

Project Summary

The purpose of this visit was to identify and help resolve issues that are causing a severely negatively pressurized 5 Guys Restaurant. On arrival at the store, the Make-up-Air Unit (MUA) was not operating, and the exhaust hood was displaying the alarm "MUA Interlock." As a result, the building pressure was extremely negative, and it was hard to open the front door. An acceptable pressure range for a building falls between $-0.02''$ and $0.02''$ W.C.. A pressure of $-0.52''$ W.C. was initially measured at the front door. We were able to clear the alarm on the MUA and get it operating. Once running, the MUA's airflow was measured to be within design. Adding the MUA's outside air supply relieved some of the negative pressure and eased access to the store. The building is still very negative ($-0.32''$) and we suspect the following items of contributing to the pressure issue:

1. Neighboring tenants HVAC systems: Other tenants' spaces are severely impacting the 5 Guys store pressure. There are highly noticeable pressure issues throughout the building; several doors held open, doors slamming shut, drafts. The buildings maintenance specialist informed us the building was renovated about a decade ago, and it has experienced these pressure and airflow issues ever since. The eastern tenants' building pressure was measured as $-0.27''$ W.C. at their front door. We recommend consulting the landlord about having a balance performed on the entire building to resolve the base building pressurization issues.

2. Exhaust Fan 3: EF-3 is scheduled to exhaust 1550 cfm and was measured to be exhausting 1158 cfm, pushing the building airflow even more negative. We believe this fan is installed to satisfy Chicago Code requirements but does not serve any other necessary purpose. It pulls exhaust from a ceiling grille on the east side of the dining room as well as a grille above the food prep area in the back. A disconnect for the fan could not be found and it was not labeled in the electrical panel. It appears to be on a circuit tied in with lighting. Recommend this fan is powered off and disabled to help reduce negative airflow on the store space.

3. Transformative Wave Controls: The Roof top unit was found to be operating within design supply airflow. The RTU has a building control system installed, Transformative Wave, and this regulates/controls the outside air (OA) damper position. The unit operates at multiple speeds and needs multiple OA setpoints to maintain a consistent flow of outside air through all stages of operation. After speaking with the controls support, I was able to set the OA damper position to achieve design airflow, 1200cfm, with the supply fan operating at high speed. However, the transformative wave technician informed me there is only one OA minimum position setpoint, and the damper position will modulate from my setpoint based on fan speed and outside air temperature. This modulation will result in inconsistent outside airflow to the RTU and consequently, fluctuating building pressure. We recommend that the Transformative Wave controls be evaluated to determine if they are still needed or could potentially be removed to help ensure constant building pressure.

The hoods were found balanced in design and a smoke test demonstrated they are performing well, with 100% smoke capture. EF-2, serving the restrooms, could not be located. The plans have it listed as a roof fan, but only a gooseneck discharge was found on the roof in its listed location. We suspect it is an inline fan. The fan is operating and was measured to be exhausting 304 cfm out of a design of 280 cfm.

With all systems running, the final building pressure was measured at $-0.32''$ W.C.. We believe that addressing items 2 and 3 above will greatly improve but may not totally resolve the building's negative pressure. The neighboring tenants HVAC system will likely still have an impact on the stores building pressure unless that issue is also addressed.