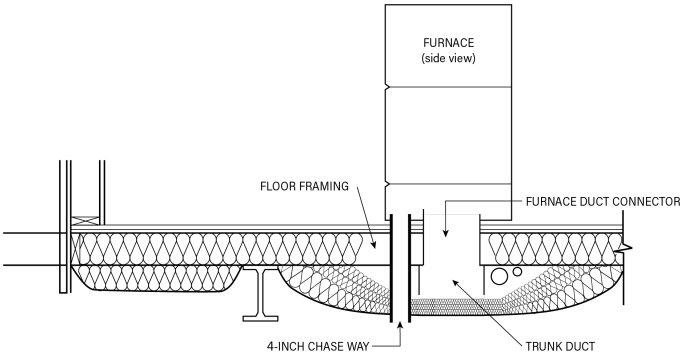
NEEM Heat Pump Preparation Specifications

The following Specifications, beginning at section 3.5, are intended to be inserted into the Northwest Energy Efficient Manufactured Housing program (NEEM) specifications, should participating manufacturers vote to do so. No ballot or meeting has been established as of August 8, 2023.

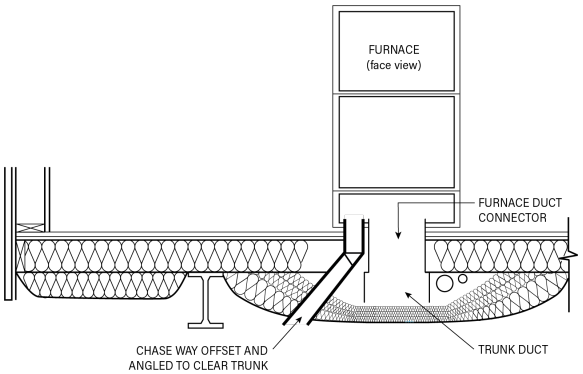
3. Heating Systems
   - 3.1. Sizing
   - 3.2. Ducts
   - 3.3. Duct Sealing
   - 3.4. Space and Water Heating Systems
   - 3.5. Heat Pump Preparation
     - 3.5.1. Homes equipped with a ducted forced-air furnace shall be prepared to facilitate onsite heat pump or air conditioner installation without necessitating cutting into the floor system in the field to route electrical wiring, refrigerant lines or condensate piping
       - 3.5.1.1. Chase way: A pipe, conduit, tube or other means of supplying passage through the floor system to accommodate refrigerant lines, control wiring and condensate piping (if not independently accommodated) shall be installed. The chase way shall have a cross sectional area of not less than 10 in.^{2} and shall extend from inside the furnace compartment to just below the bottom barrier. The bottom board shall be sealed to the outer wall of the chase way
         - 3.5.1.1.1. Chase way location, furnace with refrigerant line routing within the furnace's cabinet: This application requires the chase way to be located below the knockout in the bottom of the furnace. The chase way must be routed to avoid the trunk duct. See illustrations below

Chase Way Routing: Refrigerant Lines and Condensate Exit Through Base of Furnace/Air Handler

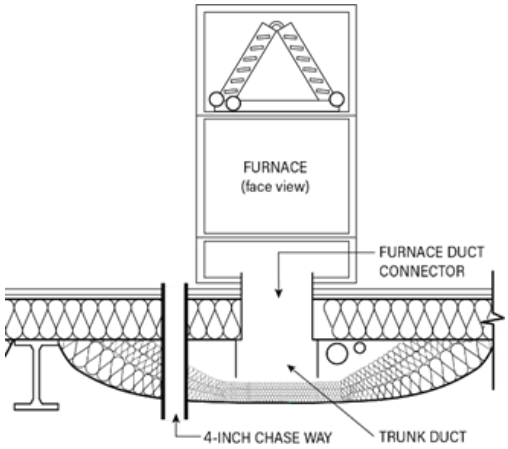
Chase way furnace perpendicular to trunk duct



Chase way furnace parallel to trunk duct



Chase Way Location: Refrigerant Lines and Condensate Exit Furnace/Air Handler at Coil Location and Route Externally to Chase Way



3.5.1.1.2. Chase way location, furnace with refrigerant line routing outside the furnace cabinet: The chase way shall be located alongside the furnace near the front of the unit

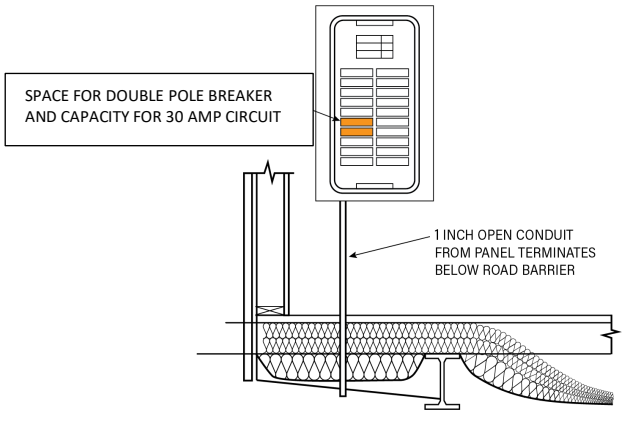
3.5.1.2. Electrical circuits and connections: two tiers of preparation are recognized, depending upon how future electrical connections are accommodated or installed in the factory

3.5.1.2.1. Tier 1, accommodation: A 1 in. conduit shall be provided that runs from the main electrical panel and down to just below the bottom barrier. The electrical panel shall have vacant space for the addition of a double pole breaker for a future outdoor compressor and a single pole breaker for a future exterior outlet, since one will be required within twenty-five feet of the compressor. The panel shall have at least 50 amps of capacity for the future circuits

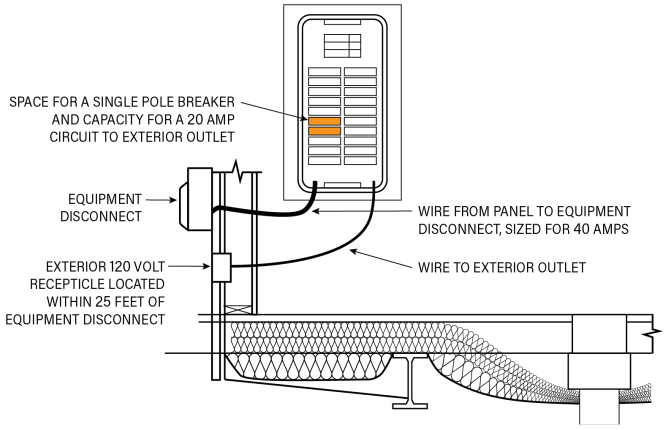
3.5.1.2.2. Tier2, connection: An equipment disconnect for the future outdoor compressor shall be installed on the exterior of the home at a location identified on the home order. Wire conductors shall be sized to provide the greater of the current required by a typical outdoor compressor match for the OEM furnace of sufficient capacity to meet the maximum cooling Btu/hr capacity of the home's duct system or 30 Amps. An exterior 120 VAC outlet shall be installed within 20 feet of the equipment disconnect.

3.5.1.3. Control wiring: Thermostat wiring to the furnace shall have eight conductors. The wire shall be installed such that at least 12 inches of excess wire shall be available for future needs. Unused conductors shall not be cut short.

Electrical panel Tier 1



Electrical panel Tier 2



3.5.1.4. Condensate drain: the indoor coil of a split-system heat pump or air conditioner generates liquid water condensate during cooling operation, and this water needs to be conveyed out of the home. Two tiers of preparation are recognized, depending upon how condensate drain lines are accommodated or installed at the factory

3.5.1.4.1. Tier 1, accommodation: the chase way detailed in section 3.5.1.1 shall terminate no more than 1½ in. below the bottom board, to allow the future HVAC technician the best chances possible for creating a gravity drain to outside the home's perimeter

3.5.1.4.2. Tier 2, condensate drain installation: condensate may be drained either directly to the outside of the home and allowed to fall to the ground, or it may be connected to the home's waste plumbing system. See illustrations below

3.5.1.4.2.1. Direct drain: the factory shall install plastic pipe measuring at least ¾ in. I.D. that runs from inside the furnace compartment, continues through the floor's rim joist and terminates outside the home with a 90 deg. Elbow fitting, to prevent water running back along the pipe. Any such drain line shall either include an air gap and P-trap, or it shall lack such a trap and run at a continuous slope of no less than 1/8 in. per foot of run. A label shall be placed in the furnace compartment identifying whether or not a P-trap is present in the line and that its purpose is for carrying water condensate.

3.5.1.4.2.2. Waste plumbing connection: the factory shall plumb a drain line, with necessary P-trap and air gap fitting, if required by the plant's DAPIA, into which the condensate line from the future indoor coil can be directed.