

HVAC

INTRODUCTION

The proper design of the Heating, ventilating and air conditioning subsystem will determine the thermal comfort of a building's inhabitants. The comfort range is relatively small and deviations from it are easily perceived. The major determinant is the ambient temperature but drafts and radiative effects also have an influence on comfort, sometimes notwithstanding proper ambient temperature.

Added complexity in the design of HVAC subsystems is the variance in heating or cooling load needed throughout any one building - what is usually referred to as zoning. This requires the subsystem to deliver different temperatures of the heating cooling medium to many areas of the facility.

METHOD OF EXAMINATION

The quality of the thermal environment was measured by using a temperature recorder. Since cooling is not provided in the 3 older schools this was the factor most closely studied. Determining the performance of the following characteristic and comparing it with recommended standards results in an evaluation of the quality of the thermal environment. For a more detailed description refer to the Field Test Manual, December 1974.

SUMMARY OF PERFORMANCE

	P	R	S	M
Ambient Temperature	○	○	○	○

SUMMARY OF FINDINGS

Performance of HVAC systems is unsatisfactory during the beginning and end of the school year at the Parkside, Richards and Smith Schools. Mt. Healthy School has cooling capability and is satisfactory.

DETAILS OF FINDINGS

AMBIENT TEMPERATURE

Results: In the 3 schools without cooling systems the classroom temperatures exceed maximum recommended limits (78 degrees) from approximately mid-May through schools' closing date in early June. During the first 2-3 weeks of school in September this result can also be expected.

Probable cause: Lack of cooling capability.

Discussion: Since these schools are closed during the summer months the need for cooling capacity can be questioned. For about 6 weeks real discomfort will be experienced. It is possible in each school, we believe, to add on some cooling capacity without major alterations though this area needs more study. In the interim most teachers bring in their own fans to produce some cooling by convection during this period.

OTHER AREAS

A warm weather ambient temperature study was our focus in the HVAC area. Further research needs to be done especially on the radiative effects of the uninsulated walls in the winter. Informal observations and a questionnaire given to teachers in two of the schools (without cooling) note virtually no problems with winter heating and unanimous dissatisfaction with hot weather.

INDOOR AMBIENT TEMPERATURE

