Typical combined system
Mechanical Systems
Domestic hot water heater w/hx
**Diagram Description:**

- **Finish Flooring:**
- **Adhesive or Thin-set Mortar:**
- **Plywood Subfloor:**
- **Aluminum Heat Transfer Plate:**
- **Tubing:**
- **Underside Insulation:**

**Instructions:**

- **Tubing Must Exit Plates Straight to Avoid Expansion Noise:**
- **Floor Joist @ 16" O.C.**
- **Expansion Gap Between Plates:**

**Notes:**

- **Looking Up at Underside of Floor:**
- **Aluminum Heat Transfer Plates:**
- **Tubing Routed Through Oversized Holes in Joists**
- finish flooring
- adhesive or thin-set mortar
- 1/4" cover sheet
- plywood subfloor
- aluminum heat transfer plate
- plywood sleepers
- tubing
- foil-faced batt
- underside insulation

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- plywood end plate
  - leave min. 4" between wall and tube to prevent damage
  - tubing snaps down into groove in plate
- aluminum heat transfer plate

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- 1/4" cover sheet
- finish flooring
- routed return bends
- wood sleepers glued and mechanically fastened to subfloor. (gap between sleepers provides space for tubing and groove in plate)
Concrete Pour over Tubing
Manifold detail