

20 Year Approach to Existing Schools

- ◆ Life Cycle Replacements (LCR)
- ◆ Major Renovations (MR)
- ◆ Deferred MR and LCR

Life Cycle Replacements

- ◆ Individual systems replaced before failure
- ◆ Replacement cycle 5 – 20 years
- ◆ Prioritize based on matrix priority
- ◆ Cyclic increase starting with a range of \$16M to \$30M (Source: Whitestone Research)

		Immediate - System(s) have failed	Short Term - 0-2 Years - System(s) functioning improperly and will fail soon.	Long Term - 3-5 yrs - System(s) that have exceeded their useful life, but are still functioning.	Improvements - Code changes, systems upgrades, aesthetic issues, and program needs.
	<u>Pts</u>	40	30	20	10
<p>High: Significant loss of capability, frequent interruptions and considerable degradation of effectiveness. <u>Health/Safety:</u> Probable chance of physical disability greater than 3 months or resource loss greater than \$200,000.</p>	10	400	300	200	100
	9	360	270	180	90
	8	320	240	160	80
<p>Medium: Limited loss of capability. Relocations and rescheduling of work or classes required. <u>Health/ Safety:</u> Possible chance of lost workdays or resource loss greater than \$10,000.</p>	7	280	210	140	70
	6	240	180	120	60
	5	200	150	100	50
	4	160	120	80	40
<p>Low: Minimal impact on capability. All others.</p>	3	120	90	60	30
	2	80	60	40	20
	1	40	30	20	10

Example: Significant impact on teachers and children throughout the school. Frequent interruptions to service and continuous leaks. Considerable degradation.
Rating: High/Immediate - Probably 360 pts

Example: Replace shingle roofing on gym before additional damage occurs to roof and interior
Rating: Medium/Short Term - Probably 120 pts

Example: Facility changes have evolved past boilers capability. System can no longer be manipulated to satisfactorily support facility.
Rating: Medium/Long Term - Probably 80 pts

WHITESTONE RESEARCH DATA

Uniformat	Component Name	Quantity	Year Replaced
B2010	Concrete, Painted, Exterior, 1st Floor	17869	2003
B2020	Aluminum Fixed Window, 12 sf, 1st Floor	506	2003
B2030	Aluminum Frame, Fully Glazed, Exterior Door	9	2003
B2030	Steel w/ Safety Glass, Painted, Exterior Door	18	2003
B3010	Metal Roof	83000	2003
B3010	Single-Ply Modified Bituminous/Thermoplastic F	19000	2003
C1020	Wood, Solid Core w/ Safety Glass, Painted, Int	120	2003
C1020	Wood, Solid Core, Painted, Interior Door	37	2003
C3010	Concrete Block, Painted, Interior Wall Finish	5405	2003
C3010	Sheetrock, Unstippled, Interior Wall Finish	116484	2003
C3020	Carpet, Nylon 20 oz., High Traffic	10809	2003
C3020	Concrete, Finished Flooring	5405	2003
C3020	Quarry Tile Flooring	27023	2003
C3020	Vinyl Tile Flooring	64854	2003
C3030	Acoustical Tile, Dropped, Ceiling	108090	2003
D2010	Drinking Fountain, Vitreous China	41	2003
D2010	Lavatory, Vitreous China	41	2003
D2010	Service Sink, Iron Enamel	9	2003
D2010	Tankless Water Closet	51	2003
D2010	Urinal, Vitreous China	28	2003
D2020	Circulator Pump, 1/12 HP, Hot Water	2	2003
D2020	Pipe & Fittings, 2" Copper, Cold Water	7	2003
D2020	Pipe & Fittings, 3/4" Copper, Cold Water	6	2003
D2020	Pipe & Fittings, 3/4" Copper, Hot Water	2	2003
D2020	Pipe Insulation, Cold Water	7	2003
D2020	Pipe Insulation, Hot Water	2	2003
D2020	Water Heater, Gas/Oil 130 Gph	2	2003
D2030	Backflow Preventer, 2"	5	2003
D2030	Pipe & Fittings, 10" Cast Iron	1	2003
D2030	Pipe & Fittings, 6" Cast Iron	3	2003
D2040	Pipe & Fittings, 4" DWV PVC	1	2003
D2040	Roof Drain, 4-6"	32	2003
D3010	Pipe & Fittings, 4" Steel, Gas	4	2003
D3020	Chemical Feed System	2	2003
D3020	Circulation Pump 5 HP, Hot Water	2	2003
D3020	Expansion Tank, 60 Gal.	5	2003
D3020	Gas Boiler, 2000 Mbh	2	2003
D3030	Chiller, Reciprocal Air-Cooled Hermetic, 200 Tc	1	2003
D3030	Circulation Pump, 5 HP, Chiller & Condenser W	7	2003
D3030	Cooling Tower, 200 Ton	2	2003
D3040	Air Handler, Multizone, 20,000 Cfm	9	2003
D3040	Variable Air Volume Box	51	2003
D3060	Direct Digital Controls, System Points	540	2003

Component Close Help...

Sort By: **Uniformat** Name Newest 0-815

Component: Review Tasks...

Uniformat: Distribution Systems Reports...

Sort Order within Uniformat: 3.6

Unit of Measure: Allow PM Tasks to coincide with Replacement Tasks.

M&R Tasks

Task	Reviewed
▶ Repair Air Handler, Multizone, 20,000 Cfm	6/11/2004
Replace Air Handler, Multizone, 20,000 Cfm	6/11/2004
Maintain Air Handler, Multizone, 20,000 Cfm	6/11/2004

Task Close Help...

Task: 765 Reset ALL frequencies to one value...

Component: 815

Labor Trade: Hours: 4 per Each

Rental Equipment: Hours: 0 per Each

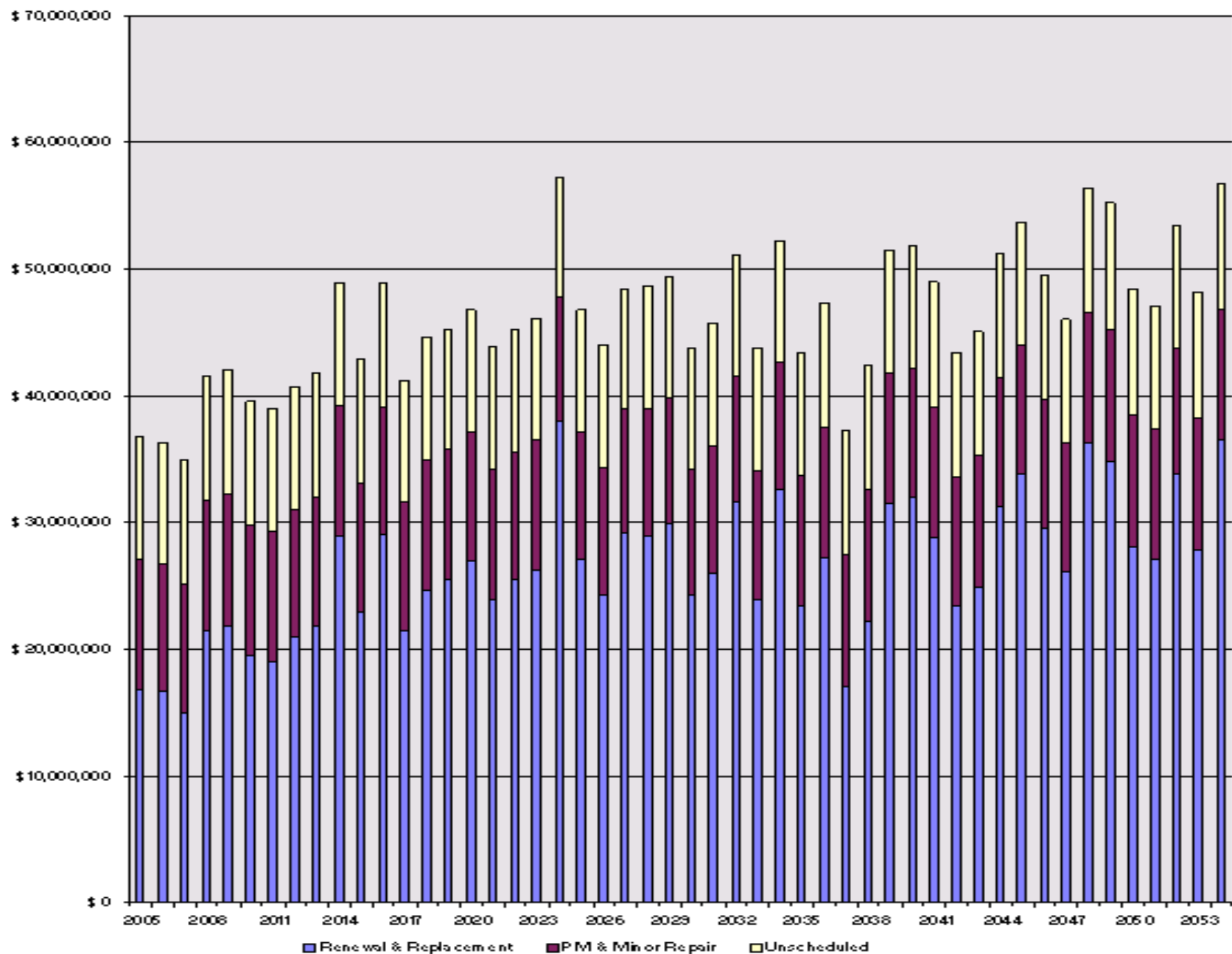
Material Cost: 629.769 per Each Date Last Reviewed: 6/11/2004

Task Type: Replacement Task:

Frequencies by City

City	Freq
▶ Akron, OH	11
Alamogordo, NM	10
Albany, NY	11
Albuquerque, NM	10
Altus, OK	9
Amarillo, TX	10
Anaheim, CA	10
Anchorage, AK	18
Ann Arbor, MI	11
Atlanta, GA	9

Average Annual M&R Costs Over 50 Years



Organization: Wake County Public Schools

Replacement Value: \$1,701,227,706

[Close](#) [Help...](#)

Current FCI: .05

Current Backlog: \$88,535,932

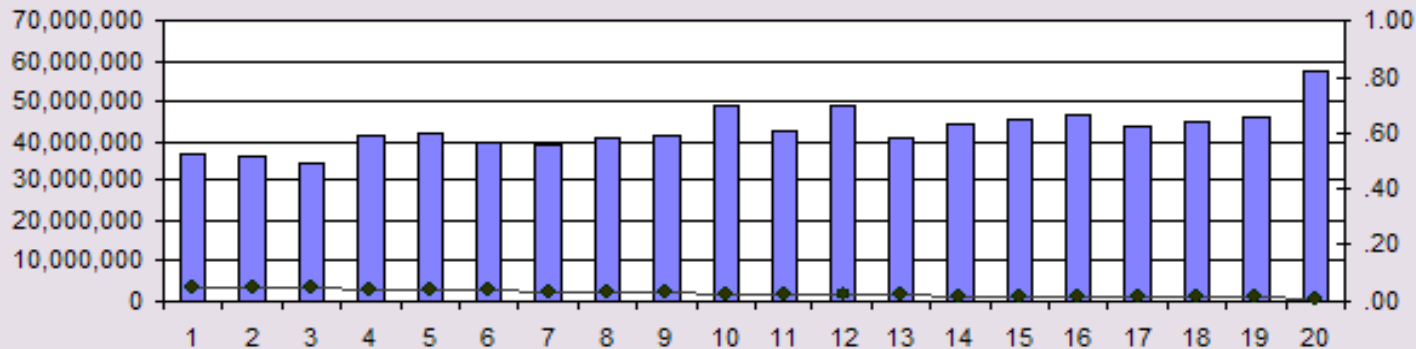
[Set Funding Priorities...](#)

Projected Funding & Condition Index

[Analyze in MS Excel](#)

[Reset Worksheet](#)

[Print](#)



Track Added PM

2005

Projected Requirements

Year	PM & Minor	Unsched.	Renewal	Total	Funding	Backlog	FCI	Delta
1	10,180,521	9,740,272	16,885,669	36,806,462	36,806,462	84,977,868	.05	
2	10,017,918	9,532,137	16,689,113	36,239,168	36,239,168	81,020,538	.05	
3	10,239,515	9,773,259	14,904,306	34,917,080	34,917,080	77,240,184	.05	
4	10,285,139	9,757,899	21,542,774	41,585,812	41,585,812	73,081,031	.04	
5	10,362,491	9,832,118	21,833,021	42,027,630	42,027,630	69,404,319	.04	
6	10,275,166	9,783,235	19,500,394	39,558,795	39,558,795	65,729,945	.04	
7	10,282,423	9,786,197	18,950,198	39,018,818	39,018,818	61,325,137	.04	
8	10,076,299	9,642,318	21,020,708	40,739,325	40,739,325	55,669,763	.03	
9	10,210,075	9,664,684	21,872,645	41,747,404	41,747,404	51,128,554	.03	
10	10,215,087	9,715,622	28,976,279	48,906,988	48,906,988	45,847,160	.03	
11	10,189,344	9,753,734	22,886,452	42,829,530	42,829,530	43,513,975	.03	
12	10,150,928	9,728,466	29,008,304	48,887,698	48,887,698	41,762,116	.02	
13	10,004,664	9,547,106	21,572,121	41,123,891	41,123,891	38,661,994	.02	
14	10,242,821	9,713,785	24,690,387	44,646,993	44,646,993	34,367,850	.02	
15	10,160,454	9,622,808	25,536,811	45,320,073	45,320,073	33,121,262	.02	
16	10,127,155	9,649,575	26,965,077	46,741,807	46,741,807	30,896,546	.02	
17	10,255,327	9,745,777	23,937,803	43,938,907	43,938,907	28,412,139	.02	
18	10,063,405	9,618,493	25,517,234	45,199,132	45,199,132	25,093,610	.01	
19	10,151,265	9,687,996	26,292,504	46,131,765	46,131,765	22,517,621	.01	
20	9,918,193	9,436,773	37,934,229	57,289,195	57,289,195	17,991,387	.01	

Major Renovations

- ◆ Structural, Mechanical, IAQ, Electrical, Plumbing, Codes, and Program
- ◆ Renew every 40 Years (CMS)
- ◆ Prioritize based on Facility Condition Index
- ◆ Steady increase starting at over 450,000 SF next year
- ◆ Approximately \$56M

Deferred Maintenance and Repair

- ◆ Facilities exceeding 40 yrs since renovation
~ 1.1 MSF
- ◆ Major Renovations ~ \$140 M
- ◆ Systems exceeding industry recognized life cycle and facility < 40 yrs
- ◆ Life Cycle ~ \$73 M
- ◆ Catch up in 5 yrs = \$43 M/Yr

What Will It Cost Per Year?

Life Cycle Replacements per Year	\$ 20M
Major Renovation per Year	<u>\$ 56M</u>
\$/Yr to Maintain Status Quo	\$ 76M
Deferred Maintenance per Year	<u>\$ 43M</u>
\$/Yr to Catch Up in 5 Yrs	\$ 119M
Existing Schools in Plan 2004	\$ 58M/Yr

Note

- ◆ Whitestone Research (WR) Model – 2004 \$\$
 - WR shows at least 5% increase since 2004
- ◆ WR projections replace old standards with same
 - Exp: Steam replaced with steam
- ◆ WR repair costs do not include code
- ◆ Costs do not include furniture, equipment, technology or project management
- ◆ Projections do not reflect any square footage growth (additions to buildings)