A Clearinghouse of Resources to Aid in Reopening Schools

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BEYOND
21ST CENTURY DESIGN

Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

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DISCLAIMER

This report is a clearinghouse of resources and assembled data to aid in reopening schools; provided for informational and educational purposes only. The intended use is to provide some guidance regarding the innumerable options related to design, transporting students and the operation of school facilities to reduce the risk of disease transmission, specifically COVID-19.

By applying the information in this report, the user acknowledges that there is not a "zero risk" scenario that will result in a once-and-done successful action in every situation. Users acknowledge that each situation is unique and some of the guidance contained in the report will not apply.

Additionally, this report is in no way intended to override or supersede guidance from government and health organizations, including, without limitation, the Centers for Disease Control and Prevention, the World Health Organization, the United States Government, and or any state, city or local governmental agencies. The information contained herein reflects the available information at the time the report was created. Users recognize that details and information are changing daily, and new information and/or the results of future studies may require revisions to the report (and the general guidance contained therein) to reflect new data. We do not warrant the accuracy or completeness of the guidance in this report and assume no responsibility for any injury or damage to persons or property arising out of or related to any use of the report or for any errors or omissions.

REOPENING SCHOOLS RESOURCES

WEBSITE, CHECKLISTS & TOOLKITS

Maryland Recovery Plan for Education
http://marylandpublicschools.org/newsroom/Documents/MSDERecoveryPlan.pdf

CDC Toolkits
https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/School-Admin-K12-readiness-and-planning-tool.pdf

https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/schools.html#anchor_1589931942037
https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/index.html

Tennessee Reopening Schools Toolkit
https://www.tn.gov/education/news/2020/6/19/tdoe-releases-5th-set-of-toolkits-in-series-of-school-reopening-and-guidance-to-support-local-school-district-plans-for-fall.html

Harvard Reopening Schools Considerations
https://news.harvard.edu/gazette/story/2020/06/harvard-expert-outlines-recommendations-for-school-reopenings/

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LETTER OF APPRECIATION

To the 36 members of the Beyond 21st Century Design Collaboration (B21CD)
and the many others who contributed to this report:

I would like to personally express my appreciation for the hard work and diligence that you put into this document, especially during difficult times when we all were required to work from home. The COVID-19 pandemic, racial protests, and the loss of loved ones has left the world upside down, and many of our family and friends are often sick or grieving. Yet, not only did the team members work diligently on this task, in addition to their regular jobs, they went the extra mile and continuously added penetrating insights into the real issues concerning education today. You are some of the finest professionals in your respective fields. I will always be grateful and feel privileged to have worked with a group such as this. I consider all who supported this effort as heroes—people who jumped in and made sure we kept moving forward to provide these resources to help Maryland educate students during these critical circumstances.

During the composition of this report, I too faced several personal challenges, and I must express deep appreciation to those people who stepped-up, above and beyond the call of duty, to make this document happen. Without the efforts of *Lori Walls, Crabtree, Rohrbaugh, Associates—Architects* and *David Lever, AIA D.Arch, Educational Facilities Planning LLC*, this report could not have been completed. They diligently labored to ensure this paper is a great resource to assist school systems in their efforts to provide a safe and healthy return to school. My heart pours out to both of you— thank you; I will forever be indebted to you. Likewise, Crabtree, Rohrbaugh was tremendously generous in allowing six staff members to dedicate their expertise and hundreds of hours to this worthy cause. Additionally, I must acknowledge the assistance and dedication of many Prince George's County Public Schools employees for using their experience to contribute to this document. Finally, sincere gratitude to all of our families for their indulgence during copious amounts of time and late nights spent on this essential document.

This was a team effort and could not have been produced without these dedicated and knowledgeable professionals. My confidence is that this document will assist decision-makers with making informed decisions for the many difficult challenges ahead of them, as they work to keep Maryland's students and staff safe and healthy during these very trying times.

Best regards,

Ronald Skyles A.I.A., NCARB
Architectural Project Manager,
Department of Capital Programs
Prince George's County Public Schools
beyond21stcenturydesign@gmail.com

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BEYOND 21ST CENTURY DESIGN COLLAB

TEAM MEMBERS

Thank you for your hard work, long hours and commitment to help keep Maryland's students safe.

TOPIC 1 - EDUCATIONAL SPECIFICATIONS

LEAD: David Lever, AIA D.Arch, Principal
Educational Facilities Planning LLC
edfacplanningllc@gmail.com

- Dan Lubeley, Acting Director, Capital Planning & Construction, Howard County Public School System
- Larry Levato, AIA, REFP, Principal/Studio Director Crabtree, Rohrbaugh & Associates—Architects
- Rick LeBlanc, AIA, Principal Crabtree, Rohrbaugh & Associates—Architects
- Cynthia Smith, Director Design & Construction Baltimore City Public Schools
- Lori D. Walls, Director of Client Relations Crabtree, Rohrbaugh & Associates—Architects
- Shuchita Warner, Director of School Construction Calvert County Public Schools
- Seth Wentz, AIA, Senior Project Manager, Crabtree, Rohrbaugh & Associates—Architects

TOPIC 2 - DESIGN & SPACE ANALYSIS

LEAD: Richard C. LeBlanc, AIA, LEED AP, Principal
Crabtree, Rohrbaugh & Associates—Architects
RLeBlanc@cra-architects.com

- Fred Mason, Chief, School Facilities Branch Maryland State Department of Education
- Gloria Mikolajczyk, RA, School Facilities Architect Supervisor Maryland State Department of Education
- Jonathan Hill, AIA, ALEP, LEED AP, Vice President Grimm & Parker, Architects - Calverton, MD
- Lori D. Walls, Director of Client Relations Crabtree, Rohrbaugh & Associates

TOPIC 3 - DISTANCE LEARNING & CLASSROOMS

LEAD: Jeff Luker, AIA, LEED AP, Principal
Quinn Evans, Baltimore, MD
jluker@QUINNEVANS.com

- Joe Cellucci, AIA, Principal Quinn Evans
- Charles Tilley, AIA, REFP, Principal Quinn Evans
- Heather Schrader SMART Technologies
- Natalie Smith ViewSonic
- William Richardson Educational System Planning (ESP)

TOPIC 4 – SPECIAL EDUCATION

LEAD: Ron Skyles, AIA, NCARB
Architectural Project Manager
Prince George's County Public Schools
ronald.skyles@pgcps.org

- Jonathan Hill, AIA, ALEP, LEED AP, Vice President Grimm & Parker, Architects - Calverton, MD
- David Lever, AIA D.Arch, Principal Educational Facilities Planning LLC
- Larry Levato, AIA, REFP, Principal Crabtree, Rohrbaugh & Associates—Architects
- Lori Walls, Director of Client Relations Crabtree, Rohrbaugh & Associates—Architects
- Seth Wentz, AIA, Senior Project Manager, Crabtree, Rohrbaugh & Associates—Architects

TOPIC 5 – HVAC & AIR PURIFICATION

LEAD: Jeff Alban, PE, LEED AP, President
Alban Engineering Associates, Inc.
jalban@albanengineering.com

TOPIC 6 – SANITIZING SCHOOLS

LEAD: Ron Skyles, AIA, NCARB
Architectural Project Manager
Prince George's County Public Schools
beyond21stcenturydesign@gmail.com

- Jeff Alban, PE, LEED AP, President
  Alban Engineering Associates, Inc.
- Kathy Dixon, FAIA, NOMAC, LEED AP+, NCARB, CDT,
  Principal, K. Dixon Architecture, PLLC
- My-Anh Nguyen, NOMA, Architectural Designer,
  K. Dixon Architecture, PLLC
- Seth Wentz, AIA, Senior Project Manager
  Crabtree, Rohrbaugh & Associates—Architects

TOPIC 7 – TRANSPORTATION

LEAD: Ron Skyles, AIA, NCARB
Architectural Project Manager
Prince George's County Public Schools
beyond21stcenturydesign@gmail.com

TOPIC 8 – LEGAL CONSIDERATIONS

LEAD: Ron Skyles, AIA, NCARB
Architectural Project Manager
Prince George's County Public Schools
beyond21stcenturydesign@gmail.com

- Robin Welsh, Esq.
  Prince George's County Public Schools
- Diana Wyles, Esq.
  Prince George's County Public Schools

CADD, GRAPHICS & EDITING

Crabtree, Rohrbaugh & Associates—Architects

- Kelsey Boeshore, Graphics & Marketing
  Coordinator
- Arif Hasanbhai, Associate AIA, Senior
  Project Designer
- Lori D. Walls, Director of Client Relations
  lwalls@cra-architects.com

ADDITIONAL TEAM PARTICIPATION

- Darin Beamish, Box Light
- Lisa Barrett, Brailsford & Dunlavey, Inc.
- Robin Evans, Prince George's County Public Schools
- Ron Kauffman, RA, Prince George's County Public Schools
- Jeff La Porta, MD-DC ASBO
- Michael McBride, 21st Century Schools /
  Baltimore City Schools
- John Oh, PMP, K. Dixon Architecture, PLLC
- Heather Schrader, ViewSonic
- Eric Scheibeler, Box Light
- Natalie P. Smith, SMART Technologies
- Lisa Spencer, Prince George's County Public School
- Jillian Storms, AIA, School Facilities Architect,
  Maryland State Department of Education
- Carla Viar Pullen, Facilities Planner,
  Queen Anne's County Public Schools
- Melissa Wilfong, AIA, LEED AP BD+C, ALEP, Principal,
  Grimm & Parker Architects
- Scott Washington, Scott W. Washington, CDT, CCCA,
  Chief Operating Officer, Howard County School System
- Kieran Wilmes, AIA, LEED AP BD+C, Partner, Grimm
  & Parker Architects

INTRODUCTION

RATIONALE, GOALS & METHODOLOGY

Among the radical and unprecedented changes brought on by the novel coronavirus epidemic in the spring of 2020 are the closures of schools across the nation. As distance learning takes the place of regular classroom instruction, teachers, parents, and students themselves have expressed a powerful desire to return to the school and educational facilities.

The school building is increasingly appreciated as the setting, not only for an orderly, systematic approach to learning, but also as an environment that nurtures the social and emotional development of children; a safe haven for children while their parents work and attend other obligations, and a crucial resource for community meetings, recreation, and in some cases, essential social services.

Schools are also recognized as playing an important role in preventing a resurgence of COVID-19 or the emergence of similar epidemics in the future: children, even if they are not infected themselves, can be potent vectors of illness through their physical and social behaviors. Keeping our children safe while in school, and through association, their parents, siblings, and community neighbors, is a national priority.

There is widespread agreement that when Maryland schools do reopen, two overarching conditions will be present, not only in the fall of 2020 but potentially for a considerable time into the future:

- *Social distancing* - within the school building and grounds for all functions: arrival, dismissal, classroom instruction, meals, recreation, class change, and multiple other actions.
- *Distance learning* - as a significant component of the instructional environment.

Each of these factors have far-reaching and complex consequences for instruction, administration, operations and the school climate. Each also has a bearing on the design of school facilities: how classrooms and other instructional spaces are configured, how interior spaces are related to access points and outdoor recreational and sports facilities, how support facilities within the school are located and equipped, and how spaces will be used jointly with the community.

To address these concerns and provide guidance to Maryland school boards as they consider options for reopening schools, a collaborative of professionals with specialized experience in school facility design, included school system facility planners, private sector architects, engineers and private sector experts in educational services, came together to research, deliberate, and develop practical suggestions. The members of this group have spoken with officials in every branch of school operations, including academics, legal services, facility support (maintenance and custodial), transportation, information technologies, food services, and security, and have contacted an array of state, national, and international organizations that are involved in the various dimensions of school operations and facility design.

This report outlines the findings and suggestions of the Beyond 21st Century Design (B21CD) collaborative and provides a clearinghouse of resources to aid in reopening schools safely. The suggestions support the instructional and administrative guidance provided by the Maryland State Department of Education (MSDE) in the *Maryland's Recovery Plan for Education: COVID-19 Response and the Path Forward* (MRPE, June 2020). As noted in the *Recovery Plan*, each school system will need to determine the mix of facility and operational initiatives that are appropriate for their individual composition of students, communities, school facilities, and geographic and climatic conditions.

RATIONALE: WHY B21CD COLLABORATIVE WAS FORMED

The B21CD process was initiated in early April 2020 to address many concerns shared by facility planners and design professionals across the state:

- How social distancing and distance learning will affect the use of school facilities in the future.
- How the design of facilities should be modified to prepare for future events of a similar kind.
- How inequities in instructional quality and school facilities, and especially in distance learning capacities, will affect the future of students.
- How the crisis can be a springboard to rethink educational delivery for the future.
- How school support functions like transportation, food services, and security will be affected, and
- How these factors will interact.

The collaborative pursued several specific goals:

- To develop practical guidance for facilities design in a time of pandemic, considering both the short-term reopening of schools in the fall 2020 and long-term changes in educational specifications and design.
- To assist school systems in addressing the operational and design issues involved in reopening, by raising the complex issues involved, exploring their interconnectivity, sharing best practices, and assisting LEAs to avoid pitfalls and to help minimize mistakes.
- To address the equity of educational delivery and support services, particularly for students with special needs.
- To assemble resources (in one location) for use by LEAs, consisting of websites and documents that provide guidance from credible sources.
- To improve our own understanding, so that we may better serve our school systems as staff members and as design and planning professionals.

Challenges to equity may include:

Students and staff members may:

- be immunocompromised;
- face new mental health challenges;
- provide childcare for siblings or work to support their families;
- have learning disabilities or need accommodations that are impacted by COVID-19 control measures;
- not have internet access or technology devices at home;
- have difficulty finding safe transportation to school;
- rely on schools for food security;
- rely on physical activity opportunities during school due to lack of neighborhood safety and/or resources to be active at home;
- not have access to face masks, hand soap, or other supplies that help maintain general hygiene at home; and
- vary in their understanding of COVID-19 information.

Schools for Health: Risk Reduction Strategies for Reopening Schools, June 2020, page 18,
Joseph G. Allen, Assistant Professor of Exposure Assessment Science and Director,
Healthy Buildings Program, Harvard T.H. Chan School of Public Health

ORGANIZATION OF TASKS

In total, 36 professionals participated in the Beyond 21st Century Design collaboration. These planners, architects, engineers, and education experts were organized into eight separate topic groups:

1. **Educational Specifications**: How the space, equipment, and FF&E (furniture, furnishings and equipment) requirements of schools will change as social distancing and distance learning are put into effect.
2. **Design & Space Analysis**: How classrooms and other instructional spaces will be used under conditions of social distancing.
3. **Distance Learning** & **Classroom**s: How distance learning can be used to enhance contemporary instructional models and the pitfalls of utilizing too much time for distance learning.
4. **Special Education**: How the requirements of students with disabilities, who have need of in-person contact with instructors and others, will be addressed under conditions of social distancing.
5. **HVAC & Air Purification**: How mechanical systems will need to be modified to prevent the airborne transmission of infection in enclosed spaces.
6. **Sanitizing Schools & Buses**: How sanitization can be achieved while preserving the educational and social mission of the school.
7. **Transportation**: How social distancing will reduce bus capacity and affect enrollments and will require special attention to social distancing at every stage of pupil transport.
8. **Legal Considerations**: How legal and contractual obligations can be met cooperatively during a time of national emergency.

Each group conducted research, met using electronic platforms for discussion, interviewed subject matter experts, and developed materials for presentation to the entire group. These research materials and discoveries are the basis for this report.

As the COVID-19 epidemic progresses, new information is being continually developed by research institutions, national and regional organizations, and local school officials. This document presents no startling new ideas, nor does it pretend that the suggestions offered will guarantee that there will be no infections in schools. No living person or organization can make such a guarantee. It is hoped, however, that the suggestions it offers will assist school system leaders in the vital and difficult decisions that they must make, affecting the health, welfare, education, and possibly even the lives of the students and adults who are under their responsibility.

> "Scientific evidence indicates that risks to students and staff can be kept low if schools adhere to strict control measures and dynamically respond to potential outbreaks."
>
> *Harvard Schools for Health*:
> *Risk Reduction Strategies for Reopening Schools,*
> *June 2020, page 6* https://schools.forhealthorg/

SUMMARY: KEY TAKE-AWAYS & SUGGESTIONS

SUMMARY OF THE ENTIRE REPORT

Following are the principle findings and key take-aways from the eight topics. Each topic is discussed in greater detail in the corresponding sections of the full report. This section is a vital component of the research paper and could be used as an informative tool; it provides a summary of the highly detailed information in all topics, for those that may require it.

General Principles

- Policy Objectives: Along with many logistic, operational, capital, and fiscal factors that must be considered, the occupancy of school facilities will depend on balancing three competing societal values:
  - The safety and welfare of students;
  - The need for educational attainment; and
  - The caretaking role that schools play in relation to adult employment and the larger economy.
- Communications: There is a need for multiple channels of communication, between:
  - decision-makers and front-line staff that will implement board policies, which is a critical element of success.
  - administration, instructional personnel and parents and students to provide assessments, direction on the changes, and requirements to maintain instruction, safety and health.
  - policy makers, who must be informed about the range of consequences involved in their decisions. Decisions by the board of education will in turn assist staff to work out the results in more detail as changes are applied to individual schools and to individual educational programs.
  - staff of different school systems, in order to disseminate best practices, avoid potential pitfalls encountered by colleagues, and develop a compendium of solutions available to all LEAs to disseminate best practices, avoid potential pitfalls encountered by colleagues, and develop a compendium of solutions available to all LEAs.
- Risk Assessment: Each school system is challenged to define an acceptable level of risk, and to adapt and act in the safest way feasibly possible to reopen schools.

TOPIC 1 - EDUCATIONAL SPECIFICATIONS

Takeaway: **Capital Costs**. Changes in educational specifications (ed spec) outlined in this report will involve increased capital costs, and some of them will also result in an increase in square feet of certain school features, e.g. corridors. Recognizing that capital funds are constrained, facility planners, school architects, and decisionmakers will need to:

- Establish trade-offs in terms of costs and square footage.
- Prioritize ed spec changes with respect to both appropriateness for specific and urgent requirements of the issue. As an example, while the report suggests that almost every operational school will need a separation (isolation) space, the identification of the school space that will serve this function, and therefore its size and location, will vary from school to school, depending on local priorities.
- Incorporate analysis of operational costs into the decision process, since the changes may increase the need for staffing and material resources of various kinds.

Takeaway: **To determine the size and specific requirements of future schools**, it will be essential to understand the proposed instructional model and how distance learning may affect daily attendance and the actual usage of spaces.
These policy decisions will inform:

- spaces that will be used daily, under all instructional scenarios and conditions of occupancy;
- spaces that may be called into service occasionally in the event of an emergency;
- limits of how many students and adults may safely occupy the school under different conditions.

Takeaway: **School systems should develop multiple scenarios** for how both existing and proposed school buildings will be used. Scenarios must consider:

- realities and limitations of school bus transportation;
- preferences of the community;
- students that will need to attend school in person, including special education students, alternative education students, and students whose educational program involves work in the classroom or laboratory, e.g. CTE students.

TOPIC 2 - DESIGN AND SPACE ANALYSIS

Takeaway: Confirm School Capacity Now, Prior to Reopening:

- **Survey families in each school in the summer 2020** to determine, to the closest extent possible, a count of those students who will be returning by grade, in order to plan for capacity and space needs for social distancing layouts for each school.
- **Place special emphasis on families who may be highly mobile**, high risk students who are more likely not to return, and those families who may be experiencing additional hardship.
- **Survey all staff, including support staff and substitute teachers at each school**, to determine if staffing capacity matches the number of students returning in social distancing settings.
- **Accommodating 1/2 to 2/3 of school enrollment could be accomplished** using the elementary social distancing analysis in this section, based upon an elementary school of 700 – 750 students.
- **The impact of reduced accessibility to resources, special curriculum**, etc. requiring many more teaching staff members. Careful choreography of entry and exiting, circulation through corridors; changing of classes would be required. Modified dining would need to be considered (breakfast/lunch/after school). Rooms such as the gymnasium or cafeteria may need to be modified to become teaching stations.

Takeaway: September Goals: Additional Program Enhancements

- Nurses Suite evaluation and functional analysis
- Separation (isolation) rooms with independent HVAC
- Counseling rooms / safe room
- Sanitation supply room
- Secured containers with masks, gloves and alcohol wipes at every entry/egress.
- Containers for disposal of hazardous waste
- Sanitizing incoming product – mail, supplies, kitchen deliveries, etc.
- Security & SRO Command Center

Takeaway: Future Goals: Additional Program Enhancements

- Separation (isolation) rooms with independent HVAC
- Counseling rooms / safe room
- Sanitation supply room
- Security & SRO
- Command Center
- Nurses Suite Program Enhancement
- Unisex Restroom Suites for Boys, Girls, Gender Neutral, & Handicapped

TOPIC 3 - DISTANCE LEARNING & CLASSROOMS

Takeaway: A Rare Opportunity:

- Under any scenario for reopening in SY 2020, many students will of necessity continue to learn through remote means.
- Rather than viewing this situation as one of limitations, educators are challenged to see in it a rare opportunity to shift toward a new classroom teaching and learning model, where the teacher's role changes from instructor to facilitator, and students become active participants in order to develop critical thinking and problem-solving skills.

Takeaway: New Teaching and Learning Models:

- **Use the small class sizes that result from social distancing as an advantage** to enhance individualized learning and competency-based evaluation of progress.
- **Will incorporate distance learning as a permanent part of instruction**, under several different scheduling models.
- **Need to be supported by an infusion of ubiquitous classroom technology** built around a robust communications infrastructure.
- **Will require training of teachers and students in the use of technology** to maximize the strengths of both in the classroom and remote instruction.

Takeaway: Distance Learning Training for parents & students will improve success

- When engaging in distance learning, students are home with their parents. Therefore, along with training teachers, more intense parental training and involvement is required for success, especially for younger students. Parents should have direct access to supports after training as well.

Takeaway: Self-Directed Learning:

- **Project Based Learning** is compatible with distance learning, and while it can be enhanced through digital tools, it is not fully dependent on online learning. School systems and teachers can initially distribute hardcopy packets, which can guide students to design projects, processes, and learning objectives.
- **May provide a low-cost solution** that allows teacher contact hours to be spread out over time, with a small group focus, meeting remotely with individual students or groups every two to three days.

TOPIC 4 - SPECIAL EDUCATION

Takeaway: **Face-to-Face Instruction**: Special education students are in greater need of in-person, close contact with instructors than other students, and may also be more disturbed by the changes in location and routine that have been imposed by the COVID-19 crisis. Distance learning may also be less effective for these students. Consequently:

- **LEAs must develop a detailed student assessment prior to starting school**. This will be a valuable tool to determine the current status of the child and how to continue to provide the appropriate education.
- Return students to school and to the same routine as soon as possible, maintaining social distancing. If possible, return students to the same rooms they occupied before.
- Medically fragile students and children in the Infants and Toddlers program: delay return until pre-COVID schedules are in place and cleaning and sanitation protocols are in full effect, and appropriate spaces have been designated.
- Special education students in the same classroom should be kept together throughout the day to facilitate contact tracing.
- Special education students may need increased counselling services, and spaces where face-to-face meetings can safely take place.
- Aides, nurses, and equipment must be factored into the space requirements, along with social distancing parameters.

Takeaway: **Space for PPE & Sanitation Equipment Storage. Additional space may be needed to:**

- Ensure social distancing. If additional space is not feasible, consider keeping students on a split schedule (e.g. A day/B day).
- Store specialized PPE.
- Store additional cleaning and sanitation equipment and materials.
- NOTE: These space demands may compete with the spaces required for the regular student population.

Takeaway: **HVAC & Air Purification**. Requirements for mechanical systems for spaces housing special education students are particularly stringent:

- Frequent air changes and higher levels of filtration will be essential for all students who experience respiratory vulnerabilities or who are medically fragile.

TOPIC 5 - HVAC & AIR PURIFICATION

Takeaway: **Control of Airborne Infection:**

- Apply the highest efficient MERV filter possible. MERV 13 is minimum and MERV 14 is recommended.
- Utilize portable HEPA filter units in classrooms.
- The use of UV-C Lamps kills microorganisms and can be used in occupied spaces near the ceiling and in Air Handling Equipment

Takeaway: **Health/Nurse's Station:**

- Upgrade Health/Nurses' Suites and treat as separation (isolation) rooms using:
  - 100% exhaust/100% outside air
  - Maintain proper pressure relationships and follow ASHRAE Standard 170 design guidelines for "separation (isolation) mode"
- It is important to note that human exposure to UV rays is not recommend and treatment with UV rays should only be used in an unoccupied room.
- Likewise, maintenance staff should use proper PPE to perform this function.

Takeaway: **Indoor Environment:**

- Utilize outdoor air to flush the building. Maximize/increase outdoor air flow rates to dilute contaminates.
- Maintain indoor temperature and humidity design criteria

TOPIC 6 - SANITIZING SCHOOLS & BUSES

Takeaway: Sanitizing and PPE Provisions:

- Hand Sanitizing Stations & PPE:
  - Calculate locations / sanitizing stations based on traffic and square footage.
  - Quantities depend on program population: half the population may be present, but usage will increase up to six times a day per student.
  - Budgets: include for soap and calculate approximately 150% more for Personal Protective Equipment (PPE).
  - Early procurement of PPE and other mitigation supplies will be important to avoid shortages due to high demand periods.
  - Buy in bulk – no-touch sanitizing stations and hand sanitizer, masks or cloth face coverings, clear shields, gloves, paper gowns, etc.
  - Long-term, no touch sinks and water fountains should be considered
  - Communicate with local emergency management agency (EMA) to determine whether the needed supplies are available elsewhere in the county or state.
- Secured storage & monitoring:
  - Provide secured storage for all PPE and supplies and develop and implement ongoing monitoring strategy to maintain accurate count for PPE and cleaning supplies.

Takeaway: Sanitizing Buildings:

- Develop sanitizing protocol:
  - Develop specific protocols and train staff in their use and application.
  - Playgrounds and exterior areas will also need to be sanitized.
- Sanitization of HVAC equipment and spaces is particularly important, to prevent the transmission of airborne infectious materials.
- Sanitizing Restrooms:
  - Limit and control number of people in restroom at a time
  - Keep restroom doors closed
  - Run exhaust fans continuously when occupied

Takeaway: Sanitizing Buses:

- Cleaning and sanitizing schedule will be determined by the instructional model adopted by the board of education.
- Protocols for sanitizing buses will need to be developed and communicated to parents and the community to assure them of the safety of their children.
- Sanitizing will require additional time and new skills for drivers. Union negotiations may be needed to adjust to the new requirements
- Sanitizing options:
  - UV lighting for unoccupied buses
  - Disinfecting robots
  - Sanitize after each route
  - Sanitize at the end of school day

TOPIC 7 – TRANSPORTATION

Takeaway: **Transportation of students has the potential to be a major constraint in reopening schools, in both short and long-term, and it is essential to assess transportation capacity and utilize this data in deciding on the best instructional model:**

- Survey parents to determine the likely number of students expected to be transported, both at the beginning of the school year and daily/weekly.
- Determine the capacity of buses based on social distancing guidelines, considering seating arrangements and sibling exceptions.
- Determine how many students can be transported on each run.
- Determine time required for each run, including the time needed for temperature checks, loading and unloading, and sanitizing (per the protocols established by the BOE). Include contingency time in case a student shows signs of infection at a bus stop or in route.
- Determine number of runs required for each route.
- Determine feasibility of transporting students in morning & afternoon windows established by the board.
- Work with unions to determine what is feasible within existing contracts and where adjustments can be made that will protect the rights of drivers while allowing the system to operate under new conditions.
- Inform decision-makers if transportation represents a major constraint on the possibility of returning students to school.

Takeaway: **Staffing, resources, and time are major constraints that must be addressed:**

- **Staffing:** Availability of trained bus drivers, potentially working longer hours than previously, due to extended and staggered pickup and drop-off times.
  - It requires two to three months to train a new bus driver; there is a large pool of unemployed people who can be trained as drivers.
  - All new employees, drivers & support staff should obtain background checks prior to reporting to work.
  - Training must include protocols for communication with parents, identification and actions in case a rider shows signs of infection, and bus sanitization.

TOPIC 7 – TRANSPORTATION, continued

- Resources:
  - Buses, fuel & maintenance requirements, particularly if mileage increases due to multiple trips and the time available for maintenance decreases. Sanitizing materials and equipment, and PPE for drivers and pupils, must also be considered (including storage & distribution on buses).
- Time:
  - Increased time will be needed for every bus run: picking up students at neighborhood stops, discharging them at school, loading the bus at dismissal and sanitizing.

Takeaway: Routing and resource limitations may force LEAs to transport students from different grade levels on the same bus.

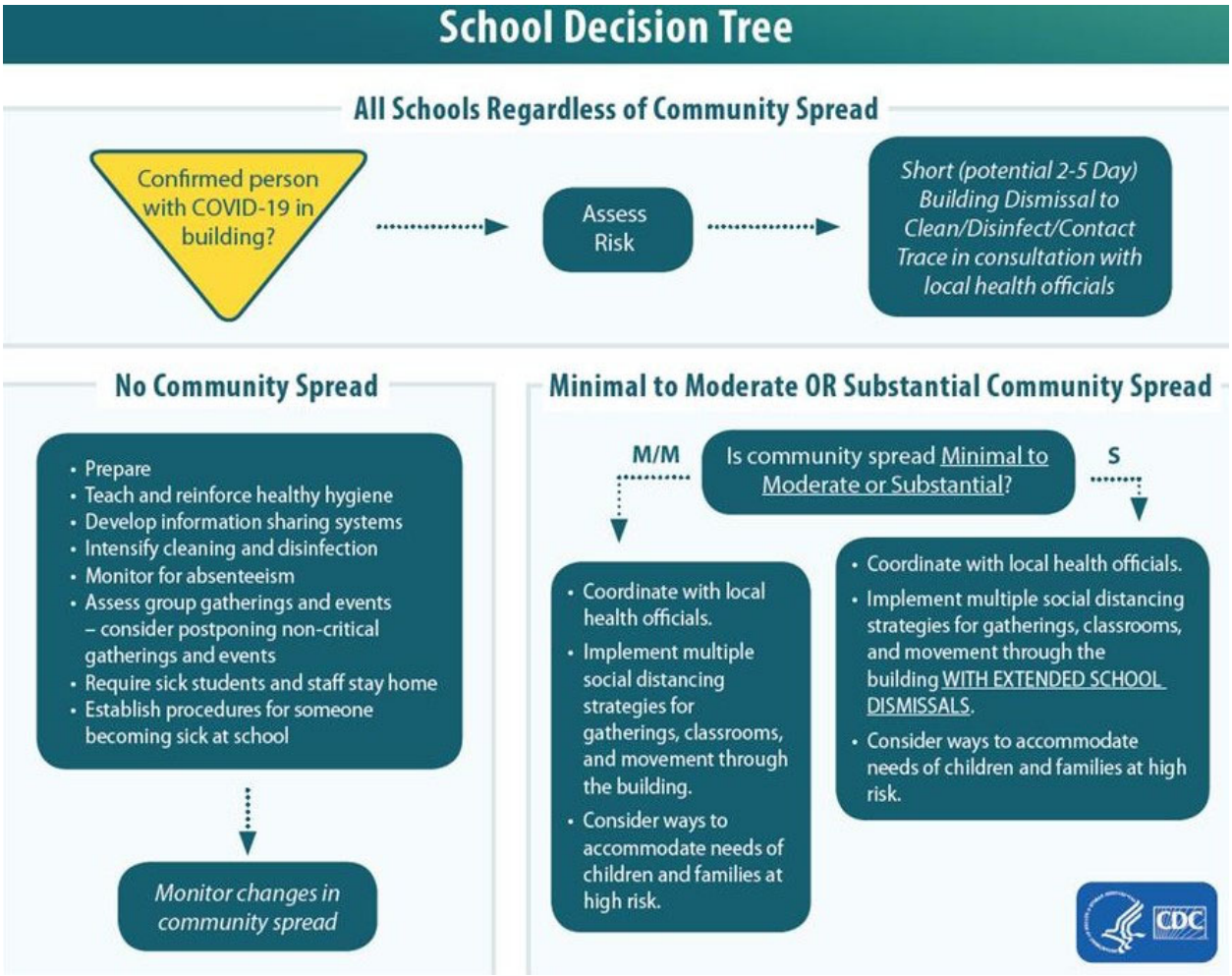
- LEAs should determine how this procedure will align with the principle that students should stay together as groups throughout the school day to facilitate tighter contact tracing, in order to reduce cross-infection.
- Options include:
  - Gather students from multiple buses into same-class groups before entering the building;
  - Distribute all students from one bus to their classes before another busload is distributed.
  - Under all circumstances, additional time will be required at the bus loading/unloading points. Additional staff support may be needed on the bus and at loading and unloading points to ensure safety and to reduce the risk of cross-infection among students.

TOPIC 8 - LEGAL CONSIDERATIONS

Takeaway: Schools can require students to social distance and use PPE in order to ensure the health and safety of staff and students and to protect the general public.

Takeaway: In order to assure the health and safety of staff and students and to protect the general public, schools can administer temperature tests to determine if people have a fever and possibly COVID-19.

Takeaway: Prior to separation (isolation) of minors, parental consent will be required.



Topic 1
Educational Specifications

BEYOND
21ST CENTURY DESIGN

Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

TOPIC 1 - EDUCATIONAL SPECIFICATIONS

OVERVIEW

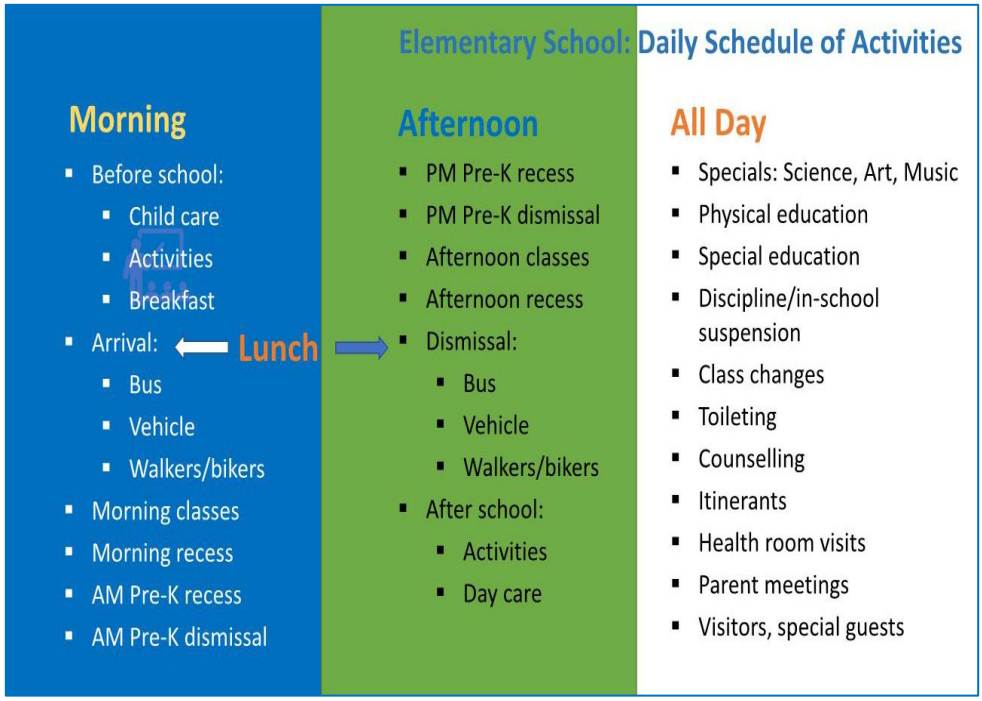
It is important to acknowledge that administrators are challenged with developing new policies to maintain the health of staff and students and that many of these decisions will undermine policies already in place related to security, sustainability and efficiency standards. Since this pandemic is unprecedented, even authorities disagree on what they consider to be the best course of action. The considerations and suggestions in this paper are provided as insight into various options and the associated risks. Each school system must develop protocol and assess the amount of acceptable risk they are willing to take.

With schools across the country closed in a response to the unprecedented COVID-19 pandemic, there is considerable uncertainty about how schools will re-open in fall 2020. Irrespective of the choices made, school design in the future will need to permit a rapid and flexible response to address similar emergency conditions. The Educational Specifications (Ed Spec) group focused on changes of school design that will support resilience in case of either a continuation or a resurgence of the COVID-19 epidemic, or of similar emergency conditions. It is anticipated that many of these suggestions will also support improved educational delivery and healthy building performance under normal operations.

The Ed Spec group was also mindful of the short-term impact of these suggestions in fall 2020: some can be implemented quickly, others will require more time, and fiscal constraints may dictate which changes are reasonable to implement and their timing. From both a fiscal and a facility perspective, it will be infeasible to implement all of the suggestions in this report; nor should this be necessary, as the improvements will be tailored to the specific needs of the student body, the instructional program, and the community.

GUIDING FACTORS

The research focuses on the A/B Week scenario outlined in the *Maryland Recovery Plan for Education* (MRPE) dated June 2020. The Group explored solutions that will be applicable under a variety of scheduling and distance learning scenarios. Inherently, the ed spec is a long-term (1 to 5 years) instrument used for defining and planning capital projects. Therefore, operational and educational impacts of school projects that will be occupied in the Fall of 2021 and beyond were considered, but with attention as well to short-term impacts in the fall of 2020.



Since capital funds are scarce and the routine facility needs of school systems are very large, it is hoped that the short-term suggestions to make schools operational in Fall 2020 will not obstruct future capital projects. With good planning, the short-term improvements may improve the resiliency of the facility to address other emergency threats and enhance future capital projects. Following are short-term considerations:

- MRPE Updated June 10, 2020 - *"…after consultation with leading public health experts…[means] having between 10-15 individuals maximum at a time in rooms within school buildings is acceptable,"* Karen B. Salmon, Ph.D., State Superintendent of Schools.
- Social distancing can be recommended in schools in Fall 2020 and possibly until the pandemic is extinguished, or a truly effective vaccine is developed.
- Reduced Classroom Occupancy is required to enforce social distancing and presents an opportunity to implement educational reforms around small-group instruction; these will require rethinking the role and design of the schools and should be undertaken by educators and designers, jointly.
- Elementary School presents the simplest case: students in this setting are generally in the same classroom throughout the day and the educational program within any grade level does not vary greatly among individual students (except for students with IEPs).
- Secondary School: Solutions appropriate to the elementary grade band provide a basis for investigating the more complex issues related to middle and high school, which under normal circumstances involve student movement throughout the day, more highly individualized instructional programs, and a number of hands-on programs, including Technology Education and Career and Technical Education (CTE).
- Distance learning will be important in the short term and will remain an important component of instruction in the future, hopefully with enhanced training on how to improve instructional delivery (whether under epidemic conditions or in normal instructional practices).
- Face to Face Learning - Certain students are more dependent on access to the physical facility than others; these include special education, alternative education, and all students involved in hands-on activities.

Methodology

The activities of a typical day in an elementary school day were traced from before-school through after-school events, using the A/B Week option presented by the MRPE Plan as a basis for discussion. Floor plans for a typical elementary school were used as an aid to understand these sequences and to illustrate the suggestions.

Pedestrian simulation software is under development at the University of Maryland and may prove very valuable to identify locations on school grounds and in school buildings where social distancing will be difficult to achieve. The software shows movement patterns based on assumptions of use and given parameters (e.g. 6 feet social distancing, vs. 9 feet). The tool can be used for planning purposes, for example to identify one-way corridors, as in a grocery store, or to limit the number of occupants in a specific space. The application has not yet been applied to schools, but this may occur soon. For more information, see YouTube demonstration at https://www.coffman.com/pedestrian-simulation-modeling-for-covid-19/.

KEY FINDINGS, TAKEAWAYS & SUGGESTIONS

Capital Costs

Changes in educational specifications outlined in this report will involve increased capital costs, and some of them will also result in an increase in square feet of certain school features, e.g. corridors. Recognizing that capital funds are ways constrained, facility planners, school architects, and decisionmakers will need to:

- **Establish trade-offs** in terms of costs and square footage.
- **Prioritize the educational specification changes** with respect to both appropriateness for the specific requirements of the school, and the urgency of the issue. As an example, while the report suggests that almost every operational school will need an separation (isolation) space, the identification of the school space that will serve this function, and therefore its size and location, will vary from school system to school system, depending on local priorities.
- **Incorporate analysis of operational costs** into the decision process, since the changes may increase the need for staffing and material resources of many kinds.

School Capacity & Program

To determine the size and specific requirements of future schools, it will be essential to understand the proposed instructional model and how distance learning may affect daily attendance and the actual usage of spaces. These policy decisions will inform:

- The spaces that will be used daily, under all instructional scenarios and conditions of occupancy;
- The spaces that may be called into service occasionally as emergency conditions arise;
- The limits of how many students and adults may safely occupy the school under different conditions.

Multiple Scenarios

School systems should develop multiple scenarios for how both existing and proposed school buildings will be used. Scenarios must consider:

- The realities and limitations of school bus transportation;
- The preferences of the community;
- The students that will require constant face-to-face learning to attend school in person, including special education students, alternative education students, and students whose educational program involves work in the classroom or laboratory, e.g. CTE students.

CONSIDERATIONS

The Group recognized that space utilization and operational conditions will vary significantly under different occupancy scenarios. Therefore, three enrollment scenarios for an elementary school with a State Rated Capacity (SRC) of 685 (89,998 sf) were examined:

1. Operation using only the usual teaching spaces;
2. Operation using all available space for instruction; and
3. Operation housing 50% of students at 94% utilization

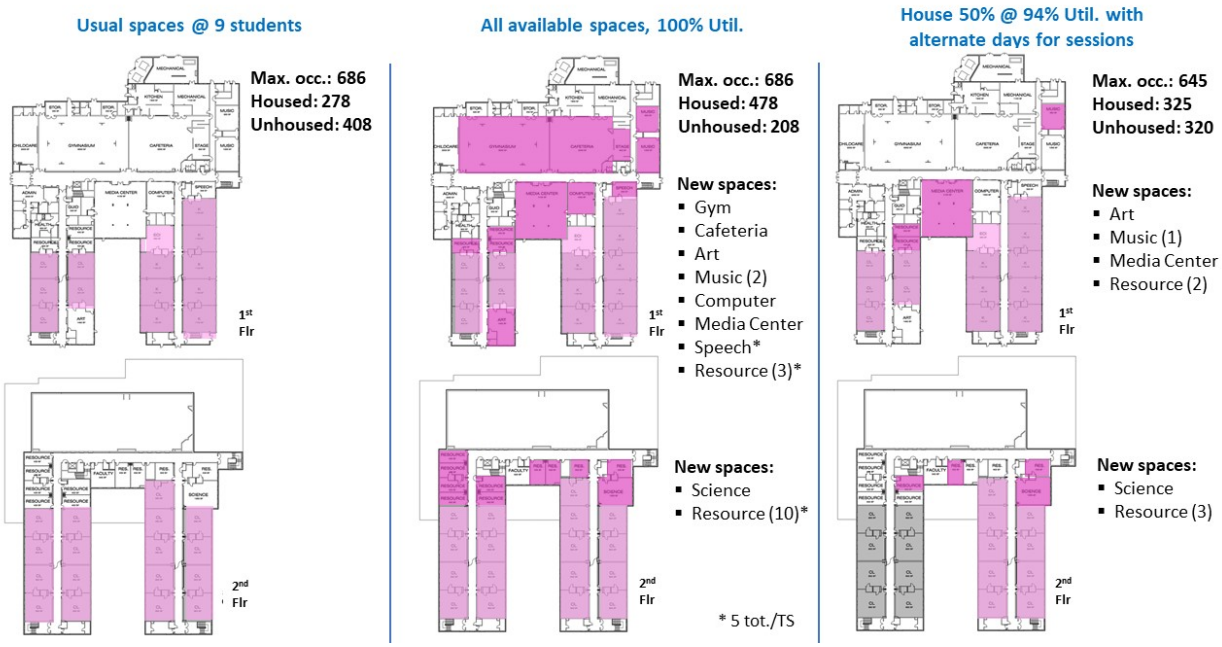
The table below provides calculation details and illustrates how these three scenarios enlist different areas of the school. Analyses of this kind, applied to the actual assessment of existing and proposed schools, can be used by local officials to test the feasibility and the operational consequences of various scenarios, and to select the most appropriate suggestions for facility changes outlined in this report.

If the per-room occupancy is increased to 15 people, the utilization figures given below would increase by approximately half (e.g. 40.5% would become approximately 60.8%).

School Utilization Under Varying Occupancy Scenarios * Social distancing occupancy of 9 students (1 teacher) / classroom	Occupancy	% Utilization	Students not accounted for	Classroom deficiency*
Normal operation @ 100% utilization	685	100%	0	NA
1. Operation utilizing only usual teaching stations	278	40.5%	408	41%
2. Operation utilizing all available spaces	478	69.7%	208	21%
3. Operation housing 50% of students @ 94% utilization of all available spaces with alternate days for sessions.	325	47.4%	320	32%

Plans: Alternative Utilization Scenarios

Elementary School – Normal 685 SRC / 89,998 GSF



General Facility Considerations

The following suggestions apply to every occupancy scenario. All suggestions have long-term benefits for instruction and/or operations (e.g. use of additional spaces).

1. **Develop a communication system** that will ensure open and continuous connection with local health officials, emergency management services, first responders, staff and parents.

2. **Assess, identify and prioritize the order of individual schools to reopen and develop a plan to communicate the order to all stakeholders.**

3. **Increase usable floor area in sequencing instructional spaces** as much as possible, e.g., by reducing the amount of cabinetry.

4. **Use large spaces** - be prepared to use cafeteria or gymnasium for instruction on short notice, for example, through installation of partial-height partitions.

5. **Ensure good operation of HVAC system**: adjust to increase ventilation, filtration, and air changes; provide separate system (air purifier for short-term) for nurse's station and designated quarantine space(s).

6. **Flexible, movable furniture** - use to facilitate social distancing within instructional spaces.

7. **Use floor markings & signage** to facilitate social distancing. Ultimately, this presents designers with an interesting long-term challenge: how to design an attractive floor pattern that can be quickly transformed for social distancing when needed.

8. **Touchless Hand Sanitizer Stations** - locate throughout; numbers of stations will depend on the occupancy.

9. **Before & After School** - any school providing before or after school care should consider either limiting attendance, expanding the area of use, or rotating students through spaces to allow for social distancing.

10. **CDC childcare recommendations -** https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/index.html

DATA

Abbreviations/Symbols:

SD – Social Distancing
DL – Distance Learning
$ - Capital funds required
T – Additional time required

Elementary School: General Considerations

Fire Safety
- Conduct fire drills: preserving SD during exiting
- **Instructional spaces larger than 1,000 nsf: control of 2nd door to meet fire code requirements**

HVAC: Air changes are essential in all spaces

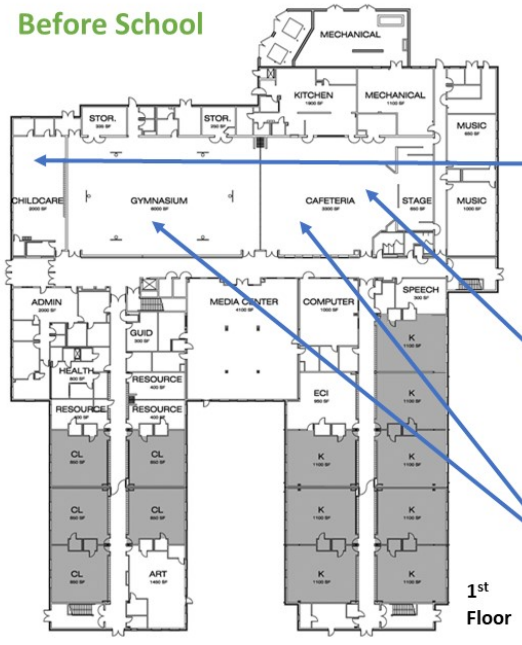
Corridors
- **Narrow corridors require particularly close attention**
- **Future: no corridor should be less than 10' clear ($$)** (i.e., with locker doors open; may require removing lockers)

Cleaning
- Between classes (particularly if used by different groups, e.g. Art, Music)

Socializing: How to ensure avoidance of touching

Toileting
- How to ensure SD when no supervision
- How to ensure hand washing/sanitizing

Parents
- Train parents in both SD and DL
- Encourage practice SD with their children and others



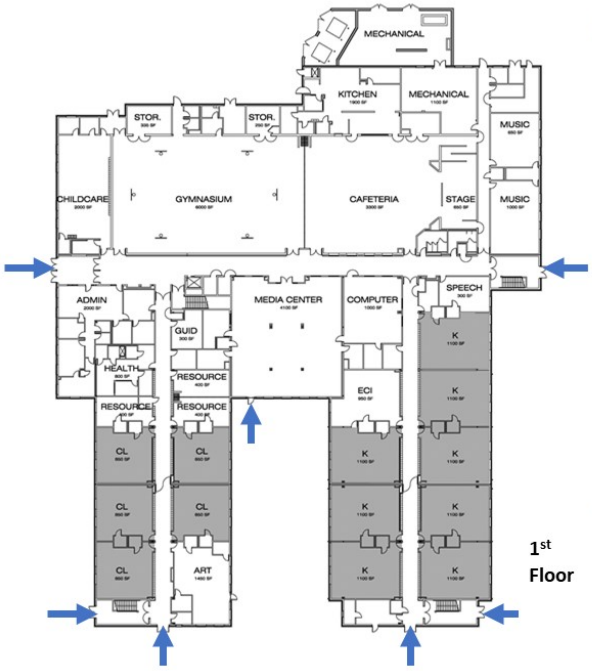
Elementary School: Morning Activities

Before & After Entering Each Space
- **Hand washing stations ($)**
- **Temperature checks**

Child care
- **Space used: Re-purpose-designed room to meet licensing requirements** <<confirm>>
- Restrict numbers to ensure SD
- **Furniture to ensure SD**
- Drop-off/pick-up must allow spacing of cars
- Supervision at drop-off to ensure SD
- Limit parent / guardian access to building
- Direct access secure entry recommended

Breakfast
- Cafeteria
- Small numbers to facilitate SD
- Same SD techniques as at lunch
- Monitor route into school

Activities
- Gym and Cafeteria
- Small numbers to facilitate SD
- Activities must be non-contact, non-crowding



1st Floor

Elementary School: Morning Activities

General

- **Arrivals - may require exterior & interior staging to assemble** - gym, cafeteria, library, hallways
- **Use of alternate entries may be necessary** (➔ more staff control, more supervision)
- **Temperature checks before students leave staging area**

Bus arrivals

- **SD on buses while in transit** (➔ more buses needed ($))
- **Staggered Bus arrivals** (T)
- **Wait on bus, or under canopy** ($?) to enter school
- **Secured vestibule may allow controlled entry** ($?)

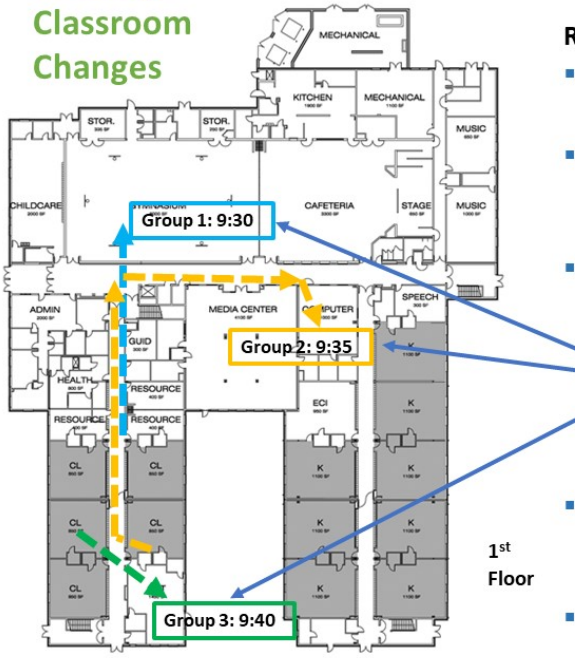
Parent drop-off

- Separate car arrival from bus arrival to avoid mixing
- Monitor cars to ensure SD

Walkers

- Parent monitoring during walking to ensure SD
- **Exterior staging area to avoid mixing w/ buses or dropped-off students**

Limiting Classroom Changes



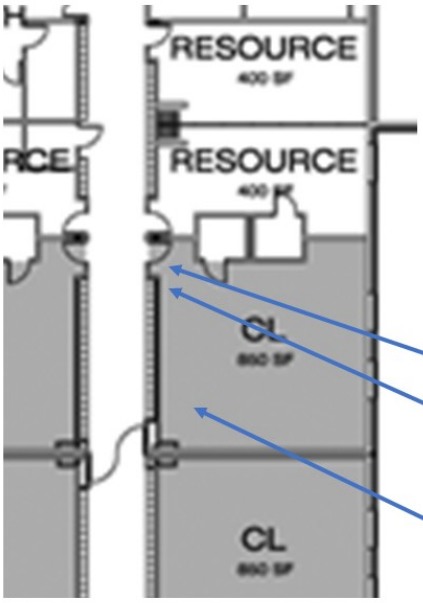
1st Floor

Elementary School: All Day Activities

Reducing Class Changes

- **Lunch in classroom**
  - Art, music, library, computers on carts, P. E. in classroom?
- **Maintain SD in classroom and corridors**
  - Maximum of 10 (9 students & 1 teacher)
  - **Sanitation protocols for sneezing, coughs**
- **Necessary class changes:**
  - **Staggered Schedules** – Each class alternates & stays together
    - Bells in small increments, w/ different sounds (T)
    - 1st group clears before 2nd group enters hallway
    - **Hallway social distancing: min. 40', one side of corridor**
    - **Possibly, remove lockers** ($)
    - Lengthen change time/ one class moves at a time (T)
- **Special attention to water fountains & toilets**
  - SD, hand washing, reduce or eliminate touching surfaces, door handles, etc.
- **Provide sanitizer stations in all corridors, common spaces ($)**

Classroom Instruction Flexibility



Elementary School: All Day Activities

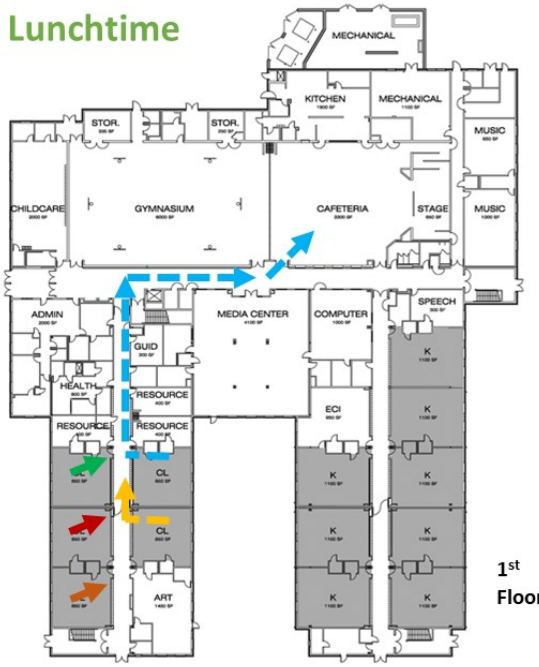
Impacts on Classroom Capacity

- **10 Max. class size**
- **More classrooms may be needed**
- **Short-term:**
  - Possibly relocatable classrooms **($)**
  - Specialty rooms may be needed for core instruction; may move to cart or be eliminated
- **Long-term: larger building footprint ($$)**
  - **CIP funding constraints ➔ SF reductions elsewhere**
  - **Reduction/elimination of other categories of Capex**

Impacts on Classroom Procedures & Design

1. **Classroom protocol needed: entrance, exit, toileting,** group work, play, discipline, visitors
2. SD entering classroom: one-by-one, teachers monitor spacing and timing
3. **Hand sanitizer station at entry point ($)**
4. **Lunch in classroom whenever possible**
5. **Light, flexible furniture ($)**
6. Assigned seating

Lunchtime



1st Floor

Elementary School: Mid-Day Activities

Assumption

- Even if most lunches are served in classrooms, there will still be a need for a cafeteria

Sequencing

- Lunch groups need to be sequenced to ensure SD
- SD in cafeteria during lunch ➔

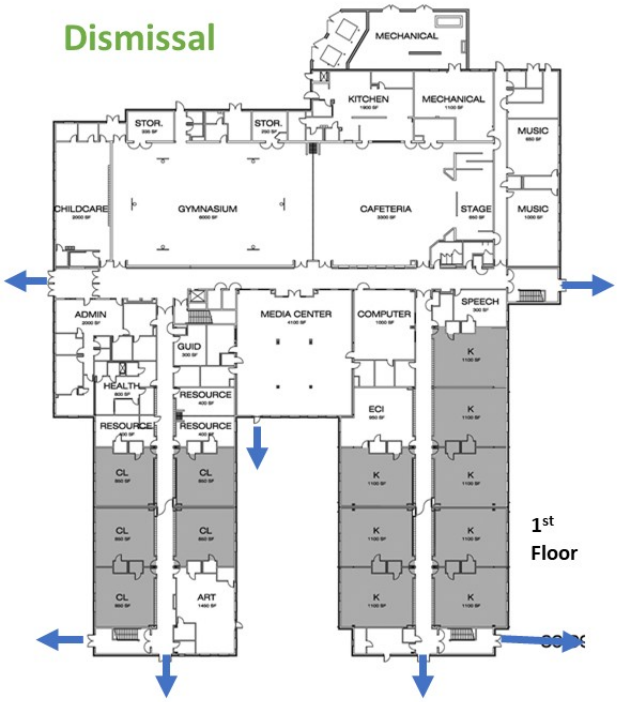
Reduced occupancy

- **More students will need to eat elsewhere**
- **Need to accommodations for waste, cleaning, pest control) ($)** or
- **Cafeteria will need to be larger ($$)**

Elementary School: All Day Activities

Exit & Re-entry

- SD while leaving and re-entering classroom:
  - students leave and enter one-by-one,
  - teacher monitors spacing and timing
- **Hand sanitizer station at entry point of entry ($)**
- Exit using multiple doorways
- Close monitoring during recess to ensure SD
- Class – Cafeteria – Recess –
  - **Classroom sequencing requires oversight**
  - **Need more staff for monitoring ($)**



Elementary School: Afternoon Activities

General

- **Classrooms will serve as staging area(s) before groups are dismissed**
- **Additional staging may be needed**: gym, cafeteria, library, hallways
- **Use of alternate entries may be needed** (➔ more staff control, more supervision)
- **Temperature checks before students enter bus**

Bus arrivals

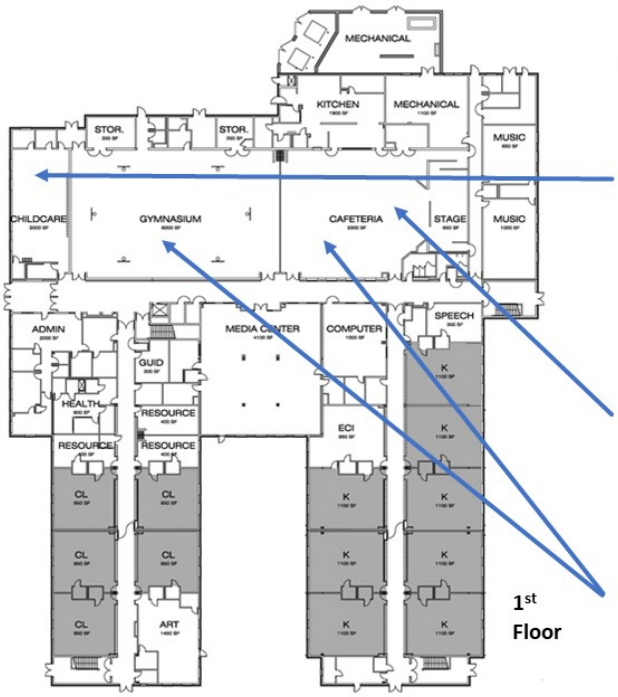
- SD on buses while in transit (➔ more buses needed ($))
- Buses will need to be staggered for loading
- **Security vestibule** ($?) may allow controlled exit

Parent pick up

- Separate car pick up from bus loading to avoid mixing
- Monitor cars to ensure SD

Walkers

- Parent monitoring during walking to ensure SD
- **Exterior staging area** to avoid mixing w/ buses or picked up students



Elementary School: Afternoon Activities

All

- **Hand washing before and after entering space**
- **Temperature check before and after entering space**

Child care

- Purpose-designed room to meet licensing requirements <<confirm>>
- Restrict numbers to ensure SD
- **Use furniture to ensure SD**
- **Drop-off/pick-up must allow spacing of cars**
- Children need to be supervised at pick-up to ensure SD

After school snack

- Space used: Cafeteria
- Small numbers facilitate SD
- Use same SD techniques for serving as at lunch
- Monitor passage from school

Activities

- Spaces used: Gym and Cafeteria
- Small numbers facilitate SD
- Activities must be non-contact, non-crowding

Educational Specification Matrix

The suggestions in this report are intended to increase the resiliency of schools in the future to address situations like the COVID-19 crisis. The suggestions are presented in outline format in the matrix that follows; a great deal more detailed investigation is needed to determine which suggestions are appropriate for a school, instructional program and community. In addition, recognition of the limits of funding, of the capacities of the design and construction communities, and of the LEA facilities and operational staff who must implement and maintain the improvements, will unavoidably constrain some of the options. The Educational Specification group recognizes that however important preparation for a COVID-19-like epidemic may be, there are multiple other facility imperatives that boards of education face. Therefore, the suggestions in this report must be prioritized within an overall environment of fiscal constraints.

It must also be recognized that several suggestions in this document conflict with long-standing policies and goals that support security, safety, and sustainability. School boards will need to weigh and prioritize the value of these potentially competing societal and environmental demands. Specifically:

- Energy concerns:
  HVAC & Air Purification - The need to increase air changes and the percentage of outdoor air ventilation throughout the school, and particularly in the critical quarantine areas, conflicts with efforts to improve the energy efficiency of schools.
- Security concerns:
  Multiple Entrances – The need to disperse students upon arrival/exiting runs counter to contemporary security concerns, which attempt to limit the number of active entrances and exits at the school in order to improve monitoring and control of visitors.
- Impervious surfaces / environmental issues:
  Expansion of Parking – The effort to address increased parent drop-off and pick-up and additional buses will increase the amount of impervious surface, with effects on stormwater management and heat-island impacts.

STOP

Policy makers must be aware of the conflicts and trade-offs as they develop strategies for re-opening schools and select among the multiple options to increase school resiliency in the face of possible future epidemics.

SPREADSHEET

The following matrix outlines long-term educational specification suggestions and the impact they will have on re-opening of schools. The long-term pros and cons of these suggestions are defined: many involve capital expenditures, as well as staffing and operational implications that must be carefully weighed by school system leaders and justified in their policy decisions. The short-term implications are also described.

RESPONSE ON HEALTH/ISOLATION QUARANTINE

ACTIVITY	TIMING	CONSIDERATIONS	EDUCATIONAL SPECIFICATION IMPLICATIONS	SHORT-TERM KEY TAKE-AWAYS	EDUCATIONAL SPECIFICATION EVALUATION	
					PROS	CONS
ALL DAY	AM/PM	Need to isolate and treat single student or staff member who demonstrates symptoms, pending arrival of medical assistance. Nurses may require special equipment and personal protective equipment to ensure safety	**Nurses suite**: capacity to isolate and treat one person. Requires separate ventilation system with negative pressure, internal isolation to protect staff. Separate shower area for nursing staff. Storage needed for PPE & testing equipment, Also accommodates routine calls.	**Difficult to implement in many existing schools due to spatial configuration & HVAC system. Use of portable Air Purifier with HEPA filter & UV Lights & install HEPA filters in current HVAC vents if possible. If isolation is not possible, designate nearby quarantine space.**	Establishes isolated quarantine area, inhances resiliency; helps separate people exhibiting symptoms until they can be retrieved by parents or first responders.	May require additional square footage, additional HVAC/energy consumption: energy costs due to high outside air volume. Increased capital cost. Additional operational & maintenance requirements. Routine nurse's calls may need to be deferred to another location; intensive sanitization will be required. Additional capital cost: HVAC, shower, storage.
		Need space to isolate multiple student or staff members who demonstrate symptoms of infection, pending arrival of medical assistance. Physical separation is essential to limit spread of infection.	Isolation or Quarantine space: Large space designated for quarantine for several people who exhibit symtoms at the same time. Otherwise used for instructional or recreational purposes. Not a space dedicated to this sole function. Needs to be in close proximity to nurse's suite with dedicated HVAC system & other measures, e.g. UV lighting. Gymnasiums typically have seperate supply of outside air, and large enough to house multiple people at a time, and require multiple access points from the outside.	**Identify a space, equip with supplies. Install temporary air purifiers and/or HVAC & HEPA filters. Gymnasium has many potential advantages for this function, including size & seperate outside air. Gym can house 35-40 students if used for instruction**	Establishes isolated quarantine area, inhances resiliency; helps separate people exhibiting symptoms until they can be retrieved by parents or first responders. If well designed, could provide community isolation space closer to homes and loved ones. Individual air purifiers not needed.	Will displace functions that normally occupy the spaces, e.g. gym, lunch, music, etc. Locate these elsewhere in the school, or defer/cancel; if these spaces are used for instruction, they can accommodate 35-40 students. Location near nurse's suite may be in conflict with best location for access, acoustics, etc.
		Storage requirements for PPE, cleaning & sanization equipment, etc. will be needed.	**Storage**: is in addition to regular storage, and must be a dedicated area. Quantity determined by size of school and role during pandemic conditions (number & age of occupants; community shelter function; short-term or long-term quarantine; etc.)	**Adequate onsite storage is feasible in under-utilized schools where excess space is available. Storage must remain dedicated to this use and must be carefully monitored. Consider use of relocatable classrooms, If site permits, POD containers, nearby community facilities, religious organizations, etc. to assist. Pre-K and Kindergarten students bring a pair of school to change into when they arrive in the classroom; they change into home shoes when they leave school.**	Enhances resiliency; improves efficiency of operations and PPE management under epidemic conditions. The virus lives on surfaces, including the floor for up to 24 hours. Changing shoes will limit the spread.	Cost and may require additional square footage. Pressure to use space for non-medical storage; additional staff management required.
		Large group toilets should have staff supervision. No more than 2 students at a time to ensure social distancing	**Restrooms:** May require multiple small, individual toilets with washing facility within toilet area.	**Will require additional staff to monitor group toilets; training students in sanitation and handwashing practices will be critical.**	Reduces opportunities for infection.	Capital expense. Behavior change: ensure students practice good hand washing technique when not supervised. May require additional support staff or community volunteers. Possibly develop restroom schedules, which will be time consuming.
SPECIAL EDUCATION	AM/PM	Assume that most special education student needs cannot be met through distance learning and in the home. Need to maintain continuity of learning plan, IEP & 504 plans. Students should be assessed.	**Special Education:** spaces are properly identified/sized in new facilities. Each school must be individually analyzed for the ability to provide social distancing for special education students. Additional safe zones may be needed.	**Conduct individual assessment of each student. Additional spaces may be needed for Social distancing. Note: Former classrooms converted for special edcation are typically undersized and do not contain the proper spacing for various equipment. Safe zones, wholesome, or wellness rooms may need to be provided to assist studetns with PTSD.**	Will provide special education students with appropriate in-school learning environment.	If additional spaces are needed, additional capital cost and staffing may be necessary.
		Impacts of social distancing on caregivers	See suggestions for nurse's suite above.	**Need for additional storage and availability of PPE**	See pros for nurse's suite above.	See cons for nurse's suite above.
		Distance Learning due to child with disability having a high risk of severe medical complications due to exposure to COVID-19	HVAC for special education rooms may need to be a dedicated system with enhanced ventilation.	**Indiviual assessment and proper implementation and monitoring of IEP & 504 plans.**	Reduces risk to medically fragile students.	Specialized medical needs may not be met in the school. Extended absence from learning may require additional compensatory services. Capital expenditure, additional maintenance cost, energy impacts.
		Social,emotional, educational impacts	Tactile surfaces. Access to and storage of satinizing/cleaning materials for shared equipment	**Eliminate /modify programs and provide additional sanitzing stations in hallways and instructional spaces.**	Continuity of learning plan.	Additonal equipment may be needed

RESPONSE ON HEALTH/ISOLATION QUARANTINE

BEFORE SCHOOL	**AM**	Free breakfast program	May require pickup structure / window. Expand use area within Cafeteria.	**Pickup option outside of main building: temporary structure / covering for pickup at designated area. Additional sanitization within cafeteria./ Permit students who arive early for breakfast to eat it in their designated classroom.**	Continue to support students in need of nutrition. Lesson exposure by eating in classrooms.	Limited choices - will need to be boxed in nature. Limited spaces available that are not designated for education. Cafeteria will need to be sanitized between the arrival of students for breakfast and transition to instructional space or isloation space.
		Limit attendence.	Where social distancing is not feasable, and space is scarce, limiting admission or feeding studetns in their designated classroom may be required.	**Identify space for student breakfasts, or feed in classroom and provide monitoring for social distancing and sanitization prior to school start**	Continue to provide services to students in need	Require parents to seek additional care options for days they are not attending; risking exposure to more groups given the limited options. Requires additional sanitization prior to start of school.
		Restrict parents from accompanying child to program.	Outside drop-off area clearly marked, near entrance to before-school space. Direct access between drop-off area and before school space. Capacity for staff to view drop-off area for late arrivals of parents not complying.	**Difficult if routine drop-off area is not adjacent to before school area, and there is not direct communication between this area and the outdoors.**	Restricts potential for infection.	Behavioral change that may be unacceptable to some parents. Requires additional staff.
		Child Care / Before & After School Care: Consider grouping children by grade and limiting interaciton to assist with contact tracing.	May require additional area to social distance, or a rotation schedule of activities and groups.	**For rotating groups, may require additional staff to monitor groups. May require sanitization of surfaces between rotating groups.**	Enhanced contact tracing	Requires more space or use of additional areas within the building and more frequent cleaning & sanitization
		Provide direct entry to child care / before school care programs	May require vestibule additions, walkways, and other associated items	**May not be feasable for every program. Identify entrace and post signage.**	Limits exposure. Enhances security. Creates a sanitizing / temp check zone	Capital expense. May not be possible for all buildings.
		Activities typically held in the Gymnasium may be limited to smaller groups or eliminated	Little / No Impact	**Restrict activities to contactless exercises with low respiratory impact. Limit group sizes.**	Reduces exposure.	Limits activity and social / developmental outlets.
ARRIVAL	**AM**	Spacing of cars, students. Multiple buses and cars. Staging areas for bus, vehicle, and walking arrivals.	Pavement and sidewalk markings. Signage, directional arrows. Separate bus and vehicle entrances. Possible need for bus magazine space on street.	**Provide temporary pavement and sidewalk markings. Contact local authorities for traffic control.**	Markings and signage: relatively inexpensive. Separate bus/vehicle entrances: standard in current ed. spec.	Separate entrances & street magazine space: not always feasible due to site constraints. Requires multiple bus runs and staggered arrival and school start times. More potential for bus/vehicle conflicts. Requires staff to monitor students in between arrival times.
		Parent dropoff separated in time and space.	Separate bus and vehicle entrances. Will require enlarged parent parking/drop-off area.	**Not feasible in short term for sites without these features already built. Communicate with parents and establish staggered parent drop-off arrival times.**	Standard in current ed. spec.	Capital expenditure. Many urban sites are too small for more than minimal parking, will result in neighborhood traffic problems. Expanded parking generates increased impervious surface, heat island impact. Potentially significant behavioral changes among parents: conflicts with work schedules, inability to see child into the school, long delays, etc.
		Social Distancing @ main entry	Extended canopies at main entry & other entries. Secured vestibule.	**Not feasible in short-term.**	Standard in current ed. spec.	Capital expenditure. Addtional maintenance of canopies.
		Use of multiple entrances.	Ensure separation of circulation: entry vs. staircase.	**Not all entrances are easily accessible from bus/vehicle dropoff area. Identify accessible entrances and provide signage.**		May require additional square footage at entries. Raises severe security concerns: will require additional staff to monitor and supervise.
			Sidewalk/pavement at all entrances.	**May not always be present.**	Standard in current ed. spec.	
CLASS CHANGE	**AM/PM**	Social Distancing in corridors / Timing of movement	Floor markings, signage, directional arrows.	**Temporary floor markings, signage, directional arrows**	Relatively inexpensive, quick to install.	Will severely restrict number of students in the corridors, extending class change times; strong incentive to keep students in the same room for as much of the day as possible.
			Minimum corridor width (no narrow corridors)	**Restrict passage to one group at a time. Ensure air change between groups**	Relatively inexpensive, quick to install.	Increases square footage & building ineffiency factor.
			No lockers. If corridors are too narrow for two-way traffic, it increases the chance of interaction between students passing.	**Restrict items students can bring from home; seal lockers; isolate backpacks etc.**	Reduces capital cost	Significant behavioral change. Student items must be reduced and stored elsewhere. Potential contaminents - all will be exposed to any item brought into school.

RESPONSE ON HEALTH/ISOLATION QUARANTINE

CLASSROOM INSTRUCTION	**AM/PM**	Social Distancing ; max. 10 occupants	Light, flexible, movable furniture. Reduce built-in cabinetry.	**Furniture can be installed very quickly, ready for fall 2020.**	Relatively low expense of furniture implies benefits can be applied quickly to many schools. Approach aligns with contemporary educational philosophy: project based learning, flexible learning spaces, more individual instruction.	FF&E Needs frequent sanitization. Will require change in State regulations for FF&E to become eligible for State funding.
		Same group of students stays together through day.	Operational issue: limited impact on ed spec.	**Develop schedule for 1 teacher and 9 students per class**	Smaller classes allow teachers more time to teach students, know their individual needs. Allows focused contact tracing in case of outbreak.	Behavioral change: students required to clean up. Additional time required if staff cleans up. Special attention to toilet needs, students visiting with special instructors, students attending parent/teacher conferences, etc.
		Regular sanitization and cleaning	Touchless hand sanitizer at every entry	**Relatively inexpensive, readily installed.**	Encourages good hygiene and cleanliness.	Need to monitor sanitizing units & refill, & have storage available for supplies.
		Maintain social distancing & ensure students don't brush past one another at entry and exit	Minimal cubbies or hangers for student storage.	**May be necessary to remove cubbies/hangers to discourage large backpacks, increase floor area for social distancing**	Reduces fire hazard, clutter, dust collecting items.	Behavioral change: students bring less to school, do not share.
			Floor markings for Social Distancing.	**Can be completed easily prior to school reopening**		
			Broader visual control of corridor side to allow teacher or aide to monitor student entry and exit.	**Schedule for teachers' aides and parents to be hall monitors**	Teachers have more control to manage classrooms	Cuts into classroom space. Must be integrated with shelter in place requirements for security.
LUNCH	**MID-DAY**	Limit use of large volume space such as cafeteria to allow for appropriate social distancing and smaller groupings of students in one space.	Consider multiple smaller "niche" locations for multiple serveries through the building.	**Request parents to provide lunches if possible, and lunches can be delivered to classrooms to limit student movement within the school. Carts will be needed.**	Disbursement of services throughout building allows for more flexibility in lunch shifts.	Smaller "niche" locations require additional staffing, more square footage, potentially increased serving line equipment.
		Serve "lunches on a cart" in classrooms.	Storage space for carts.	**Displace other school materials/items being stored to another location (e.g. addl chairs for assembly).**	Allows for more flexibility in lunch shifts.	Potential increase in lunch staff and work hours.
		Order ahead provisions through Point of Sale (POS) software, allowing students to place order through smartphone or app or other device	No impact on ed spec.	**Additional networking and software provisions may be needed.**	Allows for social distancing through an order-ahead setup.	Potential increased staff and additional hours to decipher "orders" and fill requests. Means for staff to receive information on orders (large display in kitchen, etc).
		Disposable sealed containers with individual pre-packaged meals. May require Just in Time ordering and delivery of meals to school sites due to space constraints.	Allocate space for additional trash/recycling containers. May require staging area to receive and distribute containers.	**Additional trash/recycling containers and pest control in classroom spaces.**	Reduction in certain kitchen equipment such as steamers, kettles, ovens, dishwashing, etc. Reduction in square footage to support food prep.	More frequent trash/recycling pickup service. May require more frequent delivery of food. Environmentally not sustainable.
		Shelf stable meals	Upsizing of storage (walk-in units)	**Displace other stored items to make room for quick ready meals, packaged salads and fruit.**	Reduction in certain kitchen equipment such as steamers, kettles, ovens, dishwashing, etc. Reduction in square footage to support food prep.	Environmentally <u>not</u> sustainable due to excess packaging
RECESS	**AM/PM**	Social distancing when leaving and entering classrooms. Hand Sanitizers at every point of entry.	Wider hallways and elimination of lockers to accommodate SD.	**Provide directional arrows in corridors for one-way traffic flow as much as possible to limit students passing.**		Net to gross ratio of building increased. Additional maintenance and operational costs due to added SF.
		Use multiple doors to outside.	Additional doors to exterior play areas to create "loop" (e.g. classroom-lunch-recess-classroom).	**May have to distribute additional keys to staff.** **May need to schedule staff members to open doors for groups to allow re-entry.**		Potential compromise to security. Distribution of additional keys to staff may compromise key security. Additional staff, or demands on existing staff.
			Added card access at entry points and door hardware changes to accommodate multiple re-entry locations. Additional walkways around buildings to facilitate flexibility of site usage.	**Develop and train staff in security measures**	Added convenience by adding multiple entry points into building may eliminate bad habit of "leaving door open".	Added maintenance and upkeep of more electronic equipment. Added maintenance and upkeep.
		Close monitoring to ensure social distancing at all times.		**provide sanitizing stations prior to re-entry**		
		Keep students away from frequently touched equipment.	Explore different materials and play equipment for future playground equipment for optimal anti-microbial qualities and maintaining social distancing	**Some existing equipment may need to be blocked off due to in-ability to play and social distance**		Sanitizing of equipment.
			Design play areas to be further separated in space.			Larger area of site dedicated for outside play equipment.
		Use asphalt sport courts and green areas.	Additional play areas on future sites for added flexibility.	**non-contact supervised play**	No additional infrastructure or changes needed.	May be difficult at urban sites.
		Separate play zones for preserving social distancing		**non-contact supervised play**	No additional infrastructure or changes needed.	May be difficult at urban sites.
		Sequencing will require particular oversight: Class-Cafeteria-Recess.	Location of play equipment may require different adjacencies for future designs.	**develop schedule to permit additional time for Class-Cafeteria-Recess and handwashing**	No additional infrastructure or changes needed.	Adjacencies may not result in optimal utilization of site.

RESPONSE ON HEALTH/ISOLATION QUARANTINE

DISMISSAL	**PM**	Spacing of cars, students. Multiple buses and cars. Staging areas for bus, vehicle, and walking students	Pavement and sidewalk markings. Signage, directional arrows. Separate bus and vehicle entrances. Possible need for bus magazine space on street.	**Provide temporary sidewalk and pavement signage. Possibly stagger dissmisal and inform parents of new schedule. Communicate with local authorities for traffic control.**	Markings and signage: relatively inexpensive. Separate bus/vehicle entrances: standard in current ed. spec.	Separate entrances & street magazine space: not always feasible due to site constraints. Requires multiple bus runs and staggered arrival and school start times. More potential for bus/vehicle conflicts. Requires staff to monitor students in between arrival times.
		Parent pickup: separated in time and space.	Separate bus and vehicle entrances. Will require enlarged parent parking/drop-off area.	**Not feasible in short term for sites without these features already built. Communicate with parents and establish staggered parent drop-off arrival times.**	Standard in current ed. spec.	Capital expenditure. Many urban sites are too small for more than minimal parking, will result in neighborhood traffic problems. Expanded parking generates increased impervious surface, heat island impact. Potentially significant behavioral changes among parents: conflicts with work schedules, inability to see child into the school, long delays, etc.
		Walkers: cannot mix with bus riders and students being picked up.	Requires a staging area before students are released to walk. Parents may be in this area to wait for children.	**May be very difficult in tight urban settings. Extremely difficult to enforce social distancing off of school grounds.**	Extremely difficult to enforce social distancing off of school grounds.	Behavioral change; will require teaching children, staff supervision.
		Use of multiple exits.	Ensure separation of circulation: entry vs staircase. Sidewalks and pavements at all entrances	**Very tight entrances in older schools; sequence and timing of dismissing groups will be essential.**	Allows for dispersal of students, reduces risk, facilitates social distancing. Standard in current ed spec	May require additional square footage at entries. Raises severe security concerns: will require additional staff to monitor and supervise.
AFTER SCHOOL	**PM**	**Sports / Activities**	Little / No Impact	**Sports and activities may be limited to those able to be practiced without close interaction, or with training that promotes social distancing. Use of outdoor areas would be encouraged**	Maintains social distancing.	Limits practice and training.
		Limit attendence	Where social distancing is not feasable, it may be necessary to limit admission to the program	**Limit attendees to students that attend the school or those attending that day.**	Continue to provide services.	Require parents to seek additional care options for days they are not attending; risking exposure to more groups given the limited options
		Restrict parents from entering building to meet child.	Outside drop-off area clearly marked, near entrance to after-school space. Direct access between drop-off area and after school space. It will be important for staff to view drop-off area.	**Possibly identify drop-off near after school activities. Provide parents with cell number of teacher or after school coordinator, so they can call and alert that they have arrived for their child.**	Restricts potential for infection.	Behavioral change that may be unacceptable to some parents. Requires additional staff.
		Child Care / Before & After School Care: Consider grouping children by grade and limiting interaction to assist with contact tracing.	May require additional area to social distance, or a rotation schedule of activities and groups.	**For rotating groups, may require additional staff to monitor groups. May require sanitization of surfaces between rotating groups.**	Enhanced contact tracing	Requires more space or use of additional areas within the building
		Direct entry to child care / after care programs	May require vestibule additions, walkways, and other associated items	**May not be feasable for every program. If not, communicate to parents pick-up location.**	Limits exposure. Enhances security. Creates a sanitizing / temp check zone	Capital expense. May not be a possability for all buildings.
		Activities typically held in the Gymnasium may be limited to smaller groups or eliminated	Little / No Impact	**Restrict activities to non-contact exercises with low respritory impact. Limit group sizes.**	Reduces exposure	Limits activity and social / developmental outlets.
TRANSPOR-TATION	**AM/PM**	Buses are considered small space and social distancing will be required; must limit students to 8 or 9 per bus run.	Requires multiple trips and staggered departure and dismissal times	**Communicate after school schedule with parents. Limit as much as possible, students that require bus transportation home.**	limiting studetns to program, and asking parents to provide transportation will require less bus runs and limit the need for sanitization and exposure	**COSTLY & TIME CONSUMING:** Buses will need to be sanitized between runs. May require more drivers and buses and increased cost of fuel & maintenance.

TEAM MEMBERS

TOPIC 1 – EDUCATIONAL SPECIFICATIONS

Please email questions to the team lead:

LEAD: David Lever, AIA D. Arch, Principal
Educational Facilities Planning LLC
1910 Martins Cove Ct., Annapolis, MD 21409
edfacplanningLLC@gmail.com

Dan Lubeley, Capital Planning and Construction
Howard County Public School System
Ellicott City, MD

Larry Levato, AIA | Principal
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

Rick LeBlanc, AIA | Principal
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

Cynthia Smith | Director Design & Construction
Baltimore City Public Schools
Baltimore, MD

Lori D. Walls | Director of Client Relations
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

Shuchita Warner | Director of School Construction
Calvert County Public Schools
Prince Frederick, MD

Seth Wentz, AIA | Senior Project Manager,
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

BEYOND 21ST CENTURY DESIGN

Refining K-12 Design to Accommodate EMERGENCY SITUATIONS

WEBSITES, CITATIONS & SOURCES

TOPIC 1 – EDUCATIONAL SPECIFICATIONS

HOW COVID-19 WILL CHANGE EDUCATION

Study comparing PTSD in quarantined parents & children
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30460-8/fulltext

Various Articles on Domestic Violence & Abuse during quarantine
https://www.theguardian.com/us-news/2020/apr/03/coronavirus-quarantine-abuse-domestic-violence /
https://www.nytimes.com/2020/04/06/world/coronavirus-domestic-violence.html /
https://www.psychologytoday.com/us/blog/why-bad-looks-good/202004/5-steps-prevent-domestic-violence-during-quarantine /https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30460-8/fulltext

Various articles on Special education – 504 & IEP Plans
https://calmatters.org/education/k-12-education/2020/03/coronavirus-stretches-californias-special-education-system-to-the-brink/ https://sites.ed.gov/idea/files/qa-covid-19-03-12-2020.pdf

https://www.chalkbeat.org/2020/3/12/21178761/schools-that-go-remote-for-coronavirus-must-keep-serving-students-with-disabilities-can-any-really-d

USA Today – Chicago/special education & COVID
https://www.usatoday.com/story/news/education/2020/03/15/coronavirus-school-closings-closures-kids-quarantine-symptoms-special-needs-illinois/5034633002/

Washington Post – Challenges in Distance Learning
https://thewashingtonpost.pressreader.com/the-washington-post/20200511/textview

How the virus is spread, and the risks in various types of gatherings and spaces
https://www.erinbromage.com/post/the-risks-know-them-avoid-them?campaign

New York Times - Transmission risks involved in speaking
https://www.nytimes.com/2020/05/14/health/coronavirus-infections.html?campaign

New York Times - Transmission information, the value of social distancing
https://www.nytimes.com/2020/04/14/health/coronavirus-six-feet.html

New York Times - Proposes 2-week cycle (4 on/10 off) for schools to reduce infection rate
https://www.nytimes.com/2020/05/11/opinion/coronavirus-reopen.html

COVID-19 change our schools in the long run
https://www.brookings.edu/blog/brown-center-chalkboard/2020/04/24/how-will-covid-19-change-our-schools-in-the-long-run/

Johns Hopkins - Recalibrating the American educational system
https://hub.jhu.edu/2020/04/07/bob-balfanz-education-reform-covid-19/

NASBE - change the way schools operate for years to come
https://komonews.com/news/local/covid-19-could-change-the-way-schools-operate-for-years-to-come

Washington Post - electronics to allow groups to practice singing together
https://www.washingtonpost.com/opinions/2020/05/14/pandemic-shut-down-choirs-were-finding-new-ways-sing-together/

RESOURCES FOR EDUCATORS, PARENTS

CDC Checklist to help reopen schools
https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/School-Admin-K12-readiness-and-planning-tool.pdf

A4LE – Distance Learning
https://mail.google.com/mail/u/1/#inbox/FMfcgxwHNCrgBsPQxKRZdWnkmcMkWWph

Alexandria City Schools – Education & Training to prepare for fall
https://www.acps.k12.va.us/summer-learning-for-all

National Institute for Early Education Research – preparing for the fall
http://nieer.org/wp-content/uploads/2020/04/NIEER_ReopeningSchools_Resources_April242020-1.pdf

American Enterprise Institute – Considerations for school years 2020 to 2022
https://www.aei.org/wp-content/uploads/2020/05/A-Blueprint-for-Back-to-School.pdf

ASHRAE – several articles on reopening schools
https://www.achrnews.com/articles/143102-hvac-systems-should-be-checked-before-buildings-reopen-due-to-covid-19/ https://www.ashrae.org/technical-resources/resources

ASHRAE - Risks posed by air conditioning systems
https://www.healthline.com/health-news/can-air-conditioning-spread-covid-19-probably-not

CDC - Interim Guidance for Administrators of US K-12 Schools and Child Care Programs
https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/schools.html

CDC - CDC Activities and Initiatives Supporting the COVID-19 Response and the President's Plan
https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/schools.html

CDC - Schools During The Covid-19 Pandemic
https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/schools.html

MSDE -Maryland's Recovery Plan for Education - Covid-19 Response and The Path Forward
http://marylandpublicschools.org/about/Pages/OCP/Publications/index.aspx

MSDE - Multiple resources on preparing schools
http://marylandpublicschools.org/newsroom/Pages/COVID-19/OPGD.aspx

EPA & CDC - Guidance For Cleaning and Disinfecting Public Spaces, Workplaces, Businesses, Schools, and Homes
https://www.cdc.gov/coronavirus/2019-ncov/community/clean-disinfect/index.html

American Enterprise Institute – Blueprint for back to school
https://www.aei.org/policy-areas/education/

National Institute for Early Education Research (NIEER) – Reopening schools
http://nieer.org/covid-19_resources/nieer-resources

GOV.UK - European Models - Cluster and hub provision: coronavirus (COVID-19)
https://www.gov.uk/government/publications/using-clusters-and-hubs-to-maintain-educational-provision/cluster-and-hub-provision-coronavirus-covid-19

GOV.UK – Guidance, Actions for schools during the coronavirus outbreak
https://www.gov.uk/government/publications/covid-19-school-closures/guidance-for-schools-about-temporarily-closing

US DOE - Resources for Schools and School Personnel
https://www.ed.gov/coronavirus?src=feature

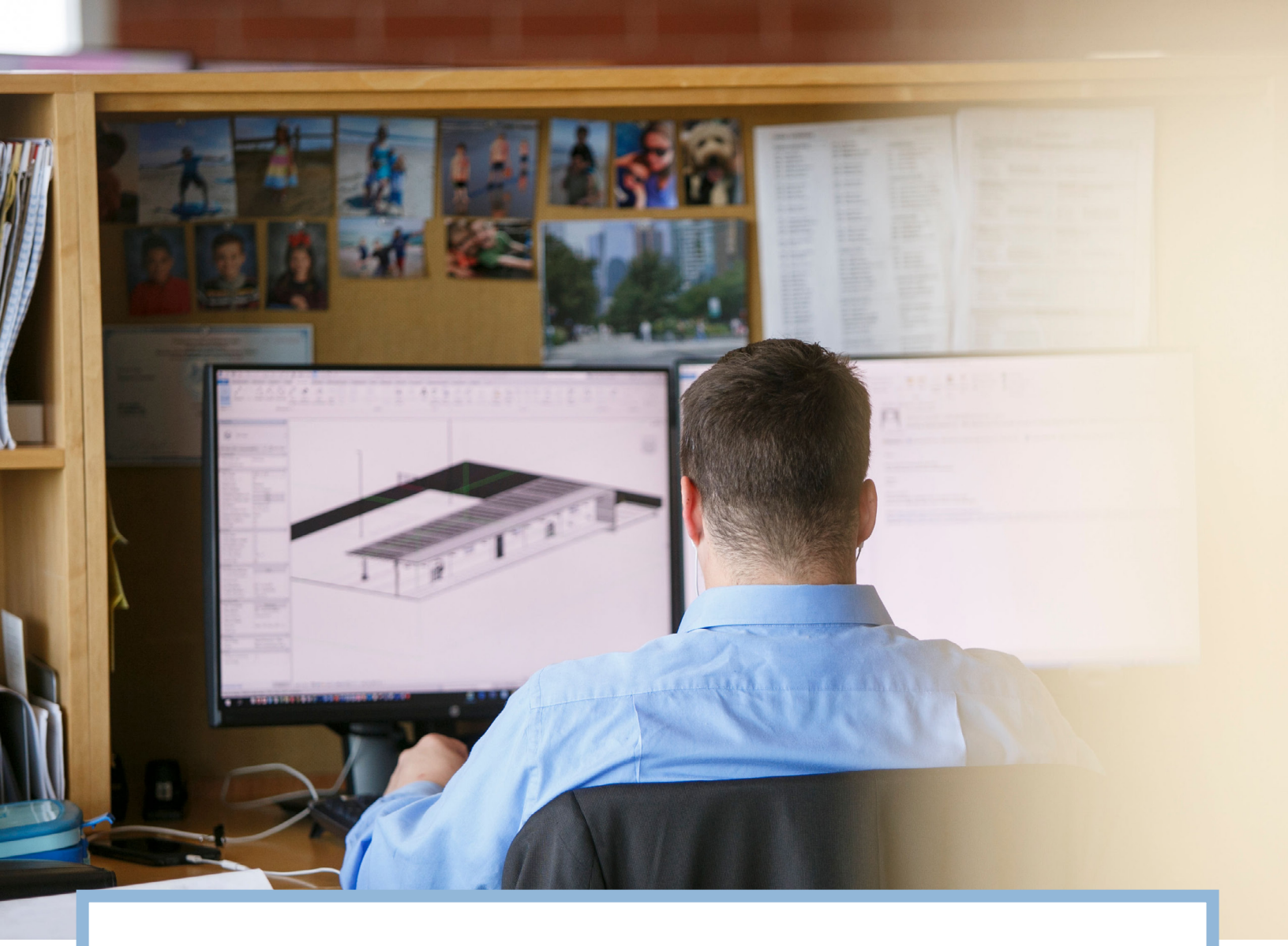
US DOE - Special Education Programs Highlighted Resources – WAIVER
https://oese.ed.gov/files/2020/04/invite-covid-fiscal-waiver-19-20.pdf

CONGRESS.GOV - H.R.748 - CARES Act
https://www.congress.gov/bill/116th-congress/house-bill/748/text

National Center for Systemic Improvement (NCSI) - COVID-19 Resources for Supporting Students with Disabilities
https://ncsi.wested.org/

World Health Organization (WHO) - Key Messages and Actions for COVID-19 Prevention and Control in Schools
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/guidance-for-schools-workplaces-institutions

NPR - U.K. Schools Begin Reopening Despite Coronavirus Concerns
https://www.npr.org/sections/coronavirus-live-updates/2020/06/01/867158531/u-k-schools-begin-reopening-despite-coronavirus-concerns



Topic 2
Design and Space Analysis

BEYOND
21ST CENTURY DESIGN

Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

TOPIC 2 – DESIGN & SPACE ANALYSIS

OVERVIEW

This section identifies suggested spatial requirements for schools to reopen and operate within the guidelines of Maryland's Recovery Plan for Education (MRPE), and Governor Hogan's Executive Order with social distancing for a maximum of 10 people for indoor group gatherings, including schools. Although the MRPE was updated June 2020 to increase the occupancy from 10 to 15 people per room, the design and space analysis group worked under the more stringent requirements of 10 people per room to illustrate the impact of the guidelines. These requirements limit the capacity of each classroom and will require repurposing large group and recreational spaces into classrooms.

MRPE provides four options for schools to reopen applying a mix of face to face and distance learning under every scenario, many students will still need to continue to participate in distance learning. For the basis of discovery, we have also evaluated a fifth option for an extended school day. At the time of preparing this document, we based calculations on Governor Hogan's Executive Order for 10-people per room guidelines, we have also included additional spatial configurations, should capacity guidelines be increased:

1. One Day Rotation
2. Two Day Rotation
3. A/B Week
4. Elementary Face to Face & Secondary Distance Learning
5. Extended School Day

It is important to note that providing quality education for Special Education students presents significant challenges in any of the five options considered. Special Education students with IEP and 504 Plans will be addressed in greater detail in a separate section.

Likewise, HVAC systems can have a significant impact on air filtration and can potentially spread contaminates if not altered. This section provides an overview of indoor air quality, while a detailed strategy for both short-term and long-term HVAC suggestions to improve filtration are found in a subsequent section.

GUIDING FACTORS

An evaluation of each of the following prototypical schools was the basis for analysis:

1. 795 Student Elementary School
2. 1200 Student Middle School
3. 2000 Student High School

Each school was analyzed to identify the rated capacity and how that capacity was determined. Each prototype was then evaluated to determine the modified capacity based on COVID-19 restrictions of 6' social distancing and a maximum of 10 persons per classroom (1 teacher / 9 students).

Further consideration for teaching aides for special education students is referenced in Section 4 of this report. The evaluation also includes capacity analysis for repurposing large group spaces, i.e. cafeteria, gymnasium, media center, etc. as instructional teaching spaces. It is significant to note that face to face learning for elementary and middle school students was a priority, in order to allow parents to return to work, while traditional high school instruction could take place via distance learning, given that these students require less supervision at home. The exception being CTE students, who may distance learn part-time and participate in labs/academies/apprenticeships part-time. Another guiding factor is that all options are based on students not changing classrooms, which will limit exposure and permit more accurate contact tracing in the event of an outbreak. Officials will need to determine how high school electives will be managed, while keeping students in the same room through the day.

KEY FINDINGS, TAKE-AWAYS & SUGGESTIONS

Confirm Capacity Now

Survey families in each school during the summer 2020 to determine, to the closest extent possible, a count of those students who will be returning by grade, in order to plan for capacity and space needs for social distancing layouts for each school by SY 2020-2021:

- Place special emphasis on families who may be highly mobile, students who are more likely to not return (high-risk), and those families who may be experiencing additional hardship.
- **Survey all staff, including support staff and substitutes at each school, to determine if staffing capacity matches capacity of students returning in social distancing settings.**
- **Accommodating 1/2 to 2/3 of school enrollment could be accomplished using the elementary social distancing analysis in this section, based upon an elementary school of 750 – 800 students.**

The impact is reduced accessibility to resources, special curriculum, etc. requiring many more teaching staff. Careful choreography of entry and exiting, circulation through corridors and changing classes would be required. Modified dining would need to be considered (breakfast/lunch/after school). Rooms such as the gymnasium or cafeteria would have to be modified to become teaching stations.

September goals: additional program enhancements

Nurses Suite Evaluation and Functional Analysis

- Isolation Rooms with Independent HVAC
- Counseling Rooms / Safe Room
- Sanitation Supply Room
- Secured containers with masks, gloves and alcohol wipes at every entry/egress.
- Containers for disposal of hazardous waste
- Sanitizing incoming products – mail, supplies, kitchen deliveries, etc.
- Security & SRO Command Center

Future Goals: Additional Program Enhancements

- Isolation Rooms with Independent HVAC
- Counseling Rooms / Safe Room
- Sanitation Supply Room
- Security & SRO
- Command Center
- Nurses Suite Program Enhancement
- Unisex Restroom suites for boys, girls, gender neutral, & persons with disabilities.

CONSIDERATIONS

The major objective in all educational options evaluated is to provide face to face instruction for as many students as possible. Each Local Education Authority (LEA) must weigh various factors in completing their evaluation to determine the options that best fits their schools. All options outlined in the Maryland Recovery Plan for Education (MRPE) have significant limitations that each LEA must evaluate for the impact on education that is acceptable to their jurisdiction.

Key Considerations for All Options

1. **Quality of Education:** Each option varies widely on the amount of time students are in school and the role of distance learning. The many factors involved must be independently evaluated to arrive at a plan that is best for each jurisdiction.

2. **Cost to Implement:** Each option has cost impacts. The options for greater students in face to face learning are the costliest, with staffing, transportation, food service, sanitation, technology, and retrofit all having cost implications. Each jurisdiction must weigh safety, quality of education and cost impact to determine which option is best and the level of risk acceptable to the Board of Education, staff, parents and community

3. **One in-service day per week in all options:** The highest cost options, where the greatest number of elementary and middle school students are returning to school, will permit parents to return to work. However, it is notable to mention that in all MRPE options, teachers will have 1 in-service day per week for lesson planning. All students will be home distance learning on this day.

4. **Calculate capacity of those returning (students & staff):** Several options require a moderate staffing increase, except for the One Day a Week Option; an increase of staff to this magnitude may be unattainable. Survey students and staff to determine whether there is adequate staffing coverage.

5. **Repurposing large spaces:** Many large group spaces will have to be repurposed to create adequate teaching space; this includes the gymnasiums, cafeterias, large group rooms, media centers/ libraries, stages, music rooms, choral rooms, dance studios, fitness space, etc. Temporary partitions, and or modular divider panels can be used to divide these larger learning areas. New power, technology, and phone systems may be required in most spaces. Mobile air purification units should also be considered.

6. **Secured storage of supplies, including hand sanitizer, should meet fire code.** Additional space will need to be carved out for sanitizing products, hand sanitizer, PPE, thermometers, etc.; ensure the storage space meets local fire codes, as well as develop procedures for monitoring quantities of supplies.

7. **No-touch items** – are best to lessen spread of virus, such as hand-sanitizing stations, thermometers, and trash receptacles, which should be strategically placed throughout the building for disposal of hazardous waste and soiled PPE. These items will take up space.

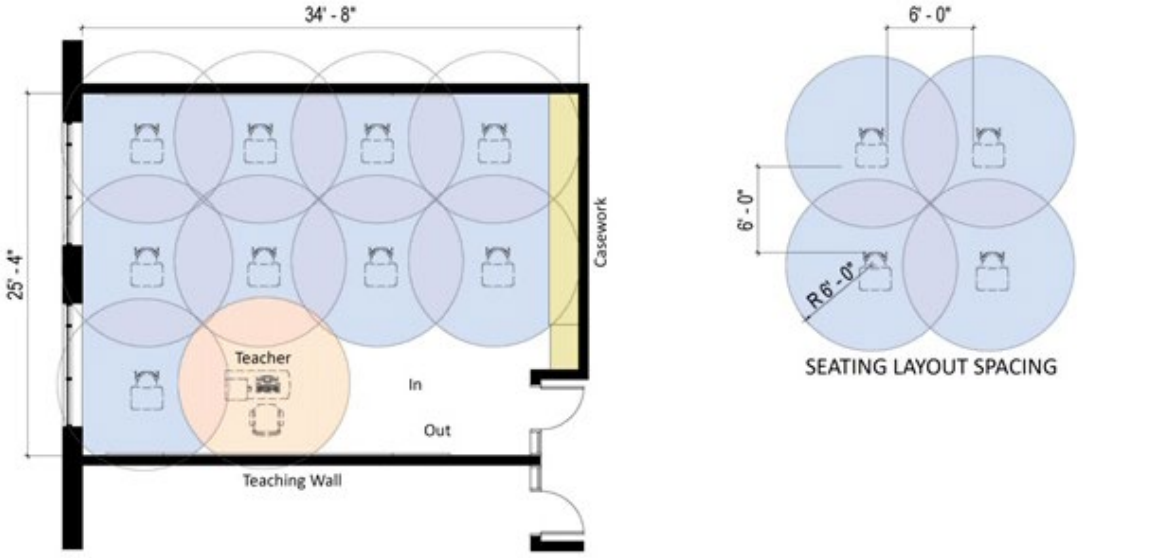
8. **Drinking fountains –** should be disconnected and alternate sources of water provided (preferably individual servings)

9. **Items not reusable:** Retrofit existing spaces with temporary partitions, temporary power, technology, and temporary air purification systems. These items may not be reused once the pandemic is over, however, they may be beneficial in the event of a resurgence.

SPREADSHEETS

Comparison of Instructional Models for Social Distancing

The spreadsheets on the following pages provide a side by side comparison of each educational model in the "Adjusted Return to School Options," in the Maryland Recovery Plan for Education (MRPE). Plans utilize an elementary school space analysis for social distancing, and pros and cons associated with reopening schools in the SY 2020-2021, as well as additional long-term goals for program enhancements.



9 STUDENTS + 1 TEACHER

SOCIALLY DISTANCED CLASSROOM 700-750 SF

APPROXIMATELY 7,000 SF GYMNASIUM

SOCIALLY DISTANCED CLASSROOM LAYOUT IN GYMNASIUM

Prototypical 795 Student Elementary School **6/8/2020**

Covid 19 Capacity Analysis Scenario 1 Converts Large Group Spaces into Teaching Spaces

Grades K-5 Adjusted Covid 19 Capacity

	Description	Quan.	Area	Subtotal	Program Capacity	Total Prog. Cap.	Max 9+1 Group Capacity	**Scenario 1 Total**	Max 9+1 Group Capacity	**Scenario 2 Total**
1	PK-K	9	1175	10,575	20	180	9	81	9	81
2	Academic Grades 1-3	15	950	14,250	20	300	9	135	9	135
3	Academic Grades 4-5	10	900	9,000	25	250	9	90	9	90
4	Collaborative Learning Area	5	1628	8,140	25		18	90	9	45
5	PK Extended Learning	1	1000	1,000	15		9	9	9	9
6	Special Needs Classroom	3	900	2,700	15	45	9	27	9	27
7	STEAM Lab	1	1000	1,000	28	28	9	9	9	9
8	STEM Lab	1	1100	1,100	28	28	9	9	9	9
9	Library	1	2281	2,281	75		18	18		
10	Library Computer Area	1	700	700	25		9	9	9	9
11	Dual Purpose Room Music	1	1100	1,100	25	25	9	9	9	9
12	Music Classroom	1	1100	1,100	28	28	9	9	9	9
13	Instrumental Music	1	900	900	28	28	9	9	9	9
14	Stage	1	1000	1,000	25		18	18		
15	Gymnasium	1	7000	7,000	60		54	54		
16	Cafeteria	1	3975	3,975			27	27		
17	Art Classroom	1	1100	1,100	28	28	9	9	9	9
	Total					940		612		450
	Utilization Rate Adjustment				90%	846	95%	581	95%	428
					Deficiency	0	Deficiency	**214**	Deficiency	**368**

Prototypical 1200 Student Middle School **6/8/2020**
Covid 19 Capacity Analysis
Grades 6-8

Converts Large Group Spaces into Teaching Spaces
Adjusted Covid 19 Capacity

	Description	Quan.	Area	Subtotal	Program Capacity	Total Prog. Cap.	Max 9+1 Group Capacity	**Scenario 1 Total**	Max 9+1 Group Capacity	**Scenario 2 Total**
1	Academic Classrooms	40	850	34,000	25	1000	9	360	9	360
2	Collaborative Learning Area	3	1020	3,060	25		9	27	9	27
3	Family and Consumer Science	1	1800	1,800	25	25	9	9	9	9
4	Science Classrooms	9	1200	10,800	25	225	9	81	9	81
5	Small Group Instruction	6	400	2,400	12	72	6	36	6	36
6	Special Needs Classroom	3	875	2,625	12	36	9	27	9	27
7	STEAM Lab	1	2200	2,200	25	25	9	9	9	9
8	Library	1	3300	3,300			9	9		
9	Library Computer Room	1	1100	1,100	25	25	9	9	9	9
10	Band	1	1800	1,800			27	27	9	9
11	Choral	1	1400	1,400			9	9	9	9
12	Music Classroom	1	900	900	25	25	9	9	9	9
13	Stage	1	1200	1,200			9	9	9	9
14	Dance Studio	1	1800	1,800			18	18	18	18
15	Gymnasium	1	9200	9,200			72	72		
16	Fitness Center	1	1400	1,400			9	9		
17	Cafeteria	1	6000	6,000			36	36		
18	Art Classroom	2	1300	2,600			9	18	9	18
	Total					1433		774		630
	Utilization Rate Adjustment				90%	1218	95%	735	95%	599
					Deficiency	0	Deficiency	**465**	Deficiency	**602**

Prototypical 2000 Student High School **6/8/2020**
Covid 19 Capacity Analysis
Grades 9-12

Scenario 1 Converts Large Group Spaces into Teaching Spaces
Adjusted Covid 19 Capacity

	Description	Quan.	Area	Subtotal	Program Capacity	Total Prog. Cap.	Max 9+1 Group Capacity	**Scenario 1 Total**	Max 9+1 Group Capacity	**Scenario 2 Total**
1	Academic Classrooms	36	850	30,600	25	900	9	324	9	324
2	Collaborative Learning Area	4	1020	4,080	60	240	9	36	9	36
3	Large Studio Classrooms	4	1100	4,400	25	100	9	36	9	36
4	Business / Journlism Classroom	9	900	8,100	25	225	9	81	9	81
5	Science Classrooms	9	1400	12,600	25	225	9	81	9	81
6	World Languages	2	400	800	20	40	9	18	9	18
7	Small Group Instruction	6	400	2,400	15	90	6	36	6	36
8	Special Needs Classroom	4	850	3,400	15	60	9	36	9	36
9	Technology	3	1600	4,800	25	75	9	27	9	27
10	Media Center	1	4200	4,200	150		18	18	18	18
11	Media Center Classroom	1	900	900	25	25	9	9	9	9
12	Library Tech Hub	1	1400	1,400	25	25	9	9	9	9
13	Band	1	2500	2,500	80		27	27	18	18
14	Choral	1	1800	1,800	60		18	18	18	18
15	Auditorium	1	8500	8,500	850					
16	Stage	1	2250	2,250			18	18		
17	Dance Studio	1	2700	2,700	28		27	27	27	27
18	Gymnasium	1	11900	11,900	50		90	90		
19	Wrestling Room	1	1800	1,800	25		18	18		
20	Cafeteria	1	8500	8,500	575		54	54		
21	Art Classroom 3D	1	1600	1,600	32	32	9	9	9	9
22	Art Classroom	2	1300	2,600	30	60	9	18	9	18
	Total					2097		990		801
	Utilization Rate Adjustment				90%	1887	95%	**941**	95%	**761**
					Deficiency	0	Deficiency	**947**	Deficiency	**1126**

COMPARISON OF INSTRUCTIONAL MODELS - PART 1

June 2020	DAYS OF ATTENDANCE										DL = Distance Learning			EDUCATIONAL IMPACTS			EMOTIONAL IMPACTS		SPATIAL IMPACTS		STAFFING	TRANSPORTATION	TECHNOLOGY	COST IMPACTS	
MODELS	"A"/ "B"/"C" /"D"EACH REPRESENT A PORTION OF THE ENROLLMENT "DL" REPRESENTS DISTANCE LEARNING													PROS	HRS DL/WK. PER ENROLL.	CONS	PROS	CONS	PROS	CONS				IMPACT ITEM	COSTS
	WEEK 1					WEEK 2																			
	M	T	W	TH	F	M	T	W	TH	F	Grades	Student Attendance	Available Capacity												
FACE TO FACE (HYBRID) - ALL STUDENTS ATTEND 50%														PK - 8 STUDENTS ARE IN A LEARNING ENV. ALL WEEK***	HOURS	ADDITIONAL TEACHERS/ AIDES/ADULTS ARE REQUIRED FOR 2ND LOCATION FOR ES & MS**3/4/5 ES TO MS; 7/8 MS GO TO HS; HS - FULL TIME DL	ADULT TO STUDENT CONTINUITY FOR SUPERVISON /CARE TEACHER /BUS CONTINUITY OF LOCATION FOR EACH STUDENT	2000 HS STUDENT FULL TIME DISTANCE LEARNING 4 DAYS/WEEK (52,000 HOURS/WK)	ELEM/MIDDLE STUDENTS ARE HOUSED IN EDUC. SETTING	SIGNIFICANT REPURPOSING OF LARGE GROUP ROOMS WILL BE REQUIRED	DOUBLE STAFF NEEDED FOR ES & MS	ES & MS TRANSPORTATION COSTS ARE SIGNIFICANT IN THAT ONLY 8 STUDENTS PER BUS ALLOWED	TECHNOLOGY NEEDED FOR ALL HS STUDENTS	TRANSPORTATION	$$$$
795 Student ES (A)	A	A	A	A							P-K-2	456	*581*											STAFFING	$$$$
1200 Student MS (ESB)	B	B	B	B							3-6	742	*735*											RETROFIT	$$$$
2000 Student HS (MS)	C	C	C	C							7-8	800	941											TECHNOLOGY	$$$$
HS	DL	DL	DL	DL							9-12	2000			52,000									HVAC	$$
												3998	2257		**52,000**										
ONE-DAY ROTATION - 1/4 OF STUDENTS / DAY														ALL STUDENTS GO TO SAME SCHOOL 1 DAY A WEEK	HOURS	LACKS CONTINUITY OF LEARNING RELIES MAINLY ON DISTANCE LEARNING	STUDENTS GOING TO THEIR OWN SCHOOL	ES DISTANCE LEARNING LACKS CONTINUITY OF LEARNING. GREATER RELIANCE ON PARENTS INVOLVEMENT	MINIMAL ALTERATIONS TO ACCOMMODATE STUDENTS	NONE	STAFFING NOT INCREASED	LEAST COSTLY TRANSPORTATION PLAN	TECHNOLOGY NEEDED FOR ALL STUDENTS		
ES (A)	A	DL	DL	DL							PK-5	199	428		3,582									TRANSPORTATION	$
ES (B)	DL	B	DL	DL							PK-5	199			3,582									STAFFING	$
ES (C)	DL	DL	C	DL							PK-5	199			3,582									RETROFIT	$
ES (D)	DL	DL	DL	D							PK-5	199			3,582									TECHNOLOGY	$$$$
MS (A)	A	DL	DL	DL							6-8	300	599		5,400									SANITATION	$$$$
MS (B)	DL	B	DL	DL							6-8	300			5,400									HVAC	$$
MS (C)	DL	DL	C	DL							6-8	300			5,400										
MS (D)	DL	DL	DL	D							6-8	300			5,400										
HS (A)	A	DL	DL	DL							9-12	500	801		9,750										
HS (B)	DL	B	DL	DL							9-12	500			9,750										
HS (C)	DL	DL	C	DL							9-12	500			9,750										
HS (D)	DL	DL	DL	D							9-12	500			9,750										
												3996	1828		**74,928**										
TWO-DAY ROTATION														ALL STUDENTS GO TO SCHOOL 2 DAYS A WEEK EVERY OTHER WEEK	HOURS	LACKS CONTINUITY OF LEARNING HIGH SCHOOL LACKS ADEQUATE CAPACITY	STUDENTS GOING TO THEIR OWN SCHOOL	LACKS CONTINUITY OF LEARNING	MINIMAL ALTERATIONS TO ACCOMMODATE STUDENTS AT ES & MS	SIGNIFICANT REPURPOSING OF SPACES WILL BE REQUIRED AT THE HS	STAFFING NOT INCREASED	TRANSPORTATION COSTS ARE SIGNIFICANT IN THAT ONLY 8 STUDENTS PER BUS ALLOWED	TECHNOLOGY NEEDED FOR ALL STUDENTS		
ES (A)	A	A	DL	DL							PK-5	398	428		4,770									TRANSPORTATION	$$$
ES (B)	DL	DL	B	B							PK-5	398			4,770									STAFFING	$
MS (A)	A	A	DL	DL							6-8	600	599		7,200									RETROFIT	$$$
MS (B)	DL	DL	B	B							6-8	600			7,200									TECHNOLOGY	$$$$
HS (A)	A	A	DL	DL							9-12	1000	801		13,000									SANITATION	$$$$
HS (B)	DL	DL	B	B							9-12	1000	***200***		13,000									HVAC	$$
												3996	2028		**49,940**										
A/B WEEK														HALF THE STUDENT POPULATION GO TO SCHOOL 4 FULL DAYS A WEEK EVERY OTHER WEEK	HOURS	LACKS CONTINUITY OF LEARNING HIGH SCHOOL LACKS ADEQUATE CAPACITY	STUDENTS GOING TO THEIR OWN SCHOOL	LACKS CONTINUITY OF LEARNING	MINIMAL ALTERATIONS TO ACCOMMODATE STUDENTSAT ES & MS	SIGNIFICANT REPURPOSING OF SPACES WILL BE REQUIRED AT THE HS	STAFFING NOT INCREASED	TRANSPORTATION COSTS ARE SIGNIFICANT IN THAT ONLY 8 STUDENTS PER BUS ALLOWED	TECHNOLOGY NEEDED FOR ALL STUDENTS		
ES - A	A	A	A	A		DL	DL	DL	DL		PK-5	398	428		9,540									TRANSPORTATION	$$$
ES - B	DL	DL	DL	DL		B	B	B	B		PK-5	398												STAFFING	$
MS - A	A	A	A	A		DL	DL	DL	DL		6-8	600	599											RETROFIT	$$$
MS - B	DL	DL	DL	DL		B	B	B	B		6-8	600			14,400									TECHNOLOGY	$$$$
HS - A	A	A	A	A		DL	DL	DL	DL		9-12	1000	801											SANITATION	$$$$
HS - B	DL	DL	DL	DL		B	B	B	B		9-12	1000	***200***		26,000									HVAC	$$
												3996	2028		**49,940**										
EXTENDED DAY														HALF THE STUDENT POPULATION ATTENDS MORNING SESSION AND HALF ATTENDS AFTERNOON/EVENING SESSION	HOURS	TEACHER MUST ROTATE BETWEEN SESSIONS AND INTERACTION WITH STUDENTS WILL BE COMPROMISED DURING ONE DAY SESSION HIGH SCHOOL LACKS ADEQUATE CAPACITY	STUDENTS GOING TO THEIR OWN SCHOOL MAINTAINS CONTINUITY OF LEARNING	LATE AFTERNOON /EVENING SESSIONS WILL COMPROMISE LEARNING	MINIMAL ALTERATIONS TO ACCOMMODATE STUDENTS AT ES & MS	SIGNIFICANT REPURPOSING OF SPACES WILL BE REQUIRED AT THE HS	STAFF MAY HAVE TO WORK DOUBLE SHIFTS OR DOUBLE STAFF NEEDED AND HALF THE STUDENTS WOULD LEARN FROM RECORDED LESSON	TRANSPORTATION WILL BE A MAJOR CHALLENGE WITH ONLY 8 STUDENTS PER BUS ALLOWED AND WITH TWO SESSIONS PER DAY THIS OPTIONN MAY BE MORE THAN THE TRANSPORTATION SYSTEM CAN ACCOMODATE	TECHNOLOGY IMPACTS ARE MODERATE		
ES - A	A	A	A	A							PK-5	398	428											TRANSPORTATION	$$$$$$
ES - B	B	B	B	B							PK-5	398												STAFFING	$$$$$$
MS - A	A	A	A	A							6-8	600	599											RETROFIT	$$$$$$
MS - B	B	B	B	B							6-8	600												TECHNOLOGY	$$
HS - A	A	A	A	A							9-12	1000	801											SANITATION	$$$$$$
HS - B	B	B	B	B							9-12	1000	***200***											HVAC	$$
												3996	2028		**0**										

NOTES:

TEACHER PLANNING DAY / HRS STUDENT ATTENDANCE

180 Day School Year	K-8 = 6 HRS / DAY	9-12 = 6.5 HRS / DAY

LOCATION

1* SCHOOL OF ENROLLMENT

2** ALTERNATE LOCATION - OTHER SCHOOL; HOME; LEARNING CENTER

*** IF ALT LOC. IS HOME = HARDSHIP ON PARENTS/ECONOMY

COMPARISON OF INSTRUCTIONAL IMPACTS - PART 2

June 2020 — **DAYS OF ATTENDANCE**

"A"/ "B"/"C" /"D"EACH REPRESENT A PORTION OF THE ENROLLMENT "DL" REPRESENTS DISTANCE LEARNING

MODELS	WEEK 1 M	WEEK 1 T	WEEK 1 W	WEEK 1 TH	WEEK 1 F	WEEK 2 M	WEEK 2 T	WEEK 2 W	WEEK 2 TH	WEEK 2 F	Grades	Students	Capacity
FACE TO FACE (HYBRID)													
795 Student ES (A)	A	A	A	A							P-K-2	456	581
1200 Student MS (ESB)	B	B	B	B							3-6	742	735
2000 Student HS (MS)	C	C	C	C							7-8	800	941
HS	DL	DL	DL	DL							9-12	2000	
												3998	2257
ONE-DAY ROTATION - 1/4 OF STUDENTS / DAY													
ES (A)	A	DL	DL	DL							PK-5	199	428
ES (B)	DL	B	DL	DL							PK-5	199	
ES (C)	DL	DL	C	DL							PK-5	199	
ES (D)	DL	DL	DL	D							PK-5	199	
MS (A)	A	DL	DL	DL							6-8	300	599
MS (B)	DL	B	DL	DL							6-8	300	
MS (C)	DL	DL	C	DL							6-8	300	
MS (D)	DL	DL	DL	D							6-8	300	
HS (A)	A	DL	DL	DL							9-12	500	801
HS (B)	DL	B	DL	DL							9-12	500	
HS (C)	DL	DL	C	DL							9-12	500	
HS (D)	DL	DL	DL	D							9-12	500	
												3996	1828
TWO-DAY ROTATION													
ES (A)	A	A	DL	DL							PK-5	398	428
ES (B)	DL	DL	B	B							PK-5	398	
MS (A)	A	A	DL	DL							6-8	600	599
MS (B)	DL	DL	B	B							6-8	600	
HS (A)	A	A	DL	DL							9-12	1000	801
HS (B)	DL	DL	B	B							9-12	1000	200
												3996	2028
A/B WEEK													
ES - A	A	A	A	A		DL	DL	DL	DL		PK-5	398	428
ES - B	DL	DL	DL	DL		B	B	B	B		PK-5	398	
MS - A	A	A	A	A		DL	DL	DL	DL		6-8	600	599
MS - B	DL	DL	DL	DL		B	B	B	B		6-8	600	
HS - A	A	A	A	A		DL	DL	DL	DL		9-12	1000	801
HS - B	DL	DL	DL	DL		B	B	B	B		9-12	1000	200
												3996	2028
EXTENDED DAY													
ES - A	A	A	A	A							PK-5	398	428
ES - B	B	B	B	B							PK-5	398	
MS - A	A	A	A	A							6-8	600	599
MS - B	B	B	B	B							6-8	600	
HS - A	A	A	A	A							9-12	1000	801
HS - B	B	B	B	B							9-12	1000	200
												3996	2028

NOTES: TEACHER PLANNING DAY / HRS STUDENT ATTENDANCE

180 Day School Year | K-8 = 6 HRS / DAY | 9-12 = 6.5 HRS / DAY

MODELS	TRIAGE OF INSTRUCTION	SPECIAL EDUCATION	SOCIAL DISTANCING	NURSE STATION & QUARANTINE ROOM	FOOD SERVICE	STUDENT / STAFF SCREENING	SANITATION	IMPACT ON PARENTS	COMMUNITY ACCEPTANCE	LIMITING FACTORS
FACE TO FACE (HYBRID)	SOME TRIAGE WILL BE NEEDED AS SOME GROUP ACTIVITIES, eg BAND, CHORUS, PHYSED, MAY NEED TO BE CURTAILED DUE TO REPURPOSING OF LARGE GROUP SPACES FOR GENERAL INSTRUCTION TEACHING SPACES	ALL SPECIAL EDUCATION STUDENTS SHOULD BE RE-ASSESSED AND IEP & 504 PLANS WILL NEED TO BE UPDTAED. ALL SPECIAL EDUCATION STUDENTS WILL BE ACCOMPANIED BY SUPPORT STAFF (MUST ASSESS CAPACITY IN ALL SPACES BASED ON SUPPORT STAFF REQUIREMENTS).	**DIFFICULT** - SCHOOLS ARE FILLED TO CAPACITY - MAY RESULT IN GREATER TRANSMISSION OF VIRUS	NURSES SUITE SHOULD BE OUTFITTED TO CREATE A QUARANTINE ISOLATION AREA. THE GYM SHOULD BE CONSIDERED FOR THIS SPACE, BECAUSE IT HAS IT'S OWN AIR SUPPLY SYSTEM. IF OTHER AREAS ARE USED AS AN ISOLATION ROOM, THEY WILL NEED TO ALTERED TO MINIMIZE AIR RETURN FLOWING TO ADJACENT SPACES.	IN ORDER TO RESTRICT MOVEMENT AND INTERACTION OF STUDENTS, BREAKFAST WILL NEED TO BE SERVED IN CLASSROOMS & BOX LUNCHES IN CLASSROOMS MUST BE CONSIDERED. ADDITIONAL CLEANING & PEST CONTROL IN CLASSROOMS WILL BE NECESSARY.	AS RECOMMENDED BY THE CDC, STAFF AND STUDENTS WILL REQUIRE FREQUENT MONITORING OF TEMPERAURES. IF A FEVER IS DETECTED, THEY SHOULD BE QUARANTINED UNTILL PARENTS CAN RETRIEE THEM. CHALLENGE WILL BE GREAT IF SEVERAL STUDENTS WITH FEVERS NEED TO BE ISOLATED AT THE SAME TIME.	FOLLOW CDC RECOMMENDATIONS FOR CLEANING & DISINFECTING FREQUENTLY TOUCHED SURFACES, DISPURSE HANDS-FREE SANITIZING STATIONS THROUGHOUT THE SCHOOL, OBTAIN APPROPRIATE PPE FOR MAINTENANCE STAFF, INCREASE HOURS FOR MAINTENANCE STAFF	PARENTS BACK TO WORK 4 DAYS A WEEK - HS STUDENTS AT HOME 5 DAYS A WEEK SELF SUPERVISED	ES AND MS PARENTS ARE LIKELY TO SUPPORT THIS OPTION WHERE AS HS PARENTS WILL NOT	FUNDING FOR INCREASED STAFFING, TECHNOLOGY, RETROFITTING SPACE, SANITATION, AND TRANSPORTATION
ONE-DAY ROTATION - 1/4 OF STUDENTS / DAY	MINOR IMPACTS	ALL SPECIAL EDUCATION STUDENTS SHOULD BE RE-ASSESSED AND IEP & 504 PLANS WILL NEED TO BE UPDTAED. ALL SPECIAL EDUCATION STUDENTS WILL BE ACCOMPANIED BY SUPPORT STAFF (MUST ASSESS CAPACITY IN ALL SPACES BASED ON SUPPORT STAFF REQUIREMENTS).	**BETTER** - SMALLER STUDENT BODY WILL ALLOW GREATER SOCIAL DISTANCING AND POTENTIALLY REDUCE THE SPREAD OF THE VIRUS	NURSES SUITE SHOULD BE OUTFITTED TO CREATE A QUARANTINE ISOLATION AREA. THE GYM SHOULD BE CONSIDERED FOR THIS SPACE, BECAUSE IT HAS IT'S OWN AIR SUPPLY SYSTEM. IF OTHER AREAS ARE USED AS AN ISOLATION ROOM, THEY WILL NEED TO ALTERED TO MINIMIZE AIR RETURN FLOWING TO ADJACENT SPACES.	IN ORDER TO RESTRICT MOVEMENT AND INTERACTION OF STUDENTS, BREAKFAST WILL NEED TO BE SERVED IN CLASSROOMS & BOX LUNCHES IN CLASSROOMS MUST BE CONSIDERED. ADDITIONAL CLEANING & PEST CONTROL IN CLASSROOMS WILL BE NECESSARY.	AS RECOMMENDED BY THE CDC, STAFF AND STUDENTS WILL REQUIRE FREQUENT MONITORING OF TEMPERAURES. IF A FEVER IS DETECTED, THEY SHOULD BE QUARANTINED UNTILL PARENTS CAN RETRIEE THEM. CHALLENGE WILL BE GREAT IF SEVERAL STUDENTS WITH FEVERS NEED TO BE ISOLATED AT THE SAME TIME.	FOLLOW CDC RECOMMENDATIONS FOR CLEANING & DISINFECTING FREQUENTLY TOUCHED SURFACES, DISPURSE HANDS-FREE SANITIZING STATIONS THROUGHOUT THE SCHOOL, OBTAIN APPROPRIATE PPE FOR MAINTENANCE STAFF, INCREASE HOURS FOR MAINTENANCE STAFF	STUDENTS HOME 4 DAYS A WEEK WILL HAVE A MAJOR IMPACT ON PARENTS	THIS OPTION RELIES ON FAMILIES TO SUPERVISE AND MONITOR CHILDREN 5 DAYS 4 WEEK WHICH PLACES A SIGNIFICANT BURDEN ON WORKING PARENTS	LEAST COSTLY OPTION YET RELIES ON ALL FAMILIES TO PLAY A MUCH MORE SIGNIFICANT ROLE IN THEIR CHILDS EDUCATION
TWO-DAY ROTATION	SOME TRIAGE WILL BE NEEDED AS SOME GROUP ACTIVITIES, eg BAND, CHORUS, PHYSED, MAY NEED TO BE CURTAILED DUE TO REPURPOSING OF LARGE GROUP SPACES FOR GENERAL INSTRUCTION TEACHING SPACES AND INABILITY TO PROVIDE DUE TO SOCIAL DISTANCING / HEALTH ISSUES	ALL SPECIAL EDUCATION STUDENTS SHOULD BE RE-ASSESSED AND IEP & 504 PLANS WILL NEED TO BE UPDTAED. ALL SPECIAL EDUCATION STUDENTS WILL BE ACCOMPANIED BY SUPPORT STAFF (MUST ASSESS CAPACITY IN ALL SPACES BASED ON SUPPORT STAFF REQUIREMENTS).	**DIFFICULT** - SCHOOLS ARE FILLED TO CAPACITY - MAY RESULT IN GREATER TRANSMISSION OF VIRUS	NURSES SUITE SHOULD BE OUTFITTED TO CREATE A QUARANTINE ISOLATION AREA. THE GYM SHOULD BE CONSIDERED FOR THIS SPACE, BECAUSE IT HAS IT'S OWN AIR SUPPLY SYSTEM. IF OTHER AREAS ARE USED AS AN ISOLATION ROOM, THEY WILL NEED TO ALTERED TO MINIMIZE AIR RETURN FLOWING TO ADJACENT SPACES.	IN ORDER TO RESTRICT MOVEMENT AND INTERACTION OF STUDENTS, BREAKFAST WILL NEED TO BE SERVED IN CLASSROOMS & BOX LUNCHES IN CLASSROOMS MUST BE CONSIDERED. ADDITIONAL CLEANING & PEST CONTROL IN CLASSROOMS WILL BE NECESSARY.	AS RECOMMENDED BY THE CDC, STAFF AND STUDENTS WILL REQUIRE FREQUENT MONITORING OF TEMPERAURES. IF A FEVER IS DETECTED, THEY SHOULD BE QUARANTINED UNTILL PARENTS CAN RETRIEE THEM. CHALLENGE WILL BE GREAT IF SEVERAL STUDENTS WITH FEVERS NEED TO BE ISOLATED AT THE SAME TIME.	FOLLOW CDC RECOMMENDATIONS FOR CLEANING & DISINFECTING FREQUENTLY TOUCHED SURFACES, DISPURSE HANDS-FREE SANITIZING STATIONS THROUGHOUT THE SCHOOL, OBTAIN APPROPRIATE PPE FOR MAINTENANCE STAFF, INCREASE HOURS FOR MAINTENANCE STAFF	STUDENTS HOME 3 DAYS A WEEK WILL HAVE A MAJOR IMPACT ON PARENTS	THIS OPTION RELIES ON FAMILIES TO SUPERVISE AND MONITOR CHILDREN 3 DAYS A WEEK WHICH PLACES A SIGNIFICANT BURDEN ON WORKING PARENTS	FUNDING FOR INCREASED STAFFING, TECHNOLOGY, RETROFITTING SPACE, SANITATION, AND TRANSPORTATION
A/B WEEK	SOME TRIAGE WILL BE NEEDED AS SOME GROUP ACTIVITIES, eg BAND, CHORUS, PHYSED, MAY BE CURTAILED DUE TO REPURPOSING SPACES FOR GENERAL INSTRUCTION TEACHING SPACES	ALL SPECIAL EDUCATION STUDENTS SHOULD BE RE-ASSESSED AND IEP & 504 PLANS WILL NEED TO BE UPDTAED. ALL SPECIAL EDUCATION STUDENTS WILL BE ACCOMPANIED BY SUPPORT STAFF (MUST ASSESS CAPACITY IN ALL SPACES BASED ON SUPPORT STAFF REQUIREMENTS).	**DIFFICULT** - SCHOOLS ARE FILLED TO CAPACITY - MAY RESULT IN GREATER TRANSMISSION OF VIRUS	NURSES SUITE SHOULD BE OUTFITTED TO CREATE A QUARANTINE ISOLATION AREA. THE GYM SHOULD BE CONSIDERED FOR THIS SPACE, BECAUSE IT HAS IT'S OWN AIR SUPPLY SYSTEM. IF OTHER AREAS ARE USED AS AN ISOLATION ROOM, THEY WILL NEED TO BE ALTERED TO MINIMIZE AIR RETURN FLOWING TO ADJACENT SPACES.	IN ORDER TO RESTRICT MOVEMENT AND INTERACTION OF STUDENTS, BREAKFAST WILL NEED TO BE SERVED IN CLASSROOMS & BOX LUNCHES IN CLASSROOMS MUST BE CONSIDERED. ADDITIONAL CLEANING & PEST CONTROL IN CLASSROOMS WILL BE NECESSARY.	AS RECOMMENDED BY THE CDC, STAFF AND STUDENTS WILL REQUIRE FREQUENT MONITORING OF TEMPERAURES. IF A FEVER IS DETECTED, THEY SHOULD BE QUARANTINED UNTILL PARENTS CAN RETRIEE THEM. CHALLENGE WILL BE GREAT IF SEVERAL STUDENTS WITH FEVERS NEED TO BE ISOLATED AT THE SAME TIME.	FOLLOW CDC RECOMMENDATIONS FOR CLEANING & DISINFECTING FREQUENTLY TOUCHED SURFACES, DISPURSE HANDS-FREE SANITIZING STATIONS THROUGHOUT THE SCHOOL, OBTAIN APPROPRIATE PPE FOR MAINTENANCE STAFF, INCREASE HOURS FOR MAINTENANCE STAFF	STUDENTS HOME FOR 5 DAYS EVERY OTHER WEEK WILL HAVE A MAJOR IMPACT ON PARENTS	THIS OPTION RELIES ON FAMILIES TO SUPERVISE AND MONITOR CHILDREN 5 DAYS A WEEK EVERY OTHER WEEK WHICH PLACES A SIGNIFICANT BURDEN ON WORKING PARENTS	FUNDING FOR INCREASED STAFFING, TECHNOLOGY, RETROFITTING SPACE, SANITATION, AND TRANSPORTATION
EXTENDED DAY	SOME TRIAGE WILL BE NEEDED AS SOME GROUP ACTIVITIES, eg BAND, CHORUS, PHYSED, MAY BE CURTAILED DUE TO REPURPOSING SPACES FOR GENERAL INSTRUCTION TEACHING SPACES	ALL SPECIAL EDUCATION STUDENTS SHOULD BE RE-ASSESSED AND IEP & 504 PLANS WILL NEED TO BE UPDTAED. ALL SPECIAL EDUCATION STUDENTS WILL BE ACCOMPANIED BY SUPPORT STAFF (MUST ASSESS CAPACITY IN ALL SPACES BASED ON SUPPORT STAFF REQUIREMENTS).	**VERY DIFFICULT** - ALL SCHOOLS ARE FILLED TO CAPACITY AND ACCOMODATED TWO SHIFTS IN ONE DAY WHICH MAY RESULT IN GREATER TRANSMISSION OF THE VIRUS	NURSES SUITE SHOULD BE OUTFITTED TO CREATE A QUARANTINE ISOLATION AREA. THE GYM SHOULD BE CONSIDERED FOR THIS SPACE, BECAUSE IT HAS IT'S OWN AIR SUPPLY SYSTEM. OTHER AREAS USED AS AN ISOLATION ROOM WILL NEED TO DEVELOPED TO MINIMIZE AIR RETURN FLOWING TO ADJACENT SPACES.	IN ORDER TO RESTRICT MOVEMENT AND INTERACTION OF STUDENTS, BREAKFAST WILL NEED TO BE SERVED IN CLASSROOMS & BOX LUNCHES IN CLASSROOMS MUST BE CONSIDERED. ADDITIONAL CLEANING & PEST CONTROL IN CLASSROOMS WILL BE NECESSARY.	AS RECOMMENDED BY THE CDC, STAFF AND STUDENTS WILL REQUIRE FREQUENT MONITORING OF TEMPERAURES. IF A FEVER IS DETECTED, THEY SHOULD BE QUARANTINED UNTILL PARENTS CAN RETRIEE THEM. CHALLENGE WILL BE GREAT IF SEVERAL STUDENTS WITH FEVERS NEED TO BE ISOLATED AT THE SAME TIME.	FOLLOW CDC RECOMMENDATIONS FOR CLEANING & DISINFECTING FREQUENTLY TOUCHED SURFACES, DISPURSE HANDS-FREE SANITIZING STATIONS THROUGHOUT THE SCHOOL, OBTAIN APPROPRIATE PPE FOR MAINTENANCE STAFF, INCREASE HOURS FOR MAINTENANCE STAFF. WILL BE MORE CHALLENGING IN EXTENDED DAY SCENARIO.	NON TRADITIONAL SCHOOL HOURS WILL HAVE A SIGNIFICANT IMPACT ON FAMILITES PARTICULARLY THOSE WITH SEVERAL CHILDREN ATTENDING SCHOOL AT DIFFERENT TIMES		FUNDING FOR INCREASED STAFFING, TECHNOLOGY, RETROFITTING SPACE, AND SANITATION - THE SIGNIFICANT TRANSPORTATION REQUIREMENT MAY RENDER THIS OPTION INFEASIBLE

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TEAM MEMBERS

TOPIC 2 - SCHOOL DESIGN & ADDITIONAL SPACE ANALYSIS

Please email questions to the team lead:

LEAD: Richard C. LeBlanc, AIA, LEED AP
Principal, Director of Design
Crabtree, Rohrbaugh & Associates—Architects
100 West Road, Suite 402
Towson, MD 21024
Rleblanc@cra-architects.com

Jonathan Hill, AIA, ALEP, LEED AP | Vice President
Grimm & Parker, Architects
Calverton, MD

Fred D. Mason III, R.A. | Chief, School Facilities Branch
Maryland State Department of Education
Baltimore, MD

Gloria Mikolajczyk, RA | School Facilities Architect Supervisor
Maryland State Department of Education
Baltimore, MD

Lori D. Walls | Director of Client Relations
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

CADD & GRAPHIC DESIGNERS

Arif Hasanbhai | Senior Project Designer
Crabtree, Rohrbaugh & Associates—Architects

Kelsey Boeshore | Marketing Coordinator
Crabtree, Rohrbaugh & Associates—Architects

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TOPIC 2 - SCHOOL DESIGN & ADDITIONAL SPACE ANALYSIS

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Topic 3
Distance Learning

BEYOND
21ST CENTURY DESIGN

Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

TOPIC 3 – DISTANCE LEARNING & CLASSROOMS

OVERVIEW

As we scramble to adjust school facilities to respond well to the COVID-19 pandemic, and at the same time provide inspiring educational settings, the spring 2020 school shutdown offers a rare opportunity to evaluate the effectiveness of current instructional models. Distance learning will be a significant component of the educational environment in the future. Under any scenario for school re-opening in the fall of 2020, out of necessity, many students will continue to learn through remote means. Should there be a resurgence of the epidemic, or similar events in the future, readiness to implement distance learning will be an important aspect of each school system's resilience planning.

The long-term question is how distance learning modes of instruction, which have been available for years but have been forced into prominence by the COVID-19 pandemic, can be incorporated into education in a way that takes advantage of their inherent strengths and enhances classroom instruction.

The current situation presents us with a unique opportunity to accelerate change and greatly improve our schools and the evolving educational experience. New instructional models will be oriented by the needs and learning experience of the student, the development of essential resources, and adjustments to ensure that education is equitable and safe. The goal is to cultivate a lifelong learner through a shift to student-centered learning and competency-based evaluation and advancement. The training of staff and the design of facilities will be essential components of the transition to these new educational models, in which distance learning will play a vital role.

GUIDING FACTORS

Evolving Educational Technology

The COVID-19 crisis has forced school systems to implement complete distance learning for all students, a situation which required educators to find new methods to connect with students in meaningful ways, such as the following:

- District or School-provided Learning Management System (LMS): Programs to allow teachers to manage student rosters, assignments, and grades.
- Publisher-provided content: These include PDFs of documents and games.
- Teacher creation and delivery software: Software ecosystems like MyViewBoard and SMART Learning Suite that integrate with the other tool's teachers are using to make their current lesson content more engaging and allow them to share lesson content with students both in-person and remotely, synchronously and asynchronously.

Using such tools in the future, classrooms may look more like production studios with video cameras, audio systems, and large displays. Class sizes will be smaller, and every student will have a device. When learning from home, every student will require at least one device and a strong, reliable internet connection. Teachers, who may also teach from home at some point, will need a district-issued laptop or another device with a webcam or video camera system, a strong internet connection, and ideally, an interactive display that allows for annotating and moving manipulatives.

KEY FINDINGS, TAKEAWAYS & SUGGESTIONS

A Rare Opportunity

Under any scenario for school re-opening in the fall of 2020, many students will of necessity continue to learn through remote means.

Rather than viewing this situation as one of limitations, educators are challenged to see in it a rare opportunity to shift toward a new classroom teaching and learning model, where the teacher's role changes from instructor to facilitator, and students become active participants in order to develop critical thinking and problem-solving skills.

Distance Learning Training for teachers, parents & students

When engaging in distance learning, students are home with their parents. Therefore, along with training teachers, more intense parental training and involvement is required for success, especially for younger students. Parents should have direct access to supports after training as well.

New Teaching Models

The new teaching and learning models:

- **Will use the small class sizes** that result from social distancing as an advantage to enhance individualized learning and competency-based evaluation of progress.
- **Will incorporate distance learning as a permanent part of the instructional environment**, under several different scheduling models.
- **Need to be supported by an infusion of ubiquitous classroom technology** built around a robust communications infrastructure.
- **Will require training of teachers** in the use of technology to maximize the strengths of both the classroom and remote instruction

Self-Directed Learning

Project Based Learning is compatible with distance learning, and while it can be enhanced through digital tools, it is not fully dependent on online learning. School systems and teachers can initially distribute hardcopy packets, which can guide students to design projects, processes, and learning objectives.

This may provide a low-cost solution that allow teacher contact hours to be spread out over time, with a small group focus, meeting remotely with individual students or groups every two to three days.

CONSIDERATIONS

The desired learning environment will encompass teacher presentation and teaching methods that focus on interaction with students, are learner-centered, collaborative, and project based, and that actively engage students. In this collaborative learning environment, each student will have a laptop with wireless connection and shared software. The teacher will not simply lecture but will facilitate learning using an audiovisual (AV) presentation system. Four to six students, practicing social distancing, will group to share individual work on a team project. The teacher can receive the work, collaborate, or elaborate, communicating with the whole group. The method may involve *flipped instructional method*: students will be introduced to learning material before class, and classroom time will be used to deepen understanding through discussion. Problem solving activities will be facilitated by technology, with students absorbing prepared content material, lesson guidelines and suggested internet locations through remote distance learning.

The new model of teaching and learning aligns well with the capabilities of distance learning, under several instructional scenarios. In the classroom, the smaller groups of students that result from split-week or alternate week schedules lend themselves to such interactive, project-based, technology-facilitated learning. Students who are remote might participate in the same lesson with the same teacher in real time, using a hybrid model with students both in the classroom and in remote locations. Or, an entire lesson could be taught remotely, with students interacting entirely through electronic means in real time. All of these models could involve combinations of pre-distributed materials and assignments, asynchronous lectures, and synchronous projects, discussions, and lectures.

Daily Use of Online Technology

Spring 2020 has uncovered the breaches in our digital infrastructure and indicated the need to train faculty, students, parents, guardians, caregivers also need training, or at least access to training in order to effectively participate in distance learning. This forced experiment in distance learning has had varied results across Maryland's jurisdictions, revealing limitations in connectivity, the availability of devices, teacher training, and parental capacity to provide guidance and assistance. Many school systems lack the IT capacity to fully address the daily needs of students and teachers. However, the experience does show that in the future, virtual reality and augmented reality could be reliable and permanent components of remote education, with students gathering in a virtual room for instruction. Feedback from teachers, the individuals who operate daily in the remote learning environment, will be essential to identify the weak spots and vulnerabilities and to fully incorporate distance learning into the future instructional model. It cannot be stressed enough that if students are to succeed, parents need to be involved in this educational model, by helping them to become familiar with the technology utilized and distance learning methods of instruction.

Pedagogic Trends

Contemporary education demonstrates the following general pedagogic trends:

Student Designed Programs

Project Based Learning (PBL) models were developed to provide students with real-life educational experiences. Design Thinking applied to PBL sharpens observation, curiosity, research, problem solving, making, and presentation skills. In PBL, students design their assignments around their interests, moving away from standardized testing in favor of skill- and achievement-based evaluations.

Project Photos: Quinn Evans Architects -
Pilot School – Wilmington, Delaware

Project Photos: Quinn Evans Architects -
Dorothy Height Elementary - Baltimore, MD

IMPORTANT Necessary Infrastructure

Short-term

To support this instruction model, the classroom will require a robust communications infrastructure. This will follow the general trend toward using Internet Protocol (IP) communication data networks for applications, including telephone, video streaming, and video surveillance. This convergence of major technology applications to the IP network places increasingly greater demands on bandwidth and reliability of infrastructure. Each building must be equipped with a robust wireless network to make every space in the building a connected and flexible "classroom" setting. This will require Cat-6A cabling to all appropriately located wireless locations. This will allow any location to be a "distance learning" hotspot (camera and Internet) and ensure the maximum usage of each facility. We need to be creative in considering how and where face-to-face or remote instruction can happen, including fields and external areas of the school campus in order to promote learning and instruction outdoors as well as inside.

From a wide area network perspective, we have tended to think about bandwidth "downstream", or how fast can we reach resources on the Internet from the schools. However, with many teachers streaming lessons concurrently, we need to consider the network chokepoints, as more is being uploaded to the Cloud from the individual school. We should ask if there are hardened networks at the schools. With the increasing demands on the data network, we need to consider redundancy in wide area network connections to the schools.

Long Term

The State could support this trend through a Technology in Maryland Schools II (TIMS-II) initiative to upgrade the communications infrastructure in existing schools (like the TIMS program in the late 1990s that installed fiberoptic and Cat-5 cables in all schools).

IT Support plans must provide enough IT technicians in schools and in the district offices to cover all the new ways that technology will be asked to support innovation. The physical infrastructure will need to be kept updated, as downtime will be catastrophic. Helplines and tutorials for innovative teaching and learning applications are critical to support instructors who are pushing the limits of distance learning. Older, unreliable network equipment such as switches, routers, and file servers will quickly become problematic in the more connected virtual classrooms. Hardware failures that can take down entire sections of the school, not just individual classrooms, will demand contingency plans and extra inventory in order to minimize disruptions.

Student-designed learning programs require

- Specialized equipment & resources
- Specialized makerspaces, labs, 3D digital technology
- Flexible learning studios/choice in working arrangements through furniture options. Furniture can affect the physical learning environment for the least amount of expense.
- Presentation spaces.

PBL is particularly suited for distance learning: hardcopy packets would be distributed to students, and teacher contact hours would be spread out over time, with a small group focus and periodic remote meetings. Under a split-week or alternate week schedule, in-class sessions could be used for the types of project activities that do not easily lend themselves to remote instruction.

Mentor Relationships

Spaces within the school – particularly in high school – can be dedicated to outside organizations to offer mentoring opportunities; these could even be incubator spaces where students could participate in product development. Mentoring can also productively be conducted remotely.

Focused Social & Emotional Connections

There is increased consideration of spaces that support social/emotional wellbeing. Design considerations include:

- Access to counseling, generally requiring a conference room.
- Mindfulness or wholeness rooms for de-escalating anxiety.
- Windows between spaces and to the exterior.
- Connections and access to the exterior and natural light, and to the natural world.
- Wide hallways or open space opportunities for small student gatherings.

This is an area of education that is particularly difficult to achieve through distance learning, particularly for younger students or for students with disabilities. With its many advantages, electronic communication does not cultivate the nuanced appreciation of human gesture, expression, touch and voice modulation that is so essential to emotional growth and rich social interaction. This is where the split-week or alternate week instructional models will show their strength, taking advantage of the in-class sessions to emphasize the skills involved in direct human contact and the emotional and psychological rewards that come from these exchanges. These instructional models will also provide the ability for teachers and administrators to identify the most vulnerable students, those who might be left behind in a distance learning educational environment, and to make the necessary accommodations so that they receive the counseling, guidance, and instructional support that they need.

Facilities Support Trends

The following design adaptations have been developed to support these pedagogic approaches.

Classroom Adaptations / Expanded Learning Spaces

A portion of the student body can be accommodated in small and medium learning pods. In these spaces, the teacher is a resource working with different groups for a focused time. To maintain flexibility, these small learning pods can be achieved within conventional classrooms using movable partitions or furnishings. Where several groups may be learning concurrently in the same larger space, the distraction of noise must be accounted for; attention to acoustic conditions will be particularly important, using absorptive materials and white noise background where appropriate.

Boston Schoolyard Initiative - Winship Elementary (Before & After)
http://www.schoolyards.org/index.html

Collaborative Project Centers

Combining a makerspace program with the school library or media center offers a low-cost solution that supports both project-based learning and design thinking. These spaces are readily fitted with distance learning technologies, so that instruction can take place under a range of models. Technology upgrades and future renovations can be phased as funds become available. High school black box theater spaces provide high flexibility, variable acoustics, and limited fixed seating for a variety of programs. Remote access will allow for wide audience enjoyment of performances (as several symphony orchestras are now doing).

Woodland Education

Each year, the William Schmidt Outdoor Education Center offers 8,000 Prince George's County Public Schools' 5th graders an overnight outdoor environmental science education experience. Several programs consist of a half-day spent in a classroom setting and the remainder of the day carrying out experiments in the wooded area. There are currently four Forest Schools operating in Maryland. While the complete visual, tactile, auditory, and spatial experience of being in the outdoors cannot be translated into the virtual world of distance learning, 'flipped education' can provide background materials that will then allow the child's hours spent in the outdoors to be more rewarding.

School Yard Classrooms

During temperate weather, particularly in the fall and spring, outdoor spaces can be used for instruction, potentially expanding the number of students returning to school on rotating schedules. This may be one of the safest ways to bring more students back to school (although the vagaries of weather conditions will naturally affect scheduling). Outdoor spaces can be used to teach about natural habitat, water management, energy systems, and school yard agriculture, can be enjoyed for play, and can enrich programs in art and writing. Maintenance of outdoor spaces is a primary concern. The Boston Schoolyard Initiative has developed a maintenance model based on shared responsibilities among the school, the students, and the community. *Examples include*:

- Boston Schoolyard Initiative - moved part of the school curriculum outdoors, including Science, Art, Mathematics, and Language Arts.
- New Zealand, Australia, California, other locations - experimenting with using outdoor space and transforming schoolyards into green areas for instruction and play.

Project Photos: Crabtree, Rohrbaugh Architects
Bay Brook Pre-K-8 - Baltimore, MD

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EMERGENCY SITUATIONS

TEAM MEMBERS

TOPIC 3 – DISTANCE LEARNING & CLASSROOMS

Please email questions to the team lead:

LEAD: Jeff Luker, AIA, LEED AP, Principal
Quinn Evans – Architects
Baltimore, MD
jluker@quinnevans.com

Joe Cellucci, AIA | Principal
Quinn Evans – Architects

William Richardson
Educational System Planning (ESP)

Heather Schrader
SMART Technologies

Natalie Smith
ViewSonic

Charles Tilley, AIA, REFP | Principal
Quinn Evans – Architects

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WEBSITES, CITATIONS & SOURCES

TOPIC 3 – DISTANCE LEARNING & CLASSROOMS

Digital Learning Tools Are Everywhere, But Gauging Effectiveness Remains Elusive, Survey Shows; By Alyson Klein
https://www.edweek.org/ew/articles/2019/09/18/digital-learning-tools-are-everywhere-but-gauging.html

Personalized PBL: Student-Designed Learning: By Andrew Miller
https://www.edutopia.org/blog/personalized-pbl-student-designed-learning-andrew-miller

Why Every Student Should Have a Mentor and Every Teacher Should Be One; By Lauren Faggella
https://www.nextgenlearning.org/articles/why-every-student-should-have-a-mentor-and-every-teacher-should-be-one

'A drastic experiment in progress': How will coronavirus change our kids?
There's little precedent for the social isolation children are experiencing because of the pandemic: by Caroline Preston
https://hechingerreport.org/a-drastic-experiment-in-progress-how-will-coronavirus-change-our-kids/

Rethinking Grading in A 21st Century Project-Based Learning Environment; By Terry Heick
https://www.teachthought.com/category/project-based-learning/

General School Website Content
https://www.baltimorecityschools.org/schools/61

How to Make PBL a Reality in a Distance Learning Environment; Podcast – Dr. John Spencer
http://www.spencerauthor.com/category/project-based-learning/

General School Website Content
https://www.pilotschool.org/

General School Website Content
http://wcpsmd.com/schools/high-schools/barbara-ingram-school-arts

General School Website Content
http://www.schoolyards.org/

General School Website Content
https://www.pgcps.org/williamschmidt/

Audubon Nature Preschool at the Woodend Nature Sanctuary Free Forest School Baltimore MD
Audubon Nature Preschool at the Woodend Nature Sanctuary
Free Forest School Baltimore MD
Nature Preschool at Irvine Nature Center

Nature Preschool at Irvine Nature Center Wild Haven Forest Immersion Program
Wild Haven Forest Immersion Program

Topic 4
Special Education

BEYOND
21ST CENTURY DESIGN

Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

TOPIC 4 – SPECIAL EDUCATION

OVERVIEW

School closures due to the pandemic, although necessary to protect public health, have had a disparate impact on the already challenged and vulnerable special education student population. The Maryland Recovery Plan for Education (MRPE) notes that "While the extended school closures have a significant impact on the education of Maryland students statewide, it is recognized that students with disabilities may experience increased distress and negative educational consequences due to the changes in instructional method and environment." (p. 21).

Distance learning has allowed education to continue, yet it is a far cry from the face to face education that most special education students need. With training, time and monitoring, distance learning will surely become more efficient and eventually an effective educational asset. However, currently, distance learning has caused a void for many students, particularly special education students and students with IEP individualized education program or 504 plans.

There is wisdom in a multitude of counselors

There are no easy short or long-term solutions for establishing social distancing within special education, however, communicating early with parents, counselors, the health department, medical professionals, and referring to the State and CDC for advice, will help in developing a plan that takes all students' needs into consideration. Likewise, an interchange with other school systems will provide insight into what may be working well in other jurisdictions.

Despite good intentions from boards of education, various special education students and their families have not received the academic or socioemotional support to the extent they need. As we move towards a phased return to school, equity concerns apply with urgency, to students with disabilities. The extraordinary situations presented by COVID-19 have prescribed that families, local authorities and educators need to work together to facilitate transition plans that consider each student with an IEP or 504 plan and prioritize solutions that can reasonably be implemented. In this regard, special education students require far greater support as they are re-introduced into the classroom. In this section, we shall review challenges and provide suggestions to help re-open schools in an appropriate, safe manner for special education students.

GUIDING FACTORS

Many considerations for the general school population, such as taking their temperatures prior to boarding buses and entering the school facility, will also apply to students with IEP and 504 plans. However, there are additional factors for Special Education students that will need to be addressed. Social distancing presents a particularly difficult challenge for special education instruction, since physical contact with teachers, support staff and aides is intrinsic to the educational process for most special education students. This close physical relationship must be aligned with the social distancing protocols that school systems will apply to instructional and other activities in the school. Social Distancing for some student populations may also be difficult to maintain due to student behaviors. Typically, special education staff and aides are trained to follow CDC guidelines in hygiene and use of personal protection equipment (PPE).

(*Until this emergency is controlled, it may be wise to provide additional training, sanitizing stations, showers and identify on-site changing facilities specifically for special education staff.)*

Even more than for the general student population, special education spaces and equipment must be in place for students, and especially for those who are medically fragile, before the return to school. This will affect not only the spaces that the students will occupy, but also the storage requirements for their instructional equipment, PPE and cleaning/sanitizing materials and equipment.

IMPORTANT MRPE, IDEA, FAPE, ADA

The Maryland Recovery Plan for Education notes that "each public agency is required to consider the unique needs of the student, their IEP [individualized education program], and the local school system's Continuity of Learning plan to develop and implement, as appropriate, changes to the student's special education program within the context of distance learning." (21). The federal *Individuals with Disabilities Education Act* (IDEA) guarantees the right to a Free and Appropriate Public Education (FAPE) for children with disabilities, which includes students with physical, learning and intellectual differences. The State of Maryland follows the guidance provided by the United States Department of Education, which indicates that if "an LEA continues to provide educational opportunities to the general student population during a school closure, the school must ensure that students with disabilities also have equal access to the same opportunities, including the provision of FAPE. (34 CFR §§ 104.4, 104.33 (Section 504) and 28 CFR § 35.130 (Title II of the ADA)). SEAs, LEAs, and schools must ensure that, to the greatest extent possible, each student with a disability can be provided the special education and related services identified in the student's IEP developed under IDEA, or a plan developed under Section 504. (34 CFR §§ 300.101 and 300.201 (IDEA), and 34 CFR § 104.33 (Section 504))." USDOE, *Questions and Answers On Providing Services To Children With Disabilities During The Coronavirus Disease 2019 Outbreak*, March 2020, p.2

Prince George's County Public Schools
Special Education Event

KEY FINDINGS, TAKE-AWAYS & SUGGESTIONS

Face to Face Instruction

Special education students are in greater need of in-person, close contact with instructors than other students, and may also be more disrupted by the changes in location and routine that have been imposed by the COVID-19 crisis. Distance learning may also be less effective for these students. Consequently:

- **LEA's must develop a detailed student assessment prior to starting school to school**. This will be a valuable tool to determine the current status of the child and how to continue to provide the appropriate education.
- **Return to school and to the same routine, as soon as possible,** maintaining social distancing. If possible, return the students to the same rooms they occupied before.
- **Medically fragile students and children in the Infants and Toddlers programs delay return until** pre-COVID schedules are in place and cleaning and sanitation protocols are in full effect, and appropriate spaces have been designated.
- **Special education students in the same classroom** should be kept together throughout the day to facilitate contact tracing.
- **Special education students may need increased counselling services,** and spaces where face-to-face meetings can safely take place.
- **Aides, nurses, and equipment must be factored into the space** requirements, along with social distancing parameters.

Space & PPE & Sanitation Equipment Storage

Additional space may be needed to:

- **Ensure social distancing**. If additional space is not feasible, consider keeping students on a split schedule (e.g. A day/B day).
- **Store specialized PPE**
- **Store additional cleaning and sanitation equipment and materials.**

NOTE: These space demands may compete with the spaces required for the general student population and in special education classrooms.

HVAC & Air Purification

Requirements for mechanical systems for spaces serving special education students are particularly stringent:

- frequent air changes and higher levels of filtration will be essential for all students who experience respiratory vulnerabilities or who are medically fragile.

CONSIDERATIONS

Prior to returning to school for face-to-face instruction, special education students, including medically fragile students, must be assessed to determine if additional, new or different services are required. Parents will be highly involved, both in temporary remote teaching and in developing a plan for the return to school. Some parents may prefer to continue distance learning for a period.

Mental Health & Behavior Concerns

Returning to school after a natural disaster or crisis can be difficult for all students, and there are common emotional and behavioral reactions that may require adult support. The needs of the whole child should be considered within a multi-tiered system of supports (MTSS) to include universal accessibility practices and increasingly intensive interventions. A resource to assist with some universal practices and targeted strategies for high-risk students can be found here: https://www.nasponline.org/resources-and-publications/resources-and-podcasts/school-climate-safety-and-crisis/natural-disaster-resources/large-scale-natural-disasters-helping-children-cope.

The National Association of School Psychologists has additional mental health resources available to assist families and educators with COVID-19 related needs. Please visit the (Tennessee Department of Education) COVID-19 webpage https://www.tn.gov/education/health-and-safety/update-on-coronavirus.html and scroll down to find the Health and Wellness Re-Open Toolkit for general mental health and behavior supports for students.

IMPORTANT **Special education students may be subject to negative educational consequences due to changes in environment & instructional methods.**

- Provide access to counselors & health clinics—it will be essential to provide additional counseling services for both students with disabilities and their parents. This will have a long-term budget impact. Space must be provided for these professionals, which will generally involve face-to-face meetings, with the student present. The spaces must have adequate air changes to reduce the potential for transmission of airborne contagions. PPE must be provided for all in attendance.
- Lessen anxiety at arrival & dismissal—students may need a staggered schedule to arrive before or after the general population in order to lessen their anxiety and ensure their safety. Each school will need to determine the appropriate timing for safe social distancing.

Consolidate Classroom Activities

- **Contact Tracing –** Special education students should remain in the same classroom all day (same suggestion as for general population), in order to facilitate contract tracing and to reduce the possibility of inadvertent infection from contact with other students.

- **Support Staff or Private Nurses** – Will need to be included in the total classroom count, because they typically accompany students with IEP and 504 plans.

- **Meals** - Should also be served in the classroom. Consult with the office of food services on meal protocols to determine:
  - number of students with special feeding protocols;
  - number of students with personal care protocols.

- **Instructional spaces -** may need to be adjusted to adhere to social distance guidelines, for example, by removing cabinetry to increase the available floor area.

- **Classrooms** – if possible, students should return to the same classrooms they occupied prior to school closure; these rooms are already familiar to the students and are furnished with the equipment necessary to instruct and care for their needs, and this may help to lessen the student's anxiety about changes.

- **Storage for PPE & cleaning supplies**

- PPE Quantities - due to the special health conditions of some students and the proximity of staff members and students, storage requirements for PPE may be larger than in typical education situations: PPE should be pre-ordered and stored for ready access. Determine the number of students and staff that will require various types of PPE.
- PPE with Clear Shields – it may be necessary to obtain face shields for students who have challenges breathing with masks on or keeping them on. Further, staff may need to use PPE that allows students to see their faces, again to help lessen anxiety.
- Staff members working with the deaf and hard of hearing, who require American Sign Language, will need clear face masks for students to see the face and lips of the signer.
- Additional staff training may be required for the sign language program.
- Additional PPE Supplies, such as gloves and disposable paper isolation gowns, will require additional storage space.

IMPORTANT:
AVAILABLE FUNDING

The Coronavirus Aid, Relief, and Economic Security (CARES) Act established funding intended to provide relief for existing needs and to plan for future needs. Here is a summary of allowable <u>onetime</u> funds:

- Purchasing education technology
- Providing summer learning & supplemental afterschool programs (including online)
- Planning for long-term closures
- Addressing the unique needs of special populations
- Providing mental health services
- Conducting other activities necessary to maintain operation of services and employing existing staff and coordination activities, including childcare and the needs of principals and school leaders - *Tennessee Toolbox, Special Population– page 5*

Cleaning & Sanitizing

- Additional storage capacity may be needed for sanitizing items to be readily available.
- Maintenance staff will need to develop schedules to clean and sanitize between student usage, if equipment is shared.

Develop Cleaning & Sanitizing Protocols

- Personal Care Protocols - Need to be developed that align with national, State of Maryland and CDC guidelines.

- Hand Washing Protocols – Training will be important for staff, and to the extent possible, for students, to help lessen the spread of the virus. Accessible hand washing fixtures must be readily available, preferably within the instructional space itself. Special attention will be needed for students with disabilities who may have salivary incontinence or the involuntary spillage of saliva over the lower lip, and/or those who have difficulty keeping their hands to themselves.

- Daily cleaning and sanitizing - throughout the day, equipment will need to be sanitized between usages. At the end of the day, classrooms and equipment will need to be cleaned and sanitized. See CDC website for details.

- Cleaning protocols will need to be established for all student equipment (i.e. adaptive seating systems, adaptive toilets, chair lifts, showers, computers, assistive technology devices, augmentative communication devices, and oral sensory materials; to allow for sanitization between student usage; because several students may share equipment.

- One to one device - The school system may want to consider purchasing devices to establish one to one usage to alleviate sharing of devices and lessen sanitizing rotations.

Students with Medical Needs, and Infants & Toddlers

- Medically Fragile Students - consider returning them in stage 3 of the Recovery Plan (full return of students to in-person instruction), with continuing distance learning through re-opening stages 1 (full closure of schools) and 2 (begin the re-opening process). These students have significant underlying medical conditions that make them high-risk, and they may need nurses to accompany them daily. Unique spaces with specialized ventilation and filtration equipment may be needed to ensure that they are protected from infection.

- Health Services should provide additional information related to a student's significant medical condition in each school. Determine if the student requires special space adaptations or equipment, which may require adjustments to social distancing calculations.

- Infants & Toddlers – Unless a dedicated, separate space with direct outside access, high air changes, and can accommodate the specialized care requirements needed, consider having these students remain in virtual instruction until all can students return to pre-COVID-19 spaces.

Programs & Capacity Size Analysis

- **Classroom Capacity & Specialized Equipment** – to enforce social distancing, class sizes need to include the students and support staff in the count.
  - Under normal conditions - a classroom with a significant amount of physical therapy equipment may also include a teacher, two paraprofessionals, an additional support staff member, and six to seven students. Under social distancing requirements, the number of support staff for the individual student may not change, but the number of students will be reduced.

  - Increased Mental Health Support - may be needed for students with disabilities who already have counseling services documented on their IEPs. Review MD Online Reports to assess the number of students with private nurses and add these to your total social distancing counts.

  - Consider purchasing materials and use of the *Irobot* or similar, to video all live classroom lessons for those who are unable to attend in a school environment due to medical conditions.

- **Identify classes that must accommodate over 10 people, including support staff.** Split schedules may be ideal for these classrooms to limit class sizes and assist with implementing safe social distancing protocols. This will involve some students attending A-week (1/2 week or every other week) and the remaining students attending B-week.

Prince George's County Public Schools
Special Education

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TEAM MEMBERS

TOPIC 4 – SPECIAL EDUCATION

Please email questions to the team lead:

LEAD: Ron Skyles, AIA, NCARB, Design Manager
Prince George's County Public Schools
Upper Marlboro, MD
ronald.skyles@pgcps.org

Jonathan Hill, AIA, LEED AP, ALEP | Vice President
Grimm & Parker

David Lever, AIA D. Arch, Principal
Educational Facilities Planning LLC
Annapolis, MD

Larry Levato, RA, REFP | Principal
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

Lori D. Walls | Director of Client Relations
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

Seth Wentz, AIA | Senior Project Manager
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

WEBSITES, CITATIONS & SOURCES

TOPIC 4 – SPECIAL EDUCATION

COVID-19 & Special Education
https://www.cde.state.co.us/cdesped-covid19

Pandemic is a Crisis for Students with Special Needs
https://www.theatlantic.com/education/archive/2020/04/special-education-goes-remote-covid-19-pandemic/610231/

Navigating the COVID-19 Crisis: Considerations for Special Education Administrators
https://cec.sped.org/COVID19forAdministrators

COVID-19 School Shutdown: Compensatory Education Guidance for Students with IEPs or 504 Plans
https://buelowvetter.com/covid-19-school-shutdown-compensatory-education-guidance-for-students-with-ieps-or-504-plans/

UK.GOV – Education and Childcare during Coronavirus
https://www.gov.uk/government/publications/coronavirus-covid-19-send-risk-assessment-guidance/coronavirus-covid-19-send-risk-assessment-guidance

Tennessee Department of Education – Reopening Schools Toolbox, Special Population
https://www.tn.gov/content/dam/tn/education/health-&-safety/Special%20Populations.pdf

Topic 5

HVAC & Air Purification

BEYOND

21ST CENTURY DESIGN

Refining K-12 Design to Accommodate

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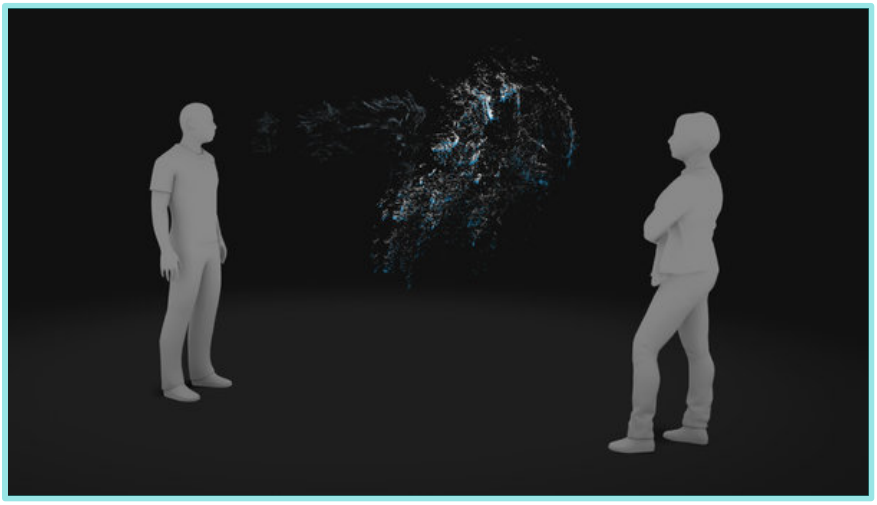
TOPIC 5 – HVAC & AIR PURIFICATION

OVERVIEW/SUMMARY

Integral to determining rational engineering interventions is having a clear understanding of how effectively the virus is transmitted through the air by infected people and understanding the types of controls utilized by hospitals and other high-risk facilities to reduce the spread. Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can help reduce the airborne concentration of SARS-CoV-2-like and thus the risk of transmission through the air.

Click this Link:
3-D Simulation Shows Why Social Distancing Is So Important

Visualize a cough to show how far respiratory droplets can spread and why it is important to enhance the HVAC.



ASHRAE provides recommendations to consider for minimizing the risk of infectious disease transmission within buildings. HVAC systems need to remain functional and in good working order to maintain temperature control, humidity control, and ventilation, which are all important to help minimize the spread of the virus.

GUIDING FACTORS & SOURCES

Information was obtained from the CDC, ASHRAE and product manufacturers such as American Ultraviolet, Titus HVAC products and Price Industries. There is great concern about the possibility of transmission through the air of various pathogens among staff and administration in public facilities, and the general public in outdoor settings and in public transportation. ASHRAE is uniquely qualified to provide guidance on the design, operation, and maintenance of heating, ventilating, and air-conditioning systems to help reduce the dangers of pathogen transmission through the air in these settings:

- Airborne transmission of SARS-CoV-2 Transmission of SARS-CoV-2 through the air is sufficiently likely that airborne exposure to the virus should be controlled. Changes to building operations, including the operation of heating, ventilating, and air-conditioning systems, can reduce airborne exposures.
- Operation of heating, ventilating, and air-conditioning systems to reduce SARS-CoV-2 transmission Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air.
- Unconditioned spaces can cause thermal stress to people that may be directly life threatening and that may also lower resistance to infection. In general, disabling of heating, ventilating, and air-conditioning systems is not a recommended measure to reduce the transmission of the virus.

KEY FINDINGS & TAKEAWAYS

Testing recommendations prior to reopening schools:
CDC Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operation

Mold awareness & Legionella guidance monitoring,
for people with weakened immune systems and
use of respiratory protection when flushing water systems.
Updated May 7, 2020 Summary of Changes:

The temporary shutdown or reduced operation of a building and reductions in normal water use can create hazards for returning occupants. Two potential microbial hazards that should be considered prior to reopening after a period of building inactivity are mold and *Legionella* (the cause of Legionnaires' disease). For mold, a "prolonged period" may be **days**, **weeks**, or **months** depending upon building-specific factors, season, and weather variables.[1] For *Legionella*, a "prolonged period" may be **weeks** or **months** depending on plumbing-specific factors, disinfectant residuals, water heater temperature set points, water usage patterns, and preexisting *Legionella* colonization.[2] Note that additional hazards, outside of those discussed in this document, may exist for returning occupants. These can include other microbial hazards, such as non-tuberculous mycobacteria, changes in water chemistry that lead to corrosion, leaching of metals (such as lead) into stagnant water, disinfection by-products, and sewer gases that enter buildings through dry sanitary sewer drain traps.
https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html

TAKEAWAY

- Apply the highest efficient MERV filter possible. MERV 13 is minimum and MERV 14 is recommended.
- Utilize portable HEPA filter units in classrooms.
- The use of UV-C lamps kills microorganisms and can be used in spaces when not occupied, in occupied spaces near the ceiling, and in air handling equipment.

TAKEAWAY

- Upgrade Health/Nurses' Suites and treat as isolation rooms using:
  - 100% exhaust/ 100% outside air
  - Maintain proper pressure relationships and follow ASHRAE Standard 170 design guidelines for "isolation mode"

TAKEAWAY

- Utilize outdoor air to flush the building. Maximize/increase outdoor air flow rates to dilute contaminates.
- Maintain indoor temperature and humidity design criteria

CONSIDERATIONS

Germicidal UV/UV-C Disinfection

Ultraviolet energy, UV-C, utilizing UVGI lamps inactivate microorganisms including viral, bacterial, and fungal type organisms.

UV-C lamp disinfection systems:

- Portable Room Decontamination Units which could be utilized during unoccupied times.
- Upper Air Disinfection Units which can be in a room at approximately 7'-0" above finished floor which can disinfect the air in an occupied space based on air movement in the room. Upper room UVGI works best when the air in a room is well mixed.
- AHU Surface Irradiation if space allows for UV-C lamps to be located within the air handling unit, preferably downstream of the cooling coil focused on wetted surfaces.
- In-duct Disinfection Using UV-C Lamps which can be installed in straight runs of ductwork to create a kill zone to disinfect the air.

Variables that affect efficiency include residence air-flow velocity, time, and lamp intensity. Factors include exposure time, location in spaces or ducts, and lamp output.

- Advantages/Pros include long history of usage in healthcare facilities, known to be able to have a high ratio of killing microorganisms.
- Disadvantages/Cons - the upper UV is typically used and proven in healthcare facilities and since not applied in other locations such as schools, there is no historical data on how effective it will be. We accept that it should have similar effectiveness.

The cost of implementing and maintaining UV-C lamps and placement of lamps to maximize kill ratio. UV-C does not penetrate deeply into human tissue but can penetrate outer surfaces of the eyes and skin and shielding is required to protect eyes from damage. Typically, lamps must be replaced every 2-years and start to lose efficiency after 1-year.

Summary – Use of UV-C energy to kill microorganisms used in conjunction with high efficiency filters to capture particles is an effective combination method to kill and capture viruses. ASHRAE recommends consideration of using UV-C in healthcare suites and in high density spaces in non-healthcare buildings.

Particle Filtration

Increasing mechanical air filter efficiency is recommended by ASHRAE.
Standard filters have a Minimum Efficiency Reporting Value (MERV) range of 1 to 16. The higher the rating, the more efficient the filter is at capturing particles. MERV ≥ 13 are efficient at capturing airborne viruses, MERV 14 is preferred. Higher efficiency MERV filters can generally be utilized in existing filter banks if fans can overcome the higher associated pressure drop of higher efficiency filters.

HEPA filters are rated in efficiency based on a 0.3-micron diameter particle size. Typical efficiencies are 99.97 and 99.99. These filters are typically applied in critical environments. HEPA filters are less efficient than rated on smaller particle sizes. HEPA filters are more efficient than MERV 16 filters. Due to special filter racks and high pressure drops, HEPA filters typically cannot be retro fitted into existing HVAC systems. Typically, preassembled fan filter units and/or portable HEPA filter machines need to be employed.

- Advantages/Pros include higher efficiency filters (MERV 13 minimum) increase capture of particles and can utilize existing filter frames. Portable or preassembled HEPA filter machines are more efficient than MERV filters.
- Disadvantages/Cons include the higher pressure drop associated with higher MERV filter ratings and limitations of existing fan pressure capability. HEPA filters will typically require independent fan filter units in a portable or permanent installation

Summary – The use of higher efficiency filters to capture particles used in conjunction with UV-C provides an effective capture and kill approach for cleaning and disinfecting the air. ASHRAE recommends consideration of using the highest efficiency MERV filter achievable and portable HEPA filter room air-cleaners with due consideration to the clean air delivery rate. For high risk healthcare suites local HEPA filtration should be considered. Appropriate PPE is recommended when changing filters.

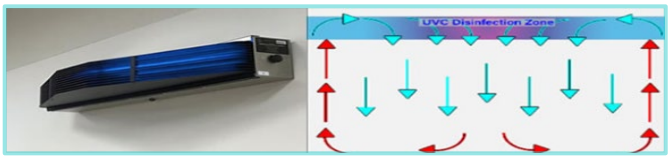
Ultra-Violet Lighting Systems

American Ultraviolet
https://www.americanultraviolet.com/uv-germicidal-solutions/documents-germicidal.cfml

Duct Mounted/HVAC
- CC Series (Coil Mounted)
- CK Series (Coil Mounted)
- DC Series (Duct Clean)
- ICR Series (Infection Control Series)

Upper Air
- TB/CM Series
- RAM Series

Mobile/In Room
- MRS Series (Mobile unit)
- Blade Series (Handheld)
- DB Series (Door Blade)
- RT (Recessed Troffer)



IMPORTANT SAFETY INFORMATION

Appropriate PPE, including N95 or higher respirators, eye and foot protection and disposable gloves are recommended when performing maintenance

Ventilation

Ventilation utilizes outdoor air as a strategy for dilution of infectious particles. Ventilation systems include local exhaust for source control of contaminated air and proper pressurization relationships in a building.

ASHRAE recommends considering:

- increasing outdoor air ventilation (disable demand-controlled ventilation,
- increase the outdoor air economizer range),
- flush out buildings with outside air before and after occupancy,
- keep toilet room doors shut and exhaust fans running,
- maintain temperature and humidity levels
- maintain proper building pressure relationships.

Healthcare/Nurses' Suites consideration shall be given to provide 100% exhaust, maintain a negative pressure, and increase outdoor air change rate up to 6 air changes per hour like a patient room in a healthcare facility. Utilize heat recovery devices that don't potentially leak contaminated exhaust air back into the outdoor air supply or bypass heat recovery devices that have the potential for cross contamination of air streams. CO2 monitors can be used as a low-cost proxy for ventilation testing.

- Advantages - include maximizing outdoor air for ventilation and dilution purposes which can be accomplished through adjusting existing control sequences of operation. If occupant density per room is reduced, the existing outdoor air flow rate will provide the extra ventilation air per person for dilution purposes.
- Disadvantages - includes the potential extra operating cost to condition outdoor air, the need to modify the Health/Nurses' suite to provide independent exhaust system and/or increase outdoor air flow rates. Bypassing energy recovery devices may not be possible on ambient outdoor air conditions unless the cooling or heating capacity is built into the unit and system.
- **Summary** – Increasing outdoor air per person can occur by reducing the number of occupants in the space. Adjusting control sequences can provide extra outdoor air for dilution of contaminates in the space. Exhaust systems are recommended for higher risk areas of concern. Dilution utilizing higher outdoor air rates per person (dilution) should be used in conjunction with upgrades to mechanical air filtration (capture) and disinfection systems (kill).

HEPA Air Purifiers

- **Manufacturers**
  - Titus https://www.titus-hvac.com/
  - Price https://www.priceindustries.com/
- **Types**
  - Reverse flow – Exhausting bad air from the space (2x4)
  - Forward flow – Delivering HEPA air to the space (2x2, 2x3, 2x4)
  - Recirculation – Cleaning existing room air and delivering it back to same space (2x2, 2x3, 2x4)
- **Shipping**
  - 5-day ship - $2,900-$3,100
  - 10-day ship - $2,500-$2,700

Other Air Cleaners/Electronic Air Filters

Other air cleaning devices with different efficiencies, applications, and implications that can be considered according to ASHRAE include:

- Photocatalytic oxidation (PCO)
- Ozone – generating air cleaning devices
- Electronic air cleaners
- Bi-polar ionization/corona discharge
- Pulse xenon
- Sorbent air cleaners

ASHRAE does not recommend devices that use the reactivity of ozone in occupied spaces as a result of negative health effects. Bi-polar ionization creates hydroxyl radicals that are dangerous to microorganisms. ASHRAE recommends the effectiveness and performance of these technologies should be accompanied with data based on industry test standards.

Sanitizing HVAC

Maintaining a clean and sanitized environment will depend not only on the training of the staff to follow defined protocols, but also on the effectiveness of the mechanical system to introduce outdoor air, provide ample air changes, and filtrate the air before it enters spaces. For suggestions on the upgrading and maintenance of the mechanical system, see the HVAC and COVID 19 section.

> People's physiological defenses against respiratory viral infections, function best in mid-range humidity levels...avoiding dry conditions in buildings is generally thought to be effective as a risk reduction strategy.
>
> **Harvard Schools for Health**:
> Risk Reduction Strategies for Reopening Schools,
> June, 2020, page 37 - https://schools.forhealth.org/

Mechanical Systems

- **Change filters, using the MERV filters** recommended in HVAC and COVID 19.
- **Practice cleaning & sanitizing procedures** in mechanical spaces to ensure that maintenance personnel do not spread infectious materials. Provide hand sanitizers at all points of access between the mechanical spaces and the school proper.
- **Limit the number of people who enter mechanical spaces** and ensure that they have appropriate training in cleaning and sanitization and require them to follow social distancing protocols.
- **Evaluate any potential contaminant source** near the outdoor air intake duct, for example, an exhaust vent.
- **Dedicate separate local exhausts** venting directly outdoors for each probable source zone, to the extent possible.
- **HVAC systems that mix recirculated air supply**, replace existing MERV rated filters with MERV 13 or MERV 14 rated filters using existing filter banks in AHUs.
- **For 100% O/A DOAS units with heat wheels** that have some air bypass/leakage from exhaust to outside air streams, replace existing MERV rated filters with MERV 13 or MERV 14 rated filters using existing filters banks.
- **For 100% O/A DOAS units with plate HX** (no leakage), maintain existing or upgrade with new MERV filters as stated above.
- **All AHU equipment** (AHU, DOAS Units etc.) provide UV filters downstream (wet side) of cooling coils. If not practical or space prohibitive, use in-duct UV.
- **Mechanical Equipment Supplemental UV systems** for nightly sanitizing per classroom

Filtration Systems: HEPA filters

- **Upgrading existing MERV 11** to a similar type MERV 13 or 14 filter and reusing the existing filter frames and just purchasing higher efficiency filter is the recommendation for air cleaning through filtration.
- **HEPA filters** are commonly used for hospitals. The HEPA diffuser type like the Titus and Price products are used for operating rooms and clean rooms. We really don't see this for a classroom application, more of a health suite or separation room application only.
    - Disadvantage is the cost to replace these filters as often basic filter replacement in schools can be challenging. In existing schools, it will be extremely challenging to add as these are box filters in special frames inside of AHU's and the fans don't have enough pressure to push them through the filter.
- **UV Systems** have more of a benefit to kill vs capture viruses, does help with keeping the cooling coil/drain pans and air clean if space allows inside the AHU and can be easily incorporated into a new AHU. It uses minimal energy so that's something we would recommend in lieu of HEPA filtration.

Building & Food Services

- **Food Service** - Streamline meal offerings and provide additional sanitizing products, disposable materials, and personal protective equipment.

Plumbing

- Before re-occupying the school building, flush all bathroom faucets, drains, and toilets in case the water in the p-traps has evaporated.
- Close bathrooms during transition periods and promote bathroom breaks during class time instead; assign classrooms to specific bathrooms or stagger the timing of scheduled bathroom breaks by class.

ASHRAE, EPA & CDC

Recommendations to Lessen the Spread of COVID:

- **Reducing occupants in the building** will help to enhance outdoor air per person for air ventilation.
- **Flushing out the building** during unoccupied periods increases dilution.
- **Health/Nurses suite -** exhausting and/or providing higher outdoor air flow rates for higher risk areas is key and should be considered.
- **Ventilation with outdoor air for dilution** - recommendations include enhanced mechanical filtration to capture particles, and air cleaning strategies to kill particles that are not captured (dilute/capture/kill).
- **Increasing mechanical filtration** could be achieved in existing air handling equipment by utilizing higher efficiency MERV filters.
- **HEPA filter units -** enhanced air cleaning can be accomplished by utilizing portable or permanent preassembled and or ducted HEPA filter units. The use of HEPA filter units should be considered for higher risk areas such as the Health/Nurses Suite. Devices that mix indoor air are preferred because they capture more particles, and it is beneficial to use several smaller units rather than a single large unit.
- **Air cleaning devices** (ultraviolet light, electronic air cleaners) have various applications, including the disinfection of portable or permanent installations. The use of UV-C/UVGI should be considered for high-risk areas.
- **HVAC system** should be scheduled for cleaning and filters changed on a regular basis.
- **Environmental Protection Agency** provides Indoor Air Quality Assessment tools to identify opportunities for improving air quality. https://www.epa.gov/iaq-schools/indoor-air-quality-design-tools-schools
- **Ventilate and clean -** the school should be thoroughly ventilated: open all doors and operable windows and/or run HVAC systems for a period adequate to replace air in building.
- **Train custodial and maintenance staff** on appropriate routines and protocols to follow when deep cleaning is required.

TEAM MEMBERS

TOPIC 5 – HVAC & AIR PURIFICATION

Please email questions to the team lead:

LEAD: Jeff Alban, PE Principal
Alban Engineering Associates, Inc.
Hunt Valley, MD
jalban@albanengineering.com

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WEBSITES, CITATIONS & SOURCES

TOPIC 5 – HVAC & AIR PURIFICATION

Covid-19 Preparedness Resources
https://www.ashrae.org/technical-resources/resources

EPA Indoor Air Quality Assessment tools
https://www.epa.gov/iaq-schools/indoor-air-quality-design-tools-schools

CDC Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operation
https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html

Tennessee Tool-kit to Reopen Schools
https://www.tn.gov/education/health-and-safety/update-on-coronavirus/reopening-guidance.html

Harvard Schools for Health: Risk Reduction Strategies for Reopening Schools, June, 2020, page 37 -
https://schools.forhealth.org/

Topic 6

Sanitizing Schools & Buses

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TOPIC 6 – SANITIZING SCHOOLS & BUSES

OVERVIEW

School systems are tasked with identifying methods to sanitize buildings and buses, as well as how they will continue to be sanitized periodically, before staff and students re-enter schools. A key consideration is the amount of time it will take to sanitize; if schools remain open for a longer period each day, the schedule for cleaning and sanitizing will be impacted. The sanitizing schedule for both school facilities and for buses will be significantly impacted by any instructional model that is adopted by the board of education: one-day rotation, two-day rotation, A/B week, etc., as these will determine the number of students in the school, the hours the school is occupied, and special arrangements that must be made for at-risk student populations. These factors will in turn affect the amount of time that is available for cleaning and sanitizing both the buildings and the buses.

to san·i·tize
to make clean *and* hygienic; disinfect.

Any plan to re-open schools during the COVID-19 pandemic should include sanitizing protocols and schedules.

If bus schedules are altered from the normal schedule because of social distancing requirements, this may adversely impact the ability to sanitize buses. After analyzing social distancing capacities for bus, the group elected to use eight (8) passengers (7 students and 1 driver) for purposes of the study. It is important to note that this number may vary depending on the protocol adopted by each school system. This reduced capacity will increase the number of trips required to drop off a load of students at each school and return for the next group of students. Schedule options for buses should include sanitizing after each route is completed, or periodically during the multiple runs the bus will now make.

Considerations in this section:

- School buildings: classrooms, health/nurses' suites, building circulation routes, restrooms
- Exterior portions of schools
- School buses
- After an outbreak

KEY FINDINGS & SUGGESTIONS

General

Hand Sanitizing Station

- Calculate locations / sanitizing stations based on traffic and square footage.
- Quantities depend on program population: The half population, but usage increased up to six times a day per student.
- Budgets for soap - calculate approx. 150% more usage

Personal Protective Equipment (PPE)

- Early procurement of PPE and other mitigation supplies will be important to avoid shortages due to high demand periods.
- Buy in bulk – no touch stations and hand sanitizer, masks or cloth face coverings, clear shields, gloves, paper gowns, etc.
- Communicate with local emergency management agency (EMA) to determine whether the needed supplies are available elsewhere in the county or state.

Secured storage & monitoring

- Provide secured storage for all PPE and supplies and develop and implement ongoing monitoring strategy to maintain accurate count for PPE & cleaning supplies – Make assurances that the supplies are never depleted.

Sanitizing Buildings

Develop sanitizing protocol:

- Develop specific protocols and train staff in their use and application.
- Playgrounds and exterior areas will also need to be sanitized.
- Sanitization of HVAC equipment and spaces is particularly important, to prevent the transmission of airborne infectious materials.

Sanitizing Restrooms

- Limit and control number of people in restroom at a time
- Keep doors closed
- Run exhaust fans continuously when occupied

Sanitizing Buses

- Cleaning and sanitizing schedule will be determined by the instructional model adopted by the board of education.
- Protocols for sanitizing buses will need to be developed and communicated to parents and the community to assure them of the safety of their children.
- Sanitizing will require additional time and new skills for drivers. Union negotiations may be needed to adjust to the new requirements

Sanitizing options

- UV lighting for unoccupied buses
- Disinfecting robots
- Sanitize after each route
- Sanitize at the end of school day

CONSIDERATIONS

Sanitizing Schools

Sanitation Plan and Procedures - A sanitation plan and procedures should be developed and discussed with all staff

- Regularly scheduled sanitation of high touch areas.
- Regularly schedule sanitation of specific spaces and the entire building.
- If an A/B schedule is adopted, procedures on how to clean between the cycles of student attendance.
- PPE equipment and sanitizing supplies should be inventoried, and ample supplies should be on site for daily use and for an emergency.
- Student and parent procedures and expectations should be distributed prior to re-opening.
- Signage should be strategically placed throughout the building and reminders (visual and audio) should be issued throughout the day to establish good sanitary habits among students.

General Protocols:

Follow CDC recommendations for consistent scheduling of cleaning and sanitizing.

- Staff should be instructed to continuously perform routine cleaning.
- High-risk locations warrant cleaning and disinfection on a regular schedule.
- Once an individual has tested positive with COVID-19, it is necessary to perform contact tracing and clean and disinfect all areas they visited, including restrooms.

IMPORTANT:

If one person has tested positive for COVID-19:
it is necessary to perform contact tracing, clean and disinfect all areas.

- **Provide training** for students & staff on handwashing
- **Provide good and consistent** management of cleaning crew
- **Listen to front line workers** on needs & recommendations
- **Keep Good Records** on areas & times of sanitizing
- **Verify the effectiveness** of sanitizing with tests
- **Make changes** to improve effectiveness of process
- **Use appropriate** personal protective equipment
- **Every 60 minutes:** clean lobbies & bathrooms.
- **Nurses / Health Suite:** cleaned after each use
- **Remove all materials** that cannot be disinfected
- **Avoid sharing** pens, pencils and equipment, if possible, and disinfect after each use
- **Disconnect all water fountains**

Transparent communication - designate one person to begin contact tracing; to address staff, parents, students, bus drivers and local health departments. Also anticipate media coverage and plan a collaborative strategy.

Cleaning & Disinfecting: Cleaning and disinfecting (sanitization) should be distinguished. Cleaning: removes germs, dirt and impurities from surfaces or objects, while disinfecting kills germs on surfaces or objects. Staff should perform cleaning and disinfection of frequently touched areas throughout the school.

Step 1: Cleaning: Always clean surfaces prior to use of disinfectants in order to reduce soil and remove germs and to ensure the effectiveness of the disinfectant product. Dirt and other materials on surfaces can reduce the effectiveness of disinfectants. For combination products that can both clean and disinfect, always follow the instructions on the specific product label to ensure effective use. Cleaning methods should not produce airborne dust particles which will settle on surfaces later.

Step 2: Disinfection: Use Environmental Protection Agency (EPA) registered products, specifically labeled for SARS-CoV-2, to disinfect surfaces. These are also effective against rhinovirus and/or human coronavirus.

EPA Approved Products

List of EPA disinfectants for COVID-19
https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19

- **Label directions must be followed when using disinfectants** to ensure the targeted viruses are effectively killed. This includes adequate contact time (i.e., the amount of time a disinfectant should remain on surfaces to be effective), which may vary between five and ten minutes after application. Disinfectants that come in a wipe form will also list effective contact times on their label.

- **Disinfectants that come in concentrated forms.** It is important to carefully follow instructions for making the diluted concentration needed to effectively kill the target virus. This information can be found on the product label. Cleaning and disinfecting should be conducted by staff who have been trained and regularly reminded to use products in a safe and effective manner. Staff do not need to wear respiratory protective gear while cleaning. Safety instructions are listed on product labels and include the personal protective equipment (e.g., gloves) that should be used. Place all used gloves in a bag that can be tied before disposing of them with other waste. Wash hands with soap and water for at least 20 seconds immediately after removing gloves or use an alcohol-based hand sanitizer if soap and water are not available. Soap and water should be used if hands are visibly soiled.

Routine Cleaning

- Clean surfaces using soap and water, then use disinfectant.
- Practice routine cleaning of high contact surfaces that are touched by many different people, including: tabletops, countertops, desks, light switches, handrails, doorknobs/handles, phones, keyboards, toilets, faucets, sinks, etc.
- Dust- and wet-mop or auto-scrub floors
- Vacuum entryways and high traffic areas
- Remove trash (provide no-touch trash receptacles)
- Wipe heat and air conditioner vents
- Spot clean walls
- Spot clean carpets
- Dust horizontal surfaces and light fixtures
- Clean spills

Restroom Sanitation

- Limit and control the number of people in the toilet room at a time
- Keep the doors closed
- Run exhaust fans continuously when occupied
- Clean frequently and thoroughly

Equipment

- High-speed thermal scanners or touch-free personal thermal scanners at all entry points and masks.
- Hand sanitizer should be available at:
  - Entry points
  - Public access areas
  - Restrooms
  - Each classroom

Typical Elementary School:
Suggested locations for hand sanitizing stations

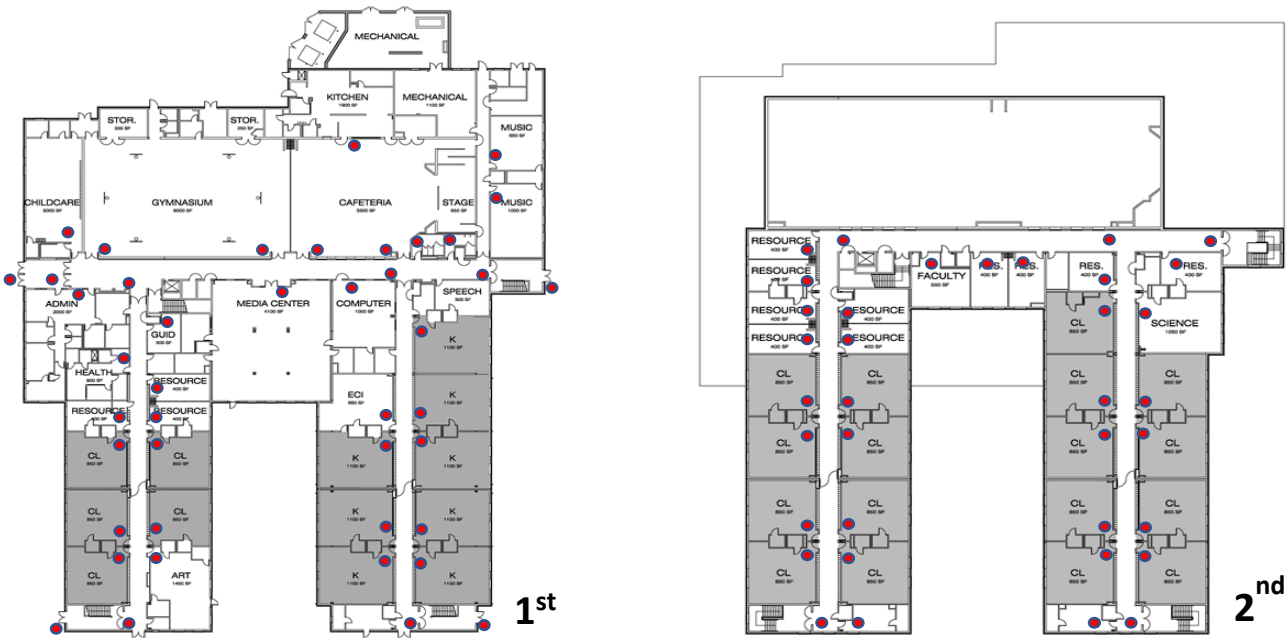

Diagram: No-Touch Hand Sanitizing Stations

Playground Sanitation - CDC Recommendations

- Frequently touched surfaces should be cleaned and disinfected daily or between use as much as possible.
- Use of shared objects should be limited when possible or cleaned between use.
- Since it is recommended that students should remain with the same class throughout the day, sanitize equipment after each classroom's use.

General Recommendations

- Inventory buildings for prevention opportunities : See Tennessee Department of Education DOE - SCHOOL RE-OPENING TOOLKIT: SAFETY & OPERATIONS – Check list https://www.tn.gov/content/dam/tn/education/health-&-safety/Safety%20and%20Operations.pdf

IMPORTANT

If COVID-19 Positive Case – Close Schools!

CDC recommends the following procedures regardless of the level of community spread:

Any school in any community, might need to implement short-term closure procedures regardless of community spread, if an infected person has been in a school building.

- Coordinate with local health officials.
- Communicate with staff, parents, and students.
- Clean and disinfect thoroughly.
- Make decisions about extending the school dismissal.
- Childcare and school administrators should work in close collaboration and coordination with local health officials to make dismissal and large event cancellation decisions.
- Implement strategies to continue education and related supports for students.
- Ensure continuity of education.
- Ensure continuity of meal programs.
- Consider alternatives for providing essential medical and social services for students.

https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-schools.html

Sanitizing Buses

- **Social Distancing:** All individuals must maintain 6-feet of separation from other people, busing sanitizing operations
  - Protocols should be established: who is responsible for sanitizing buses and how often?
  - Additional bus trips will require additional numbers of times sanitizing is required, extending the entire transport window in morning and afternoon.

- **Personal Protective Equipment** (PPE) is necessary to reduce potential transmission during sanitizing, including:
  - Face masks
  - Shields
  - Gloves
  - Goggles
  - Protective suits
  - Disposable shoe covers
  - Disposable medical caps

- **Sanitizing by bus driver will require**:
  - Negotiations with union
  - Specialized training
  - Acknowledgement of schedule impacts

Protocols – Each school system must first determine the bus schedule and the number of trips on each bus driver's route. It will then determine if the jurisdiction will allow the bus driver to sanitize the bus at the completion of each run, at the end of each route, or on another schedule. While a city like New York, with 2.2 million riders per day, may only sanitize its municipal buses once each day, this would likely not be satisfactory for the buses of a public-school system. The vulnerability of children, the school system's legal obligations to stand *in loco parentis*, and the expectations of parents and community members, imply that buses will need to be cleaned and sanitized often and thoroughly.

Union Negotiation – Each union will need to negotiate the added requirement for drivers:

- Protocols and equipment needed for sanitizing vehicles
- Additional time required for multiple trips
- Potential hazards of sanitizing buses

Timing – The board of education will determine the schedule requirements for school re-opening: the opening and closing times of schools, whether arrival and dismissal will be staggered, whether split shifts will be required. These parameters will impact the number of students allowed on each bus and the number of daily runs the bus will make (see the Transportation section), which will in turn affect the number of times the buses will be required to be sanitized, and the time allowed for sanitization.

The model used for this research utilized the A/B Week as referenced in the Maryland Education Recovery Plan (MERP). In this model, half of the student population will report to school for four full days each week, while the remaining half of the school population participates in distance learning at home. The student population will alternate each week.

Methodology - Options for sanitizing buses

- UV lighting after bus unloads
- Disinfectant robots
- Buses cleaned with disinfectant after each route
- Buses disinfected at the end of each school day

Disinfecting Products

Products & Market Prices

Consideration	Type	General Use	Product	Referred Product	Rating	Market Price	Unit	Source Link	
Daily	**Mechanical Equipment**	AHU	Filter	HEPA Filter Bank**	$$$	$400.00	1 Filter Cartridge	Titus HVAC *	*
				MERV 14 Filter**	$$	$100.00	1 Filter	Titus HVAC *	*
		Portable Units	UVGI	American UV Portable Unit	$$$$	$15,000.00	1 Unit	American UV	*
	Transportation	Shield	Installed - Fixed	Arow Global Shield	$$$	2800****	Shield	Arow Global	*
		Thermometer	Infrared	Thermometer	$$	$102.50	1 Thermometer	American Screenings Group	*
	Hygiene Protocol	Hand Sanitizer	Wall Mount - Auto	Dispenser, 700ml, White	$$	$34.50	1 Unit	Wholesale Janitor Supply	*
			Wall Mount - Manual	PURELL ADX-12 Dispensers	$	$6.99	1 Unit	Wholesale Janitor Supply	*
			Floor Stand	Free Instant Hand Sanitizing	$$	$64.23	1 Unit	Wholesale Janitor Supply	*
			Floor Stand - Refill	Handwash Dispenser Refill,	$	$52.74	3 Refills	Wholesale Janitor Supply	*
			Wall Mount Refill	Hand Sanitizer Refill, 1200ml,	$	$34.50	2 Refills	Wholesale Janitor Supply	*
			Pump bottle	Refreshing Gel Pump Bottle - 8 fl	$	$134.09	96 Bottles	Wholesale Janitor Supply	*
		Hand Soap	Refillable	Lotion Soap, Floral-Lavender	$	$9.17	1 Gallon	Wholesale Janitor Supply	*
	Cleaning Materials		Comet Disinfecting	32 oz Trigger Bottle	$	$72.28	8 Bottles	Wholesale Janitor Supply	*
			Comet Disinfecting	Cleaner Refill	$	$78.90	3 Gallons	Wholesale Janitor Supply	*
			Paper Towels	Ply, 7.8" x 700 ft, 6/Carton	$	$29.75	6 Rolls	Wholesale Janitor Supply	*
	PPE		Face Masks	Surgical	$	$30.00	50 Masks	American Screening	*
				N95 Rated	$$	$65.20	10 Masks	American Screening Grou	*
			Face Shields	Clear Protective Face Shields	$	$2.94	1 Shield	Disc Makers	*
			Gloves	Glove-Small	$	$19.95	100 Pairs	American Screening Corp	*
Emergency	**Sanitizing**	Environmental	Mist Fogger/Blower	GenEon Mist***	$$$	Call for Pricing	1 Shield	Gen Eon Tech	*
			Electrostatic Sprayer	Clorox Total 360 System***	$$$	Call for Pricing	100 Pairs	Clorox Pro	*

*Checked 05/28/2020 **Cost of single unit ***Based on the single unit

**** Derived from estimated costs in 2012

https://www.morningjournal.com/news/cleveland-considers-safety-shields-for-bus-drivers/article_2b0fd927-c44e-5ae7-912a-d20cca3617b5.html

BEYOND
21ST CENTURY DESIGN
Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

TEAM MEMBERS

TOPIC 6 – SANITIZING BUSES & SCHOOLS

Please email questions to the team lead:

LEAD: Ron Skyles, AIA, NCARB
Prince George's County Public Schools
Upper Marlboro, MD
beyond21stcenturydesign@gmail.com

Kathy Dixon, Principal
K-Dixon Architecture, LLC
Washington, DC

Jeff Alban, PE, Principal
Alban Engineering Associates, Inc.
Hunt Valley, MD

My-Anh Nguyen, Senior Project Manager
K-Dixon Architecture, LLC
Washington, DC

Seth Wentz, Senior Project Manager
Crabtree, Rohrbaugh & Associates—Architects
Towson, MD

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Refining K-12 Design to Accommodate
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WEBSITES, CITATIONS & SOURCES

TOPIC 6 – SANITIZING BUSES & SCHOOLS

Report Addresses UV Technology in Fighting Coronavirus
https://www.facilitiesnet.com/maintenanceoperations/tip/Report-Addresses-UV-Technology-in-Fighting-Coronavirus--46082?source=facility_insider&utm_source=facility_insider&utm_campaign=5/6/2020&utm_medium=email

Cleaning Strategies for Healthy Workplaces During Coronavirus Pandemic
https://www.facilitiesnet.com/maintenanceoperations/article/Cleaning-Strategies-for-Healthy

HVAC Considerations for Healthy Offices During Coronavirus Pandemic
https://www.facilitiesnet.com/maintenanceoperations/article/HVAC-Considerations-for-Healthy-Offices-During-Coronavirus-Pandemic--18918

Safe at Work: Creating Healthy Workplaces During Coronavirus Pandemic
https://www.facilitiesnet.com/maintenanceoperations/article/Safe-at-Work-Creating-Healthy-Workplaces-During-Coronavirus-Pandemic--18917

Rethinking the Workplace in the Age of Coronavirus
https://www.facilitiesnet.com/commercialofficefacilities/article/Rethinking-the-Workplace-in-the-Age-of-Coronavirus--18913

6 Facility Strategies to Prevent Coronavirus Spread
https://www.facilitiesnet.com/emergencypreparedness/article/6-Facility-Strategies-to-Prevent-Coronavirus-Spread--18910

Ultraviolet Light Kills Coronavirus, But Caution Required
https://www.facilitiesnet.com/hvac/tip/Ultraviolet-Light-Kills-Coronavirus-But-Caution-Required--46066

Coronavirus Fallout: Risks for Empty Buildings
https://www.facilitiesnet.com/emergencypreparedness/tip/Coronavirus-Fallout-Risks-for-Empty-Buildings--45941

Cleaning and Disinfecting Your Facility
https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html

Schools and Child Care Programs-Plan, Prepare, and Respond
https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/index.html

Interim Guidance for Administrators of US K-12 Schools and Child Care Programs
https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-schools.html

Guidance for Cleaning and Disinfecting
https://www.cdc.gov/coronavirus/2019-ncov/community/cleaning-disinfecting-decision-tool.html

COVID-19: How U.S. Carriers Are Working to Protect Travelers
https://www.airlines.org/blog/covid-19-how-u-s-carriers-are-working-to-protect-travelers/

The other COVID-19 'front lines': hospital housekeeping
https://www.novanthealth.org/healthy-headlines/the-other-covid-19-front-lines-hospital-housekeeping

What Bus Transit Operators Need to Know About COVID-19
https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/bus-transit-operator.html

GUIDANCE SUMMARY: Interim Guidance on Re-Opening Schools Following COVID-19 Closures
https://nyapt.org/resources/SchoolReOpeningGuidance_050120.pdf

COVID-19 BUS CLEANING INSTRUCTIONS
https://thomasbuiltbuses.com/content/uploads/2020/03/COVID19-Cleaning-Instructions.pdf

Properly cleaning your IC Bus
https://www.mctrux.com/--Cleaning-Your-IC-Bus

Proper Disinfecting of School Buses
http://www.newyorkbussales.com/wp-content/uploads/2020/04/20-0326REV-A-SERVICE-UPDATE-Proper-Disinfecting-of-School-Buses.pdf

COVID-19 BUS CLEANING INSTRUCTIONS
https://thomasbuiltbuses.com/content/uploads/2020/03/COVID19-Cleaning-Instructions.pdf

Cleaning and Disinfecting Your Facility
https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fprepare%2Fdisinfecting-building-facility.html

EPA- List N: Disinfectants for Use Against SARS-CoV-2 (COVID-19)
https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19

NAPT UPDATE ON COVID-19
https://www.napt.org/blog_home.asp?Display=34

CDC recommendations - anxiety
https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html

CDC recommendations - testing
https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html

CDC recommendations – precautions
https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/index.html

CDC recommendations
https://www.cdc.gov/coronavirus/2019-ncov/testing/diagnostic-testing.html

CDC recommendations
https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html
https://www.nga.org/coronavirus/#resLegal

List N: Disinfectants for Use Against SARS-CoV-2 (COVID-19)
https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19

Here's how NYC is using powerful UV light to kill the coronavirus on subways and buses
https://www.theverge.com/2020/5/20/21265221/nyc-mta-ultraviolet-light-uvc-coronavirus-disinfect-puro-pictures

Tennessee Department of Education, SAFETY ANDOPERATIONS
https://www.tn.gov/content/dam/tn/education/health-&-safety/Safety%20and%20Operations.pdf

Safety Shield for Bus Drivers
https://www.morningjournal.com/news/cleveland-considers-safety-shields-for-bus-drivers/article_2b0fd927-c44e-5ae7-912a-d20cca3617b5.html

SCHOOLS FOR HEALTH Risk Reduction Strategies for Reopening Schools
https://schools.forhealth.org/wp-content/uploads/sites/19/2020/06/Harvard-Healthy-Buildings-Program-Schools-For-Health-Reopening-Covid19-June2020.pdf

Harvard: Healthy Building https://schools.forhealth.org/wp-content/uploads/sites/19/2020/06/Harvard-Healthy-Buildings-Program-Schools-For-Health-Reopening-Covid19-June2020.pdf

Topic 7
Transportation

BEYOND
21ST CENTURY DESIGN

Refining K-12 Design to Accommodate
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TOPIC 7 – TRANSPORTATION

OVERVIEW

The Beyond 21st Century Design collaboration primarily consisting of facility planners and architects, was largely focused on the operation and design of school facilities and sites. However, the group recognized that transporting students to and from school under social distancing conditions may have a major influence on the number of students who will attend the school on any day. In turn, the student enrollment will affect the usage of spaces, events in the school day such as class changes and lunch period, and the length of the arrival and dismissal periods.

Since transportation offers a clear example of how different aspects of school operations are interdependent, it is critical that school transportation officials analyze the feasibility of re-opening schedules adopted by decision-makers, and that decision-makers take into account the potential constraints presented by transportation before re-opening plans are finalized.

> "As districts weigh various strategies related to how best to structure the school day from an operational lens, transportation may prove the enabler and the boundary setter for what types of school days, nutritional services, and distancing strategies may be employed based on local context, needs, and risk tolerance."
>
> *Tennessee Department of Education School Reopening Toolkit, "Transportation," June 11, 2020*

The specific number of children transported will depend on the policies that each board of education adopts for re-opening schools and on decisions parents make to drive their children to school or to allow them to walk. This section offers several suggestions that school administrators and school staff should consider mitigating the effects of increased bus routes while still ensuring the health and safety of students, drivers, and school staff.

While the focus is on students transported by bus, private vehicles and walking students must also be considered. Most importantly, before school re-opens, school systems should survey families at each school now, to determine how many students will require busing, since this data will drive all other transportation decisions.

Other Sources

Calvert County Public Schools found that if it follows the CDC guidelines and transports 50% of the normal enrollment in a representative elementary, middle, and high school routing area, it would need to increase the number of daily bus runs on these routes from 48 to approximately 108 (2.25 times). If this logic were applied to every bus route in this school system, the consequence would quickly become apparent: a significant increase in the number of buses and drivers, with impacts on congestion in route and at the school site. Fiscal and schedule constraints are likely to make increases of this magnitude infeasible in many jurisdictions.

The websites of several national organizations were reviewed for guidance, including the National Association of State Directors of Pupil Transportation Services (NASDPTS), the National Association for Pupil Transportation (NAPT), and the National School Transportation Association (NSTA). State guidelines were also reviewed, including from New York, Tennessee, and Missouri. The Tennessee *School Reopening Toolkit* provides a thorough checklist of items that affect the operation of school buses (https://www.tn.gov/education/health-and-safety/update-on-coronavirus/reopening-guidance.html).

The Missouri School Boards' Association (MOSBA) guidance document, *Pandemic Recovery Considerations: Re-Entry and Reopening of Schools*, dated May 13, 2020, also provides a comprehensive outline of school transportation concerns (pages 52-54; available at https://www.mosba.org/2020/04/05/msba-resources-for-the-covid-19-pandemic-2/).

GUIDING FACTORS

The number of students on each bus will be affected by the capacity of the bus and the social distancing parameters that are adopted by the board of education.

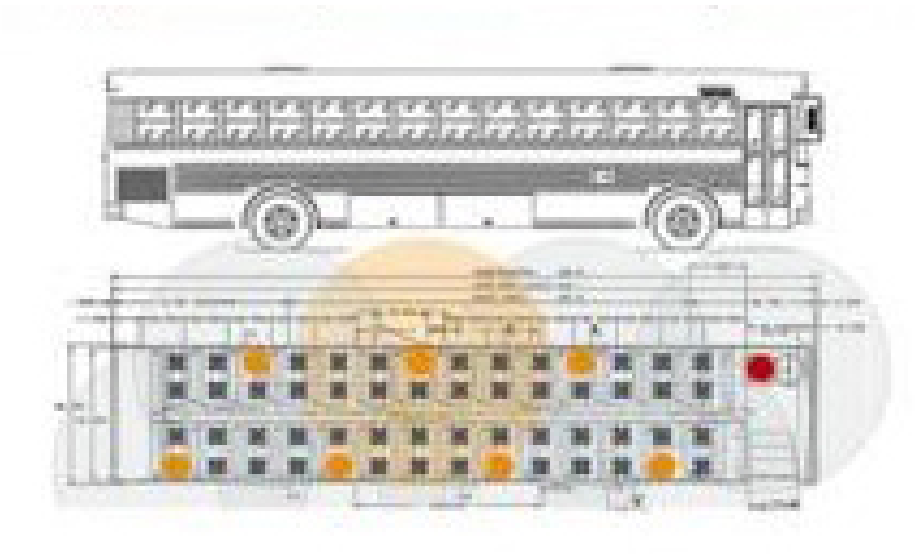
Bus Seating Guidance

"The Centers for Disease Control and Prevention have published guidance that recommends that on school buses, a child sits one to a seat and by alternating the rows in which students sit. For a 77-passenger bus, this would allow for approximately 13 students to be transported. It is understood that by adding social distancing requirement for all riders, the number able to be transported on a 77-passenger bus drops to 8 (not counting the driver)."

MSDE - Maryland Educational Recovery Plan,
Page 10 / June 2020

Modified School Bus Planning Guide

Without PPE, a socially distanced school bus is limited to 12% capacity, or approximately 50% with strict use of masks. Strict social distancing would result in the seating pattern below:



Cannon Design

The transportation of special needs students is of concern in order to ensure compliance with the child's Individualized Education Plan (IEP) and to prevent violations of IDEA for IEP and 504 students. Since some special education students may have problems with spitting, screaming, biting or other behaviors that may spread COVID-19, social distancing, PPE, and sanitizing are critical for these buses.

The guidance information available through national and state organizations largely addresses bus hygiene and safety (see website directory). No guidance was found on protocols for arrival and dismissal of students, or for on-site traffic management to ensure social distancing and general safety. The B21CD group relied on the collective experience of the members to develop the following suggestions. While the B21CD collaboration did not include transportation experts, discussions were held with these experts to inform the B21CD members on transportation challenges.

The pedestrian simulation modeling described in the Educational Specifications section of this report will have application to the movement of students inside the bus and at the school site on arrival and dismissal. This is being investigated, and updates will be forthcoming.

KEY FINDINGS, TAKE-AWAYS & SUGGESTIONS

Transportation of students has the potential to be a major constraint in re-opening schools. In both short and long terms, it is essential to assess transportation capacity and utilize this data in deciding on the best instructional model:

- Survey parents to determine the likely number of students requiring to be transported, both at the beginning of the school year and daily/weekly;
- Determine the capacity of buses based on social distancing guidelines, taking into account seating arrangements and sibling exceptions;
- Determine how many students can be transported on each run;
- Determine time required for each run, including the time needed for temperature checks, loading and unloading, and sanitizing (per the protocols established by the BOE). Include contingency time in case a student shows signs of infection at a bus stop or in route;
- Determine number of runs required for each route;
- Determine feasibility of transporting students in morning & afternoon windows established by the board;
- Modify school start times to allow students who use public transit to avoid crowded rush hour buses and trains.
- Work with unions to determine what is feasible within existing contracts and where adjustments can be made that will protect the rights of drivers while allowing the system to operate under new conditions;
- **Inform decision-makers if transportation represents a major constraint on the possibility of returning students to school.**

Staffing, resources, and time are major constraints that must be addressed:

- *Staffing:* Availability of trained bus drivers, potentially working longer hours than previously, due to extended and staggered pickup and drop-off times.
  - It requires two to three months to train a new bus driver; there is a large pool of unemployed people who can be trained as drivers.
  - All new employees, drivers & support staff should obtain background checks prior to reporting to work.
  - Training must include protocols for communication with parents, identification and actions in case a rider shows signs of infection, and bus sanitization.
- *Resources*:
  - Buses, fuel & maintenance requirements, particularly if mileage increases due to multiple trips and the time available for maintenance decreases. Sanitizing materials and equipment, and PPE for drivers and pupils, must also be considered (including storage & distribution on buses).
- *Time*:
  - Increased time will be needed for every bus run: picking up students at neighborhood stops, discharging them at school, loading the bus at dismissal and sanitizing.

Routing and resource limitations may force LEAs to transport students from different grade levels on the same bus.

LEAs should determine how this procedure will align with the principle that students should stay together as groups throughout the school day to facilitate tighter contact tracing, in order to reduce cross-infection.

Options include:

- Gather students from multiple buses into same-class groups before entering the building;
- Distribute all students from one bus to their classes before another busload is distributed.

Under all circumstances, additional time will be required at the bus loading/unloading points. Additional staff support may be needed on the bus and at loading and unloading points to ensure safety and to reduce the risk of cross-infection among students.

CONSIDERATIONS

Facility & Site Considerations

When schools re-open in the fall, and perhaps for a few years afterward, school systems will face fundamental facts that will affect student transportation:

- **Many students will be educated using social distancing** at locations other than the school. The number of students who will be transported each day will decrease (but this does not mean that the demands placed on school transportation will be lessened). Concurrently, there may be increased demands placed on parents and others to transport students to non-school locations other than the home.

- **Individual school buses will transport significantly fewer students per trip**, in order to ensure social distancing during transport. This will increase the number of buses required, potentially the number of routes they travel, the time required to transport students, and the impact on pick-up and of drop-off points. Since it is also likely that the number of students transported by parents will increase, there may be increased congestion at the school site.

- **All actions required to ensure the safety and health of students and staff** will tend to require more time, from picking up students at local stops to emptying the bus at the school, to the reverse actions in the afternoon. Sanitizing buses will also require additional time. School systems will need to determine whether the school day should be staggered and/or extended to account for these extended transport episodes.

Arrival & Dismissal

School arrival time presents particular difficulties, because the school administration has little control over the individual actions of parents (late arrivals, parents who need to see a teacher, parents not fully aware of protocols or resistant to protocols, etc.). At dismissal, school administrators and staff have control of student movement until they enter the vehicle or leave the school site, making this episode in the day somewhat easier than arrival.

All students

- **Always maintain social distancing**: at pick-up points in the morning, entering bus, in transit, leaving bus, waiting to enter school, during entry; and similarly, for the reverse actions during and following dismissal.
- **Temperature checks** before entering bus and school. According to the CDC, anyone with a temperature of 100.4°F or over is considered to have a fever.
- **Parents to remain at bus-stops** until student temperatures are taken. If a student has a fever or shows symptoms of illness, they will not be allowed on the bus.
- **Hand sanitizing or washing before** entering bus and school.
- **Require face masks**, particularly when use of alternate rows for seating is not possible.
- **Store supplies of face masks** of different sizes on the bus for students who forget or neglect the rule.

Buses

- **Increased number of buses** arriving at school site, with potential traffic conflicts with vehicles at entry and exit points, as well as potential backup onto neighborhood streets.
- **Train students on proper bus behavior**: maintaining social distancing, sequence for entering and leaving the bus, taking one's place on the sidewalk, etc.
- **Load & unload in a social distancing manner** (back to front & front to back).
- **Keep seat behind the driver empty** during every trip.
- **Keep windows slightly open** to allow air circulation throughout the vehicle during trips.
- **Restrict food or eating** on the school bus.
- **Driver may need a clear plastic shield**, which should be designed so it does not interfere with maintaining order and social distancing among students.
- **Siblings from same household sit together** in the same seat.
- **Assign seating** so passengers sit in the same seat going to and from school.
- **Clear plastic shields** to create a small semi-quarantine space at the front of the bus; may be a consideration for students who are identified with symptoms while in-route.
- **Buses frequently sanitized** at regular intervals, particularly the touch surfaces.
- **Train drivers to effectively sanitize buses**.

Temperature checks, PPE, assigned seating & open windows

Check temperature of drivers and students daily before boarding, assign seats to keep riders at least six feet apart, and have a monitor aboard to make sure the new safety protocols are being followed. Riders and drivers also must wear masks or other face coverings and use hand sanitizer when boarding and exiting. Weather permitting, keep the windows open to increase fresh airflow.

Private Vehicles

- Increase of private vehicles at school, with potential traffic conflicts with buses at entry and exit points, as well as potential backup onto neighborhood streets.
- Parents prohibited from walking students to entry or into the school.
- Ensure students leaving vehicles maintain social distancing.
- Protocols for students who show symptoms (e.g., parent cannot leave site until student clears temperature check).

Walkers & Public Transit Riders

- Possible increase in walkers.
- Need for a designated area where walkers gather, to maintain social distancing.
- Protocols for parents to take child home if a student does not clear temperature check, and for the school to maintain the student in quarantine until the parent arrives.
- Modify school start times to allow students who use public transit to avoid crowded rush hour buses and trains.

Facility Suggestions

- Designate sidewalk areas for students to gather at arrival and dismissal. Temporary canopies may be needed.
- Designate more than one station for temperature checks.
- Mark sidewalks and pavements with social distancing indicators.
- Ensure separation of bus and vehicle entrances, with adequate "magazine" space on nearby roads to avoid neighborhood impacts; inform the neighbors so that they can plan accordingly once the number of buses and the arrival and dismissal times are established; coordinate with local officials to avoid congestion and ensure safe passage for emergency vehicles.
- Use multiple school entrances:
  - *Safe pavement* - continuous from bus drop-off or assembly area to entry point.
  - *Entrance canopy* - provide at all entrances that will be used.
  - *Access control systems* - at all entrances to maintain security.
  - *School entrances other than main entrance* - may need to be enlarged to ensure social distancing and to prevent students from crossing paths.
  - *Signage* - to identify entrance students should use; staff must be present to ensure students follow directions and to maintain security.
  - *Touchless hand sanitizers* provided **-** at all entrances that will be used.
- Accessing classrooms - develop protocols & training for students to use the entrance closest to their classroom (e.g., assemble a single class from various buses on the sidewalk, then proceed to classroom; or allow all students from one bus to access their separate classrooms before the next busload enters school).

Other Suggestions

- Contact local police to provide traffic control
- Work with local and state officials to improve the walking environment to and from school (e.g., following Safe Routes to School design principles).
- Conduct an "opt in/opt out" survey daily among parents to determine students who will not be attending that day or will not require bus transportation.
- Enlist parents and retirees to help supervise at arrival and dismissal, to ensure social distancing, direct students to the right entrance, greet late-arrivals, etc.
- Consider adopting parental drop-off/pick-up sites several blocks from school, with appropriate supervision of students, in order to reduce on-site congestion, improve air quality at the school, and give students an opportunity for mild exercise before and after school. In the United Kingdom this program, called Park and Stride, has been very successful (see website reference).

Transportation of Special Education Students

Modify Transportation Options - for students with disabilities who have specialized transportation as a related service. IEPs may need to be adjusted to reflect social distancing and staggered schedules in order to align with school system transportation guidelines.

- Special Education Buses – While these buses generally have less seating and lower rider capacity than regular school buses, the number of students on routes may still need to be adjusted to align with CDC guidelines for social distancing. Support staff and nurses who accompany students should be included in the total rider count.

- Obtain data reports on the number of students by school who require a wheelchair (SEP 6R), and consult with transportation staff to obtain the names of the students and their school assignments.

- Ask parents to provide transportation where possible to help limit the number of students riding the bus

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TEAM MEMBERS

TOPIC 7 – TRANSPORTATION

Please email questions to the team lead:

LEAD: Ron Skyles, AIA, NCARB
Prince George's County Public Schools
beyond21stcenturydesign@gmail.com

David Lever, AIA D. Arch, Principal
Educational Facilities Planning LLC
Annapolis, MD

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WEBSITES, CITATIONS & SOURCES

TOPIC 7 – TRANSPORTATION

Missouri School Boards' Association's / Comprehensive guidance on bus safety and operations.
www.mosba.org

CDC What Bus Transit Operators Need to Know About COVID-19
https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/bus-transit-operator.html

National Association of State Directors of Pupil Transportation Services (NASDPTS)
http://www.nasdpts.org/

National Association for Pupil Transportation (NAPT) / cleaning of buses
https://www.napt.org/blog_home.asp?Display=34

National School Transportation Association (NSTA)/ Emergency Management & Safety Solutions
https://www.buzzsprout.com/277232/2958631-covid-19-bulletin-regina-phelps-emergency-management-safety-solutions-founder

NSTA: COVID-19 Bulletin 2/ Management & Safety
https://www.buzzsprout.com/277232/3203539

Back-to-School Planning: Minimizing COVID-19 Liability Exposure
https://www.schoolbusfleet.com/10118759/back-to-school-planning-minimizing-covid-19-liability-exposure

Living Streets: A guide to setting up a Park and Stride scheme
https://www.livingstreets.org.uk/media/2035/park-and-stride-print.pdf

Allen, Joseph G., *Schools for Health: Risk Reduction Strategies for Reopening Schools*, Harvard T.H. Chan School of Public Health, Healthy Buildings Program, June, 2020
https://schools.forhealth.org/

Tennessee Department of Education, *School Reopening Toolkit, "Transportation*," June 11, 2020
https://www.tn.gov/education/health-and-safety/update-on-coronavirus/reopening-guidance.html

Topic 8
Legal Considerations

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Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

TOPIC 8 – LEGAL CONSIDERATIONS

OVERVIEW

The team researched the legal impacts of the COVID-19 and schools. The following material applies to Prince George's County Public Schools, yet they are likely to be useful for other school systems in Maryland. The following areas were investigated:

- Impacts to transportation of students
- Testing of employees and students
- Alternate work locations
- Liability from contracting the virus
- Funding for schools due to the reduced attendance
- Equity for all students

Take Away: In some cases, the educational program will need to be individualized to meet each school systems' specific needs.

CONSIDERATIONS

PART I – Legal Ramifications

Any plan to open schools while the COVID-19 epidemic is in progress must take into consideration the legal issues that need to be addressed, prior to implementing operational changes and potential life-threatening exposure in school facilities and buses:

1. **Social Distancing:** All individuals should maintain 6 feet of separation from other people. On June 3, 2020, Governor Larry Hogan issued a Proclamation of *Renewal of Declaration of State of Emergency and Existence of Catastrophic Health Emergency — COVID-19*. This Declaration contained, among others, the following clauses:

Although this Proclamation applied specifically to the Maryland primary election, it is interpreted to mean that social distancing is required and is legally enforceable:

- WHEREAS, to reduce the spread of COVID-19, the U.S. Centers for Disease Control and Prevention and the Maryland Department of Health recommend social distancing and avoiding gatherings;
- WHEREAS, the currently known and available scientific evidence and best practices support limitations on gatherings and social distancing to prevent exposures and transmissions;
- WHEREAS, to reduce the threat to human health caused by transmission of the novel coronavirus in Maryland, and to protect and save lives, it is necessary and reasonable that individuals in the state refrain from congregating

NOW, THEREFORE, I, LAWRENCE J. HOGAN, JR., GOVERNOR OF THE STATE OF MARYLAND, BY VIRTUE OF THE AUTHORITY VESTED IN ME BY THE MARYLAND CONSTITUTION AND THE LAWS OF MARYLAND…IN AN EFFORT TO CONTROL AND PREVENT THE SPREAD OF COVID-19 WITHIN THE STATE, HEREBY DECLARE THAT A STATE OF EMERGENCY AND CATASTROPHIC HEALTH EMERGENCY CONTINUES TO EXIST WITHIN THE ENTIRE STATE OF MARYLAND, RENEW THE MARCH 5, 2020, PROCLAMATION…

PART I – Legal Ramifications, continued…

2. **Stay-at-home order:** Maryland's stay-at-home order expired at 5:00 p.m. on May 15, 2020. Gov. Larry Hogan had issued the prior order, which directed individuals to remain at home (with exceptions made for carrying out essential activities) and placed restrictions on non-essential businesses, on March 30.

3. **School closures: Maryland schools remained closed for the remainder of 2019-2020 academic year.**
   a. March 12: Governor Hogan first ordered all schools to close, effective March 16 through March 27.
   b. March 25: Dr. Karen Salmon, State Superintendent of Schools, extended the school closure order through April 24.
   c. April 17: Dr. Salmon extended the school closure order through May 15.
   d. May 6: Dr. Salmon announced that schools would be closed for the remainder of the school year.

4. **Reopening plan:** Maryland's reopening is in progress.
   a. June 5: Maryland moved into Stage 2 of its reopening, effective at 5 p.m. on June 5. The order requiring the closure of non-essential businesses was lifted.
   b. June 10: State Superintendent of Schools Karen Salmon announced that outdoor high school sports could resume practice and training. Governor Hogan encouraged local school systems to hold outdoor graduation ceremonies with appropriate capacity and social distancing measures. Dr. Salmon also announced that school systems could bring small groups of 10-15 students and staff into school buildings. Child care providers were also allowed to reopen on June 10, subject to Maryland Department of Health protocols.[8][9]

5. **Childcare.** On June 10, Dr. Salmon announced that all childcare providers may begin to reopen, and the number of individuals that childcare providers can have in one room has been expanded to a maximum of 15.

PART II – COVID-19 Legal Questions

1. **Will bus drivers be required to be tested for COVID-19 each day or at the beginning of the school year? Bus drivers might refuse to come to work because they are in a high-risk category (medical conditions, advanced age, etc.)**
   a. Family First Coronavirus Response Act - Requires employers to provide COVID-19-related paid leave to employees, regardless of the employee's actual accrued leave. It is not a certainty how PGCPS Human Resources or the Maryland Division of Unemployment Insurance will deal with refusals to return to work. Will those employees be considered to have resigned or quit and thus be ineligible? Some states are expanding unemployment benefits for employees who refuse to return to what is reasonably considered an unsafe workplace.
      - Ramification: Many staff members, including bus drivers, may elect to utilize this benefit to delay return to work. This could impact the availability of bus drivers and PGCPS staff members.
   b. Testing may not be feasible because there may not be enough tests; testing of asymptomatic individuals is an issue; assurances to parents regarding safety measures will be challenging.

PART II – COVID-19 Legal Questions, continued…

2. **Will the HIPAA Privacy Rule Waiver of Penalties and Sanctions be applicable to school systems and school system employees?**
   Effective March 15, 2020 Secretary of the U.S. Department of Health and Human Services (HHS) Alex M. Azar waived certain penalties and sanctions under the HIPAA Privacy Rule against hospitals in the March 2020 HHS COVID-19 and HIPAA Bulletin. These waivers were issued in response to the president's declaration of a nationwide emergency concerning COVID-19, and the Secretary's earlier declaration of a public health emergency on January 31, 2020.

   The Secretary's guidance makes clear that the Privacy Rule is not suspended during this crisis and it provides guidance about the ability of entities covered by the HIPAA regulations to share information, including with friends and family, public health officials, and emergency personnel. But the Secretary has waived sanctions and penalties against covered hospitals that do not comply with the following provisions of the HIPAA Privacy Rule:
   - the requirements to obtain a patient's agreement to speak with family members or friends involved in the patient's care. See 45 CFR 164.510(b).
   - the requirement to honor a request to opt out of the facility directory. See 45 CFR 164.510(a).
   - the requirement to distribute a notice of privacy practices. See 45 CFR 164.520.
   - the patient's right to request privacy restrictions. See 45 CFR 164.522(a).
   - the patient's right to request confidential communications. See 45 CFR 164.522(b).

   The waiver became effective on March 15, 2020, and there is more information and access to resources in the Bulletin about where it applies and for how long.

3. **Have any COVID-protocols been developed for checking people before entering a facility during COVID-19?**
   - What is the protocol if a child has a fever?
   - What is required for the student to return to school?

   a. Health Services, PGCPS will provide protocols based on guidance provided by CDC and the State of Maryland and Prince George's County Health Departments.
   b. This question requires further discussion after there is additional guidance from the Health Department. There should be consideration for whether a parent will be required to provide information to the nurse (or designee) on potential exposure of the student, under what circumstances should a student be quarantined, what will be required for the student to return to school, i.e. doctor's note, 14 days quarantine, etc.

      Recommendation: Students will be sent to the school nurse if fever or other COVID-19 symptoms are detected, and school staff will provide guidance on the next steps.

4. **What is the protocol if a bus driver tests positive for COVID-19? Who will determine this process?**
   LEAs should follow state/local health department guidance as well as CDC guidance; notification regarding exposure is a consideration.

5. **What would be the emergency procedure if the school identifies that a student with COVID-19 rode the bus?**
   LEAs should follow state/local health department guidance as well as CDC guidance; notification regarding exposure is a consideration.

PART II – COVID-19 Legal Questions, continued…

6. **Can bus drivers, teachers and students be asked to participate in the sanitizing of classrooms, buses, etc.**
   a. Unions: This would materially change the scope of their assigned duties. From a labor perspective, this would likely have to be negotiated as a material change to working conditions.
   b. OSHA puts the onus on employers to provide safe workplaces. It is not clear whether the Department of Labor (DOL) would approve of non-custodial staff being exposed to chemicals as compliant with providing a safe workspace.
   c. Determine if certification will be required for an employee to work with the chemicals needed for cleaning and sanitizing.
   d. Parents should be asked in advance for their permission on whether they want their children working with sanitizing chemicals during the instructional day. Determine if current law aligns with the concept of children doing cleaning and sanitizing during instructional time, and if LEAs can provide children with PPE to do cleaning and sanitizing (masks, gloves, eye cover).

7. **What liability would the district have if a student or teacher says they contracted the virus conducting cleaning activities?**
   a. Teachers--for those who have asked for ADA accommodations, it is not recommended to require that they participate in cleaning activities.
   b. Students – there could be an uptick in claims filed through Risk Management and potential lawsuits; it could be asked what instructional purpose is served in having students be required to clean their spaces.

8. **Would testing a student or staff member's temperature be acceptable prior to obtaining entrance into a school facility?**
   a. Equal Employment Opportunity Commission (EEOC) Guidance says yes (https://www.eeoc.gov/wysk/what-you-should-know-about-covid-19-and-ada-rehabilitation-act-and-other-eeo-laws). The applicable standard is, Does the employee pose a direct threat to health in the workplace?

9. **Would it be possible to take the temperatures of students as they entered the school buses or at the school facility? There will potentially be a Thermal Detection device installed at the entrance of the school.**
   a. Yes, the temperatures of students can be taken. There is a logistical issue with this because, if there is a student with a temperature who is at the bus stop and is not accompanied by an adult, they cannot be sent back home. All students must be accompanied by a parent or guardian prior to being accepted on the bus. The school system may be liable for incidents occurring from the time the student is at the bus stop until they are dropped off. Bus drivers cannot stop on their routes to contact parents to ensure someone is home or gives their permission for the student to go back home.
   b. Additionally, if the driver was aware that the child was sick and let him or her on the bus, what about the other children who entered the bus after the driver had this knowledge of the sick child? Is the LEA or the driver liable?
   c. The procedure would involve taking the student to the school nurse for reevaluation and contacting his or her legal guardian(s). LEAs may be unable to contact the parent and the driver cannot wait for the parent to come to the bus stop to retrieve the student. The driver also cannot ensure social distancing on the bus while they are driving and when they do not have a bus aide riding along.

PART II – COVID-19 Legal Questions, continued…

d. If bus drivers are trained to take student temperatures (assuming that this can be reasonably considered part of their duties and is not outside of the scope of their regular duties) there would need to be consideration for the ability to do so in a timely manner that would not delay pickups at other stops.

10. Can teachers with health risks or other extenuating circumstances teach from home?
ADA requires that the employee make the request for the accommodation (i.e. to teach from home) for special circumstance such as health risk. It is likely that LEAs will need to research and develop a response to teachers who have concerns about COVID-19 transmission in the schools. A training program for teachers in general will need to be developed as we move into a new age of distance learning. They should be trained on the specific requirements of distance learning. Additionally, the teachers' union will need to negotiate and address this as more teachers will ask to work from home due to high risk from their age or existing medical condition.

11. How can we test students for SATs, Advanced Placement, International Baccalaureate tests and state-required tests?
Test administration companies should be contacted to find out what policies they have in place, how these policies will be changing, and what plans they have for test administration, with consideration for distance learning.

12. If funding is associated with "Child Count" for the number of students enrolled in the schools, how will we address student enrollment if we stagger school schedules or allow students to stay home and distance learn, or some combination of both?
Child Count is based on the number of enrolled students. There is a requirement for a student to be present a certain number of days AND enrolled prior to 9/1 when child count numbers are submitted; however, if a student is enrolled at a school and is participating in distance learning, then that should not impact funding. If a student is being homeschooled, they are no longer enrolled and will not count. The homeschooling office maintains records of students who are formally being homeschooled, but these students are not considered public school students. MSDE would likely provide guidance on doing child count properly if there are changes to how students are counted based on staggered/modified schools.

13. How can LEAs ensure equity for teachers and students while maintaining requirements for social distancing, limited gathering requirements, and distance learning?
    a. LEAs must verify equity in the distribution and ongoing utilization of online resources and technology in order to avoid further increases in the achievement gap for Free and Reduced Price Meal Plan students and students with disabilities (e.g., by addressing ongoing IT concerns when technology is disbursed widely, slower internet speeds, and fair distribution of technology).
    b. LEAs have Continuing Obligations: Mandatory reports are required for instances of abuse and neglect even where students are in virtual classrooms.
    c. LEAs must provide access to the same education for Special Needs students as for students in the regular program.

KEY FINDINGS & TAKEAWAYS

TAKEAWAY

Impacts to transportation of students

Conclusion: Transportation entities must develop protocols for drivers to be reasonably evaluated to assure they are safe to transport students and sanitize the buses. Additionally, an emergency protocol needs to be developed for cases where a student tests positive for fever or shows symptoms of COVID 19.

Conclusion: In order to protect the health and safety of staff, students and the general public:

- Schools can require students to social distance and wear PPE
- Schools can perform temperature checks to determine if people have COVID-19 related symptoms.

TAKEAWAY

Conclusion: Students may be separated in schools if they display COVID-19 related symptoms in order to reduce the risk of spread. Parents/guardians should be contacted and informed immediately that the student is displaying symptoms and should be picked up from school.

Conclusion: Funding for schools due to the reduced attendance: The funding for a student does not depend on their attendance in the school facility as long as they are registered with the school system (homeschool students are not counted).

Equity for all students: School systems must provide equity for Special Needs students

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> If an LEA continues to provide educational opportunities to the general student population during a school closure, the school must ensure that students with disabilities also have equal access to the same opportunities, including the provision of FAPE. (34 CFR §§ 104.4, 104.33 (Section 504) and 28 CFR § 35.130 (Title II of the ADA)). SEAs LEAs, and schools must ensure that, to the greatest extent possible, each student with a disability can be provided the special education and related services identified in the student's IEP developed under IDEA, or a plan developed under Section 504. (34 CFR §§ 300.101 and 300.201 (IDEA), and 34 CFR § 104.33 (Section 504)).

Source: **United States Department of Education,** Office of Civil Rights, Office of Special Education and Rehabilitation Services, March 21, 2020, Supplemental Fact Sheet, Addressing the Risk of COVOD-19 in Preschool, Elementary and Secondary Schools While Serving Children with Disabilities

BEYOND
21ST CENTURY DESIGN
Refining K-12 Design to Accommodate
EMERGENCY SITUATIONS

TEAM MEMBERS

TOPIC 8 – LEGAL CONSIDERATIONS

Please email questions to the team lead:

LEAD: Ron Skyles, AIA, NCARB
Prince George's County Public Schools
Upper Marlboro, MD
beyond21stcenturydesign@gmail.com

Robin Welsh, ESQ
Prince George's County Public Schools

Diana Wyles, ESQ
Prince George's County Public Schools