

1**EXECUTIVE SUMMARY**

McKinstry Oregon Headquarters is a 50,590 square foot, 2 story office building. It began construction in March 2008 and is scheduled for completion in April 2009. It is located in Northeast Portland, overlooking the Columbia River. The building contains 2 floors of offices, as well as a full kitchen, showers, and a small weight room for employees. There is also a large warehouse at the west end of the building which is not ventilated. Existing conditions are described in sections 3-7.

The design of the Headquarters was dictated by three main factors: sustainability, comfort for tenants, and economy. Section 4 describes these design objectives.

A Dedicated Outdoor Air System (DOAS) is the basis of the mechanical redesign. Ventilation air provides latent cooling and Radiant Panels in the space address sensible loads. An overview of the DOAS system is located in section 8. Changing to DOAS effects many parts of the system specifically AHU, ductwork, piping, heat recovery, and the central plant. Sections 9-12 go over these changes.

The Construction breadth evaluates first cost, energy savings and payback. DOAS provided a yearly energy savings of 51,230 kWh/year or \$4,100 (Section 13). Combined with a Tambient lighting system in the open office spaces (Section 15), yearly energy savings increased to 96,410 kWh/year or \$7,715 (Section 16). The first cost went up \$143,300 for the mechanical redesign, or \$2.83/SF and \$139,890 (\$2.77/SF) for mechanical and Tambient, respectively. Payback was 35 years and 18 years respectively. Full cost analysis can be found in Sections 15 and 17.

Tambient lighting was implemented in the open office spaces of the building. This eliminated luminaires from the ceiling and placed them on the cubicles themselves. The redesign reduced lighting power density from 1.02W/SF to .50 W/SF. Full analysis is in Section 14.