



Fox Chapel Area
School District

H.F. LENZ ENGINEERING PROGRESS UPDATE



PROPOSED RENOVATIONS TO THE FOX CHAPEL AREA HIGH SCHOOL

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AGENDA

- **PURPOSE**
- **SCOPE OF WORK**
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 - **Additional Scope**
- **PROPOSED PROJECT DESIGN SCHEDULE**
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 - **Construction Documents**
- **PROPOSED PROJECT CONSTRUCTION SCHEDULE**
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 - **Construction**
- **PROPOSED PROJECT BUDGET**



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PURPOSE

- **The purpose of this presentation is to discuss the proposed renovation project for the High School. Topics of discussion include the following:**
 - **Review scope of work.**
 - **Review proposed project design schedule and key milestones.**

- **Our findings and recommendations were based on the following:**
 - **Review of the report from Cyclone Energy Group Dated August 7, 2025.**
 - **Review of the existing drawings.**
 - **On site review of the existing conditions with the District.**



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SCOPE OF WORK SUMMARY: Energy Conservation Scope

- **Defined by the Report from Cyclone Energy Group Dated August 7, 2025 (Energy Conservation) with District Modifications.**
 - **LIGHTING AND LIGHTING CONTROLS:** Replace lighting and lighting controls throughout the building.
 - **FHS-01:** Replace roof top units RTU-1, 11, 19, & 20 (Units were not replaced in 2014 project)
 - District added the replacement of RTU-33. Five (5) total RTU replacements.
 - **FHS-02:** Replace hot water boilers and associated equipment with a more energy efficient solution.
 - **FHS-03:** Replace domestic hot water boiler with a more energy efficient solution without storage.
 - **FHS-04:** Upgrade building automation system throughout the building as approximately 90% of the equipment operates on the original pneumatic system.
 - **FHS-06:** Perform Commissioning on new equipment and systems and Retro-Commissioning on existing equipment and systems to ensure proper installation and functionality while identifying deficiencies.



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SCOPE OF WORK SUMMARY: Energy Conservation Scope

- **Defined by the Report from Cyclone Energy Group Dated August 7, 2025 (Energy Conservation) - Items Not Included**
 - **FHS-05: Field Lighting Conversion - *Scope of work is being completed as part of another project.***
 - **FHS-07: Replace chiller plant and associated equipment due to ongoing issues. – *Scope of work was eliminated by the district.***

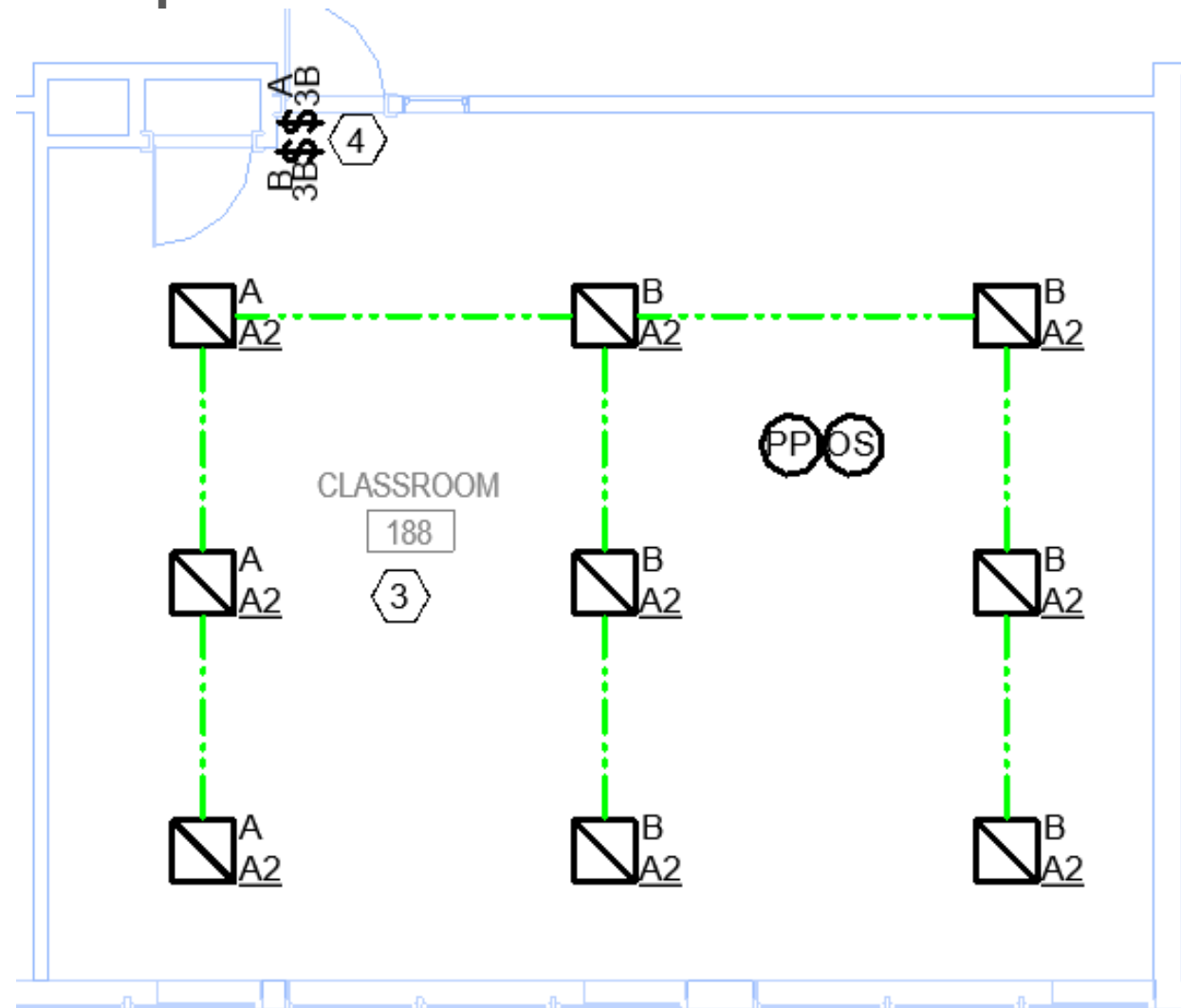


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SCOPE OF WORK: Energy Conservation Scope

➤ LIGHTING AND LIGHTING CONTROLS

- Replace lighting and lighting controls throughout the building.
- Existing lighting and associated controls that have already received LED upgrades will remain.
- Emergency lighting will be provided as required by code, as well as one (1) fixture per classroom.



Typical Classroom Lighting and
Lighting Controls



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SCOPE OF WORK: Energy Conservation Scope

- **FHS-01: SELECTIVE ROOFTOP UNIT REPLACEMENT**
 - **Replace roof top units RTU-1, 11 ,19, & 20 (Units were not replaced in 2014 project)**
 - **RTU-1 serves administration area and has heat pump heating and cooling.**
 - **RTU-11 serves music classrooms and has DX cooling only.**
 - **RTU-19 serves corridor and common areas and has DX cooling only.**
 - **RTU-20 serves corridor and common areas and has DX cooling only.**
 - **District added the replacement of RTU-33. Five (5) total RTU replacements out of thirty-three (33) total units.**
 - **RTU-33 serves the gymnasium locker room area and has heat pump heating and cooling.**
 - **Matched existing heating and cooling energy usage types to minimize cost and re-use existing utilities.**
 - **Alternative unit configurations were considered, but ultimately not recommended, due to the added costs and scope they introduced.**
 - **New units will be installed on existing curbs with curb adapters to minimize roofing work.**



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SCOPE OF WORK: Energy Conservation Scope

➤ **FHS-02: Hot Water Boiler Replacement**

- **Replace hot water boilers and associated equipment with a more energy efficient solution.**
 - **Replace three (3) 9000 MBH and two (2) 3000 MBH boilers with six (6) 3000 MBH high efficiency condensing boilers.**
- **Existing cast iron boilers have a large physical footprint and are oversized for the building.**
- **Existing cast iron boilers have a low efficiency and limited capacity control, often leading to excessive energy usage.**
- **New boilers have the following benefits:**
 - **Much smaller footprint. New boilers will fit on existing concrete housekeeping pads with room to spare.**
 - **Efficiencies up to 95%.**
 - **Proper sizing: Total plant capacity will be approximately 55% of old capacity.**
 - **High turn down ratios allow for better capacity control during periods of low heating demand.**
- **Electric and bio-mass boilers were considered, but ultimately not recommended due to a lack of existing infrastructure and associated costs.**



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SCOPE OF WORK: Energy Conservation Scope

➤ FHS-02: Hot Water Boiler Replacement



Existing Boilers



Proposed New Boilers



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SCOPE OF WORK: Energy Conservation Scope

- **FHS-03: Domestic Hot Water System Replacement**
 - **Replace domestic hot water boiler with a more energy efficient solution without storage.**
 - **Existing system consists of two (2) natural gas water heaters, one (1) storage tank, two (2) master mixing valves, and two (2) circulator pumps.**
 - **Hot water storage takes up significant floor space and introduces the risk of microbial growth.**
 - **Mixing valves present a common point of system failure.**
 - **Maintaining stored water temperature requires additional energy usage.**
 - **New domestic hot water system consists of two (2) systems:**
 - **An instantaneous hot water system to cover all 120F hot water needs. This generally includes showers, sinks, and other similar plumbing fixtures throughout the building.**
 - **An instantaneous water system to cover the kitchen and associated 140F hot water needs.**
 - **Neither system stores hot water. Both produce hot water on an as-needed basis, allowing for significant energy savings.**



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SCOPE OF WORK: Energy Conservation Scope

- **FHS-03: Domestic Hot Water System Replacement**
 - A domestic hot water heat exchanger tied into the hydronic heating boiler plant was also considered. This system would utilize a heat exchanger in which boiler hot water would heat the domestic hot water.
 - This system was not recommended because it would result in increased hot water boiler and piping sizes.



Existing Hot Water Storage Tank



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SCOPE OF WORK: Energy Conservation Scope

- **FHS-04: Building Automation System**
 - Upgrade building automation system throughout the building as approximately 90% of the equipment operates on the original pneumatic system.
 - New system will be Direct Digital Controls (DDC).
 - New DDC system will be the same platform as Hartwood Elementary.
 - DDC systems allow for more efficient programming and control of both new and existing equipment. Modern control sequences provide additional comfort, simplicity, and energy efficiency.



Existing Pneumatic Control Air Compressors



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SCOPE OF WORK: Energy Conservation Scope

- **FHS-06: Commissioning**
 - **Perform Commissioning on new equipment and systems and Retro-Commissioning on existing equipment and systems to ensure proper installation and functionality while identifying deficiencies.**
 - **Identify and address system deficiencies prior to the end of the project and building occupancy.**



Typical Existing Rooftop Equipment to be
Retro-Commissioned



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SCOPE OF WORK SUMMARY: Additional Scope

➤ **Based on site visits, code review, and discussion with the District:**

- **Elevator: Upgrade existing Commons Elevator.**
- **Generator: Replace two-(2) existing natural gas generators (one-(1) in the mechanical room and one-(1) on the roof) with one-(1) new natural gas unit mounted on the roof.**
- **HVAC Classroom: Replace existing horizontal unit ventilators with new horizontal unit ventilators to match the existing.**
- **Miscellaneous Items Required: The following items are required for completion of the proposed scope of work:**
 - **Selective ceiling upgrades.**
 - **Miscellaneous steel supports.**
 - **Required code upgrades.**



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SCOPE OF WORK: Additional Scope

- **Commons Elevator Upgrades**
 - **Cosmetic cab upgrades.**
 - **Control and operational upgrades.**
 - **Life safety upgrades.**
 - **Perform any miscellaneous MEP work required to support the above scope of work.**



Elevator Cab



Elevator Controls



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SCOPE OF WORK: Additional Scope

- **Generator Upgrades**
 - **Replace two-(2) existing natural gas generators (one-(1) in the mechanical room and one-(1) on the roof) with one-(1) new natural gas unit mounted on the roof.**
 - **Provide additional free space in the mechanical room.**
 - **Utilize existing structural steel and natural gas piping on the roof to support new generator.**
 - **Install new code compliant generator service platform.**



Generator



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SCOPE OF WORK: Additional Scope

- **Classroom HVAC Upgrades**
 - **Replace existing horizontal unit ventilators with new horizontal unit ventilators to match the existing.**
 - **New units will have the same physical dimensions and heating/cooling types as existing units to minimize associated ancillary work.**
 - **Replace corridor barometric relief vents with new roof mounted exhaust fans. New exhaust fans will be installed on existing roof curbs to minimize roof work.**



Typical Ceiling Classroom
Unit Ventilator



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SCOPE OF WORK: Additional Scope

- **Classroom HVAC Upgrades**
 - **Vertical ducted unit ventilators were also investigated but ultimately not recommended for the following reasons:**
 - **Additional ceiling work would be required to accommodate ductwork.**
 - **More floor space would be required.**
 - **Exterior wall penetrations would need to be cut and patched.**
 - **Adjacent casework and windows would need reworked.**
 - **Units and all ancillary work added significant project cost.**



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SCOPE OF WORK: Additional Scope

- **Classroom HVAC Upgrades**
 - **Packaged Rooftop Units with Variable Air Volume Boxes were investigated but ultimately not recommended for the following reasons:**
 - **Significant ceiling work would be required to accommodate ductwork.**
 - **New structural steel would be required to support new rooftop units.**
 - **Existing exterior wall penetrations would need to be patched.**
 - **Existing casework would need reworked.**
 - **Multiple chases would be required to get ductwork down from the roof to the first floor.**
 - **Utilities would need to be run to the new equipment locations.**



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SCOPE OF WORK: Renewable Energy Considerations

➤ **Solar Panels**

- **Utilization of solar panels for building power were investigated but ultimately not recommended for the following reasons:**
 - **Rooftop solar panels require substantial structural work to properly support. These supports added significant cost to the project.**
 - **On-site green space available for solar panel installation is minimal.**
 - **Solar panel car ports over existing parking lots added significant cost to the project.**



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SCOPE OF WORK: Renewable Energy Considerations

➤ **Geothermal HVAC**

- **Utilization of geothermal power for HVAC in the administration and high school office areas was investigated but ultimately not recommended for the following reasons:**
 - **On-site green space available for digging of geothermal wells is minimal.**
 - **On-site green space available for digging of geothermal wells is not properly located with respect to indoor mechanical spaces.**
 - **New geothermal wells would need to dug underneath existing parking lots, adding additional demolition and paving costs.**
 - **An entirely new piping and pumping system would need to be installed that connects the geothermal wells to the areas being served.**
 - **Significant ceiling work would be required to accommodate ductwork, piping, and equipment.**



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PROPOSED PROJECT DESIGN SCHEDULE

➤ SCHEMATIC DESIGN

- Completed on June 30, 2026.

➤ DESIGN DEVELOPMENT

- Completed on July 31, 2026.

➤ CONSTRUCTION DOCUMENTS

- Complete by end of October, 2026.
- 50% Page Turn with the district conducted on August 21, 2026.
- Project Summary presented to the Authority Board on August 31, 2026.
- 95% Page Turn with the district conducted on October 1, 2026.
- Project Summary presented to the School Board on October 5, 2026. (Tonight)

➤ SCHEDULE FLEXIBILITY

- H.F. Lenz Co. is flexible and can adjust the schedule as needed to accommodate the Authority Board, School Board, and District's needs.



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PROPOSED PROJECT CONSTRUCTION SCHEDULE

Overall Concepts:

- Perform main MEP plant work and equipment serving multiple zones during three ('27, 28' and '29) summer break periods;
- Replace the boiler plant in two phases;
- Operate new digital controls and existing pneumatic controls concurrently;
- Base Bid: Replace terminal equipment and lighting on second shift during the school year:
 - Two classrooms per night for lighting
 - One classroom per night for HVAC terminal equipment
- Alternate: Replace terminal equipment and lighting during summer break periods:
 - Two classrooms per night for lighting (Summer '28)
 - One classroom per night for HVAC terminal equipment (Summer '28 and '29)
- Replace elevator controls and generator in Summer '28



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QUESTIONS?



THANK YOU FOR THE OPPORTUNITY!