STAFFORD Virginia

Board of Supervisors

BOARD OF SUPERVISORS
CAPITAL IMPROVEMENT WORK SESSION AGENDA
JUNE 4, 2019
11:00 A.M. TO 12:30 P.M.
A/B/C CONFERENCE ROOM

11:00 A.M. CALL TO ORDER - ROLL CALL OF MEMBERS

WORK SESSION AGENDA ITEMS

1. FY20-29 CIP PRESENTATION

This agenda may be amended on the day of the meeting. Participation of all citizens is encouraged. For all individuals with special needs, please notify County Administration of any accommodations required at least 24 hours in advance of the meeting. The agenda and related materials may be found on the County's website at www.staffordcountyva.gov

Capital Improvement Plan (CIP) Budget Work Session

June 4, 2019

Purpose

1. To present the Technical Review Committee's (TRC) ranking of projects and recommendation of changes
2. To provide the TRC's recommended CIP
3. To get the Board's direction to prepare a CIP that aligns with the Strategic Plans and the needs of the Community

Agenda

Item
• Technical Review Committee Process
• TRC's Recommendation for the CIP
• Debt Capacity and Affordability
• County Projects
• School Projects
• Board Direction and Questions

TRC PROCESS

TRC Process

- The TRC finalized scoring all Schools and County projects
  - In Fall 2018, the TRC had scored the Courthouse and Parking Lot, and the Public Safety Joint Training Center projects and all other County projects
  - School Staff reviewed and scored all School 3R projects
  - Finalized scoring for all School projects and the Brooks Park Stream Restoration (Stormwater project)
- Ferry Farm ES is underway, and was not reviewed or scored by the TRC

TRC Ranking

Project	TRC Member 1	TRC Member 2	TRC Member 3	Average Score
Brooks Park Stream Restoration	48.9%	39.6%	29.8%	39.4%
Hartwood Elementary Renovation/Additions	47.3%	41.8%	20.7%	36.6%
Courthouse	33.2%	35.0%	38.1%	35.5%
Drew Middle School Renovation/Addition	38.7%	39.8%	20.7%	33.1%
High School #6	41.0%	31.8%	22.4%	31.8%
Early Childhood Special Education Addition, Phase 1	27.2%	39.5%	20.6%	29.1%
Public Safety Joint Training Center	30.4%	32.3%	22.3%	28.3%
N. Stafford HS Fine Arts Wing Renovation/Addition	25.4%	30.4%	18.0%	24.6%
Elementary School 18	18.3%	32.4%	20.2%	23.6%
Early Childhood Special Education Addition, Phase 2	14.6%	34.1%	20.6%	23.1%
Fleet Services Addition	14.0%	33.1%	20.7%	22.6%

Link to TRC Reporting

TRC’S RECOMMENDED CIP

STAFFORD Virginia

TRC Recommendation

ected Sources	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	5 Year Balanced CIP	Years 6-10 Planning (Unbalanced)	Total Sources over 10 years
t Funding Sources														
unty Bond Proceeds	0	0	28,774,241	3,150,000	5,940,000	0	0	0	34,888	183,573	9,512,795	37,864,241	9,731,257	47,595,498
hool Bond Proceeds	172,086	13,945,271	7,523,000	8,984,579	42,824,216	55,362,409	30,090,778	8,709,000	18,908,280	15,374,446	11,584,672	128,811,561	84,667,176	213,478,737
aster Lease	0	3,260,000	2,185,521	7,691,686	1,445,677	638,487	658,112	677,545	787,781	1,143,815	11,982,639	15,221,371	15,249,892	30,471,263
Total Debt Funding Sources	**$172,086**	**$17,205,271**	**$38,482,762**	**$19,826,265**	**$50,209,893**	**$56,000,896**	**$30,748,890**	**$9,386,545**	**$19,730,949**	**$16,701,834**	**$33,080,106**	**181,897,173**	**$109,648,325**	**$291,545,497**
nty Sources														
rrent Revenue	0	1,054,842	0	0	0	0	0	0	0	0	0	1,054,842	0	1,054,842
Allocation Transfer - 3% Guideline	0	3,777,219	3,759,000	3,989,503	4,141,533	4,267,400	4,870,717	4,408,200	4,505,000	5,039,000	4,258,930	19,934,656	23,081,847	43,016,503
of Prior Year Fund Balance General Fund	667,000	3,486,500	0	0	0	0	0	0	0	0	0	4,153,500	0	4,153,500
offers	0	63,000	305,334	0	0	0	122,126	0	165,000	907,000	568,635	368,334	1,762,761	2,131,095
ate Grants	0	0	0	700,000	0	0	0	0	0	39,000	161,000	700,000	200,000	900,000
et Sale from Boat Property	0	0	0	0	0	0	0	0	0	0	5,600,000	0	5,600,000	5,600,000
ansfer in from General Fund	0	41,027	0	0	0	0	0	0	0	0	0	41,027	0	41,027
dicated Real Estate Tax Revenue	0	188,815	194,479	200,314	206,323	212,513	218,888	225,455	232,219	239,185	246,361	1,002,444	1,162,108	2,164,552
Total County Sources	**$667,000**	**$8,611,403**	**$4,258,813**	**$4,889,817**	**$4,347,857**	**$4,479,913**	**$5,211,731**	**$4,633,655**	**$4,902,219**	**$6,224,185**	**$10,834,926**	**$27,254,803**	**$31,806,716**	**$59,061,519**
ool Sources														
rrent Revenue - County Designated 3R	0	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	7,229,325	7,229,325	14,458,650
rrent Revenue - Schools	0	1,758,929	0	0	0	0	0	0	0	533,891	0	1,758,929	533,891	2,292,820
e of Prior Year Fund Balance General Fund	1,478,714	0	0	0	0	0	0	0	0	0	0	1,478,714	0	1,478,714
offers	0	0	0	1,015,836	1,517,784	2,641,006	561,611				0	5,174,626	561,611	5,736,237
utrition Capital Funding	0	120,000	125,000	131,000	135,000	139,000	143,000	0	0	0	0	650,000	143,000	793,000
et Funding Sale of MES	0	0	0	0	6,300,000	0	0	0	0	0	0	6,300,000	0	6,300,000
Total School Sources	**$1,478,714**	**$3,324,794**	**$1,570,865**	**$2,592,701**	**$9,398,649**	**$4,225,871**	**$2,150,476**	**$1,445,865**	**$1,445,865**	**$1,979,756**	**$1,445,865**	**$22,591,594**	**$8,467,827**	**$31,059,421**
Total Projected Sources	**$2,317,800**	**$29,141,468**	**$44,312,440**	**$27,308,783**	**$63,956,398**	**$64,706,680**	**$38,111,097**	**$15,466,065**	**$26,079,033**	**$24,905,775**	**$45,360,897**	**$231,743,570**	**$149,922,867**	**$381,666,437**

TRC Recommendation

Projects by Functional Area	Completion Date	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	5 year Balanced CIP	5 Year Planning Period	Total Projected Uses (Includes PY Funding)
General Government															
ERP System		200,000	0	0	6,206,000	0	0	0	0	0	0	0	6,406,000	0	6,406,000
Fiber Network		0	0	874,000	0	0	1,028,400	700,000	1,189,900	0	0	0	1,902,400	1,889,900	3,792,300
3R		0	1,022,930	32,000	169,503	468,363	186,000	970,000	897,000	1,031,000	1,906,000	1,381,930	1,878,797	6,185,930	8,064,727
Public Safety															
Replacement Apparatus & Ambulance		0	2,531,000	3,079,000	2,700,000	2,763,000	1,926,000	1,984,000	2,042,000	2,104,000	2,634,000	2,231,000	12,999,000	10,995,000	23,994,000
Public Safety Joint Training Center	FY2030	0	0	0	0	0	0	0	0	199,888	1,129,573	10,192,430	-	11,521,892	11,521,892
Cardiac Equipment Replacement		0	1,716,000	270,000	0	0	0	0	0	90,000	0	0	1,986,000	90,000	2,076,000
3R for Fire Rescue		0	440,022	0	0	0	0	0	0	0	0	0	440,022	0	440,022
CAD		0	0	0	0	0	0	0	0	0	0	16,842,000	-	16,842,000	16,842,000
3R for Sheriff		0	581,000	1,056,000	457,000	1,906,000	0	0	0	0	0	0	4,000,000	0	4,000,000
Brooks Stream Restoration		467,000	0	0	1,100,000	0	0	0	0	0	0	0	1,567,000	0	1,567,000
Judicial															
Courthouse		0	2,600,000	28,991,575	3,150,000	5,940,000	0	0	0	0	0	0	40,681,575	0	40,681,575
Parking Lot and Initial Start of Downtown Stafford		0	1,800,000	0	0	0	0	0	0	0	0	0	1,800,000	0	1,800,000
Parks and Recreation															
3R		0	895,000	332,000	1,334,000	323,170	1,063,000	821,561	475,300	1,047,000	1,882,000	0	3,947,170	4,225,861	8,173,031
Library		0	0	0	0	0	0	0	0	0	0	50,000	0	50,000	50,000
Public Works															
3R		0	285,451	584,000	615,000	333,000	915,000	1,394,282	707,000	1,253,000	0	1,633,000	2,732,451	4,987,282	7,719,733
Education															
Renovate Ferry Farm ES		1,650,800	11,139,200	0	0	0	0	0	0	0	0	0	12,790,000	0	12,790,000
Drew MS Renovation	FY2032		0	0	0	0	0	0	0	0	1,092,727	6,009,999	-	7,102,726	42,763,871
Hartwood ES Renovation	FY2029		0	0	0	0	0	1,030,000	2,575,000	13,880,280	9,771,610	0	-	27,256,890	27,256,890
ECSE Addition, Phase I	FY2032		0	0	0	0	0	0	0	0	0	521,673	-	521,673	9,841,078
Elementary School #18		0	0	0	0	0	0	0	0	0	0	0	0	0	0
High School #6	FY2026	0	0	2,500,000	5,000,000	45,600,000	53,000,000	24,595,389	1,125,000	0	0	0	106,100,000	25,720,389	131,820,389
Bond Funded 3R		0	4,565,000	5,023,000	5,000,415	5,042,000	5,003,415	5,027,000	5,009,000	5,028,000	5,044,000	5,053,000	24,633,830	25,161,000	49,794,830
Cash Funded 3R		0	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	1,445,865	7,229,325	7,229,325	14,458,650
Nutrition Funded 3R		0	120,000	125,000	131,000	135,000	139,000	143,000	0	0	0	0	650,000	143,000	793,000
Total All Projects		**$2,317,800**	**29,141,468**	**44,312,440**	**27,308,783**	**63,956,398**	**64,706,680**	**38,111,097**	**15,466,065**	**26,079,033**	**24,905,775**	**$45,360,897**	**231,743,570**	**149,922,867**	**$426,646,987**

Other County Projects

- General Government
  - ERP
  - Fiber
  - 3R
- Public Safety
  - Apparatus and Ambulances
  - Cardiac Equipment
  - CAD
  - 3R
- Parks and Recreation
  - 3R
  - Library
- Public Works
  - 3R

DEBT CAPACITY AND AFFORDABILITY

STAFFORD Virginia

Debt Capacity

- Debt capacity was recalculated maintaining the $1.01 Tax Rate
  - In the fall, debt capacity will be recalculated with newly reviewed assumptions that may change capacity projections
- Based on the TRC recommended CIP, available debt capacity is $98.1M

Debt Capacity

- Based on the TRC's recommendation, capacity is available should the Board decide to consider a bond borrow for Transportation or other needs
- A $50M bond borrow would be approximately $4.2M in debt service
- Funding strategies could include changes to the Real Estate or Personal Property Tax rates, proffers and other sources
- This will be discussed in more detail at the Transportation CIP Budget Work Session

Debt Capacity Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	5 Year Plan	All Years
Total Borrow	13,945,271	36,297,241	12,134,579	48,764,216	55,362,409	30,090,778	8,709,000	18,943,168	15,558,019	21,097,467	166,675,802	260,902,148
Debt Capacity	32,419,000	46,106,000	42,400,000	41,387,000	35,029,000	17,947,000	27,127,000	20,085,000	31,831,000	64,695,000	197,341,000	359,026,000
Cumulative (Deficit)/Surplus	18,473,729	28,282,488	58,547,909	51,170,693	30,837,284	18,693,506	37,111,506	38,253,338	54,526,319	98,123,852	30,837,284	98,123,852

Debt Service

Debt Service Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	5 year Balanced CIP	5 Year Planning Period	Total
Existing Debt Service for Governmental Funds	45,825,478	43,930,864	41,706,161	39,646,491	37,541,345	35,983,470	35,792,219	34,751,594	34,326,689	32,702,315	208,650,340	173,556,288	382,206,627
Debt Service Approved Not Borrowed	792,000	792,000	792,000	792,000	792,000	792,000	792,000	792,000	792,000	792,000	3,960,000	3,960,000	7,920,000
Existing Debt Service for Governmental Funds	46,617,478	44,722,864	44,428,092	45,917,751	46,629,018	49,490,701	54,082,139	55,713,490	56,176,348	56,321,126	228,315,203	271,783,802	500,099,005
County Debt Service	0	0	2,407,809	263,590	497,055	0	0	0	2,919	15,361	3,168,454	18,281	3,186,735
County Master Lease		763,000	512,000	1,801,000	339,000	150,000	154,000	159,000	184,000	268,000	3,415,000	915,000	4,330,000
Schools Debt Service		1,166,931	629,520	751,824	3,583,502	4,632,689	2,517,976	728,763	1,582,232	1,286,523	6,131,776	10,748,184	16,879,960
Total Debt Service	$46,617,478	$46,652,795	$47,977,421	$48,734,164	$51,048,575	$54,273,390	$56,754,115	$56,601,253	$57,945,499	$57,891,010	241,030,433	283,465,267	524,495,700

	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	5 year Balanced CIP	5 Year Planning Period
1 cent	$1,672,000	$1,672,000	$1,755,600	$1,755,600	$1,843,380	$1,843,380	$1,935,549	$1,935,549	$2,032,326	$2,032,326	$9,779,131	$2,032,326
Current tax rate	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01		
Interest Rate	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
Years Financed	20	20	20	20	20	20	20	20	20	20	20	20
Payment	-	1,929,930.93	3,549,329	2,816,413	4,419,557	4,782,689	2,671,976	887,763	1,769,152	1,569,885	$12,715,230	$11,681,465
Tax Rate Equivalent	0.000	0.012	0.020	0.016	0.024	0.026	0.014	0.005	0.009	0.008	0.072	0.061

COUNTY PROJECTS

County Projects in the Recommended CIP

Brooks Park Stream Restoration (Stormwater) FY2022

- Mandated project

Courthouse and Parking Lot (Initial start of Downtown Stafford) FY2020-23

- No significant changes

Public Safety Joint Training Center FY2027-29

- Being considered in Strategic Work Plans, will update findings in next CIP

Link to County Project Sheets

SCHOOL PROJECTS

STAFFORD Virginia

School Submission

Total $293.3M

- SCPS provided project sheets and supporting studies and documents
- These corresponded to the School Board's Large Capital Project List which was approved on November 13, 2018 with the exception of Ferry Farm ES renovations phases II-IV
  - The Board took action to budget the renovation on February 19, 2019, on R19-58.

Link to School Board's Large Scale Projects

School Projects Recommended by TRC

Hartwood ES Renovation FY2025-28

- Provided as a renovation to the TRC at $27M with no additional capacity; a rebuild is projected at approximately $23M more with increased capacity of 317 students
- Renovation assumes County water, but does not include additional costs to run water to school

Early Childhood Special Education Addition Phase I FY2029-31

- TRC recommends funding in the final year of the CIP (FY2029)
- For preparation of next year's CIP, we will work with School staff to understand the basis for enrollment projections

Drew Middle School Renovation FY2028-31

- Presented to begin in the ninth year of the CIP during the planning period
- More information to be reviewed during the preparation of next year's CIP

High School #6 FY2021-26

- Presented with the cost provided by the Construction Cost Estimator
- Does not include land costs
- Timing is supported by the latest School enrollment projections

Link to; School Projects Sheet HES FCA Study, HES Mosely Study; ECSE Projections; Drew MS; HS#6; Enrollment Projections

School Projects Not Included in TRC's CIP

Elementary School #18

- Projections support sufficient capacity

Early Childhood Special Education Addition Phase II

- Elementary School capacity could allow for additional growth and the committee needs a better understanding of assumptions behind projections

North Stafford High School Fine Arts Wing

- Lower School Board priority

Fleet Services Addition

- Additional information regarding work order history and support of the Steering Committee

Link to: NSH Study; Fleet Services Addition

NEXT STEPS AND QUESTIONS

STAFFORD Virginia

FY2020 CIP

The major projects in the FY2020 CIP are:

- Courthouse Design and Temporary Parking Lot
- Fire and Rescue Apparatus
- Cardiac Equipment Replacement
- Ferry Farm Elementary School Renovation
- School 3R Projects

Appropriation authority will be considered by project phase

FY2021-30 CIP

- Staff has been directed by the Board to develop and present a new CIP policy
  - The policy will no longer include a joint School Board/Board of Supervisor's review but maintains data driven decision criteria for all projects
  - Anticipate a draft policy for the Board to consider this summer
- Work has begun on planning for the FY2021-30 CIP
  - Proffers Committee

Conclusion/Questions

- Direction for the change in projects as recommended by the TRC:
  - Public Safety Joint Training Center – does the Board support the change in timing to the project?
  - Hartwood ES – does the Board support the rebuild or the renovation of this elementary school?
  - Early Childhood Special Education Phase I Addition – does the Board support adding funding in the last year as we work towards a better understanding of the assumptions?
  - Drew MS Renovation – does the Board support adding funding in the planning period as staff gathers additional information about the renovation?
  - High School #6 -
    - Does the Board support the proposed cost provided by the Schools through their Construction Cost Estimator?
    - Does the Board support the timing of the high school based on the school enrollment projections?
    - Should staff estimate and add land costs to the project?

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Project	TRC Member 1	TRC Member 2	TRC Member 3	Average Score
Brooks Park Stream Restoration	48.9%	39.6%	29.8%	39.4%
Hartwood Elementary Renovation/Additions	47.3%	41.8%	20.7%	36.6%
Courthouse	33.2%	35.0%	38.1%	35.5%
Drew Middle School Renovation/Addition	38.7%	39.8%	20.7%	33.1%
High School #6	41.0%	31.8%	22.4%	31.8%
Early Childhood Special Education Addition, Phase 1	27.2%	39.5%	20.6%	29.1%
Public Safety Joint Training Center	30.4%	32.3%	22.3%	28.3%
N. Stafford HS Fine Arts Wing Renovation/Addition	25.4%	30.4%	18.0%	24.6%
Elementary School 18	18.3%	32.4%	20.2%	23.6%
Early Childhood Special Education Addition, Phase 2	14.6%	34.1%	20.6%	23.1%
Fleet Services Addition	14.0%	33.1%	20.7%	22.6%

Summary Worksheet

Criteria Percentage	15	15	15	15	15	10	10	5	100
Project	Health and Safety	Education	Impact on Operational Budget	Special Considerations / Regulatory Compliance / Timing / Location	Economic / Community Development	Quality of Life	Infrastructure	Sustainability / Energy Efficiency	Total Project Percentage
Courthouse	15.0%	0.0%	0.5%	8.4%	1.4%	2.9%	5.0%	0.0%	33.2%
Public Safety Joint Training Center	7.5%	7.5%	5.2%	0.6%	3.3%	3.3%	3.0%	0.0%	30.4%
Brooks Park Stream Restoration	13.8%	6.0%	7.5%	10.0%	1.9%	7.5%	1.0%	1.3%	48.9%
Fleet Services Addition	0.0%	3.8%	0.9%	4.7%	0.9%	1.7%	2.0%	0.0%	14.0%
N. Stafford HS Fine Arts Wing Renovation/Addition	0.0%	9.0%	5.6%	3.1%	0.9%	3.8%	3.0%	0.0%	25.4%
Early Childhood Special Education Addition, Phase 1	2.5%	8.3%	3.8%	7.8%	1.4%	2.5%	1.0%	0.0%	27.2%
Early Childhood Special Education Addition, Phase 2	0.0%	3.8%	1.9%	5.3%	1.9%	1.3%	0.5%	0.0%	14.6%
Elementary School 18	0.0%	3.0%	0.5%	2.5%	3.8%	4.6%	1.5%	2.5%	18.3%
Drew Middle School Renovation/Addition	3.8%	8.3%	7.0%	4.7%	3.8%	4.6%	6.0%	0.7%	38.7%
Hartwood Elementary Renovation/Additions	10.0%	8.3%	7.0%	5.0%	5.2%	5.0%	6.0%	0.8%	47.3%
High School #6	12.5%	6.8%	0.5%	5.6%	5.2%	5.0%	3.0%	2.5%	41.0%

Summary Worksheet

Criteria Percentage	15	15	15	15	15	10	10	5	100
Project	Health and Safety	Education	Impact on Operational Budget	Special Considerations / Regulatory Compliance / Timing / Location	Economic / Community Development	Quality of Life	Infrastructure	Sustainability / Energy Efficiency	Total Project Percentage
Courthouse	5.0%	0.0%	1.9%	10.0%	6.6%	3.3%	8.0%	0.3%	35.0%
Public Safety Joint Training Center	6.3%	6.8%	4.7%	5.3%	3.8%	2.1%	3.0%	0.4%	32.3%
Brooks Park Stream Restoration	10.0%	5.3%	6.1%	8.4%	2.3%	6.3%	0.0%	1.3%	39.6%
Fleet Services Addition	0.0%	6.8%	7.5%	4.7%	5.2%	0.0%	8.0%	1.0%	33.1%
N. Stafford HS Fine Arts Wing Renovation/Addition	0.0%	9.8%	7.5%	3.8%	4.2%	1.3%	3.5%	0.4%	30.4%
Early Childhood Special Education Addition, Phase 1	8.8%	12.0%	4.2%	5.9%	4.7%	0.8%	2.0%	1.1%	39.5%
Early Childhood Special Education Addition, Phase 2	5.0%	11.3%	2.3%	5.9%	5.2%	0.8%	2.5%	1.1%	34.1%
Elementary School 18	2.5%	9.8%	0.9%	4.1%	7.5%	2.1%	2.0%	3.6%	32.4%
Drew Middle School Renovation/Addition	2.5%	10.5%	5.6%	5.0%	6.6%	1.3%	4.5%	3.9%	39.8%
Hartwood Elementary Renovation/Additions	2.5%	12.0%	6.1%	5.0%	6.6%	1.3%	4.5%	3.9%	41.8%
High School #6	2.5%	9.8%	0.9%	3.4%	7.5%	2.1%	2.0%	3.6%	31.8%

Summary WorkSheet

Criteria Percentage	15	15	15	15	15	10	10	5	100
Project	Health and Safety	Education	Impact on Operational Budget	Special Considerations / Regulatory Compliance / Timing / Location	Economic / Community Development	Quality of Life	Infrastructure	Sustainability / Energy Efficiency	Total Project Percentage
Courthouse	2.5%	10.5%	3.8%	6.6%	5.6%	0.0%	7.5%	1.7%	38.1%
Public Safety Joint Training Center	6.3%	6.0%	2.3%	1.3%	1.4%	0.0%	5.0%	0.0%	22.3%
Brooks Park Stream Restoration	7.5%	0.0%	5.6%	12.2%	1.4%	2.5%	0.0%	0.6%	29.8%
Fleet Services Addition	5.0%	4.5%	4.7%	3.1%	0.0%	0.0%	2.0%	1.4%	20.7%
N. Stafford HS Fine Arts Wing Renovation/Addition	0.0%	5.3%	3.8%	2.5%	0.0%	0.0%	4.0%	2.5%	18.0%
Early Childhood Special Education Addition, Phase 1	3.8%	7.5%	2.3%	2.5%	0.0%	0.0%	2.0%	2.5%	20.6%
Early Childhood Special Education Addition, Phase 2	3.8%	7.5%	2.3%	2.5%	0.0%	0.0%	2.0%	2.5%	20.6%
Elementary School 18	5.0%	8.3%	0.9%	2.5%	0.0%	0.0%	1.0%	2.5%	20.2%
Drew Middle School Renovation/Addition	3.8%	7.5%	0.9%	2.5%	0.0%	0.0%	3.5%	2.5%	20.7%
Hartwood Elementary Renovation/Additions	3.8%	7.5%	0.9%	2.5%	0.0%	0.0%	3.5%	2.5%	20.7%
High School #6	5.0%	7.5%	0.9%	2.5%	0.0%	0.0%	4.0%	2.5%	22.4%

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Large Capital Project List

Stafford County Public Schools

FY2020-29 CIP

Priority	Large Projects	Proposed Opening Date	Current Cost (FY19)	Proposed Opening Date Cost
1	**Construct High School #6**	FY2026	$ 109,895,344	$ 132,382,000
	Construct 2,150 student capacity HS. 2017 - 2028 Student Enrollment Projections show exceeding 100% HS capacity in FY2025.			
2	**Construct Elementary School #18**	FY2028	$ 37,601,398	$ 49,402,000
	Construct 966 student capacity ES. Student Enrollment Projections show exceeding 100% in 2027 - 28 (FY2028) school year.			
3	**Renovate/Addition Ferry Farm Elementary School (Phase II)**	FY2027	$ 6,324,265	$ 8,045,000
	Renovate the 22,000 s.f. 1966 addition. 10 year Facility Condition Index (96.8% Very Poor) and program deficiencies relative to new ES Ed Spec warrant significant upgrades to all critical building systems and additional square footage (similar to other ES renovations).			
4	**Additional Early Childhood Special Education Capacity (10 Classrooms)**	FY2027	$ 6,653,610	$ 8,489,000
	Adds an additional 10 classrooms and support space (location TBD) for ECSE. ECSE projections and past trending data shows a need for additional classrooms in the county by 2021.			
5	**Renovate/Addition Hartwood Elementary School**	FY2028	$ 20,185,812	$ 26,463,000
	Facility Condition Index (92.38% Very Poor) and program deficiencies relative to new ES Ed Spec warrant significant upgrades to all critical building systems and additional square footage (similar to other ES renovations).			
6	**Additional Early Childhood Special Education Capacity (10 Classrooms)**	FY2029	$ 6,928,135	$ 9,374,000
	Adds an additional 10 classroom (location TBD) for ECSE. ECSE projections and past trending data shows a need for additional classrooms beyond the inventory at Gari Melchers and ECSC/Head Start Northern Campus by FY2025 (this includes the proposed 10 classroom addition in FY2027).			
7	**Renovate/Addition Ferry Farm Elementary School (Phase III - IV)**	FY2029	$ 7,690,265	$ 10,379,000
	Renovate the remaining 27,160 s.f. 1988 and 1991 additions with 5,000 sf addition to address program deficiencies. 10 year Facility Condition Index (96.8% Very Poor) and program deficiencies relative to new ES Ed Spec warrant significant upgrades to all critical building systems and additional square footage (similar to other ES renovations).			
8	**Renovate Drew Middle School**	FY2029	$ 28,904,897	$ 39,135,000
	Renovate 98,900 s.f. of DMS and add s.f. to address program deficiencies. Facility Condition Index (66.43% Very Poor but facility is in "better" condition than FFES and HES) and program deficiencies relative to most recent MS Ed Spec warrant significant upgrades to all critical building systems and additional square footage.			
9	**Addition Fleet Services**	FY2030	$ 6,949,872	$ 9,683,000
	Adds 10 service bays to existing facility. CST Study shows a need for two (2) additional bays in FY18, two (2) more in FY28 and an additional four (4) more in FY38. Operational work around plans can extend the need date to FY30 but recommend building 10 and gain efficiency of scale.			
10	**Renovate/Addition North Stafford High School - Fine Arts Wing**	FY2030	$ 5,223,506	$ 7,269,000
	Renovates existing fine art wing and addresses program deficiencies relative to new HS program specifications. Existing space is supporting programs now, but space is not efficiently nor does it meet program requirements.			

Storm Water: Brooks Park Stream Restoration

Project Code		**Square Footage/Acreage**	
Project Type	3-R	**Construction Cost per Sq. Ft.**	
Project Status	Design/Engineering	**Est. Opening Date**	
Total Project Cost	$1,567,000	**Student Capacity**	
Functional Area	Public Works Stormwater		
Total Debt Service			
Full Year Operating Impact			

Project Description:

This Project will restore approximately 1,400 linear feet of an unnamed tributary to the Rappahannock River. The stream segment receives water from 175 acres of urbanized area. The project improvements will restore geomorphic stability, enhance removal of pollutants, and improve water quality of the Rappahannock River Watershed through adjustment of the dimension, pattern, and profile of the stream.

Stafford County has a Multiple Separate Storm Sewer System (MS4) permit [VAR040056] from Virginia's Department of Environmental Quality. One aspect of the MS4 permit is compliance with the U.S. Environmental Protection Agency's (EPA)/Virginia Department of Environmental Quality (VDEQ) Chesapeake Bay Total Maximum Daily Load (TMDL) 'pollution diet' plan, The TMDL establishes a "pollution diet" for the entire Chesapeake Bay watershed to address pollution (i.e. nutrients/sediment. A state-wide Watershed Implementation Plan (WIP) was developed with pollutant removal goals assigned.

The County has identified and completed final site design for the St. Clair Brooks Park Stream Restoration project to assist with meeting the Pollutant of Concerns (POC) load reduction requirements for total nitrogen, total phosphorus, and sediment as identified in the County's Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan developed in accordance with the Multiple Separate Storm Sewer System (MS4) permit [VAR040056] from Virginia's Department of Environmental Quality.

Location:

St. Clair Brooks Memorial Park.

Storm Water: Brooks Park Stream Restoration

Relationship to Approved County Policy or Plan:

- The stream restoration project located in St. Clair Brooks Memorial Park is related to the EPA-issued TMDL for the Chesapeake Bay, which is coordinated by the VDEQ. Per Stafford County's storm water permit (issued July 1, 2013), we are required to meet 100% of the pollution reductions associated with the TMDL by June 30, 2028. A draft Phase II Chesapeake Bay TMDL Action Plan was required for the MS4 permit renewal (June 2018); within that document, the stream restoration was recognized as the manner to accommodate the pollutant reductions.

Analysis of Need:

Federal and state regulations have signified the need for Stafford County to identify, design, and construct certain storm water retrofit projects that would satisfy the County's TMDL requirement. It is imperative that Stafford County meet this requirement to avoid non-compliance, consent orders, violations and/or fines associated with federal and state regulations. Currently, Stafford County has met the June 30, 2018 deadline for the 5% TMDL reduction goal. However, the County is required to meet the 40% reduction goal by June 30, 2023 and the 100% reduction goal by June 30, 2028.

Change or Reasons for Revisions:

The stream restoration project located in St. Clair Brooks Memorial Park will satisfy the 100% MS4 TMDL reduction goal required for June 30, 2028. Due to the extent of the design and construction, it is safe to assume that the estimated schedule for completion would be 18-24 months.

Alternative:

Additional storm water retrofit projects have been identified in the Rappahannock River watershed to help meet the TMDL requirement. However, the stream restoration project in St. Clair Brooks Memorial Park was selected based on numerous factors that favor Stafford County.

Project Summary:

Project	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Project Total
Brooks Park Steam Restoration	$467,000	$0	$0	$1,100,000	$0	$0	$0	$0	$0	$0	$0	$1,567,000
Total Expenditures	**$467,000**	**$0**	**$0**	**$1,100,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,567,000**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Project Total
GF Allocation Transfer - 3% Guideline	$0	$0	$0	$400,000	$0	$0	$0	$0	$0	$0	$0	$400,000
Use of Prior Year Fund Balance General Fund	467,000	0	0	0	0	0	0	0	0	0	0	467,000
State Grants	0	0	0	700,000	0	0	0	0	0	0	0	700,000
Total Revenues	**$467,000**	**$0**	**$0**	**$1,100,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,567,000**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Total Operating Impacts	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Judicial: New Circuit Court and Renovation/Expansion of Existing Facility

Project Code		**Square Footage/Acreage**	80,006 ft^2 New Finished 18,202 ft^2 New Shell 64,900 ft^2 Renovation 400 ft^2 Expansion
Project Type	Building Construction	**Construction Cost per Sq. Ft.**	New Finished: $352 New Shell: $176 Renovation: $100 Expansion: $386
Project Status	Design/Engineering	**Operating Cost per Sq. Ft.**	$5.91
Functional Area	Circuit Court	**Student Capacity**	
Estimated Project Cost	$40.7 million	**Est. Opening Date**	FY2023
Current Year Cost		**Funding Source**	Virginia Resource Authority (VRA)
Total Debt Service	$3,169,000	**Tax Rate Equivalent**	$0.019
Full Year Operating Impact	$1,353,000		

Project Description:

The proposed project includes the construction of a new 98,208 ft^2 Circuit Court building. 80,006 ft^2 of that will be finished and include four circuit courtrooms and spaces for judges' chambers, Circuit Court Clerk, security, and other associated court functions. 18,202 ft^2 will be shelled for the eventual finishing for two additional circuit courtrooms and associated spaces. The project also includes extensive renovation and minor expansion of the existing facility. This renovation will expand the space for the Juvenile and Domestic Relations court needs as well as the General District Court.

Judicial: New Circuit Court and Renovation/Expansion of Existing Facility

Operating Impact Summary:

Below are the operating impacts for the new Circuit Court building:

For building security: a total of seven additional deputies would be required to operate a safe and efficient courthouse.

- (2) For front security / magnetometer and X-Ray machine.
- (1) For Control Room: Deputy will monitor all cameras, control cell doors, and certain courtroom doors.
- (2) For security of inmates: Escorting inmates to and from the jail vans to the court holding cells, serving various papers, escorts through the building, high risk inmates, emergency situations and the like.
- (2) Deputies for the fourth circuit court

The total number to support the building is 13. We have considered the fact that we will be bringing six over from the current courthouse staffing level.

For maintenance and custodial:

- (2) Building Maintenance Mechanics.
- (2) Custodians.
- Start-up Costs include equipment and supplies.
- On-going operating costs include additional costs for utilities, contracts, and maintenance.

Location:

1300 Courthouse Road.

Relationship to Approved County Policy or Plan:

Public Safety has been identified by the Board of Supervisors as a major Board priority. Providing the necessary court facilities to handle the growing caseload and ensuring all court facilities meet or exceed the safety standards is essential to our overall public safety mission. The proposed circuit court building and renovation of the existing facility will ensure that these needs are met for the next 10-15 years.

Judicial: New Circuit Court and Renovation/Expansion of Existing Facility

Analysis of Need:

Moseley Architects conducted a detailed court needs analysis in 2016. The result of this analysis was a proposed new court building that would provide for all court needs for the next 20 years at an estimated cost of $74 million. The proposal would abandon the current facility for future administration use. At the request of the Board, staff reengaged Moseley to reevaluate the proposal utilizing the existing building and keeping all new construction on the current Government Center site with additional parking across Courthouse Road. Utilizing the needs analysis completed in 2016 and updating the data to reflect the most recent years, Moseley presented the proposed circuit court building and the renovated existing facility as the preferred option that was later approved by the Board of Supervisors with the adoption of the FY19 CIP.

Change or Reasons for Revisions:

FY2007 - New project in CIP $20.6M
FY2008 - Updated construction costs $33.8M
FY2009 - No change
FY2010 - No change
FY2011 - Consolidate a renovation of the current courthouse project and reduce existing project to an addition due to current conditions in the economy. Project to begin in FY13. $21.7M
FY2012 - Changed the scope of the project. Added a Courthouse annex project. Due to shortage in affordability, project to begin planning and design in FY17. $22.9M
FY2013 - Due to conditions in the economy and changes in affordability project will begin planning and design work in FY19. No other changes have been made. $22.2M
FY2014 - Scope of the project changed to include parking improvements and significant ADA upgrades. $26.8M
FY2015 - No change
FY2016 - Project cost update. No change in scope of project. $29M
FY2017 - No change
FY2018 - Change in the scope of project. Project is a new construction for all three courts. New proposed cost is $71M
FY2019 - As provided above, the proposed project replaces the previously recommended $71 million project in order to utilize existing facilities to the maximum extent possible and reduce project costs while still providing for all necessary safety improvements and court space needs. New estimated cost is $42.5M
FY2020 – Change in ramp-up philosophy. Project now presented as two separate projects, Courthouse construction and a temporary parking lot.

Alternative:

The previously approved CIP court project for new court complex across Courthouse Road.

Judicial: New Circuit Court and Renovation/Expansion of Existing Facility

Project Summary:

Project Expenditures	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Project Total
Planning/Design	0	2,600,000	0	0	0	0	0	0	0	0	0	2,600,000
Construction / Project	0	0	25,391,575	3,150,000	5,940,000	0	0	0	0	0	0	34,481,575
Contingency	0	0	3,600,000	0	0	0	0	0	0	0	0	3,600,000
Total	**$0**	**$2,600,000**	**$28,991,575**	**$3,150,000**	**$5,940,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$40,681,575**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Bond Proceeds	0	0	28,774,241	3,150,000	5,940,000	0	0	0	0	0	0
Current Revenue - County	0	724,919	0	0	0	0	0	0	0	0	0
GF Allocation Transfer - 3% Guideline	0	188,581	0	0	0	0	0	0	0	0	0
Use of Prior Year Fund Balance General Fund	0	1,686,500	0	0	0	0	0	0	0	0	0
Proffers	0	0	217,334	0	0	0	0	0	0	0	0
Total	**$0**	**$2,600,000**	**$28,991,575**	**$3,150,000**	**$5,940,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Personnel	0	0	0	395,500	807,000	823,000	1,193,000	1,217,000	1,241,000	1,266,000
Operating	0	0	0	411,000	546,000	562,000	578,000	595,000	612,000	630,000
Debt Service	0	0	1,204,000	2,672,000	3,169,000	3,169,000	3,169,000	3,169,000	3,169,000	3,169,000
Total	**$0**	**$0**	**$1,204,000**	**$3,478,500**	**$4,522,000**	**$4,554,000**	**$4,940,000**	**$4,981,000**	**$5,022,000**	**$5,065,000**

Judicial: Temporary Parking Lot and Initial Start of "Downtown Stafford"

Project Code		**Square Footage/Acreage**	
Project Type		**Construction Cost per Sq. Ft.**	
Project Status	Construction	**Operating Cost per Sq. Ft.**	
Functional Area	Circuit Court	**Student Capacity**	
Estimated Project Cost	$1.8 million	**Est. Opening Date**	
Current Year Cost	$1.7M	**Funding Source**	Prior Use of Fund Balance
Total Debt Service		**Tax Rate Equivalent**	
Full Year Operating Impact			

Project Description:

The proposed project is for the construction of a new temporary parking lot to accommodate the established parking at the George L. Gordon Government Center while the new Circuit Court building is being constructed, and to introduce the site and initial start of the "Downtown Stafford" project across from the Government Center.

Operating Impact Summary:

No operating impacts associated with this project.

Location:

1300 Courthouse Road.

Relationship to Approved County Policy or Plan:

Stafford County 2040 Strategic Plan 5.1

Judicial: Temporary Parking Lot and Initial Start of "Downtown Stafford"

Project Summary:

Project Expenditures	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Project Total
Planning/Design	0	76,000	0	0	0	0	0	0	0	0	0	76,000
Construction / Project	0	1,724,000	0	0	0	0	0	0	0	0	0	1,724,000
Total Project Cost	**$0**	**$1,800,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,800,000**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Use of Prior Year Fund Balance General Fund	0	1,800,000	0	0	0	0	0	0	0	0	0
Total	**$0**	**$1,800,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Fire and Rescue: Public Safety Joint Training Center

Project Code		**Square Footage/Acreage**	24,300sq. ft./20+ac.
Project Type	Building Construction	**Construction Cost per Sq. Ft.**	$300
Project Status	Planning	**Operating Cost per Sq. Ft.**	
Functional Area	Public Safety - Fire & Rescue	**Student Capacity**	
Estimated Project Cost	$11,521,891	**Est. Opening Date**	FY2023
Current Year Cost	$8,455,000	**Funding Source**	VRA, Proffers, Grants
Debt Service	$653,231	**Tax Rate Equivalent**	$0.005
Full Year Operating Impact			

Project Description:

A new Joint Training Center is needed to accommodate the Fire and Rescue Department's current education and fleet functions; including proper classrooms, securable equipment storage, appropriate housing of training simulators and safe apparatus repair facilities. Currently, the department depends upon a repurposed motorboat sales facility to accomplish these tasks. The land and building within this existing space are for sale and being actively marketed.

The project includes site development, 4,800 square feet of classroom space, 12,000 square feet of working space (materials storage, gear areas, locker rooms, etc.), 7,500 square feet of vehicle bays and exterior training grounds with a live fire burn building.

Education and training space is necessary to provide the means to meet classroom and practical needs for various emergency medical services (Paramedic), fire suppression (Career Firefighter and Volunteer), hazardous materials, and technical rescue course offerings.

Fleet maintenance, repair, and logistics high-bay spaces are needed for the safe upkeep of apparatuses. Additionally, planned shared space will incorporate a forensic bay for use by the Sheriff's Office and Fire Marshal.

The exterior training grounds includes a Class-A live fire burn building, training tower, and educational simulators for use by all Public Safety Personnel.

Operating an appropriately designed and constructed facility will allow for a convenient and centralized location to be used days, nights, and weekends; meeting the demands of our complex combination system.

Fire and Rescue: Training and Logistics Center

Operating Impact Summary:

There will be minor one-time startup costs for the facility to include instructional supplies such as smart boards, a copy machine, fax machine, projectors, and computers. Other startup costs for the facility include kitchen and janitorial supplies. Current staff will transition to the new Central Training and Logistics Complex - no new staffing costs would be incurred.

Location:

Staff, at the direction of the Public Safety Committee, is pursuing available land options. One Option may be through cooperation with the Stafford Regional Airport, an area of 20+ Acres of land has been identified for the construction of the Fire and Rescue Department's Training and Logistics Center. The Airport Authority is amenable to providing the County of Stafford with deeded land ownership of 20+ Acres, in exchange for the relief of debt (at fair market price). The location is in the northeastern portion of the Airport Authority's land ownership, adjacent to Ramoth Church Road and Blaque Trax Lane.

Relationship to Approved County Policy or Plan:

- Relates to the County Board of Supervisor's Top Priorities (Public Safety)
- Comprehensive Plan (Response Time Standards)
- 2017 Fire and EMS Assessment (Education/Training, Safe Workplace, Volunteer Recruitment and Retention, Career Morale)

Analysis of Need:

The existing commercial space (which is being used for Education, Training, and Fleet) is being marketed for sale. An appropriate replacement must be planned and constructed.

Change or Reasons for Revisions:

FY2012 - Project new to the CIP. Project cost $5.5M. Project scheduled for completion in FY17.
FY2013 - Project moved out three years. Project scheduled for completion in FY20. Reduction in project cost. $5.3M
FY2014 - No change
FY2015 - No change
FY2016 - Updated project costs $6.6M
FY2017 - No Change
FY2018 – Updated project costs $6.9M. Timing of project will be determined during the FY2019 process.

Fire and Rescue: Training and Logistics Center

FY2019 – Removed from the CIP based on TRC ranking. Scope and cost of project changed to include the needs of the departments of Fire and Rescue and the Sheriff.
FY2020 – Requested as a new project. $9.6M

Alternative:

Removal of marketing efforts and sale of the existing space, with continued use by the Fire and Rescue Department.

3R funds budgeted and appropriated to modernize and ensure all safety aspects required within the various standards associated with a Training and Logistics Center (International Association of Emergency Vehicle Technicians, National Fire Protection Association, Virginia Office of Emergency Medical Services, International Association of Arson Investigators, etc.)

Project Summary:

Project Expenditures	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Project Total
Planning/Design	0	0	0	0	0	0	0	0	0	1,129,573	0	1,129,573
Property Acquisition	0	0	0	0	0	0	0	0	199,888	0	0	199,888
Construction / Project	0	0	0	0	0	0	0	0	0	0	9,772,430	9,772,430
Contingency	0	0	0	0	0	0	0	0	0	0	420,000	420,000
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$199,888**	**$1,129,573**	**$10,192,430**	**$11,521,891**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	9,569,274
Proffers	0	0	0	0	0	0	0	0	199,888	1,129,573	423,156
State Grants - Fire Programs	0	0	0	0	0	0	0	0	0	0	200,000
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$199,888**	**$1,129,573**	**$10,192,430**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Operating	0	0	0	0	0	0	0	0	0	43,000
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$43,000**

Hartwood Elementary School Renovation/Additions

Project Code		**Square Footage/Acreage**	73,900/0
Project Type	Building Renovation	**Construction Cost per Sq. Ft.**	$158/309 + site work
Project Status	Planning	**School Board Priority Number**	5
Functional Area	Education	**Student Capacity**	
Estimated Project Cost	$27,256,920	**Est. Opening Date**	August 2027 (FY2028)
Current Year Cost	$20,185,812	**Funding Source**	VPSA
Debt Service	$2,280,000	**Years Financed**	20
Full Year Operating Impact	N/A	**Tax Rate Equivalent**	$0.014

Project Description:

This project is the renovation/additions to Hartwood Elementary School (ES). Hartwood ES, originally constructed in 1963, is located on a 29.6-acre site. There have been three additions built onto the original building. The project scope includes renovating the entire building, 61,100 square feet, and building two small additions sized collectively at 12,800 square feet. This project is currently planned to include the upgrading and modernization of the following systems: ADA accessibility, electrical, fire alarm, fire suppression sprinklers, HVAC, life safety, and plumbing. Additionally, architectural items such as floors, doors, hardware, and windows will be replaced, as will the data and network plant, public address system, and lighting within the building. The sloped roof over the 1993 addition with be replaced with a standing seam metal roof. This project also includes the re-development of the site and upgrading the storm water management system and parking areas. The two additions for this project are planned to address a 12,800 square feet space deficiency for the elementary school program. It is assumed and hoped that county water can be extended from the Urban Service Area to the school site prior to the project start date allow for upgraded fire protection via fire sprinkler system throughout the school and more dependable water service. The school will continue to operate a package wastewater treatment plant.

Modular classrooms will be utilized as swing space during the renovation to house the areas of the building that are actively being worked on. Hartwood ES renovation and additions will be designed and constructed in accordance with the most current elementary school education specifications and in conjunction with the Stafford County Public Schools Facility Design Standards. Planning, design, furniture, fixtures, equipment, project management, technology infrastructure, and site work are all included in the project cost. Working with Virginia Department of Education, consultants, and historic data, staff estimate a minimum of $158 per square foot for renovation and $309 per square foot for the new building cost. Hartwood ES renovation and additions are being planned as a LEED Silver facility and will be designed to achieve an Energy Star rating of 80 or better, as well as an Energy Utilization Index rating of less than 24.

Hartwood Elementary School Renovation/Additions

Operating Impact Summary:

This project will result in the entire school building and the new additional space being more energy efficient than the current facility. Space within the school will better align with educational specifications, and ADA accessibility entering and traversing within the school facility will be improved. Swing space in the form of modular buildings will be utilized to house the affected areas of the school while construction is occurring. The square footage that is being built addresses identified programmatic deficiencies. Therefore, no additional personnel or operating costs are associated with this renovation and addition project.

Location:

Hartwood Elementary School is located at 14 Shackelford Well Road, Fredericksburg, VA 22406.

Relationship to Approved County Policy or Plan:

Stafford County School Board's Strategic Plan:

- Goal 1: Engage, challenge, and prepare every student for success
- Goal 3: Resource stewardship

Stafford County Comprehensive Plan:

- Goal 1: Manage growth and development in a sustainable manner
- Goal 3: Preserve and protect environmental resources
- Goal 8: Support Stafford County as a community for superior education

Stafford County Board of Supervisors' Priorities (Education, Infrastructure)

Analysis of Need:

A facility assessment conducted in 2008 evaluated the condition of Hartwood ES and provided recommendations on the levels and timing of investments to be made to critical building systems. This facility assessment was updated in 2017 and continues to show and support a significant level of investment needed between FY2021 and FY2027. In addition to the facility assessment, and in support of the development of a future capital improvement project (renovation and addition or rebuild), Moseley Architects initiated a study to evaluate and analyze three proposed future building improvement options. Three options were renovate and additions with no increase in capacity, rebuild on site with no increase in capacity, and rebuild at new location (inside the Urban Service Area) with increased capacity.

Hartwood Elementary School Renovation/Additions

Change or Reasons for Revisions:

FY2007 – New renovation project in CIP, open FY12, $9.4M.
FY2008 – Project removed from CIP.
FY2009 – No change.
FY2010 – No change.
FY2011 – No change.
FY2012 – No change.
FY2013 – No change.
FY2014 – Renovation project added to CIP, opening FY24; $12.5M.
FY2015 – Escalation rate adjusted, project moved from FY24 to FY26; $12.1M.
FY2016 – Construction cost updated, escalation rate adjusted, project moved from FY26 to FY27, $14.4M.
FY2017 – Increase in scope, new ES educational specifications; $21.8M.
FY2018 – No change.
FY2019 – Project changed from renovation to rebuild, moved from FY27 to FY31, $55.8M.
FY2020 – Project changed from rebuild to renovation.

Alternative:

The alternative to this project is the current building continues to need a substantial level of investment to address critical building systems' deficiencies within the original building and all three additions. Areas of the school will not have update fire protection (sprinklers) and more dependable water services will not have been provided.

Hartwood Elementary School Renovation/Additions

Project Summary:

Project Expenditures	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total Project
Planning/Design	0	0	0	0	0	0	1,030,000	600,000	397,000	0	0	2,027,000
Construction / Project	0	0	0	0	0	0	0	1,775,000	12,979,280	9,461,610	0	24,215,890
Contingency	0	0	0	0	0	0	0	200,000	504,000	310,000	0	1,014,000
Total Project Cost	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,030,000**	**$2,575,000**	**$13,880,280**	**$9,771,610**	**$0**	**$27,256,890**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Bond Proceeds	0	0	0	0	0	0	1,030,000	2,575,000	13,880,280	9,771,610	0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,030,000**	**$2,575,000**	**$13,880,280**	**$9,771,610**	**$0**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Debt Service	0	0	0	0	0	0	86,000	301,000	1,462,000	2,280,000
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$86,000**	**$301,000**	**$1,462,000**	**$2,280,000**

Early Childhood Special Education Addition, Phase I

Project Code		**Square Footage/Acreage**	15,258/0
Project Type	Building Construction	**Construction Cost per Sq. Ft.**	$275 + site work
Project Status	Planning	**School Board Priority Number**	4
Functional Area	Education	**Student Capacity**	80
Estimated Project Cost	$9,841,078	**Est. Opening Date**	August 2031 (FY2032)
Current Year Cost	$6,653,610	**Funding Source**	VPSA
Debt Service	$823,495	**Years Financed**	20
Full Year Operating Impact	N/A	**Tax Rate Equivalent**	$0.005

Project Description:

This project is phase one of two regarding the creation of additional early childhood special education (ECSE) capacity. In the upcoming 2019-20 school year, early childhood special education will be housed at two centers within Stafford County that are primarily focused on housing early childhood special education and head start students. The northern campus is North Star Early Education Center (formerly known as Fredericksburg Christian School, Stafford Campus) in Stafford, while the southern campus is located at the Gari Melchers Complex in Fredericksburg. The project consists of new construction to house ten classrooms, with restrooms, specifically designed for early childhood special education, supporting space, site work, project management, furniture, fixtures, equipment, and technology infrastructure.

Operating Impact Summary:

Early Childhood Special Education Addition, Phase I will allow for the expansion in the school division's capability to serve the early childhood special education student population. This new facility will be subjected to SCPS' standard maintenance and operation costs, to include custodial support, internal and external preventative maintenance, and utility costs.

Early Childhood Special Education Addition, Phase I

Location:

The current location for the additional early childhood special education capacity is to be determined.

Relationship to Approved County Policy or Plan:

Stafford County School Board's Strategic Plan:

- Goal 1: Engage, challenge, and prepare every student for success
- Goal 3: Resource stewardship

Stafford County Comprehensive Plan:

- Goal 1: Manage growth and development in a sustainable manner
- Goal 3: Preserve and protect environmental resources
- Goal 8: Support Stafford County as a community for superior education

Stafford County Board of Supervisors' Priorities (Education, Infrastructure)

Analysis of Need:

The early childhood special education (ECSE) student population is expected to grow at a rate of 5% annually, which equates to approximately two additional ECSE classrooms per year. The basis of this projected growth rate is the concatenation of multiple data sources, including the Virginia Department of Education (3.8-4.7%), the Department of Behavioral Health and Development Services (5%), and the Parent Education-Infant Development (PE-ID) Region 3 staff (5%). These projects are in line with growth experienced within SCPS since 2013.

With North Star Early Childhood Education Center opening at, or very near, full capacity, this project plans to address the expected continuous ECSE growth by providing additional classrooms outside of elementary schools. When ECSE programs are placed within elementary schools, the program(s) occupy classrooms that would otherwise be available to serve the elementary population. This reduces the capacity at elementary schools where ECSE programs are housed.

Change or Reasons for Revisions:

FY2020 – New project proposed in CIP.

Early Childhood Special Education Addition, Phase I

Alternative:

The alternative to this project is ECSE program placement within elementary schools. As the ECSE student population continues to grow, the number of required programs will exceed the Northern and Southern ECSE-Head Start Campuses' capacities. Programs unable to be located within the North Star Early Education Center or Gari Melchers Complex will be housed within elementary schools, reducing the capacities at those schools.

Project Summary:

Project Expenditures	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total Project
Planning/Design	0	0	0	0	0	0	0	0	0	0	521,673	521,673
Total Project Cost	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$521,673**	**$521,673**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	521,673
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$521,673**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Operating	0	0	0	0	0	0	0	22,000	23,000	24,000
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$22,000**	**$23,000**	**$24,000**

Drew Middle School Renovation/Addition

Project Code		**Square Footage/Acreage**	106,900/0
Project Type	Building Construction	**Construction Cost per Sq. Ft.**	$170/$275 + site work
Project Status	Planning	**School Board Priority Number**	8
Functional Area	Education	**Student Capacity**	
Estimated Project Cost	$42,763,871	**Est. Opening Date**	August 2028 (FY2029)
Current Year Cost	$28,904,897	**Funding Source**	Bond
Debt Service	$	**Years Financed**	20
Full Year Operating Impact	N/A	**Tax Rate Equivalent**	$

Project Description:

This project is the renovation of Drew Middle School (MS) accompanied with a small addition. Drew MS was originally constructed in 1951 and has had three additions built. The school site is 15 acres, which is significantly smaller than a typical middle school site. The project scope includes renovating the entire building, 98,900 square feet, and building an addition sized at 8,000 square feet. This project is currently planned to include the upgrading and modernization of the following systems: ADA accessibility, electrical, fire alarm, fire suppression sprinklers, HVAC, life safety, and plumbing. Additionally, architectural items such as floors, doors, hardware, and windows will be replaced, as will the data and network plant, public address system, and lighting within the building. This project also includes the re-development of the site and upgrading the storm water management system. The addition component of this project is planned to address a square footage deficiency for the middle school program. The space utilized by the Heather Empfield Day School is included in the renovation component of this project.

Modular classrooms will be utilized as swing space during the renovation to house the areas of the building that are actively being worked on. Drew MS addition and renovation will be designed and constructed in accordance with the most current middle school education specifications and in conjunction with the Stafford County Public Schools Facility Design Standards. Planning, design, furniture, fixtures, equipment, project management, technology infrastructure, and site work are all included in the project cost. Working with Virginia Department of Education, consultants, and historic data, staff estimate a minimum of $170 per square foot for renovation and $275 per square foot for the new building cost. Drew MS addition and renovation is being planned as a LEED Silver facility and will be designed to achieve an Energy Star rating of 80 or better, as well as an Energy Utilization Index rating of less than 24.

Drew Middle School Renovation/Addition

Operating Impact Summary:

The newly renovated building, as well as the new addition, will be more energy efficient than the existing facility. The newly upgraded systems will result in a school that is more accessible, safer, and more apt to address the modern learning environment. There will be no additional recurring personnel or operating costs. While construction is ongoing, portable classrooms will be utilized as swing space to house affected areas of the building. The construction strategy will constitute a phased, multi-year approach.

Location:

Drew Middle School is located at 501 Cambridge Street, Fredericksburg, VA 22405.

Relationship to Approved County Policy or Plan:

Stafford County School Board's Strategic Plan:

- Goal 1: Engage, challenge, and prepare every student for success
- Goal 3: Resource stewardship

Stafford County Comprehensive Plan:

- Goal 1: Manage growth and development in a sustainable manner
- Goal 3: Preserve and protect environmental resources
- Goal 8: Support Stafford County as a community for superior education

Stafford County Board of Supervisors' Priorities (Education, Infrastructure)

Analysis of Need:

A facility assessment for Drew MS was complete in May 2008 and was updated in 2017. This assessment of the school's condition showed a significant level of investment needed by FY2028 (almost $15M in today's cost). This level of investment, when escalated, exceeds the industry standard of 70% replacement value and therefore merits consideration of a rebuild. However, the school division currently does not plan to relocate the school to another site and feels the current site is too small to rebuild on the existing campus with the school open. Rebuilding a school on the same site while the existing school remains used consumes an exorbitant amount of space because two schools essentially have to be created on the same piece of property. In this case, it does not seem feasible for this to occur at Drew MS. In addition to the condition of this school, program deficiencies exist at this facility.

Drew Middle School Renovation/Addition

Change or Reasons for Revisions:

FY2017 – New project approved in CIP, open FY2028; $24.2M.
FY2018 – No change.
FY2019 – Project not included in approved CIP.
FY2020 – Escalation rate adjusted, construction cost updated.

Alternative:

The alternative to this project is the continuation of the degradation to the existing Drew Middle School building. If renovating this building does not occur in a timely manner, the School Division will be forced to expend funds to address areas of need. Any pre-renovation dollars spent in areas that would be impacted by this project feature a low return on investment.

Project Summary:

Project Expenditures	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total Project (10 year)
Planning/Design	0	0	0	0	0	0	0	0	0	1,092,727	2,000,000	3,092,727
Construction / Project	0	0	0	0	0	0	0	0	0	0	3,759,999	3,759,999
Contingency	0	0	0	0	0	0	0	0	0	0	250,000	250,000
Total Project Cost	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,092,727**	**$6,009,999**	**$7,102,726**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Bond Proceeds	0	0	0	0	0	0	0	0	0	1,092,727	6,009,999
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,092,727**	**$6,009,999**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Debt Service	0	0	0	0	0	0	0	0	0	91,000
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$91,000**

High School 6

Project Code		**Square Footage/Acreage**	300,000/65
Project Type	Building Construction	**Construction Cost per Sq. Ft.**	$237.08/sf + site work
Project Status	Planning	**School Board Priority Number**	1
Functional Area	Education	**Student Capacity**	2,150
Estimated Project Cost	$131,820,389	**Est. Opening Date**	August 2025 (FY2026)
Current Year Cost	$109,895,344	**Funding Source**	VPSA
Debt Service	$10,023,000	**Years Financed**	20
Full Year Operating Impact	$5,435,000	**Tax Rate Equivalent**	$0.060

Project Description:

High School (HS) 6 is planning to house 2,150 students and serve grades ninth through twelfth. HS 6 will be designed and constructed utilizing the most current Stafford County Public Schools high school education specifications and in accordance with the Stafford County Public Schools Facility Design Standards. This project includes the construction of the school building, all outbuildings, site development, all on-site road improvements, any necessary off-site road improvements, parking lots, storm water management requirements, utility operating costs, and athletic fields to include bleachers, stadium, and track. Planning and design requirements are included in the project cost, as are furniture, fixtures, equipment, technology infrastructure, and project management.

SCPS high school education specifications will be updated prior to the start of design, however, staff estimates the total square footage requirement to be at, or near, 300,000 square feet. The Division hired a cost-estimating consultant to provide an accurate cost per square footage for the building, as well as costs associated with the site. These experts have concluded that a rough order magnitude programming level cost estimate of $237.08 per square foot in current dollars should be used for building only.

HS 6 is planning to be a LEED Silver rated facility and will be designed to achieve an Energy Star rating of 80 or better, as well as an Energy Utilization Index rating of less than 24. Rainwater will be collected and used for irrigation and/or grey water. Additionally, photovoltaic panels will be used to not only supplement energy consumption, but also as a teaching tool for students. It is assumed (by proffer) the developer will have utilities and road access completed prior to construction starting.

High School 6

Operating Impact Summary:

The principal, librarian, administrative assistant V, and an administrative assistant IV will be funded and hired one year prior to HS 6 opening. When the school opens, there will be a total of 71 positions funded, excluding grade-level teachers, to support the new facility. The instructional startup costs one year prior to HS 6 opening include the purchasing of textbooks, library books, and other instructional startup requirements. After the school has been open for one year, expect a noteworthy drop in operational funds to be observed as the result of all one-time startup items being purchased. HS 6 will be a LEED Silver, energy efficient building with approximately 300,000 square feet. Estimated utilities are included in the operating costs.

Location:

The current location for HS 6 is to be determined.

Relationship to Approved County Policy or Plan:

Stafford County School Board's Strategic Plan:

- Goal 1: Engage, challenge, and prepare every student for success
- Goal 3: Resource stewardship

Stafford County Comprehensive Plan:

- Goal 1: Manage growth and development in a sustainable manner
- Goal 3: Preserve and protect environmental resources
- Goal 8: Support Stafford County as a community for superior education

Stafford County Board of Supervisors' Priorities (Education, Infrastructure)

Analysis of Need:

The methodology for determining the need for additional high school capacity is when the cumulative high school enrollment exceeds 100% capacity utilization. The total capacity of the five high schools within Stafford County amounts to 10,650. Based on this criterion, the student enrollment projections completed in the 2018-19 school year indicate the need for a new high school beginning in the 2023-24 school year, when the high school level is projected to be at 100.9% capacity utilization.

High School 6

Change or Reasons for Revisions:

FY2016 – New project in CIP, open in FY2026; $106.3M.
FY2017 – Project moved from FY2026 to FY2028, updated construction cost; $120.3M.
FY2018 – No change
FY2019 – Project moved from FY2028 to FY2026, construction cost lowered at request of BOS; $121.3M.
FY2020 – Escalation rate adjusted, construction cost updated.

Alternative:

The alternative to this project is overcrowding at the high school level as the student population increases with no additional capacity added.

Project Summary:

Project Expenditures	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	Total Project
Planning/Design	0	0	2,500,000	5,000,000	2,000,000	500,000	450,000	0	0	0	0	10,450,000
Construction / Project	0	0	0	0	41,800,000	49,800,000	23,545,389	1,000,000	0	0	0	116,145,389
Contingency	0	0	0	0	1,600,000	2,500,000	1,000,000	125,000	0	0	0	5,225,000
Total Project Cost	**$0**	**$0**	**$2,500,000**	**$5,000,000**	**$45,400,000**	**$52,800,000**	**$24,995,389**	**$1,125,000**	**$0**	**$0**	**$0**	**$131,820,389**

Project Revenues	Prior Year	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Bond Proceeds	0	0	2,500,000	3,984,164	37,582,216	50,158,994	24,433,778	1,125,000	0	0	0
Proffers	0	0	0	1,015,836	1,517,784	2,641,006	561,611	0	0	0	0
One-Time Funding	0	0	0	0	6,300,000	0	0	0	0	0	0
Total	**$0**	**$0**	**$2,500,000**	**$5,000,000**	**$45,400,000**	**$52,800,000**	**$24,995,389**	**$1,125,000**	**$0**	**$0**	**$0**

Operating Impacts	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Personnel	0	0	0	0	0	284,000	3,666,000	3,740,000	3,815,000	3,891,300
Operating	0	0	0	0	0	1,150,000	1,769,000	1,204,000	1,228,080	1,252,642
Debt Service	0	0	209,000	542,000	3,687,000	7,884,000	9,929,000	10,023,000	10,023,000	10,023,000
Total	**$0**	**$0**	**$209,000**	**$542,000**	**$3,687,000**	**$9,318,000**	**$15,364,000**	**$14,967,000**	**$15,066,080**	**$15,166,942**

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FACILITY CONDITION ASSESSMENT

prepared for

Stafford County Public Schools
31 Stafford Avenue
Stafford, Virginia 22554
Jennifer Spindle

FACILITY CONDITION ASSESSMENT

OF

HARTWOOD ELEMENTARY SCHOOL
14 SHACKELFORD WELL ROAD
HARTWOOD, VIRGINIA 22471

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EMG PROJECT #:
125578.17R000-004.170

DATE OF REPORT:
October 5, 2017

ONSITE DATE:
April 20, 2017

Immediate Repairs Report
Hartwood Elementary School
10/5/2017

Report Section	ID	Cost Description	Quantity	Unit	Unit Cost	Subtotal	Deficiency Repair Estimate *
5.1	585217	WWTP / Water Supply Upgrades, Remove and Replace	1	EA	$134,000.00	$134,000	**$134,000**
5.1	660706	Engineer, Civil, Site Utility, Evaluate/Report, School system for additional well pump, treatment plant upgrade with 20% additional capacity and adding a pump for additional capacity.	1	EA	$18,975.00	$18,975	**$18,975**
5.2	584229	Parking Lots, Asphalt Pavement Repair, Cut & Patch, 10FT X 10FT Section	100	SF	$4.96	$496	**$496**
5.5	584360	Metal Halide Lighting Fixture w/ Electronic Ballast, Wall Mount, 150 W, Replace	2	EA	$574.32	$1,149	**$1,149**
5.5	584508	Walkway Luminaire, 70 to 250 W HID (Fixture Only), Replace	20	EA	$800.00	$16,000	**$16,000**
6.3	586062	Roof, Asphalt Shingle, Repair	50	SF	$5.12	$256	**$256**
6.4	584354	Exterior Masonry, Vertical crack in masonry brick, Joint Caulking 0" to 1/2", 1-2 Stories, Replace, including abatement of any PCB or asbestos materials	10	LF	$10.14	$101	**$101**
6.4	584355	Exterior Wall, Joint Caulking 0" to 1/2", 1-2 Stories, Sealant addition - above window lintels - masonry joint (typical). Replace, including abatement of any PCB or asbestos materials	300	LF	$8.28	$2,484	**$2,484**
6.6	584773	Exterior WIndows, Joint Caulking 0" to 1/2", 1-2 Stories, Replace, including abatement of any PCB or asbestos materials	3000	LF	$3.96	$11,880	**$11,880**
6.6	585493	Window Sills - sheet metal worl, Reinstall 3 exterior window flashings	3	EA	$65.00	$195	**$195**
7.6	660609	Install new pre-action sprinkler system including deluge equipment, Install	14508	SF	$7.56	$109,680	**$109,680**
Immediate Repairs Total							**$295,217**

* Location Factor (1.0) included in totals.

Replacement Reserves Report

Hartwood Elementary School

10/5/2017

Location	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total Esc
Hartwood Elementary School	$295,217	$68,152	$354,509	$2,574,488	$5,323,499	$1,767,695	$2,800,012	$1,123,578	$250,918	$854,708	$1,807,722	$6,359	$252,700	$103,785	$335,937	$1,500,296	$55,160	$375,447	$198,233	$2,276	
GrandTotal	**$295,217**	**$68,152**	**$354,509**	**$2,574,488**	**$5,323,499**	**$1,767,695**	**$2,800,012**	**$1,123,578**	**$250,918**	**$854,708**	**$1,807,722**	**$6,359**	**$252,700**	**$103,785**	**$335,937**	**$1,500,296**	**$55,160**	**$375,447**	**$198,233**	**$2,276**	

Report Section	ID	Cost Description	Lifespan (EUL)	EAge	RUL	Quantity	Unit	Unit Cost	Subtotal	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
5.1	585275	Well Pump including casing, 1.5 HP, Replace	20	18	2	2	EA	$11,709.35	$23,419			$23,419																	
5.1	585217	WWTP / Water Supply Upgrades, Remove and Replace	0	26	0	1	EA	$134,000.00	$134,000	$134,000																			
5.1	586342	WWTP & Water Supply Upgrades, Remove and Replace	0	26	* 0	1	EA	$512,900.00	$512,900				$512,900																
5.1	660706	Engineer, Civil, Site Utility, Evaluate/Report, School system for additional well pump, treatment plant upgrade with 20% additional capacity and adding a pump for additional capacity.	0	0	0	1	EA	$18,975.00	$18,975	$18,975																			
5.2	584225	Roadways & Parking Lots, , Seal & Stripe	5	3	2	138690	SF	$0.38	$52,633			$52,633					$52,633					$52,633				$52,633		
5.2	584229	Parking Lots, Asphalt Pavement Repair, Cut & Patch, 10FT X 10FT Section	25	25	0	100	SF	$4.96	$496	$496																			
5.2	659050	Parking Lots, Asphalt Pavement, Mill & Overlay	25	18	7	110484	SF	$3.28	$362,432								$362,432												
5.2	659049	Parking Lots, Asphalt Pavement, Full Depth (includes sub-base), Repair	0	15	* 0	104375	SF	$2.62	$273,463										$273,463										
5.5	584360	Metal Halide Lighting Fixture w/ Electronic Ballast, Wall Mount, 150 W, Replace	20	2010	0	2	EA	$574.32	$1,149	$1,149																			
5.5	584949	Fences & Gates, Chain Link, 6' High, Repair - attach fencing to top rail, 30LF	30	29	1	30	LF	$8.00	$240		$240																		
5.5	584223	Play Surfaces & Sports Courts, Asphalt, Seal & Stripe	5	3	2	17500	SF	$0.38	$6,659			$6,659					$6,659					$6,659				$6,659		
5.5	584506	Play Structure, Medium, Replace	20	6	14	1	EA	$70,000.00	$70,000															$70,000					
5.5	584508	Walkway Luminaire, 70 to 250 W HID (Fixture Only), Replace	20	2010	0	20	EA	$800.00	$16,000	$16,000																			
6.3	586062	Roof, Asphalt Shingle, Repair	0	20	0	50	SF	$5.12	$256	$256																			
6.3	584629	Roof, Metal, Replace asphalt shingle roof with metal standing seam	40	38	2	18936	SF	$12.45	$235,734			$235,734																	
6.3	584636	Roof, Built-Up, Replace	20	10	10	41831	SF	$12.96	$542,188											$542,188									
6.4	584354	Exterior Masonry, Vertical crack in masonry brick, Joint Caulking 0" to 1/2", 1-2 Stories, Replace, including abatement of any PCB or asbestos materials	10	4	* 6	10	LF	$10.14	$101	$101																			
6.4	584355	Exterior Wall, Joint Caulking 0" to 1/2", 1-2 Stories, Sealant addition - above window lintels - masonry joint (typical). Replace, including abatement of any PCB or asbestos materials	10	16	0	300	LF	$8.28	$2,484	$2,484										$2,484									
6.5	585661	Interior Utility Stairs, Metal, Refinish	5	3	2	45	SF	$1.44	$65			$65					$65					$65				$65		
6.6	584773	Exterior WIndows, Joint Caulking 0" to 1/2", 1-2 Stories, Replace, including abatement of any PCB or asbestos materials	10	4	* 6	3000	LF	$3.96	$11,880	$11,880										$11,880									
6.6	585493	Window Sills - sheet metal worl, Reinstall 3 exterior window flashings	0	26	0	3	EA	$65.00	$195	$195																			
7.1	585525	Air Compressor, 3 HP, Replace	20	8	12	1	EA	$9,652.21	$9,652													$9,652							
7.1	585526	Compressed Air Dryer, Replace	15	3	12	1	EA	$5,077.01	$5,077													$5,077							
7.1	585193	Boiler, Gas, 1,200 MBH, Replace	25	20	5	1	EA	$46,465.41	$46,465						$46,465														
7.1	585055	Chiller, Air-Cooled, 110 Ton, Replace	25	10	15	1	EA	$180,236.86	$180,237															$180,237					
7.1	585187	Chiller, Air-Cooled, 60 Ton, Replace	25	8	17	1	EA	$91,740.80	$91,741																	$91,741			
7.1	584712	Condensing Unit/Heat Pump, Split System, 2 Ton, Replace	15	14	1	1	EA	$3,122.18	$3,122		$3,122														$3,122				
7.1	585148	Condensing Unit, Split System, 2 Ton, Replace	15	10	5	2	EA	$3,122.18	$6,244						$6,244														
7.1	584713	Condensing Unit/Heat Pump, Split System, 2 Ton, Replace	15	8	7	1	EA	$3,122.18	$3,122								$3,122												
7.1	584696	Air Handler, Interior, 6,501 to 8,000 CFM, Replace	30	23	7	1	EA	$26,016.62	$26,017								$26,017												
7.1	584683	Air Handler, Exterior, 8,001 to 10,000 CFM, Replace	15	8	7	5	EA	$45,895.13	$229,476								$229,476												
7.1	585867	Air Handler, Exterior, 16,200 CFM, Replace	15	8	7	1	EA	$87,310.29	$87,310								$87,310												
7.1	585289	Variable Air Volume (VAV) Unit, 700 CFM, Replace	15	6	9	48	EA	$4,983.58	$239,212										$239,212										
7.1	585282	Fan, Inline Return Fan 5,500 CFM, Replace	20	8	12	1	EA	$9,752.69	$9,753													$9,753							
7.1	584692	Air Handler, Interior, 10,390 CFM, Replace	30	15	15	1	EA	$41,979.17	$41,979															$41,979					
7.1	584667	Exhaust Fan, Roof Mounted, 501 to 800 CFM, Replace	15	12	3	15	EA	$1,750.30	$26,254				$26,254															$26,254	
7.1	584673	Exhaust Fan, Roof Mounted, 2,001 to 5,000 CFM, Replace	15	12	3	2	EA	$2,762.86	$5,526				$5,526															$5,526	
7.1	585099	Circulation Pump, Chiller & Condenser Water, 15 HP, Replace	20	10	10	2	EA	$6,860.74	$13,721											$13,721									
7.1	585252	Circulation Pump, Chiller & Condenser Water, 5 HP, Replace	20	8	12	1	EA	$5,518.88	$5,519													$5,519							
7.1	585299	Unit Heater, Electric, 20 kW, Replace	20	15	5	1	EA	$3,354.92	$3,355						$3,355														
7.1	585329	Unit Heater, Electric, 10 kW, Replace	20	15	5	4	EA	$1,974.37	$7,897						$7,897														
7.1	585529	Sill Height Convector Heater, Electric, Replace	25	19	6	960	LF	$159.00	$152,640							$152,640													
7.1	585128	Unit Heater, Electric, 7.5-10 kW, Replace	20	10	10	4	EA	$1,974.37	$7,897											$7,897									
7.1	585644	Package Unit, 6 Ton, Replace	15	6	9	1	EA	$14,395.83	$14,396										$14,396										
7.1	654914	Building Automation System (HVAC Controls), Upgrade	20	15	5	61068	SF	$5.36	$327,477						$327,477														
7.1	585271	Variable Frequency Drive (VFD), 5 HP Motor, Replace	20	8	* 12	1	EA	$4,748.96	$4,749											$4,749									
7.2	585425	Toilet, Tankless (Water Closet), Replace	20	10	10	41	EA	$842.97	$34,562											$34,562									
7.2	585426	Urinal, Vitreous China, Replace	20	10	10	11	EA	$1,193.44	$13,128											$13,128									
7.2	585431	Sink, Enameled Steel, Replace	20	10	10	8	EA	$616.03	$4,928											$4,928									
7.2	585429	Drinking Fountain, Refrigerated, Replace	10	7	3	8	EA	$1,257.51	$10,060				$10,060										$10,060						
7.2	585116	Backflow Preventer, 2.5", Replace	15	5	10	1	EA	$4,756.10	$4,756											$4,756									
7.2	585209	Water Heater, Gas, Residential, 75 GAL, Replace	10	9	1	1	EA	$3,528.93	$3,529		$3,529										$3,529								
7.2	585198	Circulator Pump, 3 HP, Replace	15	12	3	1	EA	$8,839.12	$8,839				$8,839															$8,839	

Report Section	ID	Cost Description	Lifespan (EUL)	EAge	RUL	Quantity	Unit	Unit Cost	Subtotal	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	20
7.2	585149	Water Storage Tank, 2,000 GAL, Replace	20	15	5	1	EA	$9,704.81	$9,705						$9,705														
7.2	585292	Water Heater, Electric, Residential, 80 GAL, Replace	15	10	5	1	EA	$2,937.40	$2,937						$2,937														
7.2	660539	Pipe, Domestic Water Service Distribution, Replace	35	29	6	85693	SF	$20.89	$1,790,127							$1,790,127													
7.2	585123	Water Heater, Electric, Residential, 52 GAL, Replace	15	8	7	1	EA	$1,738.90	$1,739								$1,739												
7.2	585121	Water Heater, Electric, Residential, 119 GAL, Replace	15	8	7	1	EA	$2,937.40	$2,937								$2,937												
7.2	585242	Water Storage Tank, 250-500 GAL, Replace	20	8	12	1	EA	$4,446.52	$4,447													$4,447							
7.2	585256	Water Storage Tank, 100 GAL, Replace	20	8	12	1	EA	$2,140.56	$2,141													$2,141							
7.2	585152	Circulator Pump, 2 HP, Replace	15	3	12	1	EA	$5,945.45	$5,945													$5,945							
7.2	660533	PIpe, Sewer, Replace	35	32	3	85693	SF	$18.60	$1,593,890				$1,593,890																
7.4	585068	Primary Transformer, Dry, 750 kVA, Replace	30	20	10	1	EA	$79,087.27	$79,087											$79,087									
7.4	585080	Building/Main Switchgear, 480 Y, 277 V, 2,000 Amp, Replace	30	15	15	1	EA	$285,917.81	$285,918																$285,918				
7.4	660534	Electrical System, School, Upgrade	40	36	4	85693	SF	$49.78	$4,265,369					$4,265,369															
7.4	585419	Motion Sensing Wall Switch, Replace	15	5	10	56	EA	$218.92	$12,260											$12,260									
7.4	585416	Lighting System, Interior, School, Upgrade	25	12	13	435	SF	$15.36	$6,683														$6,683						
7.4	659852	Public Address System, Replace	15	10	5	61068	EA	$1.34	$81,831						$81,831														
7.4	660494	Master Clock System, Replace	15	10	5	61068	SF	$2.12	$129,464						$129,464														
7.4	660518	Media System for Schools including LAN, Replace	15	10	5	61068	SF	$1.36	$83,052						$83,052														
7.4	585049	Generator, Diesel, 65 to 125 kW, Replace	25	15	10	1	EA	$113,996.22	$113,996											$113,996									
7.6	585221	Dry-Pipe Sprinkler System Air Compressor, 5 HP, Replace	20	5	15	1	EA	$9,652.21	$9,652																$9,652				
7.6	660609	Install new pre-action sprinkler system including deluge equipment, Install	35	35	0	14508	SF	$7.56	$109,680	$109,680																			
7.6	585453	Fire Alarm Control Panel, Addressable, Replace	15	14	1	1	EA	$20,297.59	$20,298		$20,298															$20,298			
7.6	654903	Fire Alarm System, School, Install	20	15	5	61068	SF	$3.13	$191,247						$191,247														
8.1	660689	Re-insulate interior walls and ceilings in conjunction with ceiling tile replacement, Replace/Install	15	10	5	82481	SF	$1.70	$140,218						$140,218														
8.1	585665	Interior Door, Steel, Replace	25	15	10	77	EA	$950.12	$73,159											$73,159									
8.1	585434	Toilet Partitions, Metal Overhead-Braced, Refinish	5	1	4	23	EA	$35.77	$823					$823					$823					$823					$8
8.1	585515	Interior Wall Finish, Gypsum Board/Plaster/Metal, Prep & Paint	8	4	4	21800	SF	$1.42	$31,026					$31,026								$31,026							
8.1	585513	Interior Wall Finish, Concrete/Masonry, Prep & Paint	8	2	6	60600	SF	$1.45	$87,931							$87,931								$87,931					
8.1	585518	Interior Wall Finish, Ceramic Tile, Replace	25	15	10	6000	SF	$16.55	$99,324											$99,324									
8.1	585395	Interior Floor Finish, Vinyl Tile (VCT), Replace	15	7	8	26767	SF	$4.80	$128,498									$128,498											
8.1	585401	Interior Floor Finish, Ceramic Tile, Replace	50	40	10	2550	SF	$15.76	$40,175											$40,175									
8.1	585398	Interior Floor Finish, Quarry Tile, Replace	50	35	15	1697	SF	$15.19	$25,773																$25,773				
8.1	585392	Interior Floor Finish, Carpet Standard-Commercial Medium-Traffic, Replace	10	5	5	17705	SF	$7.26	$128,473						$128,473										$128,473				
8.1	585404	Interior Ceiling Finish, Acoustical Tile (ACT), Replace	20	15	5	52251	SF	$3.11	$162,553						$162,553														
8.1	585421	Classroom Cabinetry, Base and Wall Section, Wood, Replace	20	19	1	80	LF	$467.63	$37,411		$37,411																		
8.2	585653	Commercial Kitchen, Food Service Equipment, Replace	5	1	* 4	1	EA	$35,000.00	$35,000				$35,000					$35,000					$35,000						
8.2	585658	Commercial Kitchen, Walk-In Combination Freezer/Refigerator, Replace	15	10	5	1	EA	$31,605.00	$31,605						$31,605														
Totals, Unescalated										**$295,217**	**$64,599**	**$318,509**	**$2,192,469**	**$4,297,218**	**$1,352,524**	**$2,030,697**	**$772,389**	**$163,498**	**$527,893**	**$1,058,296**	**$3,529**	**$132,915**	**$51,743**	**$158,753**	**$672,032**	**$23,420**	**$151,097**	**$75,619**	**$8**
Location Factor (1.00)										**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Totals, Escalated (5.5% inflation, compounded annually)										**$295,217**	**$68,152**	**$354,509**	**$2,574,488**	**$5,323,499**	**$1,767,695**	**$2,800,012**	**$1,123,578**	**$250,918**	**$854,708**	**$1,807,722**	**$6,359**	**$252,700**	**$103,785**	**$335,937**	**$1,500,296**	**$55,160**	**$375,447**	**$198,233**	**$2,2**

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

1.1. PROPERTY INFORMATION AND GENERAL PHYSICAL CONDITION

The property information is summarized in the table below. More detailed descriptions may be found in the various sections of the report and in the Appendices.

Property Information	
Address:	14 Shackelford Well Road, Hartwood, Virginia 22471
Year Constructed/Renovated:	1963, Additions in 1966, 1989 and 1994
Current Occupants:	Stafford Country Public Schools
Management Point of Contact:	Ms. Jennifer Spindle 540-658-6000 phone 540-658-5963 fax
Property Type:	Elementary School
Site Area:	29.8 acres
Building Area:	61,068 SF
Number of Buildings:	1
Number of Stories:	1
Parking Type and Number of Spaces:	99 spaces in open lots
Building Construction:	Concrete masonry unit walls with some steel frame supports with metal decking under the flat roof sections.
Roof Construction:	Flat roofs with built up membrane and stone ballast, asphalt shingles on the pitched roof sections, and a standing seam roof on the entranceway.
Exterior Finishes:	Brick Veneer
Heating, Ventilation and Air Conditioning:	Central system with a boiler and chillers. The additions use the central system and VAV units for heating and cooling, while original building uses electric baseboard heating and VAV boxes for cooling only. Supplemental individual split-system units.
Fire and Life/Safety:	Fire sprinklers in 1994 addition classrooms and corridor areas, fire pump with storage tanks, smoke detectors, alarms, pull stations and extinguishers.
Dates of Visit:	4/20/2017
On-Site Point of Contact (POC):	Scott Horen
Assessment and Report Prepared by:	Elizabeth Mannarino
Reviewed by:	Kathleen Sullivan Technical Report Reviewer for Bill Champion Program Manager bchampion@emgcorp.com 800.733.0660 x6234

Systemic Condition Summary			
Site	Fair	HVAC	FAIR
Structure	Fair	Plumbing	FAIR
Roof	Fair	Electrical	FAIR
Vertical Envelope	Fair	Elevators	--
Interiors	Fair	Fire	FAIR

The following bullet points highlight the most significant short term and modernization recommendations:

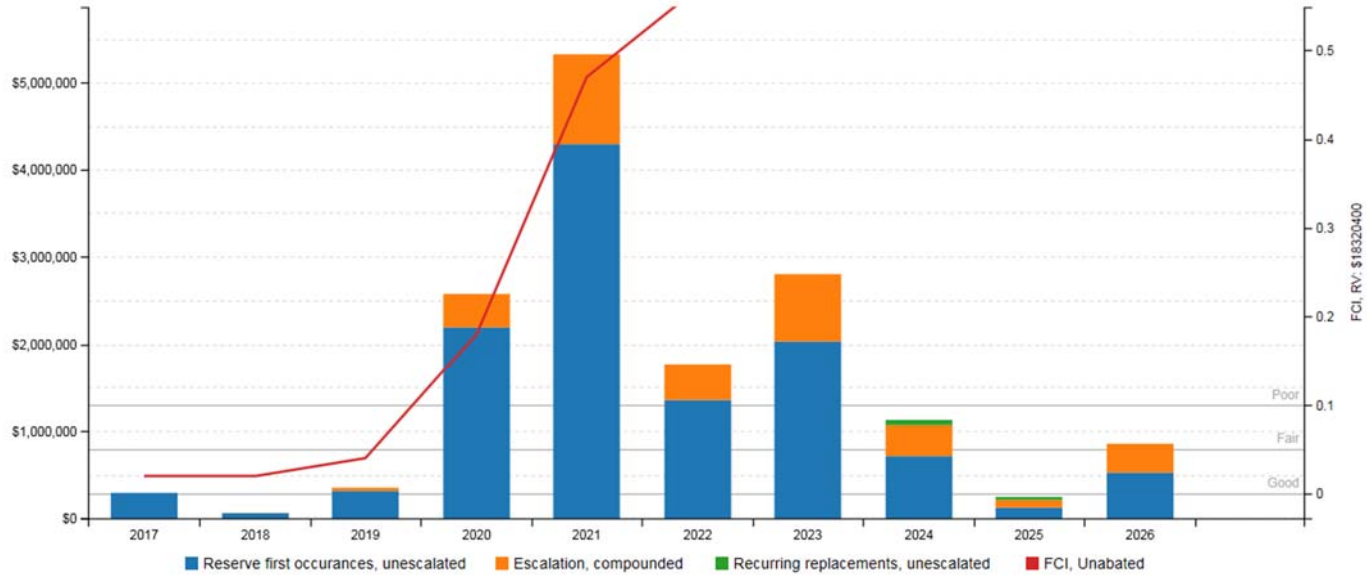
- Replacement of asphalt shingle roof
- Replacement of wastewater treatment plant
- Replace boiler with two units for redundancy
- Merge fire alarm panels

Generally, the property appears to have been constructed within industry standards in force at the time of construction. The property appears to have been well maintained since it was first occupied and is in fair overall condition.

According to property management personnel, the property has had an active capital improvement expenditure program over the past three years, primarily consisting of updating the water treatment system. Supporting documentation was not provided in support of these claims but the work is evident.

1.2. FACILITY CONDITION INDEX (FCI)

Replacement Value: $ 18,320,400; Inflation rate: 5.5%



One of the major goals of the FCA is to calculate the FCI, which gives an indication of a building's overall condition. Two FCI ratios are calculated and presented, the Current Year and Ten-Year. The Current Year FCI is the ratio of Immediate Repair Costs to the building's Current Replacement Value. Similarly, the Ten-Year FCI is the ratio of anticipated Capital Reserve Needs over the next ten years to the Current Replacement Value.

FCI Condition Rating	Definition	Percentage Value
Good	In new or well-maintained condition, with no visual evidence of wear, soiling or other deficiencies.	0% to 5%
Fair	Subjected to wear and soiling but is still in a serviceable and functioning condition.	> than 5% to 10%
Poor	Subjected to hard or long-term wear. Nearing the end of its useful or serviceable life.	> than 10% to 60%
Very Poor	Has reached the end of its useful or serviceable life. Renewal is now necessary.	> than 60%

The graphs above and tables below represent summary-level findings for the FCA. The deficiencies identified in this assessment can be combined with potential new construction requirements to develop an overall strategy that can serve as the basis for a portfolio-wide capital improvement funding strategy. Key findings from the assessment include:

Key Finding	Metric	
Current Year Facility Condition Index (FCI) FCI = (IR)/(CRV)	1.61%	Good
10-Year Facility Condition Index (FCI) FCI = (RR)/(CRV)	92.38%	Very Poor
Current Replacement Value (CRV)	61,068 SF * 300.00 / SF = $18,320,400	
Year **0** (Current Year) - Immediate Repairs (IR)		$295,217
Years **1-10** – Replacement Reserves (RR)		$16,925,281
TOTAL Capital Needs		**$17,220,498**

The major issues contributing to the Immediate Repair Costs and the Current Year FCI ratio are summarized below:

- Replacement of commercial kitchen equipment
- Replacement of exterior light
- Replacement of exterior caulk

Further detail on the specific costs that make up the Immediate Repair Costs can be found in the cost tables in the appendices.

1.3. SPECIAL ISSUES AND FOLLOW-UP RECOMMENDATIONS

As part of the FCA, a limited assessment of accessible areas of the building(s) was performed to determine the presence of mold, conditions conducive to mold growth, and/or evidence of moisture. Property personnel were interviewed concerning any known or suspected mold, elevated relative humidity, water intrusion, or mildew-like odors. Sampling is not a part of this assessment.

There are no visual indications of the presence of mold growth, conditions conducive to mold growth, or evidence of moisture in representative readily accessible areas of the property.

1.4. OPINIONS OF PROBABLE COST

Cost estimates are attached at the front of this report (following the cover page).

These estimates are based on Invoice or Bid Document/s provided either by the Owner/facility and construction costs developed by construction resources such as *R.S. Means* and *Marshall & Swift,* EMG's experience with past costs for similar properties, city cost indexes, and assumptions regarding future economic conditions.

Opinions of probable costs should only be construed as preliminary, order of magnitude budgets. Actual costs most probably will vary from the consultant's opinions of probable costs depending on such matters as type and design of suggested remedy, quality of materials and installation, manufacturer and type of equipment or system selected, field conditions, whether a physical deficiency is repaired or replaced in whole, phasing of the work (if applicable), quality of contractor, quality of project management exercised, market conditions, and whether competitive pricing is solicited, etc. ASTM E2018-08 recognizes that certain opinions of probable costs cannot be developed within the scope of this guide without further study. Opinions of probable cost for further study should be included in the FCA.

1.4.1. METHODOLOGY

Based upon site observations, research, and judgment, along with referencing Expected Useful Life (EUL) tables from various industry sources, EMG opines as to when a system or component will most probably necessitate replacement. Accurate historical replacement records, if provided, are typically the best source of information. Exposure to the elements, initial quality and installation, extent of use, the quality and amount of preventive maintenance exercised, etc., are all factors that impact the effective age of a system or component. As a result, a system or component may have an effective age that is greater or less than its actual chronological age. The Remaining Useful Life (RUL) of a component or system equals the EUL less its effective age. Projections of Remaining Useful Life (RUL) are based on continued use of the Property similar to the reported past use. Significant changes in occupants and/or usage may affect the service life of some systems or components.

Where quantities could not be derived from an actual take-off, lump sum costs or allowances are used. Estimated costs are based on professional judgment and the probable or actual extent of the observed defect, inclusive of the cost to design, procure, construct and manage the corrections.

1.4.2. IMMEDIATE REPAIRS

Immediate repairs are opinions of probable costs that require immediate action as a result of: (1) material existing or potential unsafe conditions, (2) material building or fire code violations, or (3) conditions that, if not addressed, have the potential to result in, or contribute to, critical element or system failure within one year or will most probably result in a significant escalation of its remedial cost.

1.4.3. REPLACEMENT RESERVES

Replacement Reserves are for recurring probable expenditures, which are not classified as operation or maintenance expenses. The replacement reserves should be budgeted for in advance on an annual basis. Replacement Reserves are reasonably predictable both in terms of frequency and cost. However, Replacement Reserves may also include components or systems that have an indeterminable life but, nonetheless, have a potential for failure within an estimated time period.

Replacement Reserves exclude systems or components that are estimated to expire after the reserve term and are not considered material to the structural and mechanical integrity of the subject property. Furthermore, systems and components that are not deemed to have a material effect on the use of the Property are also excluded. Costs that are caused by acts of God, accidents, or other occurrences that are typically covered by insurance, rather than reserved for, are also excluded.

Replacement costs are solicited from ownership/property management, EMG's discussions with service companies, manufacturers' representatives, and previous experience in preparing such schedules for other similar facilities. Costs for work performed by the ownership's or property management's maintenance staff are also considered.

EMG's reserve methodology involves identification and quantification of those systems or components requiring capital reserve funds within the assessment period. The assessment period is defined as the effective age plus the reserve term. Additional information concerning system's or component's respective replacement costs (in today's dollars), typical expected useful lives, and remaining useful lives were estimated so that a funding schedule could be prepared. The Replacement Reserves Schedule presupposes that all required remedial work has been performed or that monies for remediation have been budgeted for items defined in the Immediate Repair Cost Estimate.

2. PURPOSE AND SCOPE

2.1. PURPOSE

EMG was retained by the client to render an opinion as to the Property's current general physical condition on the day of the site visit.

Based on the observations, interviews and document review outlined below, this report identifies significant deferred maintenance issues, existing deficiencies, and possible issues or violations of record at municipal offices, which affect the Property's use. Opinions are rendered as to its structural integrity, building system condition, and the Property's overall condition. The report also notes building systems or components that have realized or exceeded their typical expected useful lives.

FORMAT OF THE BODY OF THE REPORT:

Throughout sections 5 through 9 of this report, each report section will typically contain three subsections organized in the following sequence:

- A descriptive table (and/or narrative), which identifies the components assessed, their condition, and other key data points.
- A simple bulleted list of Anticipated Lifecycle Replacements, which lists components and assets typically in Excellent, Good, or Fair condition at the time of the assessment but that will require replacement or some other attention once aged past their estimated useful life. These listed components are typically included in the associated inventory database with costs identified and budgeted beyond the first several years.
- A bulleted cluster of Actions/Comments, which include more detailed narratives describing deficiencies, recommended repairs, and short term replacements. The assets and components associated with these bullets are/were typically problematic and in Poor or Failed condition at the time of the assessment, with corresponding costs included within the first few years.

CONDITIONS:

The physical condition of building systems and related components are typically defined as being in one of five conditions: Excellent, Good, Fair, Poor, Failed or a combination thereof. For the purposes of this report, the following definitions are used:

Excellent	=	New or very close to new; component or system typically has been installed within the past year, sound and performing its function. Eventual repair or replacement will be required when the component or system either reaches the end of its useful life or fails in service.
Good	=	Satisfactory as-is. Component or system is sound and performing its function, typically within the first third of its lifecycle. However, it may show minor signs of normal wear and tear. Repair or replacement will be required when the component or system either reaches the end of its useful life or fails in service.
Fair	=	Showing signs of wear and use but still satisfactory as-is, typically near the median of its estimated useful life. Component or system is performing adequately at this time but may exhibit some signs of wear, deferred maintenance, or evidence of previous repairs. Repair or replacement will be required due to the component or system's condition and/or its estimated remaining useful life.
Poor	=	Component or system is significantly aged, flawed, functioning intermittently or unreliably; displays obvious signs of deferred maintenance; shows evidence of previous repair or workmanship not in compliance with commonly accepted standards; has become obsolete; or exhibits an inherent deficiency. The present condition could contribute to or cause the deterioration of contiguous elements or systems. Either full component replacement is needed or repairs are required to restore to good condition, prevent premature failure, and/or prolong useful life.
Failed	=	Component or system has ceased functioning or performing as intended. Replacement, repair, or other significant corrective action is recommended or required.
Not Applicable	=	Assigning a condition does not apply or make logical sense, most commonly due to the item in question not being present.

PLAN TYPES:

Each line item in the cost database is assigned a Plan Type, which is the primary reason or rationale for the recommended replacement, repair, or other corrective action. This is the "why" part of the equation. A cost or line item may commonly have more than one applicable Plan Type; however, only one Plan Type will be assigned based on the "best" fit, typically the one with the greatest significance. The following Plan Types are listed in general weighted order of importance:

Safety	=	An observed or reported unsafe condition that if left unaddressed could result in an injury; a system or component that presents a potential liability risk.
Performance/Integrity	=	Component or system has failed, is almost failing, performs unreliably, does not perform as intended, and/or poses a risk to overall system stability.
Accessibility	=	Does not meet ADA, UFAS, and/or other handicap accessibility requirements.
Environmental	=	Improvements to air or water quality, including removal of hazardous materials from the building or site.
Modernization/Adaptation	=	Conditions, systems, or spaces that need to be upgraded in appearance or function to meet current standards, facility usage, or client/occupant needs.
Lifecycle/Renewal	=	Any component or system in which future repair or replacement is anticipated beyond the next several years and/or is of minimal substantial early-term consequence.

PRIORITIZATION SCHEME:

One of EMG's data-sorting exercises and deliverables of fundamental value is to evaluate and rank the recommendations and needs of the facility via a logical and well-developed prioritization scheme. The factors under consideration and built into the evaluation criteria include Plan Type (the "why"), Uniformat/building component type or system (the "what"), and condition/RUL (the "when"). The facility type or importance is also factored into the overall portfolio if relevant information is provided and applicable. EMG utilizes the following prioritization scheme:

Priority 1	=	**Immediate/Critical Items:** Require immediate action to either (a) correct a safety hazard or (b) address the most important building performance or integrity issues or failures.
Priority 2	=	**Potentially Critical Items:** Include (a) those safety/liability, component performance or building integrity issues of slightly less importance not captured in Priority 1 and/or (b) issues that if left unchecked could escalate into Immediate/Critical items. Accessibility and 'stabilized' environmental issues are also typically included in this subset.
Priority 3	=	**Necessary/Recommended Items:** Items of concern that generally either require attention or are suggested as improvements within the near term to: (a) improve usability, marketability, or efficiency; (b) reduce operational costs; (c) prevent or mitigate disruptions to normal operations; (d) modernize the facility; (e) adapt the facility to better meet occupant needs; and/or (f) should be addressed when the facility undergoes a significant renovation.
Priority 4	=	**Anticipated Lifecycle Replacements:** Renewal items which are generally associated with building components performing acceptably at the present time but will likely require replacement or other future attention within the timeframe under consideration.

2.2. SCOPE

The standard scope of the Facility Condition Assessment includes the following:

- Visit the Property to evaluate the general condition of the building and site improvements, review available construction documents in order to familiarize ourselves with, and be able to comment on, the in-place construction systems, life safety, mechanical, electrical, and plumbing systems, and the general built environment.
- Identify those components that are exhibiting deferred maintenance issues and provide cost estimates for Immediate Costs and Replacement Reserves based on observed conditions, maintenance history and industry standard useful life estimates. This will include the review of documented capital improvements completed within the last five-year period and work currently contracted for, if applicable.
- Provide a full description of the Property with descriptions of in-place systems and commentary on observed conditions.

- Provide a general statement of the subject Property's compliance to Title III of the Americans with Disabilities Act. This will not constitute a full ADA survey, but will help identify exposure to issues and the need for further review.
- Perform a limited assessment of accessible areas of the building(s) for the presence of mold, conditions conducive to mold growth, and/or evidence of moisture. EMG will also interview Project personnel regarding the presence of any known or suspected mold, elevated relative humidity, water intrusion, or mildew-like odors. Potentially affected areas will be photographed. Sampling will not be considered in routine assessments.
- List the current utility service providers.
- Review maintenance records and procedures with the in-place maintenance personnel.
- Observe a representative sample of the interior spaces/units, including vacant spaces/units, in order to gain a clear understanding of the property's overall condition. Other areas to be observed include the exterior of the property, the roofs, interior common areas, and the significant mechanical, electrical and elevator equipment rooms.
- Provide recommendations for additional studies, if required, with related budgetary information.
- Provide an Executive Summary at the beginning of this report.

2.3. PERSONNEL INTERVIEWED

The management and maintenance staff and building engineers were interviewed for specific information relating to the physical property, available maintenance procedures, historical performance of key building systems and components, available drawings and other documentation. The following personnel from the facility and government agencies were interviewed in the process of conducting the FCA:

Name and Title	Organization	Phone Number
Scott Horen Facility Manager	Stafford County Public Schools	540.220.3339
Stacey Gentry Maintenance Engineering Staff	Stafford County Public Schools	
Greg Goring Maintenance Engineering Staff	Stafford County Public Schools	
Tony Gallahan Maintenance Engineering Staff	Stafford County Public Schools	

The FCA was performed with the assistance of Scott Horen and the above listed staff from the Stafford County Public Schools, the onsite Points of Contact (POC), who were cooperative and provided information that appeared to be accurate based upon subsequent site observations. The onsite contacts are completely knowledgeable about the subject property and answered most questions posed during the interview process. The POC's management involvement at the property has been for at least the past 10 years.

2.4. DOCUMENTATION REVIEWED

Prior to the FCA, relevant documentation was requested that could aid in the knowledge of the subject property's physical improvements, extent and type of use, and/or assist in identifying material discrepancies between reported information and observed conditions. The review of submitted documents does not include comment on the accuracy of such documents or their preparation, methodology, or protocol. The Documentation Request Form is provided in Appendix E.

Although Appendix E provides a summary of the documents requested or obtained, the following list provides more specific details about some of the documents that were reviewed or obtained during the site visit.

- Site plan
- Summary of recent capital improvements
- Capital Improvement Plan developed by Moseley Architects
- A "Conditional and Operational Assessment of the Water and Wastewater Facilities at Hartwood Elementary School" performed by Timmons Group.

A prior building condition assessment was reviewed while performing the FCA. The report, dated April 28, 2008, was prepared by EMG. Property condition and/or factual information discrepancies between the prior report and actual conditions are not readily apparent.

2.5. PRE-SURVEY QUESTIONNAIRE

A Pre-Survey Questionnaire was not filled out by the POC.

2.6. WEATHER CONDITIONS

4/20/2017: Clear, with temperatures in the 70s (°F) and light winds.

3. ACCESSIBILITY & PROPERTY RESEARCH

3.1. ADA ACCESSIBILITY

Generally, Title III of the Americans with Disabilities Act (ADA) prohibits discrimination by entities to access and use of “areas of public accommodations” and “commercial facilities” on the basis of disability. Regardless of its age, these areas and facilities must be maintained and operated to comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Buildings completed and occupied after January 26, 1992 are required to comply fully with the ADAAG. Existing facilities constructed prior to this date are held to the lesser standard of compliance to the extent allowed by structural feasibility and the financial resources available. As an alternative, a reasonable accommodation pertaining to the deficiency must be made.

During the FCA, a limited visual observation for ADA accessibility compliance was conducted. The scope of the visual observation was limited to those areas set forth in *EMG’s Abbreviated Accessibility Checklist* provided in Appendix D of this report. It is understood by the Client that the limited observations described herein does not comprise a full ADA Compliance Survey, and that such a survey is beyond the scope of EMG’s undertaking. Only a representative sample of areas was observed and, other than as shown on the Abbreviated Accessibility Checklist, actual measurements were not taken to verify compliance.

The facility generally appears to be accessible as stated within the defined priorities of Title III of the Americans with Disabilities Act.

A full ADA Compliance Survey may reveal some aspects of the property that are not in compliance.

4. EXISTING BUILDING ASSESSMENT

4.1. UNIT OR SPACE TYPES

The following table identifies the reported unit types and mix at the subject property.

Unit Types and Mix		
Quantity	Type	Floor Area (Sf)
33	Classroom	25,680
11	Offices	2,370
1	Cafeteria	3,990
1	Stage	790
1	Gymnasium	2,880
1	Art	625
5	Mechanical	4,500
6	Storage	1,515
1	Kitchen	1,070
1	Clinic/Health Services	180
1	Library/Media Center	2,775
1	Guidance	680
10	Common Area Restrooms	1,500
5	Private/Semi-private Restrooms	450
77	**TOTAL**	**49,000**

4.2. INACCESSIBLE AREAS OR KEY SPACES NOT OBSERVED

All of the interior spaces were observed in order to gain a clear understanding of the property's overall condition. Other areas accessed included the site within the property boundaries, external water treatment building and sewage pump rooms, the exterior of the property and the roof. Areas of note that were either inaccessible or not observed for other reasons are listed in the table below:

Key Spaces Not Observed		
Room #	Area	Access Issues
--	Sprinkler Vault	Confined space

A "down unit" or area is a term used to describe a unit or space that cannot be occupied due to poor conditions such as fire damage, water damage, missing equipment, damaged floor, wall or ceiling surfaces, or other significant deficiencies. There are no down units or areas.

5. SITE IMPROVEMENTS

5.1. UTILITIES

The following table identifies the utility suppliers and the condition and adequacy of the services.

Site Utilities		
Utility	Supplier	Condition and Adequacy
Sanitary sewer	On-site system	Fair
Storm sewer	Stafford County	Good
Domestic water	On-site system	Fair
Electric service	Dominion Virginia Power	Good
Natural gas service	Commonwealth Natural Gas	Good
Propane service	Amerigas	Good

Actions/Comments:

- According to the POC, the utilities provided are adequate for the property. There are no unique, onsite utility systems such as septic systems, or propane gas tanks.
- See Section 7.4 for descriptions and comments regarding the emergency generator.
- There is an onsite, domestic and firefighting water system located at the property. The source of domestic water is two eight-inch wells with approximate depths of 270 and over 425 feet, installed in 1963 and 2004 respectively. The system includes on site pumping and storage stations that are owned and maintained by Stafford County Public Schools.
- The water treatment plant (WTP) is a licensed and regulated facility and consists of five underground storage tanks, two – 6,000-gallon and one – 18,000-gallon domestic-use tanks, and two - 10,000-gallon fire suppression system water storage tanks. The WTP is located at the rear of the building, and the treatment itself is housed in a pre-fabricated concrete building. Two 10 HP pumps move water through a single eight-inch well to the WTP, and the wells can pump a maximum of around 16,000 gallons per day. The average building demand is 7,600 gallons per day. The WTP components include a carbon filter, a calcite filter for pH adjustment, pumps, valves, gauges, and testing facilities. The WTP provides water to the school only. Supply pressures are reportedly sufficient for the property.
- Review of the plant and discussions with the POC noted that the operation of the water treatment system is by RGS Enterprises, and all significant maintenance records are available for review. According to the POC, the water is tested on a monthly basis. Sampling and testing are completed by RGS, and reports are issued to Stafford County Schools and the State of Virginia Health Department. The most recent tests on the water supply showed no abnormal levels of contaminants. The responsibility for maintaining water quality belongs to RGS, and they have maintained this function for twenty years. According to the POC, around eight years ago there were issues with the water supply, including higher quantities of lead. Several system components were replaced, which remedied the issues. The water quality at the property has been good since these replacements. Water quality is regulated by the State of Virginia Health Department.
- The property has a firefighting water system that is part of the domestic water system. The firefighting water system appears to be adequate for the property. The firefighting water is obtained from the domestic water storage tanks. The responding fire department is the Hartwood Volunteer Firemen's Association, Inc. operating with the Stafford County Fire Department, and the closest fire station is located at 67 Hartwood Church Rd., Hartwood, Virginia, approximately one-quarter mile from the property.
- The permit file was not reviewed. The WTP appears to be functional and in good condition. No expenses beyond normal operating costs are anticipated during the evaluation period.
- There is an on-site, sanitary sewage system located at the east side of the property. The system is a carbon steel activated sludge secondary wastewater treatment plant (WWTP) and relies on gravity flow into the system. The system is operated by Dabney and Crooks.
- The on-site sewage piping system directs sewage to the sewage treatment plant. The system was installed in 2001, with three 5,000-gallon tanks from the previous 1966 system. The piping is reported to be in fair condition. The POC indicated issues with sewer gas smells and possible interior cross contamination with other piping.

- The WWTP is a licensed and regulated facility and consists of primary settling, two submersible pumps, three positive displacement blowers, chlorination and de-chlorination and discharges down a step trough to an open stream. Bacteria growth is monitored and adjusted as required. Solids are removed as required, currently about once a year, by a local septic service company.
- The responsibility for maintaining discharge quality belongs to Dabney and Crooks, and they have maintained this function for approximately twenty years. The discharge quality at the property has historically been good and is regulated by State of Virginia Department of Environmental Quality.
- In August of 2013, a conditional and operational assessment was performed on the WWTP by Timmons Group. The report indicates that the system design capacity is approximately 7,800 gallons per day, while the average daily flow is around 6,882 gallons per day. This means the plant is operating near design capacity on an average day, and thus is inadequate for the property.
- Conversations with the POC noted that the school district has plans to update the STP within the next few years.
- According to the POC, there are no plans to connect to the local municipal sewer system.
- Based on the estimated Remaining Useful Life (RUL), conversations with the POC, and the current condition, the WWTP and associated piping will require major repairs or replacement during the evaluation period. A budgetary cost for this work is included.

5.2. PARKING, PAVING, AND SIDEWALKS

Item	Description
Main Ingress and Egress	Shackelford Well Road
Access from	North
Additional Entrances	NA
Additional Access from	NA

Paving and Flatwork			
Item	Material	Last Work Done	Condition
Entrance Driveway Apron	Asphalt	2009	Fair
Parking Lot	Asphalt	2009	Fair
Parking Lot – Bus Loop	Asphalt	2009	Poor
Drive Aisles	Asphalt	2009	Fair
Service Aisles	Asphalt	2009	Fair
Sidewalks	Concrete	Unknown	Fair
Curbs	Concrete	Unknown	Fair
Site Stairs	None		
Pedestrian Ramps	None		

Parking Count				
Open Lot	Carport	Private Garage	Subterranean Garage	Freestanding Parking Structure
99	-	-	-	-
Total Number of ADA Compliant Spaces			8	

Parking Count				
Open Lot	Carport	Private Garage	Subterranean Garage	Freestanding Parking Structure
Number of ADA Compliant Spaces for Vans			1	
Total Parking Spaces			99	
Parking Ratio (Spaces/1,000 SF Building Area)			1.6	
Method of Obtaining Parking Count			Physical count	

Exterior Stairs			
Location	Material	Handrails	Condition
None	None	None	NA

Anticipated Lifecycle Replacements:

- Asphalt seal coating
- Asphalt resurface

Actions/Comments:

- The bus loop asphalt pavement exhibits isolated areas of localized depressions. The most severely damaged areas of paving must be cut and patched in order to maintain the integrity of the overall pavement system during this evaluation period.

5.3. DRAINAGE SYSTEMS AND EROSION CONTROL

Drainage System and Erosion Control		
System	Exists at Site	Condition
Surface Flow	☒	Fair
Inlets	☐	--
Swales	☐	--
Detention pond	☐	--
Lagoons	☐	--
Ponds	☐	--
Underground Piping	☐	--
Pits	☐	--
Municipal System	☐	--
Dry Well	☐	--

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- There is no evidence of storm water runoff from adjacent properties. The storm water system appears to provide adequate runoff capacity. There is no evidence of major ponding or erosion.

5.4. TOPOGRAPHY AND LANDSCAPING

Item	Description						
Site Topography	Slopes gently down from the north side of the property to the south property line.						
Landscaping	Trees	Grass	Flower Beds	Planters	Drought Tolerant Plants	Decorative Stone	None
	☒	☒	☐	☐	☐	☐	☐
Landscaping Condition	Good						
Irrigation	Automatic Underground	Drip	Hand Watering	None			
	☐	☐	☐	☒			
Irrigation Condition	--						

Retaining Walls		
Type	Location	Condition
None	--	--

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- The topography and adjacent uses do not appear to present conditions detrimental to the property. There are no significant areas of erosion.

5.5. GENERAL SITE IMPROVEMENTS

Property Signage	
Property Signage	Monument
Street Address Displayed?	No

Site and Building Lighting					
Site Lighting	None	Pole Mounted	Bollard Lights	Ground Mounted	Parking Lot Pole Type
	☐	☒	☐	☐	☒

Site and Building Lighting			
	Overall Site Lighting Condition	Good	
Building Lighting	None	Wall Mounted	Recessed Soffit
	☐	☒	☒
	Overall Building Lighting Condition	Poor	

Site Fencing		
Type	Location	Condition
Chain link with metal posts	Pump Houses	Failed
Chain link with metal posts	Water Supply Treatment Building	Failed
Chain link with metal posts	Wastewater Treatment Plant	Failed
Chain link with metal posts	Exterior Mechanical Area	Failed

Refuse Disposal				
Refuse Disposal	Common area dumpsters			
Dumpster Locations	Mounting	Enclosure	Contracted?	Condition
East side of service road	Concrete pad and asphalt pad	Chain link fence	Yes	Good

Other Site Amenities			
	Description	Location	Condition
Playground Equipment	Plastic and metal	West of building	Good
Playground Surface	Asphalt, wood chips	West of building	Good
Softball Field and Equipment	Grass	West of building	Good
Basketball Court	Asphalt	West of building	Fair
Swimming Pool	None	None	--

The property and young children's play area is surrounded by a chain link fence.

Anticipated Lifecycle Replacements:

- Exterior lighting
- Site chain link fencing
- Playground equipment
- Basketball court seal coating

Actions/Comments:

- There are corroded and damaged fixtures. Some of the light fixtures require replacement to provide necessary levels of night lighting for security which is recommended during this evaluation period.

- The metal chain link fence surrounding the pump houses has a broken gate and should be repaired which is recommended to be completed during this evaluation period.
- The metal chain link fence surrounding the wastewater treatment plant area has a 30-foot portion of the fence that requires reattachment to the top rail. This should be completed during this evaluation period.

6. BUILDING ARCHITECTURAL AND STRUCTURAL SYSTEMS

6.1. FOUNDATIONS

Building Foundation		
Item	Description	Condition
Foundation	Slab on grade with integral footings	Fair
Basement and Crawl Space	None	--

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- The foundation systems are concealed. There are no significant signs of settlement, deflection, or movement.

6.2. SUPERSTRUCTURE

Building Superstructure		
Item	Description	Condition
Framing / Load-Bearing Walls	Concrete masonry units	Fair
Ground Floor	Concrete slab	Fair
Upper Floor Framing	None	--
Upper Floor Decking	None	--
Roof Framing	Steel beams or girders	Fair
Roof Decking	Metal decking	Fair

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- The superstructure is exposed in some locations, which allows for limited observation. Walls and floors appear to be plumb, level, and stable. There are no significant signs of deflection or movement.

6.3. ROOFING

Primary Roof			
Type / Geometry	Flat or low-sloping	Finish	Built-up membrane with ballast
Maintenance	In-house staff	Roof Age	5 years

Primary Roof			
Flashing	Sheet metal	Warranties	Yes
Parapet Copings	Sheet metal	Roof Drains	Internal drains
Fascia	None	Insulation	Rigid board
Soffits	None	Skylights	No
Attics	No	Ponding	No
Ventilation Source-1	Power vents	Leaks Observed	No
Ventilation Source-2	No	Roof Condition	Fair

The primary roof is located above the original structure and 1989 addition.

Secondary Roof			
Type / Geometry	Gabled	Finish	Asphalt shingles
Maintenance	In-house staff	Roof Age	23 years
Flashing	Sheet metal	Warranties	Yes
Parapet Copings	NA; no parapet walls	Roof Drains	Gutters and downspouts
Fascia	Metal	Insulation	Blown-in
Soffits	Exposed	Skylights	No
Attics	Yes	Ponding	No
Ventilation Source-1	Gable end vents	Leaks Observed	No
Ventilation Source-2	Soffit vents	Roof Condition	Failed

The secondary roof is located above the 1994 addition.

Tertiary Roof			
Type / Geometry	Gabled	Finish	Standing seam metal
Maintenance	In-house staff	Roof Age	7-8 years
Flashing	Sheet metal	Warranties	Yes
Parapet Copings	NA; no parapet walls	Roof Drains	Gutters and downspouts
Fascia	Metal	Insulation	Could not be determined
Soffits	Exposed	Skylights	No
Attics	No	Ponding	No
Ventilation Source-1	Gable end vents	Leaks Observed	No

Tertiary Roof			
Ventilation Source-2	Soffit vents	Roof Condition	Good

The tertiary roof is located above the entrance vestibule.

Anticipated Lifecycle Replacements:

- Asphalt shingles
- Built-up roof membrane and ballast
- Roof flashings (included as part of overall membrane replacement)
- Parapet wall copings (included as part of overall membrane replacement)

Actions/Comments:

- The roof finishes vary in age. The POC indicated all roofs have a minimum 20-year warranty. The roofs are maintained by the in-house maintenance staff, and inspected by an insurance company.
- According to the POC, there are no active roof leaks. Roof leaks have occurred in the past years. The leaks have since been repaired, and no active roof leaks are evident.
- There is no evidence of roof deck or insulation deterioration. The roof substrate and insulation should be inspected during any future roof repair or replacement work.
- Roof drainage appears to be adequate. No ponding was observed during the visit; however, the areas surrounding the exterior drains were visibly stained and should be cleaned. Clearing and minor repair of drain system components should be performed regularly as part of the property management's routine maintenance and operations program.
- During severe windstorms, roofing aggregate (ballast) may become wind-borne and may harm nearby persons or may damage surrounding properties, building, or site elements of the subject property. National, regional, and local building codes vary widely in the treatment of this issue and should be consulted during any future roofing repairs or replacements.
- The field of the secondary roof has some missing shingles on the Northern most section. The damaged shingles should be replaced during this evaluation period.
- The roof flashings on the 1994 addition have isolated areas of damaged flashing elements near the entrance to the original section of the building. The damaged flashing elements must be repaired.as part of routine maintenance.
- There was some cracking and separation along the edges of the flat roof. These areas should be properly sealed as part of routine maintenance.

6.4. EXTERIOR WALLS

Building Exterior Walls		
Type	Location	Condition
Primary Finish	Brick veneer	Poor to Failed
Secondary Finish	None	--
Accented with	None	Fair
Soffits	Exposed on 1994 addition	Fair

Building sealants (caulking) are located between dissimilar materials, at joints, and around window and door openings.

Anticipated Lifecycle Replacements:

- Brick veneer

- Caulking

Actions/Comments:

- The exterior brick finishes have isolated areas of cracking along the east face of the west corner of the school, and locations where there are gaps between the structural steel and masonry. The damaged finishes should be repaired during this evaluation period.
- On-going periodic maintenance, including patching repairs, and re-caulking, is highly recommended.
- Re insulate interior wall throughout the building should occur during this evaluation period.

6.5. EXTERIOR AND INTERIOR STAIRS

Building Exterior and Interior Stairs					
Type	Description	Riser	Handrail	Balusters	Condition
Building Exterior Stairs	None	--	--	--	--
Building Interior Stairs	Integral steel	Open	Metal	None	Fair

Anticipated Lifecycle Replacements:

- Refinishing of the interior utility stairs

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended. Future lifecycle replacements of the components listed above will be required.

6.6. EXTERIOR WINDOWS AND DOORS

Building Windows				
Window Framing	Glazing	Location	Window Screen	Condition
Aluminum framed, fixed	Double pane	Entire building	☐	Good
Window flashings	N/A	Entire building		Failed

Building Doors		
Main Entrance Doors	Door Type	Condition
	Metal, insulated	Fair
Secondary Entrance Doors	Metal, insulated	Fair
Service Doors	Metal, insulated	Fair
Overhead Doors	None	--

Anticipated Lifecycle Replacements:

- Exterior caulking

Actions/Comments:

- Three window flashings were missing or broken and should be replaced. Windows should be caulked and broken or missing flashings should be replaced during this evaluation period.

6.7. PATIO, TERRACE, AND BALCONY

Not applicable. There are no patios, terraces, or balconies.

7. BUILDING MECHANICAL AND PLUMBING SYSTEMS

7.1. BUILDING HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

Building Central Heating System	
Primary Heating System Type	Hot water boilers
Quantity and Capacity of Major Components	1 boiler at 1,200 MBH
Total Heating Capacity	1,200 MBH
Heating Fuel	Natural gas
Location of Major Equipment	Sprinkler Room
Space Served by System	Original building
Age Ranges	1993
Boiler Condition	Fair
Heat Exchanger Condition	--

Building Central Cooling System	
Primary Cooling System Type	Air-cooled chillers
Quantity and Capacity of Major Components	2 chillers ranging from 60 to 110 tons each
Total Cooling Capacity	170 tons
Refrigerant	R-22
Cooling Towers	None
Location of Major Equipment	Exterior mechanical areas
Space Served by System	Entire building
Age Ranges	Chillers dated 2006 and 2008
Chiller Condition	Fair
Cooling Tower Condition	--

Distribution System	
HVAC Water Distribution System	Two-pipe
Heating Water Circulation Pump Size and Quantity	1 pump at 3 HP
Chilled Water Circulation Pump Size and Quantity	NA
Condenser Water Circulation Pump Size and Quantity	3 pumps at 15 HP each
Pump Condition	Fair
Air Distribution System	Variable volume
Quantity and Capacity of Air Handlers	8 air handlers ranging from 6,750 to 16,200 CFM each
Location of Air Handlers	Rooftop, sprinkler room, mechanical room
Large Spaces the Larger Dedicated AHU's Serve	NA
Age of Air Handlers	Majority dated 2008 with one unit dated 1993
Air Handler Condition	Good to Fair
Terminal Units	VAV boxes
Quantity and Capacity of Terminal Units	Approximately 48 VAV boxes at 700 CFM
Location of Terminal Units	Along ceilings
Spaces Served by Terminal Units	1989 and 1994 additions have VAVs with hot water heat
Terminal Unit Condition	Fair

Supplemental Components	
Supplemental Component #1	Package unit
Location / Space Served	Office area
Condition	Fair
Supplemental Component #2	Split system condensing unit
Location / Space Served	Computer lab
Condition	Fair
Supplemental Component #3	Split system condensing unit
Location / Space Served	Security vestibule addition
Condition	Poor
Supplemental Component #4	Split system condensing unit
Location / Space Served	Cafeteria office and dry storage
Condition	Fair
Supplemental Component #5	Electric wall heater
Location / Space Served	Hallways, kitchen
Condition	Fair
Supplemental Component #6	Suspended heaters
Location / Space Served	Mech areas
Condition	Fair

Controls and Ventilation	
HVAC Control System	BAS, direct digital controls (DDC)
HVAC Control System Condition	Fair
Building Ventilation	Rooftop exhaust fans
Ventilation System Condition	Fair

Anticipated Lifecycle Replacements:

- Boilers
- Chillers
- Air handling units
- Distribution pumps and motors
- VAV boxes
- Package unit
- Split system condensing units
- Electric wall heaters
- Suspended electric unit heaters
- Baseboard electric heaters
- Rooftop exhaust fans
- Air compressor
- Air dryer
- Fan

Actions/Comments:

- The HVAC systems are maintained by the in-house maintenance staff.
- The HVAC equipment appears to vary in age, although most equipment was installed in 2008. HVAC equipment is replaced on an "as needed" basis.
- The boiler will require replacement in the next few years.

- The heating side of the system appears to lack system redundancy. If the single boiler fails, the 1989 and 1994 facility additions would be without central heat. When the boiler is replaced, consideration should be given to providing two units that provide an equivalent or higher amount of capacity as the unit currently in place. Some associated engineering design services are recommended.
- The split system condenser located on the roof adjacent to the security vestibule addition has a broken protector cage, which should be replaced during this evaluation period.

7.2. BUILDING PLUMBING AND DOMESTIC HOT WATER

Building Plumbing System		
Type	Description	Condition
Water Supply Piping	Copper	Fair
Waste/Sewer Piping	Cast iron	Poor
Vent Piping	Cast iron	Fair
Water Meter Location	Pump House	

Domestic Water Heaters or Boilers	
Components	Water Heaters
Fuel	Electric and gas
Quantity and Input Capacity	3 units at 45-54 kW, 1 unit at 75 MBH
Storage Capacity	445 gallons
Boiler or Water Heater Condition	Fair
Supplementary Storage Tanks?	Yes
Storage Tank Quantity and Volume	2 units at 100 gallons each 1 unit at 300 gallons 1 unit at 3,000 gallons
Quantity of Storage Tanks	4
Storage Tank Condition	Fair
Domestic Hot Water Circulation Pumps (3 HP and over)	Under 3 HP
Adequacy of Hot Water	Adequate
Adequacy of Water Pressure	Adequate

Plumbing Fixtures	
Water Closets	Commercial grade
Toilet (Water Closet) Flush Rating	--
Common Area Faucet Nominal Flow Rate	--
Condition	Fair

Anticipated Lifecycle Replacements:

- Backflow preventer
- Storage tanks

- Water heaters
- Toilets
- Urinals
- Sinks
- Drinking fountains

Actions/Comments:

- The plumbing systems appear to be well maintained and functioning adequately. The water pressure appears to be sufficient. No significant repair actions or short term replacement costs are required. Routine and periodic maintenance is recommended. Future lifecycle replacements of the components or systems listed above will be required.

7.3. BUILDING GAS DISTRIBUTION

Gas service is supplied from the gas main on the adjacent public street. The gas meter and regulator is located along the rear exterior wall, adjacent to the sprinkler room. The gas distribution piping within the building is steel.

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- The pressure and quantity of gas appear to be adequate.
- The gas meter and regulator appear to be functioning adequately and will require routine maintenance.
- Only limited observation of the gas distribution piping can be made due to hidden conditions.

7.4. BUILDING ELECTRICAL

Building Electrical Systems			
Electrical Lines	Underground	Transformer	Pad-mounted
Main Service Size	2,000 Amps	Volts	277/480 Volt, three-phase
Meter and Panel Location	Exterior Wall near Transformer	Branch Wiring	Copper
Conduit	Metallic	Step-Down Transformers?	Yes
Security / Surveillance System?	Yes	Building Intercom System?	Yes
Lighting Fixtures	T-8, T-12		
Main Distribution Condition	Fair		
Secondary Panel and Transformer Condition	Fair		
Lighting Condition	Fair		

Building Emergency System			
Size	60 kW	Fuel	Propane
Generator / UPS Serves	Emergency lights, etc.	Tank Location	Exterior Mechanical Area
Testing Frequency	Unknown	Tank Type	Above ground storage tank
Generator / UPS Condition	Fair		

Anticipated Lifecycle Replacements:

- Main switchgear
- Switchboards
- Step-down transformers
- Interior light fixtures
- Emergency generator
- Motion sensing switches
- Public address system
- Master clock system
- Transformer

Actions/Comments:

- The onsite electrical systems up to the meter are owned and maintained by the respective utility company.
- The electrical service and capacity appear to be adequate for the property's demands.
- The panels, switchboards, and step-down transformers are mostly original 1963 components with upgrades completed during the 1966, 1989, and 1994 additions/renovations. The electrical service is reportedly adequate for the facility's needs. However, due to the age of the panels, switchboards, and step-down transformers and increasing difficulty of obtaining replacement parts over time, lifecycle replacements are recommended per above.

7.5. BUILDING ELEVATORS AND CONVEYING SYSTEMS

Not applicable. There are no elevators or conveying systems.

7.6. FIRE PROTECTION AND SECURITY SYSTEMS

Item	Description					
Type	Wet and dry pipe					
Fire Alarm System	Central Alarm Panel	☒	Battery-Operated Smoke Detectors	☐	Alarm Horns	☒
	Annunciator Panels	☐	Hard-Wired Smoke Detectors	☒	Strobe Light Alarms	☒
	Pull Stations	☒	Emergency Battery-Pack Lighting	☐	Illuminated EXIT Signs	☒
Alarm System Condition	Good					
Sprinkler System	None	☐	Standpipes	☒	Backflow Preventer	☒
	Hose Cabinets	☐	Fire Pumps	☒	Siamese Connections	☒
Suppression Condition	Fair					
Central Alarm Panel System	Location of Alarm Panel		Installation Date of Alarm Panel			
	Corridor		2013			
Fire Extinguishers	Last Service Date		Servicing Current?			
	August 2016		Yes			
Hydrant Location	NA					
Siamese Location	Rear of building near Sprinkler Room					
Special Systems	Kitchen Suppression System	☒	Computer Room Suppression System	☐		

Anticipated Lifecycle Replacements:

- Air compressor
- Alarm devices and system

Actions/Comments:

- Sprinkler heads are currently limited to the 1994 addition of the building. Due to its construction date, the facility is “grandfathered” by code and the installation of fire sprinklers not required until major renovations are performed. Regardless of when or if installation of facility-wide fire suppression is required by the governing municipality, EMG recommends a retrofit be performed. This should be performed during this evaluation period.
- The main fire alarm panel in the corridor is inadequate to meet the building’s needs. A second panel is located in a mechanical room in the building. A new panel should be installed which incorporates both systems. Installation of the second panel should be performed during this evaluation period.

8. INTERIOR SPACES

8.1. INTERIOR FINISHES

The facility is used as a school for Stafford County Public Schools.

The most significant interior spaces include classrooms, offices, a gymnasium, and a cafeteria. Supporting areas include corridors, stairs, restrooms, mechanical rooms and utility closets.

The following table generally describes the locations and typical conditions of the interior finishes within the facility:

Typical Floor Finishes		
Floor Finish	Locations	General Condition
Vinyl tile	Classrooms, corridors and gymnasium	Fair
Carpet	Classrooms, offices and the library	Fair
Terrazzo	Corridors	Fair
Quarry tile	Kitchen and art room	Fair
Ceramic tile	Restrooms	Fair
Typical Wall Finishes		
Wall Finish	Locations	General Condition
Painted drywall	Classrooms, offices, corridors	Good
Painted CMU	Classrooms, offices, corridors	Fair
Ceramic tile	Corridors, restrooms	Fair
Toilet partitions	Restrooms	Good
Typical Ceiling Finishes		
Ceiling Finish	Locations	General Condition
Suspended T-Bar (acoustic tile)	Entire building	Fair

Interior Doors		
Item	Type	Condition
Interior Doors	Hollow core	Good
Door Framing	Metal	Good
Fire Doors	Yes	Good

Anticipated Lifecycle Replacements:

- Carpet
- Vinyl tile
- Ceramic wall tile
- Interior paint

- Suspended acoustic ceiling tile
- Interior doors
- Classroom cabinetry
- Toilet partitions

Actions/Comments:

- The interior areas vary in age, and were last renovated in 2016.
- There was some cracking in the terrazzo flooring along the base of the corridor wall. This will become a concern if settlement continues or the crack widens.
- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended. Future lifecycle replacements of the components listed above will be required.
- Classroom cabinetry in poor condition. Recommended for replacement as a lifecycle replacement

8.2. COMMERCIAL KITCHEN & LAUNDRY EQUIPMENT

The cafeteria kitchen has a variety of commercial kitchen appliances, fixtures, and equipment. The staff indicated most of the equipment is original to the building, with the exception of a commercial freezer and some smaller appliances. The equipment is owned and maintained in-house. The school district is responsible for any necessary replacement costs.

The cafeteria kitchen includes the following major appliances, fixtures, and equipment:

Commercial Kitchen		
Appliance	Comment and Condition	
Refrigerators	One walk-in, one up-right and one milk cooler	Fair
Freezers	One walk-in, one up-right and one deep freezer	Fair
Garbage Disposal	☒	Fair
Convection Ovens	☒	Fair
Hot Pan Line	☒	Fair
Kettle	☒	Fair
Mixer	☒	Fair
Evaporator	☒	Fair
Hood	Two; exhaust ducted to exterior	Fair
Dishwasher	One; owned	Fair
Microwave	☐	
Ice Machines	☒	Fair
Steam Tables	☒	Fair
Work Tables	☒	Fair
Shelving	☒	Fair

Anticipated Lifecycle Replacements:

- 3 Commercial Freezers/Refrigerators
- 1 Commercial Ice Maker
- 3 Convection Ovens
- 1 Deep Freezer
- 1 Commercial Dishwasher

- 1 Garbage Disposal
- 3 Holding Cabinets
- 1 Hot Pan Line
- 1 Kettle
- 2 Hoods
- 1 Milk Cooler
- 2 Mixers
- 1 Walk-in Cooler
- 1 Walk-in Freezer
- 2 Evaporators

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended. Future lifecycle replacements of the components listed above will be required.

9. OTHER STRUCTURES

A water treatment building is located in the interior grassy area of the building. The treatment building is a pre-fabricated concrete structure set on a concrete slab, and was installed within the past year.

There are two pump sheds located at the rear of the building. The sheds are both a pre-manufactured wood structure set on a concrete slab with vinyl siding and metal doors.

A maintenance shed is located at the front west side of the building. The maintenance building is a pre-manufactured wood structure.

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended.

10. CERTIFICATION

Stafford County Public Schools retained EMG to perform this Facility Condition Assessment in connection with its continued operation of Hartwood Elementary School, 14 Shackelford Well Road, Hartwood, Virginia, and the "Property". It is our understanding that the primary interest of Stafford County Public Schools is to locate and evaluate materials and building system defects that might significantly affect the value of the property and to determine if the present Property has conditions that will have a significant impact on its continued operations.

The conclusions and recommendations presented in this report are based on the brief review of the plans and records made available to our Project Manager during the site visit, interviews of available property management personnel and maintenance contractors familiar with the Property, appropriate inquiry of municipal authorities, our Project Manager's walk-through observations during the site visit, and our experience with similar properties.

No testing, exploratory probing, dismantling or operating of equipment or in depth studies were performed unless specifically required under Section 2 of this report. This assessment did not include engineering calculations to determine the adequacy of the Property's original design or existing systems. Although walk-through observations were performed, not all areas were observed (See Section 4.2 for areas observed). There may be defects in the Property, which were in areas not observed or readily accessible, may not have been visible, or were not disclosed by management personnel when questioned. The report describes property conditions at the time that the observations and research were conducted.

This report has been prepared on behalf of and exclusively for the use of Stafford County Public Schools for the purpose stated within Section 2 of this report. The report, or any excerpt thereof, shall not be used by any party other than Stafford County Public Schools or for any other purpose than that specifically stated in our agreement or within Section 2 of this report without the express written consent of EMG.

Any reuse or distribution of this report without such consent shall be at Stafford County Public Schools and the recipient's sole risk, without liability to EMG.

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11. APPENDICES

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APPENDIX C: SUPPORTING DOCUMENTATION

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PHOTO #24:	ROOF EDGES NEED SEALING

PHOTO #25:	EXTERIOR WALL GAP

PHOTO #26:	VERTICAL MASONRY CRACK

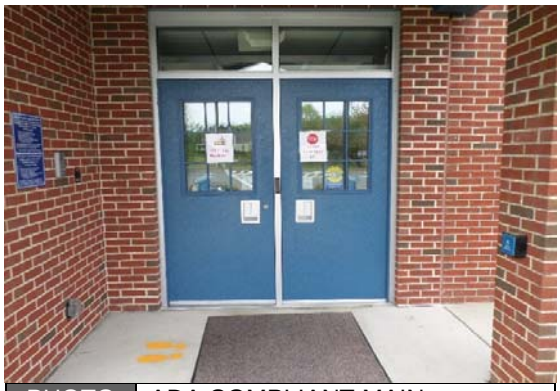

PHOTO #27:	ADA COMPLIANT MAIN ENTRANCE DOORS

PHOTO #28:	WINDOW SILL FLASHING MISSING

PHOTO #29:	BOILER

PHOTO #30:	HEATING HOT WATER CIRCULATION PUMP

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PHOTO #34:	AIR COOLED CHILLER, 110 TON

PHOTO #35:	CHILLER CIRCULATING PUMPS

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PHOTO #42:	INTERIOR AIR HANDLER

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PHOTO #45:	TYPICAL EXHAUST FAN

PHOTO #46:	ELECTRIC WALL HEATER

PHOTO #47:	CEILING HEATER

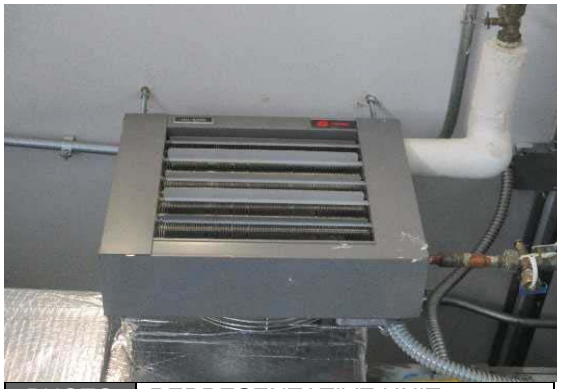

PHOTO #48:	REPRESENTATIVE UNIT HEATER

PHOTO #49:	ELECTRIC WALL HEATER

PHOTO #50:	VARIABLE AIR VOLUME (VAV) UNIT

PHOTO #51:	BACKFLOW PREVENTER

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PHOTO #55:	DRINKING FOUNTAINS

PHOTO #56:	CLASSROOM SINK

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PHOTO #58:	URINALS

PHOTO #59:	PRIMARY TRANSFORMER, 750 KVA

PHOTO #60:	BUILDING/MAIN SWITCHGEAR, 2,000 AMP

PHOTO #61:	PROPANE POWERED GENERATOR

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PHOTO #63:	MOTION SENSOR

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PHOTO #65:	FIRE PUMP

PHOTO #66:	SPRINKLER RISER

PHOTO #67:	SPRINKLER SYSTEM COMPRESSOR

PHOTO #68:	BELOW GRADE WATER SPRINKLER STORAGE

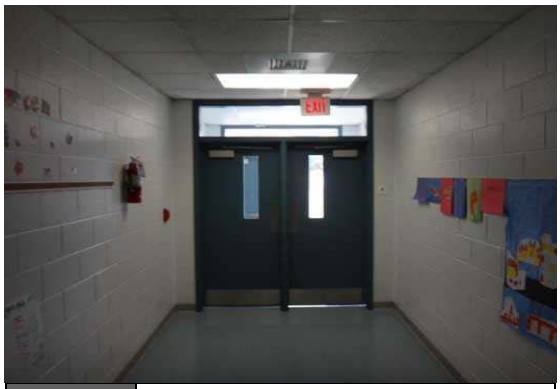

PHOTO #69:	EXIT WITH ILLUMINATED SIGN, FIRE EXTINGUISHER AND PULL STATION

PHOTO #70:	CERAMIC TILE AND CMU WALL CORRIDOR

PHOTO #71:	ACOUSTICAL TILE (ACT) CEILING FINISH AND LIGHTING SYSTEM

PHOTO #72:	TERRAZZO FLOOR FINISH WITH CRACKS

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PHOTO #74:	QUARRY TILE FLOOR FINISH

PHOTO #75:	CARPET FLOOR FINISH

PHOTO #76:	CERAMIC TILE AND TOILET PARTITIONS

PHOTO #77:	OLDER WOOD CABINETRY

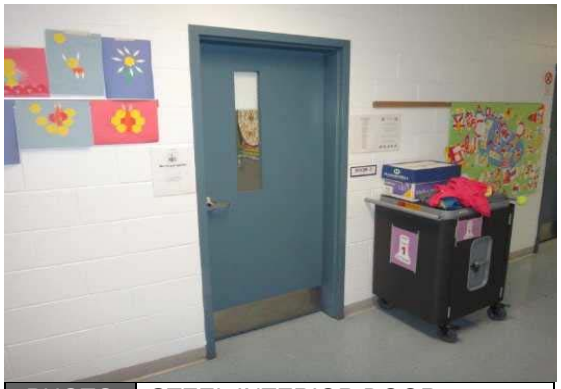

PHOTO #78:	STEEL INTERIOR DOOR

PHOTO #79:	WASTEWATER TREATMENT PLANT

PHOTO #80:	WASTEWATER TREATED RELEASE

PHOTO #81:	FRESH WATER PUMP HOUSES

PHOTO #82:	WATER STORAGE TANK, 80 TO 150 GAL

PHOTO #83:	EXTERIOR WALL, JOINT CAULKING 0" TO 1/2", 1-2 STORIES

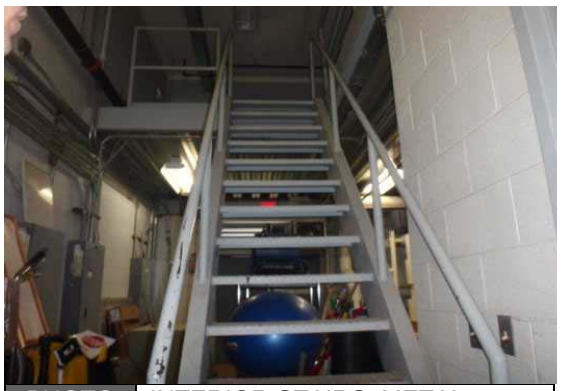

PHOTO #84:	INTERIOR STAIRS, METAL

APPENDIX B:
SITE PLAN

Site Plan

emg	**Project Name:** Hartwood Elementary School	**Project Number:** 125578.17R000-004.170
	Source: Google maps	**On-Site Date:** 4/20/2017

APPENDIX C:
SUPPORTING DOCUMENTATION

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APPENDIX D:
EMG ACCESSIBILITY CHECKLIST

Visual Checklist - 2010 ADA Standards for Accessible Design

Property Name: Hartwood Elementary School

EMG Project Number: 125578.17R000-004.170

Abbreviated Accessibility Checklist					
	Building History	**Y**	**N**	**U**	**Comments**
1	Has an ADA survey previously been completed for this property?	x			
2	Have any ADA improvements been made to the property since original construction?	x			
3	Has building ownership/management reported any ADA complaints or litigation?		x		
	Parking	**Y**	**N**	**NA**	**Comments**
1	Does the required number of standard ADA designated spaces appear to be provided? ***(Pavement markings and min. 96" wide stalls to count)***	x			
2	Does the required number of van-accessible designated spaces appear to be provided? ***(Pavement markings, International Symbol of Accessibility and "van accessible" sign, and min. 96" wide to count)***	x			
3	Are accessible spaces on the shortest accessible route to an accessible building entrance? ***(Accessible route is not required to be striped)***	x			
4	Does parking signage include the International Symbol of Accessibility? ***(Min. 60" from stall surface to bottom of sign to count)***	x			
5	Does each accessible space have an adjacent access aisle? ***(Min. 60" wide- car stall; min. 60" wide for van stall > 132" wide OR min. 96" wide for van stall < 132" wide to count)***	x			
6	Do parking spaces and access aisles appear to be relatively level and without obstruction? ***(Max. 1:48 /2.08% slope all directions; no curb ramps or other encroachments in stall or aisle)***	x			
	Exterior Accessible Route	**Y**	**N**	**NA**	**Comments**
1	Is an accessible route present from public transportation stops and municipal sidewalks on or immediately adjacent to the property? ***(Does not need to be striped; not required if access to site is by vehicle only)***			x	No bus stops on Schackelford Road
2	Does a minimum of one accessible route appear to connect all public areas on the exterior, such as parking and other outdoor amenities, to accessible building entrances? ***(Minimum 36" clear width; minimum 32" wide doors/doorways and for max. distance 24")***	x			
3	Are curb ramps present at transitions through raised curbs on all accessible routes?	x			
4	Do curb ramps appear to have compliant slopes for all components? ***(Max. 1:12/8.33% running slope; max. 1:10/10% slope for side flares; level landing 1:48/2.08% max. slope at top of curb ramp run; parallel curb ramp requires level bottom turn space 1:48/2.08% max. slope)***	x			
5	Do ramp runs on an accessible route appear to have compliant slopes? ***(Ramp if slope greater than 1:20/5%; max. 1:12/8.33% running slope; max. 1:48/2.08% cross slope)***			x	

	Exterior Accessible Route	Y	N	NA	Comments
6	Do ramp runs on an accessible route appear to have a compliant rise and width? ***(Min. 36″ clear width; min. 36″ clear width between handrails; max. 1:12 /8.33% running slope; max. rise 30″per each ramp run)***			x	
7	Do ramps on an accessible route appear to have compliant end and intermediate landings? ***(Level landing max. slope 1:48/2.08% and min. width of widest adjacent ramp run x min. 60″ long; min. 60″x min. 60″ at ramp changes of direction)***			x	
8	Do ramps on an accessible route appear to have compliant handrails? ***(Railings on both sides if ramp rise > 6″; min. 36″ between handrails; 34″- 38″ high to top of grip surface; 1.25″- 2″ diameter; extensions min. 12″ horiz. above bottom and top landings)***			x	
	Building Entrances	**Y**	**N**	**NA**	**Comments**
1	Do a sufficient number of accessible entrances appear to be provided? ***(Min. 60% of public entrances, and min. 1 each tenant)***	x			
2	If the main entrance is not accessible, is an alternate accessible entrance provided?	x			
3	Is signage provided indicating the location of alternate accessible entrances? ***(Signage not required if all entrances are accessible)***	x			
4	Do doors at accessible entrances appear to have compliant maneuvering clearance area on each side? ***(Size varies by door type; min. 48″deep x full door wide; max. slope 1:48/2.08%)***	x			
5	Do doors at accessible entrances appear to have compliant hardware? ***(Lever-type handles; no twisting; min. 34″/ max. 48″ AFF)***	x			
6	Do doors at accessible entrances appear to have a compliant clear opening width? ***(Minimum 32″ when door open 90 degrees)***	x			
7	Do pairs of accessible entrance doors in series appear to have the minimum clear space between them? ***(Minimum 48″ between end of open door to the next door)***	x			
8	Do thresholds at accessible entrances appear to have a compliant height? ***(0.5″ maximum; beveled if above 0.25″)***	x			
	Interior Accessible Routes and Amenities	**Y**	**N**	**NA**	**Comments**
1	Does an accessible route appear to connect all public areas inside the building? ***(Minimum 36″ clear width; minimum 32″ wide doors/doorways and for max. distance 24″)***	X			
2	Do accessible routes appear free of obstructions and/or protruding objects? ***(Max. 4″ horiz. protrusion between 27″ and 80″ ht. AFF)***	X			
3	Do ramps on accessible routes appear to have compliant slopes? ***(Ramp if slope greater than 1:20/5%; max. 1:12/8.33% running slope; max. 1:48/2.08% cross slope)***			X	No interior ramps present.
4	Do ramp runs on an accessible route appear to have a compliant rise and width? ***(Min. 36″ clear width; min. 36″ clear width between handrails; max. 1:12 /8.33% running slope; max. rise 30″per each ramp run)***			X	No interior ramps present.

	Interior Accessible Routes and Amenities	Y	N	NA	Comments
5	Do ramps on accessible routes appear to have compliant end and intermediate landings? ***(Level landing max. slope 1:48/2.08% and min. width of widest adjacent ramp run x min. 60" long; min. 60"x min. 60" at ramp changes of direction)***			X	No interior ramps present.
6	Do ramps on accessible routes appear to have compliant handrails? ***(Railings on both sides if ramp rise > 6"; min. 36" between handrails; 34"- 38" high to top of grip surface; 1.25"-2" diameter; extensions min. 12" horiz. above bottom and top landings)***			X	No interior ramps present.
7	Are accessible areas of refuge and the accessible means of egress to those areas identified with accessible signage? ***(Areas of Refuge instructional signage and directional signage to Areas of Refuge must have compliant visual characters. Doors at exit passageways, exit discharge and exit stairways which are part of the accessible means of egress identified by tactile signs, with raised characters, Braille and the International Symbol of Accessibility. Minimum 1 Area of Refuge required)***	X			
8	Do public transaction areas have an accessible, lowered service counter section? ***(Service counter: max. 36" ht., knee/toe clearance not required, e.g. hotel front desk; Work surface: max. 34" ht. with knee/ toe clearance, e.g. writing or computer desk)***			X	No service counters present.
9	Do public telephones appear mounted with an accessible height and location? ***(Min. 30" x min. 48" clear space centered on phone, parts in reach range)***			X	No public telephones present.
	Interior Doors	**Y**	**N**	**NA**	**Comments**
1	Do doors at interior accessible routes appear to have compliant maneuvering clearance area on each side? ***(Size varies by door type; min. 48" deep x min. 36" wide; max. slope 1:48)***	X			
2	Do doors at interior accessible routes appear to have compliant hardware? ***(Lever handles; no twisting, min. 34"/ max. 48" height)***	X			
3	Do non-fire hinged, sliding, or folding doors on interior accessible routes appear to have compliant opening force? ***(5 lbf max., use judgement)***	X			
4	Do doors on interior accessible routes appear to have a compliant clear opening width? ***(Min. 32" with door open 90 degrees)***	X			
	Elevators	**Y**	**N**	**NA**	**Comments**
1	Are hallway call buttons configured with the "UP" button above the "DOWN" button?			X	No elevators present.
2	Is accessible door identification signage present on the hoistway sidewalls on each level? ***(Raised character and Braille signage; 2" ht. star at main level)***			X	No elevators present.
3	Do the elevators have audible and visual arrival indicators at the entrances?			X	No elevators present.
4	Do the elevator hoistway and car interior appear to have a minimum compliant clear door area? ***(Min 60"x 60" or 68" wide x 51" deep from wall to wall for off-center door; min 36" door width)***			X	No elevators present.

	Elevators	Y	N	NA	Comments
5	Do the elevator car doors have automatic re-opening devices to prevent closure on obstructions?			X	No elevators present.
6	Do elevator car control buttons appear to be mounted at a compliant height? ***(Minimum 15" and maximum 48")***			X	No elevators present.
7	Are tactile and Braille characters mounted to the left of each elevator car control button? ***(Raised numbers/characters and corresponding Braille)***			X	No elevators present.
8	Are audible and visual door position indicators provided in the elevator car?			X	No elevators present.
9	Is the emergency call system at the base of the control panel and does it not require voice communication? ***(Push button with phone symbol required; visual indicator when communication established; closed compartment prohibited)***			X	No elevators present.
	Common Area Toilet Rooms	**Y**	**N**	**NA**	
1	Do publicly accessible toilet rooms appear to have a minimum compliant door area? ***(Min. 60" diameter turning radius or 36" T-shape)***	X			
2	Does the lavatory appear to be mounted at a compliant height and with compliant knee area? ***(Min. 27" knee clearance; max 34" sink rim height)***	X			
3	Does the lavatory faucet have compliant handles? ***(No twisting; Paddle/lever type handles)***	X			
4	Is the plumbing piping under lavatories con gured to protect against contact? ***(Padded and allows wheelchair access with knee/toe clearance)***	X			
5	Are grab bars provided at compliant locations around the toilet? ***(Min. 33"-max. 36" high; at least one grab bar on side wall and one on rear wall behind toilet)***	X			
6	Do toilet stall doors appear to provide the minimum compliant clear width? ***(Min. 32" wide with door open 90 degrees)***	X			
7	Do toilet stalls appear to provide the minimum compliant clear door area? ***(Wall hung toilet-min. 60" wide x min. 56" deep, floor mounted toilet min. 60" wide x min. 59" deep; no overlap with lavatory)***	X			
8	Does minimum one urinal appear to be mounted at a compliant height and with compliant approach width? ***(Urinal rim max. 17" ht.; min. 30" wide approach width)***	X			
9	Do accessories and mirrors appear to be mounted at a compliant height? ***(Mirror max. 40" ht. to bottom of reflective surface if over counter/sink or max. 35" if not over counter/sink; Accessories within reach range with control max. 48" high)***	X			
	Hospitality	**Y**	**N**	**NA**	**Comments**
1	Does there appear to be adequate clear floor space around the exercise machines/equipment? ***(min 30" x 48" centered on transfer point)***			X	
2	Does property management report there are a sufficient number of ADA guest rooms without roll-in showers? ***(Refer to tables in hot sheet)***			**X**	

	Hospitality	Y	N	NA	Comments
3	Does property management report there are a sufficient number of ADA guest rooms with roll-in showers? ***(Refer to tables in hot sheet)***			**X**	
4	Does property management report there are a sufficient number of ADA guest rooms with communications features? ***(Refer to tables in hot sheet)***			**X**	
5	Does property management report there are a sufficient number of portable communications kits available, where built-in communication features are not provided? ***(Refer to hot sheet)***			**X**	
6	Are publicly accessible swimming pools equipped with an entrance lift? ***(not required if sloped beach entry present; 2 methods of entry required for pools with total walls 300 LF or greater)***			X	
	Self- Service Storage	**Y**	**N**	**NA**	**Comments**
1	Does property management report there are a sufficient number of ADA self-service storage units? ***(Refer to table in hot sheet)***			**x**	
2	Does it appear that the accessible unit doors are accessible? (***Lever handle with no twisting, min. 34"/ max. 48" height or garage door opener for overhead doors; maneuvering clearance area max. 1:48 slope)***			**x**	

APPENDIX E:
PRE-SURVEY QUESTIONNAIRE

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Stafford County Public Schools

Hartwood Elementary School

CIP Study

May 2015

MOSELEY ARCHITECTS

Contents

I. Introduction

This Hartwood Elementary School Capital Improvement Plan (CIP) Study was conducted for Stafford County Public Schools (SCPS) by the architectural and engineering firm of Moseley Architects. The work was performed under the direction of the SCPS Department of Facility Planning, Design, and Construction.

II. Purpose

The purpose of this Hartwood Elementary School CIP Study is to assist in the long range facility planning for SCPS. This study looks at three options for the future of Hartwood Elementary School, anticipating a major project in the 2025 CIP. The first option presents what would be required to comprehensively renovate the existing facility to bring it up to the standards for a new elementary school for Stafford County Public Schools, from both programmatic and cost perspectives. The second option identifies the costs for a completely new elementary school of similar capacity. The third option identifies the costs for a completely new elementary school at a 950 student capacity, similar to other recent elementary schools in Stafford County. With this information available, SCPS will better be able to determine the future costs of a major project for Hartwood Elementary School.

The purpose of this study was not to develop final solutions, but to identify potential solutions to be used as a basis for decision making.

III. Methodology

The study involved the review of existing documentation of the facility including building and site plans. Site visits were conducted on November 4, 2014 by the Architectural and Engineering teams to assess the existing conditions. A summary of those investigations are found in Section IV of this report.

The design team also utilized the Building Condition Assessment performed by EMG, dated May 7, 2008, as a resource in the investigations of the facility.

IV. Renovation Option

Existing Building Space Program Analysis

A detailed listing of the existing building space program analysis is included in section VII of this report. The current capacity of the school is 649 students.

As programs and services for students of SCPS schools have increased over time, the staff have had to make adjustments to how they utilize the facility. An example of this is a full size classroom (Room 63-26) is currently being used by four Special Education teachers because they do not have any other space available. This function would be better served by four smaller resource rooms. There are many examples of support spaces that this school does not have that would be included in a new elementary school. Those additional spaces are highlighted in yellow in the New Elementary School Program Analysis option in section VII of this report. As a result, the existing building has only 94 square feet per student. This ratio is significantly below the Virginia average of 123.5 for recently built new elementary schools.

An Early Childhood Special Education program uses one of the full size classrooms (88-41).

A Self Contained Special Education for students with emotional or behavioral issues also utilizes a full size classroom (93-19)

The Cafeteria and Activity Room are adequately sized for the student population.

The Media Center is too small for the current population. The renovation option proposes demolishing the existing media center and replacing it with an appropriately sized media center at the same location. There is just enough space on site to enlarge the Media Center without impacting the site circulation. By adding the media center at this location, there is the potential to have a dramatic impact to the aesthetic appeal of the building.

Currently, the music classes are held on the stage, which is not an ideal situation. In a new Elementary School, there would be a dedicated music classroom.

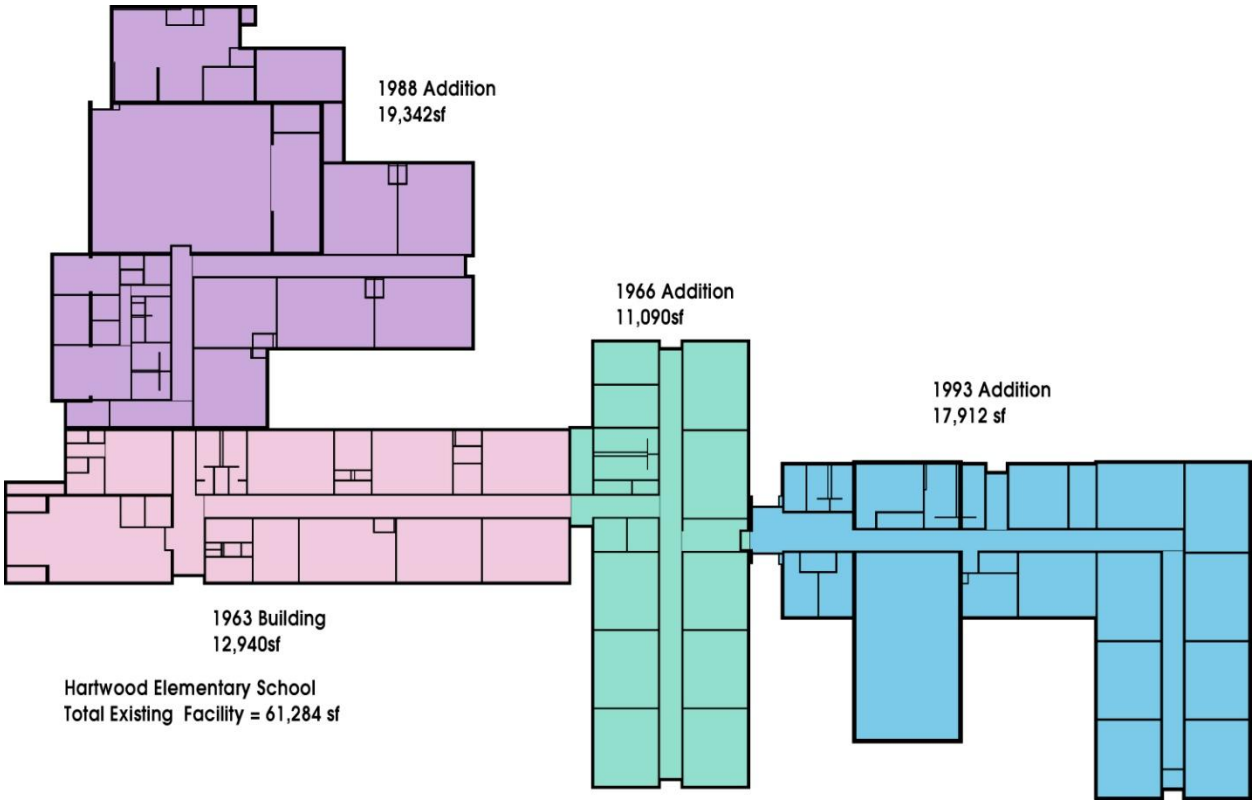
This option also includes new construction square footage to allow for the inclusion of some of the support spaces that are not included in the current facility.

The construction costs for this option are $12,936,599, and the total project costs are $17,129,101. A detailed budget is included in the attached exhibits.

Existing Condition Issues

A full existing conditions summary was conducted for SCPS by EMG in May of 2008. The goal of this study is not to re-create that effort, but to identify what it would take to renovate the facility. The items addressed below are limited to the issues which impact the cost of a comprehensive renovation anticipated to start in 2025.

Hartwood Elementary School was constructed in 1963, with major additions in 1966, 1988, and 1993. The existing building is 61,284 gross square feet.



Site

There are 97 parking spaces on site in several lots around the building, which appear to be adequate for a normal school day. At this time, the student drop-off loop and the bus loops share the same access points causing congestion. The scope of a future comprehensive renovation should include separating the bus and parent traffic to alleviate the congestion at dismissal times, and enhance student safety.

Exterior Walls

The exterior envelope of these buildings consists of face brick and concrete masonry unit load bearing masonry walls for the interior and exterior walls.

There is no cavity or insulation in the existing walls in the 1963 and 1962 buildings, which makes for very poor energy efficiency. These walls will need to be insulated from the inside to improve the envelope efficiency. The floor to ceiling height in these wings is also extremely limited in the 1963 and 1966 buildings. The low ceiling heights will limit the available options for the HVAC renovation. The 1988 and 1993 additions do have cavity wall construction with 1.5" of rigid wall insulation.

Roof

The low slope built-up roofs over the 1963, 1966, and 1988 buildings were replaced in 2008. The drawings indicate 3" of polyisocyanurate insulation for these newly re-roofed areas. By the time this facility will be renovated, the building code will likely require more R-value in the roof insulation. The 1993 addition has the original fiberglass shingle roof. The lifespan of this roof will likely be exceeded by the time the building is renovated.

Windows

The windows of the 1963 and 1966 buildings were replaced during the 1988 addition. Several of the larger openings were infilled with insulated panels. It is anticipated that a major renovation would include replacing all windows in the school with higher efficiency units.

Structure

The floors are slab on grade concrete with spread footings for the load bearing walls. There were no significant structural issues observed. In the 1993 addition, there is some cracking in the Activity Room and some separation of the floor slab from the perimeter walls that should be addressed in a renovation project. On the exterior veneer of all additions, there is some stress cracking that requires re-pointing of the masonry in some locations.

Finishes / Casework / Doors

It is anticipated that all interior finishes would be replaced in a comprehensive renovation, with the exception of the monolithic terrazzo floor in the corridors of the 1963 and 1966 buildings.

All built-in case casework would be replaced as part of a comprehensive renovation.

All interior and exterior door, frames, and hardware would be replaced as part of a comprehensive renovation.

Accessibility

Many of the accessibility concerns raised in the EMG Facility Assessment are still present. The site parking issues, accessible route issues, and bathroom clearance issues would be addressed in a renovation.

HVAC

Central Plant

Chilled water for the building is generated by two air-cooler chillers, each serving a different loop in the building. The 1993 addition is served by a 60-ton nominal chiller that was installed at the time the addition was constructed. The remainder of the building is served by a 110-ton chiller adjacent to the main mechanical room that was installed in 2005. Both loops are served by constant speed distribution pumps that deliver chilled water to the air handling units throughout the building. As part of the renovation, both chillers and their associated pumps would be replaced with the new pumps capable of variable flow operation. The potential exists to combine the chilled water service into a single loop served from the main mechanical room.

Hot water for the 1993 addition is generated by a single, gas-fired boiler. The loop is served by a constant speed distribution pump that delivers hot water to the air handling units and VAV boxes for terminal reheat. As part of the renovation, the boiler and associated pump would be replaced with high efficiency, condensing boilers and pumps capable of variable flow operation. The new boilers and pumps would be sized to provide heating hot water to the entire building, and would be located in the mechanical room of the 1993 addition.

Airside equipment

Heating and cooling for the classrooms are provided by six variable air volume air handling units with terminal reheat. Cooling for each of these units is provided by chilled water. Heating in the 1993 addition is provided by hot water, while the remainder of the building has electric heat. Heated or cooled air from the air handling units is distributed through sheet metal ductwork to VAV boxes which control the volume of air introduced to the space. In the 1993 addition, the VAV boxes have hot water heating coils that provide space heating. In the original 1963 building and 1966 addition, space heating is provided by electric baseboard radiators located under the windows in each classroom. In the 1988 addition, the VAV boxes have electric heating coils that provide space heating. The proposed renovation would include the replacement of all air handling units and VAV boxes with new equipment. All new equipment would utilize hot water for heat and chilled water for cooling. Ventilation rates would be updated to comply with the current Code requirements.

Heating and cooling for the activity room and multi-purpose room are provided by single-zone, constant volume air handling units. Both units provide cooling through the use of chilled water. The unit serving the activity room uses hot water to provide heat, while the unit serving the multi-purpose room uses electric heat. The proposed renovation would include the replacement of the constant volume air handling units with new equipment capable of variable volume operation. All new equipment would utilize hot water for heat and chilled water for cooling. Ventilation rates would be updated to comply with the current Code requirements.

Cooling for the admin area is provided by a single, direct expansion, variable air volume air handling unit with terminal reheat. Space heating is provided by VAV boxes

with electric heat, with supplemental heat provided in exterior spaces by electric baseboard radiators. The proposed renovation would include the replacement of all air handling unit and VAV boxes with new equipment. The air handling unit would be replaced with a direct expansion, variable air volume unit with hot water heat. All new VAV boxes would utilize hot water for heat. Ventilation rates would be updated to comply with the current Code requirements.

The kitchen office area is cooled by a dedicated split-system air conditioning unit and provided heat by an electric duct heater. The kitchen is heated by an electric cabinet heater mounted in the ceiling. As part of the renovation these units would be replaced by a single unit to provide heating and cooling to the kitchen and office areas.

The server room is provided cooling by a dedicated, one and a half ton, split-system air conditioning unit. This unit has been reported to need close monitoring to maintain the required temperature in the space. It would be replaced as part of the proposed renovation.

Building Automation System

The building heating and cooling systems are controlled though a building automation system. It utilizes a combination of pneumatic and direct digital controls to control the operation of these systems. As part of the renovation, the building automation system would be replaced with a new direct digital control system.

Plumbing

Domestic Water System

The domestic water system service is provided by two wells located on site. The water meter is located in the water tank room in the original 1963 building. SCPS is currently implementing maintenance projects to both the domestic water system and the sanitary system with the goal of extending the life of those systems until 2025, when a renovation or replacement building would include a comprehensive upgrade of those systems.

As part of the anticipated renovation, the municipal water service is will be extended to the site, and the wells will be put out of service. Planned development will bring the water to the intersection of Route 17 and Route 725, approximately 0.8 miles from the school site. The additional costs to extend the water line from 725 to the site are included in the project costs for all options.

Domestic hot water is provided by three tank type water heaters. Two electric water heaters are located in the main mechanical room. One is serving the kitchen; and the other is providing hot water to the original 1963 building, 1966 addition, and 1988 addition. Domestic hot water is provided to the 1993 addition by a single, gas-fired water heater located in the boiler room. Each of the water heaters would be replaced with gas-fired heaters as part of the renovation.

The water distribution system is original to the building. It will be completely replaced as part of the anticipated renovation.

Plumbing Fixtures

The facility is equipped with water closets, urinals, and lavatories in all toilet rooms. Water closets are floor-mounted. Both water closets and urinals are equipped with manual flush valves. The lavatories are wall-mounted with manual faucets. There are wall-mounted water coolers throughout the building in the corridors. Most classrooms have counter-mounted sinks with integral drinking fountains. The fixtures are from the original construction. The proposed renovation would include the replacement of all plumbing fixtures. All new fixtures would have lower flow rates than the existing fixtures to comply with current Codes.

Sanitary System

An eight-inch sanitary line serves the facility and exits out of the northern side of the building. A waste water treatment facility is located on site. There were no reports of any current issues concerning the system and the size of the line appears adequate for the facility. SCPS is currently implementing maintenance projects to both the domestic water system and the sanitary system with the goal of extending the life of those systems until 2025, when a renovation or replacement building would include a comprehensive upgrade of those systems. Costs to comprehensively update the wastewater treatment facility are included in the project costs.

There is a grease trap adjacent to the kitchen from the 1988 addition. Its capacity and condition will be further evaluated during design.

The sanitary piping is reported to be cast iron and is from the original construction in the original 1963 building and 1966 addition. This piping will be roughly 60 years old at the time of renovation and should be replaced.

Gas Service

Natural gas is provided to the building through a 2" service with the meter located outside the boiler room. The visible pipe in the mechanical room is steel with welded joints and appears to be in good condition. The existing gas service will be evaluated at the time of renovation to determine if it is of adequate size to accommodate the new boiler plant.

Sprinkler System

The 1993 addition is equipped with an automatic sprinkler system. There is a wet pipe system serving the occupied spaces and a dry system in the attic above. The 1988 addition has a limited area sprinkler system serving the main mechanical room and storage rooms. The original 1963 building and 1966 addition are unsprinklered. The entire building will be fully sprinklered as part of the proposed renovation.

Electrical

Service

The 480volt, 3-phase electrical system is provided by a power company pad-mounted transformer located near the electrical/mechanical room with underground service entrance feeders routed to a 2000amp., 277/480volt, 3-phase service switchboard. The switchboard has a 2000amp, 3-pole, 480volt main circuit breaker. The switchboard has molded-case branch circuit breakers to serve electrical rooms and equipment in the building.

There is one power company transformer that is abandon in place after the kitchen/multi-purpose room addition was built.

We received power company bills from the County from February 2013 through February 2014. The largest power company demand was February 2014 for 421KW. This peak load equals 506amps. In accordance with NEC 2011, Article 220.87, there are 968 amps of available capacity in the 2000amp service. The service is of adequate size to serve any addition or renovation the County may decide to provide. The service should be re-evaluated should the County decide to use electric heat for any such future addition or renovation.

The switchboard is served by a surge protection device (SPD). The feeder between the switchboard and the SPD device needs to be as short as possible. We observed this feeder to be approximately 15 feet long. The longer the feeder, the more impedance is induced into the feeder and reduces function of the SPD. It is recommended that the SPD be relocated to shorten the length of the feeder.

Electrical distribution

The switchboard serves several strategically located electrical rooms through the building. A 277/480volt, 3-phase feeder from the switchboard serves a branch distribution panelboard in each electrical room. The 277/480volt system feeds lights and mechanical equipment. A step-down transformer is provided in each electrical room to provide 120/208volt, 3-phase power to panelboards that serve receptacles, controls and other 120volt loads. All panelboards have circuit breakers with copper feeders and branch circuits in metallic raceway.

The school has its own on-site utility system consisting of a water treatment plant, well pumps, storage tank and septic system. The electrical distribution system was up-graded in 2007 and is adequate for the building.

Emergency Power

The emergency system is served by a 75KVA Caterpillar propane driven generator located in the mechanical courtyard adjacent to the electrical/mechanical room. The generator serves a 100amp., 4-pole transfer switch to a 100amp, 277/480volt, 3-phase panelboard. The generator serves emergency lighting through-out the building. The generator would likely need to be replaced with a larger generator as part of a renovation project.

Lighting

The building utilizes 2x4 recessed troffers with acrylic lenses in classrooms, corridors, multi-purpose room, gymnasium, library, kitchen and offices. Some classrooms have surface mounted 2x4 troffers. A few classrooms have the inefficient para-cubic fixtures that restrict light output. Electrical and mechanical rooms have open industrial fixtures with wire guards. Light fixtures are controlled by local switches. Corridors are controlled by key-switches. Lamps in the fixtures are F28T8, 3500K, 28watt energy efficient. Exit signs have fluorescent lamps with red letters. The current code requires that exit sign cannot exceed 5 watts per fixture.

Light foot-candle measurements were not taken during our site visit. Our observations noted that the school has not taken advantage of reduced lighting levels in instructional rooms and corridors. The reduced lighting levels will help reduce building wattage and meet current codes. The current code requires a COMcheck (a calculation indicating that the lighting layout meets the maximum watts per square foot for a building). We understand that the existing lighting layout met the code at the time of construction, but may not meet today's current code. Furthermore, current codes require a means to turn off lighting in un-occupied rooms by using occupancy sensors. Corridor lighting is required to have a means to turn off automatically, usually through the building automation system.

The lighting industry is quickly turning to LED lighting for reduced fixture wattage and maintenance.

Receptacles

Receptacle layouts in the classrooms vary depending on the original building or addition in which it was constructed. The receptacles are three prong grounded devices. There is no code directive as to how receptacles are to be arranged. However, In the near future, the code will be changed to add a provision that requires 50% of the receptacles in a building to be automatically turned off and on.

Ground fault Circuit Interrupters (GFCI) type receptacles are required to be installed for all receptacles within 6'-0" of a sink. It is recommend that maintenance personal review this NEC 210.8 requirement for compliance.

Intercommunication

The intercom system is provided by a Rauland-Borg Telecenter V intercommunication system. The system is located in a locked room in the Library. There is a main intercommunication telephone at the main office reception desk. This phone provides conversations from the office to classrooms or other locations in the school. All school announcements are made on a microphone in the media center. Each classroom, office and other spaces have ceiling mounted speakers. The system has the ability to play pre-recorded tapes over the intercommunication system.

The Telecenter V was designed to interface the outside telephone system such that outside phones could be routed through the Telecenter V to other parts of the building. We could not determine if this feature of the system was still operational.

Multi-Media System

The Telecenter V has the ability to distribute recorded media and television programs through the school. According to the Librarian, the system has been reduced to 4 VCR recorders distributing recorded media to classrooms.

Classrooms and other instructional spaces have ceiling mounted video projectors and marker boards with a TV monitor.

Fire Alarm System

The fire alarm main panel is located in the main office. It is manufactured by Honeywell, a Silent Knight SK-5208 system. The fire alarm system consists of pullstations at all exits, audio/visual devices through the corridors, multi-purpose room, gymnasium and kitchen. The existing fire alarm system met the requirements of the code in effect at the time of construction. However, it does not meet the current code. Audio/visual devices are missing in classrooms and restrooms. The existing A/V devices do not list a candala level rating. Some devices, I.E. multi-purpose room are not at the correct mounting height. A new fire alarm system would need to be provided in a future renovation.

Clock System

The existing clock and program system is located in the main office. It is manufactured by the "American Time and Signal Co". The system operates all of the analog clocks through-out the building. It also controls the chime for the changing of periods during a school day. The system is functioning properly. There are no code issues associated with the clock system.

Security Alarm System

The school is provided with a "DSC" Security Alarm System. The school is protected by motion detectors that monitor corridor, classrooms and rooms with direct access from the outside.

Closed Circuit Television System (CCTV) is provided through-out the school with main CCTV recorder and monitor located in the same room as the Telecenter V in the Media Center.

V. New Building Option – 649 Student Capacity

A new building option is included in this study to determine the cost of a new school building with a similar capacity of 649 students. Refer to the New Building Space Program for a listing of spaces that would be anticipated for a building of this size. As mentioned previously, there are several support and storage spaces that the existing building does not have that would be included in a new building. Those additional spaces are highlighted in yellow in the New Elementary School Program Analysis option in section VII of this report. For this reason, the anticipated gross square footage of a new building is more than the resulting Renovation Option.

The core spaces, including the Media Center, Cafeteria / Kitchen, and Gym, have been sized for the 649 student capacity, with no provisions for future expansion.

Based on the New Building Space Program, the building will be approximately 72,100 GSF.

A new building envelope will be significantly improved over the renovated building. Building codes are becoming more and more aggressive in their energy consumption requirements, which will require an advanced envelope with increased r-values and an air-barrier system. The new building would be deigned to the equivalent of LEED Silver of the USGBC rating system, and have a target EUI of 30 kBtu per square foot per year. As discussed previously, the exterior walls of the renovated building will not be as efficient, resulting in a less efficient building than the new building options.

The new building construction costs are based on historical square foot costs of recently bid and constructed buildings in the State of Virginia, adjusted for improved efficiency requirements.

Costs for demolishing the existing building are not included with the new building option costs.

As part of a new building project, the municipal water service is will be extended to the site, and the wells will be put out of service. Planned development will bring the water to the intersection of Route 17 and Route 725, approximately 0.8 miles from the school site. The additional costs to extend the water line from 725 to the site are included in the project costs for all options. Costs to comprehensively update the wastewater treatment facility are included in the project costs.

The construction costs for this option are $16,085,017, and the total project costs are $21,164,221. A detailed budget is included in the attached exhibits.

VI. New Building Option – 950 Student Capacity

A new building option is included in this study to determine the cost of a new school building with a 950 student capacity, similar to the recently built new elementary schools in Stafford County. Refer to the New Building Space Program for a listing of spaces that would be anticipated for a building of this size.

Based on the New Building Space Program, the building will be approximately 91,000 GSF.

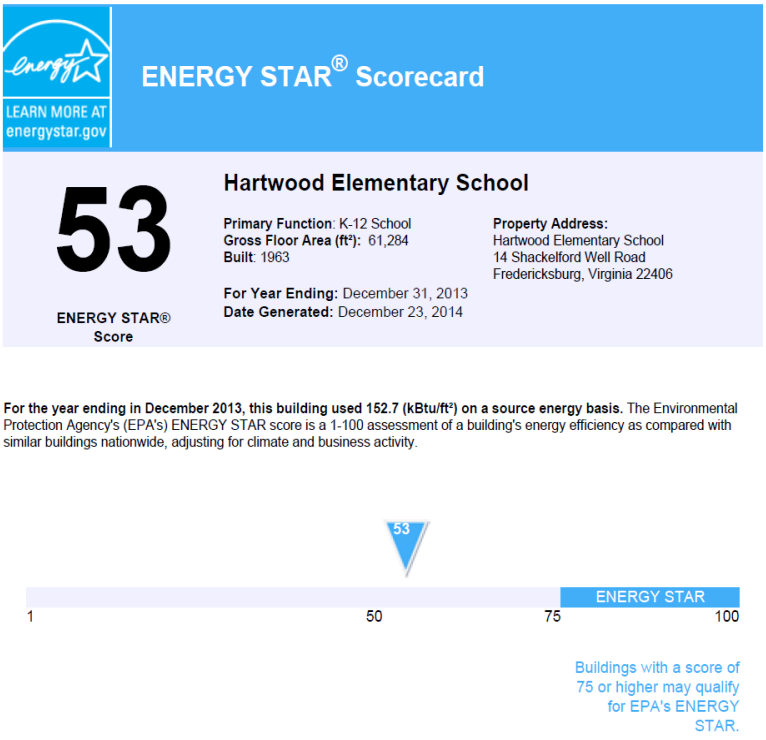
The construction costs for this option are $20,148,863, and the total project costs are $26,122,113. A detailed budget is included in the attached exhibits.

VII. Energy and Water Savings Analysis

The potential differences in annual utility costs should also be considered when deciding whether to build a completely new school or to renovate the existing school. In general, designing a completely new building allows for more opportunities to reduce utility costs than undertaking a renovation, since the design is not constrained by the school's existing conditions. The goal for any new construction would be an EUI of 30 kBtu per square foot per year, and the equivalent of LEED Silver of the USGBC rating system. When considering either option, it is important to first evaluate the existing school's current level of energy performance:

EXISTING SCHOOL

Based on the electric, gas, and propane bills provided for the 2012-2013 school year, the existing Hartwood Elementary School is consuming approximately **54.5 kBtu per square foot per year**, which is fairly good performance for a school of this age. This value is known as Energy Use Intensity (EUI) and is a commonly used metric for comparing different design options to one another. However, the existing school's ECI (Energy Cost Index) is **$1.35/SF/yr**, which is relatively high compared to its EUI. It appears that the school is using much more electricity than gas, including when the school is in heating mode. As a result, the existing school receives an ENERGY STAR rating of just **53** – which places it right about average compared to other schools with similar characteristics:



Natural gas is currently a much less expensive heating source than electricity, and is expected to remain that way well into the future. Natural gas is also less polluting than electricity per unit of energy delivered, given the considerable transmission losses involved with sending electricity throughout the grid. If the existing school's fuel mix can be improved (i.e. utilize more natural gas in place of electricity) by either building a completely new school or undertaking a major renovation, the school's energy costs and ENERGY STAR performance may be significantly improved.

NEW BUILDING

Many of Moseley Architects' new elementary schools that either pursue Leadership in Energy and Environmental Design (LEED) certification or place a strong emphasis on energy efficiency have been able to achieve Energy Use Intensities (EUI's) in the 30's and 40's. If the design team is directed to target this level of performance along with the improved fuel mix described above, our projections show that the annual savings could be in the range of **20 to 30 percent / yr** (compared to an existing school of similar size). Moseley Architects has tracked numerous LEED K-12 schools and found that they typically incur an added construction cost of **1 to 2.5%** in order to provide the energy saving materials and equipment necessary for such savings – resulting in payback periods of **3 to 7 years.**

RENOVATION OPTIONS

The potential energy savings are much more difficult to estimate for renovation/addition options, since the new school's energy consumption would depend on which systems are modified. However, it is safe to say that they would not be as high as the potential savings for a completely new school. As noted earlier, building a completely new school allows the design team greater opportunities to substantially reduce EUI and ECI than does a renovation, since all systems can be brought up to current codes (envelope, lighting, mechanical, foodservice) in this approach, rather than just partial improvements to each.

Moseley Architects' research and past experience with typical renovation strategies has revealed the following energy savings potentials:

Lighting: Significant energy savings can result from replacing existing T12 fluorescent fixtures with LED fixtures. As an example, a 3 lamp 2x4 fixture with T12 lamps is 92 watts with a newer electronic ballast and 127 watts with the old standard magnetic ballasts – whereas an equivalent LED 2x4 has an input wattage of only 54W. This represents a **41% energy savings** for the LED over the T12 fixture with the newer electronic ballast (or 57% savings over the T12 fixtures with a standard magnetic ballast). Such changes will usually result in payback periods of less than **5 years**. If the existing school has T8 lighting instead of T12, the savings potential decreases somewhat. However, as costs continue to decrease, potential payback periods of **5-12 years** have started to become possible for upgrading from T8 to LED, given the much longer lifetime of LED fixtures and their corresponding decrease in maintenance/replacement costs.

Mechanical Systems: Upgrading outdated HVAC systems to newer technologies with energy recovery units, high efficiency motors / compressors, and improved controls can greatly reduce energy costs. However, due to the complex interactions between building envelope and HVAC systems, the potential energy savings are difficult to estimate without running a full-building energy model, which can be performed during early design. It is important to note that in some cases the energy bills of a renovated school will actually be slightly higher than the existing school due to code-required improvements to ventilation rates. However, it is not usually appropriate to compare renovated schools to their pre-renovation conditions, since the comparison is not apples-to-apples: beyond their improved energy efficiency, new mechanical systems are also generally required to provide better air filtration, increased thermal comfort, better dehumidification, and improved acoustics, all of which may be less than optimal at an existing school.

Plumbing Fixtures: Water savings are another opportunity to easily reduce utility costs in school renovations. Replacing older toilets, urinals, and lavatories with low-flow fixtures can yield water savings of **20% to 30%** for restroom areas. Based on the exceptionally low cost associated with this upgrade, payback periods are typically achieved in **2-3** years or less. However, the total savings associated with water efficiency in K-12 schools is typically much less than what can be achieved through energy efficiency, given the relative amounts of electricity, gas, and water consumed by a typical school. Upgrading outdated kitchen equipment to models that utilize less hot water is another common strategy for reducing both water and energy costs.

VIII. Exhibits

Existing Building Space Program Analysis

Renovation Option Site Plan Diagram

Renovation Option Probable Cost Budget

New Building - 649 Student Capacity Option

Space Program

New Building Probable Cost Budget

New Building - 950 Student Capacity Option

Space Program

New Building Probable Cost Budget

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

EXISTING BUILDING SPACE PROGRAM ANALYSIS

	Class Size	Actual Spaces			Room Number	Remarks
		Spaces		No. Students		
KINDERGARTEN, FIRST, SECOND						w/ toilet in room
Classroom	24	4 @	975	96	88-11, 88-15, 88-17, 88-18	
Classroom	24	1 @	875	24	63-29	
Classroom	24	1 @	815	24	88-19	
Toilet		8 @	25		63-19, 63-20, 63-38, 88-13, 88-14, 88-20, 88-21, 88-43	Non-Accessible Toilets
Subtotal			5,790			
SECOND, THIRD						
Classroom	24	2 @	825	48	63-27, 63-28	
Classroom	24	2 @	815	48	63-17, 63-22	
Classroom	24	2 @	850	48	66-18, 66-19	
Classroom	24	4 @	750	96	66-10, 66-11, 66-12, 66-15	
Subtotal			3,000			
FOURTH, FIFTH						
Classroom	25	4 @	850	100	93-12, 93-20, 93-27, 93-28	
Classroom	25	5 @	750	125	66-14, 93-21, 93-22, 93-25, 93-26	
Subtotal			3,750			
PRE-K						
Classroom	24	1 @	825	24	88-41	Full Classroom for Occ. Count
Toilet		1 @	50		88-42	
Subtotal			0			
MULTI-PURPOSE						
Gymnasium		1 @	2,907		93-16	
Office		0 @	100			
Storage		1 @	345		93-18	
Outdoor Storage		0 @	200			
Subtotal			3,252			
EXTENSION / RESOURCE						
Resource Rooms		2 @	310		93-13, 93-15, 66-02	
FOCUS / Resource Room		1 @	250		93-11	
Art						
Art		1 @	635		63-11	
Kiln/Drying Room		0 @	180			
Art Storage		1 @	200		63-01, 63-12	
Music						
Music - Choral / General		0 @	800			Currently on Stage
Storage						
Computer / Technology						
Computer Labs		1 @	428		63-30	
STEM Lab		1 @	750		66-16	
Subtotal			2,883			
SPECIAL EDUCATION						
Conference Room		0 @	200			
Classroom (Self-Contained)	8	2 @	784	16	93-19, 63-26	
Office		0 @	200			
PT/OT Room		0 @	450			
SLP Therapy Room (Speech)		1 @	150		93-01	
Storage		0 @	120			
Subtotal			1,718			
SUPPORT						
Teacher's Lounge		1 @	407		66-03	
Staff Offices		2 @	150		63-25, 66-08, 66-09	
Teacher Restrooms		2 @	50		63-04, 63-23	
Book / Supply Storage		4 @	90		63-24, 66-06, 93-05, 93-14	
Subtotal			1,167			

Hartwood Elementary School CIP Study

Stafford County Public Schools

EXISTING BUILDING SPACE PROGRAM ANALYSIS

	Class Size	Actual Spaces		No. Students	Room Number	Remarks
		Spaces				
MEDIA CENTER						
Main Room (Reading/Stacks)		1 @	1,649		63-08	
MDF/Distribution Room		1 @	116		63-10	
AV Software Storage		1 @	270		63-05, 63-06, 63-07	
Librarian's Office		1 @	105		63-09	
Librarian's Workroom/Stor.		0 @	600			
Toilet		0 @	70			
Computer/Multi-Media Lab		0 @	1,000			
TV Production		1 @	165		63-31	
Editing Suite/Conference Room		0 @	200			
Subtotal			2,305			
ADMINISTRATION						
Reception/Secretary		1 @	626		88-35	
Principal's Office		1 @	381		88-25	
Asst. Principal's Office		1 @	140		63-32	
Inst. Specialist's Office		0 @	200			
Itinerant Office		0 @	140			
Security Office		0 @	120			
Bookkeeper / Office Manager		1 @	100		88-22	
Secretary/Data Record		0 @	120			
Conference Room		1 @	263		88-26	
Record Vault		1 @	45		88-24	
ISS Room		0 @	150			
Storage		1 @	46		88-23	
Restroom		2 @	30		63-35, 88-30	Non-ADA
Mail/Storage/Reproduction Room		1 @	95		88-27, 88-28	
Subtotal			1,756			
HEALTH SERVICES						
Waiting		0 @	100			
Treatment		1 @	165		88-32	
Nurse's office		0 @	100			
Recovery Area		0 @	50			
Toilet		1 @	48		88-31	
Subtotal			213			
GUIDANCE						
Conference		0 @	200			
Reception/Secretary		0 @	200			
Office		0 @	100			
Storage		0 @	100			
Subtotal			0			
DINING & FOOD PREP.						
Student Dining		1 @	3,964		88-10	(Population / 3) *14 SF = 3266
Storage (Dining)		1 @	190		88-08	
Stage/Platform		1 @	857		88-09	
Kitchen/Serving/Storage		1 @	1,834		88-01, 88-02, 88-03, 88-04, 88-05	
Subtotal			6,845			
TOILET ROOMS						
Classroom Toilets		incl. above				
General Toilets		10 @	165		63-14, 63-16, 66-04, 66-05, 88-33, 88-34, 93-02, 93-03, 93-06, 93-07	
Subtotal			1,650			

Hartwood Elementary School CIP Study

Stafford County Public Schools

EXISTING BUILDING SPACE PROGRAM ANALYSIS

	Class Size	Actual Spaces		Room Number	Remarks
		Spaces	No. Students		
MAINTENANCE/MECHANICAL					
Receiving/Processing/Distribution		0 @ 350			
Maintenance Lockers/Toilet		0 @ 200			
Mechanical Space		4 @ 500		63-18, 88-07, 93-04, 93-10	
Vending		0 @ 40			
Trash Room		0 @ 100			
Can Wash		1 @ 28		88-06	
Book Storage Room		4 @ 100			
Outside Storage		1 @ 166		88-12	
IDF Rooms		0 @ 40			
Janitor's Closets		4 @ 65		63-02, 63-15, 66-07, 93-17	
Subtotal		2,854			
TOTAL ASSIGNED SQ. FOOTAGE		**37,183**			
BUILDING SUPPORT AREAS					
Circulation					
Stairs					
Utility Closets					
Electrical equip.					
Construction (walls, chases, etc)					
Subtotal		24,101			
TOTAL STUDENTS			**649**		
TOTAL TEACHING STATIONS					
TOTAL GROSS SQUARE FOOTAGE		**61,284** @ 61% efficiency			Actual Square Footage
GROSS SQUARE FEET PER STUDENT		**94**			

Renovation Option Site Plan

MOSELEYARCHITECTS

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

RENOVATION OPTION
PROBABLE COST BUDGET

Bid Date: May 1, 2015

New Construction Square Footage: 12,757 SF
Renovation Square Footage: 58,846 SF
Demolition Square Footage: 2,438 SF

Construction Costs

		New Construction		Renovations		
		Cost per s.f.	Subtotal	Cost per s.f.	Subtotal	Total Cost
Division 1	General Requirements	$17.66	$ 225,230	$17.66	$ 1,038,948	$ 1,264,178
Division 2	Site Construction	$41.55	$ 530,047	$24.93	$ 1,467,013	$ 1,997,060
Division 3	Concrete	$8.58	$ 109,442	$1.72	$ 100,968	$ 210,410
Division 4	Masonry	$27.78	$ 354,440	$5.83	$ 343,345	$ 697,786
Division 5	Metals	$18.40	$ 234,729	$6.99	$ 411,451	$ 646,180
Division 6	Wood & Plastics (incl. casework)	$1.68	$ 21,419	$1.68	$ 98,802	$ 120,221
Division 7	Thermal & Moisture Protection	$12.55	$ 160,107	$8.19	$ 481,662	$ 641,769
Division 8	Doors & Windows (incl. hardware)	$10.51	$ 134,089	$7.67	$ 451,527	$ 585,616
Division 9	Finishes	$10.84	$ 138,343	$9.76	$ 574,340	$ 712,683
Division 10	Specialties (incl. markerboards, etc.)	$3.73	$ 47,533	$1.86	$ 109,630	$ 157,163
Division 11	Equipment (Food Service, Athletic, etc.)	$5.44	$ 69,392	$1.90	$ 112,032	$ 181,424
Division 12	Furnishings	$3.09	$ 39,464	$3.09	$ 182,040	$ 221,504
Division 13	Special Construction	$0.02	$ 293	$0.02	$ 1,353	$ 1,647
Division 14	Conveying Systems	$0.00	$ -	$0.00	$ -	$ -
Division 15	Mechanical	$45.34	$ 578,460	$45.34	$ 2,668,342	$ 3,246,802
Division 16	Electrical	$28.66	$ 365,590	$24.65	$ 1,450,311	$ 1,815,902
Division 17	Communication/Electrical Systems	$6.30	$ 80,395	$5.86	$ 344,888	$ 425,283
	Demolition / Abatement	$4.50	$ 10,971	$6.25	$ 150,188	$ 10,971
	Building only s.f. cost	$ 200.59		$ 142.23		$ 10,939,539
SUB -TOTAL		**$ 242.14**	**$ 3,099,943**	**$ 167.16**	**$ 9,836,655**	**$ 12,936,599**

PROJECT COSTS

	Planning and Design	$ 1,293,660
	Furniture & Equip / Technology	$ 323,415
	Technology	$ 258,732
	Contingency	$ 776,196
	Wastewater Treatment Facility	$ 400,000
	Municipal Water Line Extension	$ 1,140,500
PROJECT COSTS SUBTOTAL		$ 4,192,503

TOTAL PROJECT COST (Base Bid)	**$ 17,129,101**

The above costs are based on current costs of March 2015. Inflation factors would need to be applied to budget based on the actual bid date.

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April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING SPACE PROGRAM - 649 CAPACITY

	Class Size	Required Spaces			No. Students	Remarks
		Spaces				
PRE-SCHOOL						
Classroom	0	0	@	975	0	
Toilet		0	@	50		
Subtotal				0		
KINDERGARTEN, FIRST GRADE						w/ toilet in room
Classroom	24	7	@	975	168	
Toilet		7	@	50		
Kitchenette		0	@	100		
Subtotal				7,175		
SECOND, THIRD GRADE						
Classroom	24	10	@	800	240	
Subtotal				8,000		
FOURTH, FIFTH GRADE						
Classroom	25	9	@	800	225	
Subtotal				7,200		
MULTI-PURPOSE						
Multi-Purpose/Practice Gym						
Stage/Platform		1	@	755		
Gymnasium		1	@	3,150		
Office		1	@	120		
Storage		1	@	250		
Outdoor Storage		1	@	200		
Subtotal				4,475		
EXTENSION / RESOURCE						
Art						
Art		1	@	920		
Kiln/Drying Room		1	@	80		
Art Storage		1	@	125		
Music						
Music		1	@	895		
Computer						
Computer Labs		1	@	1,000		
Subtotal				3,020		
SPECIAL EDUCATION						
Classroom (Self-Contained)	8	2	@	800	16	
Resource Classroom		1	@	810		Divisible into 2
Resource Classroom		1	@	400		
Office		2	@	210		
SLP Therapy Room (Speech)		1	@	200		
Storage		1	@	350		
Subtotal				3,780		
SUPPORT						
Teacher's Lounge		1	@	150		
Teacher Restrooms		4	@	75		
Book / Supply Storage		1	@	200		
Subtotal				650		

MOSELEYARCHITECTS

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING SPACE PROGRAM - 649 CAPACITY

	Class Size	Required Spaces			Remarks
		Spaces		No. Students	
MEDIA CENTER					
Main Room (Reading/Stacks)		1 @	2,500		
MDF/Distribution Room		1 @	200		
Office		2 @	130		
Workroom/Stor.		1 @	500		
Computer Labs		1 @	810		
Studio		1 @	110		
Conference Room		1 @	360		
Subtotal			4,740		
ADMINISTRATION					
Reception/Secretary		1 @	600		
Principal's Office		1 @	300		w/ restroom
Asst. Principal's Office		1 @	200		
Bookkeeper		1 @	150		
Conference Room		1 @	200		
Record Vault		1 @	100		
Misc Offices (ISS, Iten, Vol.)		2 @	130		
Restroom		2 @	75		
Mail/Storage/Reproduction Room		1 @	200		
Subtotal			2,160		
HEALTH SERVICES					
Treatment / Office		1 @	360		
Recovery Area		2 @	40		
Toilet		1 @	70		
Subtotal			510		
GUIDANCE					
Office		2 @	200		
Subtotal			400		
DINING & FOOD PREP.					
Student Dining		1 @	3,300		250 seating, 3 Shifts, 14 SF per Student
Storage (Dining)		1 @	300		
Kitchen/Serving/Storage		1 @	2,320		
Subtotal			5,920		
TOILET ROOMS					
Classroom Toilets		incl. above			
General Toilets		6 @	240		
Subtotal			1,440		

MOSELEYARCHITECTS

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING SPACE PROGRAM - 649 CAPACITY

	Class Size	Required Spaces		Remarks
		Spaces	No. Students	
MAINTENANCE/MECHANICAL				
Receiving/Processing/Distribution		1 @ 350		
Maintenance Lockers/Toilet		1 @ 200		
Mechanical Space		1 @ 2,500		
Mechanical Fan Rooms		4 @ 300		
IDF Rooms		4 @ 40		
Janitor's Closets		3 @ 65		
Subtotal		4,605		
TOTAL ASSIGNED SQ. FOOTAGE		**54,075**		
BUILDING SUPPORT AREAS				
Circulation				
Stairs				
Utility Closets				
Electrical equip.				
Construction (walls, chases, etc)				
Subtotal		18,025		
TOTAL STUDENTS			**649**	
TOTAL TEACHING STATIONS				
TOTAL GROSS SQUARE FOOTAGE		**72,100** @ 75% efficiency		
GROSS SQUARE FEET PER STUDENT		**111**		

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April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING OPTION - 649 STUDENT CAPACITY
PROBABLE COST BUDGET

Bid Date: May 1, 2015

New Construction Square Footage:	72,100	SF
Renovation Square Footage:	0	SF
Demolition Square Footage:	61,284	SF

Construction Costs

		New Construction		Renovations		
		Cost per s.f.	Subtotal	Cost per s.f.	Subtotal	Total Cost
Division 1	General Requirements	$13.75	$ 991,411			$ 991,411
Division 2	Site Construction	$37.21	$ 2,683,122			$ 2,683,122
Division 3	Concrete	$7.68	$ 554,002			$ 554,002
Division 4	Masonry	$24.88	$ 1,794,194			$ 1,794,194
Division 5	Metals	$16.48	$ 1,188,208			$ 1,188,208
Division 6	Wood & Plastics (incl. casework)	$1.50	$ 108,424			$ 108,424
Division 7	Thermal & Moisture Protection	$10.91	$ 786,863			$ 786,863
Division 8	Doors & Windows (incl. hardware)	$9.41	$ 678,764			$ 678,764
Division 9	Finishes	$9.71	$ 700,300			$ 700,300
Division 10	Specialties (incl. markerboards, etc.)	$3.34	$ 240,612			$ 240,612
Division 11	Equipment (Food Service, Athletic, etc.)	$4.87	$ 351,264			$ 351,264
Division 12	Furnishings	$2.77	$ 199,767			$ 199,767
Division 13	Special Construction	$0.02	$ 1,485			$ 1,485
Division 14	Conveying Systems	$0.54	$ 38,617			$ 38,617
Division 15	Mechanical	$40.61	$ 2,928,190			$ 2,928,190
Division 16	Electrical	$25.67	$ 1,850,634			$ 1,850,634
Division 17	Communication/Electrical Systems	$5.64	$ 406,961			$ 406,961
	Demolition / Abatement	$9.50	$ 582,198			$ 582,198
	Building only s.f. cost	$ 177.80				$13,401,895
SUB -TOTAL		**$ 215.02**	**$ 16,085,017**			**$ 16,085,017**

PROJECT COSTS

	Planning and Design	$ 1,608,502
	Furniture & Equip / Technology	$ 804,251
	Technology	$ 643,401
	Contingency	$ 482,551
	Wastewater Treatment Facility	$ 400,000
	Municipal Water Line Extension	$ 1,140,500
PROJECT COSTS SUBTOTAL		$ 5,079,204

TOTAL PROJECT COST (Base Bid)	**$ 21,164,221**

The above costs are based on current costs of March 2015. Inflation factors would need to be applied to budget based on the actual bid date.

MOSELEYARCHITECTS

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING SPACE PROGRAM - 950 CAPACITY

	Class Size	Required Spaces			No. Students	Remarks
		Spaces				
PRE-SCHOOL						
Classroom	0	0	@	975	0	
Toilet		0	@	50		
Subtotal				0		
KINDERGARTEN, FIRST GRADE						w/ toilet in room
Classroom	24	12	@	975	288	
Toilet		12	@	50		
Kitchenette		0	@	100		
Subtotal				12,300		
SECOND, THIRD GRADE						
Classroom	24	13	@	800	312	
Subtotal				10,400		
FOURTH, FIFTH GRADE						
Classroom	25	13	@	800	325	
Subtotal				10,400		
MULTI-PURPOSE						
Multi-Purpose/Practice Gym						
Stage/Platform		1	@	755		
Gymnasium		1	@	3,335		
Office		1	@	120		
Storage		2	@	250		
Outdoor Storage		1	@	200		
Subtotal				4,910		
EXTENSION / RESOURCE						
Art						
Art		1	@	920		
Kiln/Drying Room		1	@	80		
Art Storage		1	@	125		
Music						
Music		1	@	895		
Computer						
Computer Labs		1	@	1,000		
Subtotal				3,020		
SPECIAL EDUCATION						
Classroom (Self-Contained)	8	2	@	800	16	
Resource Classroom	8	2	@	810	16	Divisible into 2
Resource Classroom		1	@	400		
Office		2	@	210		
SLP Therapy Room (Speech)		1	@	200		
Storage		1	@	350		
Subtotal				4,590		
SUPPORT						
Teacher's Lounge		1	@	150		
Teacher Restrooms		4	@	75		
Book / Supply Storage		1	@	200		
Subtotal				650		

MOSELEYARCHITECTS

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING SPACE PROGRAM - 950 CAPACITY

	Class Size	Required Spaces			Remarks
		Spaces		No. Students	
MEDIA CENTER					
Main Room (Reading/Stacks)		1 @	3,025		
MDF/Distribution Room		1 @	200		
Office		2 @	130		
Workroom/Stor.		1 @	500		
Computer Labs		1 @	810		
Studio		1 @	110		
Conference Room		1 @	360		
Subtotal			5,265		
ADMINISTRATION					
Reception/Secretary		1 @	600		
Principal's Office		1 @	300		w/ restroom
Asst. Principal's Office		1 @	200		
Bookkeeper		1 @	150		
Conference Room		2 @	200		
Record Vault		1 @	100		
Misc Offices (ISS, Iten, Vol.)		4 @	130		
Restroom		2 @	75		
Mail/Storage/Reproduction Room		1 @	200		
Subtotal			2,620		
HEALTH SERVICES					
Treatment / Office		1 @	360		
Recovery Area		2 @	40		
Toilet		1 @	70		
Subtotal			510		
GUIDANCE					
Office		2 @	200		
Subtotal			400		
DINING & FOOD PREP.					
Student Dining		1 @	3,600		250 seating, 3 Shifts, 14 SF per Student
Storage (Dining)		1 @	300		
Kitchen/Serving/Storage		1 @	2,320		
Subtotal			6,220		
TOILET ROOMS					
Classroom Toilets		incl. above			
General Toilets		8 @	240		
Subtotal			1,920		

MOSELEYARCHITECTS

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING SPACE PROGRAM - 950 CAPACITY

	Class Size	Required Spaces		Remarks
		Spaces	No. Students	
MAINTENANCE/MECHANICAL				
Receiving/Processing/Distribution		1 @ 350		
Maintenance Lockers/Toilet		1 @ 200		
Mechanical Space		1 @ 2,500		
Mechanical Fan Rooms		5 @ 300		
IDF Rooms		6 @ 40		
Janitor's Closets		4 @ 65		
Subtotal		5,050		
TOTAL ASSIGNED SQ. FOOTAGE		**68,255**		
BUILDING SUPPORT AREAS				
Circulation				
Stairs				
Utility Closets				
Electrical equip.				
Construction (walls, chases, etc)				
Subtotal		22,745		
TOTAL STUDENTS			**957**	
TOTAL TEACHING STATIONS				
TOTAL GROSS SQUARE FOOTAGE		**91,000** @ 75% efficiency		
GROSS SQUARE FEET PER STUDENT		**95**		

MOSELEYARCHITECTS

April 22, 2015

Hartwood Elementary School CIP Study

Stafford County Public Schools

NEW BUILDING OPTION - 950 STUDENT CAPACITY
PROBABLE COST BUDGET

Bid Date: May 1, 2015

New Construction Square Footage:	91,000	SF
Renovation Square Footage:	0	SF
Demolition Square Footage:	61,284	SF

Construction Costs

		New Construction		Renovations		
		Cost per s.f.	Subtotal	Cost per s.f.	Subtotal	Total Cost
Division 1	General Requirements	$13.75	$ 1,251,296			$ 1,251,296
Division 2	Site Construction	$37.21	$ 3,386,465			$ 3,386,465
Division 3	Concrete	$7.68	$ 699,226			$ 699,226
Division 4	Masonry	$24.88	$ 2,264,517			$ 2,264,517
Division 5	Metals	$16.48	$ 1,499,680			$ 1,499,680
Division 6	Wood & Plastics (incl. casework)	$1.50	$ 136,846			$ 136,846
Division 7	Thermal & Moisture Protection	$10.91	$ 993,129			$ 993,129
Division 8	Doors & Windows (incl. hardware)	$9.41	$ 856,692			$ 856,692
Division 9	Finishes	$9.71	$ 883,874			$ 883,874
Division 10	Specialties (incl. markerboards, etc.)	$3.34	$ 303,685			$ 303,685
Division 11	Equipment (Food Service, Athletic, etc.)	$4.87	$ 443,343			$ 443,343
Division 12	Furnishings	$2.77	$ 252,134			$ 252,134
Division 13	Special Construction	$0.02	$ 1,875			$ 1,875
Division 14	Conveying Systems	$0.54	$ 48,740			$ 48,740
Division 15	Mechanical	$40.61	$ 3,695,774			$ 3,695,774
Division 16	Electrical	$25.67	$ 2,335,752			$ 2,335,752
Division 17	Communication/Electrical Systems	$5.64	$ 513,640			$ 513,640
	Demolition / Abatement	$9.50	$ 582,198			$ 582,198
	Building only s.f. cost	$ 177.80				$16,762,398
SUB -TOTAL		**$ 215.02**	**$ 20,148,863**			**$ 20,148,863**

PROJECT COSTS

	Planning and Design	$ 2,014,886
	Furniture & Equip / Technology	$ 1,007,443
	Technology	$ 805,955
	Contingency	$ 604,466
	Wastewater Treatment Facility	$ 400,000
	Municipal Water Line Extension	$ 1,140,500
PROJECT COSTS SUBTOTAL		$ 5,973,250

TOTAL PROJECT COST (Base Bid)	**$ 26,122,113**

The above costs are based on current costs of March 2015. Inflation factors would need to be applied to budget based on the actual bid date.

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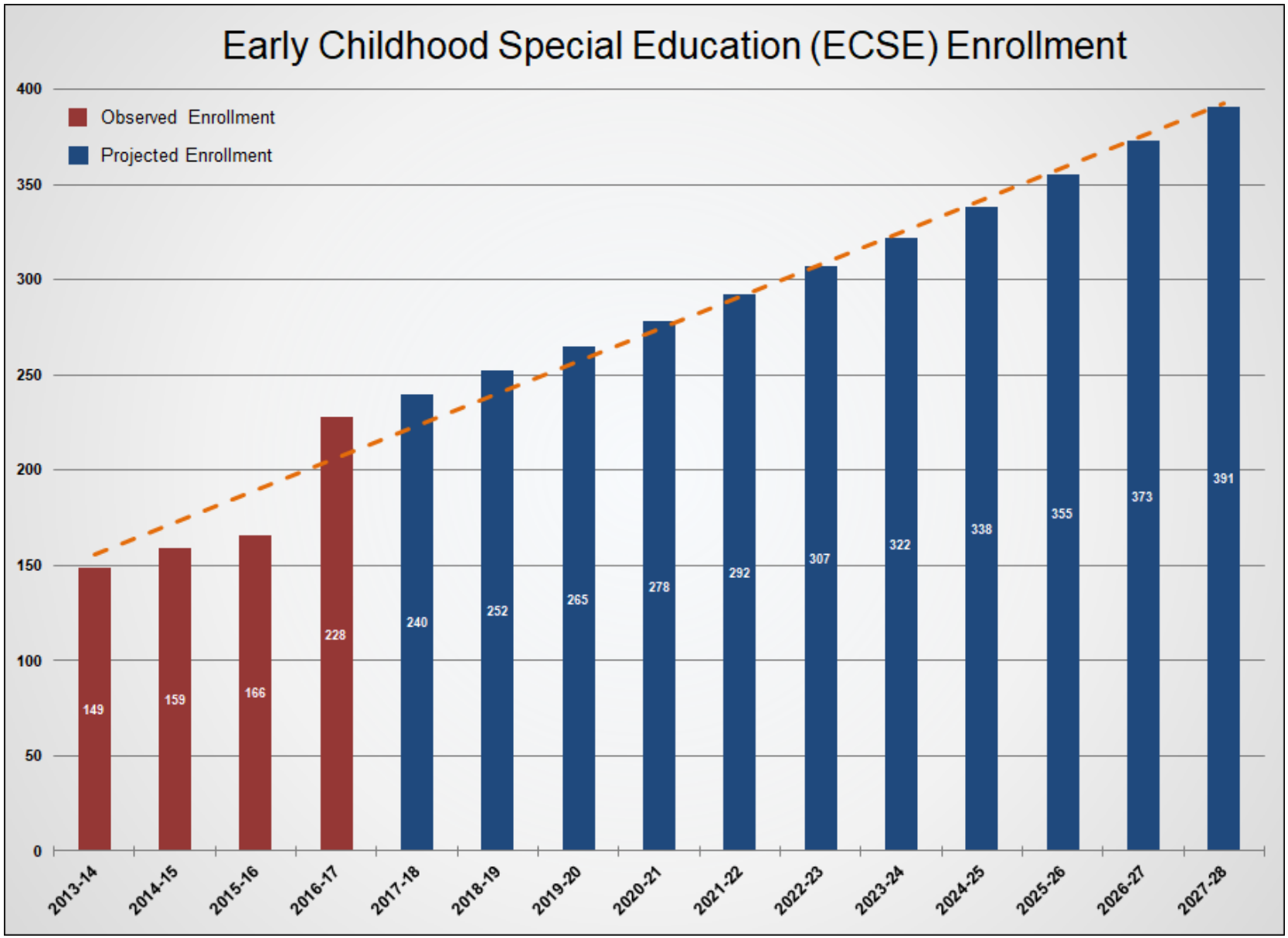
10-Year Projected ECSE Enrollment



* End of year numbers for 2017-18 through 2027-28 are based on the projected percentage of growth by the Department of Behavioral Health & Developmental Services (5%) and the Parent Education-Infant Development (PE-ID) Region 3 staff (5%). The projections are in line with growth experienced in SCPS since 2013. Counts represent only students with disabilities.

FACILITY CONDITION ASSESSMENT

Prepared for

Stafford County Public Schools
31 Stafford Avenue
Stafford, Virginia 22554
Jennifer Spindle

FACILITY CONDITION ASSESSMENT

OF

EDWARD E. DREW JR. MIDDLE SCHOOL
501 CAMBRIDGE STREET
FALMOUTH, VIRGINIA 22405

PREPARED BY:
EMG
10461 Mill Run Circle, Suite 1100
Owings Mills, Maryland 21117
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EMG PROJECT #:
125578.17R000-005.170

DATE OF REPORT:
September 30, 2017

ONSITE DATE:
April 19, 2017

Immediate Repairs Report
Edward E. Drew Jr. Middle School
9/30/2017

Report Section	ID	Cost Description	Quantity	Unit	Unit Cost	Subtotal	Deficiency Repair Estimate *
3.1	582525	ADA, Elevator/Lift, Call Buttons, Cab, Renovate	1	EA	$30,000.00	$30,000	**$30,000**
3.1	582538	ADA, Elevator/Lift, Cab Position Indicators, Lobby (per Stop/Floor), Install	1	STOP	$3,000.00	$3,000	**$3,000**
3.1	586149	ADA, Miscellaneous, Level III Study, Includes Measurements, Evaluate/Report	1	EA	$7,500.00	$7,500	**$7,500**
3.1	586229	ADA, Miscellaneous, Ramp/Stairs, Handrails, Modify	4	EA	$300.00	$1,200	**$1,200**
3.1	586225	ADA, Miscellaneous, Signage, Directional, Wall-Mounted, Install	10	EA	$200.00	$2,000	**$2,000**
3.1	586228	ADA, Miscellaneous, Drinking Fountain, Interior Wall-Mounted, Install	5	EA	$5,500.00	$27,500	**$27,500**
3.1	574906	ADA, Restroom, Paper Towel Dispenser, Modify	1	EA	$450.00	$450	**$450**
3.1	574904	ADA, Restroom, Grab Bars & Blocking, Install	13	EA	$1,700.00	$22,100	**$22,100**
5.2	586312	Pedestrian Pavement, Sidewalk, Concrete, Repair	175	SF	$19.00	$3,325	**$3,325**
5.3	586812	Landscaping, Ground Cover, Regrade/Establish	500	SF	$3.71	$1,855	**$1,855**
5.4	584340	Landscaping, Mature Tree, Trim	10	EA	$1,239.70	$12,397	**$12,397**
6.4	574858	Exterior Wall, Joint Caulking to 1/2" (Difficult), Replace, including abatement of any PCB or asbestos materials	100	LF	$16.28	$1,628	**$1,628**
6.4	584284	Exterior Wall, Brick or Brick Veneer, 1-2 Stories, Repoint	100	SF	$180.00	$18,000	**$18,000**
6.4	584342	Exterior Wall, Joint Caulking 0" to 1/2", 1-2 Stories, Replace, including abatement of any PCB or asbestos materials	15000	LF	$3.96	$59,400	**$59,400**
6.4	574855	Exterior Wall, Brick or Brick Veneer, 1-2 Stories, Repair	100	SF	$48.56	$4,856	**$4,856**
7.1	582584	Building Automation System (HVAC Controls), Building Energy Management System and Terminal Units, Upgrade	85693	SF	$5.36	$459,529	**$459,529**
7.4	647066	Transfer Switch, Automatic (ATS), 600 V, 600 Amp, Replace	1	EA	$16,318.29	$16,318	**$16,318**
7.4	586823	Generator, Diesel, 65 to 125 kW, Replace	1	EA	$113,996.00	$113,996	**$113,996**
8.2	649488	Commercial Kitchen, Dishwasher, Replace	1	EA	$19,661.82	$19,662	**$19,662**
8.2	649456	Commercial Kitchen, Convection Oven, Single, Replace	2	EA	$5,077.62	$10,155	**$10,155**
Immediate Repairs Total							**$814,870**

* Location Factor (1.0) included in totals.

Replacement Reserves Report

Edward E. Drew Jr. Middle School

9/30/2017

Location	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total Escalated Estimate
Edward E. Drew Jr. Middle School	$814,870	$565,355	$288,767	$2,207,348	$5,540,059	$1,518,646	$2,819,232	$389,073	$500,554	$452,668	$2,795,844	$2,370,945	$119,972	$2,024,182	$138,078	$792,606	$54,509	$242,510	$42,778	$160,371	**$23,838,367**
GrandTotal	**$814,870**	**$565,355**	**$288,767**	**$2,207,348**	**$5,540,059**	**$1,518,646**	**$2,819,232**	**$389,073**	**$500,554**	**$452,668**	**$2,795,844**	**$2,370,945**	**$119,972**	**$2,024,182**	**$138,078**	**$792,606**	**$54,509**	**$242,510**	**$42,778**	**$160,371**	**$23,838,367**

Report Section	ID	Cost Description	Lifespan (EUL)	EAge	RUL	Quantity	Unit	Unit Cost	Subtotal	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Deficiency Repair Estimate
3.1	582525	ADA, Elevator/Lift, Call Buttons, Cab, Renovate	0	10	0	1	EA	$30,000.00	$30,000	$30,000																				**$30,000**
3.1	582538	ADA, Elevator/Lift, Cab Position Indicators, Lobby (per Stop/Floor), Install	0	10	0	1	STOP	$3,000.00	$3,000	$3,000																				**$3,000**
3.1	586149	ADA, Miscellaneous, Level III Study, Includes Measurements, Evaluate/Report	0	45	0	1	EA	$7,500.00	$7,500	$7,500																				**$7,500**
3.1	586229	ADA, Miscellaneous, Ramp/Stairs, Handrails, Modify	0	0	0	4	EA	$300.00	$1,200	$1,200																				**$1,200**
3.1	586225	ADA, Miscellaneous, Signage, Directional, Wall-Mounted, Install	0	0	0	10	EA	$200.00	$2,000	$2,000																				**$2,000**
3.1	586228	ADA, Miscellaneous, Drinking Fountain, Interior Wall-Mounted, Install	0	0	0	5	EA	$5,500.00	$27,500	$27,500																				**$27,500**
3.1	574906	ADA, Restroom, Paper Towel Dispenser, Modify	0	20	0	1	EA	$450.00	$450	$450																				**$450**
3.1	574904	ADA, Restroom, Grab Bars & Blocking, Install	0	20	0	13	EA	$1,700.00	$22,100	$22,100																				**$22,100**
5.2	582510	Exterior Stair/Ramp Rails, Metal, Replace	40	30	10	20	LF	$50.00	$1,000											$1,000										**$1,000**
5.2	584219	Rdwys and Parking Lots, Asphalt Pavement, Seal & Stripe	5	3	2	104375	SF	$0.38	$39,610			$39,610					$39,610					$39,610				$39,610			**$158,441**
5.2	659047	Parking Lots, Asphalt Pavement, Full Depth (includes sub-base), Repair	0	15	* 0	104375	SF	$2.62	$273,463										$273,463										**$273,463**
5.2	659048	Parking Lots, Asphalt Pavement, Mill & Overlay	25	15	10	104375	SF	$3.28	$342,392											$342,392										**$342,392**
5.2	586312	Pedestrian Pavement, Sidewalk, Concrete, Repair	0	15	0	175	SF	$19.00	$3,325	$3,325																				**$3,325**
5.3	586812	Landscaping, Ground Cover, Regrade/Establish	25	25	0	500	SF	$3.71	$1,855	$1,855																				**$1,855**
5.4	586330	Retaining Wall, Brick/Stone (per SF Face), Replace	40	25	15	500	SF	$130.61	$65,306																$65,306					**$65,306**
5.4	584340	Landscaping, Mature Tree, Trim	20	20	0	10	EA	$1,239.70	$12,397	$12,397																				**$12,397**
5.4	649824	Irrigation System, , Replace	25	18	7	17000	SF	$3.16	$53,763								$53,763													**$53,763**
5.5	582614	LED Lighting Fixture, Basic, 11 W, Replace	20	15	5	45	EA	$180.19	$8,108						$8,108															**$8,108**
5.5	582611	Metal Halide Lighting Fixture w/ Electronic Ballast, Wall Mount, 150 W, Replace	20	10	10	26	EA	$574.32	$14,932											$14,932										**$14,932**
5.5	586341	Fences & Gates, Chain Link, 4' High, Replace	30	15	15	1500	LF	$30.51	$45,768																$45,768					**$45,768**
5.5	647420	Play Surfaces & Sports Courts, Asphalt, Replace	25	15	10	26144	SF	$5.90	$154,250											$154,250										**$154,250**
5.5	584519	Walkway Luminaire, 70 to 250 W HID (Fixture Only), Replace	20	16	4	30	EA	$600.00	$18,000					$18,000																**$18,000**
6.3	574868	Roof, Single-Ply EPDM Membrane, Replace	20	16	4	6500	SF	$13.00	$84,500					$84,500																**$84,500**
6.3	574876	Roof, Built-up, Replace	20	9	11	79000	SF	$13.00	$1,027,000												$1,027,000									**$1,027,000**
6.4	660688	Re-insulate interior walls and ceilings in conjunction with ceiling tile replacement, Replace/Install	15	5	10	184270	SF	$1.70	$313,259											$313,259										**$313,259**
6.4	574858	Exterior Wall, Joint Caulking to 1/2" (Difficult), Replace, including abatement of any PCB or asbestos materials	10	10	0	100	LF	$16.28	$1,628	$1,628																				**$1,628**
6.4	584284	Exterior Wall, Brick or Brick Veneer, 1-2 Stories, Repoint	25	25	0	100	SF	$180.00	$18,000	$18,000																				**$18,000**
6.4	584342	Exterior Wall, Joint Caulking 0" to 1/2", 1-2 Stories, Replace, including abatement of any PCB or asbestos materials	10	16	0	15000	LF	$3.96	$59,400	$59,400										$59,400										**$118,800**
6.4	574855	Exterior Wall, Brick or Brick Veneer, 1-2 Stories, Repair	0	28	0	100	SF	$48.56	$4,856	$4,856																				**$4,856**
6.4	574857	Exterior Wall, Joint Expansion Cover/Assembly up to 2", Aluminum, Replace	20	18	2	1	LF	$38.30	$38			$38																		**$38**
6.4	574850	Exterior Wall, Brick or Brick Veneer, 1-2 Stories, Repoint	25	23	2	1000	SF	$41.28	$41,283			$41,283																		**$41,283**
6.6	649435	Window, Aluminum Double-Glazed Gas-Filled 12 SF, 1-2 Stories, Replace with super high efficiency windows	30	15	15	177	EA	$696.06	$123,203																$123,203					**$123,203**
6.6	574865	Exterior Door, Steel, Replace	25	15	10	41	EA	$950.12	$38,955											$38,955										**$38,955**
6.6	574864	Exterior Door, Steel, Replace	25	10	15	2	EA	$950.12	$1,900																$1,900					**$1,900**
6.6	574861	Overhead Door, Steel Roll-Up 288 SF, Replace	35	29	6	2	EA	$5,571.98	$11,144							$11,144														**$11,144**
7.1	582541	Domestic Boiler, Gas, 501 to 800 MBH, Replace	22	20	2	2	EA	$34,559.38	$69,119			$69,119																		**$69,119**
7.1	582542	Domestic Boiler, Gas, 801 to 1,400 MBH, Replace	22	17	5	1	EA	$42,853.38	$42,853						$42,853															**$42,853**
7.1	582548	Chiller, Screw/Rotary (140 Ton), Replace	25	12	13	2	EA	$245,339.24	$490,678														$490,678							**$490,678**
7.1	582582	Condensing Unit/Heat Pump, Split System, 5 Ton, Replace	15	10	5	8	EA	$6,439.81	$51,519						$51,519															**$51,519**
7.1	613109	Variable Air Volume (VAV) Unit, 100 to 400 CFM, Replace	15	13	2	14	EA	$4,141.92	$57,987			$57,987														$57,987				**$115,974**
7.1	613110	Variable Air Volume (VAV) Unit, 100 to 400 CFM, Replace	15	11	4	14	EA	$4,141.92	$57,987					$57,987															$57,987	**$115,974**
7.1	582573	Air Handler, Interior, 200 to 400 CFM, Replace	20	15	5	3	EA	$2,473.25	$7,420						$7,420															**$7,420**
7.1	613111	Variable Air Volume (VAV) Unit, 100 to 400 CFM, Replace	15	9	6	14	EA	$4,141.92	$57,987							$57,987														**$57,987**
7.1	582558	Air Handler, Interior, 2,501 to 4,000 CFM, Replace	20	13	7	5	EA	$13,371.48	$66,857								$66,857													**$66,857**
7.1	582562	Variable Air Volume (VAV) Unit, 100 to 400 CFM, Replace	15	7	8	14	EA	$4,141.92	$57,987									$57,987												**$57,987**
7.1	582557	Exhaust Fan, Roof Mounted, 5,001 to 8,500 CFM, Replace	15	7	8	1	EA	$4,140.34	$4,140									$4,140												**$4,140**
7.1	582546	Cabinet Heater, Electric, Replace	20	6	14	6	EA	$3,179.94	$19,080															$19,080						**$19,080**

Report Section	ID	Cost Description	Lifespan (EUL)	EAge	RUL	Quantity	Unit	Unit Cost	Subtotal	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Deficiency Repair Estimate
7.1	582578	Package Unit, 26 to 50 Ton, Replace	15	8	7	1	EA	$83,488.40	$83,488								$83,488													**$83,488**
7.1	582584	Building Automation System (HVAC Controls), Building Energy Management System and Terminal Units, Upgrade	20	8	* 12	85693	SF	$5.36	$459,529	$459,529																				**$459,529**
7.1	613020	Variable Frequency Drive (VFD), 5 HP Motor, Replace	20	15	5	3	EA	$4,748.96	$14,247						$14,247															**$14,247**
7.1	613021	Variable Frequency Drive (VFD), 5 HP Motor, Replace	20	13	7	5	EA	$4,748.96	$23,745								$23,745													**$23,745**
7.2	586374	Water Heater, Condensing Style, High Efficiency, 30 to 52 GAL, Replace	10	4	6	2	EA	$11,571.69	$23,143							$23,143									$23,143					**$46,287**
7.2	613100	Pipe, Domestic Water Service Distribution, Replace	35	29	6	85693	SF	$20.89	$1,790,127							$1,790,127														**$1,790,127**
7.2	613103	PIpe, Sewer, Replace	35	32	3	85693	SF	$18.60	$1,593,890				$1,593,890																	**$1,593,890**
7.2	582570	Circulation Pump, Heating Water, 3 HP, Replace	20	18	2	6	EA	$4,652.29	$27,914			$27,914																		**$27,914**
7.4	647066	Transfer Switch, Automatic (ATS), 600 V, 600 Amp, Replace	18	18	0	1	EA	$16,318.29	$16,318	$16,318																		$16,318		**$32,637**
7.4	613098	Building/Main Switchgear, 480 Y, 277 V, 2,000 Amp, Replace	30	27	3	1	EA	$285,917.81	$285,918				$285,918																	**$285,918**
7.4	613104	Electrical System, School, Upgrade	40	36	4	85693	SF	$49.78	$4,265,369					$4,265,369																**$4,265,369**
7.4	582608	LED Lighting Fixture, Basic, 20 W, Replace	20	10	10	1461	EA	$180.19	$263,252											$263,252										**$263,252**
7.4	582610	8-Bulb Compact Fluorescent Lighting Fixture, High Bay, Replace	20	10	10	33	EA	$602.44	$19,881											$19,881										**$19,881**
7.4	659209	Public Address System, Replace	15	10	5	85693	EA	$1.34	$114,829						$114,829															**$114,829**
7.4	660500	Master Clock System, Replace	15	10	5	85693	SF	$2.12	$181,669						$181,669															**$181,669**
7.4	660513	Media System for Schools including LAN, Replace	15	10	5	85693	SF	$1.36	$116,542						$116,542															**$116,542**
7.4	586823	Generator, Diesel, 65 to 125 kW, Replace	25	25	0	1	EA	$113,996.00	$113,996	$113,996																				**$113,996**
7.5	587994	Elevator Controls, Automatic, 1 or 2 Car Cluster, Modernize	20	15	5	1	EA	$11,547.25	$11,547						$11,547															**$11,547**
7.5	582536	Elevator, Hydraulic, 1500 to 2500 LB, 2 Floors, Renovate	30	25	5	1	EA	$108,794.40	$108,794						$108,794															**$108,794**
7.6	655083	Sprinkler System, Full Retrofit, School (per SF), Renovate	50	49	1	85693	SF	$6.25	$535,881		$535,881																			**$535,881**
7.6	649406	Fire Alarm System, School, Install	20	9	11	85693	SF	$3.13	$268,365												$268,365									**$268,365**
7.6	582587	Fire Alarm Control Panel, Addressable, Replace	15	4	11	1	EA	$20,297.59	$20,298												$20,298									**$20,298**
7.6	582588	Exit Lighting Fixture, LED, Replace	10	8	2	45	EA	$405.01	$18,225			$18,225										$18,225								**$36,451**
8.1	574896	Interior Door, Wood Solid-Core, Replace	20	14	6	114	EA	$1,423.11	$162,235							$162,235														**$162,235**
8.1	647444	Lockers, Steel Baked Enamel 12" W x 15" D x 72" H, 1 to 5 Tiers, Replace	20	7	13	320	LF	$482.50	$154,400														$154,400							**$154,400**
8.1	582513	Interior Wall Finish, Gypsum Board/Plaster/Metal, Prep & Paint	8	3	5	200000	SF	$1.42	$284,640						$284,640								$284,640							**$569,280**
8.1	647057	Interior Wall Finish, Ceramic Tile, Replace	25	12	13	4800	SF	$16.55	$79,459														$79,459							**$79,459**
8.1	582522	Interior Floor Finish, Concrete, Prep & Paint	10	6	4	5000	SF	$9.23	$46,172					$46,172										$46,172						**$92,344**
8.1	582521	Interior Floor Finish, Vinyl Tile (VCT), Replace	15	7	8	55000	SF	$4.80	$264,033									$264,033												**$264,033**
8.1	647084	Interior Floor Finish, Ceramic Tile, Replace	50	40	10	9113	SF	$15.76	$143,575											$143,575										**$143,575**
8.1	582515	Interior Floor Finish, Carpet Standard-Commercial Medium-Traffic, Replace	10	5	5	16380	SF	$7.26	$118,858						$118,858										$118,858					**$237,716**
8.1	586829	Interior Ceiling Finish, Acoustical Tile (ACT), Replace	20	10	10	64270	SF	$3.11	$199,944											$199,944										**$199,944**
8.1	647049	Bleacher, Telescoping Manual, to 15 Tier, Replace	20	15	5	180	EA	$282.00	$50,760						$50,760															**$50,760**
8.1	582509	Counter, Plastic Laminate, Postformed, Replace	10	8	2	120	LF	$43.90	$5,267			$5,267										$5,267								**$10,535**
8.1	582508	Cabinet, Base and Wall Section, Wood, Replace	20	10	10	120	LF	$467.63	$56,116											$56,116										**$56,116**
8.2	649488	Commercial Kitchen, Dishwasher, Replace	10	7	* 3	1	EA	$19,661.82	$19,662	$19,662										$19,662										**$39,324**
8.2	649456	Commercial Kitchen, Convection Oven, Single, Replace	10	10	0	2	EA	$5,077.62	$10,155	$10,155										$10,155										**$20,310**
8.2	649493	Commercial Kitchen, Walk-In Combination Freezer/Refigerator, Replace	15	0	* 15	1	EA	$31,605.00	$31,605						$31,605															**$31,605**
8.2	649442	Commercial Kitchen, Freezer, 2-Door Reach-In, Replace	15	10	5	4	EA	$4,644.00	$18,576						$18,576															**$18,576**
8.2	649460	Commercial Kitchen, Icemaker, Freestanding, Replace	15	6	9	1	EA	$6,118.55	$6,119										$6,119											**$6,119**
Totals, Unescalated										**$814,870**	**$535,881**	**$259,443**	**$1,879,808**	**$4,472,028**	**$1,161,968**	**$2,044,636**	**$267,463**	**$326,160**	**$279,581**	**$1,636,773**	**$1,315,662**	**$63,103**	**$1,009,178**	**$65,252**	**$355,034**	**$23,143**	**$97,597**	**$16,318**	**$57,987**	**$16,681,887**
Location Factor (1.00)										**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Totals, Escalated (5.5% inflation, compounded annually)										**$814,870**	**$565,355**	**$288,767**	**$2,207,348**	**$5,540,059**	**$1,518,646**	**$2,819,232**	**$389,073**	**$500,554**	**$452,668**	**$2,795,844**	**$2,370,945**	**$119,972**	**$2,024,182**	**$138,078**	**$792,606**	**$54,509**	**$242,510**	**$42,778**	**$160,371**	**$23,838,367**

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

1.1. PROPERTY INFORMATION AND GENERAL PHYSICAL CONDITION

The property information is summarized in the table below. More detailed descriptions may be found in the various sections of the report and in the Appendices.

Property Information	
Address:	501 Cambridge Street, Falmouth, Stafford County, Virginia, 22405
Year Constructed/Renovated:	1951 Renovated 1989 and 1997
Current Occupants:	Stafford County Public Schools
Management Point of Contact:	Ms. Jennifer Spindle
Property Type:	Middle School
Site Area:	15.305 acres
Building Area:	98,913 SF
Number of Buildings:	2 and 2 storage buildings
Number of Stories:	Main building: 2 level, Second building: 1 level
Parking Type and Number of Spaces:	107 - all in open spaces
Building Construction:	Concrete masonry unit walls with some steel frame supports with metal decking under the flat roof sections.
Roof Construction:	Flat roofs with built-up membrane topped with an aluminized coated cap sheet and some sections of single ply membrane fully adhered or topped with stone ballast.
Exterior Finishes:	Brick veneer cavity bearing walls trimmed with some exterior insulated finish system (EIFS).
Heating, Ventilation and Air Conditioning:	Central system with boilers and chillers. Classrooms: Served by central system noted above. Air handling units with VAV boxes
Fire and Life/Safety:	Fire sprinklers in limited areas, hydrants, smoke detectors, alarms, pull stations and extinguishers.
Dates of Visit:	April 19, 2017
On-Site Point of Contact (POC):	Ms. Jennifer Spindle
Assessment and Report Prepared by:	Michael R. Nelson
Reviewed by:	Kathleen Sullivan Technical Report Reviewer for Andrew Hupp Program Manager AHupp@emgcorp.com 800.733.0660 x6632

Systemic Condition Summary			
Site	Fair	HVAC	Fair to Good

Systemic Condition Summary			
Structure	Fair	Plumbing	Fair
Roof	Fair	Electrical	Fair to poor
Vertical Envelope	Fair	Elevators	Fair
Interiors	Fair to Good	Fire	Fair to Good

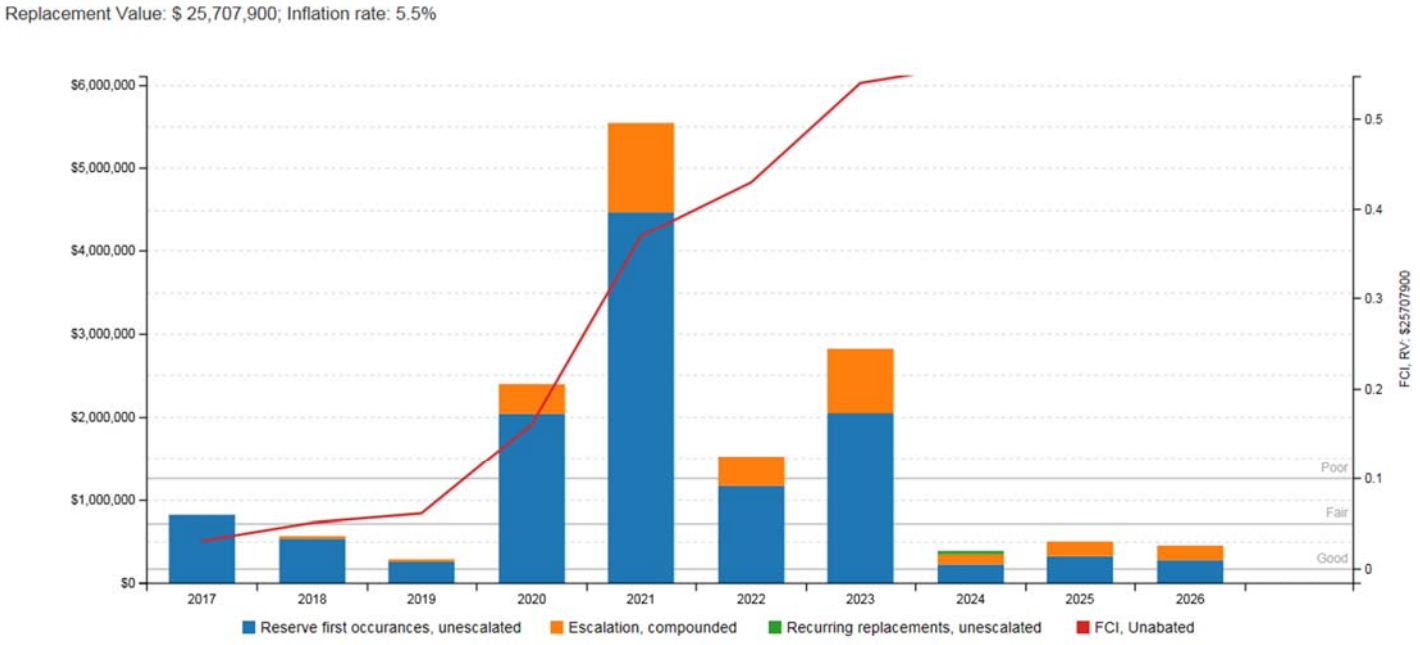
The following bullet points highlight the most significant short term and modernization recommendations:

- Seal and stripe parking
- Repoint brick veneer
- Replace exit lights

Generally, the property appears to have been constructed within industry standards in force at the time of construction. The property appears to have been well maintained since it was first occupied and is in good to fair overall condition.

According to staff, the property has had an active capital improvement expenditure program over the past ten years, primarily consisting of new water heaters, roof replacement, main entrance security upgrade, lock system repair, new fire alarm panel and new media retrieval and PA system. Supporting documentation was provided in support of these claims but some of the work is evident.

1.2. FACILITY CONDITION INDEX (FCI)



One of the major goals of the FCA is to calculate the FCI, which gives an indication of a building's overall condition. Two FCI ratios are calculated and presented, the Current Year and Ten-Year. The Current Year FCI is the ratio of Immediate Repair Costs to the building's Current Replacement Value. Similarly, the Ten-Year FCI is the ratio of anticipated Capital Reserve Needs over the next ten years to the Current Replacement Value.

FCI Condition Rating	Definition	Percentage Value
Good	In new or well-maintained condition, with no visual evidence of wear, soiling or other deficiencies.	0% to 5%
Fair	Subjected to wear and soiling but is still in a serviceable and functioning condition.	> than 5% to 10%
Poor	Subjected to hard or long-term wear. Nearing the end of its useful or serviceable life.	> than 10% to 60%
Very Poor	Has reached the end of its useful or serviceable life. Renewal is now necessary.	> than 60%

The graphs above and tables below represent summary-level findings for the FCA. The deficiencies identified in this assessment can be combined with potential new construction requirements to develop an overall strategy that can serve as the basis for a portfolio-wide capital improvement funding strategy. Key findings from the assessment include:

Key Finding	Metric	
Current Year Facility Condition Index (FCI) FCI = (IR)/(CRV)	3.17%	Good
10-Year Facility Condition Index (FCI) FCI = (RR)/(CRV)	66.43%	Very Poor
Current Replacement Value (CRV)	85,693 SF * 300.00 / SF = $25,707,900	
Year **0** (Current Year) - Immediate Repairs (IR)		$814,870
Years **1-10** – Replacement Reserves (RR)		$17,077,545
TOTAL Capital Needs		**$17,892,415**

The major issues contributing to the Immediate Repair Costs and the Current Year FCI ratio are summarized below:

- Replacement of generator
- ADA Upgrades
- Exterior façade repairs
- Energy Monitoring System
- Landscape repair
- Commercial Equipment

Further detail on the specific costs that make up the Immediate Repair Costs can be found in the cost tables in the appendices.

1.3. SPECIAL ISSUES AND FOLLOW-UP RECOMMENDATIONS

As part of the FCA, a limited assessment of accessible areas of the building(s) was performed to determine the presence of mold, conditions conducive to mold growth, and/or evidence of moisture. Property personnel were interviewed concerning any known or suspected mold, elevated relative humidity, water intrusion, or mildew-like odors. Sampling is not a part of this assessment.

In room 205, one of the ceiling tiles surrounding an air vent, displays a black shading. It is believed that this has been caused by dirt within the ductwork; however, there is a slight possibility that this may be suspect mold growth. EMG recommends that the damaged tile be replaced and a determination be made on whether this is a dirty vent or the beginning stages of mold growth. Either way the repair can be completed by the onsite maintenance staff as part of the property's routine maintenance program. Such persons should receive training in accordance with OSHA on proper clean-up methods, personal protection, and potential health/safety hazards, if necessary. The cost of this work is not included in the cost tables.

1.4. OPINIONS OF PROBABLE COST

Cost estimates are attached at the front of this report (following the cover page).

These estimates are based on Invoice or Bid Document/s provided either by the Owner/facility and construction costs developed by construction resources such as *R.S. Means* and *Marshall & Swift,* EMG's experience with past costs for similar properties, city cost indexes, and assumptions regarding future economic conditions.

Opinions of probable costs should only be construed as preliminary, order of magnitude budgets. Actual costs most probably will vary from the consultant's opinions of probable costs depending on such matters as type and design of suggested remedy, quality of materials and installation, manufacturer and type of equipment or system selected, field conditions, whether a physical deficiency is repaired or replaced in whole, phasing of the work (if applicable), quality of contractor, quality of project management exercised, market conditions, and whether competitive pricing is solicited, etc. ASTM E2018-08 recognizes that certain opinions of probable costs cannot be developed within the scope of this guide without further study. Opinions of probable cost for further study should be included in the FCA.

1.4.1. METHODOLOGY

Based upon site observations, research, and judgment, along with referencing Expected Useful Life (EUL) tables from various industry sources, EMG opines as to when a system or component will most probably necessitate replacement. Accurate historical replacement records, if provided, are typically the best source of information. Exposure to the elements, initial quality and installation, extent of use, the quality and amount of preventive maintenance exercised, etc., are all factors that impact the effective age of a system or component. As a result, a system or component may have an effective age that is greater or less than its actual chronological age. The Remaining Useful Life (RUL) of a component or system equals the EUL less its effective age. Projections of Remaining Useful Life (RUL) are based on continued use of the Property similar to the reported past use. Significant changes in occupants and/or usage may affect the service life of some systems or components.

Where quantities could not be derived from an actual take-off, lump sum costs or allowances are used. Estimated costs are based on professional judgment and the probable or actual extent of the observed defect, inclusive of the cost to design, procure, construct and manage the corrections.

1.4.2. IMMEDIATE REPAIRS

Immediate repairs are opinions of probable costs that require immediate action as a result of: (1) material existing or potential unsafe conditions, (2) material building or fire code violations, or (3) conditions that, if not addressed, have the potential to result in, or contribute to, critical element or system failure within one year or will most probably result in a significant escalation of its remedial cost.

1.4.3. REPLACEMENT RESERVES

Replacement Reserves are for recurring probable expenditures, which are not classified as operation or maintenance expenses. The replacement reserves should be budgeted for in advance on an annual basis. Replacement Reserves are reasonably predictable both in terms of frequency and cost. However, Replacement Reserves may also include components or systems that have an indeterminable life but, nonetheless, have a potential for failure within an estimated time period.

Replacement Reserves exclude systems or components that are estimated to expire after the reserve term and are not considered material to the structural and mechanical integrity of the subject property. Furthermore, systems and components that are not deemed to have a material effect on the use of the Property are also excluded. Costs that are caused by acts of God, accidents, or other occurrences that are typically covered by insurance, rather than reserved for, are also excluded.

Replacement costs are solicited from ownership/property management, EMG's discussions with service companies, manufacturers' representatives, and previous experience in preparing such schedules for other similar facilities. Costs for work performed by the ownership's or property management's maintenance staff are also considered.

EMG's reserve methodology involves identification and quantification of those systems or components requiring capital reserve funds within the assessment period. The assessment period is defined as the effective age plus the reserve term. Additional information concerning system's or component's respective replacement costs (in today's dollars), typical expected useful lives, and remaining useful lives were estimated so that a funding schedule could be prepared. The Replacement Reserves Schedule presupposes that all required remedial work has been performed or that monies for remediation have been budgeted for items defined in the Immediate Repair Cost Estimate.

2. PURPOSE AND SCOPE

2.1. PURPOSE

EMG was retained by the client to render an opinion as to the Property's current general physical condition on the day of the site visit.

Based on the observations, interviews and document review outlined below, this report identifies deferred maintenance issues and existing deficiencies, which affect the Property's use. Opinions are rendered as to its structural integrity, building system condition, and the Property's overall condition. The report also notes building systems or components that have realized or exceeded their typical expected useful lives.

Throughout sections 5 through 9 of this report, each report section will typically contain three subsections organized in the following sequence:

- A descriptive table (and/or narrative), which identifies the components assessed, their condition, and other key data points.
- A simple bulleted list of Anticipated Lifecycle Replacements, which lists components and assets typically in Excellent, Good, or Fair condition at the time of the assessment but that will require replacement or some other attention once aged past their estimated useful life. These listed components are typically included in the associated inventory database with costs identified and budgeted beyond the first several years.
- A bulleted cluster of Actions/Comments, which include more detailed narratives describing deficiencies, recommended repairs, and short term replacements. The assets and components associated with these bullets are/were typically problematic and in Poor or Failed condition at the time of the assessment, with corresponding costs included within the first few years.

CONDITIONS:

The physical condition of building systems and related components are typically defined as being in one of five conditions: Excellent, Good, Fair, Poor, Failed or a combination thereof. For the purposes of this report, the following definitions are used:

Excellent	=	New or very close to new; component or system typically has been installed within the past year, sound and performing its function. Eventual repair or replacement will be required when the component or system either reaches the end of its useful life or fails in service.
Good	=	Satisfactory as-is. Component or system is sound and performing its function, typically within the first third of its lifecycle. However, it may show minor signs of normal wear and tear. Repair or replacement will be required when the component or system either reaches the end of its useful life or fails in service.
Fair	=	Showing signs of wear and use but still satisfactory as-is, typically near the median of its estimated useful life. Component or system is performing adequately at this time but may exhibit some signs of wear, deferred maintenance, or evidence of previous repairs. Repair or replacement will be required due to the component or system's condition and/or its estimated remaining useful life.
Poor	=	Component or system is significantly aged, flawed, functioning intermittently or unreliably; displays obvious signs of deferred maintenance; shows evidence of previous repair or workmanship not in compliance with commonly accepted standards; has become obsolete; or exhibits an inherent deficiency. The present condition could contribute to or cause the deterioration of contiguous elements or systems. Either full component replacement is needed or repairs are required to restore to good condition, prevent premature failure, and/or prolong useful life.
Failed	=	Component or system has ceased functioning or performing as intended. Replacement, repair, or other significant corrective action is recommended or required.
Not Applicable	=	Assigning a condition does not apply or make logical sense, most commonly due to the item in question not being present.

PLAN TYPES:

Each line item in the cost database is assigned a Plan Type, which is the primary reason or rationale for the recommended replacement, repair, or other corrective action. This is the "why" part of the equation. A cost or line item may commonly have more than one applicable Plan Type; however, only one Plan Type will be assigned based on the "best" fit, typically the one with the greatest significance. The following Plan Types are listed in general weighted order of importance:

Safety	=	An observed or reported unsafe condition that if left unaddressed could result in an injury; a system or component that presents a potential liability risk.
Performance/Integrity	=	Component or system has failed, is almost failing, performs unreliably, does not perform as intended, and/or poses a risk to overall system stability.
Accessibility	=	Does not meet ADA, UFAS, and/or other handicap accessibility requirements.
Environmental	=	Improvements to air or water quality, including removal of hazardous materials from the building or site.
Modernization/Adaptation	=	Conditions, systems, or spaces that need to be upgraded in appearance or function to meet current standards, facility usage, or client/occupant needs.
Lifecycle/Renewal	=	Any component or system in which future repair or replacement is anticipated beyond the next several years and/or is of minimal substantial early-term consequence.

PRIORITIZATION SCHEME:

One of EMG's data-sorting exercises and deliverables of fundamental value is to evaluate and rank the recommendations and needs of the facility via a logical and well-developed prioritization scheme. The factors under consideration and built into the evaluation criteria include Plan Type (the "why"), Uniformat/building component type or system (the "what"), and condition/RUL (the "when"). The facility type or importance is also factored into the overall portfolio if relevant information is provided and applicable. EMG utilizes the following prioritization scheme:

Priority 1	=	**Immediate/Critical Items:** Require immediate action to either (a) correct a safety hazard or (b) address the most important building performance or integrity issues or failures.
Priority 2	=	**Potentially Critical Items:** Include (a) those safety/liability, component performance or building integrity issues of slightly less importance not captured in Priority 1 and/or (b) issues that if left unchecked could escalate into Immediate/Critical items. Accessibility and 'stabilized' environmental issues are also typically included in this subset.
Priority 3	=	**Necessary/Recommended Items:** Items of concern that generally either require attention or are suggested as improvements within the near term to: (a) improve usability, marketability, or efficiency; (b) reduce operational costs; (c) prevent or mitigate disruptions to normal operations; (d) modernize the facility; (e) adapt the facility to better meet occupant needs; and/or (f) should be addressed when the facility undergoes a significant renovation.
Priority 4	=	**Anticipated Lifecycle Replacements:** Renewal items, which are generally associated with building components performing acceptably at the present time but will likely require replacement or other future attention within the timeframe under consideration.

2.2. SCOPE

The standard scope of the Facility Condition Assessment includes the following:

- Visit the Property to evaluate the general condition of the building and site improvements, review available construction documents in order to familiarize ourselves with, and be able to comment on, the in-place construction systems, life safety, mechanical, electrical, and plumbing systems, and the general built environment.
- Identify those components that are exhibiting deferred maintenance issues and provide cost estimates for Immediate Costs and Replacement Reserves based on observed conditions, maintenance history and industry standard useful life estimates. This will include the review of documented capital improvements completed within the last five-year period and work currently contracted for, if applicable.

- Provide a full description of the Property with descriptions of in-place systems and commentary on observed conditions.
- Provide a general statement of the subject Property's compliance to Title III of the Americans with Disabilities Act. This will not constitute a full ADA survey, but will help identify exposure to issues and the need for further review.
- Perform a limited assessment of accessible areas of the building(s) for the presence of mold, conditions conducive to mold growth, and/or evidence of moisture. EMG will also interview Project personnel regarding the presence of any known or suspected mold, elevated relative humidity, water intrusion, or mildew-like odors. Potentially affected areas will be photographed. Sampling will not be considered in routine assessments.
- List the current utility service providers.
- Review maintenance records and procedures with the in-place maintenance personnel.
- Observe a representative sample of the interior spaces/units, including vacant spaces/units, in order to gain a clear understanding of the property's overall condition. Other areas to be observed include the exterior of the property, the roofs, interior common areas, and the significant mechanical, electrical and elevator equipment rooms.
- Appropriate inquiries to determine flood plain zone and seismic zone for the Property.
- Provide recommendations for additional studies, if required, with related budgetary information.
- Provide an Executive Summary at the beginning of this report.

2.3. PERSONNEL INTERVIEWED

The management and maintenance staff and building engineers were interviewed for specific information relating to the physical property, available maintenance procedures, historical performance of key building systems and components, available drawings and other documentation. The following personnel from the facility and government agencies were interviewed in the process of conducting the FCA:

Name and Title	Organization	Phone Number
Scott Horan Assistant Superintendent for Operations	Stafford County Public Schools	540.658.6544
Jennifer Spindle Facility Planning, Design & Construction	Stafford County Public Schools	540.658.6542
John Helinski Assistant Engineer	Edward R Drew Middle School	540.455.0357

The FCA was performed with the assistance of John Helinski, Assistant Engineer, Edward R Drew Middle School, the onsite Point of Contact (POC), who was cooperative and provided information that appeared to be accurate based upon subsequent site observations. The onsite contact is completely knowledgeable about the subject property and answered most questions posed during the interview process. The POC's management involvement at the property has been for the past 10 years.

2.4. DOCUMENTATION REVIEWED

Prior to the FCA, relevant documentation was requested that could aid in the knowledge of the subject property's physical improvements, extent and type of use, and/or assist in identifying material discrepancies between reported information and observed conditions. The review of submitted documents does not include comment on the accuracy of such documents or their preparation, methodology, or protocol. The Documentation Request Form is provided in Appendix E.

Although Appendix E provides a summary of the documents requested or obtained, the following list provides more specific details about some of the documents that were reviewed or obtained during the site visit.

- Site / Floor Plan
- Summary of recent capital improvements
- Summary of capital improvements & budgets for 2004 - 2017.

A prior facility condition report was reviewed while performing the FCA. The report, dated May 7, 2008 was prepared by EMG. Property condition and/or factual information discrepancies between the prior report and actual conditions are not readily apparent.

2.5. PRE-SURVEY QUESTIONNAIRE

A Pre-Survey Questionnaire was not filled out by the POC.

2.6. WEATHER CONDITIONS

Cloudy, with temperatures in the 50s (°F) and light winds.

3. ACCESSIBILITY & PROPERTY RESEARCH

3.1. ADA ACCESSIBILITY

Generally, Title III of the Americans with Disabilities Act (ADA) prohibits discrimination by entities to access and use of “areas of public accommodations” and “commercial facilities” on the basis of disability. Regardless of its age, these areas and facilities must be maintained and operated to comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Buildings completed and occupied after January 26, 1992 are required to comply fully with the ADAAG. Existing facilities constructed prior to this date are held to the lesser standard of compliance to the extent allowed by structural feasibility and the financial resources available. As an alternative, a reasonable accommodation pertaining to the deficiency must be made.

During the FCA, a limited visual observation for ADA accessibility compliance was conducted. The scope of the visual observation was limited to those areas set forth in *EMG’s Abbreviated Accessibility Checklist* provided in Appendix D of this report. It is understood by the Client that the limited observations described herein does not comprise a full ADA Compliance Survey, and that such a survey is beyond the scope of EMG’s undertaking. Only a representative sample of areas was observed and, other than as shown on the Abbreviated Accessibility Checklist, actual measurements were not taken to verify compliance.

The facility does not appear to be accessible with Title III of the Americans with Disabilities Act. Elements as defined by the ADAAG that are not accessible as stated within the priorities of Title III, are as follows:

Parking

- Signage directing to accessible parking or accessible building entrances to the facility are not provided. This is recommended to be installed during this evaluation period.

Paths of Travel

- Obstacle or protrusion from wall impeding access. Numerous water fountains were found to protrude into the travel path. EMG recommends replacing these with “accessible” water fountains. This is recommended to be addressed/replaced during this evaluation period.
- Stair handrails do not extend beyond the top and bottom risers. The stairs leading from the first floor to the lower level do not provide these extensions. These are recommended to be installed during this assessment period.
- Compliant signage indicating accessible entrances and general information is not provided. This is recommended to be installed during this evaluation period.
- Compliant ADA drinking fountains are not present at five locations. Funds for this have been included as an immediate repair item.

Elevators

- Audible signals are not provided at floor level changes or elevator lobbies indicating car arrival. This is recommended to be upgraded in this evaluation period.
- Elevator communication equipment not set up for speech impaired communication. This is recommended to be upgraded in this evaluation period.

Restrooms

- Install grab bars in accessible stalls at 36” above the floor. This is recommended to be installed in this evaluation period.
- Modify existing toilet room accessories and mirrors. This is recommended to be replaced in this evaluation period.

These are a sampling of the accessibility issues found. A full ADA Compliance Survey may reveal additional aspects of the property that are not in compliance and is recommended. The cost for this survey/study has been included in the reserve schedule.

Corrections of these conditions should be addressed from a liability standpoint, but are not necessarily code violations. The Americans with Disabilities Act Accessibility Guidelines concern civil rights issues as they pertain to the disabled and are not a construction code, although many local jurisdictions have adopted the Guidelines as such. The cost to address the achievable items noted above is included in the cost tables.

4. EXISTING BUILDING ASSESSMENT

4.1. UNIT OR SPACE TYPES

All 98,913 square feet of the building are occupied by a single occupant, Stafford County Public Schools. The spaces are a combination of offices, classrooms, cafeteria, gymnasium, and supporting restrooms, administrative offices, mechanical and other utility spaces.

The following table identifies the reported unit types and mix at the subject property.

Unit Types and Mix			
Quantity	Type	Vacant Units	Down Units
45	Classroom	0	0
1	Gymnasium	0	0
4	Gymnasium Storage	0	0
2	Gymnasium Locker Rooms	0	0
4	Library & Auxiliary Rooms	0	0
1	Auditorium	0	0
6	Auditorium Storage Room	0	0
1	Drama / Music Room	0	0
1	Drama / Music Storage	0	0
2	Art Room	0	0
1	Art Storage Room	0	0
1	Cafeteria	0	0
2	Cafeteria Storage Room	0	0
1	Kitchen	0	0
1	Kitchen Office	0	0
2	Kitchen Storage	0	0
5	Student Restroom, Male	0	0
5	Student Restroom, Female	0	0
1	Faculty Meeting Room	0	0
1	Faculty Lunch Room	0	0
4	Faculty Restrooms	0	0
1	Staff Restroom (kitchen)	0	0
4	Janitors Closet	0	0
6	Mechanical Room	0	0
5	General Storage	0	0
4	Guidance Office	0	0
12	Administrative Office	0	0
123	**TOTAL**	**0**	**0**

4.2. INACCESSIBLE AREAS OR KEY SPACES NOT OBSERVED

All areas of the property were available for observation during the site visit. There are no down units or areas.

5. SITE IMPROVEMENTS

5.1. UTILITIES

The following table identifies the utility suppliers and the condition and adequacy of the services.

Site Utilities		
Utility	Supplier	Condition and Adequacy
Sanitary sewer	Stafford County	Good
Storm sewer	Stafford County	Good
Domestic water	Stafford County	Good
Electric service	Dominion Electric	Good
Natural gas service	Columbia Gas of Virginia	Good
Telephone	Verizon	Good

Actions/Comments:

- According to the POC, the utilities provided are adequate for the property. There are no unique, onsite utility systems such as septic systems, water or waste water treatment plants, or propane gas tanks.
- See Section 7.4 for descriptions and comments regarding the emergency generator.

5.2. PARKING, PAVING, AND SIDEWALKS

Item	Description
Main Ingress and Egress	Cambridge Street
Access from	East
Additional Entrances	N/A
Additional Access from	N/A

Paving and Flatwork			
Item	Material	Last Work Done	Condition
Entrance Driveway Apron	Asphalt	2010	Fair
Parking Lot	Asphalt	2010	Fair
Drive Aisles	Asphalt	2010	Fair
Service Aisles	Asphalt	2010	Fair
Sidewalks	Concrete	Unknown	Fair
Curbs	Concrete	2008	Fair
Site Stairs	Cast-in-place concrete	2008	Fair
Pedestrian Ramps	None	N/A	NA

Parking Count				
Open Lot	Carport	Private Garage	Subterranean Garage	Freestanding Parking Structure
99	0	0	0	0

Total Number of ADA Compliant Spaces	6
Number of ADA Compliant Spaces for Vans	2
Total Parking Spaces	107
Parking Ratio (Spaces/Apartments)	1.08/1,000 square foot
Method of Obtaining Parking Count	Physical count

Exterior Stairs			
Location	Material	Handrails	Condition
Extreme right end of 2-story building section	Concrete stairs	Metal	Fair

Anticipated Lifecycle Replacements:

- Asphalt seal coating / restriping
- Asphalt pavement

Actions/Comments:

- The concrete curbs have isolated areas of vertically displaced concrete due to settlement or heavy surface wear due to the use of salts or other ice-melting agents, cracking and/or spalling. These areas occur throughout the site. The damaged areas of concrete curbs require replacement. This work is considered to be routine maintenance. In addition, there are small deteriorated concrete areas of the rear ramp due to settlement and spalling. As part of the curb replacement/repair, EMG recommends that this concrete ramp be repaired/filled. This work is considered to be routine maintenance.
- The parking lots asphalt pavement needs repair to the sub base and beyond its useful life. This is recommended to be completed during this evaluation period.
- There is a stone path at the rear of building leading to one of the rear doors and mechanical room. When the asphalt parking lot is resurfaced, EMG recommends replacing the stone path with asphalt. Those costs are included with the resurfacing.
- The handrails on the exterior ramp should be replaced during this evaluation period.

5.3. DRAINAGE SYSTEMS AND EROSION CONTROL

Drainage System and Erosion Control		
System	Exists at Site	Condition
Surface Flow	☒	Fair
Inlets	☒	Fair
Swales	☒	Poor
Detention pond	☐	NA

Drainage System and Erosion Control		
System	Exists at Site	Condition
Lagoons	☐	NA
Ponds	☐	NA
Underground Piping	☒	Fair
Pits	☐	NA
Municipal System	☒	Fair
Dry Well	☐	NA

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- There is no evidence of storm water runoff from adjacent properties.
- Ponding occurs in the landscaped areas. The affected areas must be graded to direct stormwater from the buildings. This should be completed during this evaluation period.

5.4. TOPOGRAPHY AND LANDSCAPING

Item	Description						
Site Topography	The property on the left side of the building is relatively flat. The property to the rear of the building gradually slopes downward from the left side of the building to the right side of the building. The right side of the building slopes upward towards the northeast.						
Landscaping	Trees	Grass	Flower Beds	Planters	Drought Tolerant Plants	Decorative Stone	None
	☒	☒	☐	☐	☐	☐	☐
Landscaping Condition	Fair						
Irrigation	Automatic Underground	Drip	Hand Watering	None			
	☒	☐	☐	☒			
Irrigation Condition	Fair						

Type	Location	Condition
Brick	Grade changes throughout the site	Fair
Concrete	Athletic field (Softball)	Good

Anticipated Lifecycle Replacements:

- Retaining walls
- Irrigation System

Actions/Comments:

- Some trees overhang existing buildings and need trimming. This should be completed during this evaluation period.

5.5. GENERAL SITE IMPROVEMENTS

Property Signage	
Property Signage	Monument
Street Address Displayed?	No

Site and Building Lighting					
Site Lighting	None	Pole Mounted	Bollard Lights	Ground Mounted	Parking Lot Pole Type
	☐	☒	☐	☐	☒
	Overall Site Lighting Condition			Fair	
Building Lighting	None		Wall Mounted		Recessed Soffit
	☐		☒		☒
	Overall Building Lighting Condition			Fair	

Site Fencing		
Type	Location	Condition
Chain link with metal posts	Surrounds athletic fields	Fair
Chain link with metal posts	Northeast front of main school bldg.	Fair
Chain link with metal posts	Chain link gate separating the rear parking lots from the front/left side parking lot.	Fair
Wood fencing with wood posts	Rear of VoTech Building	Fair

Refuse Disposal				
Refuse Disposal	Common area dumpsters			
Dumpster Locations	Mounting	Enclosure	Contracted?	Condition
Left Rear of Building	Concrete pad	Chain link fence	Yes	Fair

Other Site Amenities			
	Description	Location	Condition
Softball / Football Field	Dirt/grass	Left front of site	Fair
Athletic Track	Asphalt	Left rear of Site	Fair
Athletic Field	Grass	Left rear of Site	Fair
Rampitheatre	Dirt/grass	Rear of VoTech Building	Fair

The softball/football fields and athletic track / field are surrounded by a chain link fence. A wooden fence is utilized at the Rampitheatre. Lighting is not provided at these amenities for nighttime use.

Anticipated Lifecycle Replacements:

- Exterior lighting
- Site fencing (wood / chain link)
- Sport Surface Replace

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended. Future lifecycle replacements of the components listed above will be required.

6. BUILDING ARCHITECTURAL AND STRUCTURAL SYSTEMS

6.1. FOUNDATIONS

Building Foundation		
Item	Description	Condition
Foundation	Slab on grade with integral footings	Fair
Basement and Crawl Space	None	--

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- The foundation systems are concealed. There are no significant signs of settlement, deflection, or movement.

6.2. SUPERSTRUCTURE

Building Superstructure		
Item	Description	Condition
Framing / Load-Bearing Walls	Masonry walls	Fair
Ground Floor	Concrete slab	Fair
Upper Floor Framing	Open-web steel joists	Fair
Upper Floor Decking	Metal decking with concrete topping	Fair
Roof Framing	Open-web steel joists	Fair
Roof Decking	Metal decking	Fair

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- The superstructure is exposed in some locations, which allows for limited observation. Walls and floors appear to be plumb, level, and stable. There are no significant signs of deflection or movement.

6.3. ROOFING

Primary Roof			
Type / Geometry	Flat or low-sloping	Finish	Built-up membrane
Maintenance	Outside contractor	Roof Age	8 years

Primary Roof			
Flashing	Built-up base and edge flashing	Warranties	Yes
Parapet Copings	NA; no parapet walls	Roof Drains	Internal drains
Fascia	Metal	Insulation	Rigid board
Soffits	Concealed	Skylights	No
Attics	No	Ponding	No
Ventilation Source-1	Soffit vents	Leaks Observed	No
Ventilation Source-2	N/A	Roof Condition	Fair

The primary roof is located on the main school and dispatch buildings, has a stone ballast, and is believed to be replaced in 2007.

Secondary Roof			
Type / Geometry	Flat or low-sloping	Finish	Single-ply EPDM
Maintenance	Outside contractor	Roof Age	16 years
Flashing	Built-up base and edge flashing	Warranties	Yes
Parapet Copings	Sheet metal	Roof Drains	Internal drains
Fascia	Metal	Insulation	Rigid board
Soffits	Concealed	Skylights	No
Attics	No	Ponding	No
Ventilation Source-1	Soffit vents	Leaks Observed	No
Ventilation Source-2	N/A	Roof Condition	Fair

The secondary roof is located on the addition completed in 2001 and has a stone ballast.

Secondary Roof			
Type / Geometry	Gabled	Finish	Standing seam metal
Maintenance	Outside contractor	Roof Age	8 years
Flashing	Sheet metal	Warranties	Yes
Parapet Copings	NA; no parapet walls	Roof Drains	Edge drainage to ground
Fascia	Metal	Insulation	Could not be determined
Soffits	None	Skylights	No
Attics	No	Ponding	No
Ventilation Source-1	None	Leaks Observed	No

Secondary Roof			
Ventilation Source-2	N/A	Roof Condition	Fair

This secondary roof is located on the front entryway to the main school building and was replaced in 2009.

Anticipated Lifecycle Replacements:

- Built up roof
- Single-ply EPDM with stone ballast

Actions/Comments:

- The roof finishes vary in age and were reportedly installed in 2001 (addition) and 2009. The roofs appearing to be wearing appropriately and their effective ages are 15 and 8 respectively. Information regarding roof warranties or bonds was not available. The roofs are maintained by an outside contractor.
- According to the POC, there are no active roof leaks. There is no evidence of active roof leaks.
- There is no evidence of roof deck or insulation deterioration. The roof substrate and insulation should be inspected during any future roof repair or replacement work.
- Roof drainage appears to be adequate. Clearing and minor repair of drain system components should be performed regularly as part of the property management's routine maintenance and operations program

6.4. EXTERIOR WALLS

Building Exterior Walls		
Type	Location	Condition
Primary Finish	Brick Veneer (School) CMU (VoTech) Vinyl Siding (Sheds)	Fair to Failed Poor Fair
Secondary Finish	NA	--
Accented with	NA	--
Soffits	Concealed	Fair

Building sealants (caulking) are located between dissimilar materials, at joints, and around window and door openings. Due to the current status, the caulking will need to be redone early in the reserve term.

Anticipated Lifecycle Replacements:

- Expansion joint cover
- Masonry re-pointing
- Wall Insulation

Actions/Comments:

- Isolated portions of the mortar joints along the brick veneer are cracked on the northeast wall just outside the courtyard. The brick mortar will require cleaning and repointing as part of the property management's routine maintenance program.
- The brick veneer has isolated areas of cracking. The damaged veneer must be repaired during this evaluation period.

- There are isolated areas of brittle, damaged and missing sealant throughout the site located between the windows /doors and brick veneer. The damaged sealant must be replaced during this evaluation period.

6.5. EXTERIOR AND INTERIOR STAIRS

Building Exterior and Interior Stairs					
Type	Description	Riser	Handrail	Balusters	Condition
Building Exterior Stairs	Cast-in-place concrete with brick veneer	Closed	Metal	Metal	Fair
Building Exterior Stairs	Cast-in-place concrete	Closed	Metal	Metal	Fair
Building Interior Stairs	Cast-in-place concrete	Closed	Metal	Metal	Fair

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended.

6.6. EXTERIOR WINDOWS AND DOORS

Building Windows				
Window Framing	Glazing	Location	Window Screen	Condition
Aluminum framed, fixed	Double pane	Throughout all buildings	☐	Fair
Aluminum framed storefront	Single pane	Front Vestibule	☐	Fair

Building Doors		
Main Entrance Doors	Door Type	Condition
	Fully glazed, metal framed	Fair
Secondary Entrance Doors	Metal, insulated	Fair
Service Doors	Metal, insulated	Fair
Overhead Doors	Aluminum	Fair

Anticipated Lifecycle Replacements:

- Exterior doors
- Window sealants
- Overhead door
- Windows

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended. Future lifecycle replacements of the components listed above will be required.
- There are some missing or damaged sections of sealant. Minor sealant replacement or repair is considered to be routine maintenance.

6.7. PATIO, TERRACE, AND BALCONY

Not applicable. There are no patios, terraces, or balconies.

7. BUILDING MECHANICAL AND PLUMBING SYSTEMS

7.1. BUILDING HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

Building Central Heating System	
Primary Heating System Type	Hot water boilers
Quantity and Capacity of Major Components	3 boilers at 1,702 (2 each) and 764 MBH (1 each)
Total Heating Capacity	4,168 MBH
Heating Fuel	Natural gas
Location of Major Equipment	Mechanical rooms
Space Served by System	2 serve main building; 1 (1997) serves addition
Age Ranges	Varies (1 – 1997)
Boiler Condition	Fair
Heat Exchanger Condition	Fair

Building Central Cooling System	
Primary Cooling System Type	Air-cooled chillers
Quantity and Capacity of Major Components	2 chillers at 140 tons each
Total Cooling Capacity	280 tons
Refrigerant	R-134A
Cooling Towers	None
Location of Major Equipment	Building exterior
Space Served by System	Main School Building
Age Ranges	2005
Chiller Condition	Fair
Cooling Tower Condition	--

Distribution System	
HVAC Water Distribution System	Two-pipe
Heating Water Circulation Pump Size & Quantity	4 pumps at .75 to 3 HP each (including addition)
Chilled Water Circulation Pump Size & Quantity	2 pumps at 25 HP each
Condenser Water Circulation Pump Size & Quantity	NA
Pump Condition	Fair
Air Distribution System	Variable volume
Quantity and Capacity of Air Handlers	8 air handlers varying in capacity
Location of Air Handlers	Four on the roof; three in the gym; one in mechanical room
Large Spaces the Larger Dedicated AHU's Serve	Classrooms, Offices, Gymnasium, Auditorium
Age of Air Handlers	Varies
Air Handler Condition	Fair
Terminal Units	VAV boxes
Quantity and Capacity of Terminal Units	Approximately 56 VAV boxes, CFM difficult to determine without construction drawings
Location of Terminal Units	Along ceilings
Spaces Served by Terminal Units	Throughout facility
Terminal Unit Condition	Fair

Supplemental Components	
Supplemental Component #1	Split system heat pumps
Location / Space Served	Tech building / 5-ton (6 each)
Condition	Fair
Supplemental Component #2	Suspended unit heaters
Location / Space Served	Boiler Room
Condition	Fair
Supplemental Component #3	Package units
Location / Space Served	Addition / 50 ton (1997)
Condition	Fair

Controls and Ventilation	
HVAC Control System	VoTech – individual programmable; main building - pneumatic
HVAC Control System Condition	Fair
Building Ventilation	Rooftop exhaust fans
Ventilation System Condition	Fair

Anticipated Lifecycle Replacements:

- Boilers
- Chillers
- Air handling units
- Condensing Units
- Distribution pumps and motors
- VAV boxes
- Package units
- Split system furnaces and condensing units
- Split system heat pumps
- Gas wall heaters
- Rooftop exhaust fans
- HVAC controls
- VFD (Variable Frequency Drives)

Actions/Comments:

- The HVAC systems are maintained by the in-house maintenance staff. Records of the installation, maintenance, upgrades, and replacement of the HVAC equipment at the property have been maintained since the property was first occupied. Per the on-site contact, the building HVAC was balanced in 2013.
- The HVAC equipment varies in age. HVAC equipment is replaced on an "as needed" basis.
- The HVAC equipment appears to be functioning adequately overall. The maintenance staff was interviewed about the historical and recent performance of the equipment and systems. No chronic problems were reported and an overall sense of satisfaction with the systems was conveyed. However, due to the inevitable failure of parts and components over time, some of the equipment will require replacement. A budgetary cost for this work is included.

7.2. BUILDING PLUMBING AND DOMESTIC HOT WATER

Building Plumbing System		
Type	Description	Condition
Water Supply Piping	Copper	Fair
Waste/Sewer Piping	Cast Iron & PVC	Fair to Poor
Vent Piping	Metal & PVC	Fair
Water Meter Location	Boiler Room	

Domestic Water Heaters or Boilers	
Components	Water Heaters
Fuel	Electric
Quantity and Input Capacity	2 units
Storage Capacity	40 & 50 gallons
Boiler or Water Heater Condition	Good
Supplementary Storage Tanks?	Yes
Storage Tank Quantity & Volume	1 unit at 1000 gallons
Quantity of Storage Tanks	1
Storage Tank Condition	Fair
Domestic Hot Water Circulation Pumps (3 HP and over)	Varies
Adequacy of Hot Water	Adequate
Adequacy of Water Pressure	Adequate

Plumbing Fixtures	
Water Closets	Residential grade
Toilet (Water Closet) Flush Rating	3.0 GPF
Common Area Faucet Nominal Flow Rate	2.2 GPM
Condition	Fair

Anticipated Lifecycle Replacements:

- Water Heater
- Circulation Pumps
- Piping (sewer & domestic water)

Actions/Comments:

- The plumbing systems appear to be well maintained and functioning adequately. The water pressure appears to be sufficient. No significant repair actions or short term replacement costs are required. There is one toilet in the kitchen area that is current broken. Due to the minimal cost, EMG recommends that the operational budget be utilized to repair this item. Otherwise, routine and periodic maintenance is recommended. Future lifecycle replacements of the components or systems listed above will be required.
- The facility has a commercial kitchen onsite but no associated grease trap was observed or reported. The installation of a grease trap is highly recommended. This should be completed during this evaluation period.

- The cast iron sewer piping is showing deterioration and should be replaced during this evaluation period.

7.3. BUILDING GAS DISTRIBUTION

Gas service is supplied from the gas main on the adjacent public street. The gas meter and regulator are located along the rear of the building, near the cooling tower enclosure. The gas distribution piping within the buildings is steel.

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- The pressure and quantity of gas appear to be adequate.
- The gas meter and regulator appear to be functioning adequately and will require routine maintenance.
- Only limited observation of the gas distribution piping can be made due to hidden conditions.

7.4. BUILDING ELECTRICAL

Building Electrical Systems			
Electrical Lines	Underground	Transformer	Pad-mounted
Main Service Size	2,000 Amps	Volts	277/480 Volt, three-phase
Meter & Panel Location	Rear of main school building – next to chillers	Branch Wiring	Copper
Conduit	Metallic	Step-Down Transformers?	Yes
Security / Surveillance System?	Yes	Building Intercom System?	Yes
Transfer Switch	Poor		
Lighting Fixtures	T5 & T8 Fluorescent		
Main Distribution Condition	Fair		
Secondary Panel and Transformer Condition	Fair		
Lighting Condition	Fair		
Public Address Speaker	Good		
Master Clock System	Fair		
Media System for Schools LAN	Good		

Building Emergency System			
Size	33 kW	Fuel	Propane
Generator / UPS Serves	Emergency lights, building automation, life/safety, elevators, etc.	Tank Location	Rear of main school building – next to chillers
Testing Frequency	Every 6 months	Tank Type	Above ground storage tank
Generator / UPS Condition	Poor		

Anticipated Lifecycle Replacements:

- Interior light fixtures
- Emergency generator
- Main Electrical (Switchgear / wiring)(Main School house bldg.)
- Electrical wiring
- Public Address System
- Master Clock System
- Media System

Actions/Comments:

- The onsite electrical systems up to the meters are owned and maintained by the respective utility company.
- The electrical service and capacity appear to be adequate for the property's demands.
- Per the Assistant Superintendent for Operations, Mr. Horan, the emergency generator is antiquated and does not provide sufficient power for today's power load requirements. Therefore, EMG recommends that the existing emergency generator be upgraded to ensure that it is capable of providing sufficient power as required. Funds for this have been included in the replacement table. This should be replaced during this evaluation period.
- The transfer switch is in poor condition and should be replaced during this evaluation period.

7.5. BUILDING ELEVATORS AND CONVEYING SYSTEMS

Building Elevators			
Manufacturer	Dover	Machinery Location	Ground floor or basement adjacent to shaft
Safety Stops	Electronic	Emergency Equipment	Yes
Cab Floor Finish	Carpet	Cab Wall Finish	Painted metal wall panels
Hydraulic Elevators	1 car at 2,100 lb		
Overhead Traction Elevators	None		
Freight Elevators	None		
Machinery Condition	Fair		
Controls Condition	Fair		
Cab Finish Condition	Fair		
Other Conveyances	None		
Other Conveyance Condition	NA		

Anticipated Lifecycle Replacements:

- Elevator controls
- Hydraulic machinery

Actions/Comments:

- The elevators appear to provide adequate service. The elevators are serviced by National Elevator Inspection Services on a routine basis. The elevator machinery and controls were installed in 1989. The elevators will require continued periodic maintenance.
- The elevators are inspected on an annual basis, and per the on-site contact, a certificate of inspection is on file in the Stafford County School management office. Per the on-site contact, the inspection was conducted in March 2017 and as of the writing of this report, no comments had been received. Per the on-site contact, he was not informed of any issues.

- The emergency communication equipment in the elevator cabs appears to be functional. Equipment testing is not within the scope of the work.

7.6. FIRE PROTECTION AND SECURITY SYSTEMS

Item	Description					
Type	Wet pipe					
Fire Alarm System	Central Alarm Panel	☒	Battery-Operated Smoke Detectors	☐	Alarm Horns	☒
	Annunciator Panels	☒	Hard-Wired Smoke Detectors	☒	Strobe Light Alarms	☒
	Pull Stations	☒	Emergency Battery-Pack Lighting	☐	Illuminated EXIT Signs	☒
Alarm System Condition	Good					
Sprinkler System	None	☐	Standpipes	☒	Backflow Preventer	☒
	Hose Cabinets	☐	Fire Pumps	☐	Siamese Connections	☐
Suppression Condition	Fair					
Central Alarm Panel System	Location of Alarm Panel		Installation Date of Alarm Panel			
	Main Conference room		08/31/2013			
Fire Extinguishers	Last Service Date		Servicing Current?			
	July 2016		Yes			
Hydrant Location	Site drive aisle					
Siamese Location	N/A					
Special Systems	Kitchen Suppression System	☒	Computer Room Suppression System	☐		

Anticipated Lifecycle Replacements:

- Fire Alarm Panel
- Exit lights
- Sprinkler System

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended. Future lifecycle replacements of the components listed above will be required.
- The fire sprinklers appear to be maintaining integrity and functioning adequately. The last fire sprinkler certification inspection occurred in April 2017. Per the on-site contact, there were no significant issues that he was made aware of.
- The fire extinguishers have been inspected within the last year. Per the on-site contact, the fire extinguishers are inspected in-house monthly and an annual inspection is conducted every summer by an outside contractor (July 2016).
- Per the on-site contact, the computer room does not have a dry sprinkler system but a special fire extinguisher is maintained in that room due to the special circumstances.

8. INTERIOR SPACES

8.1. INTERIOR FINISHES

The facility is used as a school for the Stafford County Public Schools.

The most significant interior spaces include classrooms, offices, laboratories, a gymnasium, an auditorium. Supporting areas include hallways, stairs, administrative offices, restrooms, mechanical rooms and utility closets areas.

The following table generally describes the locations and typical conditions of the interior finishes within the facility:

Typical Floor Finishes		
Floor Finish	Locations	General Condition
Vinyl tile	Closets, bathrooms, classrooms, Nurse Station, Cafeteria, Kitchen office, Auditorium, Labs, Day Center office, main entry, stairwells/stairs	Fair
Carpet	Offices, Library, computer room, media center storage room	Fair
Hardwood	Gym	Fair
Quarry tile	Kitchen, girls/boys locker shower room	Fair
Ceramic tile	Bathroom, Janitor closet	Fair
Typical Wall Finishes		
Wall Finish	Locations	General Condition
Painted CMU	Throughout (Lobby, offices, classrooms, restrooms, etc.)	Fair
Gypsum Board/Plaster/Metal	Throughout (lobby, offices, classrooms)	Good
Ceramic Tile	Hallways, kitchen, bathrooms	Good
Typical Ceiling Finishes		
Ceiling Finish	Locations	General Condition
Suspended T-Bar (acoustic tile)	Throughout (Lobby, offices, classrooms, restrooms)	Fair
Painted drywall	Shop Office, Girls/ Boys Locker room showers rooms	Fair
Exposed structure	Gym	Fair
Lockers and Bleachers		
Description	Locations	General Condition
Bleachers	Gymnasium	Fair
Lockers	Gymnasium	Good

Interior Doors		
Item	Type	Condition
Interior Doors	Hollow core / Solid core wood	Fair
Door Framing	Metal	Fair
Fire Doors	Yes	Fair

Anticipated Lifecycle Replacements:

- Carpet
- Vinyl tile
- Ceramic tile
- Interior paint
- Suspended acoustic ceiling tile
- Interior doors
- Cabinetry w/counters
- Concrete floor refinishing
- Wood floor
- Bleachers
- Lockers
- Doors – metal and wood

Actions/Comments:

- The interior areas are replaced as necessary with the main entrance area being upgraded (specifically with a new security system) within the past 10 years. It appears, however, that the main interior finishes have not been renovated within the past 10 years.
- On-going periodic maintenance is highly recommended, and future lifecycle replacements of the components listed above will be required.
- There is a damaged ceiling in the boys' locker room. The cost to replace the ceiling is relatively insignificant and the work can be performed as part of the routine maintenance program.
- The ceiling tiles have isolated areas of damaged tiles throughout the site. The damaged ceiling tiles need to be replaced. The cost to replace the damaged finishes is relatively insignificant and the work can be performed as part of the routine maintenance program.
- The vinyl tiles have isolated areas of damaged tiles throughout the site. The damaged tiles need to be replaced. The cost to replace the damaged finishes is relatively insignificant and the work can be performed as part of the routine maintenance program.

8.2. COMMERCIAL KITCHEN & LAUNDRY EQUIPMENT

The cafeteria area has a variety of commercial kitchen appliances, fixtures, and equipment. The equipment is owned and maintained in-house.

The cafeteria kitchen includes the following major appliances, fixtures, and equipment:

COMMERCIAL KITCHEN		
APPLIANCE	COMMENT AND CONDITION	
Refrigerators	Walk-in, upright, chest	Fair
Freezers	Walk-in, upright, chest	Fair
Ranges	NA	--
Ovens	Electric	Fair
Griddles / Grills	NA	--

COMMERCIAL KITCHEN		
APPLIANCE	COMMENT AND CONDITION	
Fryers	NA	--
Hood	Exhaust ducted to exterior	Fair
Dishwasher	Owned	Fair
Microwave	☐	--
Ice Machines	☒	Fair
Steam Tables	☒	Fair
Work Tables	☒	Fair
Shelving	☒	Fair

Anticipated Lifecycle Replacements:

- Commercial kitchen equipment (Refrigerator / Freezer, Convection Oven, Freezer, Icemaker)

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended.

9. OTHER STRUCTURES

Two storage buildings are located adjacent to the VoTech building and to the rear of the athletic field. The buildings are pre-manufactured wood structures set on a concrete slab. The exterior finish is vinyl siding.

Anticipated Lifecycle Replacements:

- No components of significance

Actions/Comments:

- No significant actions are identified at the present time. On-going periodic maintenance is highly recommended.

10. CERTIFICATION

Stafford County Public School retained EMG to perform this Facility Condition Assessment in connection with its continued operation of Edward E. Drew Jr. Middle School, 501 Cambridge Street, Falmouth, Virginia 22405, the "Property". It is our understanding that the primary interest of Stafford County Public School is to locate and evaluate materials and building system defects that might significantly affect the value of the property and to determine if the present Property has conditions that will have a significant impact on its continued operations.

The conclusions and recommendations presented in this report are based on the brief review of the plans and records made available to our Project Manager during the site visit, interviews of available property management personnel and maintenance contractors familiar with the Property, appropriate inquiry of municipal authorities, our Project Manager's walk-through observations during the site visit, and our experience with similar properties.

No testing, exploratory probing, dismantling or operating of equipment or in depth studies were performed unless specifically required under Section 2 of this report. This assessment did not include engineering calculations to determine the adequacy of the Property's original design or existing systems. Although walk-through observations were performed, not all areas were observed (See Section 4.2 for areas observed). There may be defects in the Property, which were in areas not observed or readily accessible, may not have been visible, or were not disclosed by management personnel when questioned. The report describes property conditions at the time that the observations and research were conducted.

This report has been prepared on behalf of and exclusively for the use of Stafford County Public School for the purpose stated within Section 2 of this report. The report, or any excerpt thereof, shall not be used by any party other than Stafford County Public School or for any other purpose than that specifically stated in our agreement or within Section 2 of this report without the express written consent of EMG.

Any reuse or distribution of this report without such consent shall be at Stafford County Public School and the recipient's sole risk, without liability to EMG.

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11. APPENDICES

APPENDIX A: PHOTOGRAPHIC RECORD

APPENDIX B: SITE PLAN

APPENDIX C: SUPPORTING DOCUMENTATION

APPENDIX D: EMG ACCESSIBILITY CHECKLIST

APPENDIX E: PRE-SURVEY QUESTIONNAIRE

APPENDIX A:
PHOTOGRAPHIC RECORD

PHOTO #1:	FRONT ENTRANCE

PHOTO #2:	ADA, ELEVATOR/LIFT, CAB POSITION INDICATORS, LOBBY (PER STOP/FLOOR)

PHOTO #3:	ADA, RESTROOM, PAPER TOWEL DISPENSER

PHOTO #4:	ADA, ELEVATOR/LIFT, CALL BUTTONS, CAB

PHOTO #5:	ADA, MISCELLANEOUS, LEVEL III STUDY, INCLUDES MEASUREMENTS

PHOTO #6:	ADA, MISCELLANEOUS, RAMP/STAIRS, HANDRAILS

PHOTO #7:	ADA, MISCELLANEOUS, LEVEL III STUDY, INCLUDES MEASUREMENTS

PHOTO #8:	PEDESTRIAN PAVEMENT, SIDEWALK, CONCRETE

PHOTO #9:	PARKING LOTS, ASPHALT PAVEMENT

PHOTO #10:	PARKING LOTS, ASPHALT PAVEMENT

PHOTO #11:	RETAINING WALL, BRICK/STONE (PER SF FACE)

PHOTO #12:	LANDSCAPING, MATURE TREE

PHOTO #13:	FENCES & GATES, CHAIN LINK, 4' HIGH

PHOTO #14:	ROOF, SINGLE-PLY EPDM MEMBRANE

PHOTO #15:	ROOF, BUILT-UP

PHOTO #16:	EXTERIOR WALL, JOINT CAULKING TO 1/2" (DIFFICULT)

PHOTO #17:	EXTERIOR WALL, BRICK OR BRICK VENEER, 1-2 STORIES

PHOTO #18:	EXTERIOR WALL, BRICK OR BRICK VENEER, 1-2 STORIES

PHOTO #19:	EXTERIOR DOOR, STEEL

PHOTO #20:	STOREFRONT, METAL-FRAMED 3' X 7' SWINGING DOOR ONLY

PHOTO #21:	WINDOW, ALUMINUM DOUBLE-GLAZED 24 SF, 1-2 STORIES

PHOTO #22:	DOMESTIC BOILER, GAS, 801 TO 1,400 MBH

PHOTO #23:	EXHAUST FAN, ROOF MOUNTED, 5,001 TO 8,500 CFM

PHOTO #24:	CHILLER, AIR-COOLED, 201 TO 300 TON

PHOTO #25:	AIR HANDLER, INTERIOR, 200 TO 400 CFM

PHOTO #26:	CONDENSING UNIT/HEAT PUMP, SPLIT SYSTEM, 5 TON

PHOTO #27:	CONDENSING UNIT/HEAT PUMP, SPLIT SYSTEM, 5 TON

PHOTO #28:	AIR HANDLER, INTERIOR, 2,501 TO 4,000 CFM

PHOTO #29:	DOMESTIC BOILER, GAS, 501 TO 800 MBH

PHOTO #30:	CHILLER, AIR-COOLED, 201 TO 300 TON

PHOTO #31:	PACKAGE UNIT, 26 TO 50 TON

PHOTO #32:	DOMESTIC BOILER, GAS, 501 TO 800 MBH

PHOTO #33:	CIRCULATION PUMP, HEATING WATER, 3 HP

PHOTO #34:	WATER HEATER, CONDENSING STYLE, HIGH EFFICIENCY, 30 TO 52 GAL

PHOTO #35:	ELECTRICAL SYSTEM, SCHOOL

PHOTO #36:	WALKWAY LUMINAIRE, 70 TO 250 W HID (FIXTURE ONLY)

PHOTO #37:	EXIT LIGHTING FIXTURE, LED

PHOTO #38:	ELEVATOR, HYDRAULIC, 1500 TO 2500 LB, 2 FLOORS

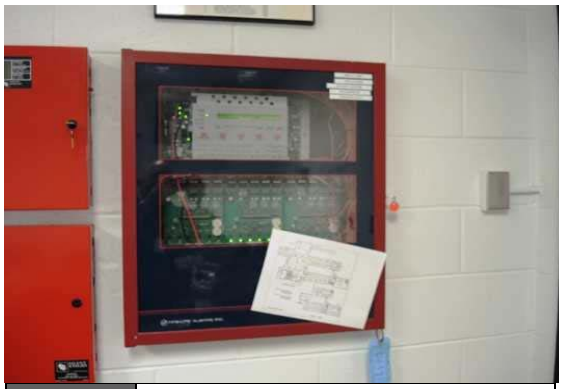

PHOTO #39:	FIRE ALARM CONTROL PANEL, ADDRESSABLE

PHOTO #40:	INTERIOR FLOOR FINISH, VINYL TILE (VCT)

PHOTO #41:	INTERIOR FLOOR FINISH, CONCRETE

PHOTO #42:	INTERIOR FLOOR FINISH, WOOD STRIP

PHOTO #43:	KITCHEN CABINET, BASE AND WALL SECTION, WOOD

PHOTO #44:	INTERIOR DOOR, WOOD SOLID-CORE

PHOTO #45:	INTERIOR FLOOR FINISH, CARPET STANDARD-COMMERCIAL MEDIUM-TRAFFIC

PHOTO #46:	COMMERCIAL KITCHEN, FOOD SERVICE EQUIPMENT (ALLOWANCE)

APPENDIX B:
SITE PLAN

Site Plan

emg	**Project Name:** Edward E. Drew Jr. Middle School	**Project Number:** 125578.17R000-005.170
	Source: Google maps	**On-Site Date:** 4/19/2017

APPENDIX C:
SUPPORTING DOCUMENTATION

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APPENDIX D:
EMG ACCESSIBILITY CHECKLIST

EMG Abbreviated Accessibility Checklist					
	Building History	**Yes**	**No**	**N/A**	**Comments**
1	Has the management previously completed an ADA review?	✓			EMG 2008
2	Have any ADA improvements been made to the property?	✓			
3	Does a Barrier Removal Plan exist for the property?		✓		
4	Has the Barrier Removal Plan been reviewed/approved by an arms-length third party such as an engineering firm, architectural firm, building department, other agencies, etc.?			✓	
5	Has building ownership or management received any ADA related complaints that have not been resolved?		✓		
6	Is any litigation pending related to ADA issues?		✓		
	Parking	**Yes**	**No**	**N/A**	**Comments**
1	Are there sufficient parking spaces with respect to the total number of reported spaces?	✓			
2	Are there sufficient van-accessible parking spaces available (96" wide/ 96" aisle for van)?	✓			
3	Are accessible spaces marked with the International Symbol of Accessibility? Are there signs reading "Van Accessible" at van spaces?	✓			
4	Is there at least one accessible route provided within the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones, if provided, and public streets and sidewalks?	✓			
5	Do curbs on the accessible route have depressed, ramped curb cuts at drives, paths, and drop-offs?	✓			
6	Does signage exist directing you to accessible parking and an accessible building entrance?	✓			
	Ramps	**Yes**	**No**	**N/A**	**Comments**
1	If there is a ramp from parking to an accessible building entrance, does it meet slope requirements? (1:12)			✓	
2	Are ramps longer than 6 ft complete with railings on both sides?			✓	
3	Is the width between railings at least 36 inches?			✓	

8 ADA BAYS (1 VAN ACCESSIBL)

4	Is there a level landing for every 30 ft horizontal length of ramp, at the top and at the bottom of ramps and switchbacks?			✓	
	Entrances/Exits	**Yes**	**No**	**N/A**	**Comments**
1	Is the main accessible entrance doorway at least 32 inches wide?	✓			
2	If the main entrance is inaccessible, are there alternate accessible entrances?			✓	
3	Can the alternate accessible entrance be used independently?		✓		
4	Is the door hardware easy to operate (lever/push type hardware, no twisting required, and not higher than 48 inches above the floor)?	✓			
5	Are main entry doors other than revolving door available?	✓			
6	If there are two main doors in series, is the minimum space between the doors 48 inches plus the width of any door swinging into the space?	✓			
	Paths of Travel	**Yes**	**No**	**N/A**	**Comments**
1	Is the main path of travel free of obstruction and wide enough for a wheelchair (at least 36 inches wide)?	✓			non ADA water fountains protrude into space
2	Does a visual scan of the main path reveal any obstacles (phones, fountains, etc.) that protrude more than 4 inches into walkways or corridors?	✓	EFT ✓		↓ ↓
3	Are floor surfaces firm, stable, and slip resistant (carpets wheelchair friendly)?	✓			
4	Is at least one wheelchair-accessible public telephone available?			✓	
5	Are wheelchair-accessible facilities (toilet rooms, exits, etc.) identified with signage?	✓			
6	Is there a path of travel that does not require the use of stairs?	✓			elevator
7	If audible fire alarms are present, are visual alarms (strobe light alarms) also installed in all common areas?	✓			
	Elevators	**Yes**	**No**	**N/A**	**Comments**
1	Do the call buttons have visual signals to indicate when a call is registered and answered?	✓			
2	Is the "UP" button above the "DOWN" button?	✓			
3	Are there visual and audible signals inside cars indicating floor change?	✓			Audible: unknown
4	Are there standard raised and Braille marking on both jambs of each host way entrance?	✓			

5	Do elevator doors have a reopening device that will stop and reopen a car door if an object or a person obstructs the door?	✓			
6	Do elevator lobbies have visual and audible indicators of car arrival?	✓			no audible
7	Does the elevator interior provide sufficient wheelchair turning area (51" x 68")?	✓			
8	Are elevator controls low enough to be reached from a wheelchair (48 inches front approach/54 inches side approach)?	✓			
9	Are elevator control buttons designated by Braille and by raised standard alphabet characters (mounted to the left of the button)?	✓			
10	If a two-way emergency communication system is provided within the elevator cab, is it usable without voice communication?				phone; alarm button
	Restrooms	**Yes**	**No**	**N/A**	**Comments**
1	Are common area public restrooms located on an accessible route?	✓			
2	Are pull handles push/pull or lever type?			✓	no doors
3	Are there audible and visual fire alarm devices in the toilet rooms?	✓			
4	Are corridor access doors wheelchair-accessible (at least 32 inches wide)?	✓			
5	Are public restrooms large enough to accommodate a wheelchair turnaround (60" turning diameter)?	✓	✓		see note
6	In unisex toilet rooms, are there safety alarms with pull cords?			✓	
7	Are stall doors wheelchair accessible (at least 32" wide)?	✓	✓		womens faculty ~~no door~~ stall teacher room restroom both locker rooms
8	Are grab bars provided in toilet stalls?	✓	✓		nurse station room needs another grab bar
9	Are sinks provided with clearance for a wheelchair to roll under (29" clearance)?	✓	✓		nurse station restroom not
10	Are sink handles operable with one hand without grasping, pinching or twisting?	✓			
11	Are exposed pipes under sink sufficiently insulated against contact?	✓			
12	Are soap dispensers, towel, etc. reachable (48" from floor for frontal approach, 54" for side approach)?	✓			
13	Is the base of the mirror no more than 40" from the floor?	✓			boys locker room mirror too high

non ADA bathrooms (no stalls) or room

womens faculty teacher room restroom

boys + girls locker rooms ↑ (ADA shower) too

kitchen restroom not operable

APPENDIX E:
PRE-SURVEY QUESTIONNAIRE

THE PRE-SURVEY QUESTIONNAIRE WAS NOT RETURNED TO EMG

On the day of the site visit, provide EMG's Field Observer access to all of the available documents listed below. Provide copies if possible.

INFORMATION REQUIRED	
1. All available construction documents (blueprints) for the original construction of the building or for any tenant improvement work or other recent construction work. 2. A site plan, preferably 8 1/2" X 11", which depicts the arrangement of buildings, roads, parking stalls, and other site features. 3. For commercial properties, provide a tenant list, which identifies the names of each tenant, vacant tenant units, the floor area of each tenant space, and the gross and net leasable area of the building(s). 4. For apartment properties, provide a summary of the apartment unit types and apartment unit type quantities, including the floor area of each apartment unit as measured in square feet. 5. For hotel or nursing home properties, provide a summary of the room types and room type quantities. 6. Copies of Certificates of Occupancy, building permits, fire or health department inspection reports, elevator inspection certificates, roof or HVAC warranties, or any other similar, relevant documents. 7. The names of the local utility companies, which serve the property, including the water, sewer, electric, gas, and phone companies.	8. The company name, phone number, and contact person of all outside vendors who serve the property, such as mechanical contractors, roof contractors, fire sprinkler or fire extinguisher testing contractors, and elevator contractors. 9. A summary of recent (over the last 5 years) capital improvement work which describes the scope of the work and the estimated cost of the improvements. Executed contracts or proposals for improvements. Historical costs for repairs, improvements, and replacements. 10. Records of system & material ages (roof, MEP, paving, finishes, and furnishings). 11. Any brochures or marketing information. 12. Appraisal, either current or previously prepared. 13. Current occupancy percentage and typical turnover rate records (for commercial and apartment properties). 14. Previous reports pertaining to the physical condition of property. 15. ADA survey and status of improvements implemented. 16. Current / pending litigation related to property condition.

Your timely compliance with this request is greatly appreciated.

ROM Development - Estimate Report

Stafford High School

Stafford County, Virginia

Submitted to:

Stafford County Public Schools

31 Stafford Avenue

Stafford, VA 22554

Owner:

Stafford County

September 24, 2018

CCS™

WE TAKE ON YOUR VALUES.

4800 Hampden Lane
Suite 200
Bethesda, MD 20814

301.718.7701
www.CCSdifference.com

CCS International, Inc. **Chicago, IL / Washington D.C / Houston, TX / United Kingdom**

Clarifications and Qualifications to ROM Estimate

Project: Stafford High School
Date: 9/24/2018

1 This ROM cost estimate is based on drawings Rebuild Stafford High School 2015, previous cost estimates, construction costs from the Rebuild SHS 2015, CCS own historical estimates and research. We have considered city indexes from RS Means Data 2018 and Davis-Bacon labor prices for the region.

2 This estimate includes two summaries, one considers the option (1) of the site in Westlake and the other corresponds to the option (2) "Potential Future Site"

3 We are using the General Services Administration (GSA) template for this ROM estimate

4 We recommend the use of a 5% for construction contingencies based on the analisys of previous change orders from the Rebuild Stafford High School construction data.

5 This estimate includes also a 10% for as project design contingency for unknown details in design. The level of the estimate is parametric, it was prepared with costs per square foot.

6 The estimate for site option 2 includes utilities (gas, water, sewer, electrical) from the Potential Site to Route 17.

7 The breakdown and/or assumptions of the cost estimate are attached in the Estimate Line Item section.

8 This estimate assumes three or more qualified Contractors competitively bidding on this project

9 This estimate assumes one contract awarded to one Contractor

10 After six months, this estimate should be updated for current market conditions

11 No escalation has been included

THIS ESTIMATE EXCLUDES:

12 Destructive testing, moving expenses, furnishings and equipment other than those shown in the body of the estimate.

10 Offsite road improvements.

13 Hazardous material removal and abatement, deep foundations.

14 Any premiums for work done in phases, out of sequence, out of hours

13 This cost estimate represents our opinion of probable construction cost for this project. We have exercised due professional diligence in the preparation of this estimate. Since we have no control over final material selection, bidding strategies and market conditions, no guarantee is given or implied with this estimate.

BUILDING COST SUMMARY

PROJECT TITLE: Stafford High School
LOCATION: Virginia
PROJECT TYPE: New Construction
PROGRAM TYPE:
PROJECT AREA: 300,000 SF
TOTAL PROJ. AREA: 300,000 SF
PREPARED BY: CCS International Inc.
REVIEWED BY: J.A/ R.T/ J.R.
REPRESENTING: A/E
SUBMITTAL: ROM

WBS CODE	UNIFORMAT SYSTEM ELEMENTS	DIRECT COST (DC)	DC+Markups	% TOTAL DIRECT COST	DIRECT COST/ SF
A	10 FOUNDATIONS	$ 1,134,000	$ 1,402,636	1.97%	$3.78
A	20 SUBGRADE ENCLOSURES	$ -	$ -	0.00%	$0.00
A	40 SLABS ON GRADE	$ 925,942	$ 1,145,290	1.61%	$3.09
A	60 WATER AND GAS MITIGATION	$ -	$ -	0.00%	$0.00
A	90 SUBSTRUCTURE RELATED ACTIVITIES	$ -	$ -	0.00%	$0.00
B	10 SUPERSTRUCTURE	$ 9,174,874	$ 11,348,335	15.96%	$30.58
B	20 EXTERIOR VERTICAL ENCLOSURES	$ 7,763,247	$ 9,602,305	13.50%	$25.88
B	30 EXTERIOR HORIZONTAL ENCLOSURES	$ 399,561	$ 494,214	0.69%	$1.33
C	10 INTERIOR CONSTRUCTION	$ 2,283,960	$ 2,825,014	3.97%	$7.61
C	20 INTERIOR FINISHES	$ 7,568,100	$ 9,360,928	13.16%	$25.23
D	10 CONVEYING	$ 165,000	$ 204,087	0.29%	$0.55
D	20 PLUMBING	$ 3,855,000	$ 4,768,222	6.70%	$12.85
D	30 HVAC	$ 11,250,000	$ 13,915,044	19.56%	$37.50
D	40 FIRE PROTECTION	$ 1,104,900	$ 1,366,643	1.92%	$3.68
D	50 ELECTRICAL	$ 6,465,000	$ 7,996,512	11.24%	$21.55
D	60 COMMUNICATIONS	$ 1,420,500	$ 1,757,006	2.47%	$4.74
D	70 ELECTRONIC SAFETY AND SECURITY	$ 1,005,000	$ 1,243,077	1.75%	$3.35
D	80 INTEGRATED AUTOMATION	$ 1,500,000	$ 1,855,339	2.61%	$5.00
E	10 EQUIPMENT	$ 1,487,500	$ 1,839,878	2.59%	$4.96
E	20 FURNISHINGS	$ -	$ -	0.00%	$0.00
F	10 SPECIAL CONSTRUCTION	$ -	$ -	0.00%	$0.00
F	20 FACILITY REMEDIATION	$ -	$ -	0.00%	$0.00
F	30 DEMOLITION	$ -	$ -	0.00%	$0.00
G	10 SITE PREPARATION	$ -	$ -	0.00%	$0.00
G	20 SITE IMPROVEMENTS	$ -	$ -	0.00%	$0.00
G	30 LIQUID AND GAS SITE UTILITIES	$ -	$ -	0.00%	$0.00
G	40 ELECTRICAL SITE IMPROVEMENTS	$ -	$ -	0.00%	$0.00
G	50 SITE COMMUNICATIONS	$ -	$ -	0.00%	$0.00
G	90 MISCELLANEOUS SITE CONSTRUCTION	$ -	$ -	0.00%	$0.00
Z	10 GENERAL REQUIREMENTS	$ -	$ -	0.00%	$0.00
Z	70 TAXES PERMITS INSURANCE AND BONDS	$ -	$ -	0.00%	$0.00
Z	90 FEES AND CONTINGENCIES	$ -	$ -	0.00%	$0.00
A	**Sub Total(s):**	**= A**	**$ 57,502,584**	**$ 71,124,532**	**100.00%**	**$191.68**
B	Project design contingency for unknown details in design:	10%	$ 5,750,258		$19.17
C	**Subtotal:**	**= A + B**	**$ 63,252,842**		**$210.84**
D1	General Cond. & Overhead:	**6%**	**$ 3,795,170.53**		**$12.65**
D2	Profit:	**4%**	**$ 2,681,921**		**$8.94**
D3	Bonds:	**2%**	**$ 1,394,599**		**$4.65**
E	Phasing Premium:		$ -		
F	**Subtotal:**	**= C +D1+D2+D3 + E**	**$ 71,124,532**		**$237.08**
G	Taxes:		(included)		
H	**Subtotal:**	**= F + G**	**$ 71,124,532**		**$237.08**
J	Escalation to Construction Mid-point:		$ -		
K	**Subtotal:**	**= H + J**	**$ 71,124,532**		**$237.08**
L	Construction Contingency:	0%	$ -		**$0.00**
M	**Total Construction Costs (CC):**	**= K + L**	**$ 71,124,532**		**$237.08**
Project Add-Ons					
N1	CxA	0.0%	$ -		
N2	Art in Architecture	0.0%	$ -		
N3	**Total Project Add-ons:**		$ -		$0.00
Estimated Cost of Construction at Award (ECCA)			**$ 71,124,532**		**237.08**
Project Soft Costs (PSC)					
W	Design Costs	0.0%	$ -		$0.00
X	Other Costs(Fees)	0.0%	$ -		$0.00
Y	**Total Project Soft Costs:**	**= W + X**	$ -		$0.00
Estimated Total Project Cost (ETPC)					
	ETPC:	**=M + N3 + Y**	**$ 71,124,532**		**$237.08**
				Escalation Rate Used:	**0.00%**

Estimate Date: 17-Aug-18 **Basis Date of Estimate:** 17-Aug-18 **Const. Mid-Point Date:**

WESTLAKE SITE (1) COST SUMMARY

PROJECT TITLE: Stafford High School
LOCATION: Virginia
PROJECT TYPE: New Construction
PROGRAM TYPE: 65 Acres
PROJECT AREA: 300,000 SF
TOTAL PROJ. AREA: 300,000 SF
PREPARED BY: CCS International Inc.
REVIEWED BY: J.A/ R.T/ J.R.
REPRESENTING: A/E
SUBMITTAL: ROM

WBS CODE	UNIFORMAT SYSTEM ELEMENTS	DIRECT COST (DC)	DC+Markups	% TOTAL DIRECT COST	DIRECT COST/ SF
A	10 FOUNDATIONS	$ -	$ -	0.00%	$0.00
A	20 SUBGRADE ENCLOSURES	$ -	$ -	0.00%	$0.00
A	40 SLABS ON GRADE	$ -	$ -	0.00%	$0.00
A	60 WATER AND GAS MITIGATION	$ -	$ -	0.00%	$0.00
A	90 SUBSTRUCTURE RELATED ACTIVITIES	$ -	$ -	0.00%	$0.00
B	10 SUPERSTRUCTURE	$ -	$ -	0.00%	$0.00
B	20 EXTERIOR VERTICAL ENCLOSURES	$ -	$ -	0.00%	$0.00
B	30 EXTERIOR HORIZONTAL ENCLOSURES	$ -	$ -	0.00%	$0.00
C	10 INTERIOR CONSTRUCTION	$ -	$ -	0.00%	$0.00
C	20 INTERIOR FINISHES	$ -	$ -	0.00%	$0.00
D	10 CONVEYING	$ -	$ -	0.00%	$0.00
D	20 PLUMBING	$ -	$ -	0.00%	$0.00
D	30 HVAC	$ -	$ -	0.00%	$0.00
D	40 FIRE PROTECTION	$ -	$ -	0.00%	$0.00
D	50 ELECTRICAL	$ -	$ -	0.00%	$0.00
D	60 COMMUNICATIONS	$ -	$ -	0.00%	$0.00
D	70 ELECTRONIC SAFETY AND SECURITY	$ -	$ -	0.00%	$0.00
D	80 INTEGRATED AUTOMATION	$ -	$ -	0.00%	$0.00
E	10 EQUIPMENT	$ -	$ -	0.00%	$0.00
E	20 FURNISHINGS	$ -	$ -	0.00%	$0.00
F	10 SPECIAL CONSTRUCTION	$ -	$ -	0.00%	$0.00
F	20 FACILITY REMEDIATION	$ -	$ -	0.00%	$0.00
F	30 DEMOLITION	$ -	$ -	0.00%	$0.00
G	10 SITE PREPARATION	$ 2,833,116	$ 3,504,261	23.07%	$9.44
G	20 SITE IMPROVEMENTS	$ 6,704,638	$ 8,292,918	54.59%	$22.35
G	30 LIQUID AND GAS SITE UTILITIES	$ 978,250	$ 1,209,990	7.96%	$3.26
G	40 ELECTRICAL SITE IMPROVEMENTS	$ 1,766,290	$ 2,184,711	14.38%	$5.89
G	50 SITE COMMUNICATIONS	$ -	$ -	0.00%	$0.00
G	90 MISCELLANEOUS SITE CONSTRUCTION	$ -	$ -	0.00%	$0.00
Z	10 GENERAL REQUIREMENTS	$ -	$ -	0.00%	$0.00
Z	70 TAXES PERMITS INSURANCE AND BONDS	$ -	$ -	0.00%	$0.00
Z	90 FEES AND CONTINGENCIES	$ -	$ -	0.00%	$0.00
A	**Sub Total(s):** **= A**	**$ 12,282,294**	**$ 15,191,880**	**100.00%**	**$40.94**
B	Project design contingency for unknown details in design: **10%**	$ 1,228,229			$4.09
C	**Subtotal:** **= A + B**	**$ 13,510,523**			**$45.04**
D1	General Cond. & Overhead: **6%**	**$ 810,631.37**			**$2.70**
D2	Profit: **4%**	**$ 572,846**			**$1.91**
D3	Bonds: **2%**	**$ 297,880**			**$0.99**
E	Phasing Premium:	$ -			
F	**Subtotal:** **= C +D1+D2+D3 + E**	**$ 15,191,880**			**$50.64**
G	Taxes:	(included)			
H	**Subtotal:** **= F + G**	**$ 15,191,880**			**$50.64**
J	Escalation to Construction Mid-point:	$ -			
K	**Subtotal:** **= H + J**	**$ 15,191,880**			**$50.64**
L	Construction Contingency: **0%**	$ -			**$0.00**
M	**Total Construction Costs (CC):** **= K + L**	**$ 15,191,880**			**$50.64**
Project Add-Ons					
N1	CxA 0.0%	$ -			
N2	Art in Architecture **0.0%**	$ -			
N3	**Total Project Add-ons:**	$ -			$0.00
Estimated Cost of Construction at Award (ECCA)		**$ 15,191,880**			**50.64**
Project Soft Costs (PSC)					
W	Design Costs **0.0%**	$ -			$0.00
X	Other Costs(Fees) **0.0%**	$ -			$0.00
Y	**Total Project Soft Costs:** **= W + X**	$ -			$0.00
Estimated Total Project Cost (ETPC)					
	ETPC: **=M + N3 + Y**	**$ 15,191,880**			**$50.64**
				Escalation Rate Used:	**0.00%**

Estimate Date: 17-Aug-18 **Basis Date of Estimate:** 17-Aug-18 **Const. Mid-Point Date:**

"POTENTIAL FUTURE SITE" (2) COST SUMMARY

PROJECT TITLE: Stafford High School
LOCATION: Virginia
PROJECT TYPE: New Construction
PROGRAM TYPE: 93 Acres
PROJECT AREA: 300,000 SF
TOTAL PROJ. AREA: 300,000 SF
PREPARED BY: CCS International Inc.
REVIEWED BY: J.A/ R.T/ J.R.
REPRESENTING: A/E
SUBMITTAL: ROM

WBS CODE	UNIFORMAT SYSTEM ELEMENTS	DIRECT COST (DC)	DC+Markups	% TOTAL DIRECT COST	DIRECT COST/ SF
A	10 FOUNDATIONS	$ -	$ -	0.00%	$0.00
A	20 SUBGRADE ENCLOSURES	$ -	$ -	0.00%	$0.00
A	40 SLABS ON GRADE	$ -	$ -	0.00%	$0.00
A	60 WATER AND GAS MITIGATION	$ -	$ -	0.00%	$0.00
A	90 SUBSTRUCTURE RELATED ACTIVITIES	$ -	$ -	0.00%	$0.00
B	10 SUPERSTRUCTURE	$ -	$ -	0.00%	$0.00
B	20 EXTERIOR VERTICAL ENCLOSURES	$ -	$ -	0.00%	$0.00
B	30 EXTERIOR HORIZONTAL ENCLOSURES	$ -	$ -	0.00%	$0.00
C	10 INTERIOR CONSTRUCTION	$ -	$ -	0.00%	$0.00
C	20 INTERIOR FINISHES	$ -	$ -	0.00%	$0.00
D	10 CONVEYING	$ -	$ -	0.00%	$0.00
D	20 PLUMBING	$ -	$ -	0.00%	$0.00
D	30 HVAC	$ -	$ -	0.00%	$0.00
D	40 FIRE PROTECTION	$ -	$ -	0.00%	$0.00
D	50 ELECTRICAL	$ -	$ -	0.00%	$0.00
D	60 COMMUNICATIONS	$ -	$ -	0.00%	$0.00
D	70 ELECTRONIC SAFETY AND SECURITY	$ -	$ -	0.00%	$0.00
D	80 INTEGRATED AUTOMATION	$ -	$ -	0.00%	$0.00
E	10 EQUIPMENT	$ -	$ -	0.00%	$0.00
E	20 FURNISHINGS	$ -	$ -	0.00%	$0.00
F	10 SPECIAL CONSTRUCTION	$ -	$ -	0.00%	$0.00
F	20 FACILITY REMEDIATION	$ -	$ -	0.00%	$0.00
F	30 DEMOLITION	$ -	$ -	0.00%	$0.00
G	10 SITE PREPARATION	$ 4,150,851	$ 5,134,158	23.97%	$13.84
G	20 SITE IMPROVEMENTS	$ 7,735,718	$ 9,568,254	44.66%	$25.79
G	30 LIQUID AND GAS SITE UTILITIES	$ 2,445,190	$ 3,024,438	14.12%	$8.15
G	40 ELECTRICAL SITE IMPROVEMENTS	$ 2,987,890	$ 3,695,700	17.25%	$9.96
G	50 SITE COMMUNICATIONS	$ -	$ -	0.00%	$0.00
G	90 MISCELLANEOUS SITE CONSTRUCTION	$ -	$ -	0.00%	$0.00
Z	10 GENERAL REQUIREMENTS	$ -	$ -	0.00%	$0.00
Z	70 TAXES PERMITS INSURANCE AND BONDS	$ -	$ -	0.00%	$0.00
Z	90 FEES AND CONTINGENCIES	$ -	$ -	0.00%	$0.00
A	**Sub Total(s):**	**= A**	**$ 17,319,650**	**$ 21,422,550**	**100.00%**	**$57.73**
B	Project design contingency for unknown details in design:	**10%**	$ 1,731,965		$5.77
C	**Subtotal:**	**= A + B**	**$ 19,051,615**		**$63.51**
D1	General Cond. & Overhead:	**6%**	**$ 1,143,096.87**		**$3.81**
D2	Profit:	**4%**	**$ 807,788**		**$2.69**
D3	Bonds:	**2%**	**$ 420,050**		**$1.40**
E	Phasing Premium:		$ -		
F	**Subtotal:**	**= C +D1+D2+D3 + E**	**$ 21,422,550**		**$71.41**
G	Taxes:		(included)		
H	**Subtotal:**	**= F + G**	**$ 21,422,550**		**$71.41**
J	Escalation to Construction Mid-point:		$ -		
K	**Subtotal:**	**= H + J**	**$ 21,422,550**		**$71.41**
L	Construction Contingency:	**0%**	$ -		**$0.00**
M	**Total Construction Costs (CC):**	**= K + L**	**$ 21,422,550**		**$71.41**
Project Add-Ons					
N1	CxA	0.0%	$ -		
N2	Art in Architecture	**0.0%**	$ -		
N3	**Total Project Add-ons:**		$ -		$0.00
Estimated Cost of Construction at Award (ECCA)			**$ 21,422,550**		**71.41**
Project Soft Costs (PSC)					
W	Design Costs	**0.0%**	$ -		$0.00
X	Other Costs(Fees)	**0.0%**	$ -		$0.00
Y	**Total Project Soft Costs:**	**= W + X**	$ -		$0.00
Estimated Total Project Cost (ETPC)					
	ETPC:	**=M + N3 + Y**	**$ 21,422,550**		**$71.41**
				Escalation Rate Used:	**0.00%**

Estimate Date: 17-Aug-18 **Basis Date of Estimate:** 17-Aug-18 **Const. Mid-Point Date:**

ESTIMATE LINE ITEMS

ID	Uniformat Number	Uniformat L1	Uniformat L2	Uniformat L3	Item Description		Qty	Unit	Unit Cost	Total Cost
					Base Building		300,000	SF		$ 57,502,584
B-001	A1010.S	A SUBSTRUCTURE	10 FOUNDATIONS	10 STANDARD FOUNDATIONS	Spread footings	Shell	300,000	SF	$ 3.78	$ 1,134,000
B-002	B4010.S	B SHELL	40 SLABS ON GRADE	10 FLOOR CONSTRUCTION	Slab On Grade	Shell	168,353	SF	$ 5.50	$ 925,942
B-003	B1010.S	B SHELL	10 SUPERSTRUCTURE	10 FLOOR CONSTRUCTION	Structural steel and floors	Shell	242,838	SF	$ 31.50	$ 7,649,402
B-004	B1020.S	B SHELL	10 SUPERSTRUCTURE	20 ROOF CONSTRUCTION	Structural Steel and roof deck	Shell	57,162	SF	$ 24.85	$ 1,420,471
B-005	B1030.S	B SHELL	10 SUPERSTRUCTURE	30 STAIR CONSTRUCTION	Stair construction	Shell	300,000	SF	$ 0.35	$ 105,000
B-006	B2010.R	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	10 EXTERIOR WALLS	Rigid insulation	Shell	137,250	SF	$ 0.98	$ 134,505
B-007	B2010.B	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	10 EXTERIOR WALLS	Brick Veneer	Shell	116,663	SF	$ 16.23	$ 1,893,432
B-008	B2010.C	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	10 EXTERIOR WALLS	CMU Walls	Shell	116,663	SF	$ 20.18	$ 2,354,249
B-009	B2020.A	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	20 EXTERIOR WINDOWS	Aluminum and glass storefront	Shell	20,588	SF	$ 58.35	$ 1,201,281
B-010	B2020.A	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	20 EXTERIOR WINDOWS	Aluminum curtain wall	Shell	18,000	SF	$ 96.21	$ 1,731,780
B-011	B2020.S	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	20 EXTERIOR WINDOWS	Solar Shades allowance	Shell	1	LS	$ 150,000.00	$ 150,000
B-012	B2030.E	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	30 EXTERIOR DOORS	Exterior doors	Shell	300,000	SF	$ 0.94	$ 282,000
B-013	B2070.L	B SHELL	20 EXTERIOR VERTICAL ENCLOSURES	70 EXTERIOR LOUVERS AND VENTS	Louvers and Vents allowance	Shell	1	LS	$ 16,000.00	$ 16,000
B-014	B3010.B	B SHELL	30 EXTERIOR HORIZONTAL ENCLOSURES	10 ROOFING	Built-up roofing	Shell	57,162	SF	$ 2.45	$ 140,046
B-015	B3010.R	B SHELL	30 EXTERIOR HORIZONTAL ENCLOSURES	10 ROOFING	Roofing accessories	Shell	57,162	SF	$ 4.54	$ 259,515
B-016	C10.I	C INTERIORS	10 INTERIOR CONSTRUCTION		Interior Partitions - CMU Walls	Shell	270,000	SF	$ 5.86	$ 1,583,010
B-017	C10.I	C INTERIORS	10 INTERIOR CONSTRUCTION		Interior Partitions - Gypsum Board	Shell	270,000	SF	$ 0.85	$ 228,150
B-018	C10.I	C INTERIORS	10 INTERIOR CONSTRUCTION		Interior Construction - Mech and Electr Spaces	Shell	30,000	SF	$ 5.86	$ 175,800
B-019	C10.A	C INTERIORS	10 INTERIOR CONSTRUCTION		Allowance for signage	Shell	270,000	SF	$ 1.10	$ 297,000
B-020	C20.I	C INTERIORS	20 INTERIOR FINISHES		Interior Finishes	Shell	270,000	SF	$ 12.00	$ 3,240,000
B-021		C INTERIORS	20 INTERIOR FINISHES		Interior Miscellaneous Specialties	Shell	270,000	SF	$ 11.63	$ 3,140,100
B-022		C INTERIORS	20 INTERIOR FINISHES		Interior Miscellaneous Built-in cabinetwork	Shell	270,000	SF	$ 4.40	$ 1,188,000
B-023		D CONVEYING	10 CONVEYING		Elevator - Hydraulic 3 stops	Shell	1	LS	$ 165,000.00	$ 165,000
B-024	D4010.W	D FIRE PROTECTION	40 FIRE PROTECTION	10.10 WATER-BASED FIRE SUPPRESSION	Wet Pipe Sprinkler System	Shell	300,000	SF	$ 3.50	$ 1,050,000
B-025	D4010.N	D FIRE PROTECTION	40 FIRE PROTECTION	10.10 WATER-BASED FIRE SUPPRESSION	New 750 gpm Electric Fire Pump/ Jockey Pump	Shell	1	EA	$ 39,900.00	$ 39,900
B-026	D4010.8	D FIRE PROTECTION	40 FIRE PROTECTION	10.10 WATER-BASED FIRE SUPPRESSION	8" BFP, OS&Y Valves/ FDC/ Test Header/ Flow Meter Assembly	Shell	1	LS	$ 15,000.00	$ 15,000
B-027	D3020.H	D Heating, Ventilation, and Air Conditioning (HVAC)	30 HVAC	20 HEATING SYSTEMS	Heating Generating System	Shell	300,000	SF	$ 1.10	$ 330,000
B-028	D3030.C	D Heating, Ventilation, and Air Conditioning (HVAC)	30 HVAC	30 COOLING SYSTEMS	Cooling Generating System	Shell	300,000	SF	$ 3.10	$ 930,000
B-029	D3050.W	D Heating, Ventilation, and Air Conditioning (HVAC)	30 HVAC	50 FACILITY HYDRONIC/AIR DISTRIBUTION	Water/Air Distribution	Shell	300,000	SF	$ 32.40	$ 9,720,000
B-030	D30CH.C	D Heating, Ventilation, and Air Conditioning (HVAC)	30 HVAC	CHECK, TEST START & START-UP	Check, Test & Start-up	Shell	300,000	SF	$ 0.40	$ 120,000
B-031	D30CO.C	D Heating, Ventilation, and Air Conditioning (HVAC)	30 HVAC	COMMISSIONING (ASSIST ONLY)	Commissioning (Assist only)	Shell	300,000	SF	$ 0.20	$ 60,000
B-032	D30TE.T	D Heating, Ventilation, and Air Conditioning (HVAC)	30 HVAC	TESTING & BALANCING	TAB	Shell	300,000	SF	$ 0.30	$ 90,000
B-033	D8010.D	D INTEGRATED AUTOMATION	80 INTEGRATED AUTOMATION	10 INTEGRATED AUTOMATION FACILITY CONTROL	DDC Controls	Shell	300,000	SF	$ 5.00	$ 1,500,000
B-034	D2010.B	D PLUMBING	20 PLUMBING	10.20 DOMESTIC WATER EQUIPMENT	Booster Pump/DWH/CRP etc.	Shell	300,000	SF	$ 0.60	$ 180,000
B-035	D2010.C	D PLUMBING	20 PLUMBING	10.40 DOMESTIC WATER PIPING (CW/HW/HWR)	CW/HW/HWR Piping	Shell	300,000	SF	$ 3.50	$ 1,050,000
B-036	D2010.W	D PLUMBING	20 PLUMBING	10.60 PLUMBING FIXTURES	WC/LAV/MB/SKs/EWC etc.	Shell	300,000	SF	$ 1.65	$ 495,000
B-037	D2020.S	D PLUMBING	20 PLUMBING	20 SANITARY DRAINAGE	Sanitary Waste/Vent Piping	Shell	300,000	SF	$ 3.75	$ 1,125,000
B-038	D2030.S	D PLUMBING	20 PLUMBING	30 FACILITY STORMWATER DRAINS	Storm Water Drainage Piping	Shell	300,000	SF	$ 2.50	$ 750,000
B-039	D20.N	D PLUMBING	20 PLUMBING		Nat. Gas Piping	Shell	300,000	SF	$ 0.75	$ 225,000
B-041	D20.C	D PLUMBING	20 PLUMBING		Compressed air piping	Shell	300,000	LS	$ 0.10	$ 30,000
B-043	D50BR.1	D SERVICES	50 ELECTRICAL	BRANCH WIRING SYSTEM	120V wiring to devices and furniture	Shell	300,000	SF	$ 1.00	$ 300,000
B-044	D50CA.I	D SERVICES	50 ELECTRICAL	CATHODIC PROTECTION	In The Ground Around The Bldg.	Shell	300,000	SF	$ 0.25	$ 75,000
B-045	D50CO	D SERVICES	50 ELECTRICAL	COMMISSIONING ASSIST		Shell	300,000	SF	$ 0.15	$ 45,000
B-046	D50EL.A	D SERVICES	50 ELECTRICAL	ELECTRICAL FEEDERS	All panel feeders	Shell	300,000	SF	$ 2.50	$ 750,000

ESTIMATE LINE ITEMS

ID	Uniformat Number	Uniformat L1	Uniformat L2	Uniformat L3	Item Description		Qty	Unit	Unit Cost	Total Cost
B-047	D50EL.M	D SERVICES	50 ELECTRICAL	ELECTRICAL SERVICE AND DISTRIBUTION	Main Gear , Distribution Panels	Shell	300,000	SF	$ 1.00	$ 300,000
B-048	D50EL.M	D SERVICES	50 ELECTRICAL	ELECTRICAL SERVICE AND DISTRIBUTION SUPPLEMENTARY COMPONENTS (MECHANICAL)	Mechanical Connect & Wiring	Shell	300,000	SF	$ 1.50	$ 450,000
B-049	D50EX.E	D SERVICES	50 ELECTRICAL	EXIT EMERGENCY LIGHTING	Exit Lights And Emergency Ballast	Shell	300,000	SF	$ 0.20	$ 60,000
B-050	D50FA	D SERVICES	50 ELECTRICAL	FACILITY GROUNDING		Shell	300,000	SF	$ 0.35	$ 105,000
B-051	D50FA	D SERVICES	50 ELECTRICAL	FACILITY POWER GENERATION SUPPLEMENTARY COMPONENTS		Shell	300,000	SF	$ 0.50	$ 150,000
B-052	D50GE.S	D SERVICES	50 ELECTRICAL	GENERAL PURPOSE ELECTRICAL POWER	Shades, special equipment etc.	Shell	300,000	SF	$ 0.20	$ 60,000
B-053	D50GE.E	D SERVICES	50 ELECTRICAL	GENERAL PURPOSE ELECTRICAL POWER	Emergency	Shell	300,000	SF	$ 0.85	$ 255,000
B-054	D50LI.D	D SERVICES	50 ELECTRICAL	LIGHTING CONTROL	Digital And Overall Light Switching	Shell	300,000	SF	$ 1.25	$ 375,000
B-055	D50LI.P	D SERVICES	50 ELECTRICAL	LIGHTING FIXTURES	Pendant, Lay-In & Downlights Led	Shell	300,000	SF	$ 8.00	$ 2,400,000
B-056	D50LI.S	D SERVICES	50 ELECTRICAL	LIGHTNING PROTECTION	Standard Lp At Roof With Downlead	Shell	300,000	SF	$ 0.50	$ 150,000
B-057	D50MI.U	D SERVICES	50 ELECTRICAL	MISCELLANEOUS ELECTRICAL SYSTEMS SUPPLEMENTARY COMPONENT(UPS & FP)	UPS F/I and FP Connect & Wired	Shell	300,000	SF	$ 0.25	$ 75,000
B-058	D50PA	D SERVICES	50 ELECTRICAL	PACKAGED GENERATOR ASSEMBLIES		Shell	300,000	SF	$ 1.15	$ 345,000
B-059	D50PO.t	D SERVICES	50 ELECTRICAL	POWER DISTRIBUTION	transformers and 208V panels	Shell	300,000	SF	$ 1.15	$ 345,000
B-060	D50TR	D SERVICES	50 ELECTRICAL	TRANSFER SWITCHES		Shell	300,000	SF	$ 0.15	$ 45,000
B-061	D50TR.S	D SERVICES	50 ELECTRICAL	TRANSIENT VOLTAGE SUPPRESSION	Surge Protection	Shell	300,000	SF	$ 0.10	$ 30,000
B-062	D50WI.g	D SERVICES	50 ELECTRICAL	WIRING DEVICES	general receptacles.	Shell	300,000	SF	$ 0.50	$ 150,000
B-063	D60DA.T	D SERVICES	60 COMMUNICATIONS	DATA COMMUNICATIONS	Telecom Outlets, Backbone Fiber	Shell	300,000	SF	$ 1.00	$ 300,000
B-064	D60DA.B	D SERVICES	60 COMMUNICATIONS	DATA COMMUNICATIONS	Backbone Fiber & Copper	Shell	300,000	SF	$ 0.45	$ 135,000
B-065	D60DA.D	D SERVICES	60 COMMUNICATIONS	DATA COMMUNICATIONS	Demarc Room	Shell	3,000	SF	$ 15.00	$ 45,000
B-066	D60DA.E	D SERVICES	60 COMMUNICATIONS	DATA COMMUNICATIONS	Equipment Room	Shell	3,000	SF	$ 18.00	$ 54,000
B-067	D60DA.T	D SERVICES	60 COMMUNICATIONS	DATA COMMUNICATIONS	Telecom Room	Shell	3,000	SF	$ 10.00	$ 30,000
B-068	D60DA.C	D SERVICES	60 COMMUNICATIONS	DATA COMMUNICATIONS	Cable Tray Mesh in Corridors 3230 LF	Shell	300,000	SF	$ 0.53	$ 159,000
B-069	D60DA.R	D SERVICES	60 COMMUNICATIONS	DATA COMMUNICATIONS NETWORK EQUIPMENT	Racks, Patch Panels, Grounding	Shell	300,000	SF	$ 1.50	$ 450,000
B-070	D60AU	D SERVICES	60 COMMUNICATIONS	AUDIO-VIDEO SYSTEMS		Shell	300,000	SF	$ 0.60	$ 180,000
B-071	D60DI.D	D SERVICES	60 COMMUNICATIONS	DISTRIBUTED COMMUNICATIONS AND MONITORING	Das Antenna System Upper	Shell	150,000	SF	$ 0.45	$ 67,500
B-072	D70AC.C	D SERVICES	70 ELECTRONIC SAFETY AND SECURITY	ACCESS CONTROL	Cr'S, Door Prep, Cabling & Control	Shell	300,000	SF	$ 0.50	$ 150,000
B-073	D70EL.C	D SERVICES	70 ELECTRONIC SAFETY AND SECURITY	ELECTRONIC SURVEILLANCE	Cctv Cameras, Monitoring & Cables	Shell	300,000	SF	$ 1.00	$ 300,000
B-074	D70FI.F	D SERVICES	70 ELECTRONIC SAFETY AND SECURITY	FIRE DETECTION AND ALARM	Fire Alarm, Mass Notif & Wiring	Shell	300,000	SF	$ 1.50	$ 450,000
B-075	D70IN.M	D SERVICES	70 ELECTRONIC SAFETY AND SECURITY	INTRUSION DETECTION	Motion Sensors, Glass Brk Etc.	Shell	300,000	SF	$ 0.35	$ 105,000
B-076	E10.F	E EQUIPMENT	10 EQUIPMENT		Food Service allowance	Shell	1	LS	$ 830,000.00	$ 830,000
B-077	E10.L	E EQUIPMENT	10 EQUIPMENT		Laundry Equipment allowance	Shell	1	LS	$ 62,500.00	$ 62,500
B-078	E10.L	E EQUIPMENT	10 EQUIPMENT		Library Stack Systems allowance	Shell	1	LS	$ 260,000.00	$ 260,000
B-079	E10.G	E EQUIPMENT	10 EQUIPMENT		Gymnasium allowance	Shell	1	LS	$ 335,000.00	$ 335,000

ESTIMATE LINE ITEMS

ID	Uniformat Number	Uniformat L1	Uniformat L2	Uniformat L3	Item Description		Qty	Unit	Unit Cost	Total Cost
					Site 1: West Lake	**1**	**65**	**Acre**		$ 12,282,294
S1-001	G10.S	G SITE PREPARATION	10 SITE PREPARATION		Site clearing-wooded area, pull stumps	Site 1	65	Acre	$ 7,466.00	$ 485,290
S1-002	G10.S	G SITE PREPARATION	10 SITE PREPARATION		Site earthwork	Site 1	367,033	CY	$ 4.98	$ 1,827,826
S1-003	G10.S	G SITE PREPARATION	10 SITE PREPARATION		Site grading	Site 1	65	Acre	$ 1,500.00	$ 97,500
S1-004	G10.E	G SITE PREPARATION	10 SITE PREPARATION		Erosion and sedimentation controls	Site 1	65	Acre	$ 6,500.00	$ 422,500
S1-005	G20.H	G SITE PREPARATION	20 SITE IMPROVEMENTS		Hardscape	Site 1	65	Acre	$25,000.00	$ 1,625,000
S1-006	G20.L	G SITE PREPARATION	20 SITE IMPROVEMENTS		Landscape	Site 1	65	Acre	$ 4,750.00	$ 308,750
S1-007	G20.M	G SITE PREPARATION	20 SITE IMPROVEMENTS		Miscellaneous site improvements	Site 1	65	Acre	$ 1,538.46	$ 100,000
S1-008	G20.F	G SITE PREPARATION	20 SITE IMPROVEMENTS		Football (turf) and track field	Site 1	135,000	SF	$ 17.56	$ 2,370,000
S1-009	G20.B	G SITE PREPARATION	20 SITE IMPROVEMENTS		Baseball field	Site 1	112,000	SF	$ 2.40	$ 268,800
S1-010	G20.S	G SITE PREPARATION	20 SITE IMPROVEMENTS		Softball field	Site 1	45,250	SF	$ 2.40	$ 108,600
S1-011	G20.P	G SITE PREPARATION	20 SITE IMPROVEMENTS		Practice fields (50K SF each)	Site 1	150,000	SF	$ 1.85	$ 277,500
S1-012	G20.T	G SITE PREPARATION	20 SITE IMPROVEMENTS		Tennis courts (six)	Site 1	40,000	SF	$ 6.20	$ 248,000
S1-013	G20.S	G SITE PREPARATION	20 SITE IMPROVEMENTS		Site irrigation	Site 1	399,425	SF	$ 3.50	$ 1,397,988
S1-014	G3010.D	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	10.10 SITE DOMESTIC WATER DISTRIBUTION	Domestic Water Line, Allowance	Site 1	65	Acre	$ 4,100.00	$ 266,500
S1-015	G3010.F	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	10.30 SITE FIRE PROTECTION WATER DISTRIBUTION	Fire Water Line, Allowance	Site 1	65	Acre	$ -	Included
S1-016	G3020.S	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	20.20 SANITARY SEWERAGE PIPING	Sanitary Sewer Line, Allowance	Site 1	65	Acre	$ 925.00	$ 60,125
S1-017	G3030.S	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	30.20 STORM DRAINAGE PIPING	Storm Sewer Line, Allowance	Site 1	65	Acre	$ 8,625.00	$ 560,625
S1-018	G30.N	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES		Nat. Gas Line, Allowance	Site 1	65	Acre	$ 1,400.00	$ 91,000
S1-019	G40.E	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS		Electrical allowance	Site 1	65	Acre	$ 4,500.00	$ 292,500
S1-020	G40SI.C	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SITE GROUNDING	Concrete Housepads & Grounds	Site 1	65	Acre	$ 1,850.00	$ 120,250
S1-021	G40SI.O	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SITE LIGHTING	Outside Lighting Allowance	Site 1	65	Acre	$ 9,000.00	$ 585,000
S1-022	G40SP.F	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SPORTS FIELD LIGHTING	Football Field Lighting and Wiring	Site 1	135,000	SF	$ 3.50	$ 472,500
S1-023	G40SP.B	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SPORTS FIELD LIGHTING	Baseball Field Lighting amd Wiring	Site 1	112,000	SF	$ 2.00	$ 224,000
S1-024	G40SP.T	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SPORTS FIELD LIGHTING	Tennis Court Lighting and Wiring	Site 1	40,000	SF	$ 1.80	$ 72,040
					Site 2: "Potential Future Site"	**2**	**93**	**Acre**		$ 16,353,430
S2-001	G10.S	G SITE PREPARATION	10 SITE PREPARATION		Site clearing - wooded area, pull stumps	Site 2	93	Acre	$ 7,466.00	$ 694,338
S2-002	G10.S	G SITE PREPARATION	10 SITE PREPARATION		Site earthwork	Site 2	525,140	CY	$ 4.98	$ 2,615,197
S2-003	G10.S	G SITE PREPARATION	10 SITE PREPARATION		Site grading	Site 2	93	Acre	$ 1,500.00	$ 139,500
S2-004	G10.E	G SITE PREPARATION	10 SITE PREPARATION		Erosion and sedimentation controls	Site 2	93	Acre	$ 6,500.00	$ 604,500
S2-005	G20.H	G SITE PREPARATION	20 SITE IMPROVEMENTS		Hardscape	Site 2	93	Acre	$ 25,000.00	$ 2,325,000
S2-006	G20.L	G SITE PREPARATION	20 SITE IMPROVEMENTS		Landscape	Site 2	93	Acre	$ 4,750.00	$ 441,750
S2-007	G20.M	G SITE PREPARATION	20 SITE IMPROVEMENTS		Miscellaneous site improvements	Site 2	93	Acre	$ 1,538.46	$ 143,077
S2-008	G20.F	G SITE PREPARATION	20 SITE IMPROVEMENTS		Football (turf) & track w/5000 bleach.	Site 2	135,000	SF	$ 17.56	$ 2,370,000
S2-009	G20.B	G SITE PREPARATION	20 SITE IMPROVEMENTS		Baseball field	Site 2	112,000	SF	$ 2.40	$ 268,800
S2-010	G20.S	G SITE PREPARATION	20 SITE IMPROVEMENTS		Softball field	Site 2	45,250	SF	$ 2.40	$ 108,600
S2-011	G20.P	G SITE PREPARATION	20 SITE IMPROVEMENTS		Practice fields (50K SF each)	Site 2	150,000	SF	$ 1.85	$ 277,500
S2-012	G20.T	G SITE PREPARATION	20 SITE IMPROVEMENTS		Tennis courts (six)	Site 2	40,000	SF	$ 6.20	$ 248,000
S2-013	G20.S	G SITE PREPARATION	20 SITE IMPROVEMENTS		Site irrigation	Site 2	399,425	SF	$ 3.50	$ 1,397,988
S2-014	G3010.D	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	10.10 SITE DOMESTIC WATER DISTRIBUTION	Domestic Water Line, Allowance	Site 2	93	Acre	$ 7,500.00	$ 697,500
S2-015	G3010.F	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	10.30 SITE FIRE PROTECTION WATER DISTRIBUTION	Fire Water Line, Allowance	Site 2	93	Acre	$ -	Included
S2-016	G3020.S	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	20.20 SANITARY SEWERAGE PIPING	Sanitary Sewer Line, Allowance	Site 2	93	Acre	$ 3,200.00	$ 297,600
S2-017	G3030.S	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	30.20 STORM DRAINAGE PIPING	Storm Sewer Line, Allowance	Site 2	93	Acre	$ 8,130.00	$ 756,090
S2-018	G30.N	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES		Nat. Gas Line, Allowance	Site 2	93	Acre	$ 4,600.00	$ 427,800
S2-019	G40.El	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS		Electrical allowance	Site 2	93	Acre	$ 8,200.00	$ 762,600
S2-020	G40SI.Co	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SITE GROUNDING	Concrete Housepads & Grounds	Site 2	93	Acre	$ 1,850.00	$ 172,050
S2-021	G40SI.Ou	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SITE LIGHTING	Outside Lighting Allowance	Site 2	93	Acre	$ 9,000.00	$ 837,000
S2-022	G40SP.Fo	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SPORTS FIELD LIGHTING	Football Field Lighting and Wiring	Site 2	135,000	SF	$ 3.50	$ 472,500
S2-023	G40SP.Ba	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SPORTS FIELD LIGHTING	Baseball Field Lighting amd Wiring	Site 2	112,000	SF	$ 2.00	$ 224,000
S2-024	G40SP.Te	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS	SPORTS FIELD LIGHTING	Tennis Court Lighting and Wiring	Site 2	40,000	SF	$ 1.80	$ 72,040

ESTIMATE LINE ITEMS

ID	Uniformat Number	Uniformat L1	Uniformat L2	Uniformat L3	Item Description		Qty	Unit	Unit Cost	Total Cost
					Site 2: "Potential Future Site": Access Road	**2**	**93**	**Acre**		$ 966,220
SA-001	G10Ac.R	G SITE PREPARATION	10 SITE PREPARATION	Access road from Holly Corner Rd	Rough Grading	Site 2	12,907	SY	$ 2.05	$ 26,459
SA-002	G10Ac.R	G SITE PREPARATION	10 SITE PREPARATION	Access road from Holly Corner Rd	Roadway and embankment cut & fill	Site 2	9,680	CY	$ 5.66	$ 54,789
SA-003	G10Ac.R	G SITE PREPARATION	10 SITE PREPARATION	Access road from Holly Corner Rd	Road grading sub-base, compaction	Site 2	6,453	CY	$ 2.49	$ 16,069
SA-004	G20Ac.R	G SITE PREPARATION	20 SITE IMPROVEMENTS	Access road from Holly Corner Rd	Roadways 4" pavement	Site 2	12,907	SF	$ 4.29	$ 55,370
SA-005	G20Ac.R	G SITE PREPARATION	20 SITE IMPROVEMENTS	Access road from Holly Corner Rd	Roadways concrete curb and gutters	Site 2	538	CY	$ 185.27	$ 99,634
SA-006	G3010.D	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	10.10 SITE DOMESTIC WATER DISTRIBUTION	Domestic Water Line, Allowance	Site 2	Included in Site 2			
SA-007	G3010.F	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	10.30 SITE FIRE PROTECTION WATER DISTRIBUTION	Fire Water Line, Allowance	Site 2	Included in Site 2			
SA-008	G3020.S	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	20.20 SANITARY SEWERAGE PIPING	Sanitary Sewer Line, Allowance	Site 2	Included in Site 2			
SA-009	G3030.S	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES	30.20 STORM DRAINAGE PIPING	Storm Sewer Line, Allowance	Site 2	2,420	FT	$ 110.00	$ 266,200
SA-010	G30.N	G SITEWORK	30 LIQUID AND GAS SITE UTILITIES		Nat. Gas Line, Allowance	Site 2	Included in Site 2			
SA-011	G40.EI	G SITEWORK	40 ELECTRICAL SITE IMPROVEMENTS		Electrical allowance	Site 2	2,420	FT	$ 185.00	$ 447,700

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Projected Student Enrollment - With Redistricted Elementary Schools

Stafford County Public Schools

2019 - 2028 School Years

School Name	Design Capacity	Projected Enrollment by School Year									
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Elementary											
Barrett ES	950	843	842	827	811	810	814	821	831	840	846
Brent ES	950	741	759	754	772	790	803	825	849	870	888
Burns ES	950	809	845	868	884	895	901	882	868	858	858
Conway ES	950	852	843	857	863	880	904	907	912	918	921
Falmouth ES	794	661	654	648	635	639	642	657	670	685	699
Ferry Farm ES	732	631	613	605	600	604	611	630	665	695	722
Garrisonville ES	768	585	572	574	572	569	572	576	583	587	590
Grafton Village ES	754	743	740	749	764	773	779	784	793	798	802
Hampton Oaks ES	950	856	858	847	838	846	848	850	855	859	862
Hartwood ES	649	537	558	593	619	653	690	711	740	768	795
Moncure ES	964	896	871	852	825	842	855	873	899	925	949
Park Ridge ES	843	774	790	822	840	844	854	856	860	862	861
Rockhill ES	843	672	670	671	678	694	702	712	725	734	740
Rocky Run ES	950	819	861	881	901	901	903	885	867	855	847
Stafford ES	794	717	742	751	761	769	772	764	756	751	747
Widewater ES	843	709	694	698	710	709	707	718	736	757	779
Winding Creek ES	925	790	856	883	906	949	986	991	996	1,004	1,014
Total	**14,609**	**12,634**	**12,766**	**12,879**	**12,980**	**13,168**	**13,343**	**13,443**	**13,606**	**13,765**	**13,920**
Middle											
Dixon-Smith MS	1,100	795	790	802	798	794	810	816	820	825	836
Drew MS	650	630	662	644	659	681	707	719	717	720	729
Gayle MS	1,100	976	981	978	974	991	1,005	1,043	1,071	1,102	1,108
Heim MS	1,100	1,049	1,083	1,087	1,086	1,092	1,113	1,125	1,132	1,133	1,144
Poole MS	1,100	866	891	893	900	917	942	948	956	961	965
Stafford MS	1,100	1,018	1,027	1,070	1,049	1,055	1,029	1,034	1,035	1,039	1,030
Thompson MS	1,100	1,004	960	924	946	977	1,000	1,042	1,079	1,103	1,101
Wright MS	920	914	897	863	831	844	862	876	876	876	881
Total	**8,170**	**7,252**	**7,291**	**7,262**	**7,243**	**7,353**	**7,467**	**7,602**	**7,686**	**7,756**	**7,795**
High											
Brooke Point HS	2,125	1,916	2,070	2,139	2,262	2,340	2,385	2,403	2,394	2,419	2,448
Colonial Forge HS	2,175	2,057	2,064	2,121	2,192	2,202	2,228	2,228	2,226	2,238	2,289
Mountain View HS	2,150	1,857	1,885	1,932	1,958	1,954	1,946	1,926	1,930	1,973	2,018
North Stafford HS	2,050	1,722	1,806	1,864	1,942	1,984	2,010	2,051	2,074	2,099	2,111
Stafford HS	2,150	1,969	2,080	2,167	2,199	2,266	2,294	2,315	2,361	2,395	2,425
Total	**10,650**	**9,521**	**9,905**	**10,223**	**10,555**	**10,747**	**10,864**	**10,924**	**10,986**	**11,124**	**11,292**
Division Total	**33,429**	**29,407**	**29,963**	**30,364**	**30,778**	**31,268**	**31,674**	**31,968**	**32,278**	**32,645**	**33,007**

Less than 90% | **90% - 99.9%** | **100% - 105%** | **Greater than 105%**

Notes:

- Elementary school projection data updated with School Board approved boundaries to take effect in the 2019-20 school year.

Stafford County Public Schools

Stafford County Public Schools

North Stafford High School Performing Arts Assessment

October 2017

Contents

I. Introduction

This North Stafford High School (NSHS) Performing Arts Assessment was conducted for Stafford County Public Schools (SCPS) by the architectural and engineering firm of Moseley Architects. The work was performed under the direction of the SCPS Department of Facility Planning, Design, and Construction.

II. Purpose

The purpose of this North Stafford High School Performing Arts Assessment is to assist in the long-range facility planning for SCPS. This study looks at the existing Music, Drama, and Auditorium spaces at North Stafford High School, and compares it to the most recently completed new High School in the County, Stafford High School (SHS). This comparison identifies deficiencies in the space available for these components of the educational program.

The purpose of this study was not to develop final solutions, but to identify deficiencies to guide future decision making. With this information available, SCPS will better be able to determine the scope of a major project for North Stafford High School to remedy these deficiencies.

III. Methodology

The study involved the review of existing documentation of the facility including building and site plans. A site visit was conducted on September 23, 2017 to assess the existing conditions. The design team met with North Stafford High School and Division staff to discuss the educational needs at NSHS.

IV. Analysis

Refer to the Attached Architectural Program Analysis for a detailed listing of spaces at each location.

Music Suite

Choral Room
The existing space is slightly smaller than the SCPS standard. It contains tiered flooring, which, while representative of the time it was built, is no longer considered a best practice. The flat floors in the SHS plans allow for more flexibility within the space, and do not create accessibility issues. Additionally, a significant portion of the floor space within the Choral Room is taken up by built-in instrument storage on the top tier along the back wall. This is due to the lack of support storage space. If additional storage spaces were provided, the current size of the Choral room at NSHS would meet the educational needs.

Band Room
Like the Choral space, the existing Band space is slightly smaller than the SCPS standard. It also contains tiered flooring, which, while representative of the time it was built, is no longer considered a best practice. The flat floors in the SHS plans allow for more flexibility within the space, and do not create accessibility issues. The tiered risers also create challenges for moving large percussion instruments in and out of the room for performances. The Staff at NSHS has solved this issue by creating homemade ramps. Although a bit small, the current size of the Band Room at NSHS would meet the educational needs if the support spaces were improved.

Orchestra Room
There is no Orchestra Room and associated support spaces at NSHS.

Band Instrument Storage
The Instrument Storage space is extremely undersized, and not configured in a way that maximizes the space available. There is one long room with entrances at either end, which is good strategy for circulation through the space. However, the space is extremely narrow and contains some electrical panels which are taking up valuable storage space. A second room off the larger storage room houses smaller instruments, but the dead-end circulation through that space is not efficient.

Music Practice Rooms
Two small practice rooms of conventional construction are located within the existing suite at NSHS. These are currently used for storage, so in effect, there are no practice spaces at NSHS. At SHS, there are 7 dedicated practice rooms, distributed throughout the Choral, Band and Orchestra suites. These are pre-manufactured rooms that create a higher quality practice space (https://www.wengercorp.com/sound-isolation/soundlok-sound-isolation-rooms.php).

Music Libraries and Choral and Band Storage
The Music Library and Storage for the Choral and Band spaces are currently shared between the programs, and are extremely undersized relative to the facilities at SHS. They are made up of several smaller rooms, inadequate for the storage of even one of the Choral, Band, or Orchestra programs. At SHS, there is a dedicated Music Library Space for both the Choral and Band areas.

Auditorium

House
Overall, the Auditorium and House areas at NSHS compare very favorably to the spaces at SHS, but the support spaces are not equivalent. The 750 seat Auditorium at NSHS is slightly smaller than the 795 seat Auditorium at SHS. While expanding the Auditorium at NSHS is not practicable given the space constraints, there are some deficiencies which could be addressed.

Control Room
At SHS, there is a dedicated Control Room for lighting and sound on a mezzanine level, accessed via the catwalk system and a dedicated handicapped lift. There is no dedicated room at NSHS for this purpose. As part of some recent modifications at NSHS, a sound and lighting desk was placed at the back-cross aisle of the auditorium house. This serves the needs for performances, but an enclosed space would be preferred for the security of the equipment. Adding a handicapped accessible elevated Control Room to the existing conditions would be a major undertaking. It would impact both the Auditorium space and the Cafeteria Space immediately adjacent to the auditorium. At a minimum, the existing desk should be modified so that the equipment can be secured. A Control Room could be added within the house space, at the same location as the existing desk. This would probably impact the last row of seats, potentially losing about 25 seats in the auditorium house. While not the ideal elevated configuration similar to SHS, adding this space would represent an improvement narrowing the gap between the two conditions.

Stage and Stage Storage
The overall Stage and Stage storage space between the two schools is very similar, just configured in different ways. The Stage at NSHS is significantly larger than SHS. However, most of NSHS storage for the stage is in the wings on the stage area. At SHS, the stage is smaller, but it has a larger enclosed storage area. The volumes of the stages are similar.

Band Shell Storage
There is no dedicated Band Shell Storage space at NSHS.

Scenery Construction
The Scenery Construction and Storage spaces between the two buildings are very similar.

Piano Storage
At NSHS, there is no dedicated piano storage space. Ideally, this would be a small room that has temperature and humidity controlled.

Dressing Rooms
At NSHS, there are two dressing / makeup rooms that enter directly onto the stage wings. This is not a preferred configuration due to the potential noise coming from those spaces into the performance area. At SHS, the spaces are larger, and are associated with the adjacent drama space. This allows the spaces to become a larger influence on the day to day instruction in the drama classes, as well as be used for performances.

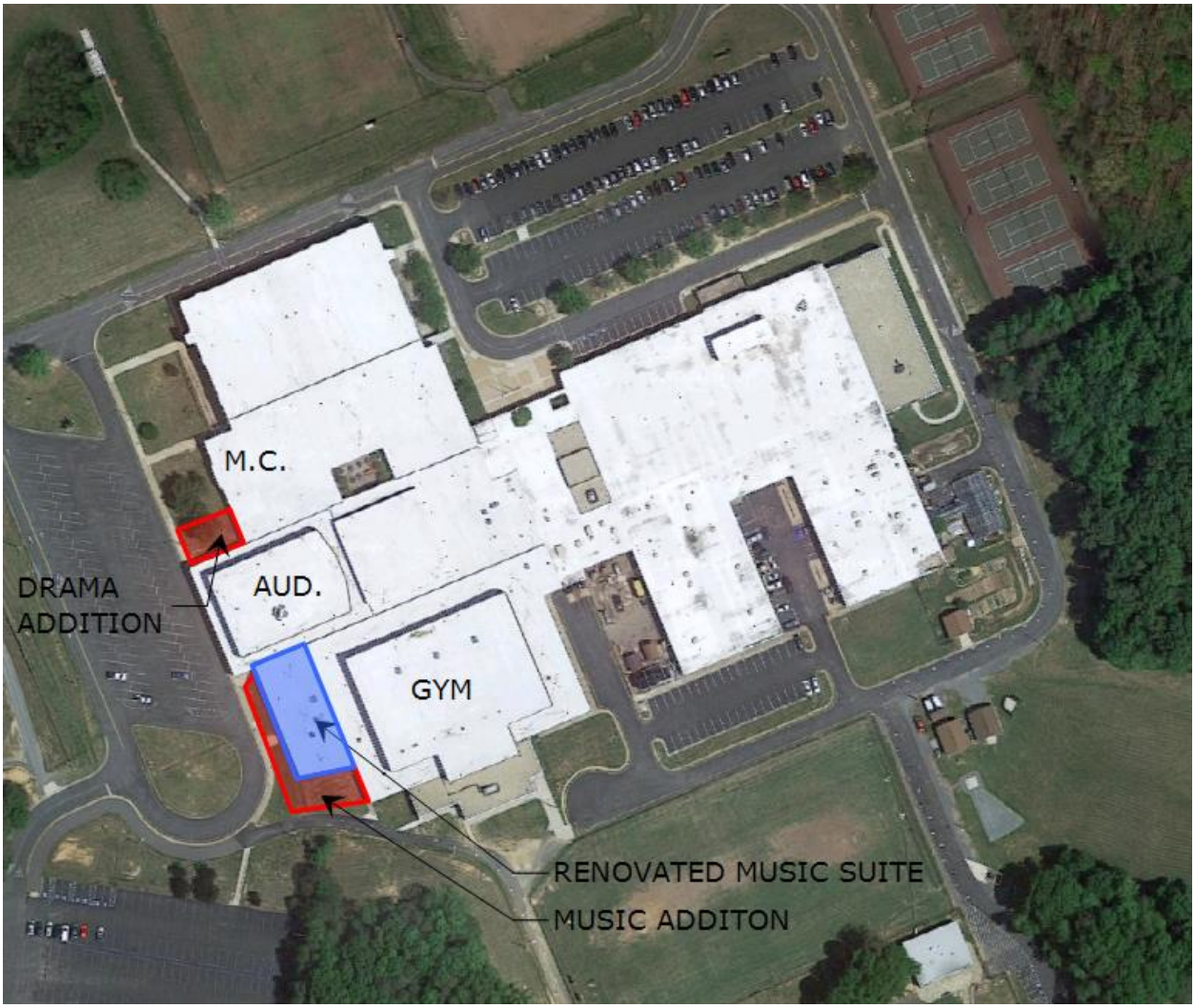
Drama Classroom

At SHS, there are two smaller classrooms, divided by an operable partition. This space is designed as a “black box” type performance space, with some basic performance lighting, a higher volume, and a small performance area. Per discussions with SCPS staff, there is a need for two full sections of Drama classrooms, and the two smaller spaces are not large enough to meet these needs. For a High School Drama Classroom, we would recommend a minimum of 900 SF per classroom if there is an operable partition between the two classrooms. If there is no operable partition, we would recommend a minimum of 1000 SF per classroom.

At NSHS, there is a small Drama Classroom that does not have any of the “Black Box” features or any dressing / make-up areas.

Conclusions

The Choral Room, Band Room, and Auditorium House and Stage at NSHS are similar in size to the spaces at SHS, but lack many of the adequately sized support spaces. Additionally, NSHS does not have a dedicated Orchestra Suite. The existing Drama room and music support spaces could be reconfigured to more adequately serve the needs of the Choral and Band Rooms. There is potential for an addition on the south end of the Band Room, and to the west between the building and the bus loop, to provide space for the Orchestra Suite and additional support spaces. An addition on the north side of the auditorium, between the Media Center support spaces and the bus loop, could be considered to provide Drama Classrooms comparable to SHS.



V. Architectural Program Analysis

MOSELEYARCHITECTS

October 3, 2017

North Stafford High School Performing Arts Assesment

MA Project No. 539203

Stafford County Public Schools

ARCHITECTURAL PROGRAM ANALYSIS

	Stafford Prototype			North Stafford High School		
	Spaces	Prototype Remarks	Spaces	S.F. Delta	NSHS Remarks
MUSIC					
Choral Room	1 @ 1,525		1 @ 1,285	240	Built-In Risers, Significant SF taken up by Instrument Storage
Choral Practice Rooms	1 @ 64	Wenger insert practice rooms	0 @ 0	64	
Choral Practice Rooms	1 @ 80	Wenger insert practice rooms	0 @ 0	80	
Choral Teacher Planning	1 @ 130		1 @ 203	-73	
Choral Riser Storage	1 @ 215		1 @ 74	141	Storage closet off risers
Choral Uniform Storage	1 @ 360		0 @ 0	360	
Choral Music Library	1 @ 100		0 @ 0	100	
Band Room	1 @ 2,000		1 @ 1,882	118	Built-in risers
Band Practice Rooms	2 @ 56	Wenger insert practice rooms	2 @ 65	-18	Shared between Choral and Band, currently used for
Band Practice Rooms	1 @ 80	Wenger insert practice rooms	0 @ 0	80	
Band Instrument Storage	1 @ 500		1 @ 352	148	Electrical panels impacting
Band Teacher Planning	1 @ 150		1 @ 155	-5	
Band Uniform and Flag Storage	1 @ 400		3 @ 116	52	Average SF across 3 rooms
Band Music Library	1 @ 120		0 @ 0	120	
Orchestra Room	1 @ 1,250		0 @ 0	1,250	
Orchestra Practice Rooms	1 @ 64	Wenger insert practice rooms	0 @ 0	64	
Orchestra Practice Rooms	1 @ 80	Wenger insert practice rooms	0 @ 0	80	
Orchestra Instrument Storage	1 @ 800		0 @ 0	800	
Orchestra Teacher Planning	1 @ 160		0 @ 0	160	
Subtotal	8,190		4,429		
AUDITORIUM					
House / Seating	1 @ 6,800	795 Fixed Seats, 7 Accessible Seats	1 @ 5,968	832	750 Seating
Stage	1 @ 2,640		1 @ 3,272	-632	Includes windg space currently used for storage
Stage Storage	1 @ 800	Includes 200 SF Mezzanine	1 @ 204	596	
Stage Band Shell Storage	1 @ 84	niche off of stage	0 @ 0	84	
Scenery Construction / Storage	1 @ 800		1 @ 838	-38	
Piano Storage	1 @ 50		0 @ 0	50	
Dressing / Make-Up Rooms	2 @ 150		2 @ 132	36	
Dressing Room Toilets	2 @ 50		2 @ 25	50	Small, non-ADA WC w/in
Control Room / Projection Room	1 @ 400	Accessible by Catwalk and dedicated lift	0 @ 0	400	Sound and lighting controls art back of house area
Drama / Theater Arts Classroom	2 @ 480	w/ Operable Parition	1 @ 676	284	
Drama / Theater Arts Classroom Stora	1 @ 16		0 @ 0	16	
Subtotal	12,950		11,272		

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Fleet Review

CST
Fleet Services

April 9, 2018

FLEET MANAGEMENT REVIEW

THE REPORT HEREIN IS A SUMMARY OF THE FLEET LEVEL RECOMMENDATIONS MADE BY CST AS A RESULT OF THE FLEET REVIEW. THIS FLEET LEVEL REPORT IS PROVIDED WITH ALL CST UPDATED AND CURRENT DETAILED MODELS AND FORECASTS.

Contents

SUMMARY

In October 2017, Stafford County Fleet Services issued a contract for CST Fleet Services to perform an assessment of the County fleet management operations.

The Stafford County Fleet Services is a joint county and school division operation hosted by Stafford County Public Schools and has the responsibility for procuring, maintaining and fueling 1110 vehicles. The report, herein, provides the results of the CST assessment and recommendations.

Note: When the fleet data was provided the vehicle count was 1110 vehicles. This study is based on the vehicles and data provided at the start of the study. Over the study the numbers will change slightly but will not affect the overall study and recommendations.

The shop and staff capabilities are matched with the needs for supporting the fleet and associated ancillary equipment, and all repairs by Stafford County Fleet Services are entered into a fleet management system(Faster). Budgets are prepared annually, and the fleet is in reliable condition to support their mission. All vehicle purchase information is maintained in Faster the system of record for Stafford County Fleet Services.

Not all departments use Fleet Services 100%. When repairs outside of Fleet Services occur the system of record (Faster) is not updated, therefore a true cost of vehicle ownership is not tracked. The current Fleet Services is too small and has inadequate parking to support the current fleet or growth in the future.

RECOMMENDATIONS

Current Fleet Management Model

CST is making the first set of recommendations as described in the table below based on the County's current mode of operations in which the County operates:

- A centralized mode of fleet capital planning is created by fleet. This plan is not always followed. Capital for fleet is based on yearly available capital not on planned replacement cycles.
- Uses the Fleet group as the primary maintenance provider with some services being performed outside of Fleet's control or knowledge (data is not recorded in the fleet management system, Faster)
- Fleet is the Fuel Manager, though some fuel information is not captured in Faster

The priority level (Priority 1- suggested to be implemented immediately, Priority - 2 should be implemented in the near future, and Priority - 3 should be investigated) for the recommendations is as follows:

Major Recommendations	Priority
1. Ensure Faster the system of record, is used for all county vehicles. Records include purchase, maintenance, fuel, utilization and disposal. Currently this is not being done.	1
2. Upgrade to Faster Web. This gives other shops as well as using departments system access.	1
3. Increase Fleet Services maintenance shop bay capacity to handle current fleet repairs. Current shop and bays are not sufficient for current fleet and the projected growth.	1
4. Increase parking spaces for the Fleet Services shop to support shop repairs for down line and ready line.	1
5. Create Total Cost of Fleet Ownership Model and revise for future budgets.	1

Other Recommendations	Priority
1. Upcharge fuel to cover fuel support, software and infrastructure. Note: Quarles charges for fuel so an upcharge based on gallons or price may/may not be possible. Some other fuel charge may have to be implemented.	2
2. Establish life cycles for vehicles and establish capital plan to keep vehicles within lifecycle with regular annual purchases	3
3. Require all departments to have PMs scheduled by Fleet and their completion recorded in the system of record (proposing to use Faster Web).	3
4. Perform a right sizing study to evaluate vehicle utilization, vehicle need and vehicle assignments. 208 vehicles traveled less than 1,000 miles in FY17	3

BACKGROUND

CST HISTORY

CST Fleet Services of Winston Salem, N.C., was formed in 2000 and specializes in the assessment of government fleet operations and vehicle asset fleets located in cities, counties and states across North America. The goal of CST is to analyze vehicles fleet operations and vehicle asset fleets to establish, recommend / implement operational efficiencies as well as costs savings initiatives.

Much of the CST work is founded upon key elements which over time have been proven to achieve valuable results:

- Assessing the fleet operations relative to accepted and established industry best practices.
- Assessing the vehicle fleet asset utilization, procurement and life cycles relative to CST proprietary analytical modeling and forecasting tools.
- Assessing fleet departmental chargeback methodologies, processes and calculations.

The CST resultant recommendations and work in the above areas are recognized industry wide. The studies and implementations of recommendations assist fleet operations in functioning with minimal costs and maximum vehicle asset availability.

The primary mission of CST through the study herein is to assist the County of Stafford in achieving the goals of minimal vehicle costs and maximum vehicle availability without compromising the mission of the fleet in its service to the citizens of Stafford County.

METHODS FOR PAYING FOR FLEET CAPITAL AND OPERATIONS

First, there are multiple ways that local governments across the country use to pay for the purchase and operations of their fleets of vehicles. In fact, one major provider of fleet management systems stated that if you viewed the purchasing and chargeback methods for 80 cities, you would find 80 different methods being used. With that said, there are really four basic methods that cities use to provide these services. These are: Capital Replacement and Planned Maintenance included in Lease, Fleet Operations Budget with No Chargebacks, Fleet Bills Departments for Maintenance for Work Performed and Monthly Administration fee per Unit Maintenance billed separately. All four are viable methods if implemented correctly. The County currently uses Method 3 (Departments Purchase Vehicles and Fleet Bills Departments for Maintenance for Work Performed) and CST sees no real reason for the County to move to a different method. The four basic methods are discussed below.

METHOD 1: CAPITAL REPLACEMENT AND PLANNED MAINTENANCE INCLUDED IN LEASE

The first method for providing services is that the customer departments provide the funds for the initial purchase of a piece of equipment and the fleet department charges a lease rate that builds in both the capital replacement costs of the vehicle as well as the planned maintenance costs. The advantage to this method is that the life cycles for the fleet can be maintained allowing the fleet department to hold maintenance costs down by ensuring that the age of the fleet stays consistent.

Option Description

- Internal Lease Rates just covers replacement fund and overhead related to vehicle specification and procurement, all scheduled maintenance
  - Lease Rate = ((Price of Vehicle + % Inflation)$^{\text{Life Cycle}}$ / Life Cycle) + Fully Burdened Scheduled Maintenance
- Fleet Management Charges by Incident for Repairs due to Abuse or Accidents
  - Work Order by Work Order Billing
  - Labor Rate is Fully Burdened including technician and administrative salaries and benefits.
  - Parts and Commercial charges are marked up

Benefits

- Built in replacement fund
- Fleet controls assets and provides vehicles as a service to departments
- Full maintenance lease allows using departments to accurately budget for all fleet charges except those caused by accident and abuse
- Fleet departments overhead and administration costs are spread over the full cost of ownership of the asset

Risks

- Fleet department must calculate adjusted rates each year
- Customers do not understand paying similar amounts for vehicles in different stages of life cycle
- End of year adjustments are common to balance fleet budgets
- Departments may not want to give up control of the purchasing power for their fleet
- Replacement fund must be maintained such that money is available to purchase vehicles at the end of their life cycle

METHOD 2: FLEET OPERATIONS BUDGET WITH NO CHARGEBACKS (NOT A RECOMMENDED OPTION)

Multiple organizations do not perform any type of chargebacks for fleet maintenance. The Fleet organization works within an annual budget and departments are not charged for maintenance at all. This leads to less overheard required for managing the time-consuming process of planning and implementing chargebacks; however, CST has found the risks to include overall higher

maintenance required due to departments not feeling the impact of driver neglect and abuse of the vehicles.

Option Description

- Fleet performs maintenance at no charge and is provided a general operations budget.
- Fleet may charge for repairs on a case by case basis for abuse, but this is rare in this method.

Benefits

- Reduced administration due to no management of chargeback process.
- Fleet maintenance fluctuations do not affect department budgets making budgeting process easier.
- Maintenance is encouraged because the department is not charged for the service.

Risks

- Departments do not have "skin in the game" in maintaining condition of fleet.
- Overall maintenance is typically higher due to increased driver abuse and neglect.
- Lack of routine maintenance and PM's has no consequences for the Using department.

Notes

- To "encourage" departments to bring vehicles in for PM services under this method, many fleets cut off fuel access for vehicles that have not been brought for service within x number of days of the scheduled PM date. The most common is for fleets to cut off fuel after 30 days.
- Unless a penalty can be charged for abuse and neglect, CST does not recommend this approach. This issue is a primary reason many organizations have moved away from this method.

METHOD 3: DEPARTMENTS PURCHASE VEHICLES AND FLEET BILLS DEPARTMENTS FOR MAINTENANCE FOR WORK PERFORMED

In this business method, the separate departments do all planning and purchasing of vehicles with the fleet department billing customers at a work order level based on actual work perform. Costs are burdened and overhead is applied. Typically, fleet bills the departments once a month for all work performed for the previous month. Both the budgeting for services and tracking versus this budget is the responsibility of the departments. This can lead to problems with vehicles not being brought in for preventative maintenance when budgets get tight.

Option Description

- Customer departments are responsible for the budgeting and purchasing of their fleet assets.
- Fleet Management Provides Maintenance as a Service (includes Preventative and Repairs)

  - Work Order by Work Order Billing
  - Labor Rate is Fully Burdened including All Relative Overhead
  - Parts Markup includes all Parts Administrative Costs
  - Commercial charges include markup.
- Targeted and non-target maintenance may have separate bills but same rates and methods used for both

Benefits

- Departments only pay for services provided.
- Fleet recovers costs for all work performed.
- Easier to compare fleet services to commercial equivalents.

Risks

- Departments tend not to use best practices in life-cycle management for their fleet which leads to:
  - Fleet creep (too many vehicles)
  - Over-age vehicle fleet (more downtime and higher maintenance cost)
  - Binge purchasing of vehicles (difficult to maintain consistent fleet costs)
- As budgets get tight, departments tend not to bring vehicles in for routine or preventative maintenance.
- Budget for fleet replacement is in the hands of customer departments.
- The burdened labor rate and parts/commercial charge markups are to be recalculated each year.
- Discrepancies in monthly bills are common causing additional administration costs to handle.
- Typically, departments that do not bring in vehicles in a timely manner end up spending more on their fleet in either increased maintenance over time or due the life of the vehicle being shortened due to neglect.

Notes

- Non-target repairs, in this method, include those caused by neglect and abuse.

Method 4 – Monthly Administration Fee per Unit, Maintenance Billed Separately

Regardless of the chargeback method used for billing maintenance, one billing method separates the Administration / Overhead fees into a separate fee than those for maintenance or fuel. In this method, each piece of rolling stock carries a standard fee that includes overhead for items such as fleet management system costs, administrative services, general fleet management, and at least part of the department overhead. Maintenance charges will only account for overhead and administration costs directly associated with the fleet maintenance or fuel management operations.

Option Description

- Separate per unit administrative fee.
- Maintenance can be charged on a monthly planned program or on a work order basis.

Benefits

- Customer sees the cost of fleet administration, regardless of maintenance costs.
- Maintenance charges can be easily compared and should be competitive with outside vendors.
- There can be some flexibility on burdened labor rate. The labor rate can be unburdened and any overhead for the shop or labor can be as a flat rate % against the work order costs.
- Departments have a better understanding of the cost of fleet department services.

Risks

- Fleet department must remain competitive with commercial vendors.

Stafford County currently uses Method 3 (Departments Purchase Vehicles and Fleet Bills Departments for Maintenance for Work Performed) and there is no reason to change from this method at the current time.

METHOD FOR CALCULATING MANPOWER AND BAY REQUIREMENTS

As part of the study, CST calculated the number of technicians and bays that are required to efficiently service the fleet. The basis of these calculations as shown later in report is described below.

Multiple organizations such as the North American Fleet Association (NAFA) and the American Public Works Association (APWA) have developed and published "industry standards" for calculating mechanic staffing requirements. For this report, CST used NAFA's standard series of metrics and formulas based on Maintenance Repair Units (MRU) and Vehicle Equivalencies (VE) to calculate basic manpower requirements. In addition, the staffing requirements determines to the number of bays that are required to support the fleet in an efficient manor.

The calculations of these metrics are standard; however, they must be tempered against the specific maintenance history, operating conditions and profile of a specific fleet to have true value. These measurements are not an exact science. You do not enter the formula and get the magic answer. To use these measurements successfully, a fleet manager should take the results of the MRU factors and combine this with his fleet management knowledge, the age of the fleet, the condition of the fleet, the knowledge of his staff and budget available to make decisions for the fleet.

Maintenance Repair Units

Maintenance Repair Units are a collection of industry factors that allow an organization to calculate metrics between classes of vehicles, including the number of mechanics needed and repair bays needed to support the fleet. Maintenance Repair Units can be used to calculate the effort expended per mechanic to support a class of vehicles in a fleet or the entire fleet.

Applying Maintenance Repair Factors to a specific fleet's operation is not an exact science and there are many variables involved that would either reduce or increase the amount of maintenance hours required for a class of vehicle over the course of the year. The classes of vehicles are identified both by type of vehicle and operational usage with vehicles placed in Vehicle Class Codes.

A **Vehicle Equivalency (VE)** represents a relative repair factor that will allow for a comparative metrics between different Vehicle Class Codes. The standard VE upon which the rest are based is the general assigned passenger sedan, having a VE of 1.0. All other types of vehicles and equipment are given a VE based on the relative level of effort to maintain them in comparison to a sedan. For instance, a law enforcement patrol vehicle is generally given a VE of 2.5, indicating this type of vehicle required 2.5 times the level of effort to maintain than does a sedan. A trailer might be given a VE of .25, while a fire truck, on the other end of the spectrum, a 10.0.

Once VEs have been established, **Vehicle Equivalency Units (VEU)** for all vehicles in a vehicle class can be calculated based on the relative level of effort required to maintain different types of vehicles.

Number of Bays Required

The number of bays required for vehicle maintenance shop to support the staff in efficiently servicing the fleet are based on the types of equipment being serviced (Light Duty or Heavy Duty) and the number of technicians working on each class of equipment. The industry standard metrics is that 1.5 bays are required per light duty technician and 2 pays per heavy duty technician. These equivalents are based on a concept of a "shift bay" meaning that a bay that is used for 1 shift counts as 1 bay and a bay that is used for 2 shifts counts as two "shift bays". This is important when sizing a shop as a smaller facility is required if it is being used for multiple shifts.

The basic equation of Number of Bays is: Bays Needed = (Light Duty Technicians * 1.5) + (Heavy Duty Technicians * 2)

SCOPE OF THE PROJECT

Task 1 – Evaluate and recommend shop facility and shop staffing needed to support fleet

- CST will perform a complete review of the current fleet and support structure including
  - Current facility
  - Numbers and types of vehicles and equipment maintained and their current prescribed life-cycles
  - Preventative maintenance and repair programs provided for all vehicles and equipment
  - Current staffing at facility
- CST shall evaluate the above areas with benchmarking against industry standards.
- CST will to compare the Stafford County facility to comparable operations. Stafford County will assist in creating the list. This desired list will include locations that Stafford County is already using for comparisons in other areas.
- CST will identify facility needs to support the fleet for the future, the future will consist of the facility needed to support the fleet for the next 20 years (from now thru 2037)
- Out of this review, CST is expected to provide a detailed narrative regarding the facility needed to support the fleet and the staffing needed to support the fleet.

Task 2 – Review fleet operations and recommend changes based on industry best practices

- CST will perform a complete review of current fleet operations and support including
  - Customer relations
  - Fleet maintenance systems and data management
  - Asset management, Procurement, replacement and disposal program, including the current long-range replacement program
  - Repair program
  - Outside repair management
  - Parts Management
  - Fuel Management
  - Work order processes and work flow
  - Internal billing processes and work flow
  - Green fleet initiatives
  - Safety
  - Comparison of all areas against industry best practices
- Out of this review, CST is expected to provide a detailed narrative regarding

existing operations and identify areas which should be improved or reviewed more in depth following the study.

Task 3 – Create Study Report and PowerPoint

- CST shall prepare a draft report and business plan for review by County staff.
- Working together, CST and County staff shall review the findings of the report and make adjustments to the report as needed.
- CST shall Identify and short- and long-term recommendations based upon the outcomes of Tasks 1 and 2
- CST shall prepare a final report and PowerPoint for the County. Both will be provided electronically as well as (1) hard original.

Task 4 – Present Report (and PowerPoint) to County staff

- CST shall present to the County staff a final version of the report.

EVALUATION OF SHOP FACILITY AND SHOP STAFFING NEEDED

VEHICLE SUPPORTED BY FLEET

Stafford County vehicles are supported by the shop in 3 ways.

- Some vehicles are fully supported by the shop. In these cases, the shop performs fleet management and manages the vehicle from purchase maintains all repairs until disposal. All records for the vehicle are maintained in the shop system of record (Faster).
- Some vehicles are partially supported by the shop. In this case, the shop is just a maintenance provider. Repairs outside of the shop are not documented in Faster and unknown to the shop.
- A few vehicles are not supported at all by the shop. The shop never sees these vehicles.

For the 1110 vehicles supported the following is the breakout:

Shop Support			
Full Support (Fleet Management)	Partial (Maintenance Service Provider)	None	Total
519	576	15	1110

Departments where vehicles are fully supported by Fleet

Department	Description	Number of vehicles
CAC	COUNTY ANIMAL CONTROL	9
CED	COUNTY ECONOMIC DEVELOPMENT	1
CPM	COUNTY PROPERTY MANAGEMENT	22
CPR	COUNTY PARKS & RECREATION	70
CPW	COUNTY PUBLIC WORKS	29
CPZ	COUNTY PLANNING & ZONING	7
CSS	SOCIAL SERVICES	8
CSU	COUNTY COURT SERVICES	2
SDE	SCHOOL DRIVER'S ED	12

SFS	Fleet Services	9
SSB	SCHOOL TRANSPORTATION-BUSES	264
SSH	SCHOOL HEADSTART	6
SSM	SCHOOL MAINTENANCE	57
SSN	NUTRITION	2
SSP	SCHOOL PLANNING & CONSTRUCTION	4
SSS	SCHOOL SECURITY	7
SST	SCHOOL TRANSPORTATION - OTHER	8
STI	SCHOOL INSTRUCTIONAL TECHNOLOGY	1

Departments where vehicles are partially supported by Fleet

Department	Description	Number of vehicles
CDU	COUNTY UTILITIES	138
CES	COUNTY EMERGENCY SERVICES	171
CLE	COUNTY LAW ENFORCEMENT	262
VF	VOCATIONAL FOUNDATION	5

Note: CES County Emergency Services has zero vehicles to the shop in last 2 months

Departments with vehicles that are not supported by Fleet

Department	Description	Number of vehicles
CLC	COUNTY LITTER CONTROL	6
CRB	COUNTY R-BOARD	1
CCR	COUNTY COMMISIONER OF REVENUE	8

NOTE: The shop estimates that they perform 80% of the repairs for Stafford county vehicles.

MECHANIC STAFFING

This was challenging to determine because approximately only 50% of the fleet is assigned to the shop and receive 100% of their maintenance. The other 50% treat the shop as a maintenance service provider taking their vehicles to the shop when they want to. This could be for 100% of

the work or 0% of the work on the vehicle. The work outside of the shop is not recorded in Faster or made available to the shop. CST used current data combined with CST knowledge of industry standards to formulate the following projections of mechanics needed.

For Stafford, we assigned the VEU for each class of vehicle as listed below. To determine the vehicle equivalency for all vehicles in a vehicle class this can be calculated based on the relative level of effort required to maintain different types of vehicles: Total VEU = # of Units in Class * VE for the Class.

Description	Equip Category	Vehicles	VEU per Vehicle	Total VEU
Truck, GVW 6,000 lb and less. (Class 1)	Light	160	1	160
Truck, GVW 6,001 to 10,000 lb (Class 2)	Light	144	2	288
Truck, GVW 10,001 to 14,000 lb (Class3)	Light	44	2	88
Truck, GVW 14,001 to 16,000 lb (Class 4)	Medium	33	4	132
Truck, GVW 16,001 to 19,500 lb (Class 5)	Medium	26	4	104
Truck, GVW 19,501 to 26,000 lb (Class 6)	Medium	33	6	198
Truck, GVW 26,001 to 33,000 lb (Class 7)	Heavy	237	8	1,896
Truck, GVW 33,001 and over (Class 8)	Heavy	50	8	400
Truck-Trailer Combination, GVW 79,501 to 99,500 lb	TT Combo	8	8	64
Off Highway, GVW 10,000 lb and less	Off Road	1	8	8
Not Applicable	Not Applicable	372	1	372
No Class Identified	unknown	2	1	2
		1110		3,712

The 1,110 active vehicles in the fleet total 3,712 VEUs. Therefore, Stafford is responsible for maintaining a fleet that is the equivalent of 3,712 sedans.

Next, we calculate the number of mechanics needed via MRU. **Maintenance Repair Factor (MRF)** is defined as the number of hours of direct labor or actual work on the vehicle that is required per year for one VE. The standard CST Fleet Services has used for county vehicles over the years is 10 hours of service per VE. However, this can vary greatly based on average

age of the units, utilization, operating environment, quality of work done, efficiency of work done, quality of parts purchased, etc.

Maintenance Repair Units (MRU) is the work in hours required for all vehicles within the same Class is a simple calculation of:

MRU = VEU * MRF. For an example fleet of 100 electric utility trucks with a VEU of 10 the calculation would be:

MRU = 1,000 * 13 = 13,000 hours of direct labor required to service the 100 utility vehicles per year.

For Stafford, we assigned the MRU for each class of vehicles as follows:

Description	Equip Category	Vehicles	Total VEU	MRU
Truck, GVW 6,000 lb and less. (Class 1)	Light	160	160	1,600
Truck, GVW 6,001 to 10,000 lb (Class 2)	Light	144	288	2,880
Truck, GVW 10,001 to 14,000 lb (Class3)	Light	44	88	880
Truck, GVW 14,001 to 16,000 lb (Class 4)	Medium	33	132	1,320
Truck, GVW 16,001 to 19,500 lb (Class 5)	Medium	26	104	1,040
Truck, GVW 19,501 to 26,000 lb (Class 6)	Medium	33	198	1,980
Truck, GVW 26,001 to 33,000 lb (Class 7)	Heavy	237	1,896	18,960
Truck, GVW 33,001 and over (Class 8)	Heavy	50	400	4,000
Truck-Trailer Combination, GVW 79,501 to 99,500 lb	TT Combo	8	64	640
Off Highway, GVW 10,000 lb and less	Off Road	1	8	80
Not Applicable	Not Applicable	372	372	3,720
No Class Identified	unknown	2	2	20
		1110	3,712	37,120

Manpower Calculations

Manpower calculations are based on the total MRUs required for the fleet divided by the total direct labor that a mechanic can perform over the course of the year. Since the MRU calculations have been defined above, we must next define the Annual Direct Labor that can be performed by each mechanic. Two primary factors determine this, the Total Work Hours per Year and the Direct Labor % per Mechanic per Year.

Total Work Hours per Year is typically defined as 2,080 hours based a 40-hour workweek over 52 weeks per year. Direct Labor per Mechanic per Year is defined as time spent performing work that can be attributed to a vehicle. The ratio between Total Work Hours per Year and Direct Hours per Year typically falls somewhere between 60% and 80% for fleet maintenance operations depending on a variety of factors including leave policies, training and meeting hours, break times, the efficiency of the operation, the quality of supervision, etc. Since there is no historic data available for in-house fleet operations at Stafford, we have assumed that in-house mechanics would produce 70% direct labor hours which equates to 1,456 hours per year.

Direct hours are the hours all the mechanics worked repairing vehicles. This excludes break time, lunch, vacation, holidays, training time, admin time, etc. With 2,080 hours available in year and using a direct labor percentage of 70% each mechanic would be able to work 1,456 hours on county vehicles. This level of productivity is the general rule of thumb used in the fleet industry as a representative average. Of course, many factors including use of leave time, required meetings, and assignment of non-mechanical duties can impact the level of productivity for any given individual. It is rare in our experience that a government fleet organization is able to exceed 70% production, while some organizations that do a poor job of managing time can fall well below this level. That said, in our consulting work we use 70% as a suggested benchmark for our government clients.

The mechanic staffing below calculations are based off of what is called VEU's Vehicle Units. CST also project needs for the next 20 years based on expected population growth.

	Number of vehicles	VEU	MRU	Number of Mechanics
2018 Current	1,110			19
2018 Recommendations using VEU	1,110	3,712	37,120	24

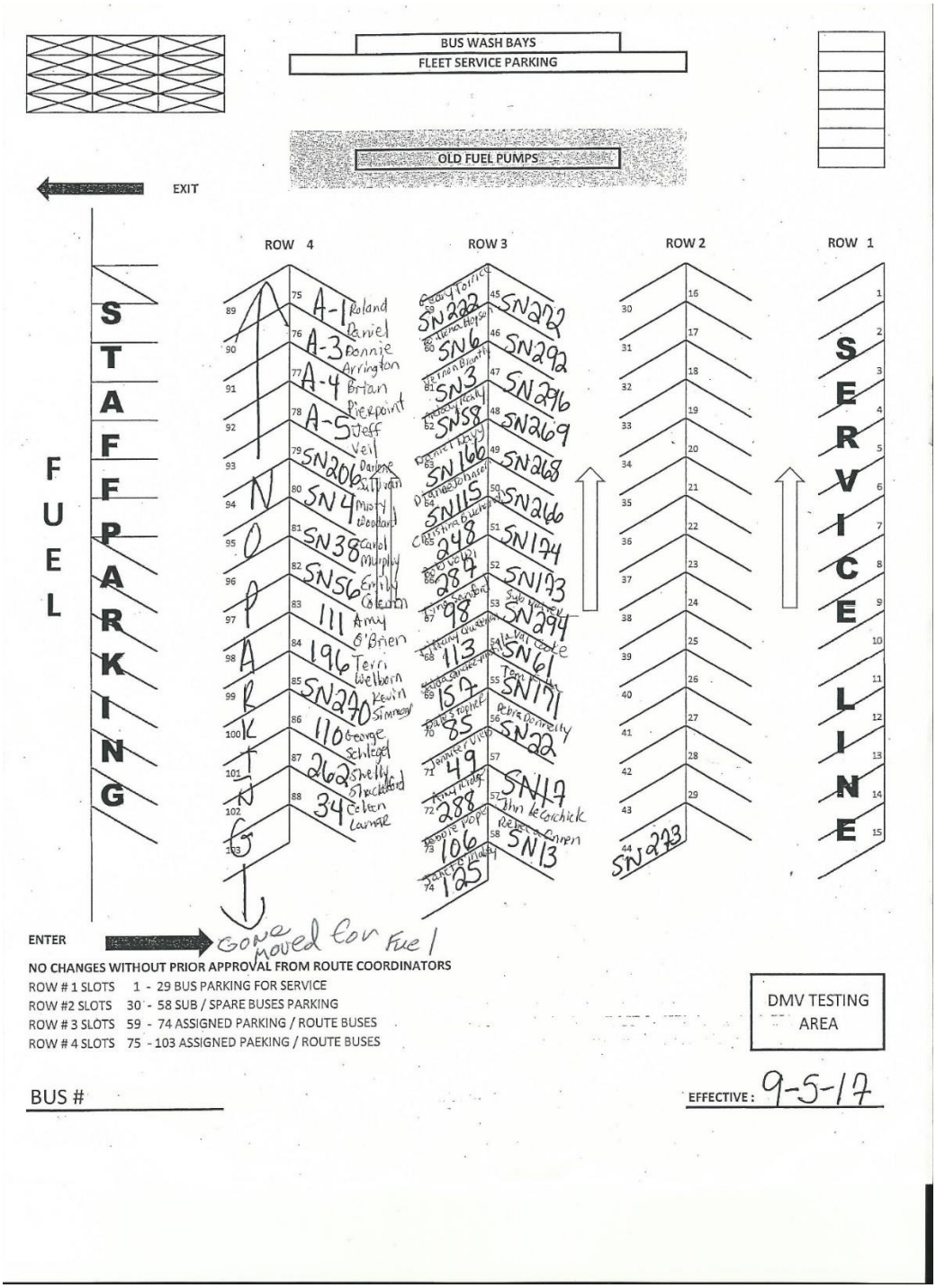
FACILITY

Using the VEU's Vehicle Equivalency Units. CST calculated the number of bays needed to support the current vehicles and projected the number of bays needed based on projected growth.

	Number of vehicles	VEU	MRU	Number of Bays
2018 Current	1,110			9
2018 Recommendations using VEU	1,110	3,712	37,120	12

PARKING

Currently the parking lot behind the shop has 103 parking spaces but only 15 are reserved for the service line (shop down and ready lines).



Projected parking needs, based on Fleet Size, are shown in the chart below. The current parking needs for the shop are well below the current space count but the need is projected to grow beyond capacity in the next few years.

	Number of vehicles	VEU	MRU	Shop Parking
2018 Current	1,110			15
2018 Recommendations using VEU	1,110	3,712	37,120	54

Parking is inadequate to support the shop repair flow. Currently 15 spaces are available for shop use (down line and ready line). The expected parking spaces for heavy duty is 6 parking spaces (3 for the down line and 3 for the ready line) for each light duty bay and 4 parking spaces (2 for the down line and 2 for the ready line) for each heavy duty bay. Based on VEU's the current fleet is 75% heavy duty and 25% light duty.

To handle the 12 bays 54 parking spaces are needed 26 for the down line and 26 for the ready line.

COMPARISON OF STAFFORD TO OTHER COUNTIES

County	Size (Area in square miles)	Residents	Number of School Busses	Total Vehicles (supported by Fleet)	Number of Shops	Number of Bays	Number of Mechanics
Source	*County Website*	*County Website*	*Fleet Manager*	*Fleet Manager*	*Fleet Manager*	*Fleet Manager*	*Fleet Manager*
Stafford	277	138,000	261	1110	1	9.5	19
Fauquier (*)	647	68,248	172	672	1	11	10
Spotsylvania (*)	402	132,523	369	1105	1	21	13
Prince William	348	454,245	915	1301	5	25 (2 shifts)	35
Loudoun	520	392,711	111 - fleet ~800 outsourced	1450	1	6	6
Henrico	245	321,921					
Hanover	470	103,227	311	1200	1	20	12
Chesterfield	437	335,687					
Chesapeake	353	239,399	0	2365	4	32	28
Albemarle	726	105,703	220	unknown	1	10	7

(*) Similar operations covering schools, sheriff & other vehicles

County	Notes
Stafford	
Fauquier (*)	
Spotsylvania (*)	
Prince William	4 HD Shops, 1 Light/Medium Shop, Dir. Walton feels they are understaffed because of amount of support work mechanics have to do.
Loudoun	Majority of maintenance is outsourced to Fist Fleet. Vehicles retired before 100,000 miles
Henrico	multiple voicemails but no response
Hanover	need to add mechanics they outsource a lot due to lack of mechanics
Chesterfield	is providing metrics via email
Chesapeake	
Albemarle	all vehicles not controlled by fleet so total vehicles unknown

County+B2:M2	Population per Vehicle	Population per Vehicle Ratio	Vehicles per Bay	Notes
Source				
Stafford	124	0.80%	117	
Fauquier (*)	102	0.98%	61	
Spotsylvania (*)	120	0.83%	53	
Prince William	349	0.29%	52	
Loudoun	271	0.37%	242	Majority is outsourced
Henrico		0.00%		
Hanover	86	1.16%	60	
Chesterfield		0.00%		

Chesapeake	101	0.99%	74	
Albemarle				

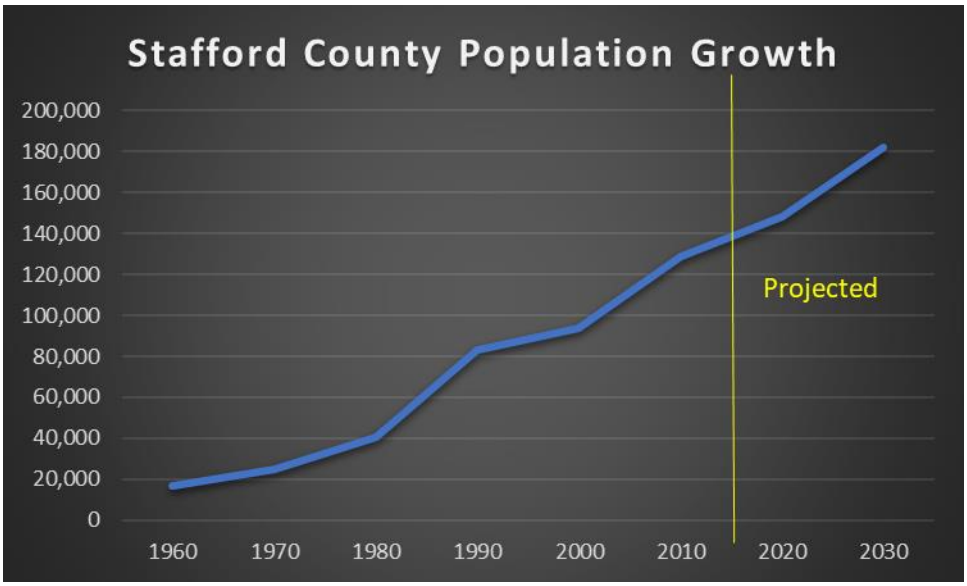
Using neighboring counties, the average population (number of people) per county vehicles is one vehicle for every 134 vehicles. Stafford is in line with this average being 7% under the average.

For vehicles per bay, Stafford is far below the neighboring counties. Stafford is at 117 which is 60% below the average of 73 per county. Note Loudon county was excluded because it outsources maintenance and has no need for a fleet shop/bays.

FORECASTING FUTURE SHOP NEEDS

PROJECTED COUNTY GROWTH

To evaluate the growth needs of the shop, CST used the population study shown at http://population.us/county/va/stafford-county/. Population.us primarily uses US Census data to make its population projects. CST also used a university of Virginia study projecting population growth to project future population. The site for this study is http://statchatva.org/2012/11/13/virginia-population-projections/ .


Stafford County Population Growth
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
1960
1970
1980
1990
2000
2010
2020
2030
Projected

With the projected increase in population CST used 3 methods to predict the number of vehicles needed and the resulting shop space (Number of bays needed).

- Method 1: Assuming increase in population and increase in vehicles needed and shop space needed is directly proportional.
- Method 2: Using the average number of vehicles for surrounding counties and applying it to the counties projected population.
- Method 3: Using the average number of vehicles for Stafford County and applying it to the projected population.

Below is the projected shop space needed using these 3 methods

	2018 Population	2018 Projected Number of	2018 Bays Needed	2028 Projected Population	2028 Projected Vehicles	2028 Projected Bays	2038 Projected Population	2038 Projected Vehicles	2028 Projected Bays
Method 1 Projections	138,000	1,110	12	158,700	1,277	14	181,970	1,468	16
Method 2 Projections	138,000	1,007	12	158,700	1,158.39	14	181,970	1,328	17
Method 3 Projections	138,000	1,113	12	158,700	1,332	15	181,970	1,527	18
Averages				158,700	1,256	15	181,970	1,441	18

Using these projections CST recommends shop space of 18 or more bays to handle growth over the next 20 years.

Parking for the shop will need to be as follows:

	Bays Needed	Shop Parking Spaces Needed
Current Need	12	54
2038 Projected Need	18	81

MINIMIZING COST OF OWNERSHIP

Although not specifically part of the scope of this project, CST would be negligent as fleet professionals if we did not point out the major cost savings initiative that we feel the County should further investigate to minimize the cost of providing reliable fleet equipment to using departments at the times that the units are needed.

The current method of capital management provides a new and reliable fleet when funds are virtually unlimited to departments and they can continually replace vehicles as they would like. There are two major problems with this:

- In today's economy, government organizations have less, not more money operate with.
- Even when funds are available, this method of capital planning produces an oversized fleet.

When money is tight, this method creates even more issues leading to the following fleet problems.

- An overaged fleet which costs more to maintain.
- Increased fleet downtime which means more units are needed to perform missions.
- Reduction in the value of fleet units at the time of disposition.

All of these issues combine to increase the Total Cost of Ownership of the fleet. The Total Cost of Ownership for a single piece of equipment is based on a standard formula:

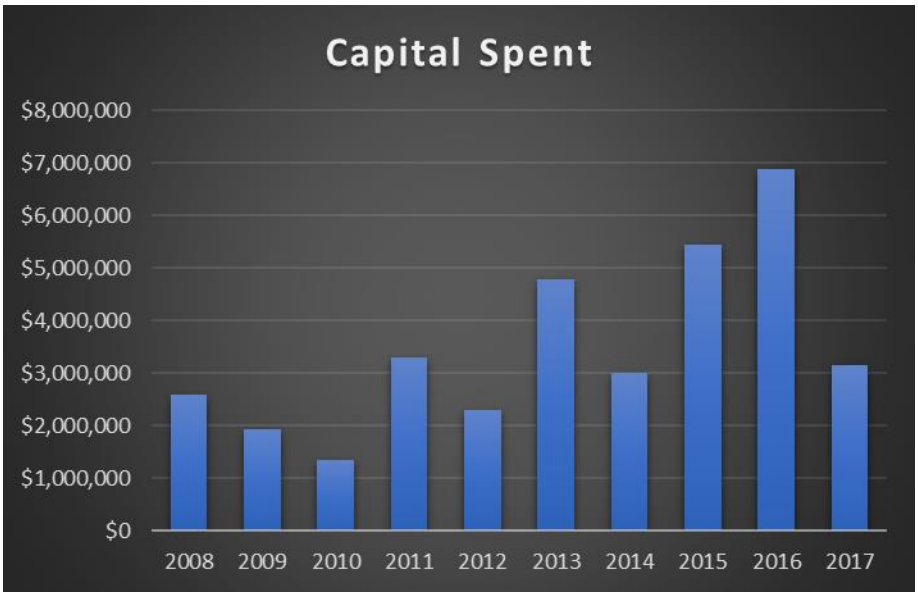
- TCO = Capital Costs +Admin Cost + Maintenance Cost + Fuel Costs – Resale Price

For an entire fleet, one more factor must be included, the total number of vehicles. This is a key factor that fleets use as they make their TCO methods more effective over time.

Why is TCO important to Stafford County?

CST noticed three primary factors that indicate that the cost of providing fleet services to the department could be significantly decreased.

- Fleet capital spent year to year is highly erratic indicating either binge or panic purchasing



- High dollar maintenance tasks (engine replacements, transmission rebuilds/replacements) being conducted on equipment in the last 30% of their life cycles
- High number of underutilized equipment (20% used less than 1000 miles a year as an example)

Total Cost of Ownership Recommendation

CST recommends that the Stafford County conducts a fleet Total Cost of Ownership initiative:

- Determine the projected impact to overall fleet costs.
- Develop a management structure that can implement and maintain a TOC program.
- Develop or configure the analytical tools (Faster would be the backbone) needed to implement the TOC program
- Develop a standard method for recouping the cost of ownership

CST appreciates the opportunity to serve the County of Stafford and the citizens they serve. All CST models and forecasting tools are being provided to Fleet for use into the future.

SAVING FOR INFRASTRUCTURE UPGRADES

The County of Stafford uses a unique, in the experience of CST, approach to saving for infrastructure upgrades and additions. Currently, each year 7% of the Fleet departments revenue is "saved" for infrastructure upgrades and major project initiatives for items such as shop facilities major projects, fuel islands, fuel management system, etc. In effect, they have created a "replacement fund" similar to what is standardly used for equipment replacement. This currently provides for repair and maintenance infrastructure projects but generally, not large scale major capital improvement projects such as a service bay addition.

In CST's experience, local governments tend to treat these a major capital projects gaining funds for these types of projects through their capital approval process with the projects competing with other department's capital project for the available funds.

As most government fleet departments are net-zero based internal service funds, they are not allowed by their governing agency to carry over a fund balance for operational or capital projects, especially funds that were generated as part of charging internal departments for maintenance and fuel.

The method of saving funds used in Stafford seems to have worked in the past. Going forward it is recommended that the county calculate the current replacement value(CRV) for the facility and plan on 3% of the CRV for routine building maintenance then compare this to the 7% of fleet budget to make sure the proper amount of funding is reserved. CST does feel that this method of savings may also need to be revisited if the County chooses to modify their method of paying for fleet operations that includes billing departments for both vehicle depreciation and operational costs as described earlier in this document.

Review of Fleet Best Practices for Fleet Operations

CST conducted the Best Practice Analysis by gathering fleet data and interviewing staff. The fleet is in good reliable shape for 2 main reasons: the reliable professional services provided by the shop; and the utilization of the faster system to record and analyze repair information where possible.

The shop is a well-run shop. The mechanics are knowledgeable of the equipment and focus on repairing and returning the vehicles to service in a reliable and efficient manner.

The sections below provide an assessment of each evaluation criteria with general comments for each category of practices.

In the tables:

- Y = Currently Implemented
- P= Partially Implemented
- N= Not Implemented
- N/A = Not Applicable

Stafford County is currently fully implementing 50% of the best practices and partially implementing 27%. These are very good indicators of the good job being completed by Stafford County.

No fleet ever achieves 100% of the best practices but achieving fully implementing 50% of the best practices and partially implementing 27%.is good. The majority of the partial implementation (27%) can become fully implemented as the fleet provides full fleet management for all departments. Note: 5% was Not Applicable and 18% was not implemented.

General Fleet Management-Finance and Customer Relations

Fleet has a modern shop with facilities needed to repair vehicles. Charges are not reflective of actual costs. Staff is cooperative and willing to make changes to better themselves and the fleet.

1.0	General Fleet Management-Finance and Customer Relations				
Overview of Category - The segment of the FS business related to administration, budgets, chargebacks and customer relations. FS does the following:					Action to improve Best Practice
	1.1		Produces an annual business plan complete with mission statement, review of previous year, budget / financial goals and service performance goals for internal customers.	Y	
	1.2		Has the ability to track YTD capital and operational expenses relative to budget.	P	Only has control of 50% of fleet. Should make fleet control 100% and make Faster system of record
	1.3		Has a customer department fleet liaison in place for all major departments who is responsible for coordination of vehicle assignments, repair activity and all issues between FS and the customer department.	Y	Use Service writer
	1.4		Has customer agreed to chargebacks in place with automated billing and efficient internal processes for department billing.	Y	

	1.5		**Has a policy in place for segregating and tracking repairs which are due to department operator abuse or neglect as well as accident repairs.**	**Y**	Warranty, Accident & vandalism
	1.6		**Has fully burdened labor rate in place which is reviewed annually.**	**Y**	Yes $66 light $75 heavy but, rates are reviewed and adjusted annually.
	1.7		**Has burdened parts mark up in place which is reviewed annually. This overhead includes the charging of 'minor - non- inventoried' parts.**	**Y**	
	1.8		**Has burdened fuel mark up in place and reviewed annually**	**N**	Fleet does not own fuel, fuel is owned by Quarles. Fuel is charged to Departments as its dispersed. Should investigate a fuel upcharge.
	1.9		**Has burdened commercial charge mark up in place which is reviewed annually.**	**Y**	
	1.10		**Has customer accepted Service Level Agreements (SLA) in place and reviewed at least annually with department customers.**	**N**	Many departments manage their own vehicles independent of fleet. Need to move all under fleet and establish SLA's
	1.11		**Has vehicle availability goals and metrics in place for customer departments to review through fleet management system in real time.**	**N**	Many departments manage their own vehicles independent of fleet. Need to move all under fleet and establish SLA's
	1.12		**Has well defined and current organizational chart in place with lines of responsibility designated.**	**Y**	
	1.13		**Has well defined job descriptions in place for all FS personnel with accountability defined.**	**Y**	
	1.14		**Offers customer department operators a waiting room at primary maintenance facilities with service status review board posted.**	**Y**	

	1.15		**Offers PM and other vehicle maintenance activities via a scheduling portal for department customers.**	**N**	Had it but customers did not use it
	1.16		**Inter-governmental agreements in place with local municipal fleets for maintenance, fuel, towing or other services.**	**N**	
	1.17		**Has regularly scheduled customer surveys on FS performance.**	**N**	
	1.18		**Builds and analyzes fleet level key fleet metrics for the operation relative to industry standards, such as vehicle life cycles, vehicle to mechanic ratios, etc.**	**P**	Faster Dashboards are available and year end statistics.

FLEET MANAGEMENT SYSTEMS – GENERAL

Fleet Management system is Fleet Maintenance Pro which does a good job of scheduling and tracking fleet repairs.

2.0	**Fleet Management Systems - General**				
Overview of Category - The segment of the FS business related to software and fleet management systems (FMS). (Detailed FMS application requirements are available through CST Fleet Services as well as detailed list of metrics for maintenance and fuel management). The following represents a high level list of application areas and features which are at minimum accepted practices in the industry. FMS does the following:					**Action to improve Best Practice**
	2.1		**Is operational with minimal system downtime and all vehicle ownership information/costs are stored in a central data base.**	**P**	Yes for vehicles 50% of fleet need to add other 50% of fleet. Note: Fleet estimates they record 80% of the fleet work and 100% of purchase is recorded.
	2.2		**Utilizes and is compatible with VMRS 2000.**	**Y**	

	2.3		**Tracks vehicle activity, assignment, and detailed vehicle specifications.**	**P**	Yes for 50% of fleet need to add other 50% of fleet. Note: Fleet estimates they record 80% of the fleet work
	2.4		**Tracks all vehicle purchase date, ownership costs and depreciation.**	**p**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
	2.5		**Tracks vehicle maintenance costs and incidents of repair, inclusive of repair frequency, detailed parts charges, detailed labor charges, and outside repair costs.**	**P**	Yes for 50% of fleet need to add other 50% of fleet. Note: Fleet estimates they record 80% of the fleet work
	2.6		**Tracks all vehicle maintenance and fuel activity and charges in real time.**	**y**	
	2.7		**Offers the option of all data entry through bar coded labels or posted bar coded charts.**	**P**	Parts is bar coded and work order is scanned as well
	2.8		**Offers real time metrics which are available at multiple levels, which are definable by FS and optionally presented in a dashboard oriented visual.**	**N**	
	2.9		**Offers metrics which are may be trended over time.**	**Y**	
	2.10		**Offers an interface to the asset in-vehicle data links such as OBD-II, J1587, J1939, etc. for use in generating requests for repair as well as vehicle on-road maintenance diagnostics/component problems.**	**Y**	where possible
	2.11		**Offers ad-hoc and custom report generation with a report save feature and scheduling / distribution option.**	**N**	Can be done in faster. Do not have a person trained to do this. Fleet does not have a person for Crystal reports! Personnel are able to capture data from Faster reports.
	2.12		**Provides standard reports with email capability to customer departments.**	**Y**	
	2.13		**Provides PM scheduling with repair notices sent to customer departments via email.**	**P**	school busses and school departments
	2.14		**Offers a parts inventory management system.**	**Y**	

	2.15		**Tracks direct and indirect labor with calculated percentages to total labor time.**	**Y**	
	2.16		**Tracks shop labor in real time on the shop floor at terminals, recording shop tradesmen repair times for each job and work accomplished.**	**Y**	
	2.17		**Tracks the issue of all direct parts to work orders and indirect parts to department or indirect parts codes.**	**Y**	
	2.18		**Offers a fuel management system with transactional updates in real time.**	**Y**	Note: System is separate from Faster batch downloads
	2.19		**Offers the interface to fuel commercial 'point of sale' transactions and updates activity into the FMS on a regular basis.**	**Y**	Quarles fuel is downloaded to Faster
	2.20		**Offers a telematics interface to a GPS or in-vehicle location system with mapping.**	**Y**	
	2.21		**Tracks and can segregate all road call repair data including reason for repair, parts and labor.**	**Y**	
	2.22		**Offers shop floor personnel with portable hand held devices for entering shop labor activity from floor in real time.**	**N**	Use Terminals no change needed

VEHICLE ASSET MANAGEMENT

Fleet scheduling and customer relations can improve.

3.0	**Vehicle Asset Management**				
Overview of Category - The segment of FS business related to the vehicle as an asset and the life of the asset, including procurement / disposal, life cycle fixed costs, life cycle maintenance / operational costs, and the effectiveness of the vehicle to the department customer. FS has the following in place:					**Action to improve Best Practice**
	3.1		**FS is organized such that a 'fleet steering committee, chaired by the fleet manager with members from finance, procurement and key customer departments, have oversight as to vehicle asset purchases, specifications, assignments and disposal.**	**N**	CST is reviewing current policy

	3.2		**FS can track the complete life cycle of each vehicle asset, segregated by fixed costs, maintenance costs and operational costs.**	**P**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
	3.3		**FS can track vehicles by their assigned customer department and accurately and timely review vehicle utilization.**	**p**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
	3.4		**FS performs an annual utilization study and fleet wide right sizing evaluation of all vehicle assets each year.**	**N**	Would be a good idea to do a rightsizing many vehicles are underutilized
	3.5		**FS has a vehicle asset life cycle replacement / capital plan in place based upon accurate asset life cycle costs.**	**p**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
	3.6		**FS can monitor vehicle downtime and availability for all vehicles, relative to targets set and agreed to by FS and the customer departments.**	**P**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
	3.7		**FS has in place and utilizes an operational status of a vehicle asset from the time it is purchased, through its life cycle: procurement, to in-service prep, to in service and assigned, to tagged for disposal. to disposed.**	**P**	Need to improve the purchase process too much is outside of fleet
	3.8		**FS has effective and timely in-service preparation procedures and capital costs are appropriately recorded where applicable.**	**p**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
	3.9		**FS provides short term lease and rental contracts from an outside vendor for customer departments.**	**N**	Should discuss and investigate. This is a good topic during rightsizing.
	3.10		**FS offers customer departments the services of an internal motor pool operated by FS with shared vehicles.**	**P**	If a customer has a downed vehicle for an extended period, fleet will help find a temporary vehicle.
	3.11		**FS offers customer departments an option for reserving FS motor pool vehicles on-line.**	**N**	

	3.12		FS can accurately determine through analysis, the most cost effective vehicle: own vs. lease vs. rent vs. motor pool assignment.	N	
	3.13		FS allocates funds, (possibly capital) for diagnostic tools required by new vehicles and components.	Y	
	3.14		FS has a written vehicle tire policy for usage of new and recap tires, specific to vehicle type and /or wheel position.	Y	
	3.15		FS has new vehicle and component warranty period and terms documented; warranty repairs are performed by appropriate vendors or claims filed for repairs performed by FS shops; all warranty repairs can be tracked as such in FMS.	P	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
	3.16		FS has an in-vehicle GPS system in place with mapping and tracking options for department customers.	P	Buses Only, Fleet does not own but has access where available
	3.17		FS has the ability to initiate repair or capital improvement campaigns through FMS to selected assets or groups of assets.	Y	

ASSET MAINTENANCE

SHOPS AND FACILITIES

	4.1		Shops and Facilities		
	Overview of Category - The portion of the FS facilities dedicated to maintenance, including vehicle flow through the facility and processes related to general repair and maintenance. The FS maintenance facilities has the following in place:				Action to improve Best Practice
		4.1.1	FS has written policies and procedures in place that include current and establish duties for shop personnel, all maintenance processes as well as lines of authority for facility maintenance and management of all FS shops.	Y	

		4.1.2	**FS has detailed written policies in place for maintenance work flow in the shop.**	**Y**	
		4.1.3	**FS has a written procedure in place with customer departments for a vehicle department operator to request repair or maintenance; this may be a follow up from a driver vehicle condition report (DVCR).**	**P**	DVCRS for police, DOT required Bus form
		4.1.4	**FS has written policy for repair estimates and expected repair completion time for department customers; this may include only major repairs with cost in excess of stated estimate.**	**Y**	
		4.1.5	**Facility has adequate space for vehicles being repaired; shop is organized for mechanic activities. parts accessibility, and is clean.**	**Y**	
		4.1.6	**Facility parking space and yard are organized for work flow; this includes down vehicles waiting for repair, vehicles ready for service, vehicles tagged as out of service; all have dedicated parking locations.**	**Y**	
		4.1.7	**Shop facility has dedicated repair areas for vehicle class (light duty vs. heavy duty) and special equipment.**	**Y**	
		4.1.8	**Facility has dedicated PM lane.**	**N**	Not enough room
		4.1.9	**Facility has a process in place for receipt and review of all driver vehicle condition reports which make request of repair or maintenance; information is available in real time through FMS.**	**N**	
		4.1.10	**Facility has procedure for vehicle release of shop responsibility to the customer department; the driver or operator must check in with shop office and sign for the vehicle prior to removal of vehicle from the facility.**	**Y**	Keys are held by service writer and service writer keeps track of vehicles as they are dropped off on a list. Service writer highlights the list when they are picked up by the driver he also checks them off.
		4.1.11	**FS has the ability to track vehicle downtime and rules for recording downtime are understood for all shops and the customer departments.**	**Y**	
		4.1.12	**FS tracks excessive downtime and the reason is recorded with the work order; this includes lack of space, lack of parts, lack of manpower, etc.**	**Y**	
		4.1.13	**FS tracks repair comebacks and rework maintenance is recorded as such in FMS.**	**Y**	
		4.1.14	**Diagnostic tools are available for floor mechanics for all applicable repairs.**	**Y**	

		4.1.15	**FS has processes in place for road call towing / maintenance and the recording into FMS of all maintenance activity in the field including parts and labor.**	**Y**	Shop handles i.e. fire drill method and call locals for pickups
		4.1.16	**Facility has dedicated shop space for vehicle tire repair or tire repair contractor.**	**P**	Work Space needed for tire contractor

PREVENTIVE MAINTENANCE

Not all departments have PM's performed.

	4.2		**Preventive Maintenance**		
	Overview of Category - The processes for FS to schedule, manage and perform preventive maintenance for all vehicles under the responsibility of FM. FS has the following in place:				**Action to improve Best Practice**
		4.2.1	**FS has the ability to schedule all PM's for all vehicles and utilize a PM scheduling in FMS for projecting PM's due by vehicles for each shop location.**	**P**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
		4.2.1	**All vehicles have an assigned maintenance shop for PM's.**	**P**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
		4.2.2	**All vehicle customer departments receive a notification in advance of PM due via email.**	**P**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
		4.2.3	**PM policies, procedures and checklists are well documented for all levels of PM's for all vehicles and PM checklists are available to the mechanics performing the repair.**	**P**	Good for school busses need to include other vehicles.
		4.2.4	**PM follow up repairs and maintenance are categorized as such and the maintenance facility has the ability to defer non-safety related PM follow up repairs to a future occurrence of downtime via the FMS.**	**Y**	

		4.2.5	**FS has the ability to track the quality of PM's, such as average labor hours and/or average part dollars for a specific level of PM for a specific class of vehicle.**	**p**	Yes for 50% of fleet need to add other 50% of fleet
		4.2.6	**FS has the ability to store non-crucial DVCR repair requests and provide these requests at the upcoming occurrence of a PM.**	**Y**	
		4.2.7	**Diagnostic tools are available to the mechanic performing the PM.**	**Y**	

PARTS MANAGEMENT – IN HOUSE

	4.3		**Parts Management - In House**		
		Overview of Category - The segment of the FS business related to procuring, stocking / managing inventory for parts required for maintenance and repair of the vehicles. (Section 4.3 is oriented towards part management accomplished through in-house FS parts inventory ownership; Section 4.4 is oriented towards parts management accomplished, owned and controlled through a strategic dedicated parts partner).			**Action to improve Best Practice**
		4.3.1	**FS operates a complete part management system with traditional inventory management functionality in place for all FS maintenance locations for which parts are stocked.; this parts management system functions in real time as parts are issued to the mechanics requesting parts for FS maintained vehicles. The system either managing the parts procurement process or interfaces in real time to the government wide procurement system.**	**Y**	
		4.3.2	**All FS parts rooms are secured; policies and procedures are maintained for the management, acquisition, inventory, issuance and return of parts to/from mechanics.**	**Y**	

		4.3.3	The FS parts management system tracks and monitors the percentage of parts immediately available to the mechanic upon request. This metric is monitored on a regular basis as is the excessive vehicle downtime due to lack of parts.	Y	
		4.3.4	FS has the ability to track parts failures and premature parts failure occurrences are submitted through parts warranty if applicable.	Y	
		4.3.5	Indirect parts, when applicable are charged to customer departments or indirect parts codes in FMS.	Y	
		4.3.6	Parts inventory is taken on a regular basis, no less than annually, and parts slippage is monitored, valued and charged off according to FS accounting rules.	Y	Physical inventory by third
		4.3.7	FS has the ability to track inventory turn rates for all facility parts rooms for which inventory is managed; goals are set for this metric.	Y	
		4.3.8	FS has the ability to track parts usage trends of inventoried parts and isolate parts classified as obsolete.	Y	
		4.3.9	FS has in place an efficient process for the acquisition of parts provided by ab outside vendor and not placed into inventory; such parts and pricing are charged against the work order in FMS.	Y	
		4.3.10	FS has the ability to establish parts lists for 'standard jobs' which are repetitive and when initiated automatically request parts list for the parts room when the vehicle repair is scheduled.	Y	

LABOR MANAGEMENT

	4.5		Labor Management		
		Overview of Category - The segment of the FS business related to the management of personnel (labor) managed by FS related to the FS vehicle maintenance function. This is inclusive of the personnel used in the direct maintenance function as well as the personnel indirectly supporting the maintenance process.			Action to improve Best Practice
		4.5.1	FS manages and interfaces with formal labor organizations (unions), if applicable to FM, in accordance with the policies and procedures set forth by the government agency for which FS is a part.	Y	
		4.5.2	Direct labor hours are charged against work orders in FMS in accordance with VMRS in real time.	Y	
		4.5.3	Indirect labor is charged to the FS shop location in FMS in accordance with VMRS in real time.	Y	
		4.5.4	FS has the ability to monitor the percentage of charged time (direct and indirect) to paid / shift time, and this metric (both at the mechanic level and shop level) is monitored on a regular basis with targets set for each FS shop location..	Y	
		4.5.5	FS has a base of established 'standard' jobs for repetitive repairs. The standard jobs may include task checklists or instructions. Labor time at the mechanic level and shop level is measured against these standard jobs.	Y	
		4.5.6	FS has goals and targets established for mechanics at each shop including a recognition process such as a 'wall of fame' for high performance.	Y	Employee excellence and bonus for high performance
		4.5.7	FS has the ability to monitor the effectiveness of mechanic performance including rework repairs.	Y	
		4.5.8	FS offers incentives for high performance by mechanics.	Y	
		4.5.9	FS utilizes interns or mechanic assistant programs in possible partnership with local community colleges or higher educational institutions.	Y	Started 3 techs in high school….. Communicate with local auto programs at the high school
		4.5.10	FS has an established criteria for mechanic certification or at minimum encourages and supports mechanic certification programs.	Y	

		4.5.11	**FS has a procedure in place and allocates time and/or budget for mechanic training curriculum either in-house by vendors, on-line by vendors or at vocational schools.**	**Y**	

OUTSIDE SERVICES

	4.6		Maintenance Outside Services		
		Overview of Category - The segment of FS business related to the processes for procuring, engaging and monitoring outside maintenance services from local providing vendors.			**Action to improve Best Practice**
		4.6.1	**FS regularly evaluates the performance of inside maintenance services and performance as compared to local outside repair and maintenance vendors; this may be for selected services such as rebuilds, body-shop etc.**	**P**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
		4.6.2	**FS has a process for acquiring repair estimates for repairs above an estimated threshold of costs.**	**P**	Yes for 50% of fleet need to add other 50% of fleet Note: Fleet estimates they record 80% of the fleet work
		4.6.3	**FS has ample repair and maintenance contracts in place with reputable outside vendors.**	**P**	For vehicles not going through fleet we do not know. Yes for vehicles going through fleet over $5,000 a contract is required under $5,000 a quote is required for Fleet. The county has the ability to ride contracts but must follow procurement guidelines. Every purchase order must have a contract, RFP or Quote
		4.6.4	**All outside maintenance and repair work is entered into the FMS on a timely basis either as a work order or attached to a work order as outside repair services; this data can be isolated in FMS for reporting purposes.**	**P**	No for vehicles not going through fleet Yes for vehicles going through fleet Educated Guess is that 80% of repairs is entered into Faster

ASSET FUEL

The County has a fuel management system Quarles in place at the fleet but no alt fuels.

5.0	Asset Fuel				
	5.1	Fuel Management			
		Overview of Category - The segment of the FS business dedicated to the procurement, security, dispensing, tracking and monitoring of fuel for FMS vehicles. FS has the following in place.			Action to improve Best Practice
		5.1.1	FS maintains up to date and current fuel contracts for on time delivery of fuel to FS sites at a negotiated rate; FS has emergency procedures in place.	Y	Fuel contract is in place for State fuel rate
		5.1.2	FS manages automated fuel sites which only dispense fuel to operators and vehicles authorized by either entered data or machine readable card / key fob devices; this authorization activates fuel dispensing via a pump controller.	Y	
		5.1.3	The FS automated fuel site controllers either receives the meter reading wirelessly or edits the operator entered meter reading for accuracy.	Y	
		5.1.4	FS has an in ground fuel tank inventory management system that monitors in ground fuel levels at each fuel site for each bulk tank; this system monitors tanks with leak detection warnings and water content warnings.	Y	
		5.1.5	A process (audit) for reconciling fuel received at FS sites, as compared to fuel dispensed, is routinely implemented; follow up investigation is taken if necessary.	Y	
		5.1.6	vehicle fuel consumption (MPG or GPH) is monitored and tracked with targets by vehicle and vehicle type.	P	Yes 100% for fleet supported vehicles and driver fuel card is imported Daily. Vehicles not supported by fleet are Still imported.

		5.1.7	FS maintains and operates a portable fuel delivery truck for emergency vehicles in the field or for remote stationary vehicles. The inventory for this vehicle is managed in FMS.	N	
		5.1.8	FS vehicles are equipped with in vehicle computers which communicate with the fuel site controllers via RF, and transmit utilization as well as diagnostic data posted to the in vehicle data links (OBD-II, J 1587, J 1922, etc.).	P	
		5.1.9	If fuel us purchased by operators while in route, via a commercial fuel point-of-sale (POS) system, the POS transactions are updated to the vehicle fuel information in FMS in real time or in a timely manner.	Y	Driver fuel card is imported daily. Vehicles not supported by fleet are imported daily.

GREEN (FUEL) INITIATIVES

Stafford County has a very active alterative fuel program. Over 20 dual powered vehciles using a combination of electric battery and unleaded fuel are deployed in the fleet . Also 10 combination propane unleaded fuel powered vehicles are in the process of being installed. Other alternative fuel initiatives are being investigated by FM.

	5.2	Green (Fuel) Initiatives			
		Overview of Category - The segment of the FS business which sets goals for environmental sustainability through 'green' fuel initiatives which utilize alternative fuels. FS has the following in place:			Action to improve Best Practice
		5.2.1	FS has a program in place that routinely calculates the carbon footprint of the vehicle asset fleet and has established goals for the annual percent reduction of green house gases.	N	would be good to calculate just for PR
		5.2.2	FS has programs for testing and/or implementing alternative fuels.	N	
		5.2.3	FS has programs for testing and/or implementing electric powered vehicles.	N	
		5.2.4	FS has access to grant writing initiatives with the goal of achieving capital or operational dollars for alternative fuels.	N	
		5.2.5	FS has an infrastructure in place for dispensing alternative fuels and selling the fuel to the public or other government agencies.	N	

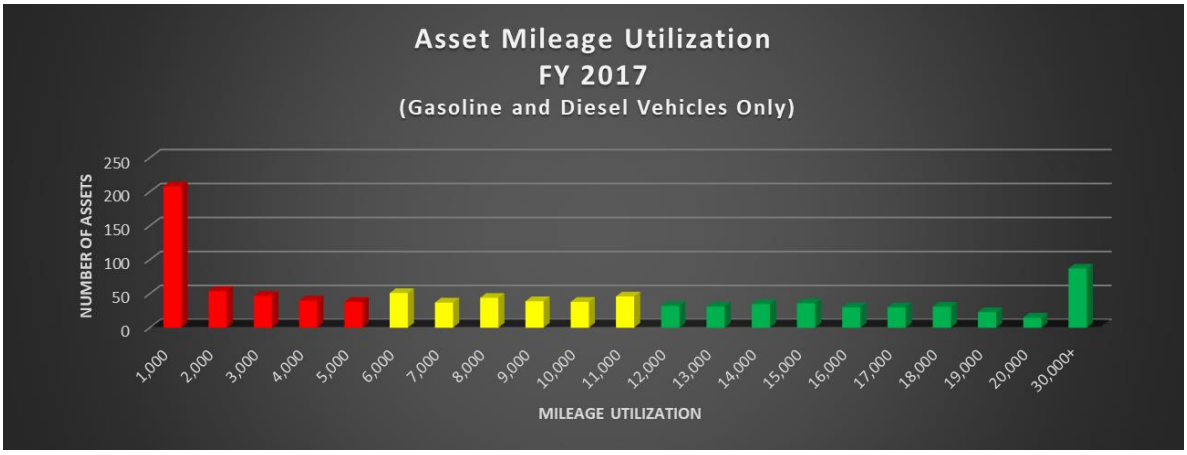
EMPLOYEE SAFETY

6.0	Employee Safety				
		Overview of Category - The segment of the FS policies which is dedicated to personnel safety, operator safety and accident procedures.			Action to improve Best Practice
	6.1		FS has written safety policies in place for all FS facilities, shops and FS personnel.	Y	
	6.2		FS has prepared or approved customer department operator safety polices for all vehicles.	Y	
	6.3		FS has vehicle accident policies and procedures in place.	Y	
	6.4		All accident repairs are recorded as such in FMS.	P	Yes for of 100% fleet supported need to add all fleet. Estimated that 80% of accidents are recorded in FMS

Additional Observations

Utilization of Vehicles

CST did take a high-level look at the fleet utilization.

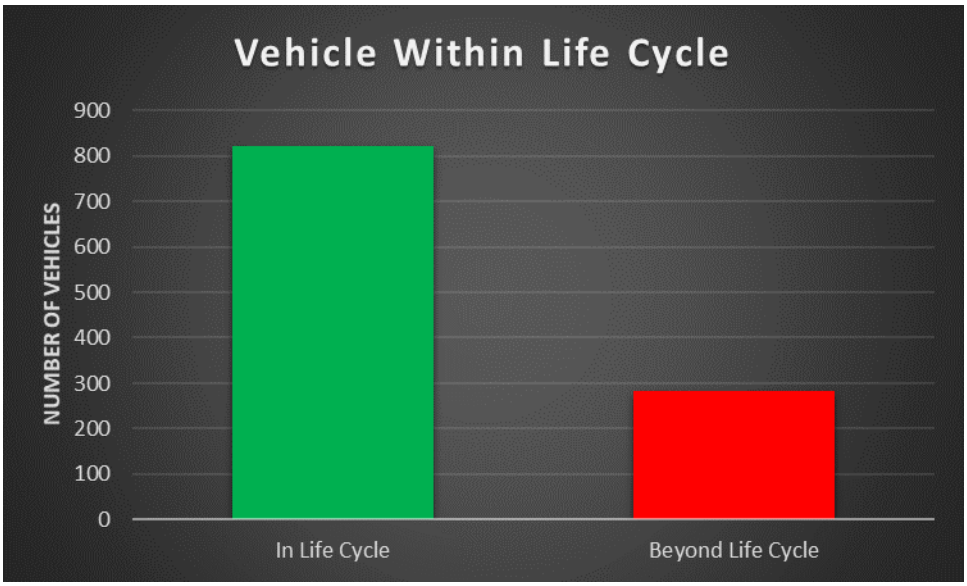


The County of Stafford has a lot of low use vehicles in that over 200 vehicles powered by gas or diesel travel less than 2,000 miles per year. Utilization analysis and right sizing was not included in this study. However, this is an area the county should investigate further in the future with the impact of a right-sizing program significantly affecting maintenance needs.

Vehicle Life Cycle

CST used some commonly used life cycle life expectancy for busses (15 years), automobiles (9 years), Heavy equipment (15 years) and auxiliary equipment and trailers (20 years).

Using these parameters, 74% of the fleet of 820 vehicles are within their expected life cycle.



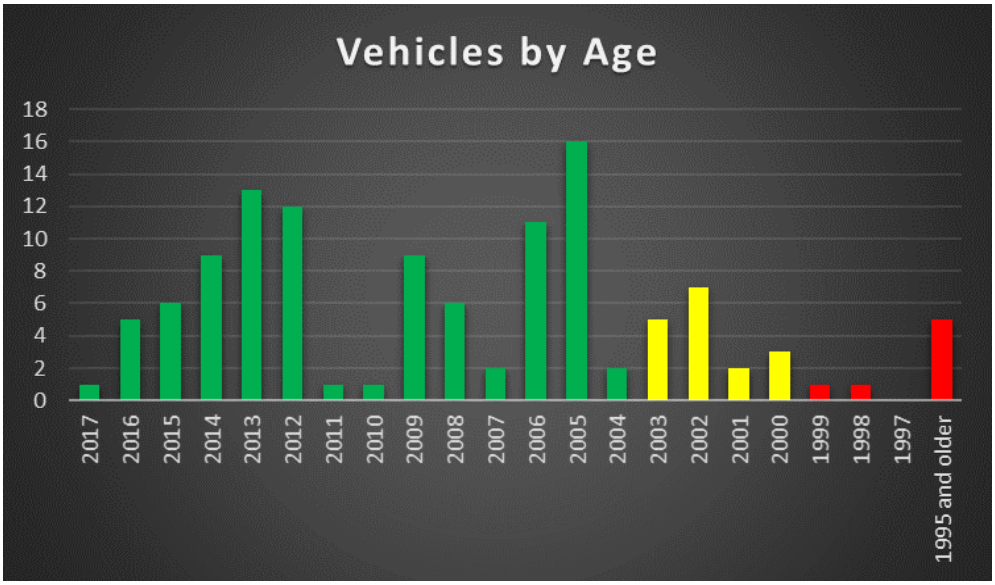
This is about average to what CST sees with similar fleets. However unit types with a large percentage of beyond life vehicles should be investigated to make sure they can still fulfill the mission they are needed for.

Below is a summary of unit types with 10 or more vehicles.

Class	Unit Type	Vehicle count	Average Age	Expected Age	Number within LifeCycle	Number beyond life Cycle	% Beyond Life Cycle
A42	Auto, Full Size, 4 Door	184	7	9	146	38	21%
906	Bus, School, Conventional, 60-79 Passenger	130	9	15	130	0	0%
914	Bus, School, Conventional, 40-59 Passenger, With V	55	9	15	55	0	0%
905	Bus, School, Conventional, 40-59 Passenger	53	3	15	53	0	0%
FH0	Trailer, Implement transport	41	11	20	38	3	7%
A32	Auto, Intermediate, 4 Door	40	10	9	20	20	50%
B2B	Truck, Sport Utility, 1/2 Ton, 4 Door	40	3	9	39	1	3%
FD0	Trailer, Flat Bed	35	25	20	27	8	23%
780	FireTruck, Medical Response	34	16	15	20	14	41%
B21	Truck, Pickup, 1/2 Ton, Extended Cab	33	5	9	31	2	6%
701	Ambulance, Type1, Light Duty	29	21	9	8	21	72%
B1B	Truck, Sport Utility, 1/4 Ton, 4 Door	28	10	9	10	18	64%
B43	Truck, Pickup, 1 Ton, Utility Body	23	10	9	12	11	48%
742	FireTruck, Pumper, With Deluge Gun	22	16	15	13	9	41%
935	Bus, School, Transit Rear Engine, 60-79 Passenger	21	16	15	0	21	100%
B32	Truck, Pickup, 3/4 Ton, Crew Cab	18	4	9	18	0	0%
B30	Truck, Pickup, 3/4t	17	14	9	3	14	82%
C30	Van, 3/4 Ton, Utility Body	17	14	9	3	14	82%
B12	Truck, Pickup, 1/4 Ton, Extended Cab	15	13	9	0	15	100%
B11	Truck, Pickup, 1/4 Ton	13	14	9	0	13	100%
702	Ambulance, Type1, Medium Duty	11	13	9	10	1	9%
A12	Auto, Sub Compact, 4 Door	11	11	6	0	11	100%

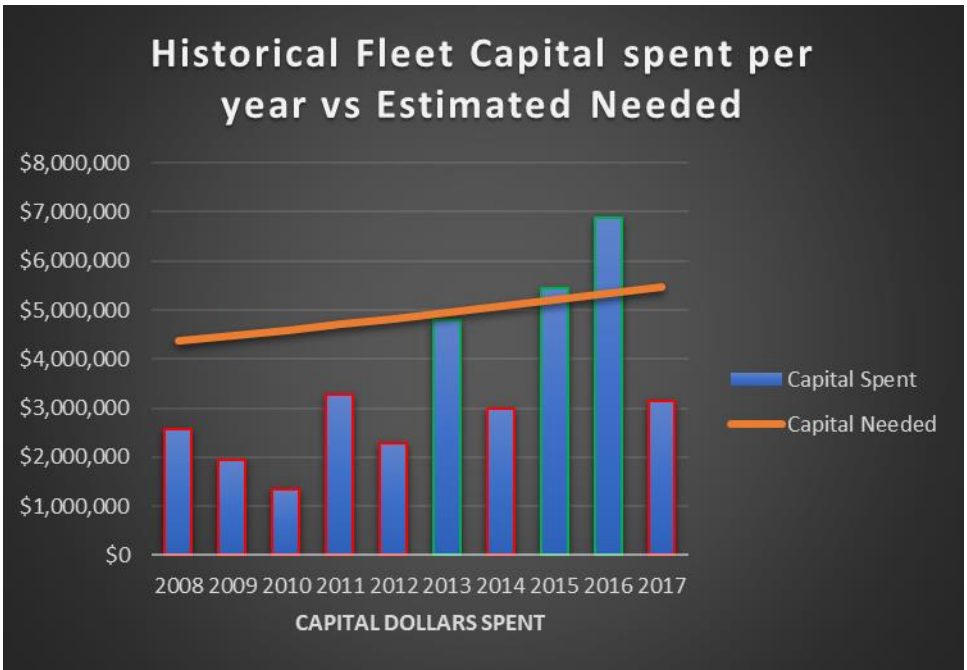
CURRENT AGE OF VEHICLES

Overall the fleet is in good shape, but the former replacements were uneven which will harm the fleet. Fleet actively works on a replacement plan each year for the buses. Purchases by year vary widely and are not under the control of fleet. The chart below shows vehicles owned by model year.



CAPITAL SPENT BY MODEL YEAR OF THE VEHICLES

Capital; spent on vehicle replacement by year vary widely and are not under the control of fleet. The chart below shows capital spent by model year vs the estimated capital expenditures needed.



Green outline indicates sufficient capital spent. Red outline indicates insufficient capital spent.

APPENDIX

Appendix A – CST models - excel spreadsheet

(“Stafford County models R27.xcls”)