NATIONAL TAB
INTELLIGENCE

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Summary

The Purpose of this visit was to address comfort issues occurring in La Colombe Coffee Bar. Balancing was completed and adjustments appeared to have improved the overall comfort of the space. However, there are issues on the following pages that need to be resolved.

Technical Summary

For the past several summers, the space has been experiencing significant cooling problems. So much so that the shop has had to close due to high temperatures and humidity in the space. The Bar is located on the ground floor of a high-rise building and has a seating area with full-length glass windows on the exterior wall. There is a large serving counter / coffee bar, one restroom, and two small rooms behind the bar for storage and BOH operations. The rearmost room is used for storage and brewing some coffee. There are large fridges/freezers located in this room and on arrival it was noticeably warmer than the rest of the space measuring at 73.8 F / 61.1% RH, while the seating area measured 69.8 f / 59.4% RH.

La Colombe is served by a 5-ton AHU mounted in the ceiling above the BOH and scheduled to supply 2000 cfm to the space. Installation of the AHU system slightly deviates from the plan drawings. The AHU is oriented perpendicular to how it is shown on the plans and the return duct was modified to two round flex ducts tapping off properly sized ductwork above. All other duct work is sized correctly, however one 8" CD2 diffuser indicated on the plans is not installed. Supply airflow was initially measured below design at 1647 cfm. It was discovered that the AHU final filters were dirty and restricting airflow. These were removed and the supply airflow was measured to have increased to 1942 cfm, within tolerance of design. The EAT of the AHU was measured at 76.2 F / 61.1 % RH and LAT was measured at 60.9 F / 81.0% RH.

Entering chilled water temperature measured as 50.4 F. Flow measurements could not be reliably obtained at the circuit setter. Entering pressure measured at the AHU as 149.6 psi and the leaving pressure at the coil was measured as 144 psi leaving (5.6 psi). The design pressure drop across the coil was 0.51 psi (1.17 ft). This indicates a restriction inside the coil. Per the service company, the strainers are dirty but they were not cleaned. They need to return to clean the strainers. Based on air temperature readings, the coil is operating at 51,163 Btuh's and design is 57,450 Btuh's. So, the unit is performing roughly 1/2 ton lower than design. Anticipated that once strainer is cleaned, and the filters are changed, the coil performance should be closer to design.

A 22"x14" duct runs from a louvre at the front of the store to the AHU mixing box supplying outside air. For the first few years of La Colombes operation, it did not experience any significant HVAC issues. The comfort issues at the shop coincided with the removal of scaffolding from the exterior of the building. It was surmised that the OA intake Louvre was covered by the scaffolding, and with the removal of scaffolding, a significant amount of OA was then introduced into the space. With the final filters still removed, outside air was initially measured at 1104 cfm, confirming the surmisal. This amount, over

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50% of total airflow, had a significant impact on the AHUs ability to cool the space. The AHU return damper was found 50% open, and the OA damper found 100% open. The return damper was opened fully, and the OA damper was set to provide approximately 340 cfm of outside air, about 1/2" open. It appears an actuator is installed to open and close the interlinked return / OA dampers based on occupancy. This does not appear functional, and the dampers are not secured or interlinked; floating freely in the mixed air box. Recommend these dampers are secured, and set to maintain these positions during occupied hours.

La Colombe also has an inline exhaust fan installed to exhaust from the BOH room and the restroom. Per plans, this fan is to run 24/7. The fan is not operational. Recommend this fan is serviced.

The extremely high percentage of outside air being pulled into space through the AHU was having a considerable impact on the comfort of La Colombe. By opening the return damper and adjusting the OA damper to provide the design amount of outside air, this should greatly improve the AHUs ability to cool/heat the space. With this adjustment, and by addressing the issues mentioned in this report, the comfort of La Colombe should improve. Several hours after our visit the manager reported a more comfortable and less humid space.

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