The focus of this visit was to get an understanding of system & facility layout and to evaluate known & unknown issues that can be evaluated by the team for possible improvement. NTAB also adjusted or made modifications to any asset during the visit if it created immediate improvements. Listed below and enclosed supporting documentation details finding of each asset & then the facility. The store consists of older Marshall Air hood with supply back return to introduce un-tempered supply air from existing supply fan located on roof. The HVAC-RTU units have been replaced later & mounted to existing curb with adapters. They store manager stated that during warmer months the store gets very hot & humid. The store has been visited by other team members to review conditions of the facility & its assets with additional recommendations not listed in the report. There may be some duplication of recommendations from different team members.

RTU DINING

The unit has the prodigy V2 version controller. The outside air damper on the unit was closed. The unit was set up to vary fan speed based upon stage of cooling & heating. National TAB reprogrammed the controller to maintain constant speed in all commanded conditions. We also set the outside air damper temporarily to ¾" open (measure from OA blade to blade on damper) to bring in some outside air unit we do final TAB setup. Our team the did a Duct Traverse of the main supply drop.

TRAVERSED DROP

- 16"X33"
- 780 FPM AVG
- 2863 CFM TOTAL

This is the amount of air distributed through the supply duct & into the space. The measurement indicates the unit is low in airflow. Typical 10-ton RTU unit ideal airflow range is 3500 to 4000 CFM. Next, we wanted to determine why the unit was low in airflow.

Part of the reason is there is supply & return duct leakage for the unit where the duct is connected to the unit. See enclosed pictures showing the gap in duct to unit connections.

The unit has additional capacity. The current Amp load is 4.9 amps. The motor is rated for 7.4 Full Load Amps (FLA). While the motor pulley is adjustable, it may be difficult to adjust the pulley to increase fan speed. NTAB will size new Motor pulley to be installed on motor by HVAC-Service team to allow NTAB to adjust the fan speed properly to achieve higher airflows.

The combination of fixing the duct leakage & increasing the speed of the supply fan will enhance unit performance.

KITCHEN UNIT

The unit has the prodigy V1 version controller. The outside air damper (economizer) is not functional. The unit was set up to vary fan speed based upon stage of cooling & heating. National TAB reprogrammed the controller to maintain constant speed in all commanded conditions. We also manually set the outside air damper temporarily to ¾" open (measure from OA blade to blade on damper) to bring in some outside air unit we do final TAB setup. The unit outside air filters are missing & is not an impact on airflow but recommended to get new ones installed to assist in maintenance.

Next the unit total airflow was measured via total summarization from all air devices. The unit is producing 2,650 CFM of supply air. The unit is suffering from low from conditions for the same reason as the dining Kitchen unit.

The unit has additional capacity. The current Amp load is 5.5 amps. The motor is rated for 9.0 Full Load Amps (FLA). While the motor pulley is adjustable, it may be difficult to adjust the pulley to increase fan speed. NTAB will size new Motor pulley to be installed on motor by HVAC-Service team to allow NTAB to adjust the fan speed properly to achieve higher airflows.

The combination of fixing the duct leakage & increasing the speed of the supply fan will enhance unit performance.

The unit is also very close to the Grill exhaust fan (KEF1) which causes a lot of grease build up on the condenser coil, fan & unit (see pictures). It is recommended to install a 45-degree discharge directed away from the RTU unit.

ADDITIONAL NOTES ON RTU'S

On a side note, the Thermostats were set to Auto Fan. To provide sufficient outside air, recommend during occupied times to have fans run On. This will keep from having unwanted & untreated outside air from infiltrating in at the front door & will also help with consistent building pressure. If the Thermostat's cannot be programmed for this application, recommend putting a sign up next to stats or getting thermostats that allow for programming of Fan Auto/On function during Occ/UnOcc times.

Temperatures were taken in space & across DX coil to provide additional insight. Keep in mind that outdoor temperatures where perfect & does not reflect performance at increased Load (Hotter days)

HOOD SYSTEM:

The total hood exhaust measured was – 2877 CFM which is on the lower range of typical exhaust for 16 ft of hood of 3200 CFM at 90% of design. The make up air (untempered) unit was measured performing a duct traverse. The unit is achieving 1679 CFM of supply air (16" Dia Duct / 1203 FPM Ave). The supply air is low in airflow. However, It is recommended not to increase the supply air since it will impact humidity in the space. Also, we suggest not increasing the exhaust fan & review performance once all items are fixed & cooking equipment is set back properly. The hoods actually work decent right now & can only get better.

Restrooms:

The Mens & Womens exhaust & Supply was measured & found that they are both positive in pressure. When NTAB returns to do final TAB, we will set the Supply at equal too or very slightly less than exhaust. Below are the current readings recorded.

WOMENS RR

63CFM EXHAUST

204CFM SUPPLY

MENS RR

76CFM EXHAUST

175CFM SUPPLY

Once getting RTU units working up to required performance & making repairs & improvements recommended by all team members, the store should have better comfort control. Below & attached are additional supporting pictures & some data recorded for team use. Once system fixes are done, we will return to finish the final TAB & adjustments.

OUTSIDE FILTERS MISSIING. IDEAL TO REPLACE.

CLEAN & CONNECT PROPERLY ALL CONDENSATE TRAPS

EXHAUST VERY CLOSE TO UNIT. SEE PICTURES & NOTES OF MINIMUM ACTION ITEM TO HELP RESOLVE ISSUE.

DIFFICULT TO GET FILTERS OUT OF MUA UNIT. IS IT POSSIBLE TO GET OUT? IF NOT, MAY NEED TO CREATE A SLOT ON SIDE OF INTAKE HOOD TO SLIDE FILTERS IN & OUT.

RTU-DINING WITH CURB ADAPTER. IDEAL TO SAND DOWN GAS PIPING & PAINT FOR THE PORTION THAT WAS REPLACED WITH LAST RTU REPLACEMENT.

SHARED BACK COORIDOOR FOR ALL SPACES IN STRIP CENTER