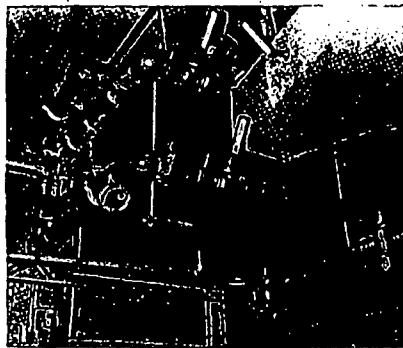
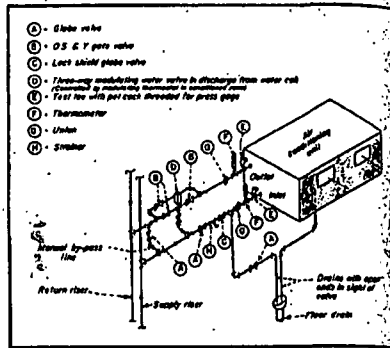




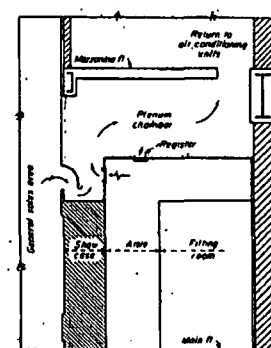
1 Fifteen factory-built air conditioning units, above, were selected to fit available area and height in stock areas



2 Coil connections to air conditioning units, above, supply chilled water to cool air distributed through the store



4 Fitting rooms, like those at the left, illustrate the problem of supplying air conditioning to partitioned spaces that are always subject to rearrangement

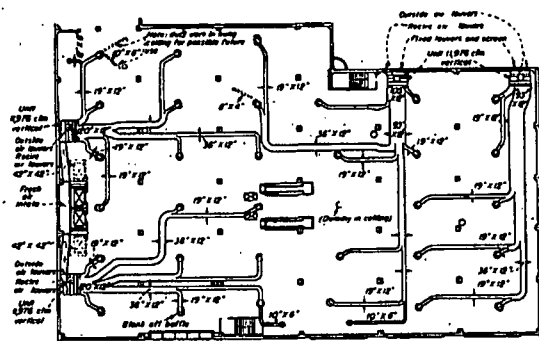


5 No return ducts as such are used. Plenum chamber serves mezzanine

Department Stores Require Flexible Air Conditioning

Usual store experience involves rearrangement of the sales floors. But here's one department store that manages to obtain the necessary flexibility by using unit air conditioners cooled by chilled water from a central refrigerating system

By T W REYNOLDS, Chief,
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3 Typical floor plan for ductwork has main runs parallel to and between deepest beams with the short, shallow branches to the air outlets crossing these beams

PHYSICAL LAYOUT of a department store is never constant. It starts to change even before it is finished, and never is finished. Take Burdines, of Fort Lauderdale, Florida. Right now, although it is a 3-story building, recent erection, provision has already been made for an additional three floors.

In this store there seemed to be more than the usual limitations in headroom and available floor area for ductwork and equipment. These restrictions led to the use of small air-distribution centers and factory-built air-conditioning units at 15 points throughout the building. Fig. 1 and 2, with cooling obtained from chilled water from a central refrigerating system on the roof, Fig. 7.

Conditioned air from the air-conditioning units is distributed by means of short runs of small ducts, each connected to a limited number of ceiling supply outlets. Main runs of ducts parallel the deepest beams and shallow branches supply outlets crossing the beams. Fig. 3. Capacity of the air-conditioning units was set by (1) area and height available for them in stock areas, (2) quantity of air the main duct from each unit could supply in the limited space of hung ceilings without air velocity producing noise. Available space proved so tight that the engineers necessarily combined all mechanical services on one coordinated plan. For this, at his shop in the metropolitan area of New York, the sheet-metal

tractor worked in assembling the ducts in sections. Notwithstanding all this, they fit when put in place.

Fixing the Load. The item of diversity factor, usually set at 80%, did not figure in calculating compressor load. The effect that lights and people play on diversity factor in an installation such as this—only three floors and

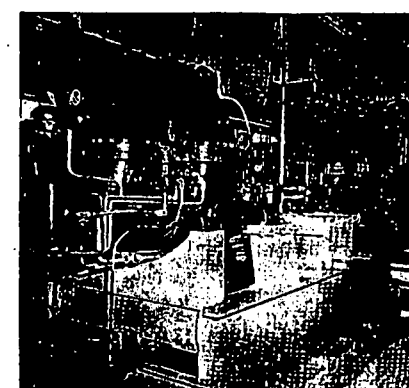
equipped with escalators—does not amount to much. Because of this, the total connected load and operating load were held to be one and the same.

But compressor selection involved another step—a rough estimate of expected load when the additional three floors are added. This resulted in picking a 540-ton compressor, Fig. 7. Its

selection came about for these reasons: (1) Excess tonnage above the presently required 455-ton capacity cost only about 60% per ton of the quoted price per ton for a 455-ton unit. (2) Estimated total tonnage of 675 tons when the store is enlarged could be met with a 540-ton compressor operating on the usual 80% diversity factor. Incident-



6 Outlets spotted in ceiling and arranged in rows are large enough for both the present and future conditions



7 Chilled water for cooling air in unit air conditioners comes from central refrigerating compressor on roof top