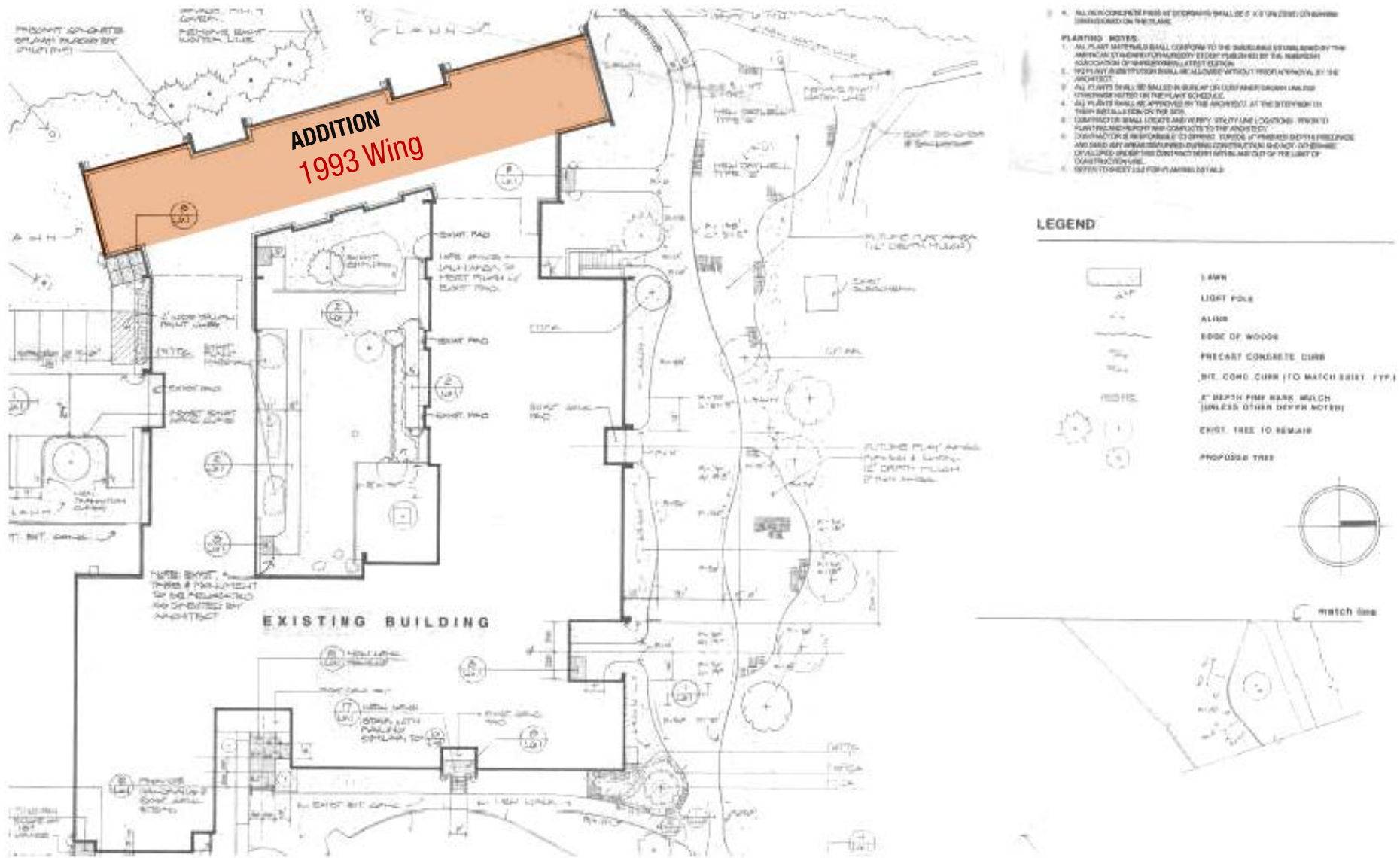


Building Committee Meeting

Wellesley - Schofield ES

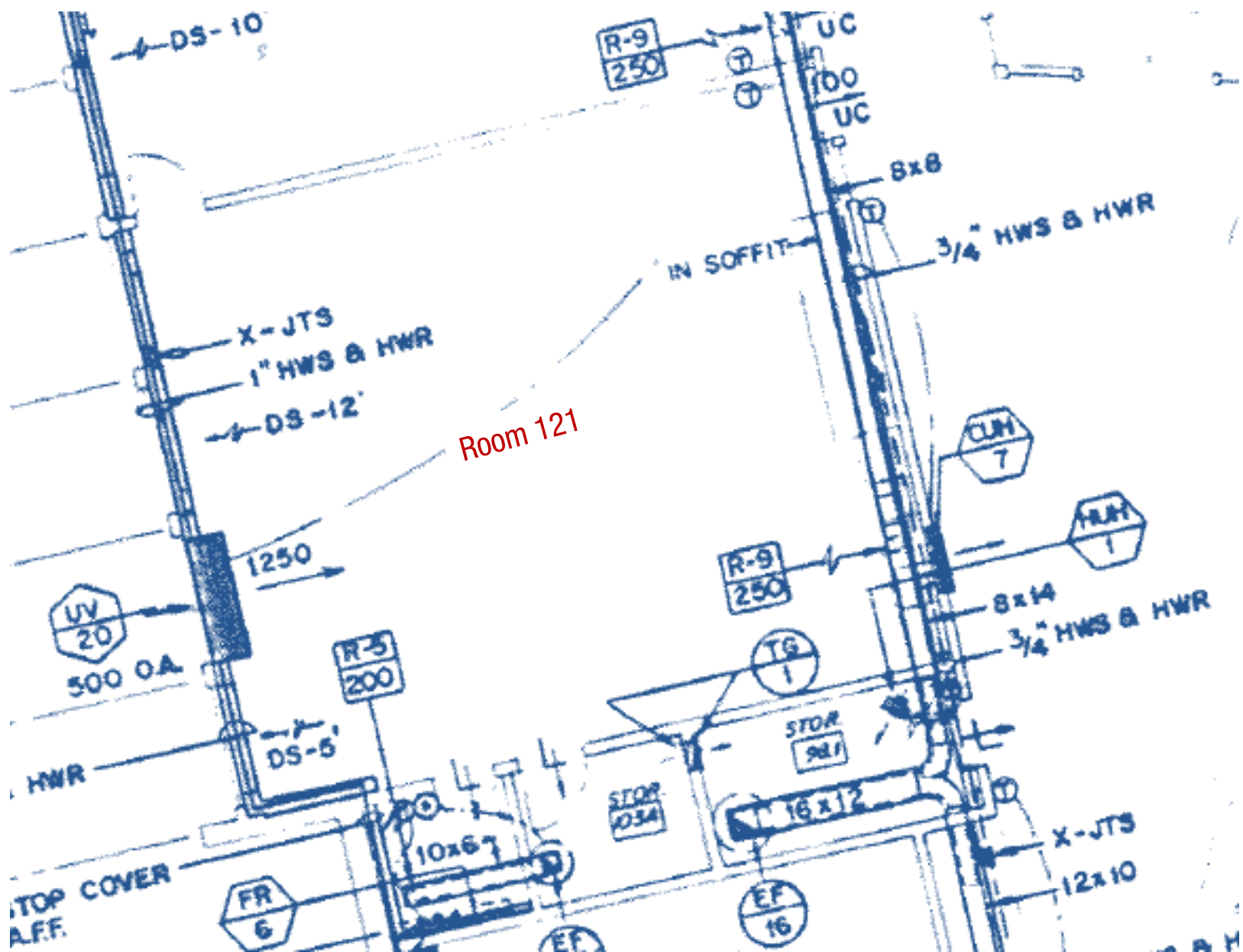
HVAC Study



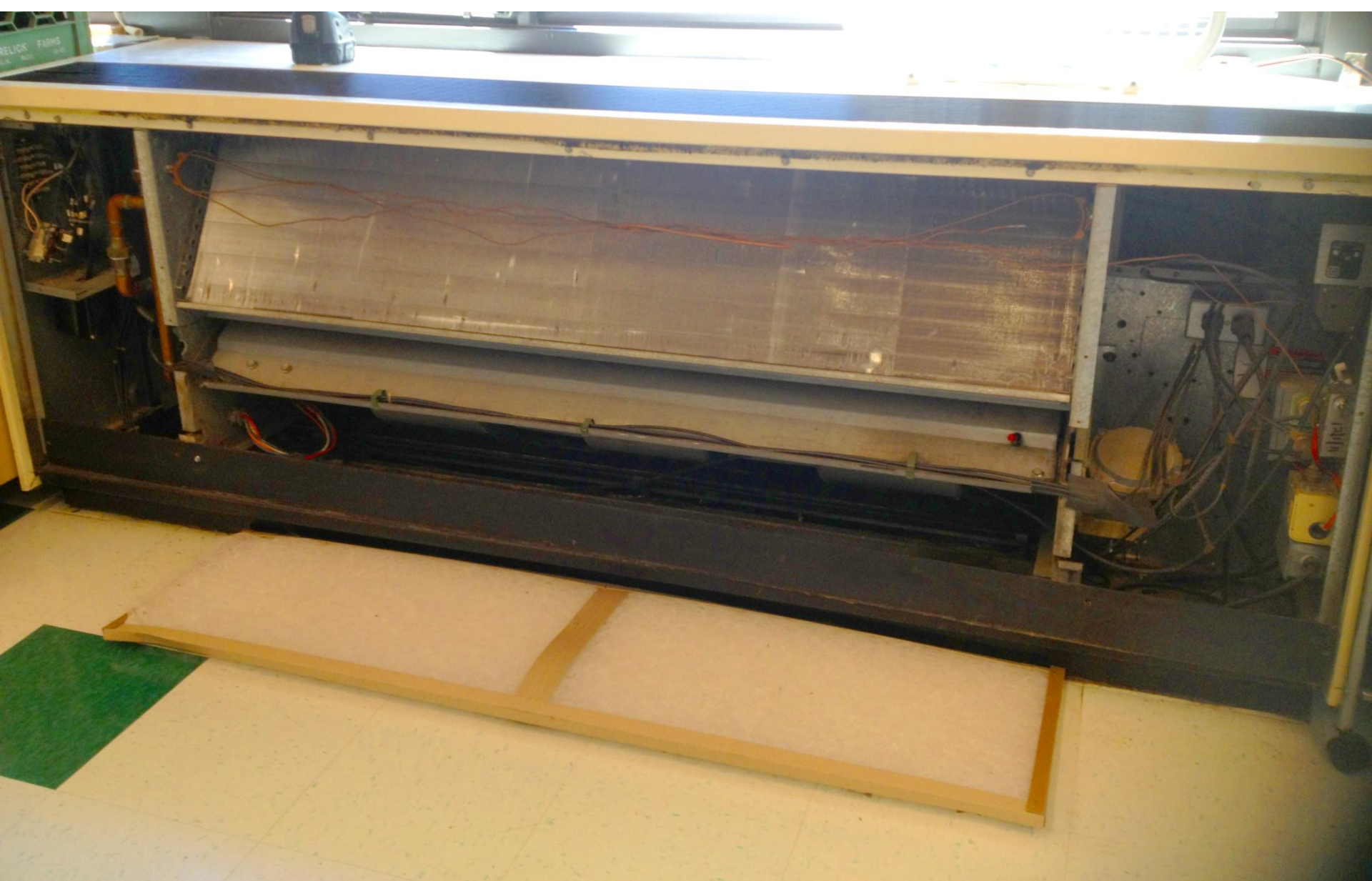
Schofield Elementary with Key plan



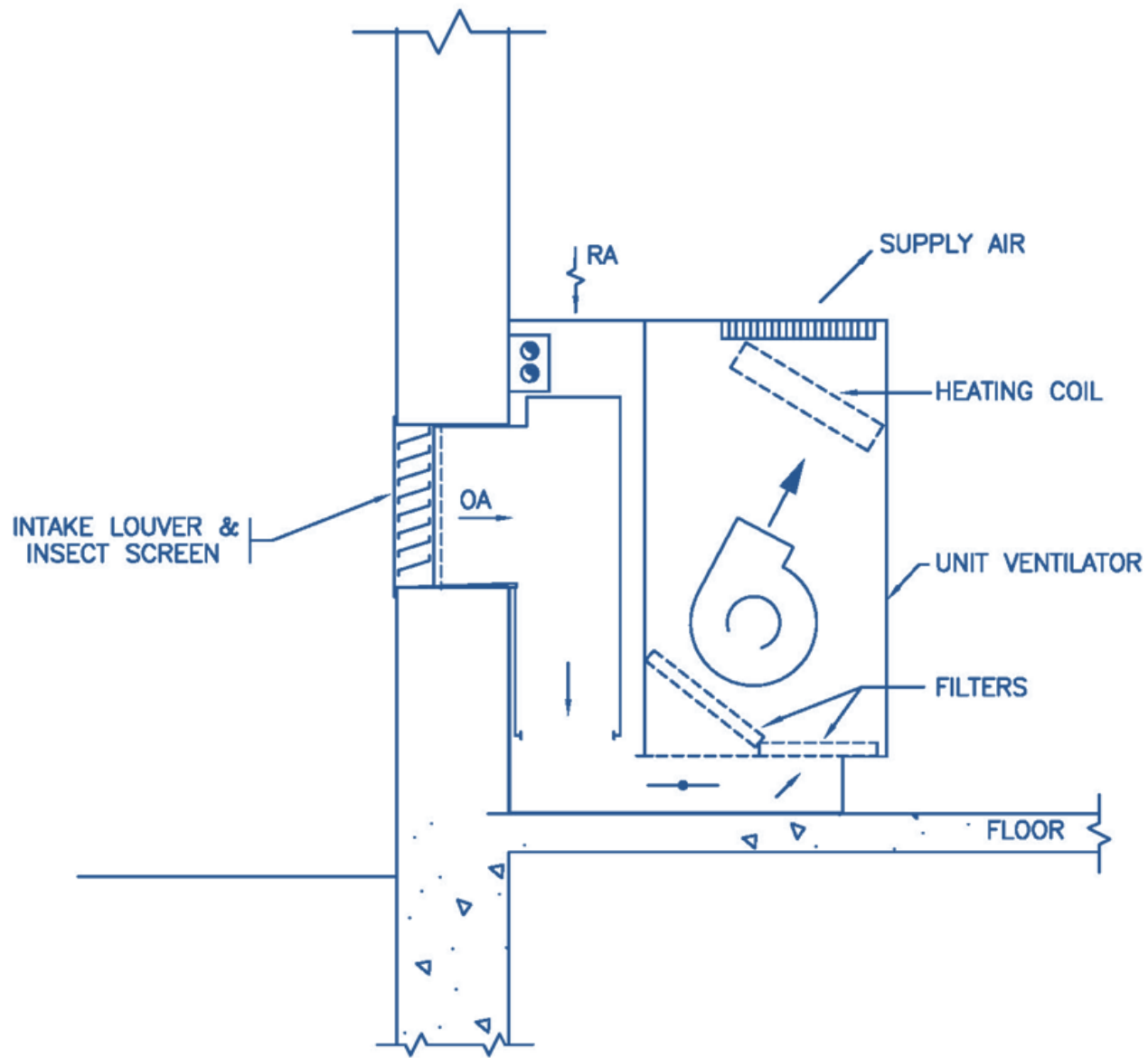
Schofield Elementary
Partial Plan of Schofield Elementary 1993 Wing



HVAC Configuration
Plan of Classroom 121



Unit Ventilator



Schematic
Unit Ventilator

Based on March 2013 IAQ Testing at Schofield Elementary School by Universal Environmental Consultants		Room 125		Room 124		Room 123		Room 121		Room 120	
		Qty of Occ	CO2 (ppm)	Qty of Occ	CO2 (ppm)	Qty of Occ	CO2 (ppm)	Qty of Occ	CO2 (ppm)	Qty of Occ	CO2 (ppm)
March 25th	11:00 AM	18	848		575	17	1,100	0	537	18/1	830
	12:00 PM	9	880								
	1:00 PM		575							26/1	1,325
	2:00 PM		640	20	850					24/2	1,325
	3:00 PM		700	20	925			0	890		470
March 26th	11:00 AM	18	750		560			18	750		
	12:00 PM					17	1,100			18/1	1,137
	1:00 PM			22	1,137	17	950				
	2:00 PM			22	1,150			18			
	3:00 PM		650	24				0	650		725
March 27th	10:00 AM	17	850	3	600	19	1,130	17			
	11:00 AM					1	1,140	17	775	21/1	1,190
	12:00 PM			29	1,250			0	920		
	1:00 PM			29	1,175						
	2:00 PM		425	29	850			0	475		475
	3:00 PM										
March 28th	11:00 AM	17	725	4	575	19	925			17	
	12:00 PM					19	1,050	0	615	0	925
	1:00 PM			22	1,050	19	1,050				
	2:00 PM			22		0	1,130			19	1,137
	3:00 PM		637	22	900			0	550	20	600

Classroom Occupancy and CO2 Levels

March 25-29 period (from UEC IAQ Report)

- ASHRAE 90.1 Std for Indoor Air Quality
 - Ambient plus 700 : Target $\leq 1,060$ ppm
- Massachusetts DPH
 - Public Buildings: Target ≤ 800 ppm
 - Schools: Target ≤ 600 ppm
- OSHA
 - $\leq 5,000$ ppm for 8 hours

Reference Guidelines for CO₂

Table 1: Outdoor Air Requirements – Then and Now

Room	1993 Design (<i>Planned</i>) Occupancy		Current (<i>Actual</i>) Occupancy	
	Design Supply Air (cfm)	BOCA 1993 Code Required Design Outdoor Air (cfm)	BOCA 1993 Code Required Outdoor Air (cfm)	ASHRAE 62.1 Recommended Outdoor Air (per MSBA draft standard) (cfm)
125	1,250	500	285	391
124	1,000	350	435	489
123	1,000	350	300	358
121	1,250	500	285	347
120	1,000	350	420	456

Table 2: Unit Ventilator Hot Water Coil Loads based on Increase Ventilation Rates

Room	Installed System		ASHRAE 62.1 Ventilation Basis		Hot Water Coil	
	Total Supply Air (cfm)	Outdoor Air (cfm)	Calculated Outdoor Air (cfm)	Recommended Outdoor Air (cfm)	Installed Capacity (Btu/hr x 1000)	Load per ASHRAE Rec'd Outdoor Air (Btu/hr x 1000)
125	1,250	500	391	700	87	73
124	1,000	350	489	500	68	55
123	1,000	350	358	500	68	55
121	1,250	500	347	700	87	73
120	1,000	350	456	500	68	55

- Classroom HVAC equipment is in reasonably good condition and appears to be well maintained.
- Above-design occupancy correlates with high CO₂ readings from March 2013 IAQ study.
- Operable windows are in each classroom and can be used to enhance ventilation.
- Guidelines for ventilation design under consideration by the MSBA are relevant to the issue of indoor air quality.

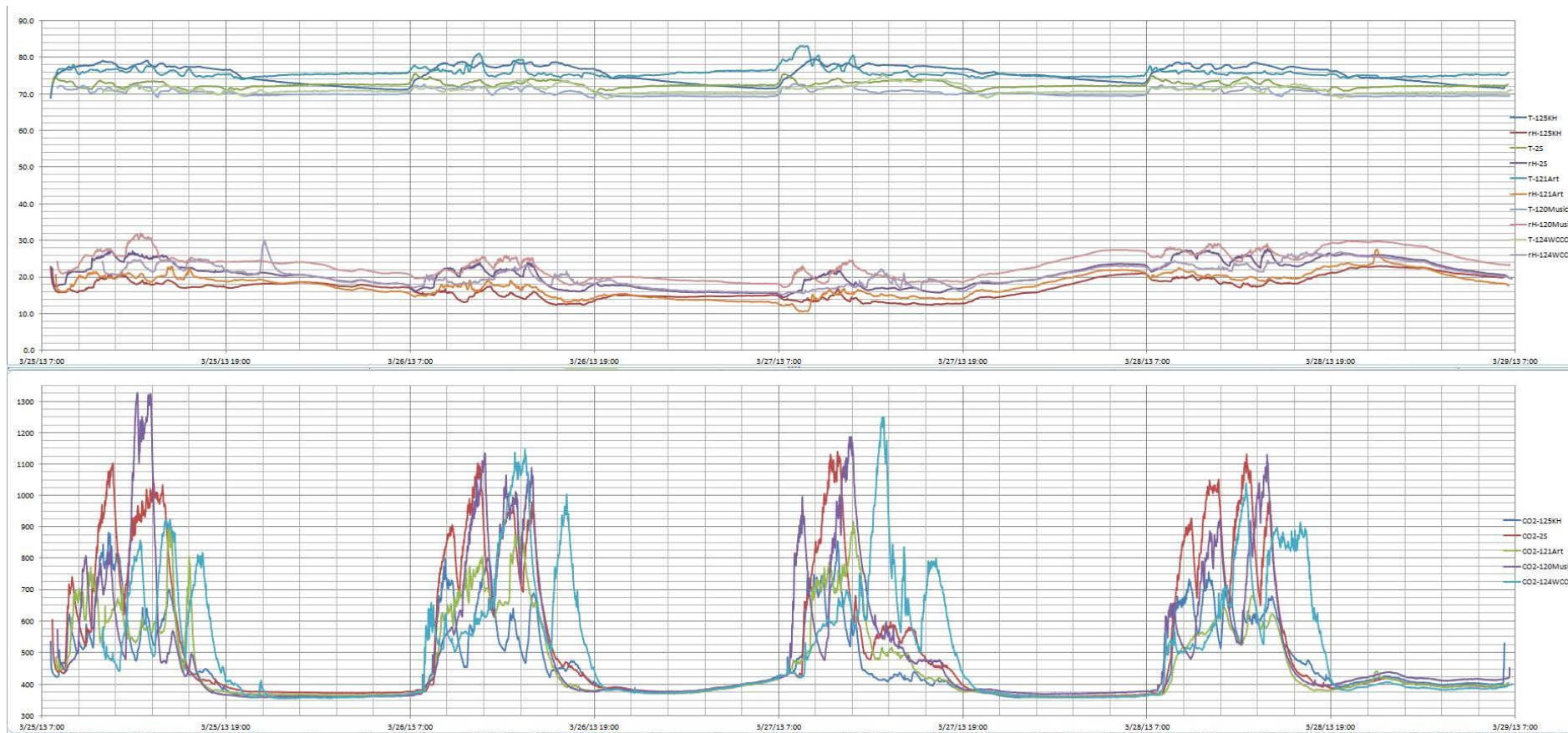
Conclusion

1. Continue a course of preventive maintenance for the installed systems, including periodic equipment tune-ups.
2. Consider making adjustments to the unit ventilators to increase the amount of fresh air delivered to the classrooms.
3. Consider upgrades to the classroom exhaust systems to provide a corresponding increase in exhaust air from each classroom to match the increase in outdoor air provided through Item 2. (Anticipated cost may warrant this being done at a later date.)

Summary of Recommendations

Building Committee Meeting

Thank you



Schofield IAQ Measurements

Based on UEC March 2013 Report