



# NY - GEO 2025

APRIL 23-24, 2025 | SARATOGA SPRINGS, NY



## 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 - Dan Sergison

3) **MULTIFAMILY**

**Steamboat 20**, Aztech Geothermal - Geoff Hoffer

*(an Albany Housing Authority project),*



# Steamboat Square – Phases 1 & 2

## *Equitable Electrification of Public and Affordable Housing*



Steamboat Square Geothermal

# 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





# 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)



# 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**

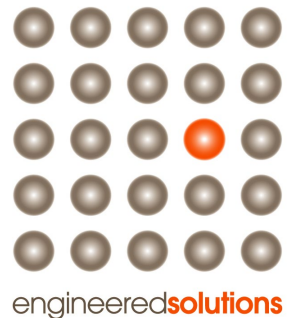
**AOW**  
A-O-W CONSTRUCTION

**Collett**

**Claverack**  
**WELL & PUMP**  
SERVICE



**Community  
Preservation  
Corporation**



engineered**solutions**

**Edgemere**  
Development Inc.  
Real Estate  
Development  
Consulting

 **SUSTAINABLE  
COMFORT**

  
**Aztech**  
Geothermal

**MR<sup>2</sup>**  
CONSTRUCTION  
SERVICES



**ALBANY HOUSING**  
AUTHORITY



**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

Steamboat Square Geothermal

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



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



**16 x 500'**  
**Vertical**  
**Boreholes**

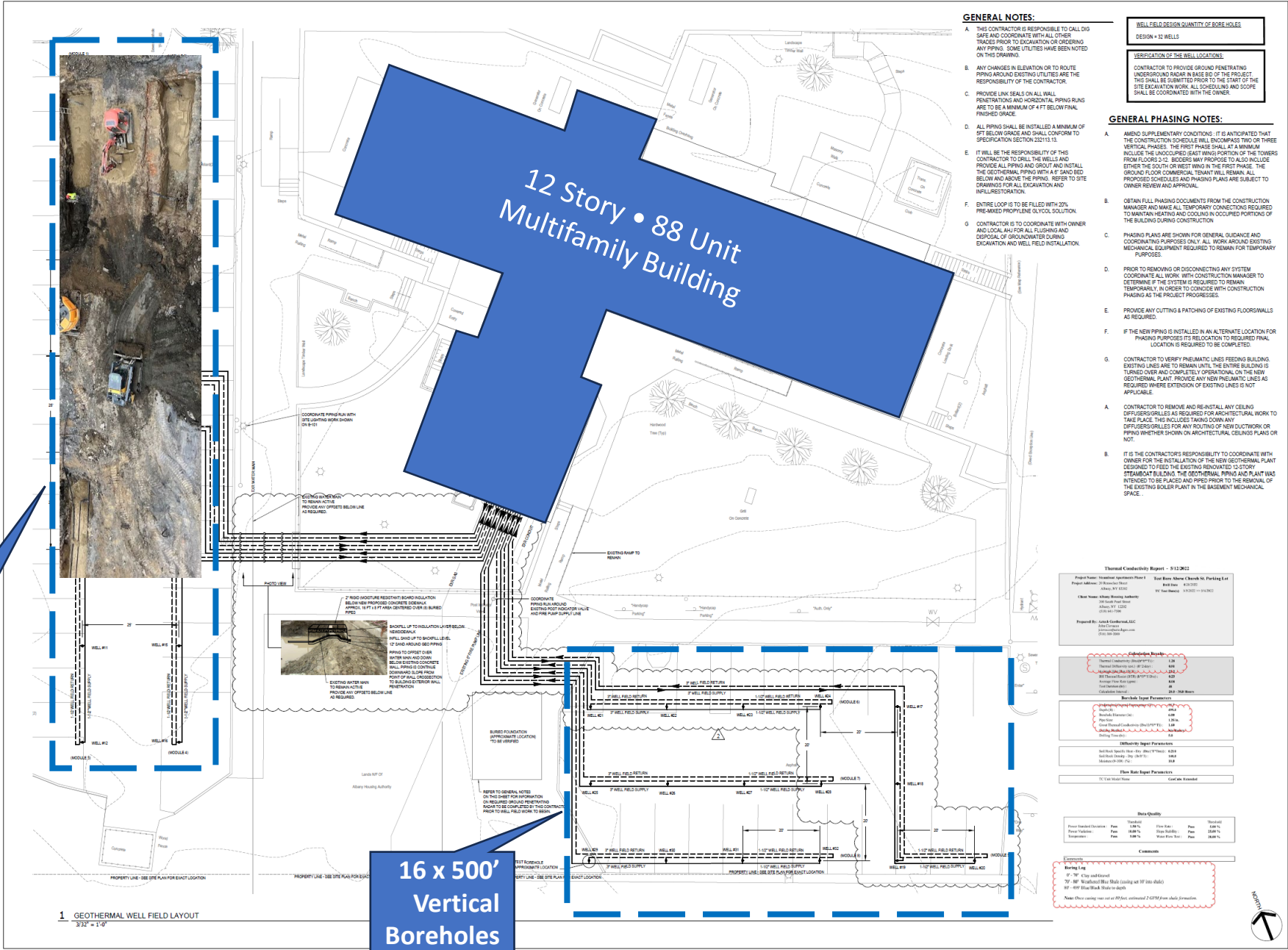
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# Ground Heat Exchanger (GHX) Layout

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

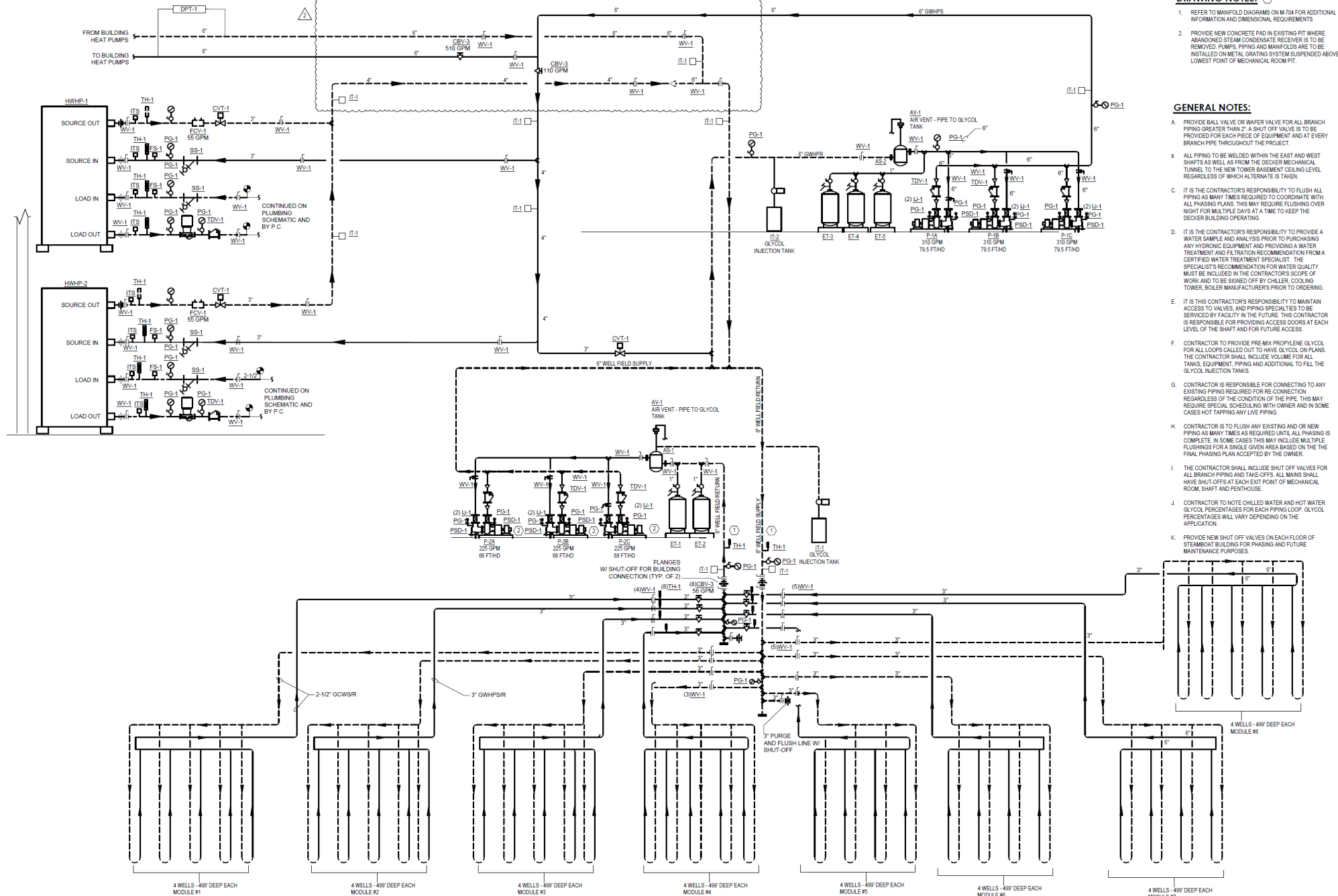
16 x 500' Vertical Boreholes

16 x 500' Vertical Boreholes





# GEOTHERMAL PIPING SCHEMATIC



**DRAWING NOTES:**

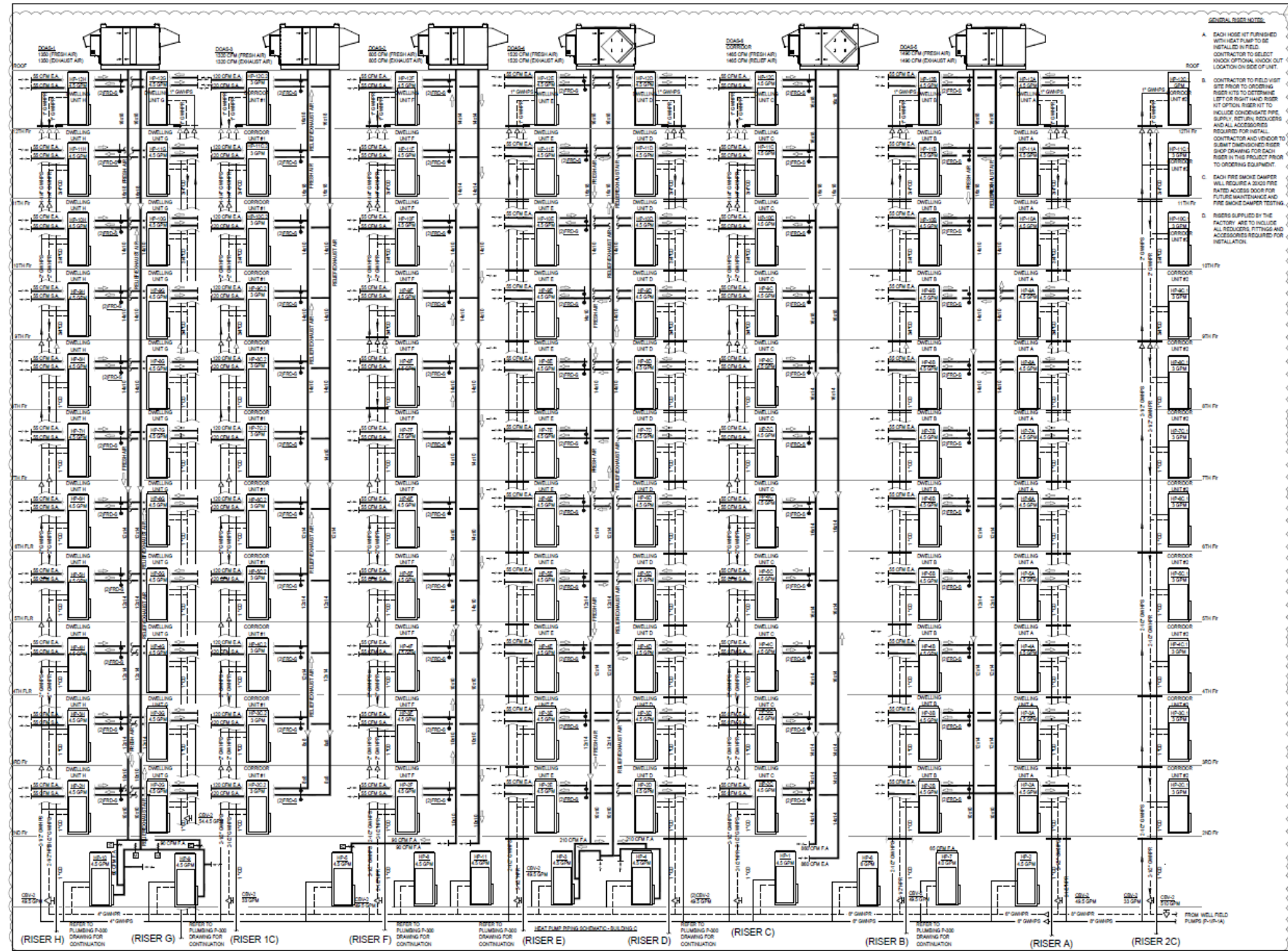
- REFER TO MANIFOLD DIAGRAMS ON M-704 FOR ADDITIONAL INFORMATION AND DIMENSIONAL REQUIREMENTS
- PROVIDE NEW CONCRETE PAD IN EXISTING PIT WHERE ABANDONED STEAM CONDENSATE RECEIVER IS TO BE REMOVED. PIPING AND MANIFOLDS ARE TO BE INSTALLED ON METAL GRATING SYSTEM SUSPENDED ABOVE LOWEST POINT OF MECHANICAL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

**GENERAL NOTES:**

- PROVIDE BALL VALVE OR WAFFER 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.
- 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.
- 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.
- 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.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ACCESS TO VALVES, AND PIPING SPECIALTIES TO BE SERVED BY FACILITY IN THE FUTURE. THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS DOORS AT EACH LEVEL OF THE SHAFT AND FOR FUTURE ACCESS.
- 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.
- 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.
- 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 FINAL PHASING PLAN ACCEPTED BY THE OWNER.
- 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.
- CONTRACTOR TO NOTE CHILLED WATER AND HOT WATER GLYCOL PERCENTAGES FOR EACH PIPING LOOP. GLYCOL PERCENTAGES WILL VARY DEPENDING ON THE APPLICATION.
- PROVIDE NEW SHUT OFF VALVES ON EACH FLOOR OF STEAMBOAT BUILDING FOR PHASING AND FUTURE MAINTENANCE PURPOSES.

# Heat Pump Riser Diagram

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



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AS-BUILT 6.24.24

SWBR Project Number: 21102.00

Albany Housing Authority

M-502

VENTILATION & HEAT PUMP RISER DIAGRAMS

7/26/22

Construction Documents

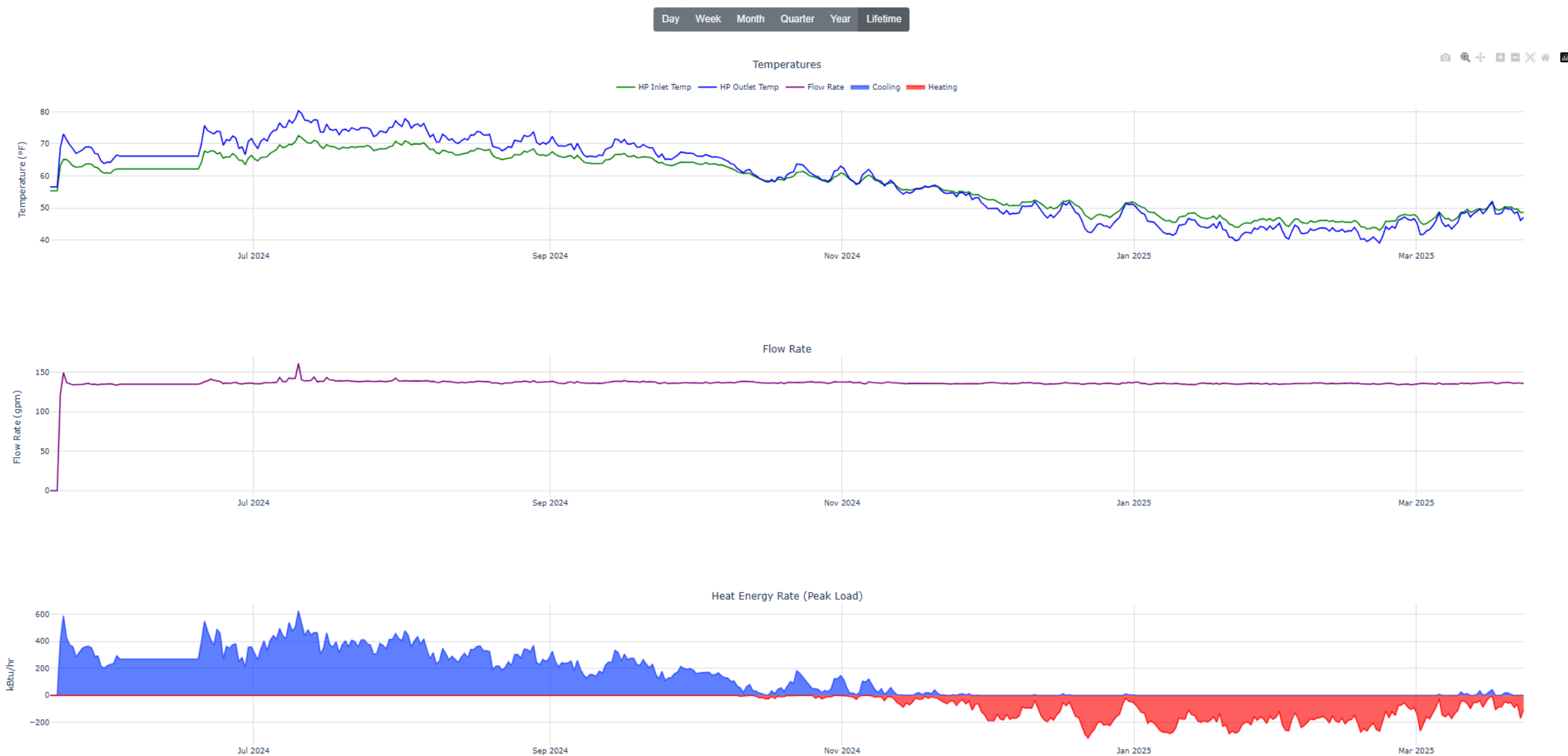
# GeoFease Loop Monitoring

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





# GeoFease Loop Monitoring





# Geothermal Drilling & Looping



# Excavation for Geothermal Piping



Steamboat Square Geothermal



# Geothermal Circuit Header Piping Trench

(under parking lot)





# Geothermal Pipes Entering Building – Valves Inside



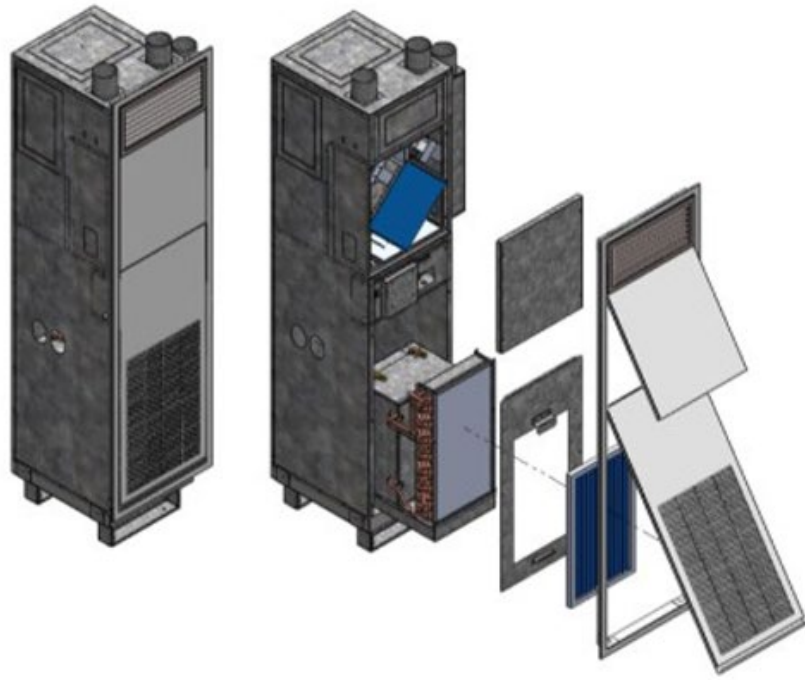




# Pressure Testing



# 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



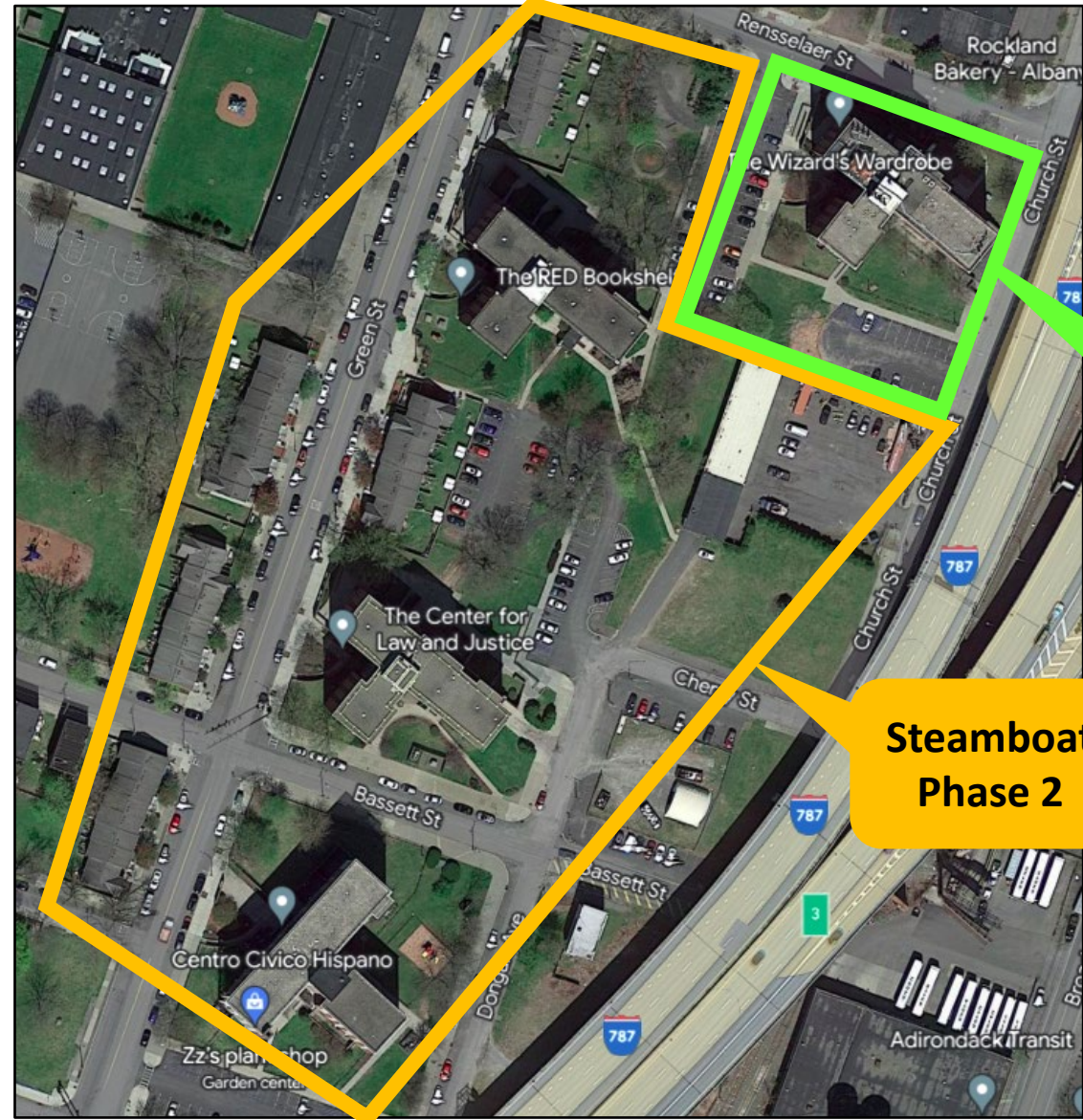
Lync CO2 Heat Pumps for Domestic Hot Water

# 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)*



**Steamboat  
Phase 1**

**Steamboat  
Phase 2**



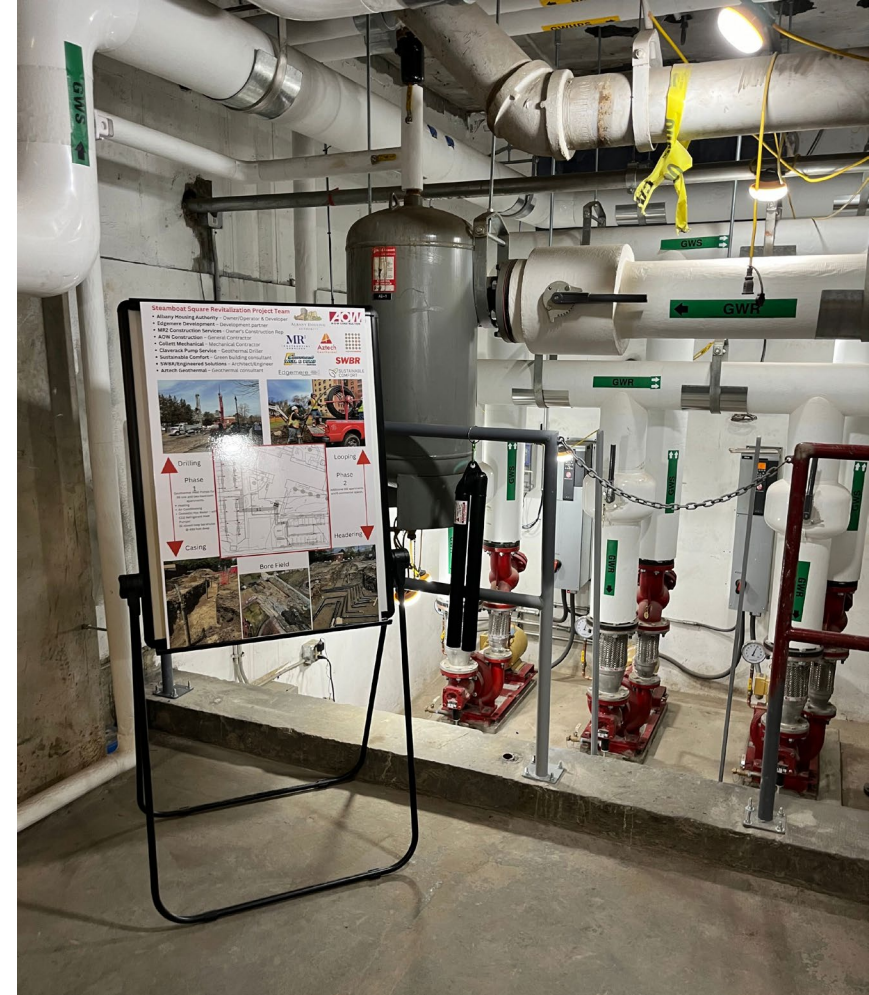
# Phase 2

## 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**





Thank You & Questions