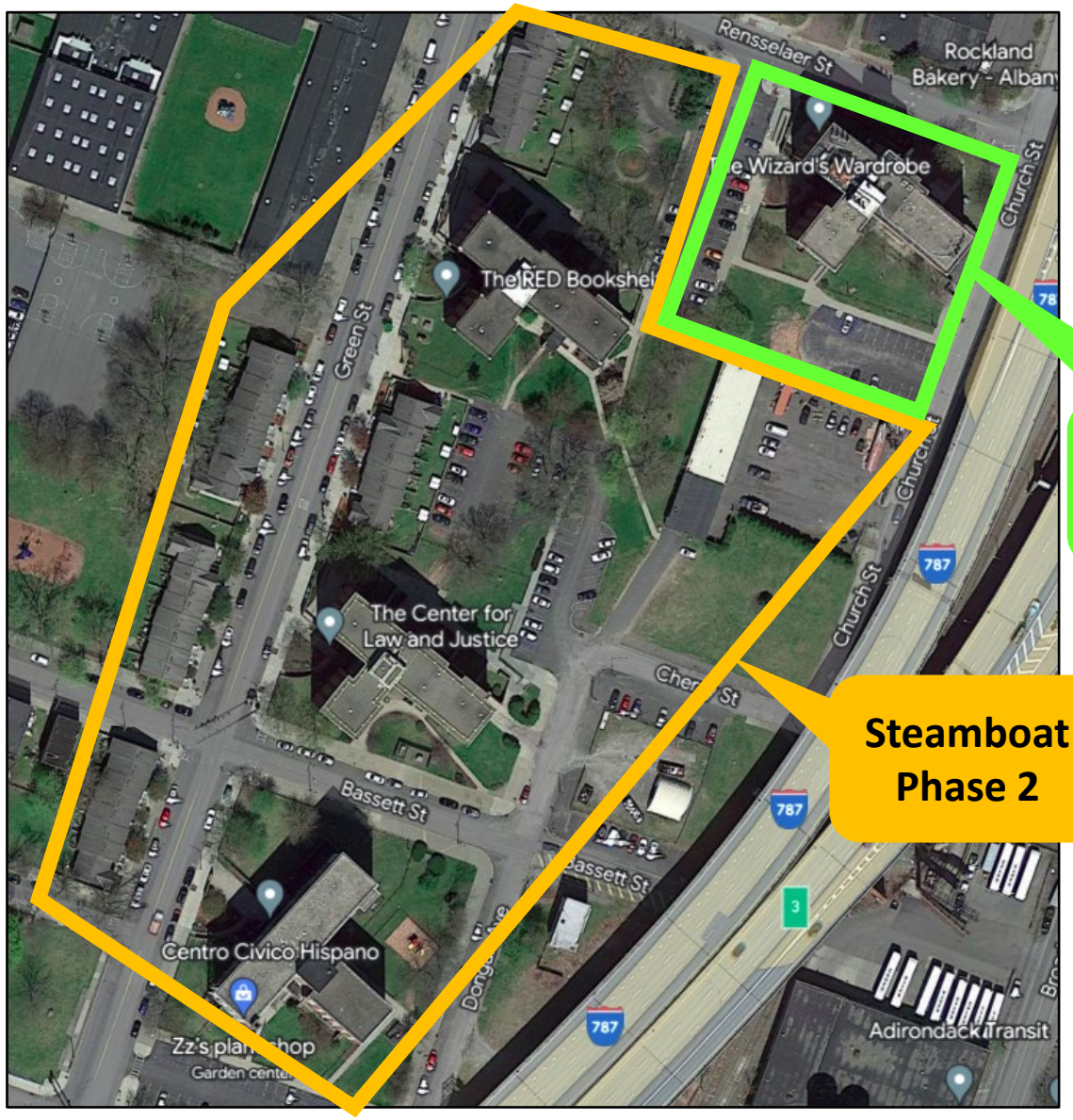
Domestic Hot Water Storage Tanks

Lync CO2 Heat Pumps for Domestic Hot Water

Steamboat Square Project Phases

Albany Housing Authority's Steamboat Square projects are all going geothermal. It will be ~425 affordable housing units when it's finished in mid 2026. Phase I is underway - a 88 unit/12 story tower @ 20 Rensselaer St.

(one townhouse not pictured)



Phase 2

Steamboat Square Revitalization

- **Additional 332 apartments** and **6 commercial spaces**
- **Featuring Geothermal Network (Campus Style):**
  - **Heating**
  - **Air Conditioning**
  - **Domestic Hot Water – with CO2 Refrigerant Heat Pumps!**
- **Phase 2 will access IRA Tax Credits for:**
  - **Geothermal Heat Pumps**
  - **Possibly Solar PV with Battery Storage**

ALBANY HOUSING AUTHORITY

Thank You & Questions

ALBANY HOUSING AUTHORITY

2025 GeoStar Top Job Presentations

Moderator: **Joanne Coons /** *NY-GEO Member*

Awardees:

1) COMMERCIAL:

- **Ithaca Firehouse, Wendel - Rachel Carpitella, Steve Grgas**

2) MIXED-USE:

- **Alafia, Salas O'Brien - Peter Strupp**

3) MULTIFAMILY

- **Steamboat 20, Aztech Geothermal - Geoff Hoffer**
  (an Albany Housing Authority project)