# REFRIGERATION REVIEW

## Doorways

We have talked in the past about how much infiltration affects the refrigeration load. This is particularly true in high humidity areas such as the east coast and the southeast. As has been pointed out previously, it takes 1,000 BTUs/pound to wring moisture out of the air, and during peak refrigeration periods infiltration can easily become 50% of the refrigeration load. While you can't stop infiltration completely, there are a number of ways you can slow it down.

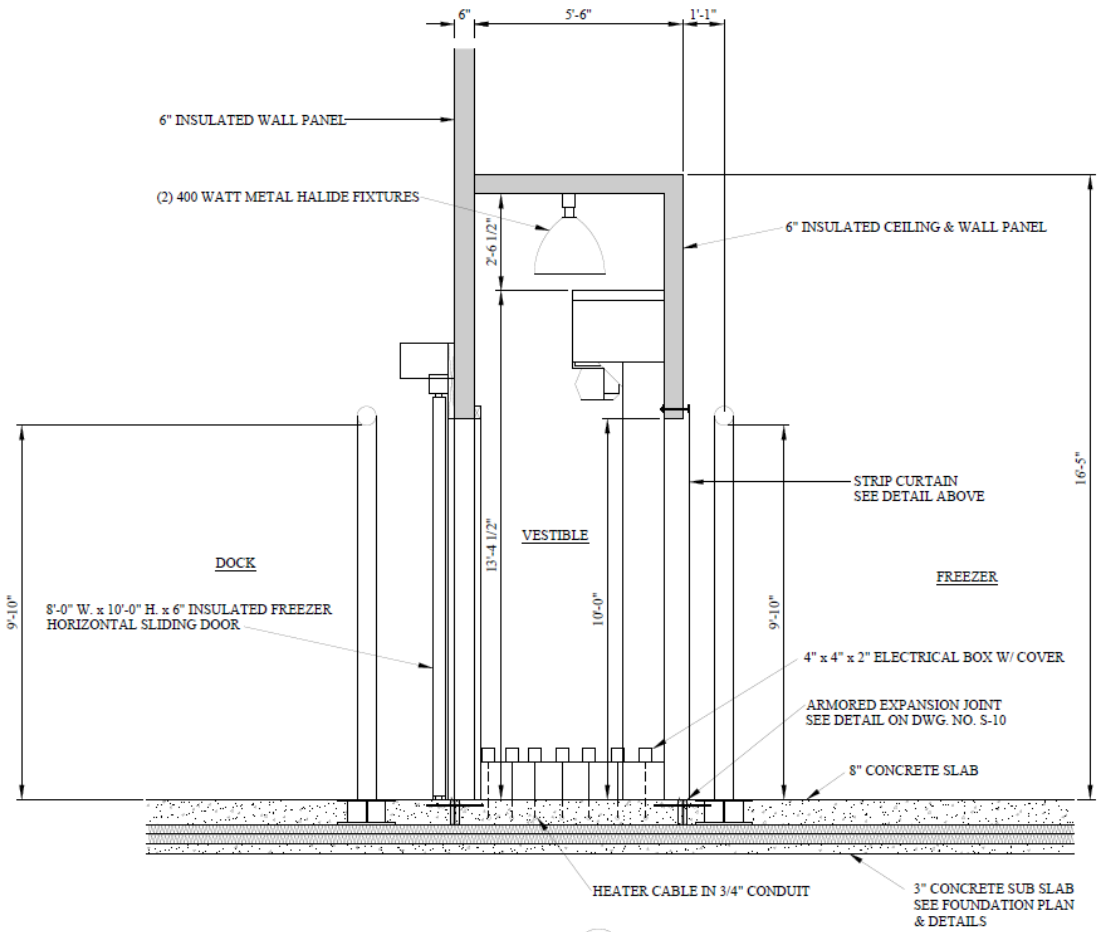
First, on refrigerated docks the old rule of thumb was to blow air at truck doors. On a tall dock, sometimes we use reheat with one unit at the end of the dock. Given a sufficiently high dock ceiling, air can be directed above doors that will tend to retard warm air that wants to come in at the top of the door, while cold air goes out at the bottom. While blowing at the area above the doors the air can be slowed down, and you get the advantage of mixing air before it condenses out at the dock ceiling. Of course it would be a major benefit to have dock doors that seal tightly when not in use, and the use of vertical levelers and/or edge of dock levelers make this possible.

Once air is in the dock area, the challenge is to keep it out of the freezers, and this can be helped in a number of ways. Again, in smaller rooms the air units can be placed opposite the doors, and generally air is blown in the direction of the

doors neutralizing the warm air rising as it comes in the door. The use of rooftop units can take advantage of a placement more at the centroid of the load, which is usually one third of the way back from the dock area; and again, the air can be directed at the area above the doors.

Very often a mini-vestibule 6’ to 8’ deep can help retard the infiltration as it comes in. It can also provide a pocket of warm air which will mix with the humid dock air and help prevent condensation and ice formation. Very often, auxiliary heat can be used via door manufacturers such as Jamison, and sometimes you can use bright lights as a source of heat, which of course serves as a two-fold benefit from a safety point of view and heats the pocket of air in the vestibule – no different than home refrigerators today which use heated seal grommets to minimize moisture and condensation around freezer doors.

Here is a typical vestibule we use for freezer dock applications.




SECTION
SCALE : 1/2" = 1'-0"

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A-24

NOTES:
1. TYPICAL FOR (3) VESTIBULES, SEE DWG. NO. A-1 FOR LOCATION