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Signature

2738

Birnhall

CARBIDE AND CARBON CHEMICALS CORPORATION

Inter-Office Correspondence

Post Office Box P
Oak Ridge, Tenn.

TO: Mr. R. I. Parrish
K-302-2

cc: S. Cromer

REPORT NO. KZ 2117

Date: April 23, 1945

Subject: Design of Ventilating System for K-27

In the light of the information obtained from a recent study of the ventilation system in Case I buildings, I believe the following items should be considered in the design of any new buildings of the 300 Section type.

I. Cold Trap Rooms

A. Installation of an additional set of floor suction ducts on the pump side of the room.

B. Increasing the air throughout by 50% (i.e. to about 3300 cubic feet per minute).

C. Installation of a type of controller in the room pressure control system with a more positive throttling action and a wider sensitivity range, to eliminate hunting, adjustment difficulties, etc.

II. Cell Floor System

A. Installation of a more rugged type of damper in the ducts discharging to the withdrawal alley.

B. Redesign of orifices in the ducts to the withdrawal alleys and motor alley to proportion the flow per cell as follows:

Withdrawal Alley	Motor Alley	Top of Cell Enclosure
8,000 c.f.m.	8,000	8,000

C. Directing a part of the motor alley air supply to each A. C. pump fan suction to provide better motor cooling.

III. Operating Floor

A. Design air outlets which discharge operating floor air to the roof so that they take suction from the very highest point in the ceiling, to eliminate trapping warm air under the ceiling.

B. Design the air supply system so that air either:

(1) enters at floor level and at the sides of the building and blows in toward the center where it rises toward the discharge (see Fig. 1), or

(2) Enters overhead and at the middle of each building corridor and is directed downward (see Fig. 2) by variable pitch vanes.

This document has been approved for release to the public by: T W Selby
for A S Quist 4/19/96
Technical Information Officer Date
Oak Ridge K-25 Site

Carbide and Carbon Chemicals Corporation, Operating Contractor for the U.S. Atomic Energy Commission.

Mr. A. L. Parrish,
April 23, 1945
Design of Ventilating System for K-27.

Design (1) has the advantage over Design (2) of more direct circulation across the floor where it is needed during hot weather, but has the disadvantage of too direct a supply during cold weather. Design (2), with its variable pitch vanes, would be a better year-round design. Either design, however, would eliminate the present shortcircuiting and improve the circulation on the floor.

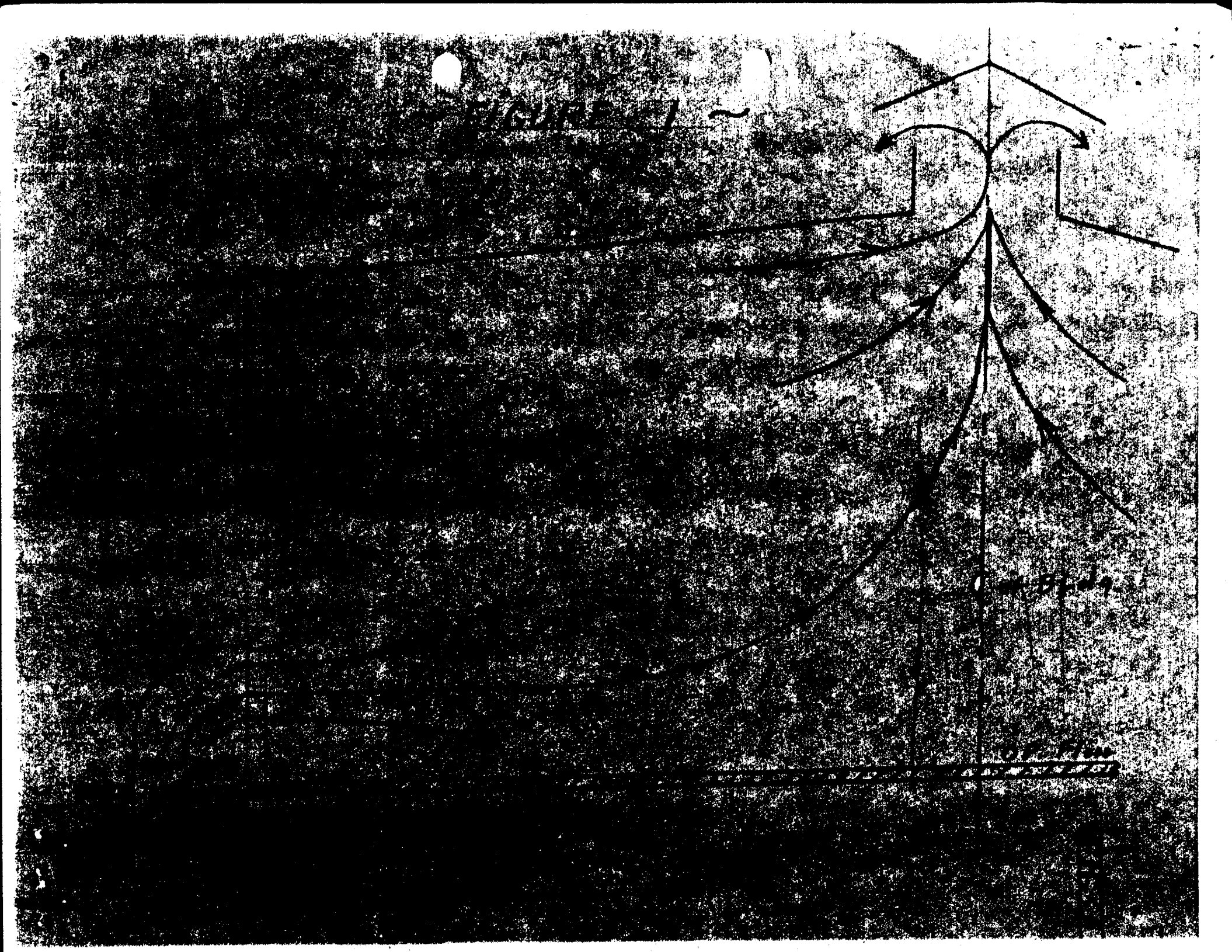
C. Provide a more rugged damper in the air supply ducts to the operating floor. Also, make provision for adjusting the damper to any degree of opening and also for seeing the adjustment by inspection. This is necessary for proper proportioning of air to the floor to maintain even temperatures and adequate circulation at all points.

Sincerely yours,

/s/ G. N. Birchall, Jr.

GNB:bf

FIGURE 1



~ FIGURE 2 ~

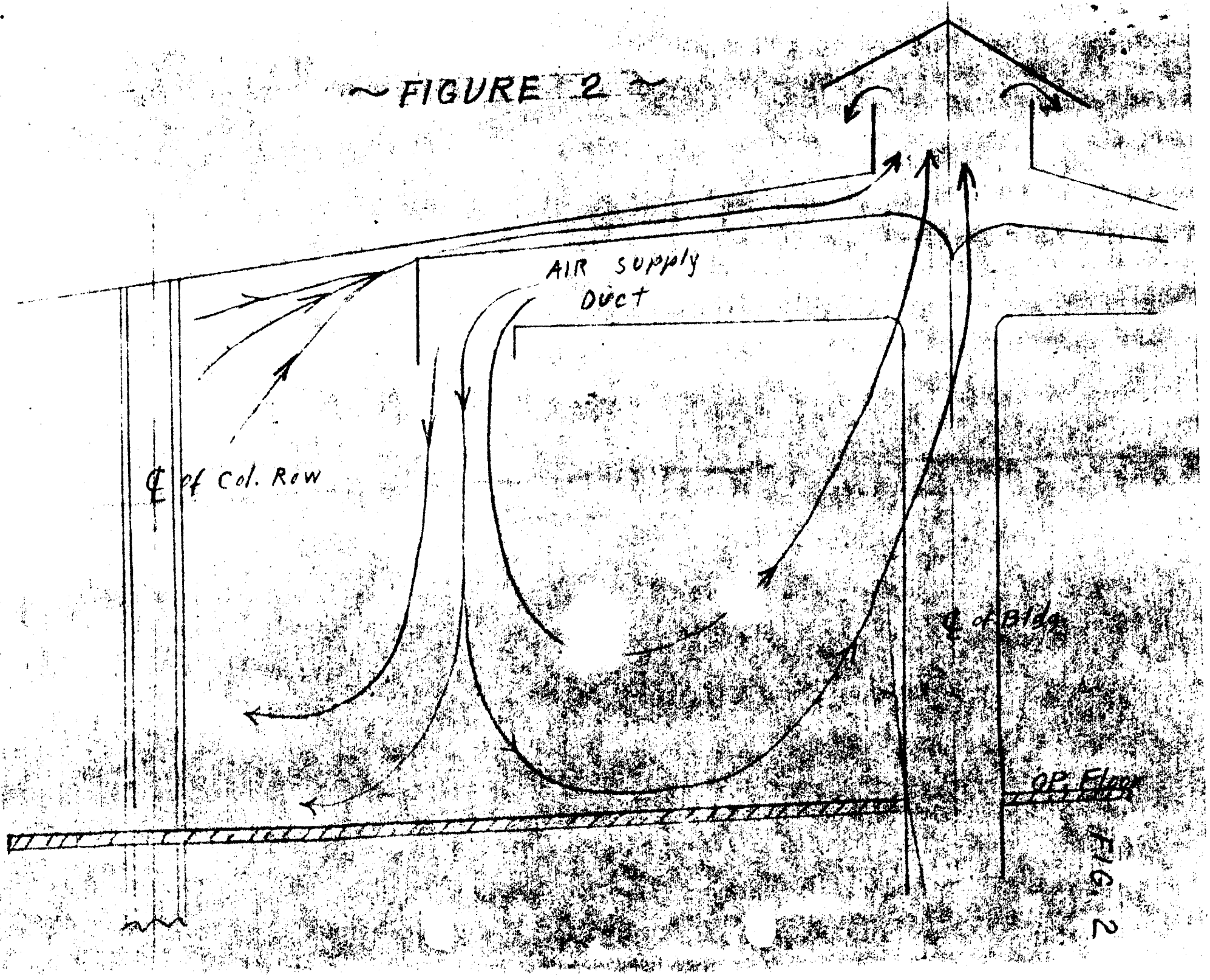


Fig 2