



*This information is provided for clarification purposes only and is not in substitution of any applicable City Bylaws or Provincial or Federal Codes or laws. In the case of any contradictions, legislative Codes, laws or Bylaws take precedence. You must satisfy yourself that any existing or proposed construction or other works complies with such Bylaws, Codes or other laws.*

## Air Source Heat Pump Installation Guideline for Single-Family and Duplex Dwellings

**No.: BUILDING-57**  
**Date: 2024-02-02**

### Background

This document provides guidelines on air-source heat pumps (ASHPs) installation in single-family and duplex dwelling applications for new construction and retrofit.

For new construction, the ASHP electrical permit is part of the entire house electrical permit issued by Technical Safety BC. For the existing building, a separate electrical permit for ASHP installation is required from Technical Safety BC.

The siting of ASHP outdoor units must comply with the setback requirements of Zoning Bylaw No. 8500, and the siting and performance of these units must also comply with the requirements of Noise Bylaw No. 8856 (see below). In instances where a gas furnace/boiler is being removed and replaced with an ASHP, a Gas Permit from the City of Richmond is required to ensure that the gas service is safely capped off.

The responsibility of noise compliance with Noise Bylaw 8856 is on the homeowner. Homeowner is encouraged to include terms within their service contracts with certified contractors requiring full compliance with the City's requirements.

### Implementation

The location for ASHP installation is shown in Figure 1 below. The blue area in Figure 1 is the permitted location to place the outdoor unit. The outdoor unit must not be placed on a porch, within a driveway or within a statutory right-of-way. More specifically:

- Per Zoning Bylaw No. 8500 Section 4.18, the ASHP outdoor unit shall have a minimum 1.2 m (~ 4 ft.) setback from the property line.
- Per City of Richmond Noise Bylaw 8856, sound from the ASHP outdoor unit should not exceed 55 dBA during daytime and 45 dBA during nighttime at a point of reception within Quiet zones in Richmond.
- Even where setback provisions allow for it, locating ASHP outdoor units within side yard areas (i.e. between your house and the neighboring house) is strongly discouraged because of the likelihood of noise impacts to neighbors.
- As a general rule, the ASHP outdoor unit should not be visible to neighbors. Units shall have required clearance from surrounding obstacles to ensure access to enough outdoor airflow (even during snow or leaf-fall events) so that the ASHP outdoor unit can efficiently extract heat from, or expel heat to, the ambient air; see Figure 2 for reference.
- ASHP indoor unit shall be located in a conditioned space of the house to ensure expected design performance.
- Ensure that water condensed from the ASHP outdoor unit is properly drained. Failure to do so can result in water or ice build-up within and/or beside the unit, impacting performance, damaging the unit and/or causing a safety hazard by creating a slippery surface in the yard.
- Avoid locating the ASHP outdoor unit under the drip line of the house. If the ASHP outdoor unit has to be placed in such a location, ensure that a rain hood (and effective drainage) is installed to minimize the likelihood of water damage.

See over →

Other considerations:

- The ASHP outdoor unit should be installed according to the manufacturer's installation guide to ensure proper operation. General notes for installation:
  - Use a rigid base with vibration absorber pads to support the unit in a level position and minimize vibration.
  - Protect the unit from snow accumulation and/or blocked air intake and ensure it is not exposed to strong wind.
  - Provides appropriate clearances to adjacent walls and obstacles shown in Figure 2.
  - Ensure penetrations for electrical and fluid lines through the envelope are properly sealed.
- Ensure the ASHP's electrical load, wiring, etc. have been considered in electrical load calculations and other relevant documents by a certified electrical contractor to ensure a sufficient and safe service capacity when applying for the required electrical permit from Technical Safety BC. Note that a licensed electrical contractor can obtain an electrical permit very quickly via the Technical Safety BC website.
- Even when there is a backup heating system for ASHP, the capacity of the ASHP alone must meet the design peak heating demand for the house in order to qualify as the "primary heating system" in new construction. [CSA C273.5:11- Installation of air source heat pumps and air conditioners](#) is a practical reference for ASHP design and installation.

Figure 1

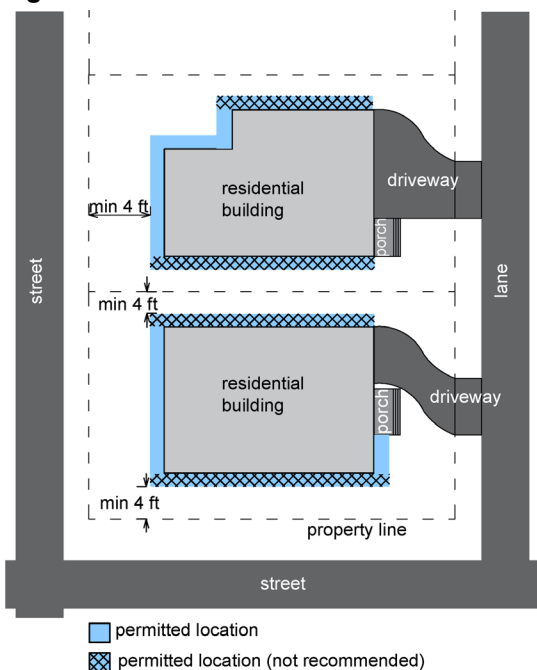
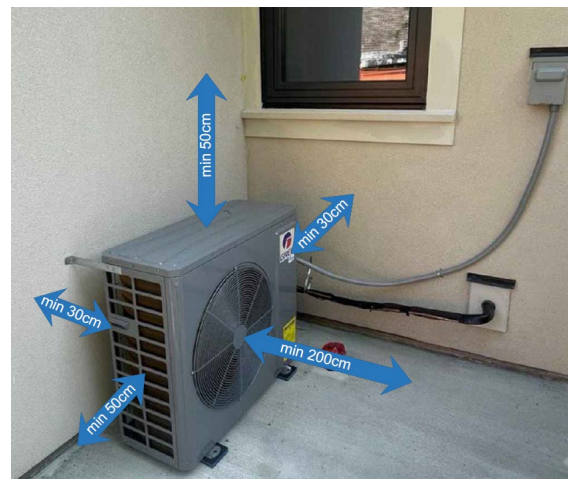


Figure 2



## References

- [Home Performance Stakeholder Council – Heat pump best practices installation guide for existing homes](#)
- [CSA C273.5:11 – Installation of air source heat pumps and air conditioners](#)
- City of Richmond [Noise Regulation Bylaw No. 8856](#)
- City of Richmond [Zoning Bylaw No. 8500, Section 4](#)