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Letter from Paul Moore to Norman Moody regarding problems with the climate control system at the new Forsyth Library building

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1969

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December 12, 1969

Mr. Norman Moody
Mechanical Engineer
State Architect's Office
State Office Building
Topeka, Kansas 66612

RE: Heating & Air Conditioning System
Library Building, F.H.K.S.C.

Dear Norman:

This letter is intended to summarize the meeting held yesterday to investigate the problems with the heating and air conditioning system on this project and to serve as a record for remedial actions that were recommended. Please let me know if I have omitted or misinterpreted any of the agreements that were arrived at.

Present were: Ray Brooks, F.H.K.S.C.
Dale Akers, F.H.K.S.C.
Ralph Speier, Midland, Inc.
Harold Heuser, State Architect's Office
Norman Moody, State Architect's Office
Carl Stephens, Chrysler Airtemp
Bob Saltzman, Air Conditioning Supply
Ronald Taylor, Honeywell
Vern Miller, Honeywell
Paul Moore, Woods and Starr

It was agreed that there are two parts to the problems with the system: (1) Difficulty of keeping the refrigeration equipment on the line; and (2) Excessive air pressure in the building. Since there are two parts to the problem, it was also agreed that the solution should be accomplished in two phases. By a copy of this letter we are asking Midland, Inc., to submit a proposal to you for the necessary work involved in correcting the refrigeration difficulties as the first phase. Then our office will prepare the necessary drawings and a written outline of the work necessary to correct the air pressure problem. We will have Midland, Inc., submit a proposal for this at a later date.

A. The work to be done on the refrigeration side includes the following:

1. Carl Stephens of Chrysler Airtemp, or his representative is to go through the complete start-up procedure in March or April, 1970, and thoroughly check out the refrigeration system including:
   a. Check expansion valves,
   b. Check all refrigeration piping for proper sizes, etc.,
   c. Check fan and damper sequences on air cooled condensers,
   d. Check for proper refrigerant charge,
   e. Adjust settings of all controls, unloaders, etc.

2. Honeywell and Midland are to furnish and install a control damper on the upper cooling coil of each air unit to close when the compressor supplying this coil shuts off as cooling load drops off. This will force all cold deck air through the bottom coil to maintain the load on this coil at light loads and help avoid low suction lock-outs. The operating sequence on the control of the refrigerant coils shall be changed, if necessary, so that the compressor serving the bottom coil is "first on" and "last off". The control dampers are to be wired to close (through a time delay) when the compressor serving the upper coil shuts off. The damper is to open when the first solenoid valve on the upper coil opens. Installation shall include the following:
   a. All wiring,
   b. Dampers and installation,
   c. Damper motors,
   d. E.P. relays,
   e. Time delay relays,
   f. All air piping,
   g. The sensors for the cold deck controllers are to be relocated from the cold deck to the return air for each unit. They are to be re-set at approximately 78 F., then observed, and adjusted as required to maintain a cold enough cold deck to carry the building cooling load, yet not cold enough to keep the compressors on when not necessary.

B. The problem with the air pressure in the building apparently is caused by an imbalance between the supply fan system and the return air system. Our approach to solving this will be increase the speed of the return fans to their original settings and observe the result of this. We will plan to do this during Christmas vacation. Also, Honeywell will have their mechanic change the setting on the static pressure controller to see if this is affecting the building air pressure. If these changes fail to solve the problem, it will be necessary to increase the size of the return air duct system as we discussed. We will prepare drawings for this, so that you can get a price for these changes.

C. Other items observed yesterday that are affecting the system were:

1. Outside air damper minimum position switches were set at 80 or 90%. These settings do not allow the outside air dampers to close in response to the mixed air controller, and of course, add considerably to the heating and cooling loads. This may also contribute to the build-up of water in the hot deck plenums. These switches were re-set to 10% outside air and Honeywell will have their mechanic relocate these switches inside the unit panels to prevent unauthorized people from changing the settings.

2. Hot deck plenums were full of water. This water appears to come from the humidifiers and has built up over a period of time. Dale Akers will have his maintenance people cut a drain hole in each plenum to allow the water to drain to a floor drain.

Thank you again for coming out. I think the meeting yesterday was quite helpful and I hope we are now well on the road toward getting things solved.

Yours truly,

WOODS AND STARR ARCHITECTS

Paul Moore, Engineer

PM/cv

cc Midland, Inc., Hays, Kansas
Mr. R. V. Brooks, Fort Hays Kansas State College, Hays, Kansas.