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To: JoAnn Michaels

From: Viking Construction Inc.

Summary: HVAC inspection report of the Davenport - Elementary School in Stamford CT.

**Davenport** – 1300 Newfield Ave.

During our HVAC Investigation at the School, we tested the operations of all of the equipment, to check for deficiencies and possible causes, for the past moisture issues. We did not find any signs of mold in or around the accessible areas of the unit's curbed plenum. We did however find multiple penetrations into the curbs that are subject to water infiltration that could cause excessive moisture into the Ventilation system. All of these curbed plenum's are lined with a fiberglass duct liner that has heavily deteriorated over the past 17 years since the equipment has been installed. Most of the duct liner used in the HVAC systems are treated with an anti-microbiologic property that is resistant to moisture and is designed to be installed in conditions with small amounts of moisture. However, if it gets soaked it can potentially create an environment for mold spores to grow. Due to the design of the curb we are only able to acquire access to certain sections of the plenum. Past the Zone Dampers we are unable to inspect the conditions of the duct and liner. In the immediate access door location of the plenum the Duct liner has been severely damaged and is falling apart, allowing these pieces debris to drift downstream into the system and causing possible air flow blockages in the smaller supply feeds. We recommend when the RTU's are sent out to Bid for replacement that the curbs be evaluated for replacement along with the RTU's.

We found that some of the zone and bypass dampers are not responding to the BMS commands. Most of the Economizer's are set to low minimum positions or fully closed. We found 3 cracked heat exchangers and 1 bad compressor, 1 failing supply fan motor. Almost every compressor contactor is pitted and worn and should all be replaced. There are a few condenser fan motors that have noisy motor bearing and will soon fail. Overall, the equipment is in fair to good condition with the typical expected problems to be found. The life expectancy of these RTU's is less than 5-years, and should be considered in the budget for replacement within the next few years.

The Exhaust fans are in the worst condition with only 10 out of the 25 fans being operational. Most of them should be replaced vs. repaired due to age and condition. Six of the fans were being commanded by the BMS system but there was no power to the fans local service switch. Recommend investigating further the cause for loss of power to the equipment.

Air Quality and Air changes in and out of the buildings seem to be the main issue with the past moisture problems



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Summary: HVAC inspection report of the Roxbury - Elementary School in Stamford CT.

**Roxbury – 751 West Hill Rd.**

At this location the Exhaust and Fresh Air Intake fans are in POOR condition and most of them are inoperable due to no power or have failed. Most of the fans are so old the unit information is not available. Due to the age and condition of the majority of these fans, our recommendation would be to replace vs. repair these units.

The 500 wing of this building has 3 HP units that are over 20 years old and have multiple failed parts. This wing is scheduled to be closed. The 100 wing has 2 older HP units that are unidentifiable due to age and label plating has worn off or been painted over, but are older than 20 years and the remaining units are 2005 year. There is one abandoned Trane unit that is sitting on the roof without dunnage support and has been salvaged for parts. Recommend this unit be removed from the roof before the metal frame of the unit damages the roof membrane and causes a water leak. The remaining HP units on this roof need a list of repair items and a thorough service/cleaning to extend the life of the equipment.

The Media center unit is a Newer Daikin McQuay, and is fairly new and needs little attention. The Evaporator and Condenser Coils are a little dirty and should be cleaned annually.

The 2 AHU's in the mezzanine that are Heating only unit's, that serve the Auditorium and Gym/Cafe areas. They are Original units to the building and are controlled by the Johnson Metasys system and are pneumatically (EP) controlled. The belts are unmarked in size and will need to be removed, measured and replaced. There is a RA (return fan) that was not operating and had no power to the motor starter. These pieces of equipment are operational but unit information is very limited due to age and condition.

In conclusion this school has a lack of Air changes per hour for proper aspiration to the building and any outside unconditioned air that enters the building is not properly being exchanged through the HVAC equipment that is onsite. Recommend an Engineering firm to further evaluate the schools current ventilation system in order to determine what added equipment can be installed to properly ventilate the school.

Air Quality and Air changes in and out of the buildings seem to be the main issue with the past moisture problems.



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Summary: HVAC inspection report of the Northeast - Elementary School in Stamford CT.

**Northeast** – 82 Scofield Town RD.

This school has a newer renovated Media center with 3 New Gas/Electric TRANE RTU's that serve the space. The only issues we found were that the Economizers were never wired up and are operational. These units need to be commissioned and set up to allow the unit to operate in Free cooling mode as well as allowing some OD Air into the ventilation system. It does not appear that there are any Exhaust fans for the Media center.

There is 1 other operational RTU (Lennox) AC only unit for the main office. This unit needs the economizer set up and the unit needs a thorough service and cleaning.

There are 3- Heating only AHU's that serve the auditorium and café. The units are operational and have been serviced recently. These units are missing on the reports and I will send over a revised report with them on it once our technician who performed the inspection returns from vacation next week.

Out of the 18 roof Exhaust fans for the school only 4 are operational. The one main Kitchen exhaust fan, which is original to the building and needs to be replaced. The other 14 fans are in fair to poor condition and do not have power to the fans. This may be a BMS system problem not energizing the relays to feed power to the fans and should be looked into further to determine the cause. We can provide this additional investigation if requested. Once power is restored to those fans we can determine if they function or need follow up repairs.

The 4 RTU HP's on the Portable units were not part of this inspection. There are also 2 AHU's 20+ft up in the air in the corners of the GYM/Café. We can inspect these units if requested but will require the use of a scissor lift. They are Hot water Heating only units. The 2 Exhaust fans for these 2 areas are also inoperable.

The classroom random inspections of the cabinet unit heaters, determined that the filter get dirty quickly and should be replaced more frequently. Most if not all of the UH's have an issue with the OD damper being stuck open. This introduces more OD air into the space and it would not been an issue if the Exhaust fans worked properly.

Air Quality and Air changes in and out of the buildings seem to be the main issue with the past moisture problems.