

FMD Update



*Joint Board Presentation
June 9, 2014*

Wellesley Facilities Maintenance Department

AGENDA

- Recently Completed Projects
- Upcoming Summer Projects
- Middle School Study Update
- School HVAC Recommissioning Project

**Entire PowerPoint Presentation to be posted on FMD website*

RECENTLY COMPLETED PROJECTS

Middle School

Concrete Walkway Repair



BEFORE REPAIRS



AFTER REPAIRS

Middle School

D'Auria Way Fence and Wall Repair (Work by DPW & FMD)



REPLACED FENCE SECTION



STORM DAMAGED FENCE

Middle School

Boiler Repair



CRACKED CAST-IRON SECTION
(REMOVED)



NEW SECTION

WFD Station 1

Kitchen Renovations (Work by FMD Maintenance)



WFD Station 1

Apparatus Bay Ceiling Painting



BEFORE



AFTER

WFD Stations 1 & 2

Industrial Washing Machines for Turnout Gear (Work by FMD Maintenance)



DPW Rigging Assistance

Police Station

Safety Officer – Office Renovations



BEFORE (Lack of Space)

Police Station

Safety Officer – Office Renovations



AFTER (Reclaimed Space – Expanded Office and New Closet)

Police Station

Roof Ice Dam Repairs



Emergency Repairs



Permanent Repairs

Warren Building

Entry Foyer Renovations (Work by FMD Maintenance)



BEFORE (Never Used Receptionist Space)

Warren Building

Entry Foyer Renovations (Work by FMD Maintenance)



FOYER AFTER (Secured
Closet)



DRINKING FOUNTAINS (Trim
Caps Added)

High School and Police Station

Terrazzo Refinishing (Work by FMD Maintenance)



EXPOSED CANOPY DECKING
(Bird Nesting)



NEW SOFFIT

High School and Police Station

Terrazzo Refinishing (Work by FMD Custodial Staff)

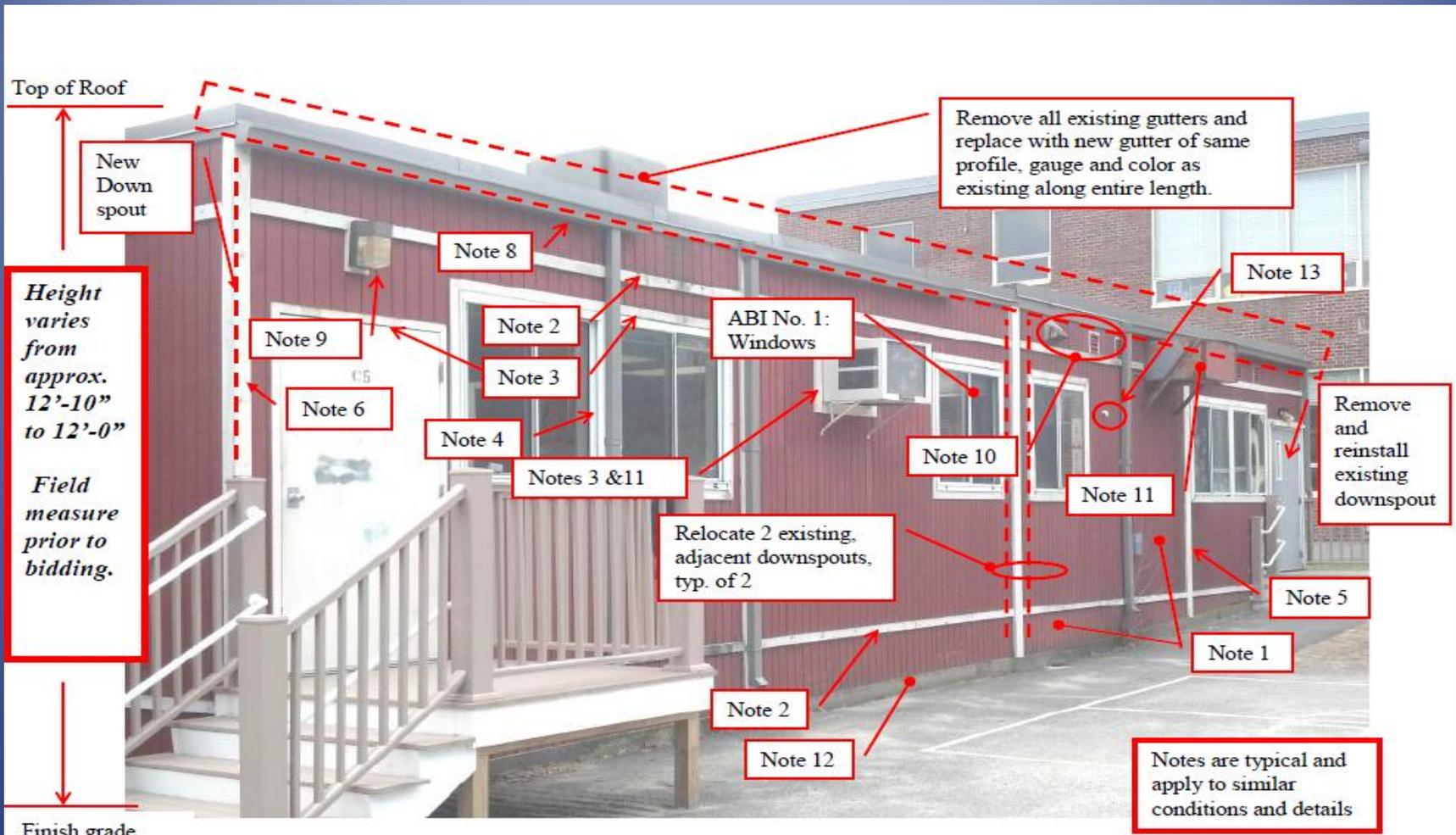


UNFINISHED FLOOR (Left)



REFINISHED FLOOR (PD Lobby)

UPCOMING SUMMER PROJECTS



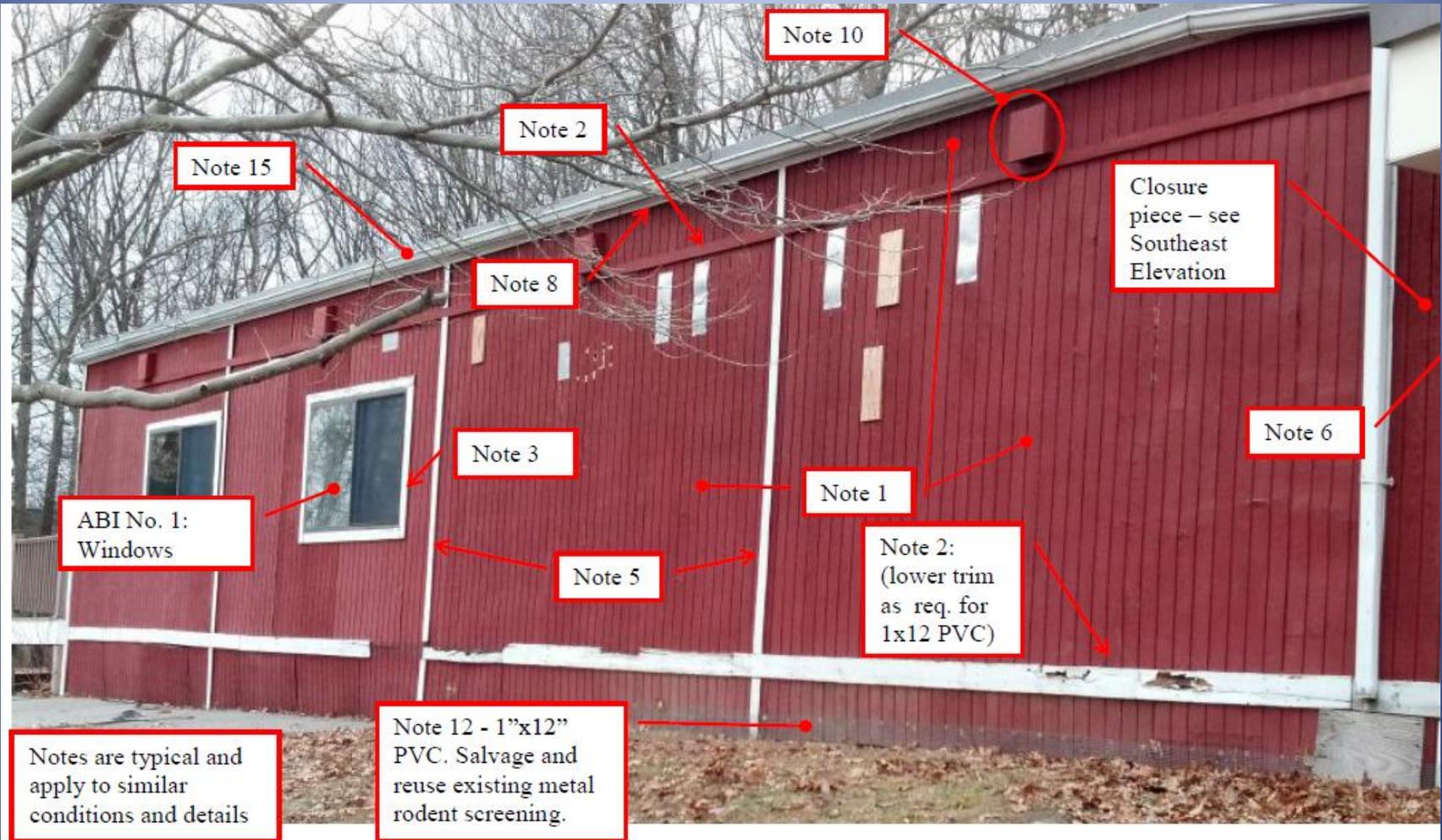
MODULAR CLASSROOM WALL REPAIR PROJECT – Contract WFMD-FY15-003

HARDY ELEMENTARY SCHOOL

ELEVATION NO. 7

No Scale

HARDY: Modular Classrooms Upgrades



MODULAR CLASSROOM WALL REPAIR PROJECT – Contract WFMD-FY15-003
UPHAM ELEMENTARY SCHOOL
SOUTH ELEVATION

No Scale

UPHAM: Modular Classrooms Upgrades



HARDY: Exterior Door Replacement

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UPHAM: Exterior Door Replacement

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MS, HARDY, PAWS and SPRAGUE: Carpet Replacement

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HARDY: Transformer Fence Replacement



SPRAGUE: Entry Canopy Painting



SCHOFIELD: Concrete Storage Shed (*MS Shed shown*)



MS: Rebuild Permanent Stairs to Stage



MS, HARDY, HUNNEWELL, UPHAM, PAWS: Exterior LED Lighting Upgrades



SPRAGUE, BATES, TOWN HALL & WARREN: HVAC Study

FMD Update - June 2014



NEW FMD OFFICE: Existing Conditions – Main Office

FMD Update - June 2014

FMD OFFICE RENOVATION

Financial Office (Work by FMD Maintenance)



FORMER CUSTODIAL CLOSET



NEW FINANCIAL OFFICE



POSSIBLE NEW FMD OFFICE: Shown at Former MLP/DPW Building

MIDDLE SCHOOL STUDY UPDATE



MSBA STATEMENT OF INTEREST – ACCELERATED REPAIR PROGRAM MIDDLE SCHOOL WINDOW REPLACEMENT PROJECT

Middle School Study - SFC

- Scope of work:
 - HVAC: Gyms, Auditorium and Kitchen
 - Boiler and piping evaluations
 - Science lab waste treatment
 - Classroom doors and cabinetry
 - Façade
- SMMA began work in early April
 - Kickoff, site visits, interviews
- Present results in late summer
- Incorporate into FMD capital plans

QUESTIONS?

*SCHOOL HVAC
RECOMMISSIONING
PROJECT*

Project Overview

- FY15 Cash Capital Projects
- HVAC Recommissioning Project
- Recommission HVAC/Control Systems
- Nine (9) Schools/538k GSF
- Hunnewell, Hardy, Schofield, Upham, Fiske, Sprague, PAWS, Bates, and MS
- \$320k Budget (\$278k Capital + \$43k Rental Revolving)

Project Scope

- Intent - Improve Indoor Air Quality, System Reliability, Optimize System Performance, and Reduce Energy Use
- Scope - Inspect, Repair, and Calibrate HVAC Equipment including DDC (Electronic)/Pneumatic (Compressed Air) Controls
 - Assess Equipment, Service and Repair as Required, Document Improvements, and Recommend Capital Improvements

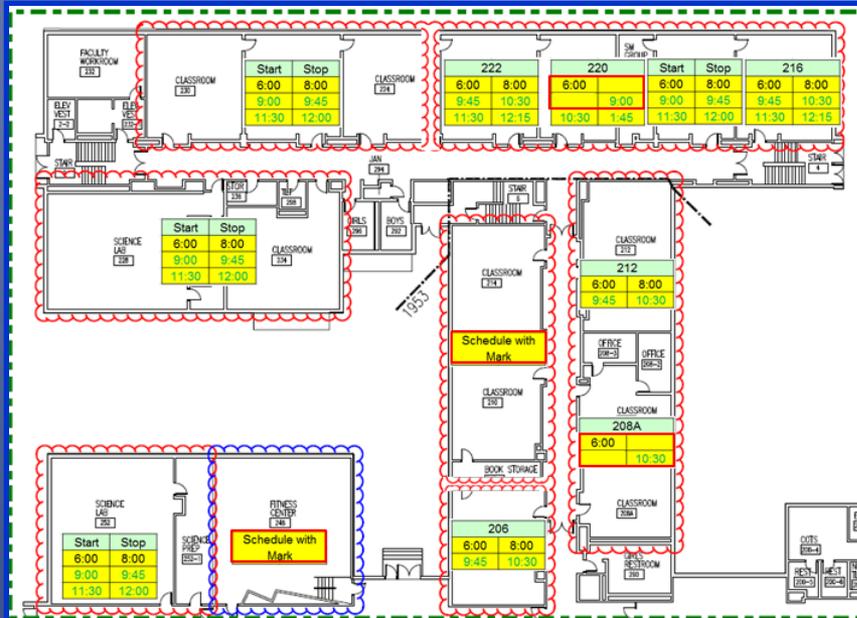
Contractor

- DCAM Certified in HVAC and Energy Management
- Automatic Temperature Control (ATC)
- Time-and-Material Contract Not-To-Exceed \$321k
- Minimum Three (3) FT Technicians on Job
- Daily Service Reports/Sign-Off
- FMD Managed/Supervised Daily Work
- ATC did an Excellent job!

FMD Management & Partnership with Schools

- Worked Closely with Principals, Staff, Teachers, and Head Custodians
- Held Kick-Off, Progress, and Close-Out Meetings
 - Used Initial Feedback (Hunnewell & Hardy) to Improve Efficiency at Subsequent Schools
- Scheduled Work on Day-to-Day Basis
- Completed Work during School Hours
- Everyone Supportive and Cooperative!

MS Project Plan & Logistics



- MS Logistics Different
- Room-By-Room Schedule for 294 Rooms
- Not Practical so Created New Plan

Group #	Room #	Room Name	6:00-8:00	8:00-9:00	9:00-9:45	9:45-10:30	10:30-11:30	11:30-12:15	12:15-1:00	1:00-1:45	1:45-2:30
L2-A	206	Classroom		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	
L2-A	208	Classroom				3	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	212	Classroom		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	216	Classroom		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	218	Classroom		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	220	Classroom			XXXXXXXXXX	XXXXXXXXXX	4				XXXXXXXXXX
L2-A	222	Classroom		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	224	Classroom		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	226	Classroom		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	228	Lab		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	230	Classroom	1	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	234	Classroom		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
L2-A	252	Lab		XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX		XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX

Project Planning & Logistics

- New Plan for MS Similar to Elementary Schools Except:
 - Concentrated Work to within Designated “Groups”
 - Relied upon Teacher Feedback for First-Hand Reports of Room-Specific Problems
 - Completed Noisy Work before Class Started
 - Used iPads to Communicate During Class
 - Pre-Purchased Parts to Avoid Down-Time

Metrics – Summary

- Started 11/20/13 and Completed 5/9/14
- Complete on Schedule
- Total Time 137 Work Days/2,061 Hours
- Average Time per Classroom 1.25 Hours
- Serviced 791 Spaces (While Occupied for Feedback)
- Interfaced with 4,209 Occupants

Metrics – By School

HVAC Maintenance Project Findings/Repairs Summary										
School	Time				Rooms					Occupants
	Begin	End	Days	Hours	Classes	Offices	Assembly	Common	Total	
Hunnewell	11/20/13	12/10/13	15	221	20	5	2	30	57	359
Hardy	12/10/13	01/08/14	20	294	18	5	2	38	63	367
Schofield	01/07/14	01/22/14	4	57	25	3	2	36	66	380
Upham	01/08/14	01/23/14	11	171	16	5	2	30	53	292
Fiske	01/23/14	03/12/14	19	288	22	5	2	37	66	401
Sprague	02/18/14	04/29/14	16	240	26	5	3	60	94	479
PAWS	03/04/14	03/12/14	1	14	7	3	3	7	20	60
Bates	03/03/14	05/09/14	13	199	21	10	3	44	78	474
Middle School	03/13/14	05/09/14	38	577	116	65	4	109	294	1,397
Total	11/20/13	05/09/14	137	2,061	271	106	23	391	791	4,209

Costs – Summary

- Total Project Cost \$304k (*Under Budget by 5%*)
- Material 12%, Labor 84%, and Other 4%
- \$17k Remaining for Follow-Up Work
- \$/SF Cost Ranged from \$0.34 to \$0.95
- Pneumatic/Steam Schools most Expensive (Hunnewell, Hardy, Upham, and Fiske)

Costs – By School

HVAC Maintenance Project Cost Summary												
School	GSF	Heating			Control		Budget	Project Costs				
		STM	HWA	AIR	PNE	DDC		Material	Labor	Other	Total	\$/GSF
Hunnewell	36,400	X		X	X		\$ 28,900	\$ 7,247	\$ 27,404	\$ -	\$ 34,651	\$ 0.95
Hardy	45,900	X		X	X		\$ 42,700	\$ 4,323	\$ 36,394	\$ -	\$ 40,717	\$ 0.89
Upham	36,500	X		X	X		\$ 34,600	\$ 1,973	\$ 21,142	\$ 879	\$ 23,994	\$ 0.66
Fiske (70,700 GSF)	45,350	X		X	X		\$ 39,300	\$ 4,799	\$ 35,650	\$ -	\$ 40,449	\$ 0.89
Sprague	72,700		X	X		X	\$ 23,100	\$ 7,634	\$ 29,760	\$ 4,602	\$ 41,996	\$ 0.58
Bates	52,750		X	X		X	\$ 23,100	\$ 4,360	\$ 25,172	\$ 4,220	\$ 33,752	\$ 0.64
Middle School	228,700	X	X	X		X	\$ 113,200	\$ 5,740	\$ 70,060	\$ 820	\$ 76,620	\$ 0.34
Total	518,300						\$ 304,900	\$ 36,076	\$ 245,582	\$ 10,521	\$ 292,178	\$ 0.56
Schofield (43,500 GSF)	10,890		X	X	X		\$ 11,500	\$ 1,415	\$ 7,068	\$ 1,736	\$ 10,219	NA
PAWS	9,070			X		X	\$ 4,600	\$ -	\$ 1,736	\$ -	\$ 1,736	NA
Total	538,260						\$ 321,000	\$ 37,491	\$ 254,386	\$ 12,257	\$ 304,134	
Percent Disitrbution								12%	84%	4%	100%	

Findings – Equipment Improved

- Inspected, Cleaned, and Lubricated 1,005 Pieces of HVAC/Controls Equipment
- Repaired/Replaced 486 Defective Parts
- Included Thermostats, Controls, Unit Ventilators, Radiators, Boilers, AHUs, Supply Fans, Exhaust Fans, and Night Setbacks

Findings – Summary

HVAC Maintenance Project Findings Summary										
School	Equipment Inventory					Repairs/Improvements				
	T'Stats	UVs	Boilers	AHUs	Total	Controls	UVs	HVAC	NSB	Total
Hunnewell	42	25	2	2	69	23	32	2	1	58
Hardy	44	30	2	2	76	19	38	10	1	68
Schofield	48	6	2	2	56	-	6	-	1	7
Upham	38	30	2	2	70	18	12	2	1	33
Fiske	48	35	2	2	85	25	50	1	1	77
Sprague	64	50	2	5	116	20	50	6	1	77
PAWs	17	0	0	8	17	NA	NA	NA	1	1
Bates	56	40	2	2	98	37	17	5	1	60
Middle School	240	175	4	15	419	41	21	43	-	105
Total	596	391	18	40	1,005	183	226	69	8	486

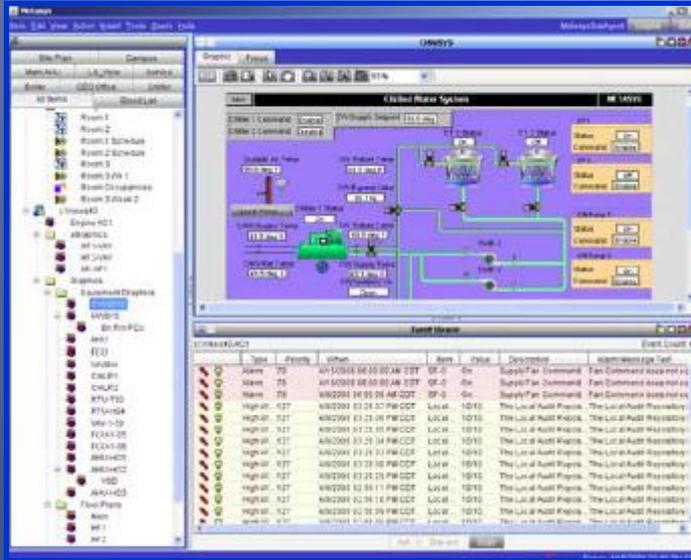
Findings – Controls

- Thermostats Not Working/Calibrated
- Point-To-Point Wiring/Pneumatic lines Not Functioning
- Central Control Panels Required Reprogramming or Repair
- Day-Time/Night-Time Setpoints Not Correct
- Only Middle School Night Setback Functioning!

Findings – Pneumatic System



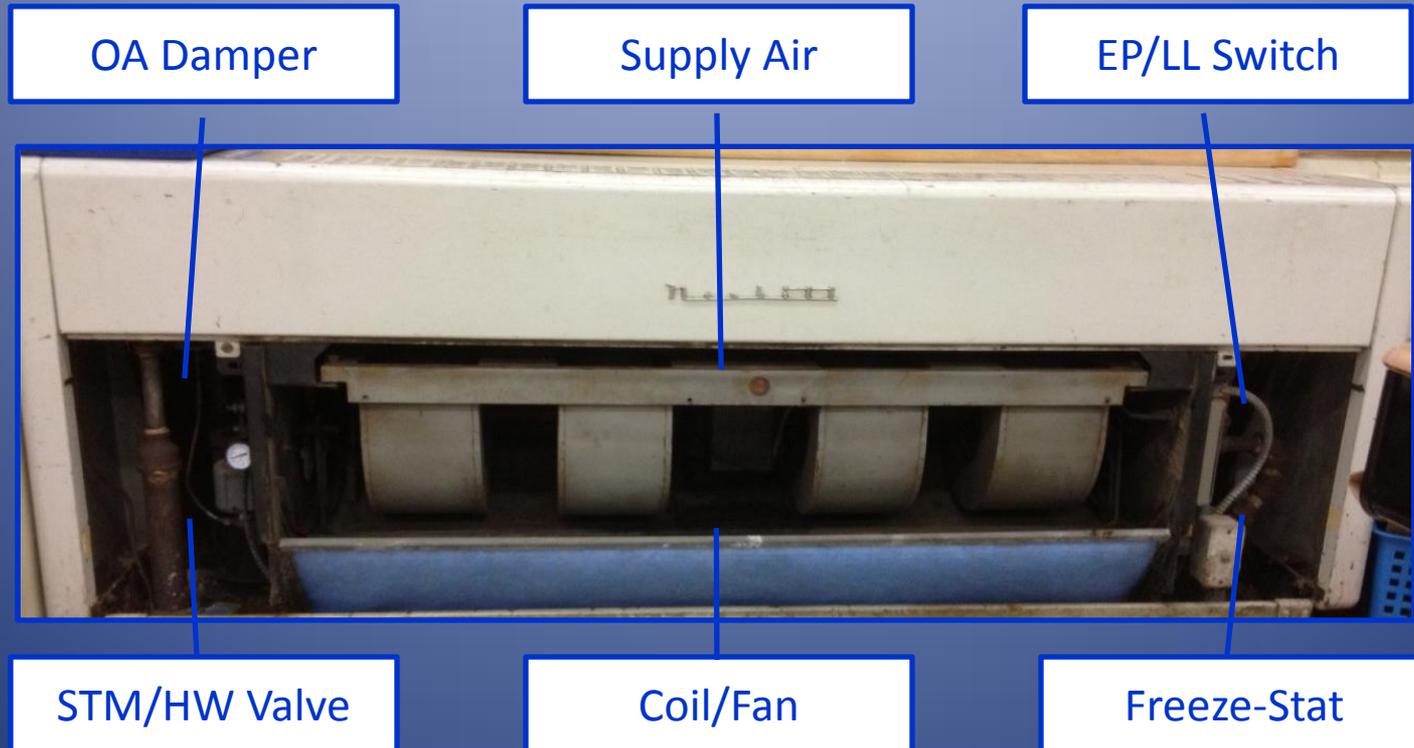
Findings – DDC System



Findings – Unit Ventilators (Univents)

- STM/HW Valves Leaking or Stuck Open/Closed
- Dampers, Actuators, or Linkage Not Working
- EP/LL Switches Not Working/Calibrated
- Freeze-Stats Not Working
- Heating/Fans always “Off” or always “On”

Findings – Univents



Findings – AHUs, Boilers, & Other

- STM/HW Valves Leaking or Stuck Open/Closed
- Dampers, Actuators, or Linkage Not Working
- Controls/Sensors Not Working/Calibrated
- Motor Bearings Vibrating and Noisy
- Motor Starters Chattering/Not Working

Savings

- Estimated Energy Savings through RA
- RA Completed for Hunnewell and Hardy
- RA Period from Jan-14 to Apr-14
- Hunnewell 31.54% & Hardy 21.92% (**AVG 26.73%**)
- Assumed 20% Annual Savings all Schools
- Actual Savings after FY15 Heating Season

Simple Payback

(Reduced Maintenance Cost Not Included)

Simple Payback	
School	Annual Energy Costs
Hunnewell	\$ 54,469
Hardy	\$ 42,336
Upham	\$ 24,393
Fiske	\$ 46,856
Sprague	\$ 63,297
Bates	\$ 54,553
Middle School	\$ 190,866
Total (Based on FY13 Costs)	\$ 476,770
Energy Savings	20.00%
	\$ 95,354
Project Cost	\$ 304,134
Simple Payback [Years]	3.2

Natural Gas Cost
\$477k

Energy Savings
\$95k (20%)

Project Cost
\$304k

Simple Payback
3.2 Years

Lessons Learned/Conclusions

- Project was Successful beyond Expectations!
- Significant Quantifiable Results: Financial & Occupant Feedback
- Should Implement every 5-7 Years to all Buildings
- “Hands-On” Management is Critical to Success
- Need “Buy-In” from Staff to this Partnership
- Age/Type of System relate directly to Cost

FMD UPDATE



QUESTIONS?

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http://www.wellesleyma.gov/pages/wellesleyma_facilities/index

Facilities Maintenance Department