

01-82-01-11 PT. 2

E. L. Hardin

August 25, 1969

Fairbanks, Alaska

Series: Alaska Science Conference, 1969

Special symposium: Planning communities in the North.

Effects of the environment on design considerations by Colonel E. L. Hardin. E. L. Hardin said those that have worked in the North realize without planning things won't be any better. Broad range planning is needed. Military realizes that planning military construction is needed in the North. Right now they are trying to create an environment instead of adapting conventional buildings. Initially they were just providing an operating facility and shelter. Later they added some amenities. It was realized that they were in the North to stay and they needed skilled professional people and needed to cut down on the turnover. As a result they created an environment that was pleasing and satisfying. There are 53 military bases in Alaska. The Army Corps of Engineers has spent over a billion dollars for facilities at these bases, much of it above the Arctic Circle. He will be describing the multi-discipline approach in building these facilities. He talked about building foundations on permafrost. They have elected to remove the permafrost. In the Anchorage area they have removed about eight feet and in Fairbanks it is about ten feet. He said working on permafrost requires much planning. They try to keep the permafrost from melting. He said in the north they put down about five feet of material for road construction. With heated buildings they have a problem. They have used a ventilated foundation. A more reliable structure is an elevated building. He showed slides of examples of construction on permafrost. In Glennallen they have discontinuous permafrost. They have used a refrigerated system to dissipate the heat. There is no one solution to the problem of foundation thawing. In the early 1950s they designed research installations in Kotzebue. He described the different designs of the foundations. One of the low cost solutions was scraping off the permafrost and the use of concrete posts and back filling. It is still standing. He talked about solutions for buildings at Bethel. He said he has generalized on the foundation problem. Every foundation needs careful investigation.

There are problems of water supply and waste disposal in the North. Despite the abundance of water in Alaska it is not easy on the North Slope. In one area they were able to draw the water from a well at 40 F and place it in insulated pipes. There are coils inside to add heat when necessary. This is a very expensive solution for the problem and would not work for large communities.