

Common HVAC Problems in K-12 Additions and Renovations



Welcome



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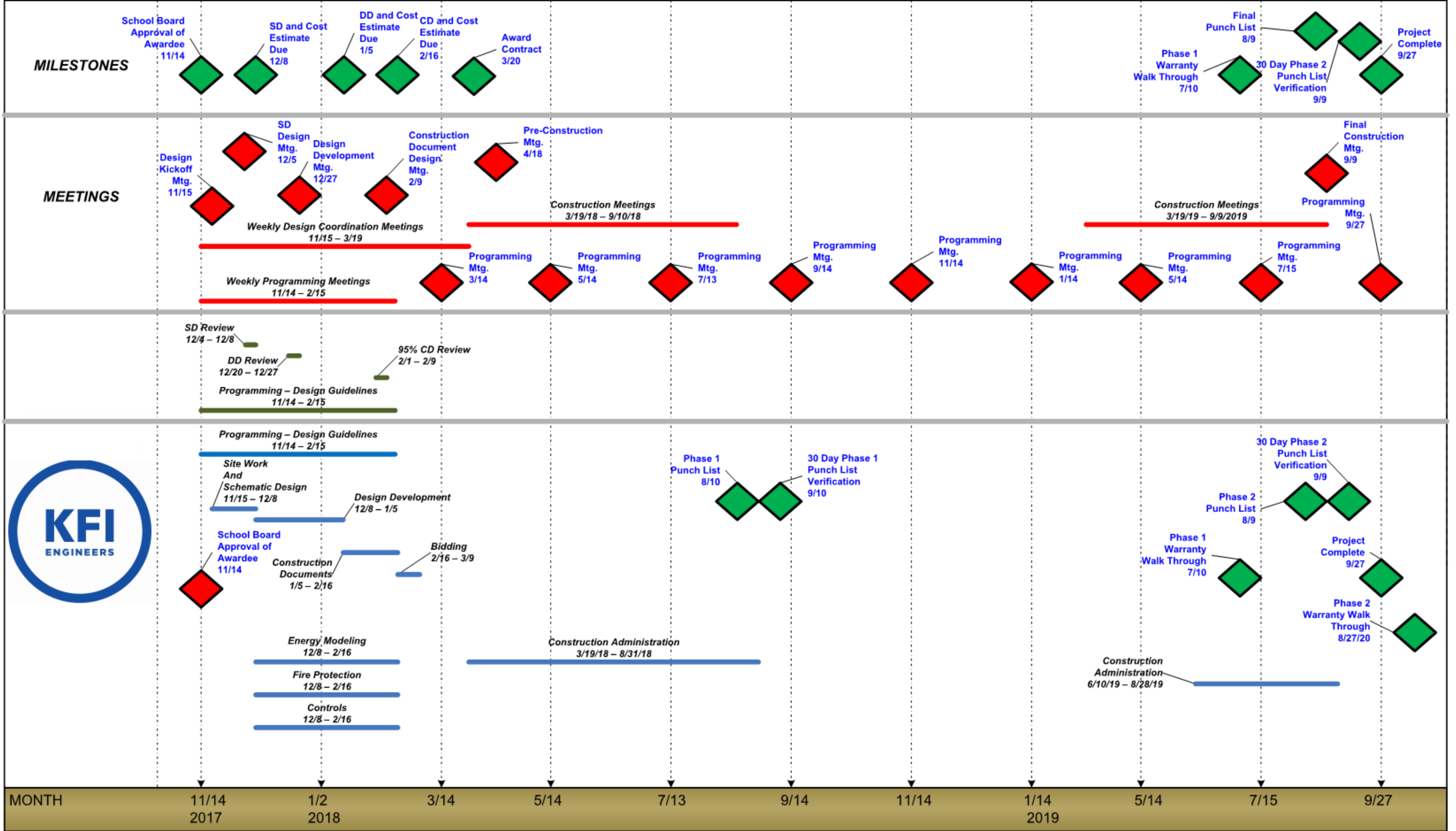
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Pre-Design

- Recommissioning and retro-commissioning study
- Predesign and schematic design estimates / Budgeting
- Phasing construction during design
- Construction phasing workplan

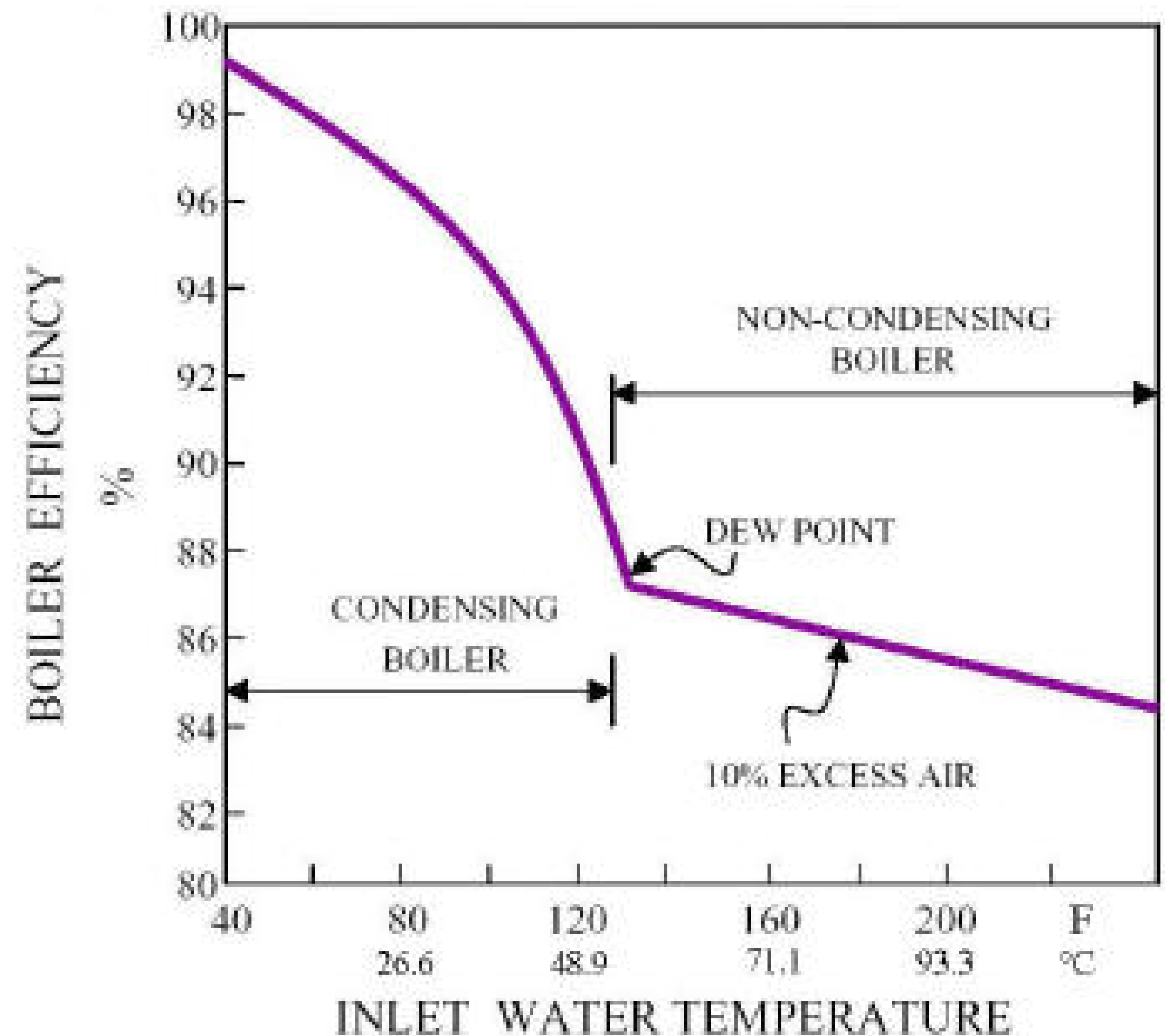
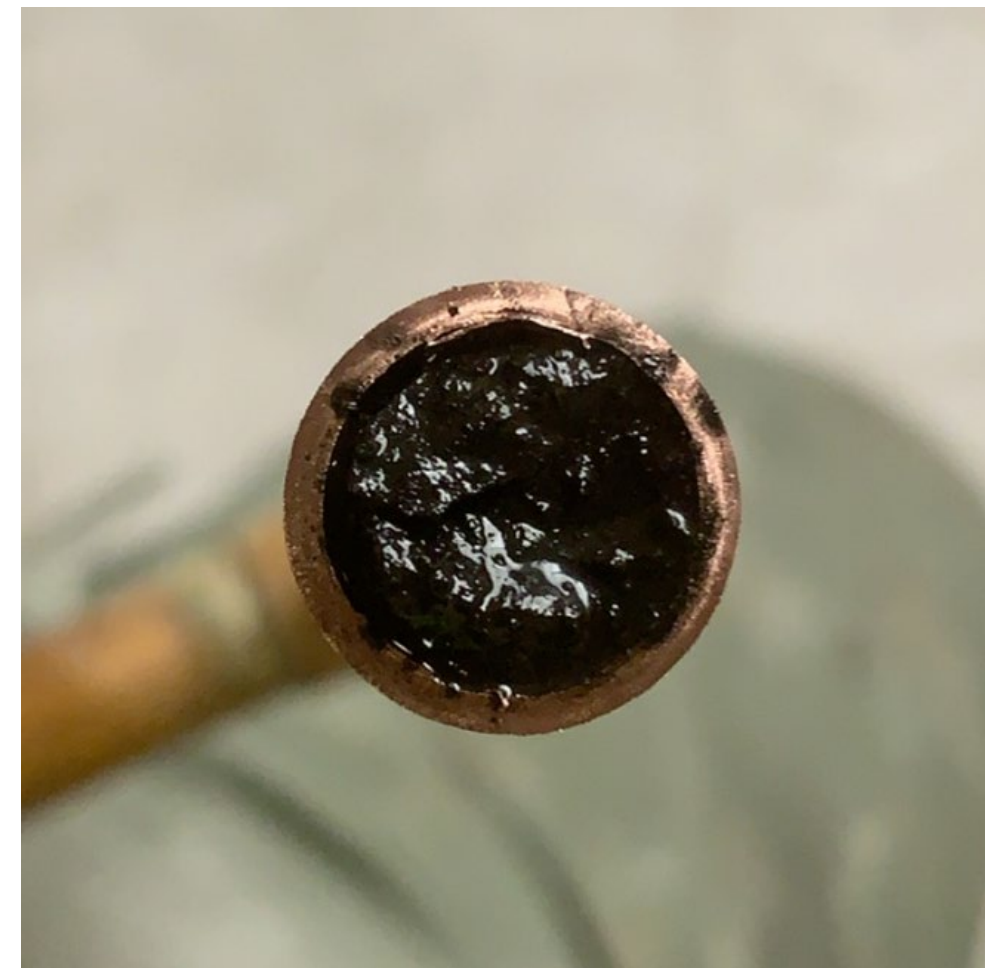


LONG TERM FACILITY MAINTENANCE PROJECTS 2017-2019 PHASED PROJECT WORK PLAN



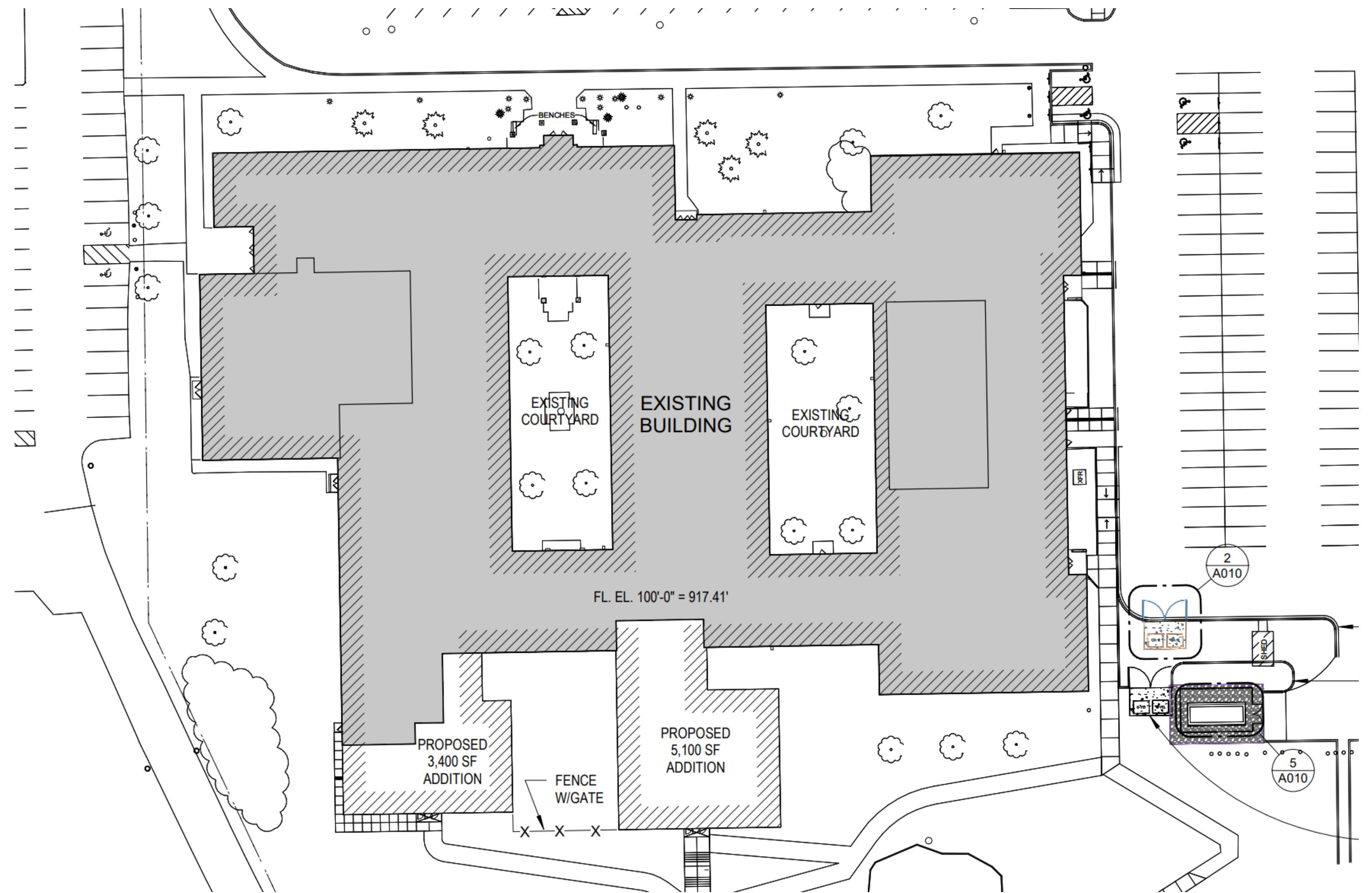
Design Considerations

- Changing boiler plant
- Define new equipment
- Pool additions
- Limitations of existing equipment / system
- Mixing a new and existing hydronic system
- Safety requirements
- Operator training
- Estimating



Construction Considerations

Case Studies



Roseville Little Canada Elementary

Case Studies



Roseville Area High School

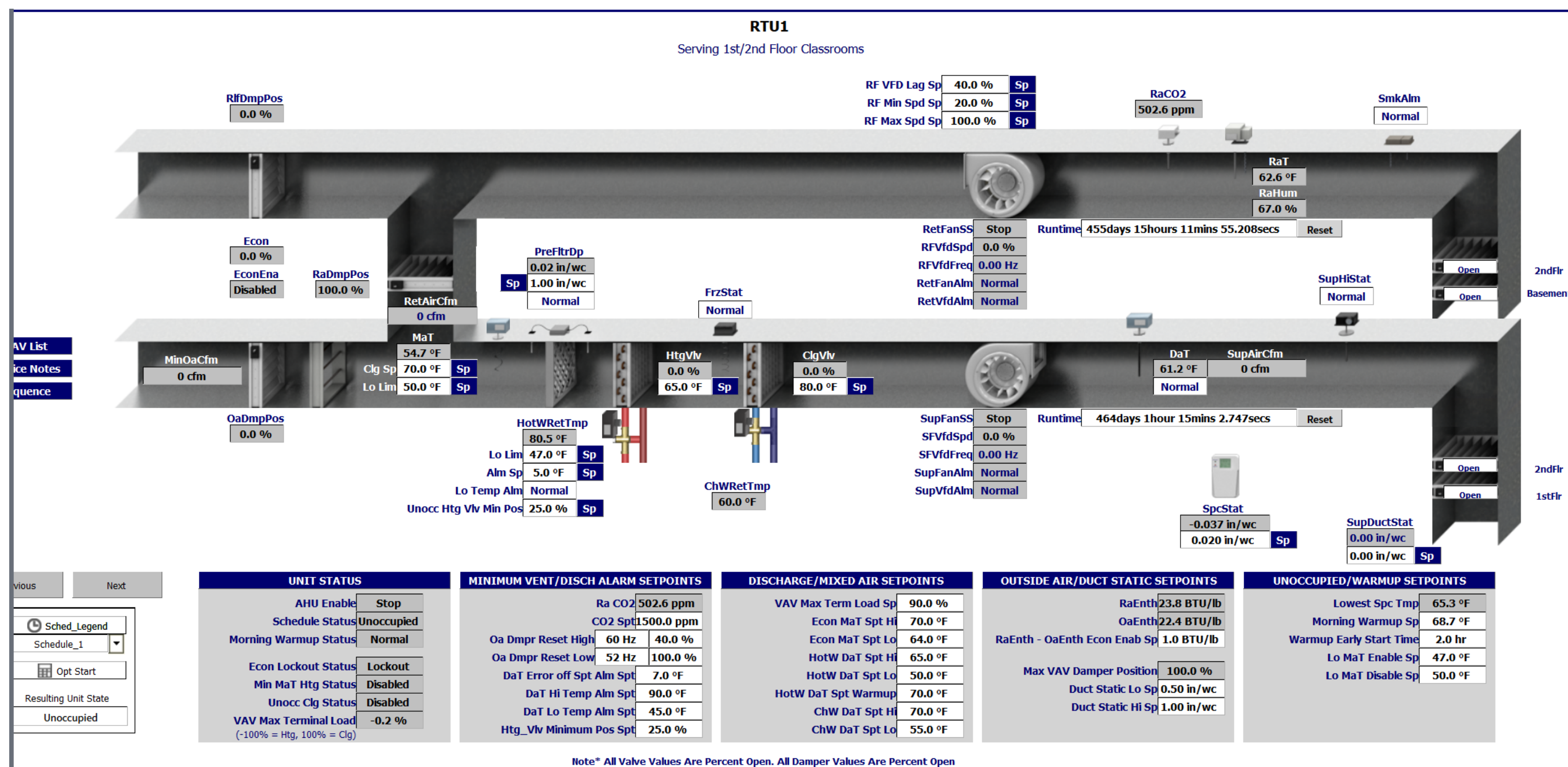
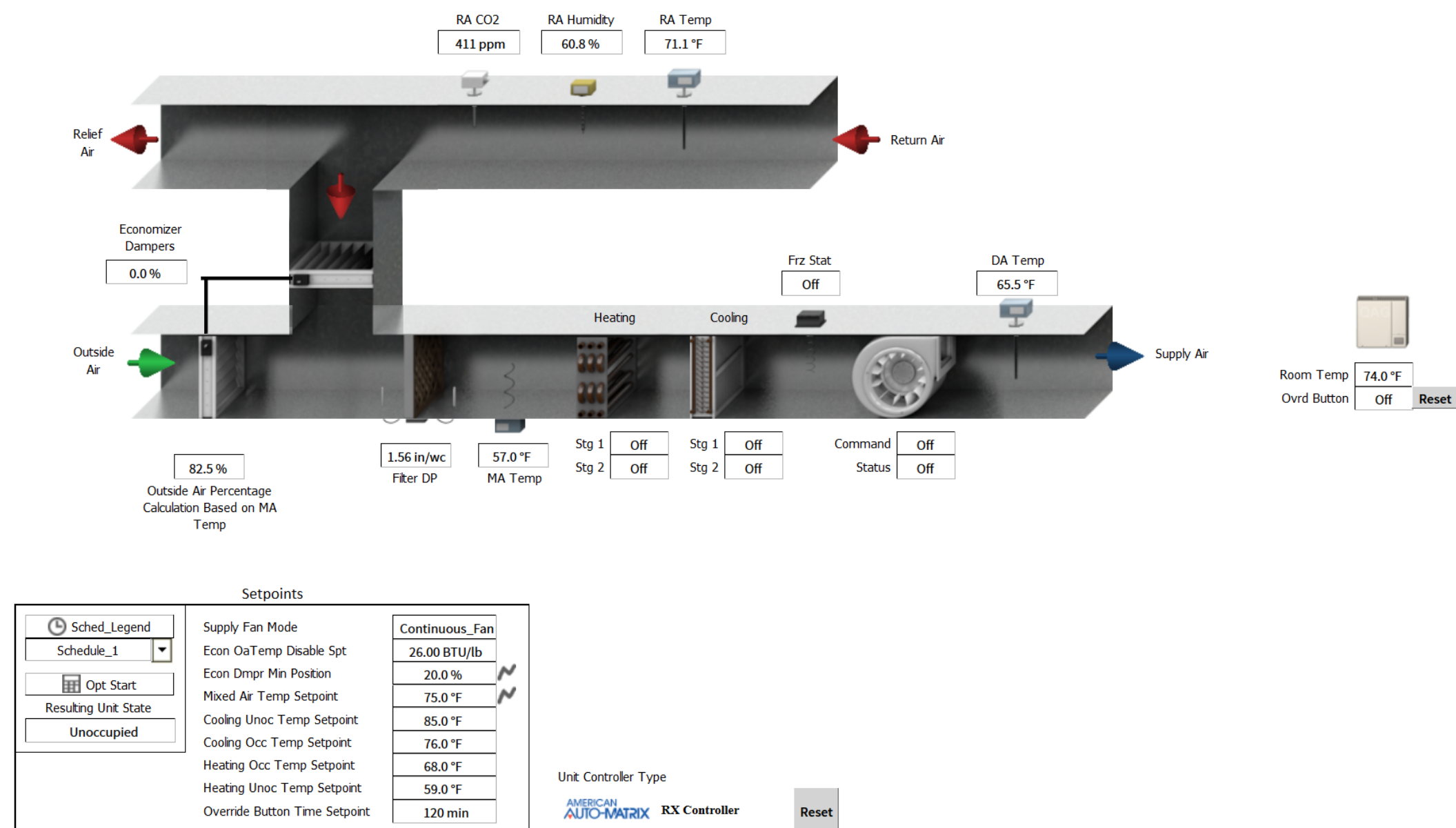
Government Building

Mounds View

Building Automation System

Standardization between new and existing systems

- Separate control systems or integrate systems
- Control sequences of operation
- Graphics



Note* All Valve Values Are Percent Open. All Damper Values Are Percent Open

Controls Upgrades

Considerations with combining new and existing equipment

- Existing equipment, new controls
- Existing sensors
- Combination renovation/addition and total BAS upgrade

Avoid BAS upgrade on significantly outdated systems



Test and Balance (TAB)

- Hydronic TAB scope
 - Partial remodel and/or addition; where does scope end?
 - Boiler/pump plant change-outs; extend TAB into building?
- Air TAB scope
 - Existing equipment
 - Recalibrate existing boxes?
 - Re-proportion outlets or just read out?
 - Existing AHU controls upgrade TAB scope
 - Building pressure impacts



Questions



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