

# Springfield School District



**BUILDING  
MECHANICALS  
AND  
ENVELOPE NEEDS**

**Information on Building Mechanical  
and Envelope Needs/HVAC**

# FACILITY ASSESSMENT REPORT SPRINGFIELD PUBLIC SCHOOLS

Springfield, Minnesota

February 16, 2016

Project #16-18829

The district had a facility study completed to help identify Physical Plant needs and to help plan for issues we were experiencing with the current HVAC system.

The school has done a solid job of taking care of roofs, tuckpointing, and obvious exterior elements, but projecting for mechanical failures and issues are problematic without the help of a professional study.

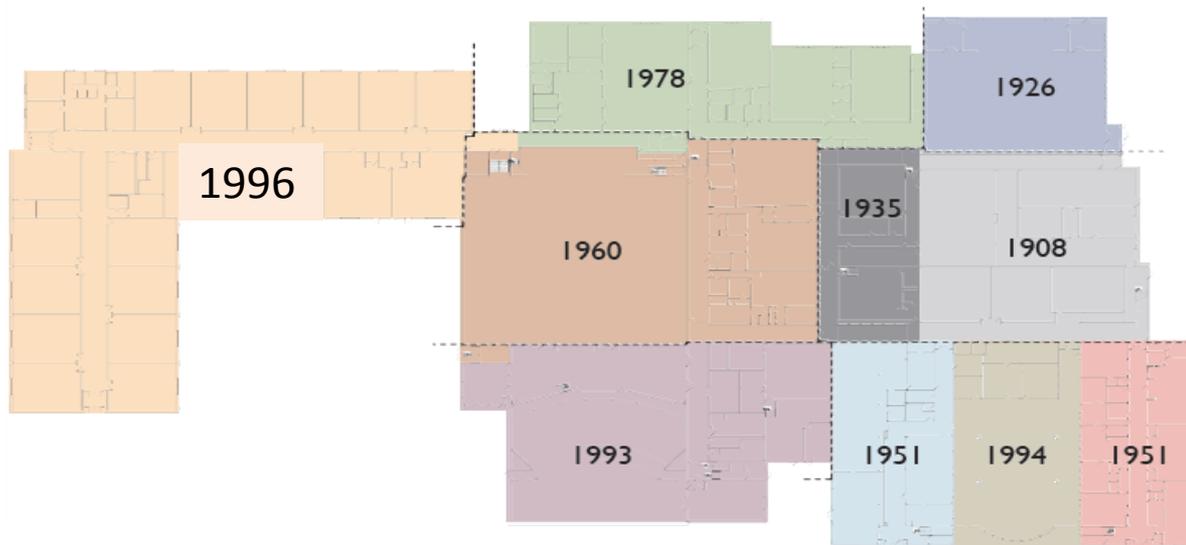
A link to their complete report can be found on the district homepage under site shortcut "School Facility Task Force."



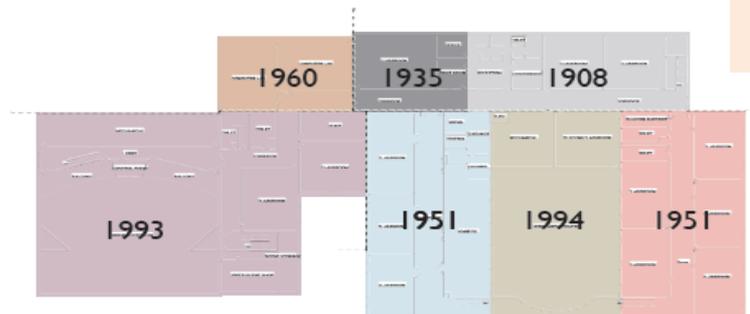
Located on two city blocks in a predominantly residential neighborhood, the Springfield Public Schools building was constructed circa 1908 at 12 Burns Avenue in Springfield, Minnesota. With an increase in student enrollment, the facility expanded with multiple additions over the last century. The first addition in 1922 (not shown on map) provided the building with a new larger boiler room. In 1926, the space that is now the Elementary School Gym was added. Other additions in 1935, 1951, 1960, 1963, 1978, 1991, 1993, and 1994 make up the current facility, which totals approximately 168,450 square feet.

## ADDITIONS TO SPRINGFIELD PUBLIC SCHOOLS

### First Floor Additions



### Second Floor Additions

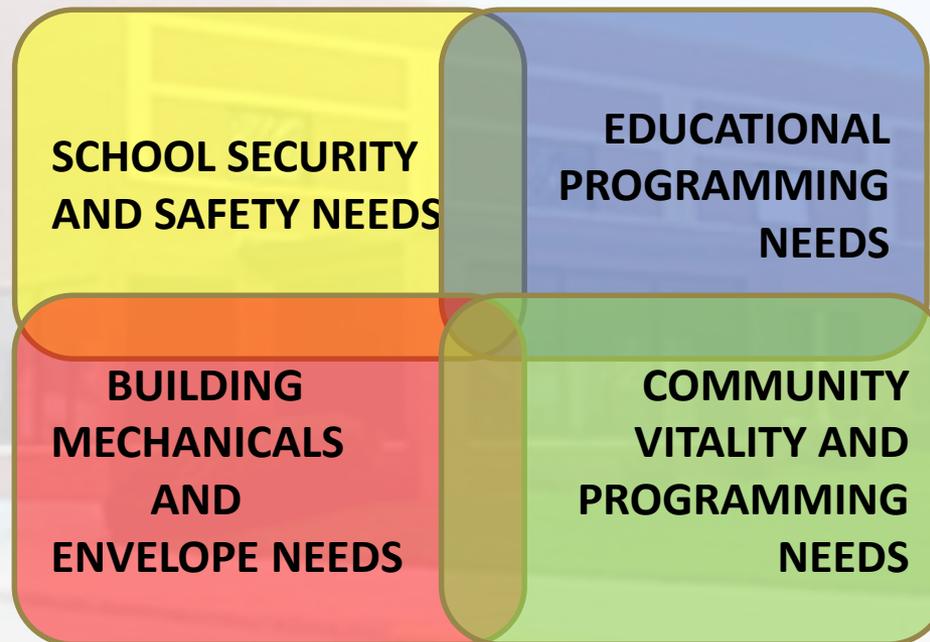


The study concluded with the current mechanical system and building inspection the district should consider the options to:

- 1) Replace Steam heat with Hot Water
- 2) Add Dehumidification
- 3) Update from our Pneumatic Controls
- 4) Or do a total HVAC update

# PHYSICAL PLANT NEEDS

This is how the committee bundled the needs.



- 1) Brainstorm ideas that would be best to address if we were able to address them.
- 2) Report ideas to the group
- 3) Identify the Benefits. What is the deliverable benefit and who benefits?

# PHYSICAL PLANT

**BUILDING  
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## Facility Analysis Reported

### Mechanical Concerns

- Convert steam heat to hot water heat
- Age of current controls
- IAQ ventilation standards have changed and noise of current air handlers
- Dehumidification
  - Elementary Specifically
  - Gym space should be considered with their large summer and community use

# PHYSICAL PLANT

## **BUILDING MECHANICALS AND ENVELOPE NEEDS**

Key Question? If the School District was able to address the building mechanical needs, what would you like to see that include? What would be the best means of addressing these needs?

- A) Try to maintain current system?
- B) Update by Phasing? Phase 1, 2, and 3-see next slide  
This would not address the noise or current IAQ ventilation standards
- C) Total HVAC Update?  
End result would meet IAQ standards, energy recovery, and coordinated controls  
Steam system would be eliminated

These are the options available to address the school building HVAC issues.

# Facility Options to Address HVAC

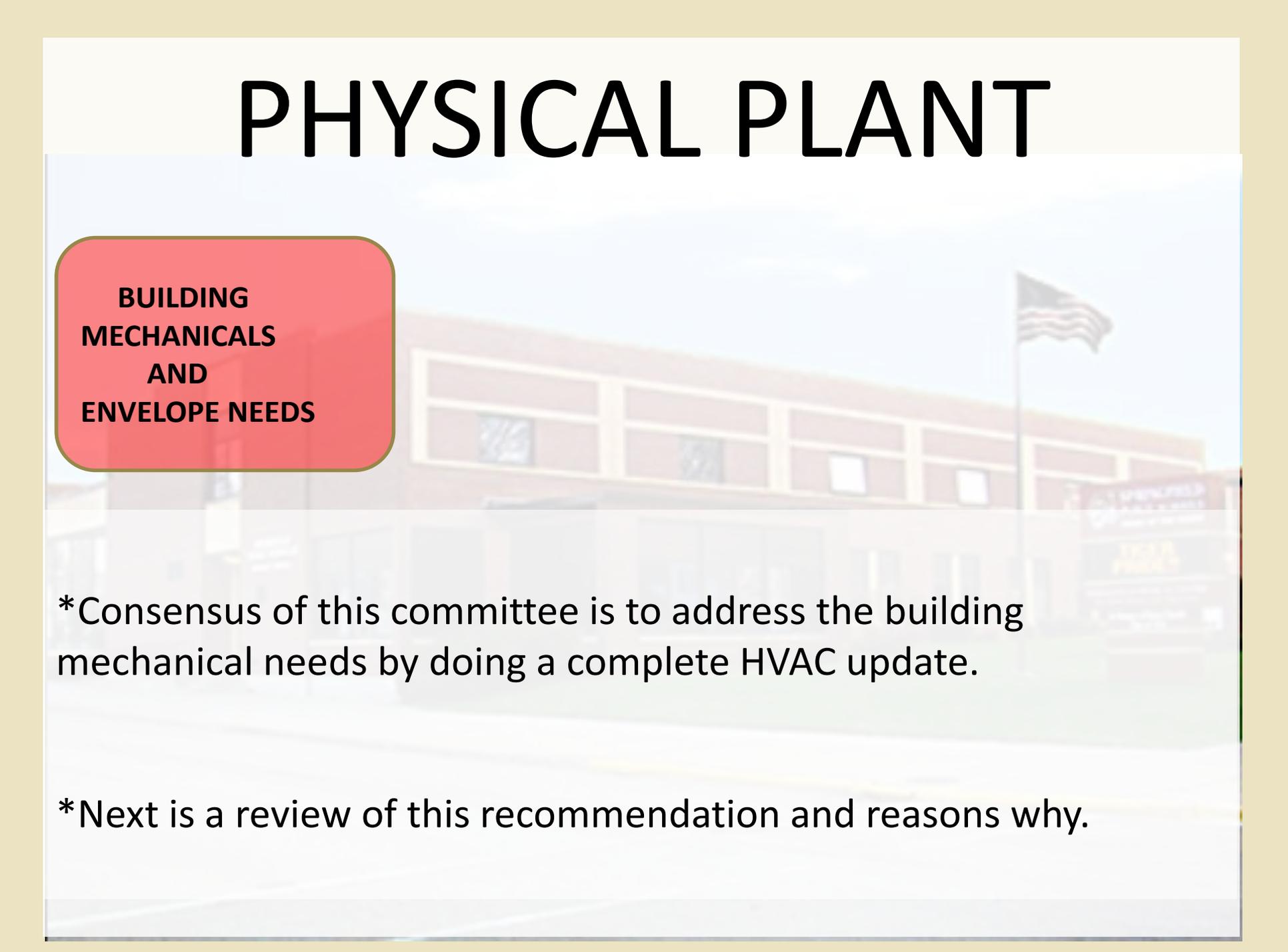
Springfield Public Schools  
HVAC Options and Phasing

ISG

**BUILDING  
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Priority	Area / Description	PHASE 1	PHASE 2	PHASE 3	Total HVAC Update
		Replace Steam with Hot Water	Add Dehumidification	Update Controls	
1	1951 Addition	\$ 383,659	\$ 416,341	\$ 197,513	\$ 800,000
2	1960 Addition	\$ 213,144	\$ 120,782	\$ 160,568	\$ 1,040,142
3	1978 Addition	\$ 85,258	\$ -	\$ 88,099	\$ 707,638
4	1926 Addition	\$ 106,572	\$ 85,258	\$ 48,313	\$ 339,609
5	Boiler Plant	\$ 781,528	\$ -	\$ -	\$ 781,528
	1994 Addition - Elem	\$ -	\$ 255,773	\$ 199,787	\$ 1,398,224
	1994 Addition - Media	\$ -	\$ 17,052	\$ 53,996	\$ 127,886
	1993 Addition	\$ -	\$ 17,052	\$ 166,252	\$ 240,142
	1935 Addition	\$ -	\$ -	\$ 55,417	\$ 55,417
	1908 rebuilt 1994	\$ -	\$ -	\$ 109,414	\$ 109,414
	<b>Estimated Construction Costs:</b>	<b>\$ 1,570,160</b>	<b>\$ 912,256</b>	<b>\$ 1,079,361</b>	<b>\$ 5,600,000</b>
	Soft Costs (20%):	\$ 314,032	\$ 182,451	\$ 215,872	\$ 1,120,000
	<b>Total Project Estimate:</b>	<b>\$ 1,884,192</b>	<b>\$ 1,094,707</b>	<b>\$ 1,295,233</b>	<b>\$ 6,720,000</b>

# PHYSICAL PLANT



## **BUILDING MECHANICALS AND ENVELOPE NEEDS**

\*Consensus of this committee is to address the building mechanical needs by doing a complete HVAC update.

\*Next is a review of this recommendation and reasons why.

**BUILDING  
MECHANICALS  
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\*The committee reviewed by using a SWOT analysis of this recommendation.



**SWOT analysis** (or **SWOT matrix**) is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning.

## SWOT Analysis Of Facility Task Force Recommendation To The School District:

Address the building mechanical/HVAC issues with a “Total HVAC Update” vs. “Maintaining the Current” or “Phasing Repairs to the Current.”

## BUILDING MECHANICALS AND ENVELOPE NEEDS

### (Strengths)

A total updated system would meet today’s Indoor Air Quality Standards, provide energy recovery, and improved coordinated electronic controls vs. our pneumatic controls that plagues classrooms with inconsistent temps.

Provide 96% boiler efficiency. Current steam boilers have standard efficiency of 77% to 80%.

Steam system would be eliminated.

A total updated system will address the “noise” issue that the current unit ventilators produce by eliminating the use of unit ventilators. Parents will notice that teachers turn off the unit ventilators when they have a play in their classrooms because of this noise.

The updated system will not depend upon hard to find older parts and qualified technicians.

### (Weaknesses)

The installation cost of a Total HVAC option would cost more than Phasing Options.

### (Opportunities)

Addressing this issue with a complete HVAC replacement vs. replacement of the current system in “Phases” will eliminate redundant work, such as tearing off the ceiling grids and replacing them before school begins.

If the district has other programming needs for the physical plant that should be addressed, this is the time to consider them so systems can be design to correct specifications for future considerations.

### (Threats)

Maintaining the current system has ongoing issues as parts are so difficult to find that it takes weeks for them to arrive. Rooms need to use space heaters while they wait for repairs.

The current system is becoming obsolete where the field service technician, master plumber Bob Adams, has identified that it is hard to find people who can service our current system, especially pneumatic controls.

### SWOT Analysis Reviews a Proposals:

\*Strengths

\*Weaknesses

\*Opportunities

\*Threats

This is the SWOT Analysis for HVAC

# Springfield School District



LEARNING FOR ALL!

If you have any questions, please don't hesitate to contact:

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