Manassas City Public Schools

Schools Facility Plan 2020-2030

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INTRODUCTION

In March of 2015 the Manassas City Public Schools contracted with Citygate GIS to update the School Division's facilities master plan and support the development of a Capital Improvement Program (CIP). A previous master plan completed in 2012 resulted in the construction of a new Baldwin Elementary School to replace the original Baldwin Elementary School that is now 54 years old. The new Baldwin facility is being constructed as a combination elementary and intermediate school employing the "school within a school" concept to provide not only a new elementary facility but also additional capacity to relieve overcrowding at the intermediate school level. The previous plan also resulted in a consolidation of central administrative offices into a leased space within the city.

Since the previous plan was adopted, significant changes have taken place that will affect the School Division's planning for future facilities. Enrollment, population diversity, and the number of births to city residents have increased. A recovering economy has generated more new residential construction and plans are being formulated for redevelopment of existing commercial and residential areas within the city's boundaries. There will be a need for additional space, especially at the elementary level, as enrollment increases and more spaces are needed for programs such as special education, early childhood education, and students with limited English proficiency (ESOL). Since the 2010-11 school year, enrollment in the Manassas City Public Schools has increased by over 600 students or roughly 9%, the vast majority of this growth has been at the elementary school level. The School Division is currently using 13 portable classrooms to help accommodate the additional students. As the increase in elementary school enrollment progresses through the grades, enrollments will increase at the intermediate, middle, and high school levels with a significant amount of overcrowding projected for the high school in the later years of the facilities plan.

SCHOOL FACILITY PLAN

The Manassas City Public Schools School Facility Plan, as outlined in this document, is a 10 year plan, which identifies capital projects and equipment purchases and provides a planning schedule for the years 2020 to 2030. The plan will be a support document used by the school district to develop and forecast annual budgets and communicate major projects and their planning process with the public and city government.

BENEFITS

The Facility Plan provides many benefits including:

- Allows for a systematic evaluation of all potential projects at the same time.
- The ability to consolidate projects and reduce costs.
- Serves as a public relations and economic development tool.
- A focus on preserving a governmental entity's infrastructure while ensuring the efficient use of public funds.

- An opportunity to foster cooperation among departments and an ability to inform other units of government of the entity's priorities.

OVERALL PROCESS

The development of the Facility Plan for the school district will involve a review of the current plan, identification of facility impacts such as ongoing maintenance programs and improvements, new school construction and planned renovations. The facility plan will also include input from the enrollment projection analysis as well as a review of the school district's instructional plans.

SPECIFIC STEPS

1. Community Meeting April 21st, 2015
2. Evaluated Previously Approved, Unimplemented or Incomplete Projects
3. Multiple Site Visits to ALL Schools
4. Met With City Planners
5. Meetings held with Principals and Manassas City Public School Staff
6. Solicited, Compiled, and Evaluated New Project Requests
7. Updated Projections
8. Updated Capacities
9. Facilities Reviewed
10. Developed Grade Reconfiguration Scenarios
11. Updated Enrollment Projections
12. Prioritized Projects
13. Created CIP based on enrollment projection, facility needs and instructional requirements.
14. Presented CIP to the School District
15. Adopted CIP
16. Monitored and Managed Approved Projects within the CIP
17. Updated Existing/Ongoing Capital Programs

PLANNING FOR THE FUTURE: 2020-2030

ENROLLMENT PROJECTION

The process of developing the enrollment projections for Manassas City Public Schools included a review of historical membership trends, analyses of actual and projected population change, past and future residential construction, live birth data and the relationship of live births to Kindergarten enrollment. The projection model utilizes a cohort component methodology that considers not only grade progression ratios but also the impact of past and future rates of construction, changes in special programs, and demographic changes in the Manassas community.

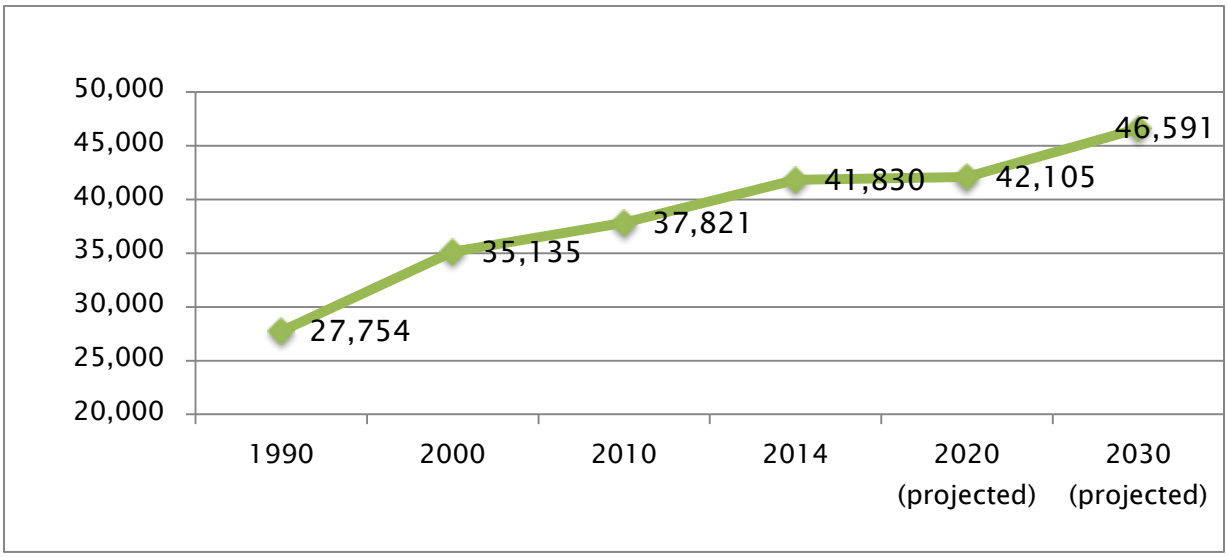
Enrollment in the Manassas City Public Schools has increased by 1,080 students or approximately 16.6% since the 2006-07 school year. Based on the projection methodology described above, a continued enrollment increase is expected to occur.

The enrollment projections contained in this report are based upon the best information available at the time. Changes in the economy, employment, immigration and numerous other factors can and will affect the accuracy of these projections. The School Division is encouraged to pay close attention to the variables that affect public school enrollment and to update these projections on a regular basis.

CITY DEMOGRAPHICS

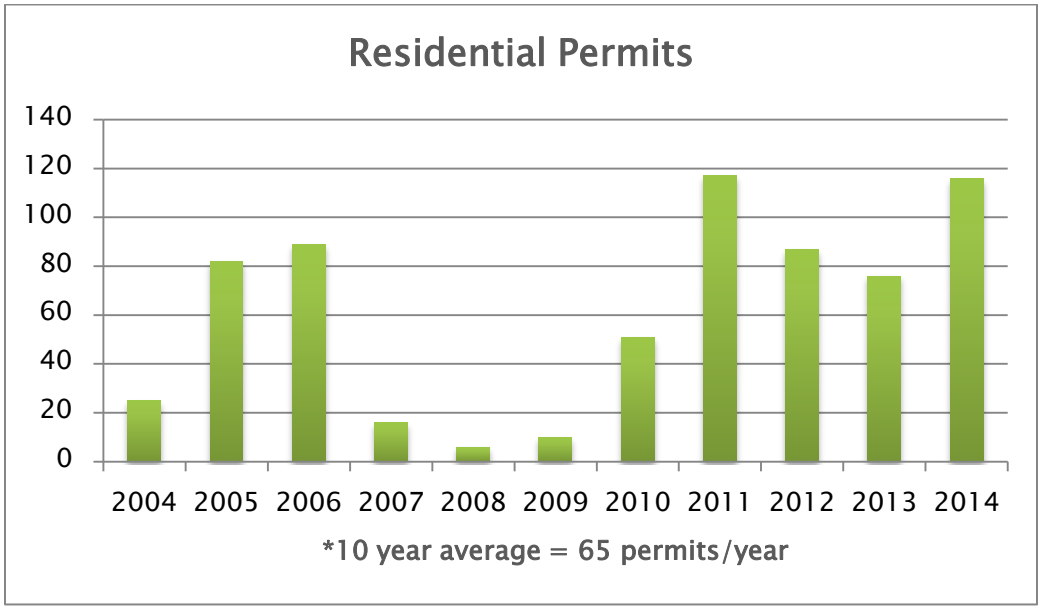
The United States Census Bureau estimates total population in the City of Manassas grew from 37,821 residents in the year 2010 to 41,705 residents in 2014, an increase of 3,884 or approximately 10.25%. During the same time period, Hispanic population in Manassas City grew from 11,876 to 14,179 – an increase of 2,303 accounting for roughly 34% of the overall population and about 59.3% of the overall population growth. Virginia Labor Market Information projections indicate continued growth in the City's population is expected with total population estimated to reach 42,105 by the year 2020 and 46,591 by 2030. The Hispanic portion of the population is projected to continue growing, accounting for 15,160 residents or roughly 36% of total population in the year 2020 and 18,958 residents or about 40.7% of total population 2030.

School age population is also projected to grow, increasing from 8,856 persons in 2010 to 9,113 in 2020 and 9,942 by the year 2030. Likewise, the population under 5 years of age is projected to increase from 3,194 in 2010 to 3,392 in 2020 and 3,779 in 2030.



CITY HOUSING DATA

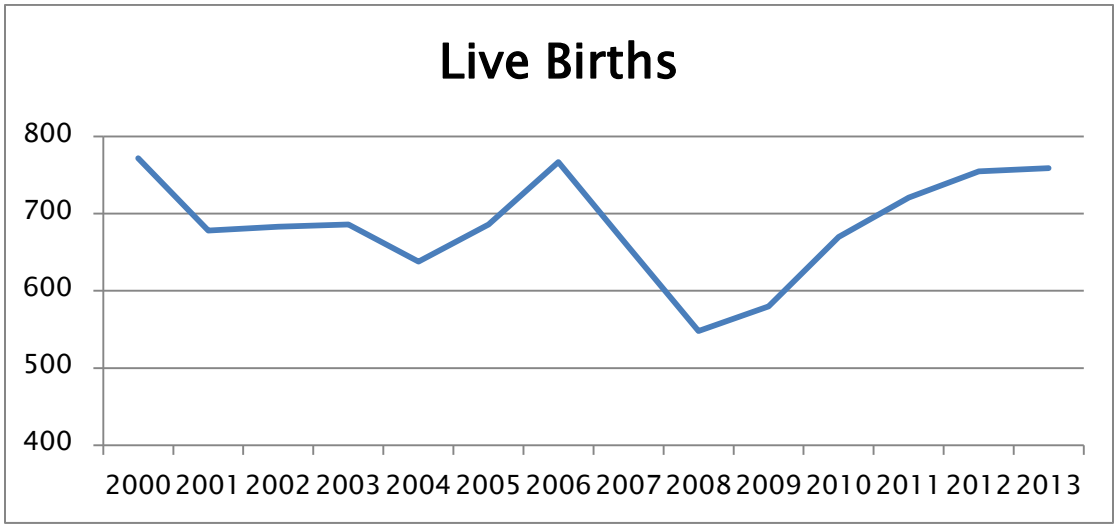
New housing development and potential redevelopment of existing residential and commercial spaces in Manassas City were reviewed with the city planning staff to determine the potential impact on school enrollment. The table below illustrates the number of residential building permits issued in the city over the past 10 years. The number of residential permits has risen significantly since the recession when a low of just 6 permits were issued in 2008. By 2011, permits issued totaled 117 and by 2014 issued permits totaled 116. Future plans indicate there is enough pending activity to support residential development at a rate equal to the average of the past 10 years. Potential redevelopment of currently low cost and affordable housing areas in the city could have a significant impact on school enrollment. MCPS staff should continue to monitor potential changes of this nature.



LIVE BIRTH DATA

Live birth data is helpful in projecting future kindergarten enrollment. The data provide a look at overall trends and assist in planning for future enrollment changes. Live birth data is used to calculate the percentage of births in a specific jurisdiction that attend Kindergarten in that jurisdiction five years later. This birth to Kindergarten progression ratio can be applied to recent births to estimate future Kindergarten enrollments. Live birth data is reported by the residence of the mother rather than were the birth actually took place. For example if a mother living in Manassas City gives birth in Arlington the birth will be reported with Manassas City birth data. It is important to note the trend in these ratios. The most recent five years show significantly higher ratio's than in the earlier years, however the ratios did decline slightly in the 2014-15 and 2015-16 school years. The following charts depict 15 years of historical birth data for Manassas City and ratios of births to Kindergarten five years later for school years 2001-02 through 2015-16.

YEAR	BIRTHS	YEAR	Kindergartner Membership	RATIO
2001	678	2006	535	0.789
2002	683	2007	493	0.722
2003	686	2008	505	0.736
2004	638	2009	539	0.845
2005	686	2010	625	0.911
2006	767	2011	610	0.795
2007	657	2012	620	0.944
2008	548	2013	620	1.131
2009	580	2014	613	1.057
2010	670	2015	557	0.831



SURVIVAL RATIOS

The following table depicts the ten-year average survival ratios for Manassas City Public Schools. Survival ratios indicate the percentage of students that advance from one grade level to the next higher grade level the following school year. A survival ratio greater than 100% indicates enrollment grew as the cohort advanced. A ratio less than 100% indicates a membership declined as the cohort progressed to the next grade level.

Grades	Average	Standard Deviation
Birth – K	86.70%	13.5
K-1	101.80%	2.33
1-2	97.40%	2.57
2-3	96.70%	2.22
3-4	100.10%	3.62
4-5	100.7	4.42
5-6	102.00%	3.62
6-7	98.70%	2.2
7-8	98.90%	2.12
8-9	120.20%	4.98
9-10	85.20%	9.06
10-11	95.80%	3.76
11-12	93.90%	7.36

Note: The unusually high percentage for grades 8-9 reflects both students being retained at the ninth grade level because they are lacking sufficient credits to classified as a 10th grade students and entries to the public school system at the 9th grade level of students previously home schooled or attending private or parochial schools.

MANASSAS CITY PUBLIC SCHOOLS HISTORICAL ENROLLMENT

The following table depicts enrollment in Manassas City Public Schools over the past ten years. As mentioned previously enrollment has grown by 1,080 students or 16.6% during this time period. Enrollment for the 2015-16 school year was 7,575 students. Note that all historical and projected enrollments in this report are for the end of September of the given school year.

DATA CHART – Manassas City Public Schools Historical Enrollment by Grade

GRADE LEVEL	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
Special Programs	80	87	129	197	191	203	215	215	213	292
K	535	493	516	539	625	610	620	620	613	557
1	503	555	516	524	547	635	610	634	617	644
2	546	483	528	513	533	524	605	602	614	600
3	511	517	478	510	512	528	498	561	583	596
4	476	518	512	493	505	522	509	486	577	595
5	478	439	504	526	495	516	537	510	515	578
6	509	483	480	523	516	499	521	530	541	532
7	459	495	485	491	520	513	501	517	502	522
8	495	454	501	494	490	519	498	474	512	500
9	607	622	553	623	586	550	598	577	597	603
10	448	476	507	480	523	533	519	543	563	518
11	435	420	475	487	476	513	510	484	520	559
12	413	432	382	424	417	439	479	465	475	479
TOTAL	6495	6474	6566	6824	6936	7104	7220	7218	7442	7575

Source: Manassas City Public Schools

DATA CHART – Manassas City Public Schools Historical Enrollment by School Level

SCHOOL LEVEL	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
Special Programs	80	87	129	197	191	203	215	215	213	292
Elementary K–4	2571	2566	2550	2579	2722	2819	2842	2903	3004	2992
Intermediate 5–6	987	922	984	1049	1011	1015	1058	1040	1056	1110
Middle 7–8	954	949	986	985	1010	1032	999	991	1014	1022
High 9–12	1903	1950	1917	2014	2002	2035	2106	2069	2155	2159
Total	6495	6474	6566	6824	6936	7104	7220	7218	7442	7575

Source: Manassas City Public Schools

MANASSAS CITY PUBLIC SCHOOLS PROJECTED ENROLLMENT – MID RANGE

Using the Mid-Range projection model, student enrollment in Manassas City Public Schools is projected to increase from 7,575 students in 2015–16 to 9,315 students in 2029–30, an increase of 1,740 students or 23.0%.

Data Chart – Manassas City Public Schools Projected Enrollment Mid-Range

GRADE	2016 -17	2017 -18	2018 -19	2019 -20	2020 -21	2021 -22	2022 -23	2023 -24	2024 -25	2025 -26	2026 -27	2027 -28	2028 -29	2029 -30
Pre-School	37	37	37	37	37	37	37	37	37	37	37	37	37	37
Sp/Ed	74	75	77	78	79	79	79	79	80	81	82	82	83	84
VPI	216	216	216	216	216	216	216	216	216	216	216	216	216	216
K	673	689	676	673	675	681	687	693	699	705	711	717	724	731
1	650	684	702	688	685	687	693	700	706	712	718	724	730	737
2	608	634	666	683	669	666	668	674	681	687	693	698	704	710
3	578	585	610	642	659	645	642	644	650	657	662	668	673	679
4	592	578	585	610	642	659	645	642	644	650	657	662	668	673
5	589	598	584	591	616	648	666	651	648	650	657	664	669	675
6	596	602	612	597	604	630	663	681	666	663	665	672	679	684
7	522	590	596	606	591	598	624	657	675	660	657	659	666	673
8	531	517	584	590	600	585	592	618	650	668	653	650	652	659
9	596	637	620	701	708	720	702	710	742	780	802	784	780	782
10	539	523	559	544	615	621	632	616	623	651	684	704	688	684
11	505	520	504	539	525	593	599	610	594	601	628	660	679	664
12	502	467	480	466	498	485	548	553	564	549	555	580	610	627
TOTAL	7808	7952	8108	8261	8419	8550	8693	8781	8875	8967	9077	9177	9258	9315

Data Chart – Manassas City Public Schools Projected Enrollment by School Level Mid-Range

LEVEL	2016 -17	2017 -18	2018 -19	2019 -20	2020 -21	2021 -22	2022 -23	2023 -24	2024 -25	2025 -26	2026 -27	2027 -28	2028 -29	2029 -30
Pre-K-4	3428	3498	3569	3627	3662	3670	3667	3685	3713	3745	3776	3804	3835	3867
5-6	1185	1200	1196	1188	1220	1278	1329	1332	1314	1313	1322	1336	1348	1359
7-8	1053	1107	1180	1196	1191	1183	1216	1275	1325	1328	1310	1309	1318	1332
9-12	2142	2147	2163	2250	2346	2419	2481	2489	2523	2581	2669	2728	2757	2757
TOTAL	7808	7952	8108	8261	8419	8550	8693	8781	8875	8967	9077	9177	9258	9315

MANASSAS CITY PUBLIC SCHOOLS PROJECTED ENROLLMENT LOW-RANGE

Using the Low-Range projection model, student enrollment in Manassas City Public Schools is projected to increase from 7,575 students in 2015-16 to 8,802 students in 2029-30, an increase of 1,227 students or 16.2%.

Data Chart – Manassas City Public Schools Projected Enrollment Low-Range

GRADE	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Pre-School	37	37	37	37	37	37	37	37	37	37	37	37	37	37
Sp/Ed	70	70	71	72	74	76	76	77	78	78	79	80	80	81
VPI	216	216	216	216	216	216	216	216	216	216	216	216	216	216
K	611	640	644	657	659	665	671	677	683	689	695	701	707	713
1	575	619	648	652	666	668	674	680	686	692	698	704	710	716
2	602	558	600	629	632	646	648	654	660	665	671	677	683	689
3	577	581	539	579	607	610	623	625	631	637	642	648	653	659
4	587	572	576	534	574	601	604	617	619	625	631	636	642	647
5	582	591	576	580	538	578	606	609	622	624	630	636	641	647
6	588	589	598	583	587	545	585	614	617	630	632	638	644	649
7	517	583	584	593	578	582	540	580	609	612	625	627	633	638
8	527	509	573	574	583	569	572	531	570	599	602	615	617	623
9	603	643	621	700	701	712	695	698	648	696	731	735	751	753
10	520	502	535	517	583	584	593	579	581	539	579	609	612	625
11	464	485	468	499	482	544	545	553	540	542	503	540	568	571
12	497	440	460	443	473	457	515	516	524	512	514	477	512	538
Total	7573	7635	7746	7865	7990	8090	8200	8263	8321	8393	8485	8576	8706	8802

Data Chart – Manassas City Public Schools Projected Enrollment by School Level Low-Range

LEVEL	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Pre-K-4	3275	3293	3331	3376	3465	3519	3549	3583	3610	3639	3669	3699	3728	3758
5-6	1170	1180	1174	1163	1125	1123	1191	1223	1239	1254	1262	1274	1285	1296
7-8	1044	1092	1157	1167	1161	1151	1112	1111	1179	1211	1227	1242	1250	1261
9-12	2084	2070	2084	2159	2239	2297	2348	2346	2293	2289	2327	2361	2443	2487
TOTAL	7573	7635	7746	7865	7990	8090	8200	8263	8321	8393	8485	8576	8706	8802

MANASSAS CITY PUBLIC SCHOOLS PROJECTED ENROLLMENT HIGH-RANGE

Using the High-Range projection model, student enrollment in Manassas City Public Schools is projected to increase from 7,575 students in 2015-16 to 10,067 students in 2029-30, an increase of 2,492 students or 32.9%.

Data Chart – Manassas City Public Schools Projected Enrollment High-Range

GRADE	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Pre-School	37	37	37	37	37	37	37	37	37	37	37	37	37	37
Sp/Ed	74	76	79	82	84	85	86	87	88	88	89	90	91	92
VPI	216	216	216	216	216	216	216	216	216	216	216	216	216	216

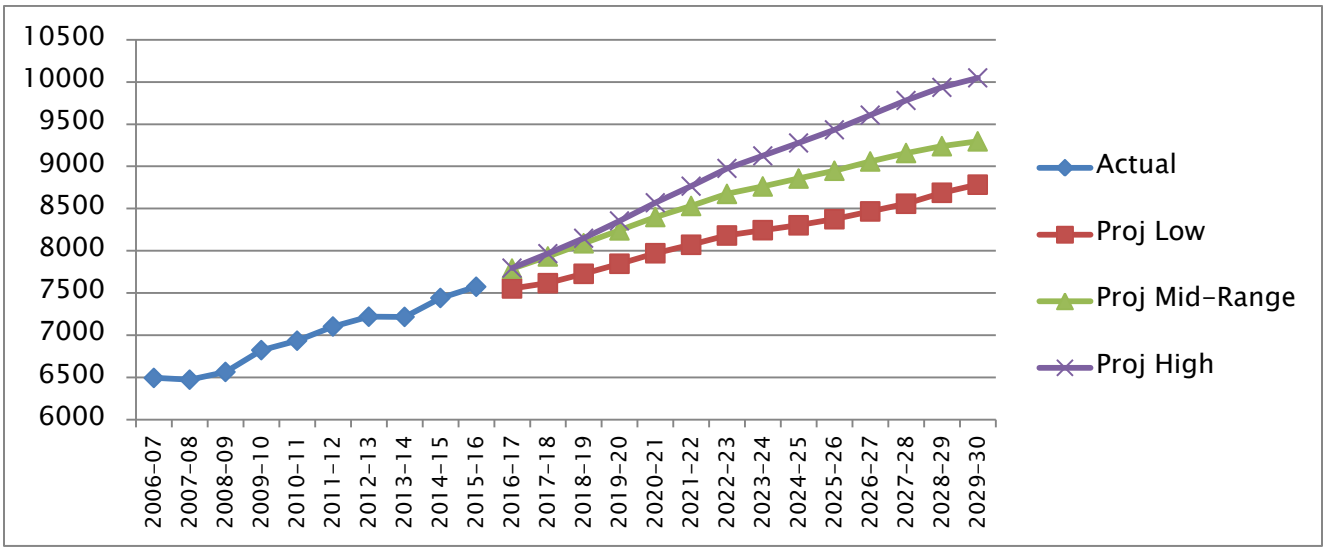
K	688	720	724	739	741	748	755	762	769	776	783	790	797	804
1	645	695	727	731	746	748	755	762	769	776	783	791	798	805
2	604	629	678	709	713	728	730	737	743	750	757	764	772	779
3	581	583	607	655	685	689	703	705	712	718	724	731	738	746
4	591	579	581	605	652	682	686	700	702	709	715	721	728	735
5	594	605	592	594	619	667	698	702	716	718	725	731	738	745
6	595	599	610	597	599	625	673	704	708	722	724	731	738	745
7	513	587	591	602	589	591	616	664	694	698	712	714	721	728
8	523	503	576	580	590	578	580	604	651	681	685	698	700	707
9	578	614	591	677	681	693	679	681	710	765	800	805	820	822
10	550	528	561	540	619	622	633	620	622	649	699	731	736	749
11	526	530	509	540	520	596	599	610	597	599	625	673	704	709
12	499	484	488	469	497	479	549	552	562	550	552	576	620	648
Total	7814	7985	8167	8373	8588	8784	8995	9143	9296	9452	9626	9799	9954	10067

Data Chart – Manassas City Public Schools Projected Enrollment by School Level High-Range

LEVEL	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Pre-K-4	3386	3436	3535	3649	3774	3874	3933	3968	4006	4036	4070	4104	4140	4177	4214
5-6	1132	1189	1204	1202	1191	1218	1292	1371	1406	1424	1440	1449	1462	1476	1490
7-8	1031	1036	1090	1167	1182	1179	1169	1196	1268	1345	1379	1397	1412	1421	1435
9-12	2227	2153	2156	2149	2226	2317	2390	2460	2463	2491	2563	2676	2785	2880	2928
TOTAL	7776	7814	7985	8167	8373	8588	8784	8995	9143	9296	9452	9626	9799	9954	10067

CONCLUSION

Manassas City Public Schools are expected to experience significant enrollment growth over the study period. It is likely this growth will continue to be ethnically diverse with much of it coming from areas of affordable multifamily housing. New residential development will also generate additional students for the School Division. The unit type and cost of this new development will impact the number of students it generates. Changes to the existing housing inventory (for example, redevelopment of currently affordable housing areas) could impact these projections significantly. The enrollment projections contained in this report are based upon the best information available at the time. Changes in the economy, employment, immigration and numerous other factors can and will affect the accuracy of these projections. The School Division is encouraged to pay close attention to the variables that affect public school enrollment and to update these projections on a regular basis.



CAPACITY ANALYSIS

Understanding and accurately capturing school capacity has become increasingly important as the Manassas City Public Schools attempt to meet the challenge of increasing enrollment. An accurate assessment of how many students a school can accommodate will allow MCPS to quickly assess appropriate program placement and develop student accommodation solutions. School capacity assessments help to ensure classroom spaces meet the needs of multiple and/or changing instructional programs. In addition to current programmatic and enrollment challenges, accurate capacity assessments are necessary to formulate long-term facility plans.

SCHOOL CAPACITY—INFORMATION AND ASSESSMENT

It is important to note that school capacity is measured differently depending upon the school type. For instance, elementary schools are calculated based upon the number of core classrooms and self-contained special education rooms. Intermediate schools are calculated based on the number of core classrooms including support areas such as gyms, art rooms and music rooms and include an appropriate utilization factor. Middle and high school capacity is far more complex than that in elementary and intermediate schools. The capacity of these schools is based upon the required core programs, the various elective options available and appropriate utilization factors for both core and elective areas.

The additional temporary capacity provided by classroom trailers is not included in the school capacity calculations.

ELEMENTARY SCHOOL (PREK-4) CAPACITY

The elementary school capacity model attempts to standardize the support space available in each school. One classroom or instructional area has been allocated for each of the following uses: art, computer lab, music, and a science/STEM lab. The use of laptop computer carts

allows technology to be brought to the classroom thus reducing the need for classrooms to be dedicated to computer labs. Rooms previously used as computer labs are now included in the inventory of available classrooms and assigned a capacity. The requirements for resource space for intervention teachers, ESOL, speech, reading, counseling, and various other small group activities were reviewed at each school to make sure appropriate space was provided. These resource areas were not assigned a capacity. The remaining classrooms were assigned a capacity based upon the typical staffing ratio of 23:1 for grades K-3 (It is noted that 4th grade classes have a slightly higher staffing ratio and some schools have a slightly lower K-3 ratio. After reviewing these situations, it was determined that an overall ratio of 23:1 would provide a reasonable average for the capacity calculation.). Likewise, classrooms used for special education were assigned a capacity appropriate to the specific self-contained special education program(s) accommodated in the building. Multiplying the number of classrooms by the appropriate pupil/teacher ratio provides the capacity for each facility.

ELEMENTARY SCHOOLS:

- Standard number of rooms for computer labs, STEM, music and art
- Utilized less than full size rooms for speech, reading and special education where appropriate
- Included space for expansion of VPI program
- Assigned appropriate capacity to VPI and Special Education classrooms

The Manassas City Public Schools also offers Pre-Kindergarten and VPI services to approximately 200 students. The capacity of classrooms (at the appropriate pupil/teacher ratio) used for these programs is included in the elementary school capacities.

DATA CHART - Manassas City Public Schools Comparison of Updated and Old Elementary Capacities

SCHOOL	UPDATED CAPACITY	OLD CAPACITY	CHANGE
New Baldwin	706	585	121
Dean	727	653	74
Haydon	667	585	82
Round	669	585	84
Weems	713	585	128
Total	**3482**	**2993**	**489**

INTERMEDIATE SCHOOL (5-6) CAPACITY

Like the elementary capacity model, the intermediate school model standardizes the number of classrooms allocated for computer labs. In this case, one lab is allowed for each grade level (or two labs total). The intermediate program scheduling is somewhat different than that of an elementary school in that intermediate level students change classes, on a limited basis, for special programs and electives. The intermediate capacity model assigns capacity to all teaching stations including the music rooms, art rooms, and gym. The total number of regular teaching stations is then multiplied by the current staffing ratio of 28:1 to calculate the gross capacity. A utilization factor that recognizes the scheduling inefficiency of students changing classes is applied to the gross capacity to calculate the net capacity of the building. At the intermediate school level the utilization factor is 75% for all regular classes. The capacity of classrooms used for self-contained special education programs is calculated based upon the appropriate pupil/teacher ratio for the specific special education program (with no utilization reduction) and added to the net capacity to attain the total program capacity for the intermediate school building.

INTERMEDIATE SCHOOLS:

- Standard number of rooms for computer labs, STEM, music and art.
- Utilized less than full size rooms for speech, reading, and special education where appropriate.
- Used a staffing ratio of 28
- Applied a utilization factor of 75%

DATA CHART – Manassas City Public Schools Comparison of Updated and Old Intermediate Capacity

SCHOOL	UPDATED CAPACITY	OLD CAPACITY	CHANGE
Mayfield	1104	1043	61

Note: An additional 336 student intermediate capacity will be available at Baldwin when the new building opens in 2016-17

MIDDLE SCHOOL (7-8) CAPACITY

Typically there are two approaches to calculating middle school capacity. For those middle schools that are organized with a family structure where the same students attend their core classes together then branch off to their unique electives, the capacity model would be based on the number of core classrooms available. Where middle schools operate more like a junior

MIDDLE SCHOOLS:

- Standard number of rooms for computer labs.
- Included capacity for "Johnson Wing" at H/S
- Used a staffing ratio of 28 except for H/S English and Science, which used 25.
- Applied a utilization ratio of 75% to academic areas
- Assigned capacity to elective areas (gym, music CTE) with a utilization factor of 60%.

high school, with students attending both core and elective classes based on their own unique schedule, the capacity model is more like one used for a high school were all teaching areas are given a capacity. Middle school scheduling in Manassas City Public Schools more closely resembles that of a junior high school. In calculating the middle school capacity classrooms were divided into three categories: core classrooms, elective classrooms, and special education classrooms. Core and elective classrooms were assigned a class load based upon a pupil/teacher ratio of 28:1. The class load for self-contained special education classrooms was based upon the appropriate pupil/teacher ratio for the program. Likewise, three different utilization factors were applied: core classrooms received a utilization factor of 75%, elective classrooms 60%, and special education classrooms 100%. The number of classrooms in each category was multiplied by the appropriate class load and utilization factor and the outcomes were summed to generate the program capacity for the middle school building.

DATA CHART - Manassas City Public Schools Comparison of Updated and Old Middle School Capacity

SCHOOL	UPDATED CAPACITY	OLD CAPACITY	CHANGE
Metz	1543	1337	206

HIGH SCHOOL (9-12) CAPACITY

High school students typically follow a schedule that is unique to each student and they change classes every period. The high school capacity model aggregates classrooms into four categories: core classrooms, English and science classrooms, elective classrooms, and special education classrooms. Core and elective classrooms were assigned a class load based upon a pupil/teacher ratio of 28:1, English and science classrooms were assigned a class load of 25:1 (based upon the state Department of Education class size cap for English and the square footage and design of the science classrooms), the class load for self-contained special education classrooms was based upon the appropriate pupil/teacher ratio for the program. Likewise, three different utilization factors were applied: core, English and science classrooms received a utilization factor of 75% (again reflecting difficulty in scheduling and teachers holding classes 6 out of 8 available blocks), elective classrooms 60%, and special education classrooms 100%. The number of classrooms in each category was multiplied by the appropriate class load and utilization factor and the outcomes were summed to generate the program capacity for the middle school

HIGH SCHOOLS:

- Standard number of rooms for computer labs.
- Included capacity for "Johnson Wing" at H/S
- Used a staffing ratio of 28 except for H/S English and science, which used 25.
- Applied a utilization ratio of 75% to academic areas
- Assigned capacity to elective areas (gym, music CTE) with a utilization factor of 60%.

building. It should be noted that providing work areas for teachers outside of their assigned classrooms would allow those classrooms to be used for instruction for more periods (blocks) each day, effectively increasing the utilization factor and the resulting building capacity of both the high school and middle school.

DATA CHART – Manassas City Public Schools Comparison of Updated and Old High School Capacity

SCHOOL	UPDATED CAPACITY	OLD CAPACITY	CHANGE
Osbourn	2428	2011	417

Note: Updated capacity includes build-out of the Johnson Wing, which was not included in the old capacity

COMPARISON OF UPDATED CAPACITIES VS. PROJECTED ENROLLMENTS

The following charts compare the updated capacities with projected enrollments through the 2029-30 schools year.

DATA CHART – Manassas City Public Schools Comparison of Elementary Capacity and Projected Enrollment

Elementary School (Grades PreK-4) Capacity vs. Projections							
		Mid-Range		Low		High	
Year	Capacity	Projection	Difference	Projection	Difference	Projection	Difference
2016-17	3482	3428	54	3275	207	3436	46
2017-18	3482	3498	-16	3293	189	3535	-53
2018-19	3482	3569	-87	3331	151	3649	-167
2019-20	3482	3627	-145	3376	106	3774	-292
2020-21	3482	3662	-180	3465	17	3874	-392
2021-22	3482	3670	-188	3519	-37	3933	-451
2022-23	3482	3667	-185	3549	-67	3968	-486
2023-24	3482	3685	-203	3583	-101	4006	-524
2024-25	3482	3713	-231	3610	-128	4036	-554
2025-26	3482	3745	-263	3639	-157	4070	-588
2026-27	3482	3776	-294	3669	-187	4104	-622
2027-28	3482	3804	-322	3699	-217	4140	-658
2028-29	3482	3835	-353	3728	-246	4177	-695
2029-30	3482	3867	-385	3758	-276	4214	-732

Note: Includes capacity of new Baldwin (706) beginning in the 2016-17 school year

DATA CHART – Manassas City Public Schools Comparison of Intermediate Capacity and Projected Enrollment

Intermediate School (Grades 5-6) Capacity vs. Projections							
		Mid-Range		Low		High	
Year	Capacity	Projection	Difference	Projection	Difference	Projection	Difference
2016-17	1440	1185	255	1170	270	1189	251
2017-18	1440	1200	240	1180	260	1204	236
2018-19	1440	1196	244	1174	266	1202	238
2019-20	1440	1188	252	1163	277	1191	249
2020-21	1440	1220	220	1125	315	1218	222
2021-22	1440	1278	162	1123	317	1292	148
2022-23	1440	1329	111	1191	249	1371	69
2023-24	1440	1332	108	1223	217	1406	34
2024-25	1440	1314	126	1239	201	1424	16
2025-26	1440	1313	127	1254	186	1440	0
2026-27	1440	1322	118	1262	178	1449	-9
2027-28	1440	1336	104	1274	166	1462	-22
2028-29	1440	1348	92	1285	155	1476	-36
2029-30	1440	1359	81	1296	144	1490	-50

Note: Includes capacity of new Baldwin Intermediate beginning in the 2016-17 school-year

DATA CHART – Manassas City Public Schools Comparison of Middle School Capacity and Projected Enrollment

Middle School (Grades 7-8) Capacity vs. Projections							
		Mid-Range		Low		High	
Year	Capacity	Projection	Difference	Projection	Difference	Projection	Difference
2016-17	1543	1053	490	1044	499	1036	507
2017-18	1543	1107	436	1092	451	1090	453
2018-19	1543	1180	363	1157	386	1167	376
2019-20	1543	1196	347	1167	376	1182	361
2020-21	1543	1191	352	1161	382	1179	364
2021-22	1543	1183	360	1151	392	1169	374
2022-23	1543	1216	327	1112	431	1196	347
2023-24	1543	1275	268	1111	432	1268	275
2024-25	1543	1325	218	1179	364	1345	198
2025-26	1543	1328	215	1211	332	1379	164
2026-27	1543	1310	233	1227	316	1397	146
2027-28	1543	1309	234	1242	301	1412	131
2028-29	1543	1318	225	1250	293	1421	122
2029-30	1543	1332	211	1261	282	1435	108

DATA CHART – Manassas City Public Schools Comparison of High School Capacity and Projected Enrollment

High School (Grades 9-12) Capacity vs. Projections							
		Mid-Range		Low		High	
Year	Capacity	Projection	Difference	Projection	Difference	Projection	Difference
2016-17	2428	2142	286	2084	344	2153	275
2017-18	2428	2147	281	2070	358	2156	272
2018-19	2428	2163	265	2084	344	2149	279
2019-20	2428	2250	178	2159	269	2226	202
2020-21	2428	2346	82	2239	189	2317	111
2021-22	2428	2419	9	2297	131	2390	38
2022-23	2428	2481	-53	2348	80	2460	-32
2023-24	2428	2489	-61	2346	82	2463	-35
2024-25	2428	2523	-95	2293	135	2491	-63
2025-26	2428	2581	-153	2289	139	2563	-135
2026-27	2428	2669	-241	2327	101	2676	-248
2027-28	2428	2728	-300	2361	67	2785	-357
2028-29	2428	2757	-329	2443	-15	2880	-452
2029-30	2428	2757	-329	2487	-59	2928	-500

MANASSAS CITY PUBLIC SCHOOLS GRADE RECONFIGURATION STUDIES

The programs and grade levels assigned to a specific school facility significantly impact the number of students that facility can accommodate. For example, at the elementary level, pupil teacher ratios tend to be somewhat lower for the primary grades than for upper elementary grades, thus a school housing only students in grades K-3 could be expected to have a lower capacity than a school housing students in grades K-5. Reviewing the current grade configuration of Manassas City Public Schools (MCPS) and looking at various grade reconfiguration opportunities will allow the MCPS to identify the most desirable and efficient grade configuration for their facilities and programs.

CURRENT CONDITIONS

MCPS are currently organized to accommodate Pre-Kindergarten through fourth grades students in five elementary schools (Baldwin, Dean, Haydon, Round and Weems). Students in grades five and six attend Mayfield Intermediate School, students in grades seven and eight attend Metz Middle School and students in grades nine through twelve attend Osbourn High School. Special Education students are accommodated by the assigned schools for their program/grade level. System wide enrollments are at or somewhat below capacity, however; there are imbalances at individual schools most notably at the elementary level where enrollment exceeds capacity at both Baldwin and Weems (based on the revised capacities contained in this report). Enrollment at Mayfield Intermediate School is also slightly above capacity while both Metz Middle and Osbourn High School have capacity surpluses. Opening the new Baldwin Elementary/Intermediate School (designed as a school within a school housing an elementary and intermediate program) in the 2016-17 school year will provide a net capacity increase of about 120 student spaces at the elementary school level and roughly 300 student spaces at the intermediate school level. The additional capacity provided by the new Baldwin facility along with some redistricting will provide an opportunity to bring all MCPS school enrollments within capacity for the near term.

MCPS school buildings are generally in good condition although a number of the facilities are reaching the age where significant renovations should be planned for. The existing Baldwin Elementary School is in poor condition but will be replaced in the 2016-17 school year with the new Baldwin facility discussed above. Dean Elementary School, built in the late 1950's is the district's oldest elementary school building and has been recommended for replacement rather than renovation. Planned replacement of this building provides an opportunity for MCPS to consider different grade configurations to help accommodate projected enrollment growth and future program requirements.

FUTURE CONDITIONS

Enrollment growth is projected for MCPS through the 2029-30 school year. System-wide enrollment in the 2029-30 school year is expected to exceed 9,300 students creating a need for additional elementary and high school capacity. MCPS will need to consider building additional capacity and reorganizing some existing space to accommodate this projected growth, reconfiguration of current grade level assignments may also provide an efficient way to address both capacity and program requirements.

GRADE RECONFIGURATION SCENARIOS

During the course of the MCPS Facilities Study numerous grade level reconfiguration scenarios were discussed including;

- Maintain the current grade configuration including the new Baldwin Elementary/Intermediate School
- Replace Dean Elementary with a new intermediate school, reconfigure to Pre K-3 elementary and grades 4-6 intermediates
- Replace Dean Elementary with a new intermediate school, reconfigure to K-3 elementary and grades 4-6 intermediates, create a VPI Center at Metz Middle School
- Replace Dean Elementary with a new intermediate school containing a space for a VPI Center, reconfigure to K-3 elementary and grades 4-6 intermediates, create a satellite CTE space at Metz

After much discussion and review two scenarios emerged as the most likely and cost effective ways to address future space and program requirements, these scenarios are described below.

SCENARIO 1

This scenario maintains the current grade configuration of PreK-4, 5-6, 7-8 and 9-12. The new Baldwin facility would continue to house approximately 300 intermediate school students. Capacity deficits at the elementary school level would be addressed by construction of two new 600 student capacity elementary schools. The first new elementary school would be a replacement for the current Dean Elementary School and would be built on the Dean site, this facility would open in the 2021-22 school year. The second new elementary school would also have capacity for 600 students and would be a site adaptation of the Dean replacement school. This facility would open for the 2022-23 school year at a site to be determined. It should be noted that a site for the second school is not currently available and would have to be acquired through dedication or purchase. Additional high school capacity would be created by providing teacher work areas outside of the classroom. Providing these work areas will allow utilization of existing academic classrooms to increase from approximately 70% to 90% which will result in a capacity increase sufficient to accommodate future high school enrollment. The cost associated with providing the work rooms is relatively small and could be

treated as an operating cost rather than a capital improvement expenditure. To meet capacity requirements the work rooms should be available by the 2021-22 school year but could be done sooner if so desired.

The anticipated total construction cost for this scenario is approximately $53,849,000 plus the cost for acquisition of a second elementary school site if one cannot be obtained through dedication.

Membership and capacity comparisons for this scenario are as follows:

New Dean Opens

2nd Elementary School Opens VPI at 300

Elementary Schools	2017	2019	2022	2023	2030
Capacity	3482	3482	3555	4155	4155
Enrollment*	3428	3569	3670	3751	3951
Capacity Balance	54	-87	-115	404	204

Intermediate Schools	2017	2019	2022	2023	2030
Capacity	1440	1440	1440	1440	1440
Enrollment*	1185	1196	1278	1329	1359
Capacity Balance	255	244	162	111	81

Teacher Work Areas Created

Osbourn High School	2017	2021	2022	2025	2030
Capacity	2428	2428	2799	2799	2799
Enrollment*	2142	2346	2419	2523	2757
Capacity Balance	286	82	380	276	42

*Mid-Range Projections

SCENARIO 2

This scenario changes the current grade configuration to K-3, 4-6, 7-8 and 9-12. The current Dean Elementary School would be replaced with a new 1,000 student capacity intermediate school. Capacity at the new Baldwin facility used for intermediate students would be converted

to a district-wide Pre-Kindergarten center. Creating the Pre-K center at Baldwin will allow Pre-K classrooms at the other elementary schools to revert to K-3 general education classrooms which will provide a slight capacity increase capacity at those facilities. An elementary capacity deficit in the out-years of the scenario would be addressed by construction of a six classroom addition at one of the existing elementary schools.

The new intermediate school on the Dean site would open in the 2021-22 school year, at that time fourth grade students would be transferred from the elementary schools to the intermediate schools and the Pre-K programs would move to Baldwin. The six classroom elementary school addition would be completed for the 2027-28 school year. As in Scenario #1 additional high school capacity would be created by providing teacher work areas outside of the classroom. Providing these work areas will allow utilization of existing academic classrooms to increase from approximately 70% to 90% which will result in a capacity increase sufficient to accommodate future high school enrollment.

The cost associated with providing the work rooms is relatively small and could be treated as an operating cost rather than a capital improvement expenditure. To meet capacity requirements the work rooms should be available by the 2021-22 school year but could be done sooner if so desired.

The anticipated total construction cost for this scenario is approximately $49,050,000.

Membership and capacity comparisons for this scenario are as follows:

300 VPI to Baldwin

Possible Classroom additions

Elementary Schools	2017 PreK-4	2021 PreK-4	2022 K-3	2027 K-3	2028 K-3	2030 K-3
Capacity	3482	3482	3100	3100	3238	3238
Enrollment*	3428	3662	3075	3183	3206	3258
Capacity Balance	54	-180	25	-83	32	-20

Dean Intermediate opens

Intermediate Schools	2017 5-6	2021 5-6	2022 4-6	2027 4-6	2028 4-6	2030 4-6
Capacity	1404	1404	2104	2104	2104	2104
Enrollment*	1185	1220	1957	1999	2018	2052
Capacity Balance	219	184	147	105	86	52

Osbourn High School	2017	2021	2022	2025	2030
Capacity	2428	2428	2799	2799	2799
Enrollment*	2142	2346	2419	2523	2757
Capacity Balance	286	82	380	276	42

Note: The capacity impact of creating teacher work areas is reflected in the 2022 capacity shown above, this needs to be prior to 2022 to avoid having a capacity deficit.

*Mid-Range Projections

RECOMMENDATION

After reviewing both scenarios it appears that Scenario #2 provides the best long term solution for addressing MCPS facilities requirements. The advantages of Scenario #2 include lower capital costs, provision of similarly sized intermediate schools, no requirement for additional school sites, less redistricting disruption at the elementary level and provision of a unified center for Pre-K programs. The K-3 configuration will allow for a concentration of Kindergarten and primary grade level materials and instruction at the elementary schools. Construction of the new intermediate school at the Dean site could take place while Dean Elementary school is still in operation. Possible joint use of facilities could be explored as Manassas City begins plans for development of the park land adjacent to the Dean site.

FACILITIES REVIEW

On May 27th and 28th of 2015, walkthroughs of 8 Manassas City Public Schools (MCPS) where done by Citygate and MCPS representatives. The purpose of the walkthrough was to become familiar with the various school buildings in the MCPS system. Photographs (540 in total) of various interior and exterior spaces were taken. The walkthroughs were followed up with later visits on August 5th and September 16th, 2015.

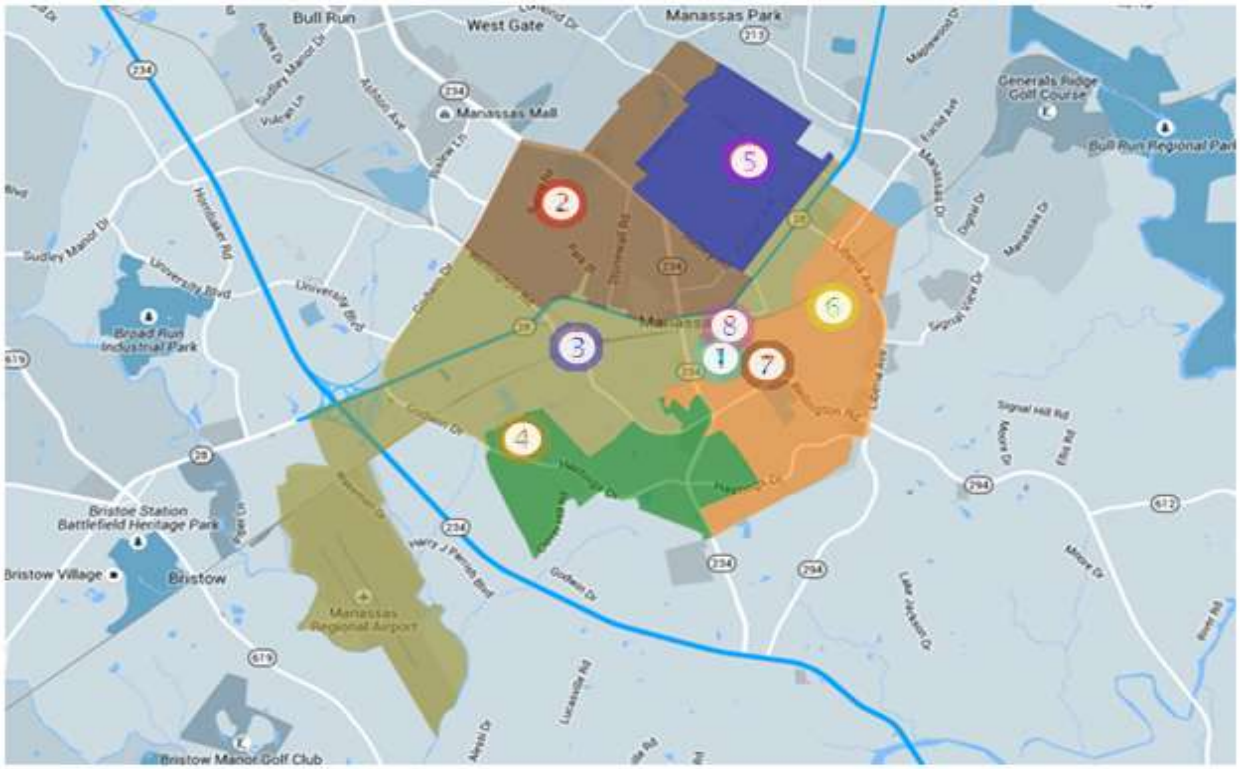
EVALUATION PROCESS

In order to evaluate a building's conditions accurately, proper weights were given to the various elements under review in order to create an accurate matrix. As building components are not of the same weight, determination of the weights are based on past experience and work performed at other school districts. Condensed versions of the major headings are provided below:

No	System	Weights	Remarks
1	Enclosure System	0.25	High due to size of system
2	Structural System	0.25	High due to size and cost
3	Mechanical System	0.15	Medium due to cost
4	Electrical System	0.15	Medium due to cost
5	Fire Safety System	0.05	The weight of existing adequately functional systems may be low while new required systems would be high
6	Finishes System	0.05	Low due to priority
7	Conveyor System	0.05	Low due to 1 or 2 story nature of buildings/ADA
8	Site-work System	0.05	Low due to nature of being exterior

It is understandable and generally accepted that larger surface areas of a building contribute to mechanical system's inefficiencies. If a building is designed to spread out in a single story layout it may be difficult to reimagine the building in a vertical or more compact design with less surface area (by contracting the wings of a building to expand vertically). However, careful analysis may provide alternative options of adapting the curriculum, which is more flexible to accommodate the physical realities of a building, then to implement architectural treatments for better place making by identifying the characters that are sought after in an appropriate school facility.

LOCATION MAP



1 – **Baldwin Elementary School (new building planned)**

2 – R. C. Haydon Elementary School

3 – Jennie Dean Elementary School

4 – George C Round Elementary School

5 – Weems Elementary School

6 – Mayfield Intermediate School

7 – Metz Middle School

8 – Osbourn High School

SCHOOL AVAILABLE DATA

The following table was developed by reviewing the engineering drawings for each facility then making field measurements of the interior and exterior spaces at each school. For each school, the exterior areas were also verified by making measurements using the GIS data from the City of Manassas.

Schools	Year of First Construction	Acreage	Sq. Ft. Schools	# Portable Units	Sq. Ft. Portables	Sq. Ft Total w/portables
Baldwin Elementary	1961	14.13	60,087	5 (4dw-1 SW)	4,152	64,239
Haydon Elementary	1978	27.25	73,704	3	2,664	76,368
Dean Elementary	1958	24.30	89,317	0	n/a	89,317
Round Elementary	1985	20.45	76,557	0	n/a	76,557
Weems Elementary	1977	15.30	74,244	5 (dw)	4,440	78,684
Mayfield Intermediate	2005	13.15	149,911	0	na	149,911
Grace E. Metz Middle	1990	37.08	209,124	0	n/a	209,124
Osbourn High	1953	50.56	338,876*	0	n/a	338,876
All Totals (Ed space)		187.67	1,071,880	13	11,256	1,083,136

BALDWIN ELEMENTARY SCHOOL

9705 MAIN ST., MANASSAS, VA 20110

SITE FROM SATELLITE

This school is planned to be replaced

R. C HAYDON ELEMENTARY SCHOOL

9075 PARK AVE., MANASSAS, VA 20110

Figure 1 – Panoramic View of Haydon Cafeteria – Source: Citygate

OBSERVATIONS

Well maintained but due for a full renovation including finishes and adding space for small work groups etc. as in the new Baldwin replacement. Note: the interior classrooms near the addition have no windows or other source of natural light – should be addressed during a renovation. Some of the issues include changing of windows and the building automation system.

SITE

- Opened: 1979
- Addition: 2007
- Age in 2030: 52 Years

Parking lot: Some improvements are needed to the walkways. Past repairs have already been made in some areas and additional repairs to the sidewalks are required in the next few years. There are also areas where the pavement has cracks, which should be repaired.

On-site bus queuing is not adequate. Although a large circular drive makes a good loop for bus queuing, morning backups occur at times and require staff intervention. The School was opened in 1979 and although it has 27.25 acres of land, which is fairly large for a school, parking, kiss-n-ride, and other facilities are not well designed.

SITE FROM AERIAL MAP:

The athletic areas and associated grandstands are limited at this school. The school also has limited play areas.

BUILDING ENVELOPE

The building is concrete with masonry veneer. The building exterior is in good condition with no recommended improvements.

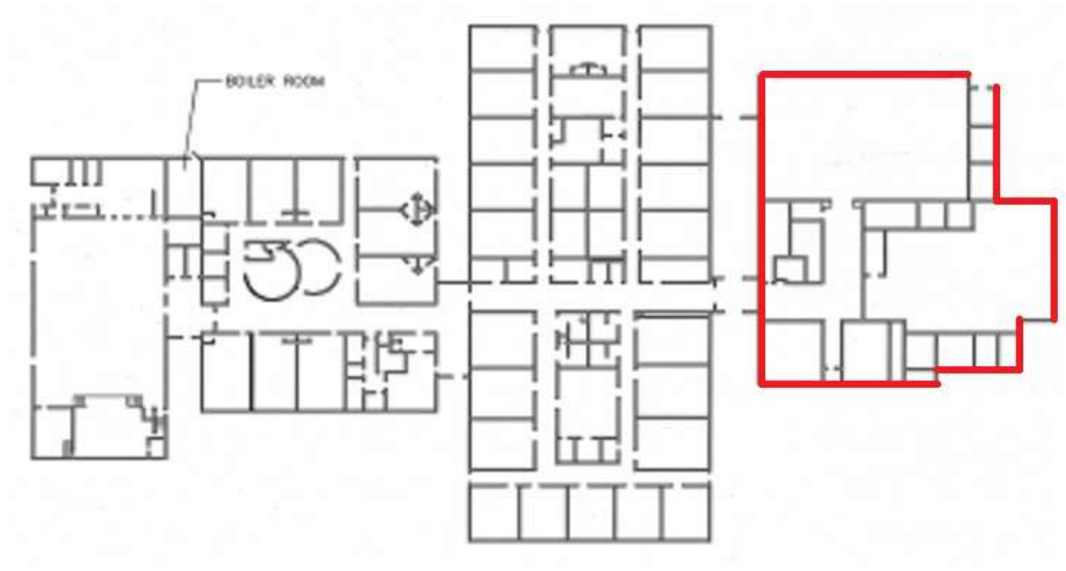
Exposed structural steel: None

The windows and doors at this school are maintained and appear to be in good condition. However, over the 2020-2030 period some may need to be replaced due to age.

ROOF AND SIDING:

The school building has 2 roof types: flat rubber roof and metal. Plan for an addition, which is outlined in red, was completed in 2006 and executed in 2007. The addition and portable units (2664 sq. ft.) make the total area of the school 76,368 sq. ft. The main roof is 37 years old and has already passed its life span. The flat roof over the mechanical room was changed in 2011-12. The remaining flat roof was installed as a part of the construction in 2006-07. It is recommended that the main roof be replaced before 2020. The roof on the addition is good for the next 25 years. The metal roof is planned for replacement in 2016-2017 school year.

The gutters and downspouts were replaced and are in good condition.



INTERIOR

The interior of the school is well maintained with no observable issues with the doors, windows, and/or their glazing. The floors, walls, and ceilings are also in good condition. The toilet partitions and some of the sinks were replaced in 2010. They are generally in good condition.

The circulation plan and the instructional areas for this school are 37 years old and spaces do not lend themselves to 21st century learning environment.

Chalkboards/tack boards: good condition

MECHANICAL PLUMBING

Majority of HVAC equipment is original. HVAC Control was replaced in 1999 and the cooling tower was replaced in 2009. Boilers were replaced in 2013. Boiler life expectancy depends upon the type of boiler purchased. The average expectancy of a traditional gas boiler is between 10 and 15 years, if well maintained and serviced annually. The boilers should be planned for replacement in 2027.

Air conditioning control unit was replaced in 1999, should be planned for replacement in 2019. Cooling tower was replaced in 2009. It will require replacement in 2029-2039. Heating system/pumps: Water Heater: Main water heater was replaced in 2000. Other water heaters replaced in 2012 and 2014. Water source heat pumps are scheduled to be replace in school year 2016-2017.

ELECTRICAL

All electrical panel boxes are in order and breakers are working properly.

Receptacles: Adequate and in good condition

Interior Light: Adequate and in good condition

Generator: All electrical panel boxes are in good order and breakers properly working. This school has a backup generator, which appears to be in good condition.

Site Lighting/Field Lighting: Needs improvement. Installation of more efficient lighting systems is recommended.

R. C HAYDON: FACILITY GRADE

No.	System	Weights	Score in percentage	Weighted Score
1	Enclosure System	0.25	85	21.25
2	Structural System	0.25	85	21.25
3	Mechanical System	0.15	85	12.75
4	Electrical System	0.15	95	14.25
5	Fire Safety System	0.05	90	4.5
6	Finishes System	0.05	80	4
7	Conveyor System	0.05	100	5
8	Site work System	0.05	80	4
		1	Total Possible Points 100	87

RECOMMENDATION

This is a well maintained school but due for a full renovation including finishes and adding space for small work groups etc. as in the new Baldwin replacement. It is recommended that a major renovation be planned around 2024 when a refurbishment of the HVAC may be required.

Project	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Haydon School											
Haydon - Paint											
Haydon-Roof Replacement											
Window/Door Replacement			385,000								
Secured Vestibule		184,000									
HVAC/Chiller					2,577,000						
Parking Lot						517,000					
Boiler											895,000
Interior Paint									106,000		
Capital Projects		184,000	385,000		2,577,000	517,000			106,000		895,000

JENNIE DEAN ELEMENTARY SCHOOL

9601 PRINCE WILLIAM ST, MANASSAS, VA 20110

Figure 2 – Panoramic View of entrance – Source Citygate

OBSERVATIONS

Although well maintained, Jennie Dean Elementary School is the oldest school in the system. The school could be renovated, however, the cost would be high and the building doesn't lend itself to an energy efficient design. The building has a one level design with extension arms resulting in large exterior and roof surfaces

SITE

- Opened: 1959
- Addition: 1977
- Addition: 1990
- Age in 2030 72 Years

Parking lot: The parking lot has sufficient parking spaces. The parking surface will likely require maintenance over the next few years. If the school is not replaced, a complete resurfacing is recommended.

Side Walk/Stairs/Railing: Some concrete steps are deteriorating due to age.

On-site bus queuing: Although there are plenty of parking spaces and adequate space for bus queuing there are occasional flow issues which require intervention.

Kiss n Ride: The kiss-n-ride is not adequate for this school. There are flow issues that require intervention to keep the flow going during morning drop off.

Athletic/play Area/ Grandstands: Well kept indoor gymnasium.

Site Landscaping: Sufficient athletic play area with generally good landscaping.

SITE FROM AERIAL MAP:

School was opened in 1959 on 28.78 acres of land. Total building area is 89,317 sq ft.

BUILDING ENVELOPE

Concrete/Masonry Veneer/Sills: Masonry and concrete façade is in good condition.

Exposed Structural Steel: None

Window/Door/Skylight: Solid core wood doors and windows in good shape

Ongoing maintenance has been performed on the exterior brick. However, repointing is needed in areas where maintenance has not been performed. This area is approximately 1/3 of the exterior brick. Current leaks into the interior areas exist because of the need for this maintenance. Windows were replaced in 2004. Some have single panes such as the windows in the gymnasium and auditorium.

ROOF/SIDING:

Roof was replaced in 1991 and then replaced in 2004 after 13 years. Roof is 12 years old. A new roof will be required in another 4-5 years (2020). However, it is important to have roof maintained and clear of any debris (drains clear).

Some downspouts appear to have a problem with drainage.

INTERIOR

The circulation plan and the instructional areas for this school are 57 years old and spaces do not lend themselves to a 21st century learning environment.

Floor/Ceilings/Walls: Floors, ceilings, and walls are in good shape but will not meet new codes and standards.

Chalkboards/tack boards: Fairly good, windows were replaced in 2004

Toilet partitions/accessories: Toilet partition and accessories meet the requirement.

Auditorium seats/curtains: good condition

MECHANICAL PLUMBING

New HVAC was installed in 2004 and is still in good condition. The HVAC system will need to be changed in 2024.

Chillers/Cooling Tower/Air Handling/Roof Equipment: This equipment was installed new in 2004. The life span is about 20 years, so predicted replacement in the year 2025.

Boiler/Pumps: The boilers and pumps were replaced in 2014 and appear to be in good condition.

Kitchen Hood: No problem with kitchen facilities

Water Heater: New system was installed in 2004

ELECTRICAL

Transformer/Panels/Breakers: The transformers, panels, and breakers appear to be in good working order. The receptacles are in good order and adequate.

Interior Light: Adequate

Site Lighting/Field Lighting: Needs improvement. Recommend additional lights and use of newer more efficient lighting options.

Theatre Lighting: The lights in the theater are in fair condition.

JENNIE DEAN: FACILITY GRADE

no.	System	Weights	Score in percentage	Weighed Score
1	Enclosure System	0.25	75	18.75
2	Structural System	0.25	65	16.25
3	Mechanical System	0.15	55	8.25
4	Electrical System	0.15	60	9
5	Fire Safety System	0.05	80	4
6	Finishes System	0.05	80	4
7	Conveyor System	0.05	100	5
8	Site work System	0.05	80	4
		1	Total Possible Points 100	69.25

RECOMMENDATIONS

The Jennie Dean school building is the oldest building in the system. It is well past its designed life. While the building could be renovated, it is anticipated that the renovation cost will exceed 75% of the cost of a new building. The replacement of Jennie Dean with a new building is recommended.

Project	2019	2020	2021	2022	2023	2024	2025
Dean Elem. School							
Total Replacement	1,000,000	44,900,000					
Capital Projects	1,000,000	44,900,000	-	-	-	-	-

NEW LOCATION PROPOSAL FOR SCHOOL CONSTRUCTION

FIELD REPORT

After a site investigation for all existing buildings, parking, and other facilities including railroad right of way, it appears that there is enough land to construct a 138,000 square foot school building in the existing school property.

By measuring in different locations it is found that the building line has between 80 to 110 feet offset from the railroad track. Also, R1 zoning requires a setback of 20 feet. In all our options that we presented, railroad right of way is more than required. On the bases of our observation and study we recommend three options for parcel A and three options for parcel B

Note: In parcel A the available land is large enough to build up to **172,000 sq. ft.**

Satellite photo of Parcel A

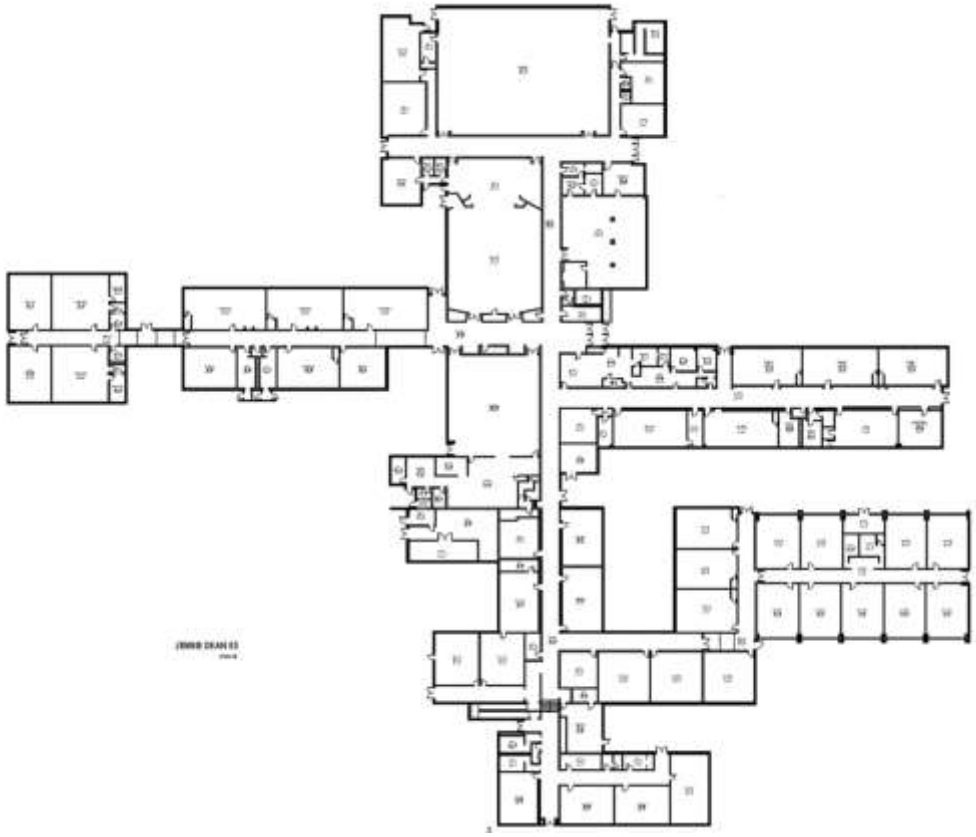
Three options for construction of a school with 138,000 square feet in one floor, two floors, and three floors are shown in the following pages: red line indicates set-back, yellow line indicates property line, and the green line indicates construction area.

Option 1 - One story, 138,000 square feet of new school will be constructed north of existing parking

Option 2 – Two stories, 69,000 square feet in each floor will be constructed north east of the parcel.

Option 3 – Three Stories, 46,000 square feet in each floor will be constructed north of existing parking

ARCHITECTURAL PLAN OF JENNIE DEAN SCHOOL



GEORGE C ROUND ELEMENTARY SCHOOL

10100 HASTINGS DRIVE, MANASSAS, VA 20110

Figure 7 – Panoramic view at Round showing cafeteria – Source: Citygate

OBSERVATIONS

Well maintained but nearing the age when a comprehensive renovation should be planned. Change the sewage system from an injector pump to a gravity flow system.

SITE

- Opened: 1986
- Age in 2030: 45 Years

Parking lot: Ample parking: adequate parking space for Kiss n Ride and adequate space for bus queuing with number of parking spaces.

Landscaping: No major issues

Side Walk/Stairs/Railing: Sidewalks need to be repaired in a number of places. The sidewalks are generally the original concrete sidewalks from 1986.

SITE FROM SATELLITE PHOTO:

George C Round was opened in 1986 on 20.45 acres. Building has 76,557sq ft. of area. Paving was done in 2006, cracks and asphalt deterioration are present and will result in a limited lifespan. The picture on the right highlights some of the issues with the paving.

ROOF/SIDING

The roof was replaced in 2014 and is in good condition.

BUILDING ENVELOPE

Concrete/Masonry Veneer/Sills: Concrete blocks and masonry veneer are in good condition.

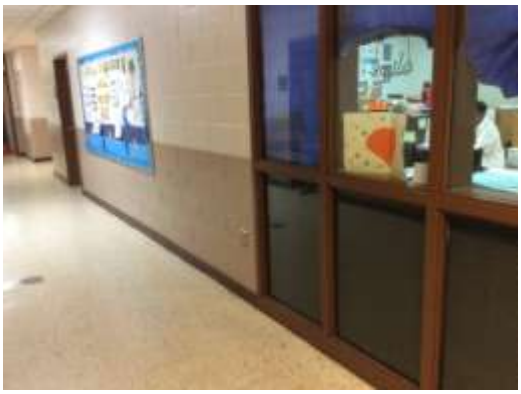
Exposed Structural Steel: None

Window/Door/Skylight: All windows and doors in good shape

INTERIOR

Plan Organization/Circulation: Given the age of the school, there is no circulation plan

Walls/Floor/Ceilings: Walls and ceilings are in good condition but floor has a crack in some areas which needs attention



Toilet Partitions/Accessories: Good condition

Athletic: athletic facility needs improvements; indoor basketball court is changed to dining hall

MECHANICAL PLUMBING

Chillers: Chiller was installed in 2010 and will serve until 2030

Boiler: The boiler was changed in 2013 and it is in good shape

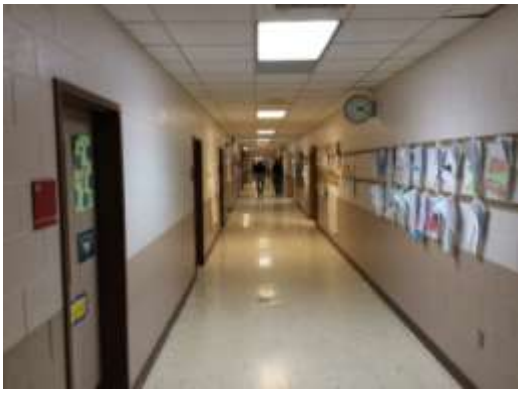
Kitchen Hood: The kitchen hood is in good condition

ELECTRICAL

Main Service: Panels/Breakers in a room with boxes. This equipment should be easy to access in case of emergency.

Receptacles: Adequate receptacles.

Adequate Interior Light: Interior lights are adequate and in good condition



Field Lighting: Not enough light outside.

The kiss and ride area is used as a hard surface play area which has a light pole in the middle. It is recommended to move the lights or create another hard surface play area.

GEORGE C ROUND: FACILITY GRADE

no.	System	Weights	Score in percentage	Weighed Score
1	Enclosure System	0.25	88	22
2	Structural System	0.25	85	21.25
3	Mechanical System	0.15	85	12.75
4	Electrical System	0.15	88	13.2
5	Fire Safety System	0.05	88	4.4
6	Finishes System	0.05	85	4.25
7	Conveyor System	0.05	100	5
8	Site work System	0.05	80	4
		1	Total Possible Points 100	86.85

RECOMMENDATIONS

Well maintained. The sewage system should be changed from an injector pump to a gravity flow system.

It is proposed that a major renovation be planned for 2029 when the parking facilities will require replacement.

Project	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Round School											
Round - Paint						93,000					
Round - Hallway Flooring Replacement											
Round - Phased BAS/HVAC Replacement											
Window/Door Replacement				419,000							
Secured Vestibule		191,000									
Parking										2,592,000	
Capital Projects		191,000		419,000		93,000				2,592,000	

ARCHITECTURAL PLAN OF GEORGE C. ROUND SCHOOL

WEEMS ELEMENTARY SCHOOL

8750 WEEMS RD., MANASSAS, VA 20110

Figure 3 – Panoramic View of classroom at Weems – Source: Citygate

OBSERVATIONS

Weems Elementary School is an almost identical building to Haydon. It has the same issues with lack of natural light in the interior classrooms, lack of small group work space, building automation systems, and overall need for renovation. Some of the windows in this building may also need to be replaced.

SITE

- Opened: 1977
- Addition: 2007
- Age in 2030: 52 Years

Parking lot: needs improvement

Side Walk/Stairs/Railing: Old concrete parking and wide walk defeating, some are repaired

On-site bus queuing: adequate. A half circular drive has enough space for bus queuing. However, similar to Dean and Haydon Schools, the combination of traffic from Kiss-n-Ride creates frequent issues, which require staff intervention.

SITE FROM AERIAL PHOTO:

School was opened in 1977. Although it has 15.3 acres of land, parking, kiss n ride, and other facilities are not well designed and should be addressed during a major renovation.

New paving was done in 2014 and asphalt surfaces are in good condition

Athletic/Play Area/Grandstands: Very limited athletic and play areas are present at the school.

Landscaping: The ground covering used in the playgrounds requires maintenance and replacement.

BUILDING ENVELOPE

Concrete/Masonry Veneer/Sills: Masonry in good condition
Exposed Structural Steel: None

Window/Door/Skylight: Windows and doors well kept and are in good condition

ROOF/SIDING

The school building has 2 roof types: flat rubber roof and metal. The flat roof over the mechanical room was replaced in 2011-12. The remaining portion was installed as a part of an addition in 2006-07. If maintained and cared for, it will last 25 years, after which a new roof will be required in 2032.

Roof Drains/Down Spots: Roof drains and down spots in good condition.

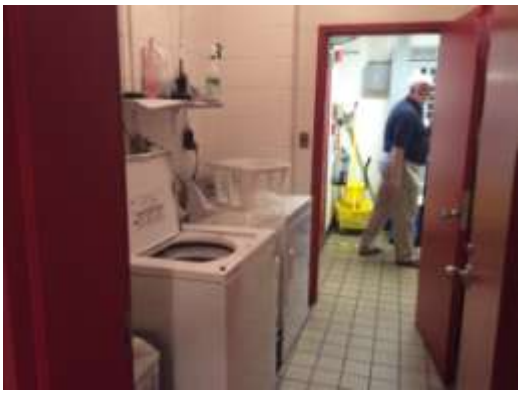
INTERIOR

Plan Organization/Circulation: Floor and circulation plan is 39 years old. The school lacks 21st century learning features such as smaller work areas.

Doors/Windows/Glazing: Doors, windows, and glazing are in good condition.

Floors/Ceilings: Floors and ceilings are in good condition

Toilet Partitions/Accessories: Good condition.



Athletic Equipment: Indoor basketball court in good condition

MECHANICAL PLUMBING

HVAC Equipment: Majority of HVAC equipment is original to the 1977 construction of the building. This equipment is scheduled to be replaced under the current CIP. Boilers and pumps were replaced in 2013. Some HVAC equipment was also added during the 2007 addition and renovation.

HVAC Control and other related equipment (e.g. cooling tower) was replaced in 2007. This system life expectancy depends very much upon the type of system that was purchased. The average expectancy of a traditional gas boiler is between 10 and 15 years, if well maintained

and serviced annually. Other boilers, such as electrical devices, will last between 8 and 10 years. A new heating system would be required in 2027 and cooling tower between 2027 and 2030.

Cooling Tower was replace in 1999

Water Heater: Water heater and chemical water treatment are in good condition.

ELECTRICAL

Generator: All electrical panel boxes are in good order and breakers properly working. This school has a backup generator, which appears to be in good condition.

Interior Light: The interior lights are adequate and in good condition.

WEEMS: FACILITY GRADE

No.	System	Weights	Score in percentage	WEIGHED SCORE
1	Enclosure System	0.25	85	21.25
2	Structural System	0.25	85	21.25
3	Mechanical System	0.15	90	13.5
4	Electrical System	0.15	95	14.25
5	Fire Safety System	0.05	90	4.5
6	Finishes System	0.05	80	4
7	Conveyor System	0.05	100	5
8	Site work System	0.05	80	4
		1	Possible Points 100 Each	87.75

RECOMMENDATIONS

Weems Elementary School is almost an identical building to Haydon. It has the same issues with lack of natural light in the interior classrooms, lack of small group work space, building automation systems, and overall need for renovation. A comprehensive renovation is recommended in 2027 when upgrades to the chiller and boiler systems will be required.

Project	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2029
Weems School											
Weems- Parking Lot Seal Coat & Crack Repair	40,000								660,000		
Window/Door Replacement			389,000								
New Roof/Replacement								1,412,000			
Partial Maintenance Roof			84,000								
HVAC/Chiller								3,098,000			
Boiler								758,000			
Interior Paint			61,000								
Secured Vestibule		185,000									
Capital Projects	40,000	185,000	534,000					5,268,000	660,000		

MAYFIELD INTERMEDIATE SCHOOL

9400 MAYFIELD CT., MANASSAS, VA 20110

Figure 4 – Panoramic view of Mayfield entry – Source: Citygate

OBSERVATIONS

Mayfield is the school district's newest operating building. The school is in good condition with the exception of the asphalt shingle roof, which should be replaced with a metal roof as per the original design. Because of the neighborhood zoning concern the metal roof was switched to shingles. This switch has caused a great deal of problems with leaks. Although it is understood that these issues have been resolved, the recommendation is to replace the roof with the original design prior to the full life of the shingles.

SITE

- Opened: 2006
- Age in 2030: 24 Years

Landscaping: Good condition

On-site bus queuing: Adequate space for bus and queuing

Kiss n Ride: Plenty of space and parking for Kiss n Ride

SITE FROM SATELLITE PHOTO:

Aerial photo and site observation show that this school is well designed: ample parking space, good circulation for Kiss n Ride, and excellent bus queuing to drop or ride. This school was opened in 2006 and is a fairly new school meeting all standard codes of county regulation.

BUILDING ENVELOPE

Exposed Structural Steel: None

Window/Door/Skylight: All windows and doors are new and in good condition

Roof: Replace with metal roof

Concrete/Masonry Veneer/Sills: Outside masonry veneer work is in good shape but inside one of the concrete blocks at the corner split and needs immediate attention to correct before it causes more damage

ROOF

As discussed, the roof is in good condition, however the shingle roof should be replaced with a metal roof per the original design.

Roof Drains/Down Spots: Good

INTERIOR

Plan Organization/Circulation: Since school was designed and opened in 2006 it has a good circulation according to code

Doors/Windows/Glazing: Good

Walls/Wainscots/Floor/Ceilings: With one exception of cracking on an expansion joint in the second floor, the remaining walls, floors, and all ceilings in good condition.

Chalkboards/Tack boards: good condition

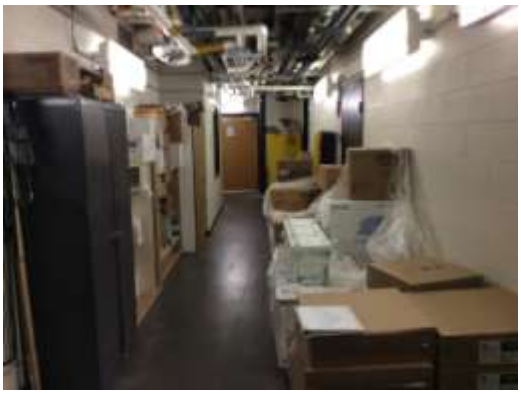
Toilet Partitions/Accessories: Toilet partitions and other accessories in good condition

MECHANICAL PLUMBING

Chiller/Cooling Tower: System is new and of high quality – It is anticipated that repairs and renovations will not be required until 2026

Boiler/Pumps: Good condition

Water Heater: Good condition



ELECTRICAL

Main service panel boxes are in good condition.

This school has a generator, which is in good condition.

Main Sound System: Good system in private office

MAYFIELD: FACILITY GRADE

no.	System	Weights	Score in percentage	Weighed Score
1	Enclosure System	0.25	95	23.75
2	Structural System	0.25	95	23.75
3	Mechanical System	0.15	95	14.25
4	Electrical System	0.15	95	14.25
5	Fire Safety System	0.05	90	4.5
6	Finishes System	0.05	90	4.5
7	Conveyor System	0.05	100	5
8	Site work System	0.05	80	4
		1	Total Possible Points 100	94

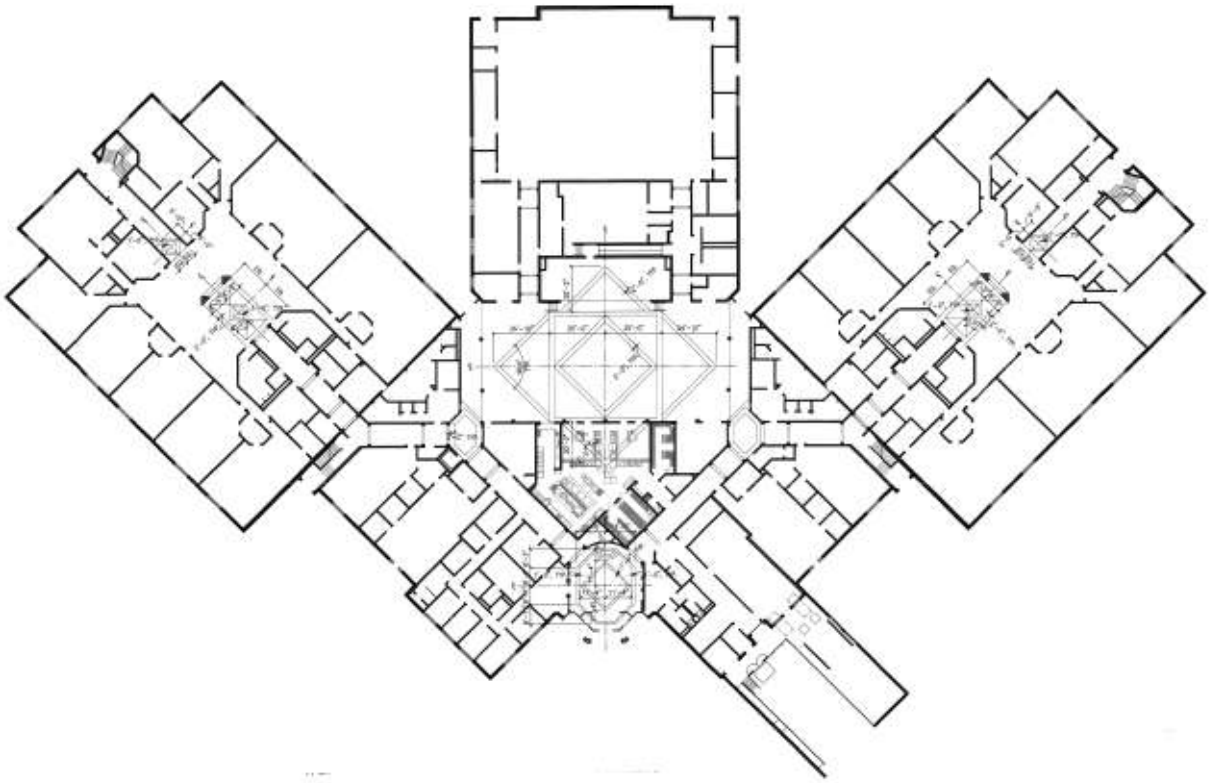
RECOMMENDATIONS

The school is good condition with the exception of the asphalt shingle roof, which should be replaced with a metal roof as per the original design. Although it is understood that these issues have been resolved, the recommendation is to replace the roof with the original design prior to the full life of the shingles.

It is proposed that the school district consider renovation of the school in 2025. At that time, the schools' parking facilities and HVAC system will be nearing their life expectancy. These are major expenditures, which could be rolled into a comprehensive renovation.

Project	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Mayfield School											
Mayfield - Paint									217,000		
Water Heater/Boiler					246,000						
Secured Vestibule		373,000									
Capital Projects		373,000			246,000				217,000		

ARCHITECTURAL PLAN OF MAYFIELD SCHOOL



METZ MIDDLE SCHOOL

9950 WELLINGTON RD., MANASSAS, VA 20110

Figure 5 – Panoramic view of classroom – Source: Citygate

OBSERVATIONS

Metz is a large school that is somewhat underutilized. Overall it is in good condition but could use some lighting finishes updated. The building also has some interior rooms that lack windows or other sources of natural light. There is a security concern because of the proximity of the cafeteria/common areas to building entrance points. Closing in the entrance way to the commons/cafeteria space with doors may address the security issue.

SITE

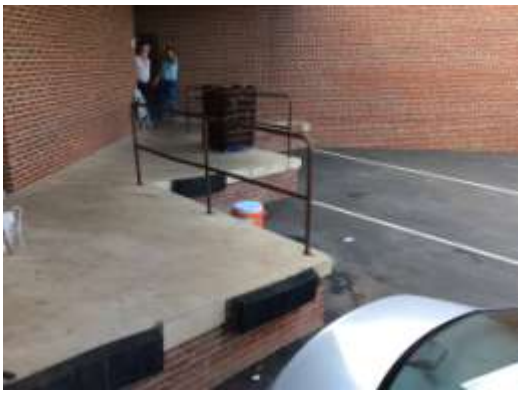
- Opened: 1990
- Age in 2030: 40 Years

Landscaping: Good

On-site bus queuing: Adequate

Kiss n Ride: Ample space

Side Walk/Stairs/Railing: Sidewalks are 25 years old and may need some replacement



Athletic/Play Area/Grandstands: Large, nicely designed baseball and softball field

SITE ARIAL PHOTO

Metz Middle School was opened in 1990 on 37.08 Acres. The school building is 209,124 sq. ft. The chiller and cooling tower were replaced in 2006.

BUILDING ENVELOPE

Concrete/Masonry Veneer/Sills: Masonry veneer was installed in 1990 (25 years old). It is in good condition.

Exposed Structural Steel: None

Window/Door/Skylight: Windows and doors are from original construction and are in good condition

ROOF/SIDING

Roof is primarily flat with sloped areas using shingle. Flat roof needs more care and maintenance to ensure down spot opening (drain) would be clear of dry leaves.

Partial roofing was done in 2011 and another partial was done in 2012. The life of the roof is between 15 and 18 years. In the case of this school, reroofing needs to be done about every 10 to 11 years. Therefore, the next roofing will be between 2020 and 2025.

INTERIOR

Plan Organization/Circulation: The organization and circulation is much better than older schools although, the school lacks some of the 21st century learning features such as smaller work areas.

Doors/Windows/Glazing: In good shape

Walls/Floor/Ceilings: Walls, floors, and ceilings are in good condition.

Chalkboards/Tack boards: good condition

Toilet Partitions/Accessories: Toilet and partitions in good condition

Lockers/Benches: Plenty of lockers with benches in good condition

Auditorium Seats/Curtains: The auditorium is well designed with a stage and in good condition.

Athletic Equipment: Indoor basketball court and separate exercise room area are in good condition

MECHANICAL PLUMBING

Chillers/Cooling Tower/Boiler: The chiller was rebuilt and refurbished. The cooling tower was replaced in 2006, and should operate to at least 2026.

The boilers are original.

Air Handling/Roof Equipment: Identified to be replaced in 2018.

Water Heater: The hot water heaters were replaced 2011.

Pumps: Most pumps are original to the construction.

Kitchen Hood: Kitchen facilities and hood in good condition

ELECTRICAL

Main Service is in good condition, with electric boxes well maintained and organized.

Receptacles: Adequate. There are plenty of receptacles as required by code

Interior Light/Site Lighting: Adequate

METZ: FACILITY GRADE

no.	System	Weights	Score in percentage	Weighed Score
1	Enclosure System	0.25	80	20
2	Structural System	0.25	80	20
3	Mechanical System	0.15	88	13.2
4	Electrical System	0.15	88	13.2
5	Fire Safety System	0.05	90	4.5
6	Finishes System	0.05	80	4
7	Conveyor System	0.05	100	5
8	Site work System	0.05	80	4
		1	Total Possible Points 100	83.9

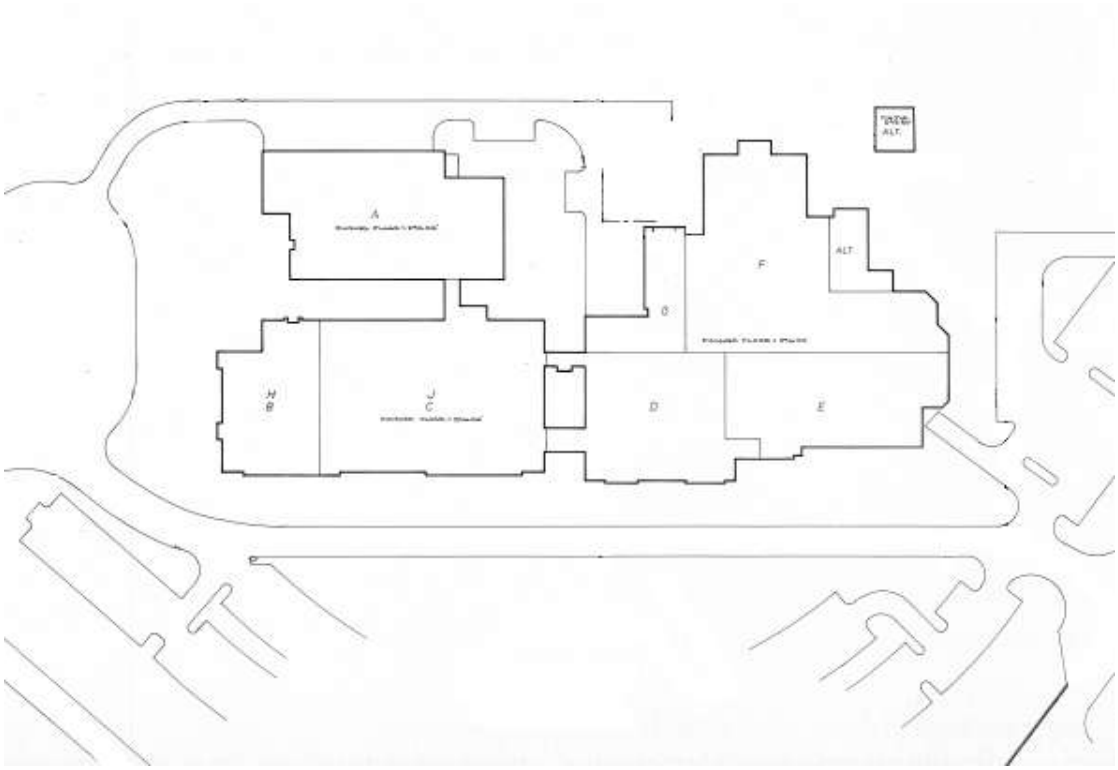
RECOMMENDATIONS

This school is in good condition but could use some lighting finishes updated. The building also has some interior rooms that lack windows or other sources of natural light. There is a security concern because of the proximity of the cafeteria/common areas to building entrance points. Closing in the entrance way to the commons/cafeteria space with doors may address the security issue.

A major renovation is recommended for this school in 2026.

Project	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Metz School											
Metz - Auditorium Improvements											
Metz- Upgrade Security Camera System											
Metz - Hallway Flooring Replacement											
Metz - Phased BAS/HVAC Replacement											
Metz - Parking Lot Seal Coat & Crack Repair											
Window/Door Replacement								1,424,000			
Secured Vestibule		517,000			598,000						
Water Heater					344,000						
Boiler							1,794,000				
Parking									3,654,000		
Capital Projects		517,000			942,000		1,794,000	1,424,000	3,654,000		

ARCHITECTURAL PLAN OF METZ MIDDLE SCHOOL



OSBOURN HIGH SCHOOL

9005 TUDOR LANE, MANASSAS, VA 20110

Figure 6 – Panoramic view of library at Osbourn – Source: Citygate

OBSERVATIONS

Although the original date of construction is in the 1950s, there doesn't seem to be anything remaining from the original building. There was a large addition built in the mid 1980's and the rest of the building was done in 2000. Overall it's in good shape, although, it has issues with interior classrooms and the lack of natural light and security issues with the main entrance opening to the cafeteria/commons area that should be addressed.

This building could possibly benefit from a phased renovation addressing the 1980's portion of the building first and the 2000 section (majority of the building) later. Renovation of the Johnson wing second floor was just completed and added capacity to the school. A covered walkway to get from the main building to the Johnson wing was installed in 2015. The area between the main building and Johnson could be a good location for an addition or CTE space. There is a need for windows, finish, and light upgrades in the 1980's section and on the first floor of the Johnson wing as well as replacement of the boilers in the 2000 section of the building.

SITE

Parking lot: There is ample parking in front and good circulation of buses with enough space for buses to queue. Kiss n Ride has plenty of spaces to allow for ease of flow. The parking lot is planned for replacement in the current CIP.

The school has 50.56 Acres of land, and 338,876 sq ft. building which includes the Johnson wing. Osbourn has had a long list of renovations, alterations, and additions with the major ones being:

- Comprehensive Renovation 1998–2000
- Johnson Wing Second Floor 2015

SITE FROM SATELLITE PHOTO:

Good landscaping and number of athletic/play areas.

BUILDING ENVELOPE

Concrete/Masonry Veneer/Sills: Concrete block and masonry veneer walls are all in good condition

Exposed Structural Steel: No exposed structural steel with the exception of the gym

Window/Door/Skylight: Windows and doors in good condition

ROOF/SIDING

Roof was changed in 2007. It is in good condition and if maintained properly will last until 2027

Roof Drains/Down Spots: Portion of roof was replaced in 2007. The drains were also replaced at the same time.

INTERIOR

Plan Organization/Circulation: Due to the original plan dating to 1953 and the number of renovations and alterations, the overall circulation plan is lacking and should be addressed in a future large renovation.

Doors/Windows/Walls: The majority of the school was replaced in 2000. The doors, windows, and walls are in good condition and should last until 2030

Floor/Ceiling: Floor and ceiling in good condition

Toilet Partitions/Accessories: Toilet partition and accessories in good condition.

Showers are in good condition.

Lockers/Benches: There are an adequate number of lockers and benches. Both lockers and benches are in good condition.

Auditorium Seats/Curtains: Auditorium, seats, and curtains are from the 1998-2000 renovation and are in good condition.

Athletic Equipment: Indoor basketball court (gym) was added in 1984 and is in good condition

Elevators: In good condition

MECHANICAL PLUMBING

Chillers: The original 1984 chiller was replaced in 1999. The cooling tower was replaced in 2008. They should last until 2028/2029 - Other 2 chillers were installed in 2000.

Cooling Tower: The cooling tower was replaced in 2008. (Picture shows cooling towers installed in 1998-2000 renovation)

Air Handling/Roof Equipment: New system since 1998-2000. Identified in current CIP for replacement.

Boiler/Pumps: The original 1984 Boiler and pumps were replaced 2015. Other boilers and pumps were installed during the 1998-2000 renovation. Should last until 2028/2029

Terminal Units/Convertors: All in good shape and will last until 2029

Water Heater: 7 years old (life span 15 years)

Kitchen Hood: Kitchen facility in good shape

ELECTRICAL

Main Service/Panels/Breakers: Electrical panels in good condition

Generator/Backup Generator/Site light: Backup generator is next to the football field and is in good condition

Receptacles: Adequate

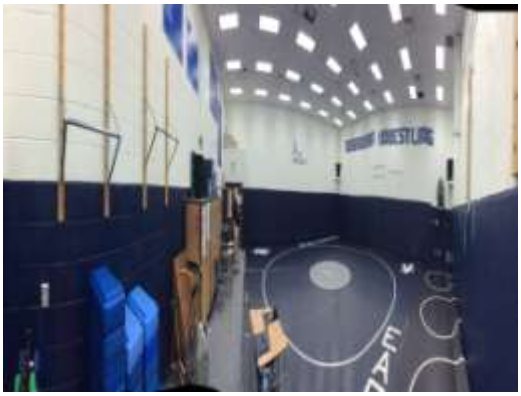
Interior Light: There are adequate interior lights in entire school

Field Lighting: Plenty of lights cover all fields

Theatre Lighting: Good

Main Sound System: Well designed system in good condition

Athletic Field Light: Good



OSBOURN: FACILITY GRADE

no.	System	Weights	Score in percentage	Weighed Score
1	Enclosure System	0.25	85	21.25
2	Structural System	0.25	85	21.25
3	Mechanical System	0.15	88	13.2
4	Electrical System	0.15	88	13.2
5	Fire Safety System	0.05	90	4.5
6	Finishes System	0.05	80	4
7	Conveyor System	0.05	100	5
8	Site work System	0.05	80	4
		1	Total Possible Points 100	86.4

RECOMMENDATIONS

Overall the building is in good condition. This building could benefit from a phased renovation addressing the 1980's portion of the building first and the 2000 section (majority of the building) later.

It is recommended that a comprehensive renovation be considered in 2025 when the HVAC cooling towers will need replacement.

Project	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Osbourn School											
Osbourn -Track Replacement											
Osbourn - Parking Lot Improvements									5,806,000		
Osbourn - Paint							436,000				
Main Gym Bleacher Replacement		563,000									
Window/Door Replacement						711,000					
Water Heater/Boiler				533,000							
Secured Vestibule		251,000									
HVAC - Cooling Tower						12,585,000					
Roof Replacement								3,170,000			
Hallway Floor Replacement											447,000
Osbourn - HVAC 1984 Addition Roof Top Repl.											
Osbourn - Control System Upgrade											
Osbourn - Gillum Field Relocation											
Capital Projects		814,000		533,000		13,296,000	436,000	3,170,000	5,806,000		447,000

ARCHITECTURAL PLAN OF OSBOURN HIGH SCHOOL