

### 3 BUILDING AND MECHANICAL SYSTEM OVERVIEW

McKinstry Oregon Headquarters is a \$15.5 million project which is scheduled for completion March 1, 2009. This includes two buildings. The only building of interest is the office building, as the other is simply a warehouse. Costs for the 50,590 square foot office building total \$11.1 million dollars.

At the completion of construction, 67% of the office space will be in use. The rest of the space will be unfinished and available for expansion in the future

The headquarters is a 2 story office building. The office is laid out in a simple rectangular grid. At the West end of the building a full height 1 story warehouse attaches at a rotated angle.

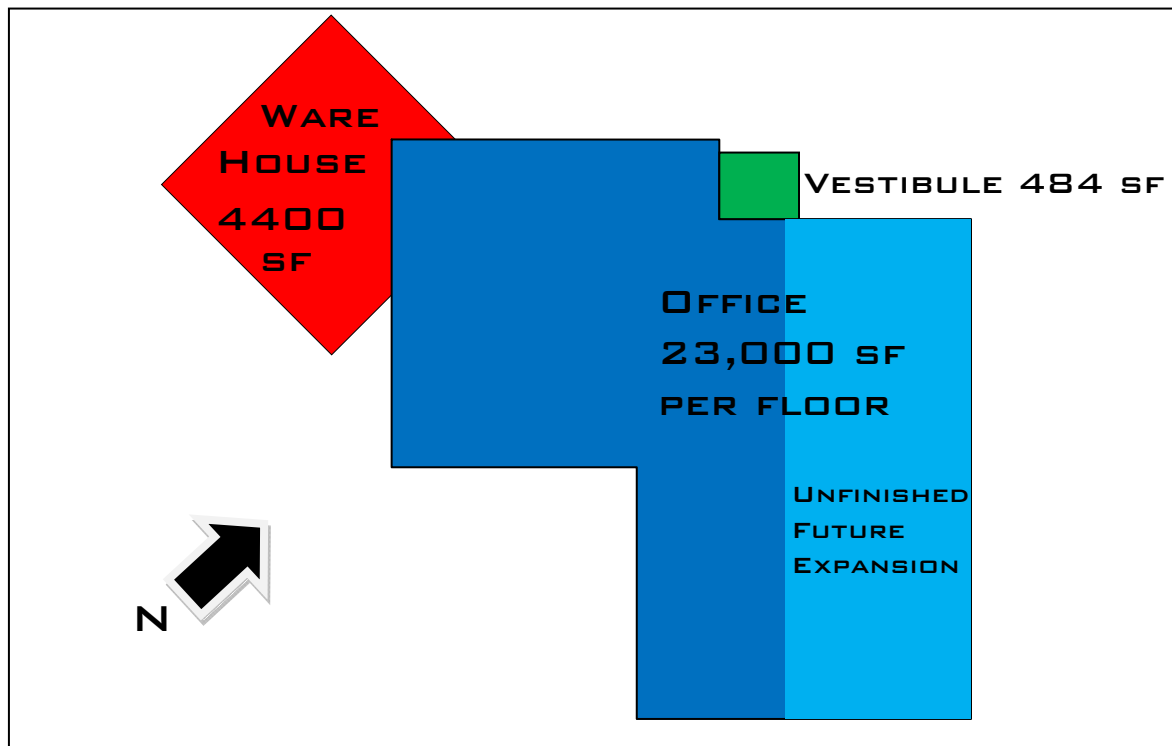


Figure 2.1. Building Footprint

The flat, tilt-up concrete walls have vertical and horizontal lines to break the long straight façade. Approximately 30% of the office façade is glazing and windows are double glazed. The base of the building is a reinforced concrete slab (there is no basement). The exterior walls are backed by 3-5/8" metal studs and 3.5" batt insulation. A built-up roof with 3" rigid insulation and 1.5" metal decking tops off the structure. The roof also has several translucent skylights for natural

day lighting. The remaining lighting in the building is fairly standard with 100% fluorescent fixtures.

### MECHANICAL SYSTEM

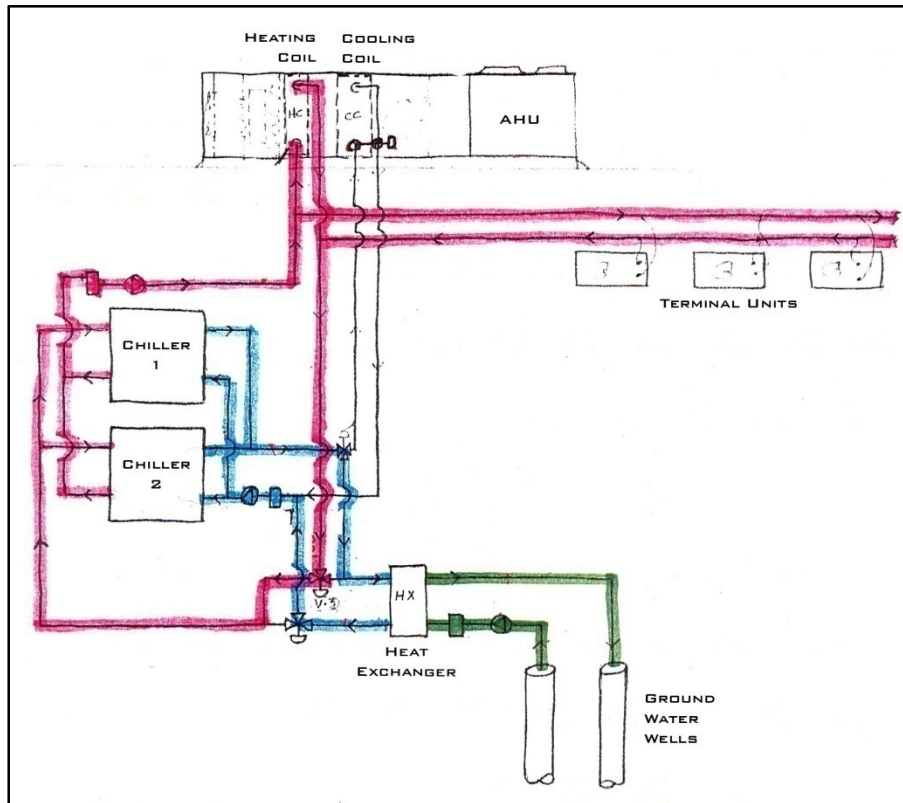


Figure 2.2. Waterside system, shown in heating mode. (McKinstry Design Documents)

The central plant of the building is a heat recovery chiller that is used for both heating and cooling. The mechanical system also includes an open loop ground source heat pump. Ground water accepts heat from the condensing water in cooling mode and provides heat to the evaporator water in heating mode. Recently designers added supplemental 1,000 kBTU/hr natural gas boiler to help meet peak loads. Evaporator side water and condenser side water are piped to the cooling and heating coils in the air handling unit, respectively. A single rooftop AHU (with VFD) distributes air via ducts to the office section of the building. Series VAV boxes with hot water reheats are located throughout the office. Also, an airside economizer can provide cooling on light load days. Two hot water unit heaters keep the warehouse warm in the winter. Heating is provided by the hot water loop and there is no cooling or ventilation. Linear diffusers condition the vestibule at the front of the building. Section 5 provides a detailed schematic of the waterside system.