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EVERGREEN HEIGHTS ELEMENTARY SCHOOL
HVAC System Assessment

Completed for:

AUBURN SCHOOL DISTRICT

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February 25, 2021

Site Visits, Analysis & Report by:
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SCOPE

Metrix Engineers was hired to perform an assessment of the existing heating, ventilation and air conditioning systems at the Evergreen Heights Elementary site in the Auburn School District. The goal of the assessment was to provide an executive summary level of detail regarding the type and condition of the existing mechanical systems, determine if the systems are operating in compliance with their original design intent, and identify any areas of improvement based on site observations.

The existing facility is approximately 39,609 square feet and consists of a single-story building containing the kitchen/servery, gymnasium, and boiler room, as well as a two-story building consisting of classrooms, office/conference rooms, and a library. The facility was originally constructed in 1970 with modernizations, HVAC upgrades, and minor plan revisions in 2014. There are 4 additional portable buildings on site.

A site walk was conducted on February 22, 2021 to review the existing mechanical systems. This report summarizes Metrix observations based on that visit.

EXECUTIVE SUMMARY

The existing facility appears to be operating per its original design intent. Generally speaking, no major operating points of concern were observed.

There were a few spaces that have been modified from their original use as noted in the observations sections below. However, modifications appear to maintain HVAC design best practices.

Additionally, there were a couple of conditions observed that require maintenance or repair operations in order to satisfy ventilation needs for the space use.

EXISTING SYSTEM OBSERVATIONS

HVAC:

Equipment serving the majority of spaces was replaced during the 2014 modernizations project, which included the replacement of existing air handling equipment with 2 new hydronic multizone air handlers located in stacked mechanical rooms and serving the administration and library areas, as well as 4 classrooms. A new hydronic single zone air handler was also installed to serve the kitchen and servery areas in the ceiling space above the kitchen. The rest of the classrooms and adjacent support spaces are served by 16 supply and return fans with economizer capability installed in the first-floor ceiling space. The gymnasium and adjacent stage are served by the original supply and return fans, however, both units had fan bearings replaced during the 2014 modernizations.

The facility has a central plant consisting of the original two gas-fired 1500 MBH boilers with heating water distributed via 2 central system pumps. There is no mechanical air conditions in the building.

Heating and ventilation to most areas of the building are provided by variable air volume (VAV) air handlers with ducted supply and return to each space. For exterior zones, individual hydronic heating coils provide zone heating control, while hydronic convection heaters serve interior conference rooms, offices, and other support spaces. Unit ventilators provide ventilation air for various storage spaces and restrooms in the gymnasium building and hydronic cabinet heaters are installed near entry foyers for additional heating.

A spot check of the internals of various HVAC system components was completed during the site visit. The majority of systems scheduled on at the time of the site visit were verified operational and all equipment appeared well maintained. The only deficiencies identified include:

- Unit Ventilator UV-506, which provides ventilation air to PE Office 517 and Storage 506, as well as exhaust-air makeup for Boys 505 and Restroom 516, appears to have failed with a "Fan Failure" alarm detected at the BAS interface. Note 1

In general, all spaces in the facility appeared to be meeting or exceeding designed outdoor airflow ventilation rates including classrooms, offices, gymnasium, stage, kitchen, and various support spaces. A few additional observed operational considerations to be aware of include:

- Storage 509, located east of the boiler room appears to be being used as an office space, with a desk observed in the space. There is no ventilation air source for this space, though it does contain a ducted return to RF-501 with makeup air from the adjacent gymnasium. Note 2
- Office 113, which is located on an upstairs level at the south end of the library, has no source of ventilation air. Note 3
- Space identified on floor plans as Conference 110 appear to have been converted to the assistant principal's office. Outdoor airflow ventilation rates appear to meet or exceed the needs of this space as an office or conference room.
- Telephone 102A, located in the northeast corner of the staff lounge, has no source of ventilation air. Note 4
- Floor supply air diffuser in the northeast corner of Kindergarten 116 has been covered by a movable bookshelf. Note 5
- Return air grille at the south end of Work Room 211 is blocked by stored items. Note 6

There are 4 portables located on site which include sidewall packaged heat pump units. These spaces appear to be meeting or exceeding designed outdoor airflow ventilation rates.

Controls:
Building automation system controls are provided by an Alerton Envision direct digital control system. No major points of concern were observed.

A review of the Building Automation System and outside air damper setpoints was conducted and all systems and spaces appear to be meeting or exceeding design outdoor airflow ventilation rates.

During control system review, no space temperature deficiencies were identified. Fan failure of UV-506 was observed as noted in Observations above.

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Evergreen Heights Elementary
HVAC System Assessment Notes

Note	Additional Notes		Estimated Completion Date	Final Completion Date
1		Submit work order to restore automatic fan operation.	3/4/21	3/4/21
	1.1	WO 1-358486	3/10/21	3/10/21
2		Provide recommendation for space occupant to open door to gym and recommend single occupancy.		3/5/21 in person Ziegler
3		Provide recommendation for space occupant to open door to library and recommend single occupancy.		3/5/21 in person Grubb and Ziegler
4		Provide training for space occupant to open door to staff lounge and recommend single occupancy.		3/5/21 in person Ziegler
5		Moved bookshelf blocking diffuser	3/8/21	3/5/21
6		Moved box blocking diffuser	3/8/21	3/5/21

Revision Date 3/5/21