

## DESIGN REVIEW / DESIGN BUILD

### Ground Source Heat Pump Systems

**Equipment type:** HP-1

**Equipment design:** Ground water source heat pump (GWSHP)

**Area served:** Condo building

**Barcode:** 111111

**Equipment location:** Equipment room

#### REPLACEMENT PHASING CONSIDERATIONS [Y] [N]

- Is there available land area, and do the soil and rock types have good characteristics for ground source heat pump (GSHP) opportunities?  [Y]  [N]
- Is there a pond or lake that could be used as a resource?  [Y]  [N]
- Is there a need to simultaneously heat and cool different parts of a building?  [Y]  [N]
- Is there a need for reduced maintenance on larger HVAC equipment (chiller/boilers)?  [Y]  [N]
- Is there a need for potential lower peak demand, lowering operating costs?  [Y]  [N]
- Is there a need for a single utility (electric) rather than multiple utilities with other systems (chiller/boilers)?  [Y]  [N]
- Is there a need for no "outdoor" equipment to be seen?  [Y]  [N]
- Has a test well been completed to establish operating data?  [Y]  [N]

#### ELECTRICAL INSPECTION / REQUIREMENTS [Y] [N]

- What are the new electrical requirements?  [Y]  [N]
- Is there adequate power to meet new load from GSHP?  [Y]  [N]
- Is there adequate electrical power coming in from the street?  [Y]  [N]
- Identify electrical scope of work required with GSHP.  [Y]  [N]
- Will emergency power be required?  [Y]  [N]
- Are electrical connections tight and secure?  [Y]  [N]
- Have fuses and wire sizes been checked and verified?  [Y]  [N]
- What electrical system components will require removal, reinstallation, and/or relocation to accommodate chiller and/or boiler removal and new GSHP installation?  [Y]  [N]
- Will a utility rebate initiative be submitted to the electrical power company?  [Y]  [N]

#### HVAC INSPECTION / REQUIREMENTS [Y] [N]

- Has selection of GSHP been approved by owner?  [Y]  [N]
- Have ground source water flow been updated to reflect new chilled water system design intent and design criteria?  [Y]  [N]
- Has the cold/hot water management system been completed in an automatic control-functional performance action/reaction matrix?  [Y]  [N]
- Have gpm / pressure drop / velocity been noted on distribution points of the water piping flow diagrams?  [Y]  [N]
- Have pump curves been assessed?  [Y]  [N]
- Verify that water piping is complete and correct.  [Y]  [N]

- Can the heat pump be installed without removing other equipment?  [Y]  [N]
- Has consideration been given to future expansion of system?  [Y]  [N]
- Has pressure testing of pipe distribution been determined in scope of work (e.g., only new installation piping)?  [Y]  [N]
- Has system flushing been determined?  [Y]  [N]
- Has ground water filter system been considered?  [Y]  [N]
- Has consideration been given to the manufacturer's recommended clearance around equipment for service?  [Y]  [N]

#### PLUMBING REQUIREMENTS [Y] [N]

- Is there an existing city water backflow preventer in place to serve this system?  [Y]  [N]

#### GENERAL CONTRACTOR CONSIDERATIONS / REQUIREMENTS [Y] [N]

- Can existing space accommodate new heat pumps?  [Y]  [N]
- Is there any masonry work to be associated with installation?  [Y]  [N]
- Has digging of wells been coordinated?  [Y]  [N]

#### GENERAL CONSIDERATIONS / REQUIREMENTS [Y] [N]

- What are the necessary installation permitting and operation permitting requirements?  [Y]  [N]
- Have insurance certificates been submitted to building owner?  [Y]  [N]
- Is the site a brownfield site?  [Y]  [N]
- Have daily cleanup costs been included in fee?  [Y]  [N]
- Have building facility support costs been included in the fee?  [Y]  [N]
- Have daily security costs been included in the fee?  [Y]  [N]
- Have police/ traffic detail costs been included in the fee?  [Y]  [N]
- Will record drawings be submitted electronically along with on paper copy?  [Y]  [N]
- Will there be an extended warranty on the equipment?  [Y]  [N]
- Will there be a service contract submitted?  [Y]  [N]
- Will the GSHP O&M website address be included along with an electronic copy and two paper copies of O&M?  [Y]  [N]
- Will system flow diagrams drawings be available for lamination in mechanical room?  [Y]  [N]

#### ES

If you have any comments, suggestions, or questions regarding this designer checklist, contact Amanda McKew at [amckew@rdkengineers.com](mailto:amckew@rdkengineers.com).

This column is meant to provide some basic guidelines for good design. Always consult all necessary codes and resources relevant to each particular project.

