

Technical Site Study Assessment

Draft Progress Report
March 10, 2021

Cora Kelly Elementary School
3600 Commonwealth Ave.

George Mason Elementary School
2601 Cameron Mills Rd.

Alexandria City School Board Alexandria City Public Schools (ACPS)
1340 Braddock Place, Suite 620



for ward

The image features the words "for" and "ward" in a large, bold, black, lowercase sans-serif font. A thin horizontal line runs through the middle of the letters. Between the "for" and "ward", there are two blue silhouettes. On the left, a person is in a wheelchair, facing right. On the right, a person is standing, facing right, carrying a box in their left hand and pointing with their right hand. A large, light gray, diagonal watermark reading "DRAFT" is visible across the background.



In the Spring of 2019, **Alexandria City Public Schools** (ACPS) decided to hire Studio Twenty Seven Architecture as the lead of a multidisciplinary professional team to assist in preparing Technical Site Study Assessments for two of the City's elementary schools. Those two schools are George Mason Elementary School, located at 2601 Cameron Mills Road, and Cora Kelly School for Math, Science, and Technology, located at 3600 Commonwealth Avenue. The goal of the Technical Site Study Assessments was to gather detailed information on the viability of school renovations versus school replacements to be used in the next stage of ACPS's capacity modernization program.

The document presented here is a result of the application of professional technical expertise and the collaboration of invested and knowledgeable stakeholders. The document is outlined in the following Table of Contents.

The research, findings, and scenarios presented here constitute the professional opinions of the multidisciplinary professional team based on the assumptions and conditions detailed throughout the book. This Technical Site Survey Assessment effort was in conjunction with City staff and faculty participation. The findings will give ACPS information on making future decisions for the CIP.

The **Multidisciplinary Professional Team** was comprised of the following individuals //

John K. Burke, AIA, Architect
 Osama Iqab, Architect
 Wayne Bryan, Structural Engineer
 Paula Guffy, MEP Engineer
 Robert Schiesel, Transportation Engineer
 David Sharon, Civil Engineer
 Kevin Hurley, Geotechnical Engineer

The Planning Team wishes to acknowledge the support, cooperation, and effort of all of the ACPS and staff who contributed to the planning effort, in particular //

Sophie Huemer, AICP, Planner II, ACPS
 Erika Gulick, AICP, GISP, Director of Capital Programs, Planning & Design, ACPS
 Dr. Alicia Hart, PMP, Executive Director of Facilities and Operations, ACPS
 Katherine Carraway, Urban Planner, City of Alexandria
 Jasibi Crews-West, Principal at Cora Kelly School for Math, Science and Technology
 Dr. Seazante` Williams Oliver, Principal at George Mason Elementary School
 Mignon R. Anthony, Former Chief Operating Officer, ACPS
 Brian Orrenmaa - GMES, Former Principal at George Mason Elementary School

All of the faculty, staff, and committee members who joined the effort throughout.

TABLE OF CONTENTS



I. Executive Summary

Introduction	09
Confirming the Priority	09
Replacement and Addition versus Renovation	12
Onsite versus Offsite Swing Space	12
Future Considerations	13

II. Cora Kelly Masterplan and Technical Data

Introduction	18
Educational Specifications	18
Site Assessment	19
Building Assessment	20
Technical Information	21
Traffic Study	21
Building Assessment Data	25
Site Assessment Data (Civil)	37
Cost Estimates	42
Space Program Sheets.....	53
Scenarios	56
Scenario 1: Renovation and Addition	57
Scenario 2: Replacement School and Recreation Center (No swing space required)	59

Scenario 3: Replacement School (in-place) and Existing Recreation Center	61
Scenario 4: Replacement School (in-place) and Existing Recreation Center	63

III. George Mason Masterplan and Technical Data

Introduction	66
Educational Specifications	66
Site Assessment	67
Building Assessment	68
Technical Information	69
Traffic Study	69
Building Assessment Data	73
Site Assessment Data (Civil)	85
Cost Estimates	91
Space Program Sheets.....	101
Scenarios	105
Scenario 1: Renovation and Addition	105
Scenario 2: Replacement School with Historic Component	107
Scenario 3: Replacement School (in-place) with Historic Component	109

IV. Conclusion

Cora Kelly Summary	113
Scenario Charts	114
George Mason Summary	115
Scenario Charts	116

Appendices

ALTA Surveys	117
Cora Kelly	119
George Mason	120
Geotechnical Reports	121
Cora Kelly	123
George Mason	129

I. Executive Summary

I. EXECUTIVE SUMMARY

Introduction

Background

George Mason Elementary School was built in 1939 on a generous 9 acre lot, and since then has undergone 5 previous phases of work, which has resulted in a fragmented construction of additions used to address immediate challenges. George Mason is situated in a residential context with a historic fabric that requires careful attention to site access without disrupting the character of the neighborhood.

Cora Kelly Elementary School was built in 1955 on an undersized 4.5-acre lot and has not built any addition addressing changes in student population or curriculum guidelines. It is located west of Commonwealth Avenue, south of Four Mile Run Stream, surrounded by a variety of housing densities and commercial sites. The school is dedicated to preparing its students for the 21st century through science, technology, engineering, and math (STEM).

Alexandria City Public Schools is a school system of approximately 15,900 students and has experienced between 2 percent and 3 percent growth annually since 2012. This growth trend combined with observed increases in kindergarten capture and cohort survival rates has led to an increasing school population. Based upon these trends and recent work with the City's planning department, ACPS believes that enrollment growth over the next five years will continue to outpace the citywide growth rate at more than a 3:1 ratio. As the school population grows, the modernization of schools to meet capacity and educational needs is required.

Explanation of the Technical Site Study Assessment Scope of Work

The purpose of the Technical Site Study Assessment (TSSA) is to identify and assess current infrastructural and programmatic challenges that a particular school experiences, and how these challenges can be addressed to meet current codes, specifications, life cycle costs, and projected schedules.

The Limits and Benefits of a Technical Site Assessment Study

Although a Technical Site Assessment Study (TSSA) provides a plethora of information with respect to cost, time, and quantity, the TSSA does not offer, nor does it try to offer, a level of specificity that can be interpreted as a design solution. The TSSA, or Feasibility Study, is an objective assessment of the current conditions of facilities, identifies the challenges and opportunities for future development projects, and applies possible approaches and solutions to those scenarios.

Confirming the Priority

This Feasibility Study confirms the Capital Improvement Plan timeline for the modernization of these schools, that George Mason's modernization should be addressed prior to Cora Kelly. George Mason's overall building condition, fragmented nature of the educational adjacencies, and issues with over-capacity reflect the need to prioritize its modernization.

Capacity and Program

Educational Specifications ("Ed Specs") are developed to serve as the guiding recipe and benchmark for future school renovations and new construction projects.

Per the National School Boards Association:

"The purpose of educational specifications ("Ed Specs") is to define the programmatic, functional, spatial, and environmental requirements of the educational facility, whether new or remodeled, in written and graphic form for review, clarification, and agreement as to the scope of work and requirements by the architect, engineer, and other professionals working on the building."

The ACPS Ed Spec and student population were used as the guiding criteria for programmatic quantities, sizes, and adjacencies.

Due to George Mason's fragmented nature and Cora Kelly's stagnant development, the TSSA and Masterplan scenarios provide a feasible framework addressing these challenges and their relationship to neighborhood context, site access and outdoor play space, academic program, and adjacencies, building and energy systems, life cycle costs, and scheduling. These scenarios are made to assist decision makers in deciding the path forward for the future of the school. They are not site plans or final scenarios, but illustrations of the opportunities and constraints of the site.

George Mason is currently 60,875 gross square feet. Per the Ed Specs, the school is 39,940 square feet deficient in gross building area and 49,600 square feet deficient in the outdoor play space area. George Mason's enrollment is 420 students based on Sept 30, 2019 enrollment data. Its current capacity is 368 students, making the school over capacity.

Cora Kelly is currently 76,840 gross square feet. Per the Ed Specs, the school is 28,102 square feet deficient in gross building area without a new gymnasium and 37,624 square feet deficient in gross building area with a new gymnasium. The school is 54,670 square feet deficient in the outdoor play space area. Cora Kelly's enrollment is 379 students with a capacity of 429 students.

I. EXECUTIVE SUMMARY

Building Systems

Per the building assessment, it was observed that both Cora Kelly and George Mason will eventually require either a full system upgrade or complete replacement of MEP systems due to its antiquated nature or a lack of system usage or availability, like a sprinkler and fire alarm system, which are crucially linked to the life safety of building occupants.

In addition to the code requirements of the state of Virginia, the City of Alexandria has implemented a new 2019 Green Building Policy. This newly approved policy requires that major or new public projects be required to meet minimum level certifications of LEED and/or other Green building certifications as well as they shall perform as a Net Zero Energy building. In order for a facility to meet the aforementioned requirements, it would be expected that the building's annual energy consumption be in the 18-22 EUI (Energy Use Intensity) range where EUI is defined as kBtu/Sf/YEAR. This requirement further justifies the complete upgrade or replacement of building systems.

Program Tables for each school are found in their respective sections of this booklet.

Adjacencies

The “ideal” adjacency diagram (**Figure 1**) illustrates relevant adjacencies for the typical elementary school model. The rooms and spaces illustrated in this educational specification compose a number of program “clusters”. The school as a whole is a collection of these “clusters” organized according to adjacencies required to best support the educational mission of ACPS.

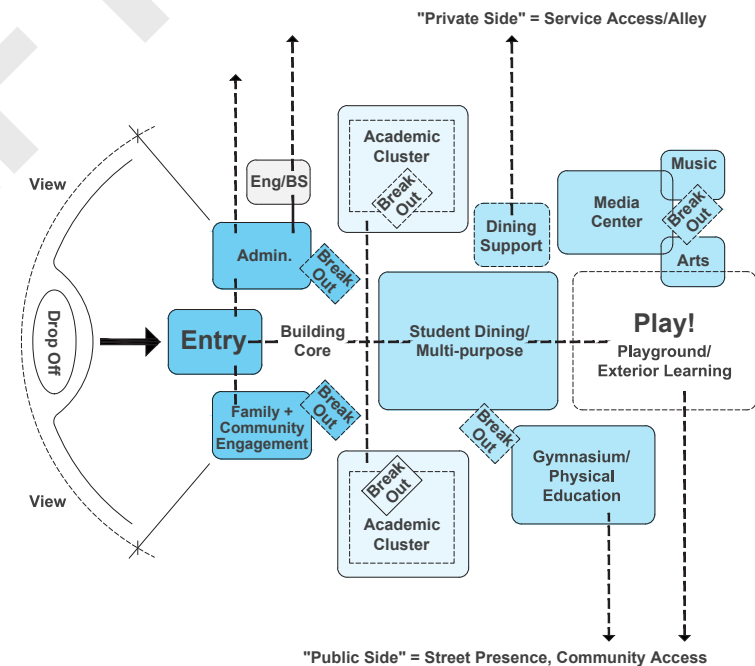
Academic clusters are located in the quiet areas of the building that can be isolated during off-hours. Noisier and shared programmatic clusters are grouped toward parking, public, and play areas allowing for after-hours access. A single main entry is a specific determination of ACPS's security plan and that entrance is supported by administration and family welcome center functions.

In addition to the ideal adjacency of the school, the site must establish clear site access and circulation that separates vehicular, bus, loading, and pedestrian traffic. Additionally, the siting of the building should maximize site open space that provides views and daylight to the school program:

- Provide different sizes and types of exterior play spaces for all age groups.
- Establish a dialogue with the neighborhood context.
- Accommodate the educational specification within an efficient and expandable footprint.
- Implement sustainable building systems.
- Coordinate phasing of work to limit swing space and co-location.

Informal “break-out” or Extended Learning Areas happen throughout the building along with opportunities for distributed dining areas. Studio 27 Architecture compared simplified adjacency diagrams of Cora Kelly and George Mason elementary to the “ideal” organization in the following pages.

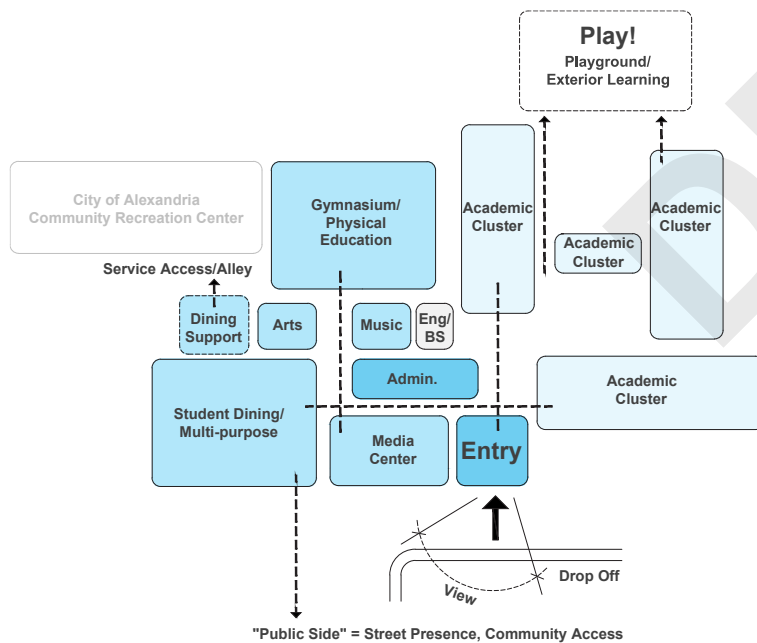
Figure 1
Ideal Adjacency



I. EXECUTIVE SUMMARY

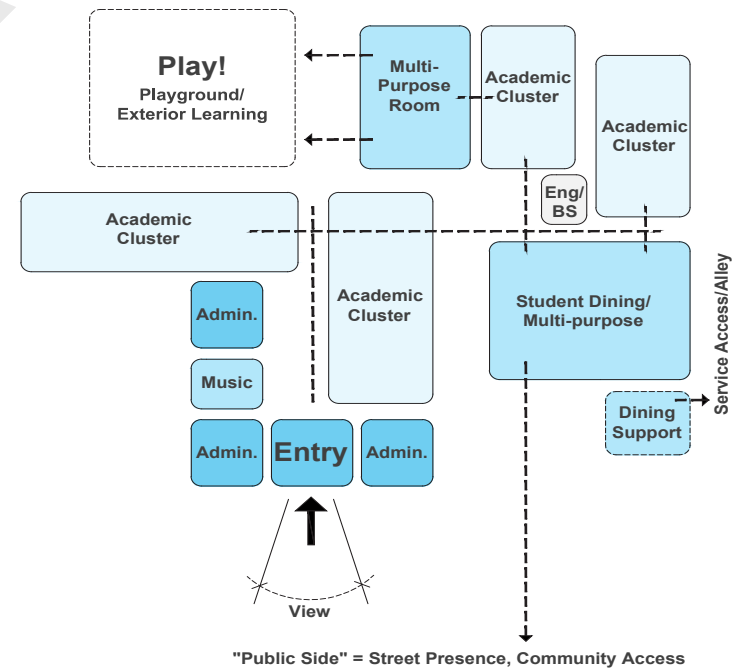
The Cora Kelly (**Figure 1a**) academic wings are very remote from the shared spaces like the cafeteria, gym, and library. To get between these two sides of the school many students must take a long, circuitous route. These larger gathering spaces should be in a more central location to facilitate class transitions. The administration program is adjacent to noisy, high traffic areas when it would be better served distributed throughout more quiet wings of the school. Another item of concern is the lack of a private service/delivery access point. The service/delivery circulation crosses paths with the recreation center traffic and is visible from the rec center main entry.

Figure 1a
Existing Cora Kelly Adjacency



George Mason Elementary (**Figure 1b**) has a more central cafeteria however the multi-purpose room is located such that students have to travel through quieter academic wings to get there. Students must also travel through the multi-purpose room to reach the outdoor play areas which are not ideal if the multi-purpose room is already in use. George Mason also lacks a separate service/delivery access point. Service traffic currently crosses paths with staff parking and is visible from adjacent homes.

Figure 1b
Existing George Mason Adjacency



I. EXECUTIVE SUMMARY

Renovation & Addition versus Replacement

A major element of the Feasibility Study is to explore options for capacity addition of schools through renovation and addition or through replacement of the school.

This book presents two key components to generate feasibility studies for each school. The Technical Site Study Assessment includes assessments of current building systems, site infrastructure, academic requirements referencing educational specifications, and life cycle costs. Project Scenarios present master plan scenario approaches to challenges currently experienced by Cora Kelly and George Mason, phasing and scheduling, and associated feasibility costs. The scenarios also allow comparison between replacement, renovation, swing space on or offsite, and future considerations.

In Scenario 1 for George Mason, the Renovation and Addition Scenario shows that any renovation and addition will encroach onto the existing outdoor area and George Mason Park, which is located on the school parcel. Additionally, any renovation or addition would not address the fragmented educational adjacencies. Lastly, swing space would be needed as the building would need to be shelled to update MEP systems.

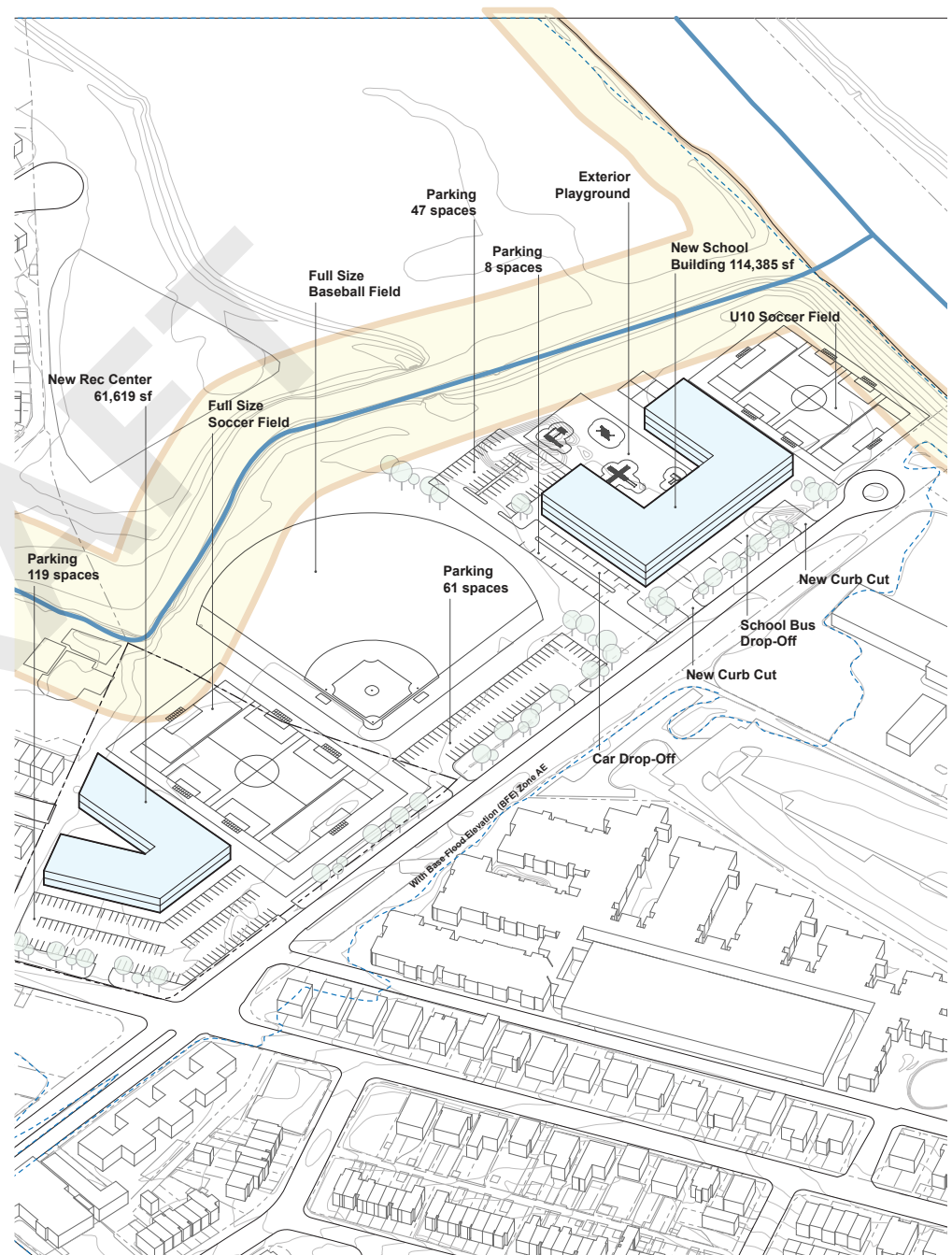
In Scenario 1 for Cora Kelly, the Renovation and Addition Scenario shows that an addition would encroach into the POS area and near the existing RPA line. Swing space would be needed as the building would need to be shelled to update MEP systems.

Onsite versus Offsite Swing Space

To the right, is a preview of one of the feasibility studies that accompany the Technical Site Assessment Study for each school. This masterplan scenario illustrates the opportunity to reconfigure the major components of the Cora Kelly site in order to provide a new school and recreation center without requiring swing space. In other words, the new school and recreation center could be constructed while the existing facilities remain in place and operational. A situation such as this would allow ACPS to avoid the costs of relocating the student body during an eighteen-to-twenty-four-month construction period.

Swing space may still be preferable to maintain existing open space uses and provide more flexibility in the design.

This is the type of question that the feasibility studies are meant to explore. What scenarios are available on the site? Can we avoid swing space? Can we increase open space and or surface parking? Each of the feasibility studies, intended to do no more than serving the purpose of answering a specific question. None of the feasibility studies is a masterplan upon which new building scenarios or additions would be based. The studies are intended only to assist the ACPS in formulating budgets for future capital improvement costs.



Future Considerations

Colocation of Community Services

ACPS had been asked by the City to explore colocation options for City/School facilities on all school sites undergoing modernization. There are many options for colocation. Colocation can include:

- Park and recreation services
- Workforce, senior and affordable housing
- Public library services
- Public health clinics and services

An example of existing colocated services include Cora Kelly Elementary School which is colocated with the Leonard “Chick” Armstrong Recreation Center.

In general, the master plan scenarios illustrate that at both the George Mason and Cora Kelly sites there is an opportunity to increase the utilization of space. Doing so would allow for additional uses to be located on the site. Those uses would be determined by ACPS and the City and discussed with the community.

In January of 2020, feasibility studies were presented to the public. At the time, future co-located use options, including affordable housing, were shown on the school parcels. During the period of public input the community generally was opposed to the colocation of affordable housing on school sites. Other co-located uses such as park and recreation services were well received. In February 2021, the ACPS School Board voted against colocating affordable housing with the new Minnie Howard school. The School Board determined that the co-location of uses on school sites should directly complement the educational programming and should not take up space which could later be used for school needs.

This Feasibility Study does not contemplate affordable housing as a future co-located use, but does include uses such as park and recreation services to be determined in future project phases.

Other Future Considerations

The process of this Feasibility study began in summer of 2019. In early 2020, the first findings of the study were presented to the public and ACPS began receiving feedback on the priorities and outcomes of the study. Shortly thereafter, efforts on the Feasibility Study were paused during the on-going COVID-19 pandemic. ACPS re-started this project in January 2021. Some of the assumptions for schools will need to be confirmed based on ACPS division priorities and other site considerations.

In addition to the opportunities for expanding the capacity and modernizing the educational adjacencies of the schools, there are some site challenges that will need to be addressed in the future. Cora Kelly is located next to the Four Mile Run AlexRenew Pump Station and future development will need to accommodate the existing facilities. New floodplain maps are expected to be adopted for the City of Alexandria in 2022. Redevelopment of Cora Kelly will be subject to additional floodplain regulations. Additionally, each site will need to meet stormwater regulations for development.

Grade-level configuration for each school will be validated in the future. This includes evaluation of a K-8 grade level configuration.

I. EXECUTIVE SUMMARY

George Mason Master Plan Scenarios

Scenario 1: Renovation and Addition

George Mason	Confirming the Priority	Addition and Renovation		Swing Space	
		Addition	Renovation	On-Site	Off-Site
Educational Program/Adequacy	Responds to immediate challenges. Critically limits expandability & flexibility	39,940 sf	Full renovation	No	Yes
Budget (Conceptual Cost)*	\$48M			-	TBD
Schedule	18 - 24 months			-	TBD
Community Impact	Addition of one or two stories would encroach heavily into the existing George Mason Park, which belongs to the school parcel, per the field survey	Emphasizes the fragmented nature of George Mason & may further complicate the coordination of building systems if further additions are constructed	Entire existing school building would need to be entirely shelled to meet MEP system and energy code (LEED and Net Zero)	-	Swing space would need to be allocated in the city

Scenario 2: Replacement School with Historic Component

George Mason	Confirming the Priority	Replacement		Swing Space	
				On-Site	Off-Site
Educational Program/Adequacy	Responds to a long-term goal & supports expandability & flexibility for future capacity changes	Replaced & relocated		Yes	No
Budget (Conceptual Cost)*	\$61M			Crucial cost savings	-
Schedule	18 - 24 months			Crucial time savings	-
Community Impact	Historic frontage is maintained as a community space or an indoor recreational space for activities	Dedicated parking & drop-off zones will avoid any kind of congestion on the local & arterial streets & will provide cleaner street frontage throughout the day	-	Relocating the school would eliminate the need	-

Scenario 3: Replacement School (in-place) with Historic Component

George Mason	Confirming the Priority	Replacement		Swing Space	
				On-Site	Off-Site
Educational Program/Adequacy	Responds to a long-term goal & supports expandability & flexibility for future capacity changes	Replaced in-place		No	Yes
Budget (Conceptual Cost)*	\$61M			-	TBD
Schedule	18 - 24 months			-	TBD
Community Impact	Historic frontage is maintained as the main entry & administration wing of the school	Dedicated parking & drop-off zones will avoid any kind of congestion on the local & arterial streets & will provide cleaner street frontage throughout the day	Courtyard configuration creates a private outdoor play area for the students, increases natural daylight into all occupiable room	-	Swing space would need to be allocated in the city

*Note: Budget and Conceptual Cost does not include costs of on-site or off-site swing space.

I. EXECUTIVE SUMMARY

Cora Kelly Master Plan Scenarios

Scenario 1: Renovation and Addition

Cora Kelly	Confirming the Priority	Renovation and Addition		Swing Space	
		Addition	Renovation	On-Site	Off-Site
Educational Program/Adequacy	Responds to immediate challenges. Critically limits expandability & flexibility	28,000 sf	Full renovation	No	Yes
Budget (Conceptual Cost)*	\$48M			-	TBD
Schedule	18 - 24 months			-	TBD
Community Impact	Gymnasium & its associated program in the recreation center will also increase & may succumb to over-utilization	Encroach heavily into the POS, & nears the RPA boundary	Entire existing school building would need to be entirely shelled to meet MEP system and energy code (LEED and Net Zero)	-	Swing space would need to be allocated in the city

Scenario 2: Replacement School and Recreation Center (no swing space required)

Cora Kelly	Confirming the Priority	Replacement		Swing Space	
		Addition	Renovation	On-Site	Off-Site
Educational Program/Adequacy	This is an approach that responds to long-term goals & supports expandability & flexibility for future capacity changes	Replaced & relocated		Yes	No
Budget (Conceptual Cost)*	New School \$68M New Rec Center \$33M			Crucial cost savings	-
Schedule	18 - 24 months			Crucial time savings	-
Community Impact	Locating the school north & closer to the water, reinforces the STEM identity by celebrating the natural context & allowing students to explore the flora & fauna discovered along the creek & park, but within the immediate school boundaries	Encroach heavily into the POS & nears the RPA boundary	The recreation center and fields receive their dedicated parking	Relocating the school would eliminate the need	-

Scenario 3: Replacement School (in-place) and Existing Recreation Center

Cora Kelly	Confirming the Priority	Replacement		Swing Space	
				On-Site	Off-Site
Educational Program/Adequacy	Approach that responds to long-term goals & supports expandability & flexibility for future capacity changes	Replaced in-place		No	Yes
Budget (Conceptual Cost)*	\$68M			-	TBD
Schedule	18 - 24 months			-	TBD
Community Impact	The recreation center would not be shared since this scenario considers a separate gymnasium within the school	Establishes a dialogue with the Four Mile Run Park and creek	Courtyard configuration creates a private outdoor play area for the students, increases natural daylight into all occupiable rooms	-	Swing space would need to be allocated in the city

Scenario 4: Replacement School (in-place) and Existing Recreation Center

Cora Kelly	Confirming the Priority	Replacement (Shared Gym)		Swing Space	
				On-Site	Off-Site
Educational Program/Adequacy	This is an approach that responds to long-term goals & supports expandability & flexibility for future capacity changes	Replaced in-place		No	Yes
Budget (Conceptual Cost)*	\$68M			-	TBD
Schedule	18 - 24 months			-	TBD
Community Impact	Recreation center is shared. New school orientation on-site allow for future expansion for dedicated gymnasium	Establishes a dialogue with the Four Mile Run Park and creek	Courtyard configuration creates a private outdoor play area for the students, increases natural daylight into all occupiable rooms	-	Swing space would need to be allocated in the city

*Note: Budget and Conceptual Cost does not include costs of on-site or off-site swing space.

This Page Intentionally Left Blank