



ANN ARBOR PUBLIC SCHOOLS
LEAD. CARE. INSPIRE.




Facilities Infrastructure Condition Assessment

PRESENTED TO THE BOARD OF EDUCATION
DECEMBER 19, 2018

PRESENTED BY:

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Presentation Overview

K-12 School Infrastructure Quality

- National + State of Michigan
- Ann Arbor Public Schools

Facility Condition Assessment (FCA)

- FCA Overview
- FCA Review of AAPS Properties
- Facility Condition Index (FCI)
- FCA Capital Needs Findings
- Other Capital Needs
- Total Capital Needs vs. Available Funds

Capital Investment Scenarios

Overview of Possibilities

American Society of Civil Engineers - *Infrastructure Report Card*



GRADING SCALE



EXCEPTIONAL: FIT FOR THE FUTURE

The infrastructure in the system or network is generally in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and severe weather events.



GOOD: ADEQUATE FOR NOW

The infrastructure in the system or network is in good to excellent condition; some elements show signs of general deterioration that require attention. A few elements exhibit significant deficiencies. Safe and reliable with minimal capacity issues and minimal risk.



MEDIOCRE: REQUIRES ATTENTION

The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.



POOR: AT RISK

The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.



FAILING/CRITICAL: UNFIT FOR PURPOSE

The infrastructure in the system is in unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.

National K-12 Schools Infrastructure Grade = **D+**



Investment needed to improve and maintain school facilities:

Annual need: **\$87 Billion**



Actual annual investment: **\$49 Billion**

Annual Investment Gap: \$38 Billion

- American Society of Civil Engineers – 2017 Infrastructure Report

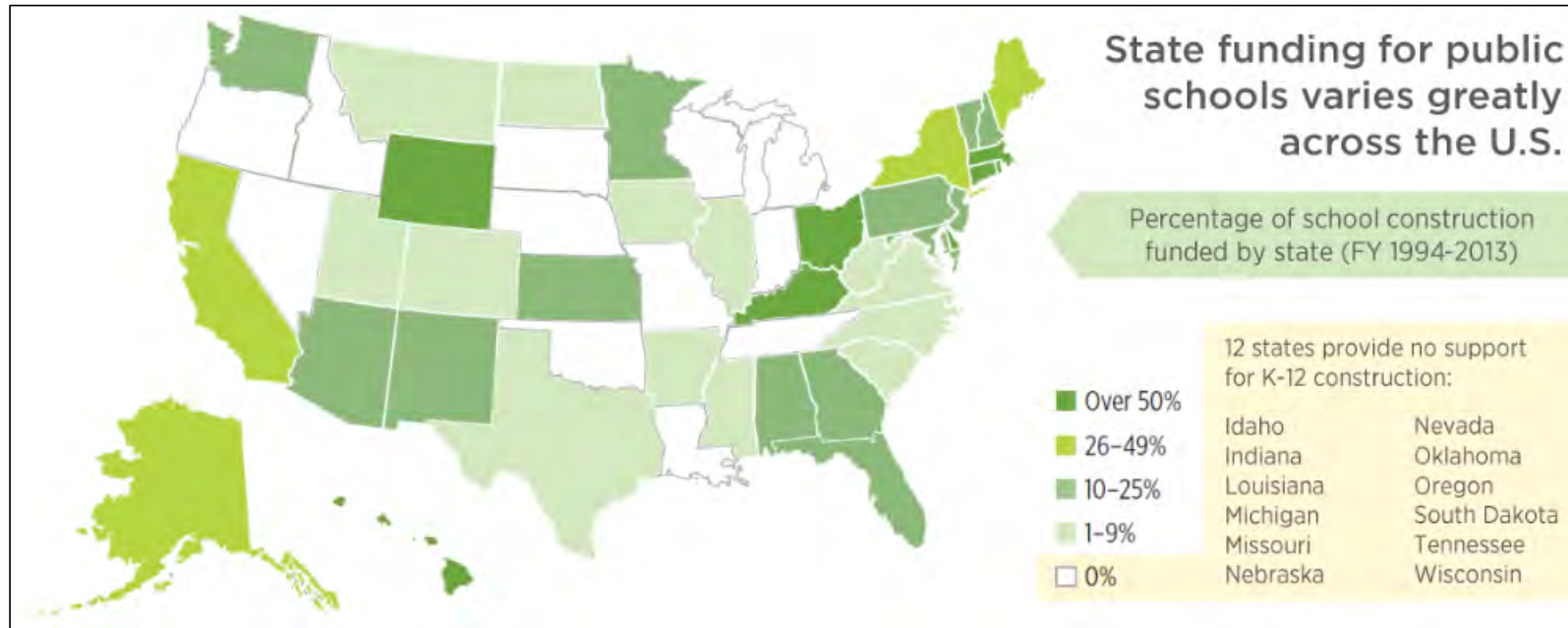
Michigan K-12 Schools Infrastructure Grade = D+



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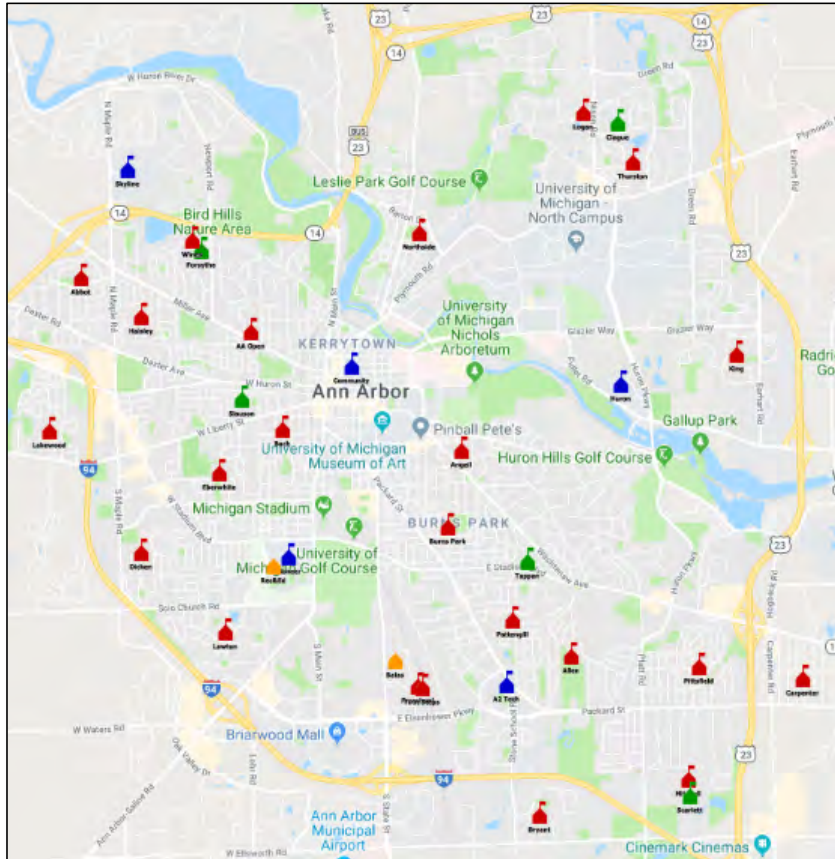
National K-12 Schools Infrastructure Investment of State Governments



Michigan is one of only 12 states with no state funding dedicated to school infrastructure

- U.S. Green Building Council - *State of Our Schools Report 2016*

AAPS Facilities Overview



Number of Principal Buildings	35
Total Square Footage	3,476,090
Average Age of Buildings	63 years
Total Acreage	762
Number of Students	18,434
Approximate Number of Staff	2,400

Average Age Of Facilities

School/Building Name	Year Built
Bach Elementary	1922
Community High School	1922
Angell Elementary	1923
Burns Park Elementary	1923
Ann Arbor Open	1923
Slauson Middle School	1937
Ann Arbor STEAM	1939
Pittsfield Elementary	1944

The Original Build

Pathways to Success	1949
Eberwhite Elementary	1950
Tappan Middle School	1950
Mitchell Elementary	1951
Freeman Elementary	1952
Carpenter Elementary	1953
Haisley Elementary	1954
Pioneer High School	1956
Dicken Elementary	1957
Pattengill Elementary	1957
Wines Elementary	1960
Forsythe Middle School	1960
Allen Elementary	1961
Lakewood Elementary	1961
Abbott Elementary	1962
Lawton Elementary	1963
Thurston Elementary	1963
Scarlett Middle School	1968
King Elementary	1969
Huron High School	1969
Balas Bldg	1971
Clague Middle School	1972
Bryant Elementary	1973

The Greatest Generation

Logan Elementary	1977
Transportation	1982
Preschool & Family Center	1990

The Baby Boomers

Skyline High School	2008
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Generation X

Average Year Built	1956
Average Age	63

High Temperatures at Schools

Location	Average Temp 5/29/18 3-4pm PM EDT	Average Temp 9/5/18 4pm PM EDT	Average Temp 9/7/18 4pm PM EDT	Average of Averages
Community High School		86.00	82.05	84.02
Pattengill Elementary		85.04	82.42	83.73
Dicken Elementary	83.22	83.61	81.07	82.34
Lakewood Elementary	81.12	83.37	81.20	82.28
Burns Park Elementary	83.71	83.69	79.52	81.60
Carpenter Elementary	81.64	83.23	79.81	81.52
Eberwhite Elementary	84.29	82.69	80.17	81.43
Thurston Elementary	81.40	82.81	79.56	81.18
Lawton Elementary	82.53	82.44	79.58	81.01
Clague Middle School	81.20	81.44	79.87	80.66
Bach Elementary	82.49	82.20	78.82	80.51
Mitchell Elementary		81.01	79.92	80.47
Tappan Middle School	79.25	81.79	78.72	80.26
Haisley Elementary	80.29	81.62	78.55	80.09
A2 STEAM	82.57	81.22	78.55	79.89
Abbott Elementary		81.06	78.07	79.56
Pittsfield Elementary	79.52	80.55	78.09	79.32
Angell Elementary	81.32	80.52	78.09	79.31
Wines Elementary	79.93	80.27	76.72	78.49
Pioneer High School		77.96	76.46	77.21
Logan Elementary	75.07	78.66	75.01	76.83
Scarlett Middle School	76.57	76.69	76.79	76.74
Skyline High School		78.01	75.44	76.72
Ann Arbor Open		77.22	76.22	76.72
Slauson Middle School	76.63	76.53	75.34	75.93
Forsythe Middle School	76.16	74.01	76.66	75.33
King Elementary	74.69	75.71	73.37	74.54
Bryant Elementary	76.18	74.06	74.31	74.18
Huron High School		74.27	73.29	73.78
Allen Elementary	74.66	73.71	73.43	73.57
Preschool & Family Center		72.05	72.01	72.03

Facility Condition Assessment (FCA)

- **AAPS commissioned a Facility Condition Assessment (FCA).**
EMG Corporation was awarded a contract to conduct the FCA
- FCA is life cycle engineering analysis of the condition of a facility in terms of age, design, construction methods, and materials.
- The analysis is done by **walk-through inspection and mathematical modeling**. It includes calculations of useful life and conditions of building systems and equipment
- The FCA identifies **needed infrastructure investments and risks associated** with continued deferral of maintenance and replacement investments



Facility Condition Assessment (FCA)

EMG is the largest technical assessment and project management company in the nation with over 700 million square feet of assessments in the last 5 years.

Their team of **over 500 professionals** offer clients a broad range of services including the life cycle engineering assessments, capital planning, and program and project management.

Clients include public school districts across the country, including: **Hartford Public Schools (63 schools), Chicago Public Schools (283 schools), District of Columbia Public Schools (120 schools)**, and many others.



Facility Condition Assessment (FCA)

The FCA includes the following components:

- **Building Structure**
 - Foundations, Superstructure and Stairwells
- **Building Envelope**
 - Walls, Windows, Doors and Roof
- **Site Improvements**
 - Parking Lots, Walkways, Signage, Fencing, Athletic Fields, etc.
- **Building Interiors**
 - Doors and Finishes (Floors, Paint, Cabinets, Lockers, etc.)
- **Building MEPF Services** (Mechanical, Electrical, Plumbing, and Fire Safety)
 - Water Systems, Mechanical Systems, Electrical Systems, Elevators, Fire Safety Systems, Communications Systems, and Security Systems
- **Equipment and Furnishings**
 - Kitchen Equipment, Pool Equipment, Scoreboards, Theatre Systems, etc



Outdated Classrooms



#35:

CLASSROOM



PHOTO
#28:

CLASSROOM

Outdated Classrooms



#61:

CLASSROOM



#63:

CLASSROOM

Teacher Lounges



#24:

KITCHEN CABINETS IN
TEACHERS LOUNGE

Theaters/Multi Purpose Rooms



#9:

MULTIPURPOSE ROOM



#38:

BLEACHERS

Kitchens



#63:

KITCHEN EQUIPMENT



PHOTO
#24:

KITCHEN EQUIPMENT

Lights and Ceilings



#81:	INTERIOR LIGHTING
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#42:	SUSPENDED ACOUSTICAL CEILING TILE (ACT), REPLACE
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Interior Doors



#17:

DAMAGED INTERIOR DOOR



#36:

INTERIOR DOORS

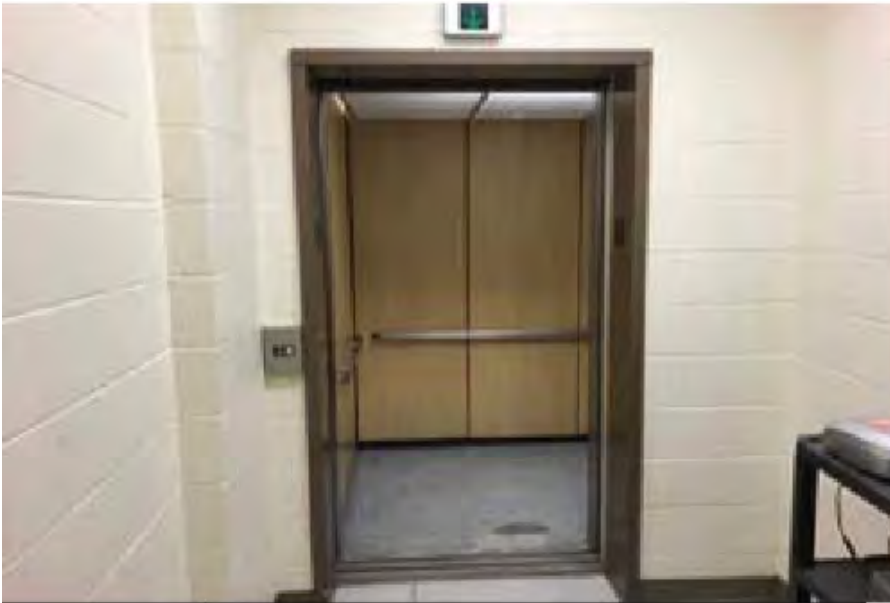
Flooring



#42:

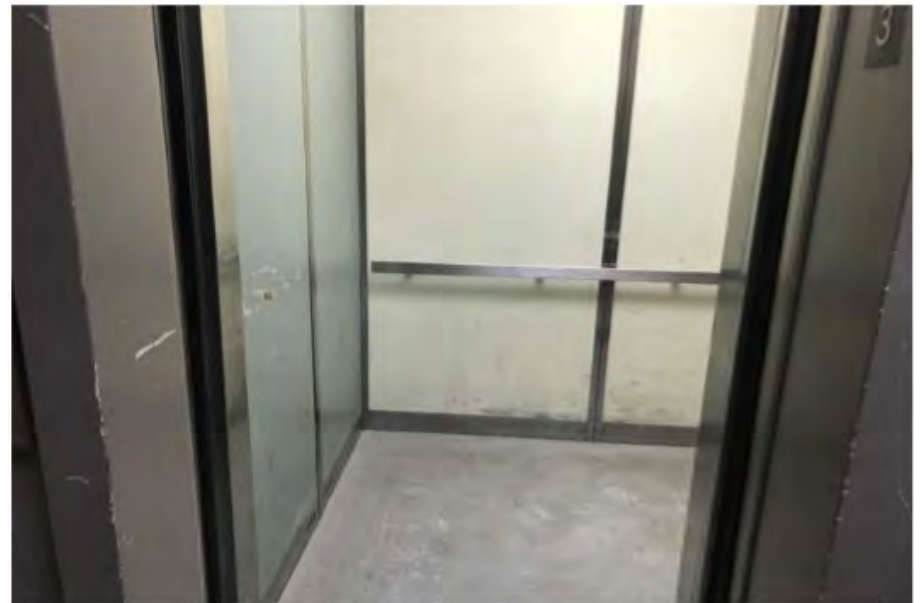
VINYL TILE (VCT)

Elevators



#47:

ELEVATOR



#73:

ELEVATOR INTERIOR

Plumbing Fixtures



PHOTO
#17:

HYDRONIC TERMINAL UNIT



#60:

SINK

Mechanical Rooms



PHOTO
#21:

DOMESTIC WATER HEATER



PHOTO
#20:

AIR HANDLER

Exhaust Fans



#49:

EXHAUST FAN



#32:

EXHAUST FAN

Fire Safety Systems



#89:

FIRE PANEL



#73:

FIRE ALARM SYSTEM UPGRADE

Building HVAC Controls



#31:

BUILDING AUTOMATION
SYSTEM HYBRID



#39:

BUILDING CONTROL PANEL

Electrical Systems



#71:	800 AMP SWITCHBOARD
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#54:	SECONDARY TRANSFORMER
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Boilers



#33:

BOILER



PHOTO
#15:

HVAC BOILERS

Heating Distribution Systems



#53:

UNIT VENTILATOR

Exterior Concrete and Stairs



#99:

CONCRETE PATIO



#100:

EXTERIOR STAIRS

Exterior Doors and Windows



#11:

RUSTING CURTAIN WALL
PANEL AND EFFLORESCENCE



#45:

EXTERIOR WALL CAULKING,
PAINTING

Parking Lots and Sidewalks



PHOTO
#8:

ADA PARKING AREA



#50:

ASPHALT PAVEMENT

Building Facades



#7:

ALUMINUM SIDING, REPLACE



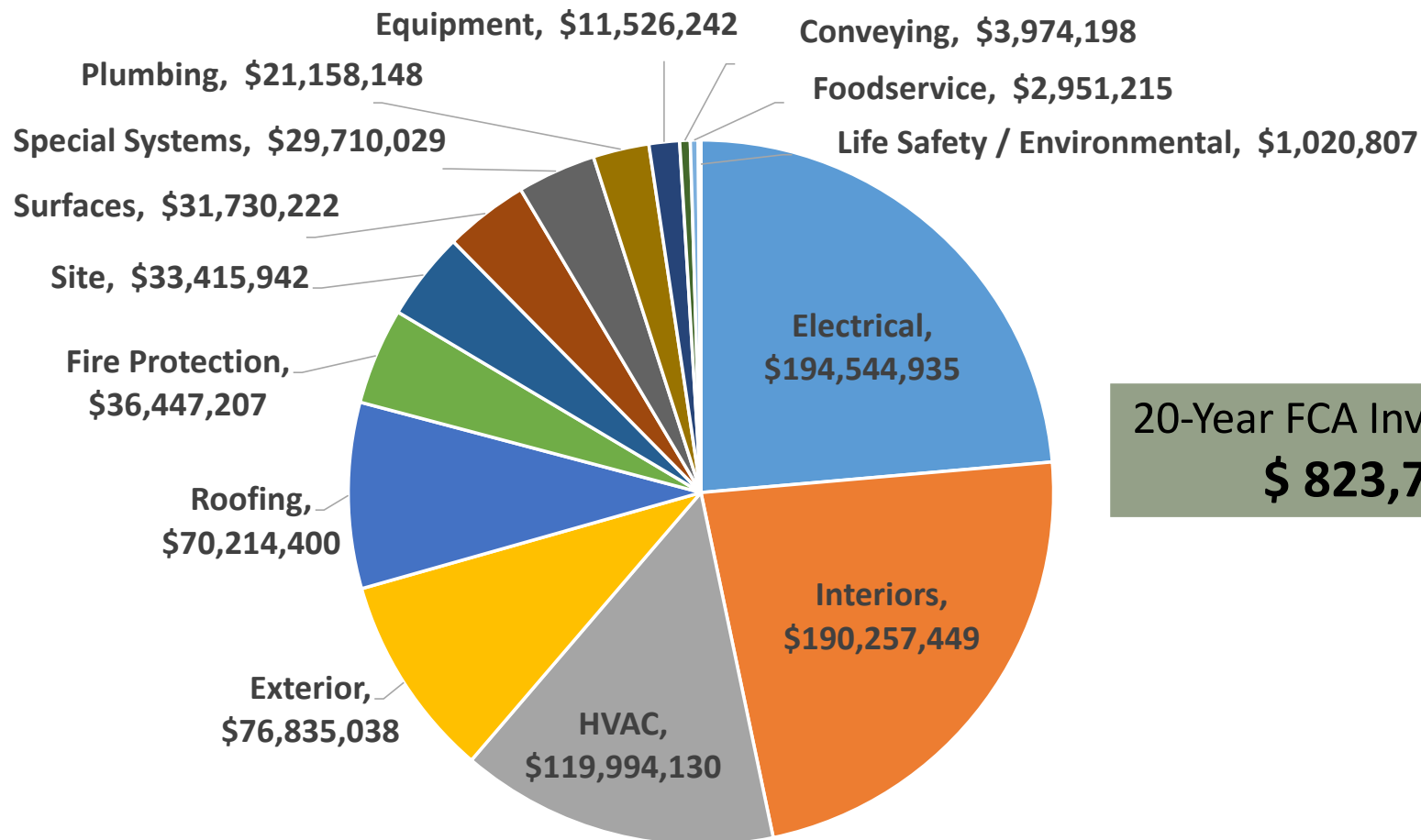
#59:

BRICK REPAIR

EMG Executive Summary



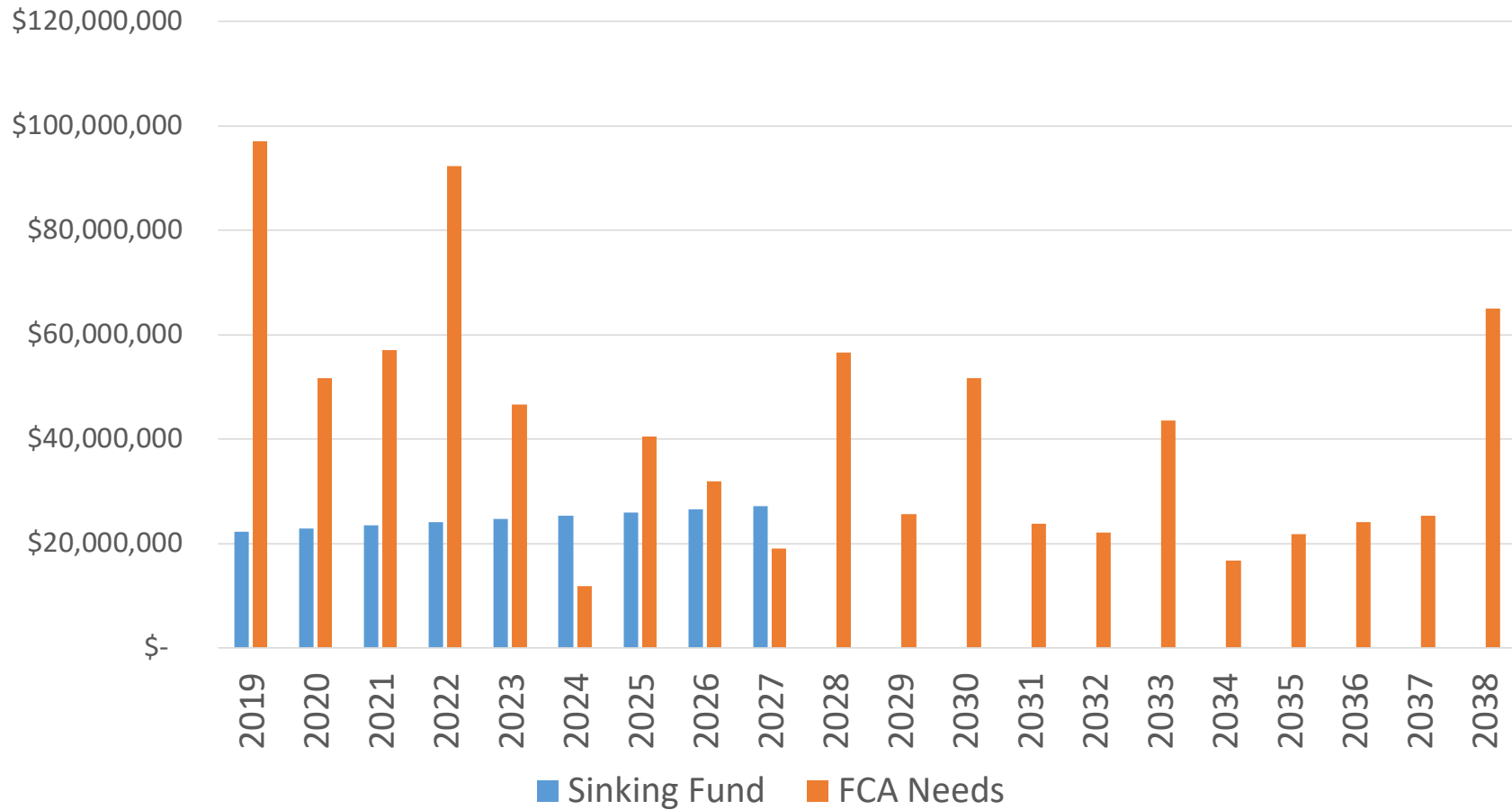
It is EMG's opinion that the facilities were found to be in overall good to fair condition and have had an adequate level of maintenance over the past few years. However, without substantial upfront investment, many of the schools Facility Condition Index (Immediate and short term needs / replacement value of the facility) will fall into the 'poor' rating within a few years.



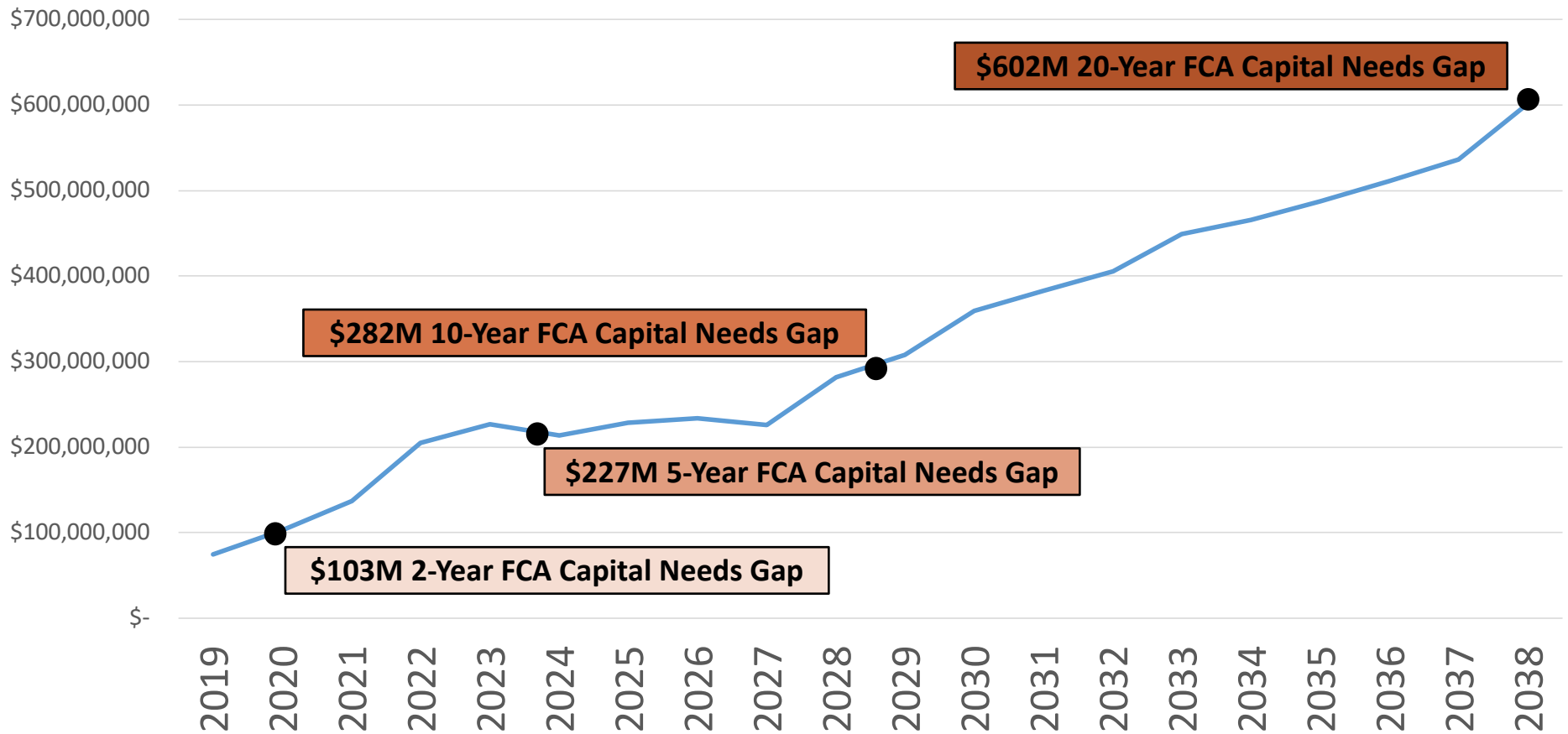
20-Year FCA Investment Needs
\$ 823,779,962

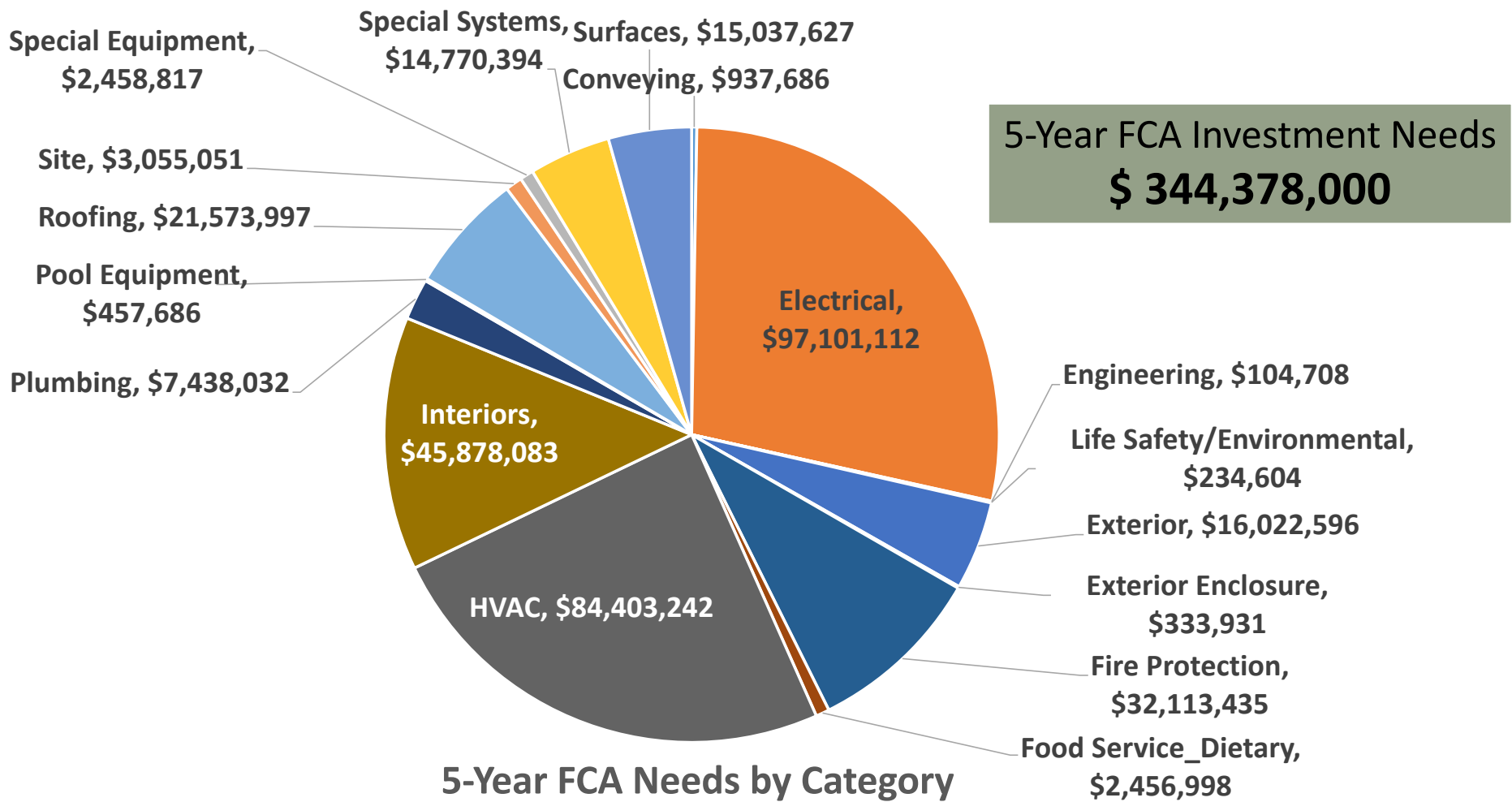
20-Year FCA Needs by Category

Facility Condition Assessment Needs vs. Sinking Fund



Facility Condition Assessment (FCA) Needs Gap





Typical FCA Results Table

EMG Renamed Item Number	Cost Description	Lifespan (EUL)	EAge	RUL	Quantity	Unit	Unit Cost	w/ Markup *	Subtotal	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000	3001	3002	3003	3004	3005	3006	3007	3008	3009	3010	3011	3012	3013	3014	3015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Sample Schools - 5 Year FCA Needs

School	Square Feet	5-Year FCA Needs	5-Year FCA Needs / SF
Allen Elementary (1961)	65,388	\$ 2,054,347	\$31 / SF
Community High School (1922)	58,200	\$7,906,749	\$135 / SF
Carpenter Elementary (1953)	52,539	\$11,463,982	\$218 / SF



Allen Elementary – 5 Year FCA Needs

5-Year FCA Investment Needs
\$ 2,054,347 (\$31/SF)

Major categorical needs identified in the FCA:

- \$750K - Heating, Ventilation, and Air Conditioning (HVAC)
- \$460K - Electrical, lighting, branch wiring and equipment
- \$400K Interior Improvements, walls, windows, doors and finishes

Other needs include:

- Sitework – sidewalks and pavement
- Resiliency improvements – onsite energy generation and infrastructure



Allen Elementary – FCA Needs Report

C10 Interior Construction

C1030 Interior Doors		
Item	Type	Condition
Interior Doors	Solid core wood	Good
Door Framing	Metal	Good
Fire Doors	Yes	Good
Closet Doors	N/A	--

Interior Finishes - ALLEN ELEMENTARY SCHOOL							
Location	Finish		Quantity (SF)	Condition	Action	RUL	Est. Cost
Restrooms	Ceiling	Gypsum Board/Plaster	750	Fair	Prep & Paint	9	1,452
Restrooms	Floor	Ceramic Tile	750	Good	Replace	23	11,816
Throughout building	Wall	Concrete/Masonry	90000	Fair	Prep & Paint	5	130,590
Throughout building	Wall	Clay Brick	2000	Fair	Repoint	15	24,816
Throughout building	Floor	Carpet Standard-Commercial Medium-Traffic	6500	Good	Replace	9	47,166
Throughout building	Floor	Vinyl Tile (VCT)	50000	Good	Replace	14	240,030
Throughout building	Ceiling	Suspended Acoustical Tile (ACT)	59000	Good	Replace	19	183,549

Allen Elementary – FCA Needs Report

Mechanical Systems - ALLEN ELEMENTARY SCHOOL

Location	Component	Component Description	Quantity	Unit	Condition	RUL	Est. Cost
Boiler Room A	Expansion Tank	200 GAL	1	EA	Fair	5	4,697
Boiler Room A	Boiler (1)	2095 MBH	1	EA	Fair	3	54,195
Boiler Room B	Distribution Pump	5 HP	1	EA	Fair	4	5,519
Boiler Room B	Boiler	2092 MBH	1	EA	Fair	5	54,195
Boiler Room B	Expansion Tank	101 to 175 GAL	1	EA	Fair	5	3,999
Boiler Room B	Distribution Pump	5 HP	1	EA	Fair	5	5,519
Penthouse level mechanical room	Air Handler	17500 CFM	1	EA	Fair	5	9,414
Roof	Condensing Unit	3 Ton	1	EA	Good	14	3,579
Roof	Condensing Unit	3 Ton	1	EA	Good	14	3,579
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Condensing Unit	3 Ton	1	EA	Good	14	3,579
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Ductless Split System	1.5 Ton	1	EA	Good	12	4,473
Roof	Packaged Unit (RTU)	2 Ton	1	EA	Good	14	7,258
Roof	Condensing Unit	3 Ton	1	EA	Good	14	3,579
Roof	Ductless Split System	2 Ton	1	EA	Good	14	4,473
Roof	Condensing Unit/Heat Pump	3 Ton	1	EA	Good	14	3,579
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Condensing Unit	3 Ton	1	EA	Good	14	3,579
Roof	Condensing Unit	2 Ton	1	EA	Good	14	3,122
Roof	Packaged Unit (RTU)	3 Ton	1	EA	Good	14	9,872
Roof	Packaged Unit (RTU)	4 Ton	1	EA	Good	14	10,581
Roof	Packaged Unit (RTU-8)	10 Ton	1	EA	Good	14	18,554

Community High – 5 Year FCA Needs

5-Year FCA Investment Needs
\$7,906,749 (\$135/SF)

Major categorical needs identified in the FCA:

- \$2.9M - Heating, Ventilation, and Air Conditioning (HVAC)
- \$2.2M - Electrical, lighting, branch wiring and equipment
- \$1.65M – Fire Protection, infrastructure

Other needs include:

- Interior improvements – ceilings, walls, floors and finishes
- Exterior improvements – masonry updates, windows and doors



Community High – FCA Needs Report

B2010 Exterior Walls		
Type	Location	Condition
Primary Finish	Brick veneer	Fair
Secondary Finish	Stone veneer	Fair
Accented with	Metal siding	Fair
Soffits	Concealed	Good
Building sealants	Between dissimilar materials, at joints, around windows and doors	Poor

G2020 Parking Lots & G2030 Pedestrian Walkways		
Item	Material	Condition
Entrance Driveway Apron	Concrete	Good
Parking Lot	Asphalt	Fair
Drive Aisles	Asphalt	Fair
Service Aisles	Asphalt	Fair
Sidewalks	Concrete	Good
Curbs	Concrete	Fair
Pedestrian Ramps	None	--
Ground Floor Patio or Terrace	Concrete	Good

Community High – FCA Needs Report

C2010 Wall Finishes; C2030 Floor Finishes; C2050 Ceiling Finishes: The following table generally describes the locations and typical conditions of the interior finishes within the facility:

Interior Finishes - COMMUNITY HIGH SCHOOL							
Location / Spaces	Finish		Quantity (SF)	Condition	Action	RUL	Est. Cost
Throughout	Floor	Vinyl Tile (VCT)	2,000	Poor	Replace	1	9,601
Interior Stairs	Wall	Concrete/Masonry	165,000	Poor	Prep & Paint	1	239,415
Throughout	Floor	Vinyl Tile (VCT)	26,000	Fair	Replace	6	124,816
Hallways & stairs	Floor	Quarry Tile	2,000	Fair	Replace	24	30,375
Hallways	Floor	Terrazzo	2,000	Fair	Replace	24	24,111
Gymnasium	Floor	Maple Sports Floor	2,000	Fair	Sand & Refinish	2	9,068
Throughout	Floor	Ceramic Tile	3,600	Fair	Replace	24	56,718
Stairwell & hallways	Ceiling	Textured Spray Coating	400	Fair	Replace	9	2,852
314/318/317	Floor	Vinyl Sheetting	5,000	Fair	Replace	7	35,046
Throughout	Wall	Gypsum Board/Plaster	20	Poor	Repair	0	64
Throughout	Ceiling	Suspended Acoustical Tile (ACT)	7,500	Fair	Replace	9	23,333
Admin Offices	Floor	Carpet Standard-Commercial Medium-Traffic	10,000	Fair	Replace	4	72,563
Band Room	Ceiling	Fiberglass Panel, Rigid	350	Fair	Replace	4	4,921
Jazz room	Wall	Acoustical Tile (ACT)	5,000	Poor	Replace	0	47,311
Throughout building	Ceiling	Gypsum Board/Plaster	52,100	Poor	Prep & Paint	1	100,897

Community High – FCA Needs Report



Anticipated Lifecycle Replacements:

- Boilers
- Air handling units
- Distribution pumps and motors
- Fan coil units
- Split system furnaces and condensing units
- Ductless split systems
- Condensate return pumps
- Building automation system
- Compressed air dryer
- Exhaust hoods
- Ceiling fans

Location / Space	Component	Component Description	Quantity	Unit	Condition	Action	RUL	Est. Cost
300/301	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
300/301	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
314	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
318	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
318	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
320	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
320	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
317	Laboratory Exhaust Hood	6 LF	1	EA	Good	Replace	10	\$3,582
Roof for 317	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Good	Replace	10	\$2,664
309	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
309	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
208	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
212	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
Computer Test Room	Ductless Split System	Multi Zone (per 1 to 2 Ton Fan Coil Unit)	1	EA	Fair	Replace	8	\$3,579
Office	Ductless Split System	Multi Zone (per 1 to 2 Ton Fan Coil Unit)	1	EA	Fair	Replace	8	\$3,579
Main roof	Condensing Unit/Heat Pump	Split System, 4 Ton	1	EA	Fair	Replace	8	\$4,820
203	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
203	Air Conditioner	1.5 to 2 Ton	1	EA	Fair	Replace	4	\$2,589
Main Entry	Fan Coil Unit	Hydronic, 801 to 1,200 CFM	1	EA	Fair	Replace	7	\$3,235
Side Entry	Fan Coil Unit	Hydronic, 801 to 1,200 CFM	1	EA	Fair	Replace	7	\$3,235
Secondary Entry	Fan Coil Unit	Hydronic, 801 to 1,200 CFM	1	EA	Fair	Replace	7	\$3,235
Gymnasium	Ceiling Fan	Ceiling Fan	2	EA	Good	Replace	10	\$1,416
Employee Entry	Fan Coil Unit	Hydronic, 801 to 1,200 CFM	1	EA	Fair	Replace	7	\$3,235
Kiln room	Ceramic Spray Booth	4 LF	1	EA	Fair	Replace	7	\$2,634
Main roof	Exhaust Fan	Centrifugal, 251 to 800 CFM	1	EA	Fair	Replace	6	\$2,022
SW Entry	Fan Coil Unit	Hydronic, 801 to 1,200 CFM	1	EA	Fair	Replace	7	\$3,235
NW Entry	Fan Coil Unit	Hydronic, 801 to 1,200 CFM	1	EA	Fair	Replace	7	\$3,235
Boiler room	Fan Coil Unit	Hydronic, 1,201 to 1,800 CFM	1	EA	Fair	Replace	8	\$4,986
Boiler room	Boiler	Gas, 2,501 to 4,200 MBH	1	EA	Fair	Replace	3	\$120,905
Boiler room	Boiler	Gas, 2,501 to 4,200 MBH	1	EA	Fair	Replace	3	\$120,905
Boiler room	Condensate Water Return Pump	3 HP	1	EA	Good	Replace	11	\$7,910
Boiler room	Air Compressor	2 HP	1	EA	Fair	Replace	4	\$8,265
Boiler room	Chemical Feed System	Chemical Feed System	1	EA	Good	Replace	21	\$10,642
Boiler room	Compressed Air Dryer	Compressed Air Dryer	1	EA	Good	Replace	11	\$5,077
Boiler room	Building Automation System	HVAC Controls	80,600	SF	Poor	Upgrade	2	\$432,218
Boiler room	Air Handler	Interior, 10,001 to 15,000 CFM	1	EA	Fair	Replace	2	\$41,979
Boiler room	Heat Exchanger	Steam-to-Water, 26 to 40 GPM	1	EA	Fair	Replace	10	\$5,349
Boiler room	Distribution Pump	Heating Water, 5 HP	1	EA	Fair	Replace	8	\$5,519
Boiler room	Distribution Pump	Heating Water, 5 HP	1	EA	Fair	Replace	8	\$5,519

Carpenter Elementary – 5 Year FCA Needs

Major categorical needs identified in the FCA:

- \$2.65M - Heating, Ventilation, and Air Conditioning (HVAC)
- \$2.25M - Plumbing, distribution and fixtures
- \$1.8M - Electrical, lighting, branch wiring and equipment
- \$1.5M Exterior Improvements, walls, windows, doors and finishes

Other needs include:

- Roofing – roof system and drainage
- Interior improvements – ceilings, walls, floors and finishes
- Fire protection – update infrastructure

5-Year FCA Investment Needs
\$ 11,463,982 (\$218/SF)



Carpenter Elementary – FCA Needs Report

Actions/Comments:

- The exterior metal siding is antiquated, faded and damaged. The metal siding is recommended for replacement.
- The soffit surfaces show signs of peeling, cracked and are damaged. The soffit surfaces require painting.

B2020 Exterior Windows				
Window Framing	Glazing	Location	Window Screen	Condition
Aluminum framed, fixed	Double glaze	Exterior windows	<input type="checkbox"/>	Fair
Aluminum framed storefront	Double glaze	Exterior windows	<input type="checkbox"/>	Fair

B2050 Exterior Doors		
Main Entrance Doors	Door Type	Condition
	Fully glazed, metal framed	Poor
Secondary Entrance Doors	Metal, insulated	Poor
Service Doors	Metal, insulated	Poor

Carpenter Elementary – FCA Needs Report

Location	Component	Component Description	Quantity	Unit	Condition	Action	RUL	Est. Cost
Boiler room	Boiler	Gas, 751 to 1,000 MBH	1	EA	Poor	Replace	0	31,277
Boiler room	Boiler	Gas, 1,001 to 2,000 MBH	1	EA	Poor	Replace	0	46,465
Boiler room	Deaerator	Deaerator	1	EA	Fair	Replace	5	75,140
Boiler room	Expansion Tank	176 to 250 GAL	1	EA	Fair	Replace	5	4,697
Boiler room	Expansion Tank	176 to 250 GAL	1	EA	Fair	Replace	5	4,697
Boiler room	Expansion Tank	251 to 400 GAL	1	EA	Good	Replace	24	12,003
Boiler room	Expansion Tank	61 to 100 GAL	1	EA	Fair	Replace	5	3,250
Boiler room	Expansion Tank	61 to 100 GAL	1	EA	Fair	Replace	5	3,250
Boiler room	Distribution Pump	Heating Water, 3 HP	1	EA	Poor	Replace	0	4,652
Boiler room	Distribution Pump	Heating Water, 3 HP	1	EA	Poor	Replace	0	4,652
Boiler room	Unit Heater	Hydronic, 13 to 36 MBH	3	EA	Poor	Replace	0	4,550
Hallways	Unit Ventilator	751 to 1,250 CFM	20	EA	Poor	Replace	0	168,883
Mechanical closet	Air Handler	Exterior, 1,201 to 2,000 CFM	1	EA	Poor	Replace	0	11,420
Mechanical closet	Air Handler	Exterior, 1,201 to 2,000 CFM	1	EA	Poor	Replace	0	11,420
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Poor	Replace	0	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Fair	Replace	5	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Fair	Replace	5	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Fair	Replace	5	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Fair	Replace	5	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Good	Replace	15	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Good	Replace	16	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Good	Replace	16	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Good	Replace	16	4,652
Mechanical closet	Distribution Pump	Heating Water, 3 HP	1	EA	Good	Replace	16	4,652
Mechanical closets	Building Automation System	HVAC Controls	52539	SF	Poor	Upgrade	0	281,740
Roof	Condensing Unit/Heat Pump	Split System, 2 Ton	1	EA	Fair	Replace	5	3,122
Roof	Condensing Unit/Heat Pump	Split System, 2 Ton	1	EA	Fair	Replace	5	3,122
Roof	HVAC System Ductwork	Sheet Metal	200	SF	Poor	Replace	0	3,000
Roof	Exhaust Fan	Centrifugal, 251 to 800 CFM	1	EA	Poor	Replace	0	2,022
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Fair	Replace	6	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Poor	Replace	0	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Poor	Replace	0	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Fair	Replace	6	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Fair	Replace	3	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Fair	Replace	6	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Poor	Replace	0	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Poor	Replace	0	2,664
Roof	Exhaust Fan	Centrifugal, 801 to 2,000 CFM	1	EA	Fair	Replace	6	2,664

Facility Condition Index (FCI)

The Facility Condition Index (FCI) is a standard facility management benchmark that is used to objectively assess the current and projected condition of a building asset. FCI is defined as: **the ratio of current year required renewal cost to current building replacement value.**

$$\text{FCI} = \frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$$



2-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

Location	Current Replacement Value	Square Feet (SF)	2-Year Capital Needs	2-Year Capital Needs/SF	2-Year FCI Unabated	2-Year FCI w/ Sinking Fund
Preschool	\$6,898,500	22,995	\$1,167,566	\$51	16.9%	14.6%
Abbott Elementary	\$15,829,500	52,765	\$2,231,876	\$42	14.1%	12.8%
Allen Elementary	\$19,616,400	65,388	\$554,733	\$8	2.8%	1.5%
Angell Elementary	\$11,060,400	36,868	\$756,229	\$21	6.8%	5.5%
Bach Elementary	\$15,927,000	53,090	\$1,055,958	\$20	6.6%	5.3%
Bryant Elementary	\$18,057,600	60,192	\$1,996,865	\$33	11.1%	9.7%
Burns Park Elementary	\$18,297,600	60,992	\$4,313,382	\$71	23.6%	22.2%
Carpenter Elementary	\$15,761,700	52,539	\$6,264,914	\$119	39.7%	38.4%
Dicken Elementary	\$12,959,700	43,199	\$2,307,199	\$53	17.8%	16.5%
Freeman Elementary	\$9,624,000	32,080	\$2,457,794	\$77	25.5%	24.2%
Eberwhite Elementary	\$18,635,100	62,117	\$4,300,412	\$69	23.1%	21.7%
Haisley Elementary	\$17,409,600	58,032	\$2,185,010	\$38	12.6%	11.2%
King Elementary	\$15,660,000	52,200	\$1,101,534	\$21	7.0%	5.7%
Lakewood Elementary	\$12,764,700	42,549	\$922,458	\$22	7.2%	5.9%
Lawton Elementary	\$17,702,700	59,009	\$1,060,626	\$18	6.0%	4.6%
Logan Elementary	\$17,991,000	59,970	\$2,552,827	\$43	14.2%	12.8%
Ann Arbor Open Elementary	\$26,553,900	88,513	\$2,486,026	\$28	9.4%	8.0%
Mitchell Elementary	\$13,030,500	43,435	\$2,654,477	\$61	20.4%	19.0%
A2 STEAM	\$19,132,800	63,776	\$9,565,512	\$150	50.0%	48.7%
Pattengill Elementary	\$16,140,000	53,800	\$4,581,521	\$85	28.4%	27.0%
Pittsfield Elementary	\$12,489,300	41,631	\$842,037	\$20	6.7%	5.4%
Thurston Elementary	\$17,541,000	58,470	\$1,946,201	\$33	11.1%	9.8%
Wines Elementary	\$14,844,600	49,482	\$2,304,810	\$47	15.5%	14.2%
Clague Middle School	\$46,800,000	156,000	\$2,343,461	\$15	5.0%	3.7%
Forsythe Middle School	\$55,546,800	185,156	\$3,626,412	\$20	6.5%	5.2%
Scarlett Middle School	\$48,827,400	162,758	\$3,566,224	\$22	7.3%	6.0%
Slauson Middle School	\$57,027,000	190,090	\$3,636,996	\$19	6.4%	5.0%
Tappan Middle School	\$64,782,600	215,942	\$4,261,860	\$20	6.6%	5.2%
Pathways to Success	\$11,520,600	38,402	\$1,055,702	\$27	9.2%	7.8%
Huron High School	\$121,556,100	405,187	\$4,707,678	\$12	3.9%	2.5%
Pioneer High School	\$121,407,600	404,692	\$1,910,201	\$5	1.6%	0.2%
Community High School	\$17,460,000	58,200	\$3,873,070	\$67	22.2%	20.8%
Skyline High School	\$114,169,200	380,564	\$6,398,863	\$17	5.6%	4.3%
Balas Bldg	\$13,980,000	46,600	\$1,011,790	\$22	7.2%	5.9%
Transportation - Main Bldg	\$5,488,200	18,294	\$940,977	\$51	17.1%	15.8%
TOTAL / AVERAGE	\$1,042,493,100	3,474,977	\$96,943,201	\$41	13.6%	12.2%

2-Year Facility Condition Index (FCI)

Unabated and with Current Sinking Fund

Average Condition = POOR (12%)

POOR CONDITION: The buildings are mostly below standard with many elements approaching the end of their service life. A large portion systems exhibit deterioration. Conditions are of significant concern with a strong risk of failure.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	3	6
Fair	6-10%	15	14
Poor	11-30%	15	13
Critical	31-50%	2	2
Divest	50%+	0	0

FCI = $\frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$

5-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

Location	Current Replacement Value (3% Escalation)	Square Feet (SF)	5-Year Capital Needs	5-Year Capital Needs/SF	5-Year FCI Unabated	5-Year FCI w/ Sinking Fund
Preschool	\$7,465,169	22,995	\$3,977,001	\$173	53.3%	48%
Abbott Elementary	\$17,129,794	52,765	\$5,287,996	\$100	30.9%	26%
Allen Elementary	\$21,227,765	65,388	\$2,054,347	\$31	9.7%	4%
Angell Elementary	\$11,968,943	36,868	\$4,342,216	\$118	36.3%	31%
Bach Elementary	\$17,235,304	53,090	\$5,856,141	\$110	34.0%	29%
Bryant Elementary	\$19,540,919	60,192	\$8,341,766	\$139	42.7%	37%
Burns Park Elementary	\$19,800,633	60,992	\$9,891,191	\$162	50.0%	45%
Carpenter Elementary	\$17,056,425	52,539	\$11,463,982	\$218	67.2%	62%
Dicken Elementary	\$14,024,258	43,199	\$7,317,970	\$169	52.2%	47%
Freeman Elementary	\$10,414,551	32,080	\$6,310,451	\$197	60.6%	55%
Eberwhite Elementary	\$20,165,857	62,117	\$8,858,382	\$143	43.9%	39%
Haisley Elementary	\$18,839,690	58,032	\$4,899,420	\$84	26.0%	21%
King Elementary	\$16,946,371	52,200	\$6,294,603	\$121	37.1%	32%
Lakewood Elementary	\$13,813,240	42,549	\$4,438,784	\$104	32.1%	27%
Lawton Elementary	\$19,156,866	59,009	\$3,852,730	\$65	20.1%	15%
Logan Elementary	\$19,468,848	59,970	\$7,966,145	\$133	40.9%	36%
Elementary	\$28,735,137	88,513	\$7,523,527	\$85	26.2%	21%
Mitchell Elementary	\$14,100,874	43,435	\$7,622,085	\$175	54.1%	49%
A2 STEAM	\$20,704,440	63,776	\$14,137,876	\$222	68.3%	63%
Pattengill Elementary	\$17,465,800	53,800	\$8,259,058	\$154	47.3%	42%
Pittsfield Elementary	\$13,515,218	41,631	\$2,372,037	\$57	17.6%	12%
Thurston Elementary	\$18,981,884	58,470	\$4,915,660	\$84	25.9%	21%
Wines Elementary	\$16,063,991	49,482	\$6,930,149	\$140	43.1%	38%
Clague Middle School	\$50,644,328	156,000	\$19,058,259	\$122	37.6%	32%
Forsythe Middle School	\$60,109,622	185,156	\$17,585,817	\$95	29.3%	24%
Scarlett Middle School	\$52,838,266	162,758	\$11,744,989	\$72	22.2%	17%
Slauson Middle School	\$61,711,412	190,090	\$15,710,719	\$83	25.5%	20%
Tappan Middle School	\$70,104,086	215,942	\$17,431,540	\$81	24.9%	20%
Pathways to Success	\$12,466,945	38,402	\$4,185,408	\$109	33.6%	28%
Huron High School	\$131,541,174	405,187	\$35,044,082	\$86	26.6%	21%
Pioneer High School	\$131,380,476	404,692	\$30,890,566	\$76	23.5%	18%
Community High School	\$18,894,230	58,200	\$7,906,750	\$136	41.8%	37%
Skyline High School	\$123,547,486	380,564	\$27,548,106	\$72	22.3%	17%
Balas Bldg	\$15,128,370	46,600	\$2,507,419	\$54	16.6%	11%
Transportation -Main Bldg	\$5,939,021	18,294	\$1,854,655	\$101	31.2%	26%
TOTAL / AVERAGE	\$1,128,127,393	3,474,977	\$344,381,827	\$116	35.8%	30.5%

5-Year Facility Condition Index (FCI)

Unabated and with Current Sinking Fund

Average Condition = CRITICAL (30%)

POOR/CRITICAL CONDITION: The buildings are in an unacceptable condition with widespread signs of deterioration. Many building systems exhibit signs of imminent failure.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	0	1
Fair	6-10%	1	0
Poor	11-30%	13	18
Critical	31-50%	15	13
Divest	50%+	6	3

FCI = $\frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$

10-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

Location	Current Replacement Value (3% Escalation)	Square Feet (SF)	10-Year Capital Needs	10-Year Capital Needs/SF	10-Year FCI Unabated	10-Year FCI w/ Sinking Fund
Preschool	\$8,446,153	22,995	\$7,619,520	\$331	90.2%	88.3%
Abbott Elementary	\$19,380,790	52,765	\$6,885,448	\$130	35.5%	34.4%
Allen Elementary	\$24,017,267	65,388	\$3,614,043	\$55	15.0%	14.0%
Angell Elementary	\$13,541,760	36,868	\$6,871,166	\$186	50.7%	49.6%
Bach Elementary	\$19,500,164	53,090	\$7,781,160	\$147	39.9%	38.8%
Bryant Elementary	\$22,108,756	60,192	\$12,116,584	\$201	54.8%	53.7%
Burns Park Elementary	\$22,402,599	60,992	\$11,879,560	\$195	53.0%	51.9%
Carpenter Elementary	\$19,297,779	52,539	\$14,844,170	\$283	76.9%	75.8%
Dicken Elementary	\$15,867,161	43,199	\$10,483,702	\$243	66.1%	65.0%
Freeman Elementary	\$11,783,109	32,080	\$6,856,298	\$214	58.2%	57.1%
Eberwhite Elementary	\$22,815,816	62,117	\$10,982,781	\$177	48.1%	47.0%
Haisley Elementary	\$21,315,380	58,032	\$6,456,722	\$111	30.3%	29.2%
King Elementary	\$19,173,263	52,200	\$8,514,854	\$163	44.4%	43.3%
Lakewood Elementary	\$15,628,414	42,549	\$7,376,130	\$173	47.2%	46.1%
Lawton Elementary	\$21,674,236	59,009	\$7,927,206	\$134	36.6%	35.5%
Logan Elementary	\$22,027,215	59,970	\$10,417,387	\$174	47.3%	46.2%
Ann Arbor Open Elementary	\$32,511,170	88,513	\$10,253,027	\$116	31.5%	30.4%
Mitchell Elementary	\$15,953,845	43,435	\$11,294,072	\$260	70.8%	69.7%
A2 STEAM	\$23,425,173	63,776	\$20,171,873	\$316	86.1%	85.0%
Pattengill Elementary	\$19,760,950	53,800	\$10,889,215	\$202	55.1%	54.0%
Pittsfield Elementary	\$15,291,229	41,631	\$4,202,732	\$101	27.5%	26.4%
Thurston Elementary	\$21,476,259	58,470	\$8,229,834	\$141	38.3%	37.2%
Wines Elementary	\$18,174,931	49,482	\$9,500,166	\$192	52.3%	51.2%
Clague Middle School	\$57,299,408	156,000	\$22,299,864	\$143	38.9%	37.8%
Forsythe Middle School	\$68,008,521	185,156	\$21,417,302	\$116	31.5%	30.4%
Scarlett Middle School	\$59,781,648	162,758	\$20,953,669	\$129	35.1%	34.0%
Slauson Middle School	\$69,820,798	190,090	\$20,238,705	\$106	29.0%	27.9%
Tappan Middle School	\$79,316,338	215,942	\$27,260,815	\$126	34.4%	33.3%
Pathways to Success	\$14,105,204	38,402	\$6,703,370	\$175	47.5%	46.4%
Huron High School	\$148,826,764	405,187	\$47,647,264	\$118	32.0%	30.9%
Pioneer High School	\$148,644,949	404,692	\$46,316,001	\$114	31.2%	30.1%
Community High School	\$21,377,087	58,200	\$10,243,712	\$176	47.9%	46.8%
Skyline High School	\$139,782,641	380,564	\$57,249,072	\$150	41.0%	39.9%
Balas Bldg	\$17,116,362	46,600	\$5,217,525	\$112	30.5%	29.4%
Transportation - Main Bldg	\$6,719,458	18,294	\$3,565,389	\$195	53.1%	52.0%
TOTAL / AVERAGE	\$1,276,372,597	3,474,977	\$504,280,338	\$169	45.9%	44.8%

10-Year Facility Condition Index (FCI)
Unabated and with Current Sinking Fund
Average Condition = CRITICAL (49%)

CRITICAL CONDITION: The buildings are in an unacceptable condition with widespread advanced signs of deterioration. Many of the building systems exhibit signs of imminent failure.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	0	0
Fair	6-10%	0	0
Poor	11-30%	3	5
Critical	31-50%	20	19
Divest	50%+	12	11

FCI =
$$\frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$$

20-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

Location	Current Replacement Value (3% Escalation)	Square Feet (SF)	20-Year Capital Needs	20-Year Capital Needs/SF	20-Year FCI Unabated	20-Year FCI w/ Sinking Fund
Preschool	\$10,811,790	22,995	\$13,443,114	\$585	124.3%	123.5%
Abbott Elementary	\$24,809,050	52,765	\$12,573,246	\$238	50.7%	49.8%
Allen Elementary	\$30,744,133	65,388	\$11,010,780	\$168	35.8%	35.0%
Angell Elementary	\$17,334,598	36,868	\$9,459,365	\$257	54.6%	53.7%
Bach Elementary	\$24,961,858	53,090	\$11,441,105	\$216	45.8%	45.0%
Bryant Elementary	\$28,301,077	60,192	\$17,064,361	\$283	60.3%	59.4%
Burns Park Elementary	\$28,677,221	60,992	\$19,885,791	\$326	69.3%	68.5%
Carpenter Elementary	\$24,702,789	52,539	\$22,376,713	\$426	90.6%	89.7%
Dicken Elementary	\$20,311,308	43,199	\$14,590,657	\$338	71.8%	71.0%
Freeman Elementary	\$15,083,376	32,080	\$10,723,546	\$745	71.1%	70.2%
Eberwhite Elementary	\$29,206,174	62,117	\$23,904,909	\$193	81.8%	81.0%
Haisley Elementary	\$27,285,488	58,032	\$11,982,515	\$206	43.9%	43.1%
King Elementary	\$24,543,398	52,200	\$13,356,948	\$256	54.4%	53.6%
Lakewood Elementary	\$20,005,691	42,549	\$11,061,960	\$260	55.3%	54.4%
Lawton Elementary	\$27,744,854	59,009	\$12,236,120	\$207	44.1%	43.2%
Logan Elementary	\$28,196,697	59,970	\$17,913,604	\$299	63.5%	62.7%
Ann Arbor Open	\$41,617,046	88,513	\$16,689,543	\$189	40.1%	39.2%
Mitchell Elementary	\$20,422,270	43,435	\$14,739,195	\$339	72.2%	71.3%
A2 STEAM	\$29,986,202	63,776	\$35,854,499	\$562	119.6%	118.7%
Pattengill Elementary	\$25,295,686	53,800	\$16,066,255	\$299	63.5%	62.7%
Pittsfield Elementary	\$19,574,065	41,631	\$9,331,580	\$224	47.7%	46.8%
Thurston Elementary	\$27,491,427	58,470	\$16,920,019	\$289	61.5%	60.7%
Wines Elementary	\$23,265,449	49,482	\$15,760,571	\$319	67.7%	66.9%
Clague Middle School	\$73,348,087	156,000	\$31,357,749	\$201	42.8%	41.9%
Forsythe Middle School	\$87,056,656	185,156	\$34,661,341	\$187	39.8%	39.0%
Scarlett Middle School	\$76,525,563	162,758	\$31,307,083	\$192	40.9%	40.1%
Slauson Middle School	\$89,376,524	190,090	\$34,172,269	\$180	38.2%	37.4%
Tappan Middle School	\$101,531,619	215,942	\$40,747,248	\$189	40.1%	39.3%
Pathways to Success	\$18,055,854	38,402	\$11,052,153	\$288	61.2%	60.4%
Huron High School	\$190,510,841	405,187	\$89,062,215	\$220	46.7%	45.9%
Pioneer High School	\$190,278,102	404,692	\$64,790,782	\$160	34.1%	33.2%
Community High School	\$27,364,478	58,200	\$14,602,608	\$251	53.4%	52.5%
Skyline High School	\$178,933,598	380,564	\$98,951,045	\$260	55.3%	54.4%
Balas Bldg	\$21,910,390	46,600	\$9,126,793	\$196	41.7%	40.8%
Transportation -Main Bldg	\$8,601,474	18,294	\$5,572,377	\$305	64.8%	63.9%
TOTAL / AVERAGE	\$1,633,864,834	3,474,977	\$823,790,059	\$281	58.5%	57.7%

20-Year Facility Condition Index (FCI)
Unabated and with Current Sinking Fund
Average Condition = DIVEST (58%)

DIVEST: Systems failure is widespread and building conditions are exceptionally poor. The buildings have reached the end of their useful life and require replacement, renewal or other significant action.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	0	0
Fair	6-10%	0	0
Poor	11-30%	0	0
Critical	31-50%	14	15
Divest	50%-100%	19	18
Divest +	100%+	2	2

FCI = $\frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$

Facility Condition Assessment - Results

2-Year Investment Needs	\$ 148,562,000
5-Year Investment Needs	\$ 344,378,000
10-Year Investment Needs	\$ 504,274,000
20-Year Investment Needs	\$ 823,780,000

What does the FCA Include and **Not** Include?

Includes	Does Not Include
Existing Infrastructure Renewals and Replacements	New Classroom Additions for Student Growth
Schools Maintained in “Good/Fair” Condition	Schools Maintained in “Good/Exceptional” Condition
Air Conditioning added all schools	Furniture Refresh
Solar Power and Geothermal to reduce Carbon Footprint where feasible	Busing Fleet Refresh
Security Enhancements	Technology Refresh
Standard Classroom Environments (code minimum)	Optimized Healthy Classroom Environments
Union Wages	Constructing New/Replacement Schools

Cost of Items ***Not*** Included in the FCA

Additional Investment Needs (Not in FCA)	Annual Cost
New Schools and Classrooms for Student Population Growth	\$ 10M/year
Furniture Refresh	\$1M/year
Busing Fleet Refresh	\$2M/year
Technology Refresh	\$5M/year
Maintaining Schools in “Good/Exceptional” Condition	\$5M/year
Annual TOTAL Additional Investment Needs	\$23M/year
20-year TOTAL Additional Investment Needs (@3% inflation)	\$ 618M

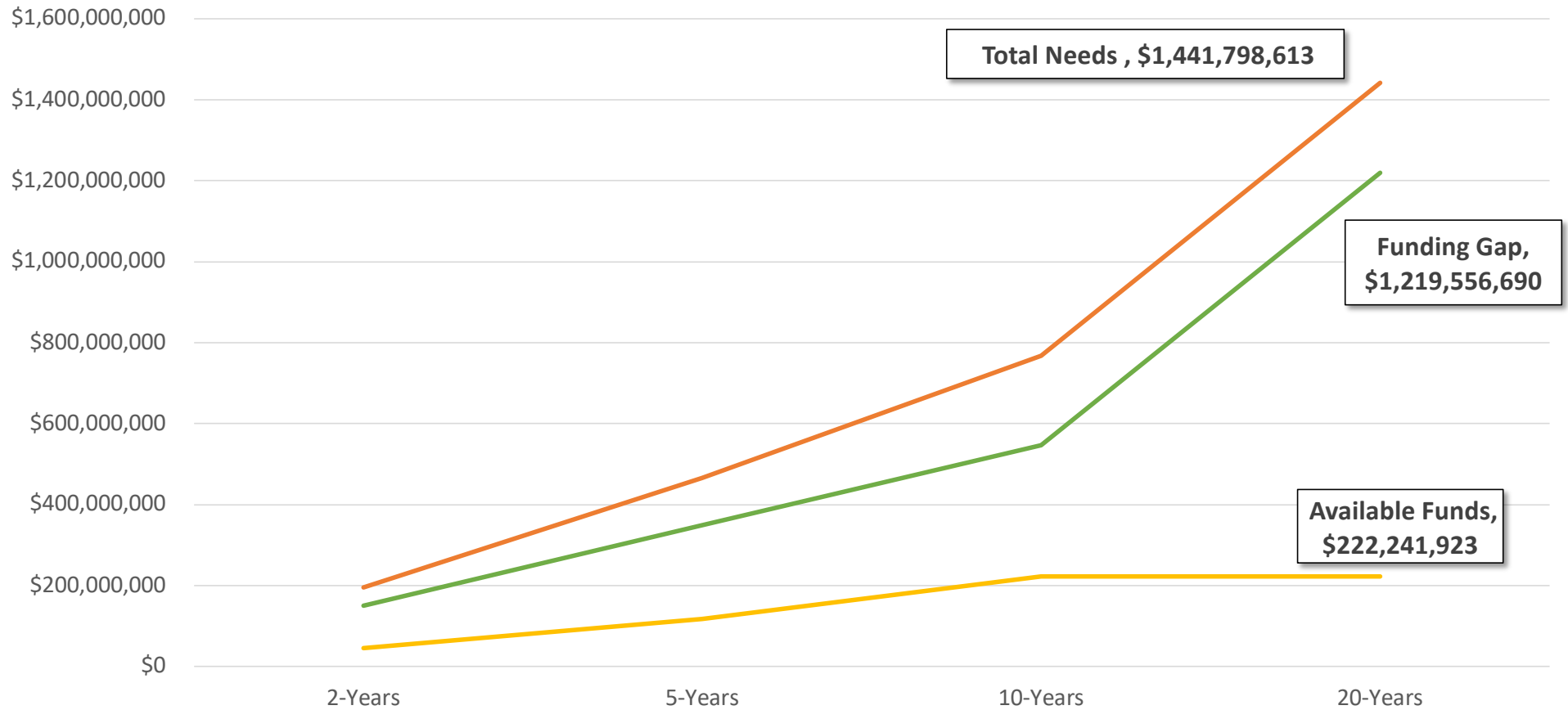
Total Capital Needs

	FCA Needs	Other Needs (Not In FCA)	Total Needs
2-Years	\$ 148,562,000	\$ 46,690,000	\$ 195,252,000
5-Years	\$ 344,378,000	\$ 122,110,124	\$ 466,488,124
10-Years	\$ 504,274,000	\$ 263,669,224	\$ 767,943,224
20-Years	\$ 823,780,000	\$ 618,018,613	\$ 1,441,798,613

Capital Needs vs. Available Funds

	Total Needs	Available Funds	Gap
2-Years	\$ 195,252,000	\$ 45,157,553	\$ 150,094,447
5-Years	\$ 466,488,124	\$ 117,320,542	\$ 349,167,582
10-Years	\$ 767,943,224	\$ 222,241,923	\$ 545,701,301
20-Years	\$ 1,441,798,613	\$ 222,241,923	\$ 1,219,556,690

Total Capital Needs vs. Available Funds and Funding Gap



Voted Bond Issues

Legislative Authority - 1351a of the Revised School Code

Voter Approval Required

Unlimited Tax General Obligations

- Voters authorize school district to issue a specific amount of bonds to pay for improvements identified in ballot proposition
- School district must levy **whatever number of mills are necessary** on the taxable property within the school district to make principal and interest payments on the bonds
- **All** of the work must be contracted
- **None** of the work can be paid to employees of the district

Capacity To Issue Additional Bonds

Debt Limitation - 15% of the total assessed valuation of the school district

AAPS Taxable Value = \$9.051B

15% Of AAPS Taxable Value = \$1.357B

AAPS Outstanding Bonds = \$0.160B

The additional bonding capacity = \$1.197B

County-Wide Debt Millages

District	Total Debt Mills
Milan	13.0000
Whitmore Lake	8.3900
Dexter	8.5000
Manchester	8.5000
Saline	8.0000
Lincoln	7.3500
Chelsea	7.0000
Ypsilanti	Two bonds 7.2200 & 13.0000
Ann Arbor	2.4500

Voted Bond Issues – cont'd

Permissible Uses of Proceeds

- Constructing new school buildings and additions to existing school buildings
- Remodeling existing school buildings
- Energy conservation improvements
- Asbestos abatement
- **Acquiring school buses (2015 Bond)**

Voted Bond Issues – cont'd

Permissible Uses of Proceeds, cont'd

- Purchasing land
- Developing and improving sites, athletic and physical education facilities, and playgrounds (2015 Bond)
- Paying the costs related to the bond issue, such as professional fees, election fees, qualification fees, insurance fees, construction fund audit fees (2012 & 2015 Bonds)
- Purchasing loose furnishings and equipment (2015 Bond)

Voted Bond Issues – cont'd

Permissible Uses of Proceeds, cont'd

- **Purchasing "technology", which is limited to: (2012 Bond)**
 - Hardware and communication devices that transmit, receive or compute information for pupil instructional purposes
 - The initial purchase of operating system software and/or customized application software, accompanying the purchase of such hardware and communication devices
 - The cost of the design and installation of the technology items listed above
- Refunding all or part of outstanding bond issues

Voted Bond Issues – cont'd

Maximum Bond Term – 30 years

- Further limited by the estimated useful life of the improvements
- Examples of estimated useful lives:
 - School buses – 6 years
 - Loose furnishings and equipment – 10 years
 - Technology – 5 years

Voted Bond Issues – cont'd

Subject to the Construction Fund Audit Requirement

- Bond proceeds may be used only for the projects described in the ballot proposition
- For each series of bonds issued, a school district shall have an independent audit of its bonding activities conducted within 120 days after the date the last certificate of substantial completion is executed for all projects financed by bond proceeds

Voted Bond Issues – cont'd

Subject to the Construction Fund Audit Requirement, cont'd

- The school district shall submit the report to Treasury:
 - Within 150 days after completion of all projects; or
 - As part of the school district's annual audit for the next ended fiscal year
 - Letter must be sent to Treasury, within 120 days after substantial completion, requesting this alternative
- Alternatively, the school district may engage an auditor to conduct the audit of bonded construction projects on an annual basis

Current Millage Payment Schedule

Levy Year	Fiscal Year End	Projected Tax Base	Growth Rate	Principal and Interest Payments	Mills Needed All Debt
2018	2019	\$ 9,051,605,246	5.19%	\$ 22,176,433	2.45
2019	2020	\$ 9,458,927,482	4.50%	\$ 22,712,749	2.40
2020	2021	\$ 9,695,400,669	2.50%	\$ 21,684,280	2.24
2021	2022	\$ 9,937,785,686	2.50%	\$ 21,660,729	2.18
2022	2023	\$ 10,186,230,328	2.50%	\$ 20,163,949	1.98
2023	2024	\$ 10,440,886,086	2.50%	\$ 20,160,672	1.93
2024	2025	\$ 10,701,908,238	2.50%	\$ 20,085,441	1.88
2025	2026	\$ 10,969,455,944	2.50%	\$ 14,892,398	1.36
2026	2027	\$ 11,243,692,343	2.50%	\$ 13,293,228	1.18
2027	2028	\$ 11,524,784,651	2.50%	\$ 13,194,624	1.14
2028	2029	\$ 11,812,904,268	2.50%	\$ 13,157,967	1.11
2029	2030	\$ 12,108,226,874	2.50%	\$ -	0.00
				\$ 203,182,470	

Ann Arbor Public Schools All Taxable Values

	Parcels	Taxable Value		Avg. Taxable Value	Per Cent of Tax Base
Ann Arbor City	35,905	\$	5,790,833,612	\$ 161,282	64.00%
Ann Arbor Township	2,050	\$	534,327,422	\$ 260,648	5.91%
Lodi Township	564	\$	88,776,387	\$ 157,405	0.98%
Northfield Township	142	\$	19,287,034	\$ 135,824	0.21%
Pittsfield Township	9,291	\$	1,285,006,737	\$ 138,307	14.20%
Salem Township	111	\$	21,164,145	\$ 190,668	0.23%
Scio Township	5,596	\$	989,496,461	\$ 176,822	10.94%
Superior Township	1,453	\$	306,632,773	\$ 211,034	3.39%
Webster Township	102	\$	13,119,089	\$ 128,619	0.14%
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TOTALS	55,214	\$	9,048,643,660	\$ 163,883	100.00%

Ann Arbor Public Schools Residential Values 2016-17

	Parcels	Taxable Values		Avg. Taxable Value	Per Cent of Tax Base
Ann Arbor City	27,887	\$	3,341,671,323	\$ 119,829	45.14%
Ann Arbor Township	1,658	\$	313,342,104	\$ 188,988	4.23%
Lodi Township	2,326	\$	349,439,632	\$ 150,232	4.72%
Northfield Township	3,974	\$	261,572,654	\$ 65,821	3.53%
Pittsfield Township	10,328	\$	1,133,828,496	\$ 109,782	15.32%
Salem Township	2,951	\$	277,810,091	\$ 94,141	3.75%
Scio Township	5,737	\$	868,931,757	\$ 151,461	11.74%
Superior Township	5,511	\$	501,798,594	\$ 91,054	6.78%
Webster Township	2,688	\$	353,869,824	\$ 131,648	4.78%
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TOTALS	63,060	\$	7,402,264,475	\$ 117,384	100.00%

Additional Cost Of Options from Current Debt Millage Per Year

	Taxable Value		Taxable Value		Taxable Value		All Properties Taxable Value	Residential Taxable Value
	\$	100,000	\$	150,000	\$	200,000	\$ 163,883	\$ 117,384
Option 1 \$533M	\$	-	\$	-	\$	-	\$ -	\$ -
Option 2 \$750M	\$	75	\$	113	\$	150	\$ 123	\$ 88
Option 3 \$1B	\$	170	\$	255	\$	340	\$ 279	\$ 200

SUMMARY OF PROPOSED BONDING

Option 1 - \$533M

No Change In Current Millage Rate

Issuance Year	Bond Amount	Bond Term Estimated	Total Interest Cost	Estimated Interest Rate
Series 2019	\$16,000,000	19.88 yrs.	\$ 5,570,231	3.50%
Series 2022	\$61,500,000	20.00 yrs.	\$ 28,145,000	4.00%
Series 2025	\$140,500,000	20.00 yrs.	\$ 79,013,025	4.25%
Series 2029	\$315,000,000	21.00 yrs.	\$233,317,800	4.50%
Total	\$533,000,000		\$346,046,056	

First Year Millage	Average Millage	Maximum Total Mills all Debt	Increase in Debt Levy
.06	1.88	2.45	0.00

The Pro is that the millage rate remains the same, no increase necessary

The Cons are not enough funds are generated at the beginning in order to build new schools or complete all major renovations. Funds are only sufficient to maintain a Fair FCI learning environment at our schools

Recommend May 2019 Election

SUMMARY OF PROPOSED BONDING

Option 2 - \$750M

0.75 Additional Mill To Current Millage

Issuance Year	Bond Amount	Bond Term Estimated	Total Interest Cost	Estimated Interest Rate
Series 2019	\$50,000,000	19.88 yrs.	\$ 13,339,686	3.50%
Series 2022	\$105,000,000	20.00 yrs.	\$ 44,470,000	4.00%
Series 2025	\$210,500,000	20.00 yrs.	\$124,670,350	4.25%
Series 2029	\$385,000,000	21.00 yrs.	\$302,167,350	4.50%
Total	\$750,000,000		\$484,656,386	

First Year Millage	Average Millage	Maximum Total Mills all Debt	Increase in Debt Levy
.75	2.59	3.20	0.75

The Pros are that enough funds are generated at the beginning to build new schools and to maintain Good FCI learning environment at our schools

The Con is that the millage rate needed is increased by .75 Mills from current millage

Recommend November 2019 Election due to time needed to campaign for an increase

SUMMARY OF PROPOSED BONDING

Option 3 - \$1B

1.70 Additional Mill To Current Millage

Issuance Year	Bond Amount	Bond Term Estimated	Total Interest Cost	Estimated Interest Rate
Series 2019	\$130,000,000	19.88 yrs.	\$ 40,358,364	3.50%
Series 2022	\$145,000,000	20.00 yrs.	\$ 64,372,800	4.00%
Series 2025	\$250,500,000	20.00 yrs.	\$146,845,150	4.25%
Series 2029	\$475,000,000	21.00 yrs.	\$372,857,625	4.50%
Total	\$1,000,000,000		\$624,433,939	

First Year Millage	Average Millage	Maximum Total Mills all Debt	Increase in Debt Levy
1.70	3.47	4.15	1.70

The Pros are that enough funds are generated at the beginning to rapidly renew our schools and to maintain Exceptional FCI learning environment at our schools which will be of the highest quality

The Con is that the millage needed is increased by 1.70 Mills from current millage

Recommend November 2019 Election due to time needed to campaign for an increase

Proposed Options for Bonding

Prospective Timeline:

- May 2019 election
- First series issued June 2019

Calculation Parameters:

- Taxable Value is expected to grow 4.50% for 2019-20 and 2.50% thereafter

Timeline for a May 7, 2019 Election

- **January 30, 2019 – AAPS BOE to Adopt Resolution placing ballot on May 2019 Election**
- **February 12, 2019 by 4:00 PM – AAPS BOE To Certify Text of Ballot Proposal to County Clerk**
- By April 1, 2019 – Clerk Publishes Notice of Last Day of Registration in Newspaper of General Circulation in School District and at least two Public Places in each Election Precinct in School District
- April 8, 2019 – Last Day Clerk receives Registrations
- By April 30, 2019 – Clerk must Publish Notice of Election in Newspaper of General Circulation in the School District once and at least two Public Places in each Election Precinct in School District
- May 4, 2019 – Last Day for Absentee Voters Application
- May 7, 2019 – Conduct Election, Polls open 7:00 AM to 8:00 PM

Timeline for a May 7, 2019 Election, cont'd

- By May 12, 2019 – County Board of Canvassers shall meet to Canvass Election Results
- By May 21, 2019 – County Board of Canvassers shall complete its Canvass and Adopt a Resolution Canvassing the Election Results
- Immediately after Form is Certified – Certificates of the Determination Results should be Filed to 1) AAPS BOE 2) County Treasurer 3) WISD 4) Counsel

What could we create?



Bloomfield Hills High School

Bloomfield Hills, MI – Stantec Architects



Dexter High School

Dexter, MI – Kingscott Architects



Discovery Elementary

Arlington, VA – VMDO Architects

Net-Zero Energy



Cherry Crest Elementary

Bellevue, WA – NAC Architects

Nature Focused Design



DISTRICT OF COLUMBIA PUBLIC SCHOOLS

MODERNIZATION PROGRAM

- Over \$4 Billion has been invested to modernize school facilities in the District since the early 2000s.
- Between \$300-\$400M is spent annually on Capital construction projects.
- By 2025 all schools will have received a significant Capital investment.



Value of Modernized Schools – Washington DC Study

STUDENTS ARE...



25% more proud to go to school in a modernized building

AND



16% happier,
18% calmer,
17% healthier, and
16% more ready to learn
in modernized school classrooms

IN MODERNIZED SCHOOLS

STUDENTS ARE...

9% more satisfied with thermal comfort



14% more satisfied with air quality



18% more satisfied with acoustics



13% more satisfied with daylight



FACULTY ARE...

40% more satisfied with thermal comfort

45% more satisfied with air quality

30% more satisfied with acoustics

45% more satisfied with daylight

Perkin Eastman – *Investing in Our Future* – Washington DC School Modernization Study

Modernized Washington DC School



Perkin Eastman – *Investing in Our Future* – Washington DC School Modernization Study

Modernized Washington DC School



Perkin Eastman – *Investing in Our Future* – Washington DC School Modernization Study

Modernized Washington DC Schools



Perkin Eastman – *Investing in Our Future* – Washington DC School Modernization Study

Baldwin Elementary and Intermediate School

Manassa, Virginia – Moseley Architects



Campus International School (K-8)

Cleveland, OH – TDA Architects/Perkins+Will



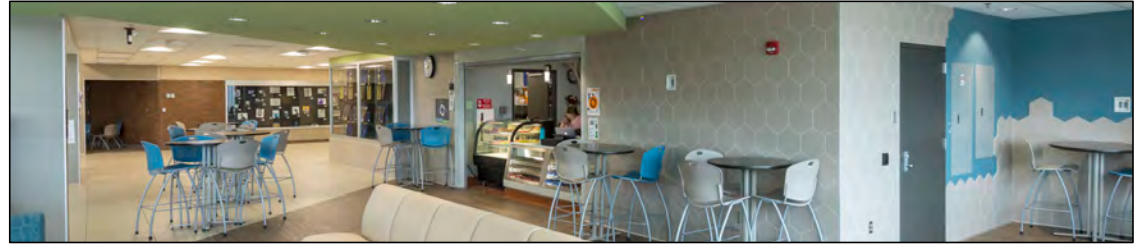
The New School

Fayetteville, AK– Hight Jackson Architects



Edina High School

Edina, MN – Wold Architects and Engineers



Rio Vista Elementary

Pico Rivera, CA – Joe LoBusso Architects



Exceptional⁺

ANN ARBOR PUBLIC SCHOOLS

Lead. Care. Inspire.

