



Getting Back to School

Responding to COVID-19

K-12

A Stantec Initiative | July 2020

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Lee Elementary School | Coppell, ISD - Coppell, TX

“Communities and schools are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging.”



Getting Back to School • K-12

Responding to COVID-19

During this unprecedented COVID-19 global pandemic event, the top priority of our leadership has been to keep Stantec’s people and the communities we serve safe. The Stantec Pandemic Committee has worked tirelessly with company leadership to adapt and execute a Pandemic Response Plan. Like countless other corporate pandemic committees around the world, ours is meeting daily to assess global impacts and gain a clear understanding of what government and health officials are recommending or mandating so that the best decisions can be made for our people, clients, and the communities we serve.

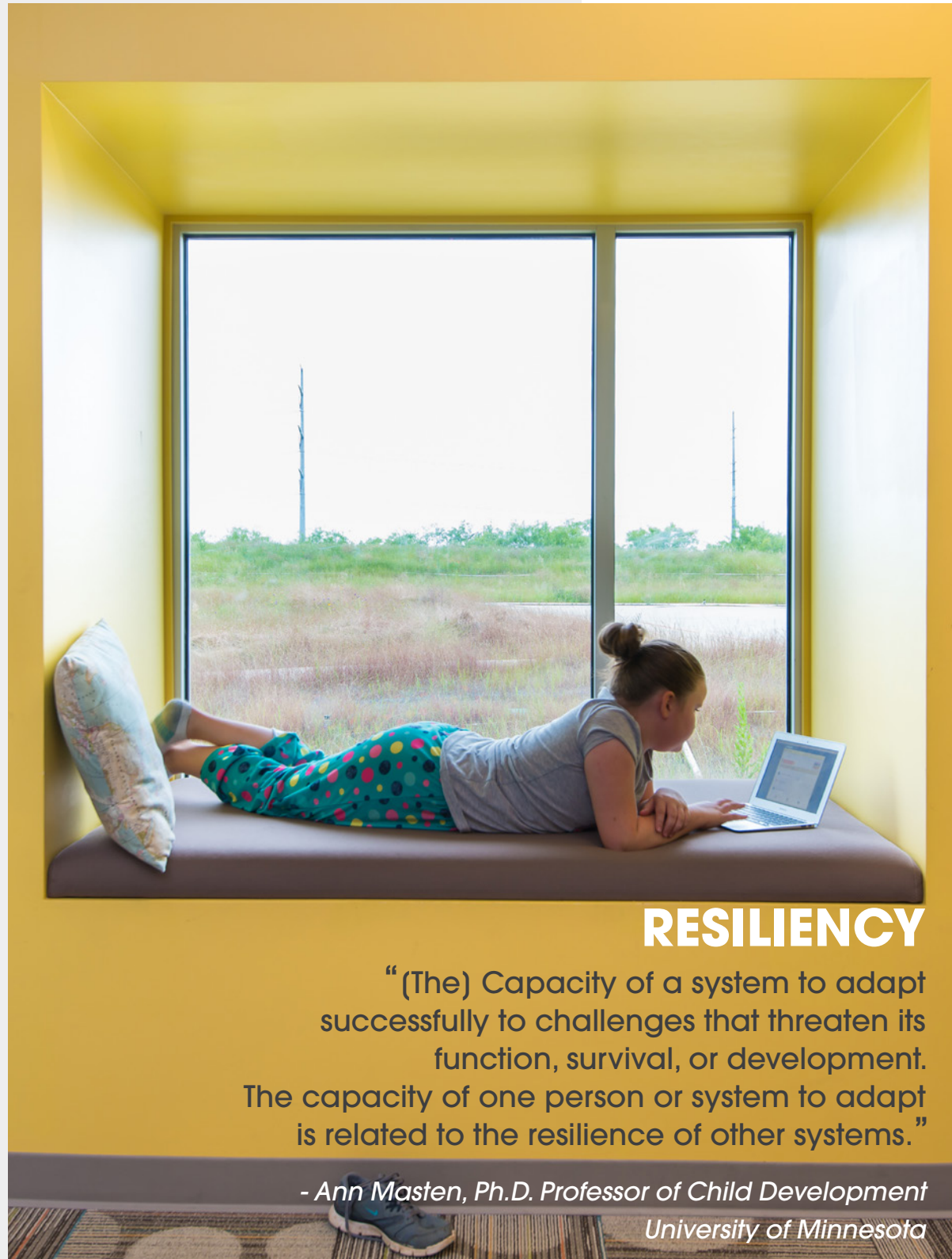
“We are better together” is one of Stantec’s core values—and despite the current challenging circumstances, this is true now more than ever. Although we may not presently be physically together in client meetings, office settings, and industry events, our community spirit is alive and well and remains a testament to the commitment we keep in serving our clients and communities. We are better together, even apart.

Stantec’s COVID-19 response is aligned with our clients’ needs along with industry partners. As part of that alignment, this document **“Getting Back to School K-12: Responding to COVID-19”** is an initiative that is focused on responding to our clients’ needs to address public education and safety as we begin a return to more normal operations and students return to school in the Fall. An emphasis here is in identifying measures and best practices that will raise the right questions and guide schools in making decisions that are in the best interest of their students and staff as they return to their facilities.

Schools are a community’s foundation. Whether around the corner or across the globe, they provide a sense of place and of belonging. That’s why at Stantec, we always design with community in mind.

We are planners, designers, architects, engineers, scientists and project managers engaged in innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life across the globe.

We hope this document is useful in helping you frame the questions that need to be asked in order to make informed decisions about planning, facilities, and operations as we emerge from the pandemic into a “New Normal” in light of the COVID-19 context.



Lee Elementary School | Coppell, ISD - Coppell, TX

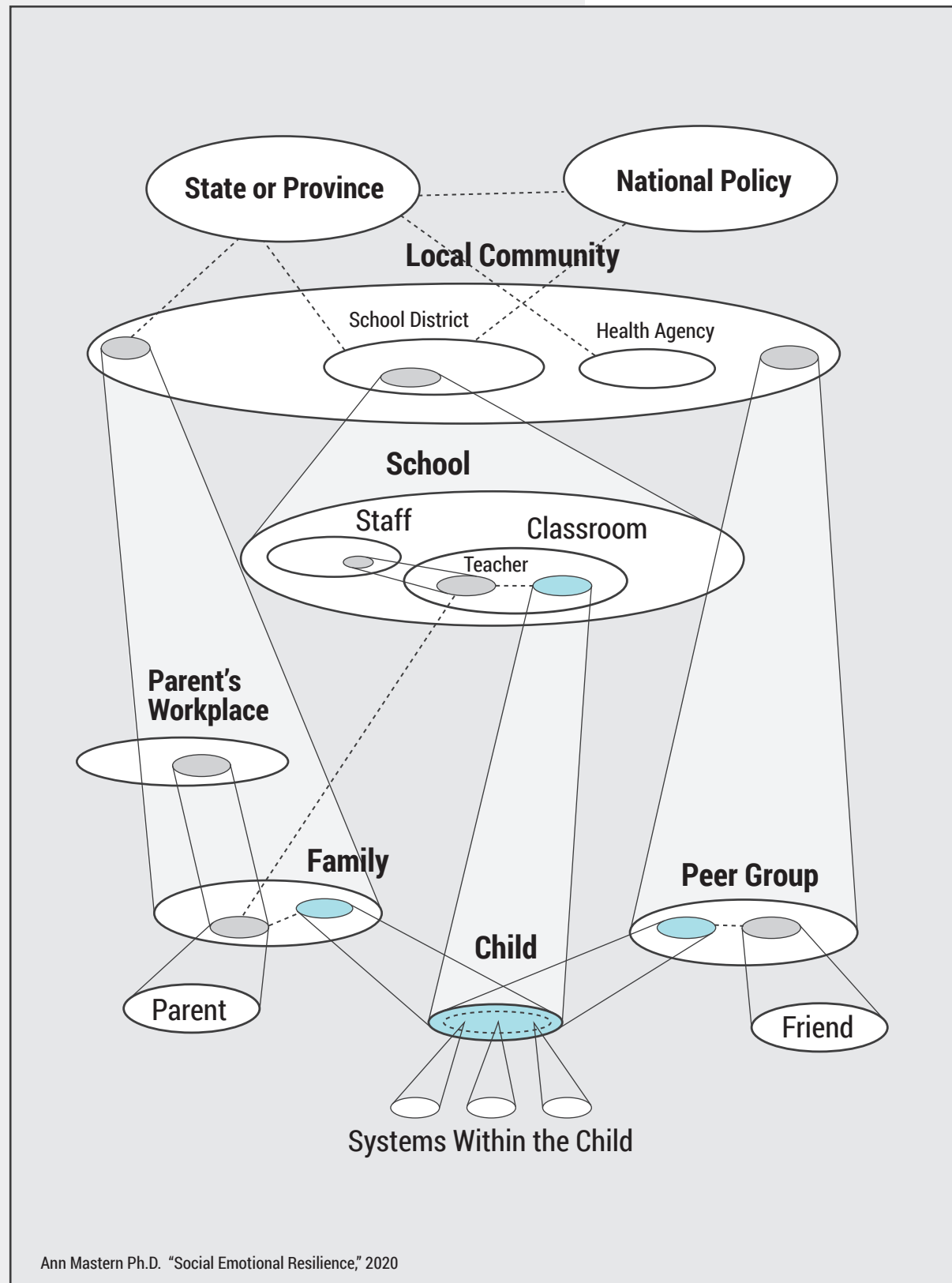
Fostering Resiliency

As we have studied the recent impacts of COVID-19 on teaching and learning, and have worked to develop this planning guide, we feel that it is paramount that we spend a moment to reflect on the impact of resiliency and the importance of creating resilient systems in our schools and communities. Schools are at the heart of every successful community, and while the COVID-19 pandemic has recently caused each of us to change our routines and set us on a new course, it has been inspiring to watch our school systems respond quickly and adapt to the changing conditions. Schools responded in a variety of ways from pivoting to digital delivery of on-line teaching and learning content to ensuring that meals were prepared and delivered to those in need. Our schools and school systems have not missed a beat while adapting to the changing landscape of public education.

It is not a surprise, as we have seen courageous behavior like this before, most recently in the Houston area with the extreme flooding caused by Hurricane Harvey. Disasters like these should not hinder our path but should ultimately make us better. To do this, we must work to build systems that are adaptable and that build resiliency.

Disasters like COVID-19 illuminate the importance of teachers and schools to children, families, workplace, economy, and the communities. As educational content shifted to virtual learning, parents of younger students were forced to engage in the education of their children. The unintended consequence has helped reinforce the importance of the role of the teacher and how educators are essential in teaching and learning in education as a profession. As a result of the pandemic, we gained clarity in the direct relationship of how working families and the economy depend on schools and educational systems. Finally, individuals, families, communities, and society understand how returning to school in the Fall is important to return to our collective sense of normal.

“Pandemics like COVID-19 illuminate the importance of teachers and schools to children, families, workplace, economy and the communities--resiliency of societies everywhere depend on building capacity for resiliency of their children.”

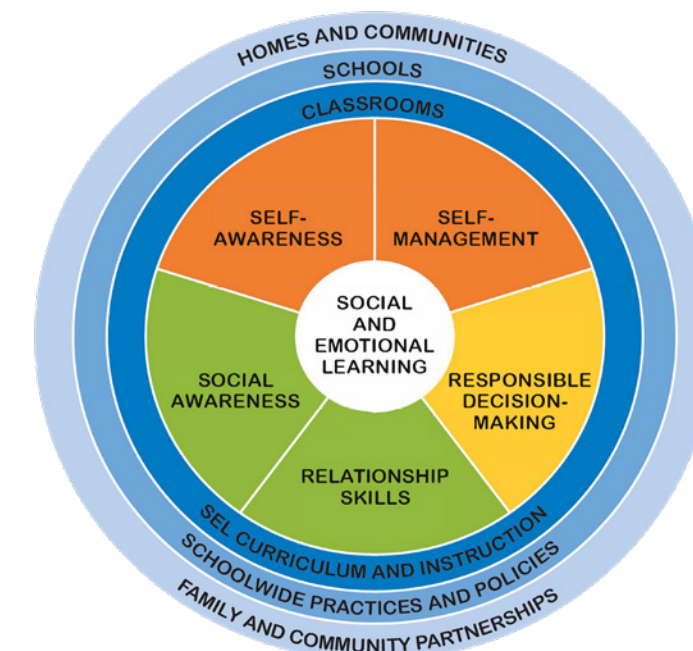


Promoting Academic, Social & Emotional Learning

As we start back to school in the Fall, our schools and school systems will undoubtedly look and feel different. Most if not all schools will have more of their curriculum delivered with on-line content, while some classes and programs will be delivered virtually. While many school systems are working around the clock to determine the best and safest way to deliver instruction, we are exploring opportunities of how to safely return to extracurricular programs such as sports and fine arts programs. We are entering a school year with many unknowns which will require us to be adaptive and flexible, and the one certainty is that it will be a year of change for students, teachers, and administrators.

With this change, we need to recognize that not all persons will react in the same manner. While some might welcome the change, for others it will create great challenges. As a result, we need to be certain that we remain cognizant of the social and emotional impact that these changes and challenges have on our children and students.

The Collaborative for Academic, Social, and Emotional Learning (CASEL.org) describes five basic Social and Emotional Learning (SEL) competencies that include: Self-Awareness, Self-Management, Social Awareness, Relationship Skills, and Responsible Decision Making. The CASEL learning model describes these competencies that occur in the classroom through curriculum and instruction, schools through practices and policies and in homes and communities through family and community partnerships. Academic, social, and emotional learning are all necessary components, under this model, for the development of the hard and soft learning skills that support the desired behaviors in the learning environment in order to achieve the desired learner outcomes that will position students for success for college or career readiness.





Sam Houston High School | Houston ISD - Houston, TX

Evaluating Schedule & Capacity

The fall school schedule will present a variety of challenges to school districts given all of the unknowns related to COVID-19. As a result, hybrid learning models and schedules will be utilized to support teaching and learning.

The continuum of learning environments will include: 100% face-to-face learning based on capacity for adequate social distancing, hybrid learning with rotating schedules utilizing in-person instruction, remote learning delivered virtually, and sporadic short-term closures requiring a shift to 100% remote learning.

Districts should anticipate and build time into their calendars to allow for periods of closure and utilize this time for enrichment through virtual learning.

*** SEE SECTION 3 FOR CLASSROOM PLANNING GUIDES**





2 USER EXPERIENCE & EDUCATION FACILITY CONSIDERATIONS

Responding to COVID-19

Experience Journey Diagram

1 At Home

App, Digital Check-In

2 On the Commute

Drive, Parent Drop-Off, Bus, Walk, Bike

3 At School

Exterior Building Entrance
Interior Building Entrance
Student Commons
Washrooms
Classrooms
Laboratory
Workshop
Cafeteria
Library
Physical Education & Athletics
Mechanical



University Park Elementary School | Highland Park ISD - University Park, TX

At Home

BEST PRACTICES

- 1** Teachers and Students (with help from parents) check in on school website for any daily updates.
- 2** Teachers and Students (with help from parents) take temperature and complete a quick symptoms assessment before leaving for school.
- 3** Wipe and sanitize backpack, books, mobile phone, and other hard surfaces from the day before
- 4** Pack mask, wipes, and hand sanitizer for the day.
- 5** If bringing lunch, pack it in disposable containers, and throw these away at school.

On the Commute

BEST PRACTICES

- 1** If walking, always maintain social distancing, especially as you arrive at school where crowds grow.
- 2** If riding the bus, consider providing bus stop monitors to observe student health.
- 3** Equip monitors to take temperatures and ask questions about health.
- 4** If a student is showing positive signs, the monitor will contact the student's parents for pick-up.
- 5** If driving, do not carpool; only students who are in the same classroom should share a ride.
- 6** Follow prescribed parking spacing and locations for drop-off and pick-up.



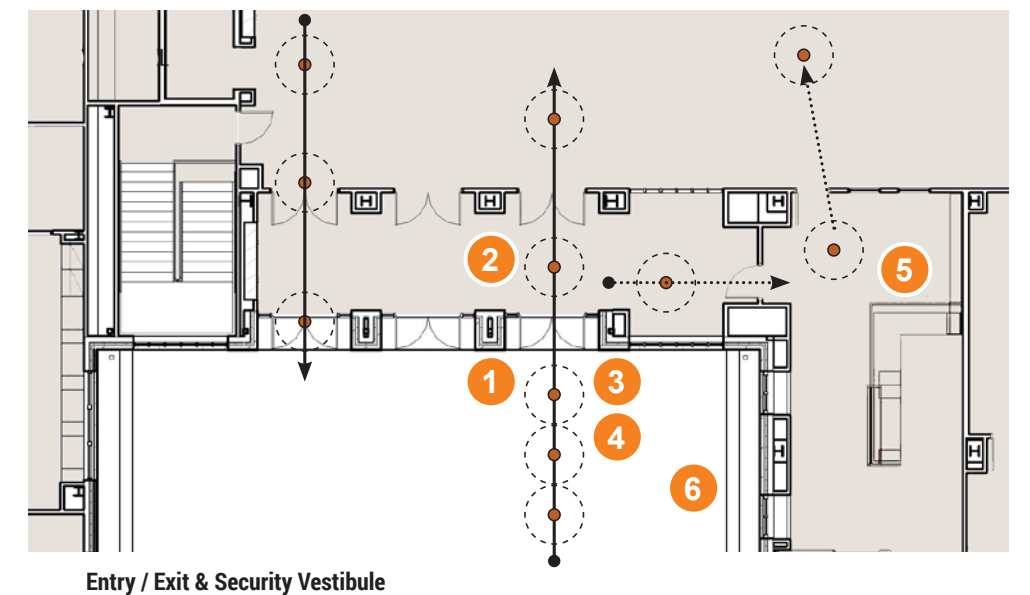
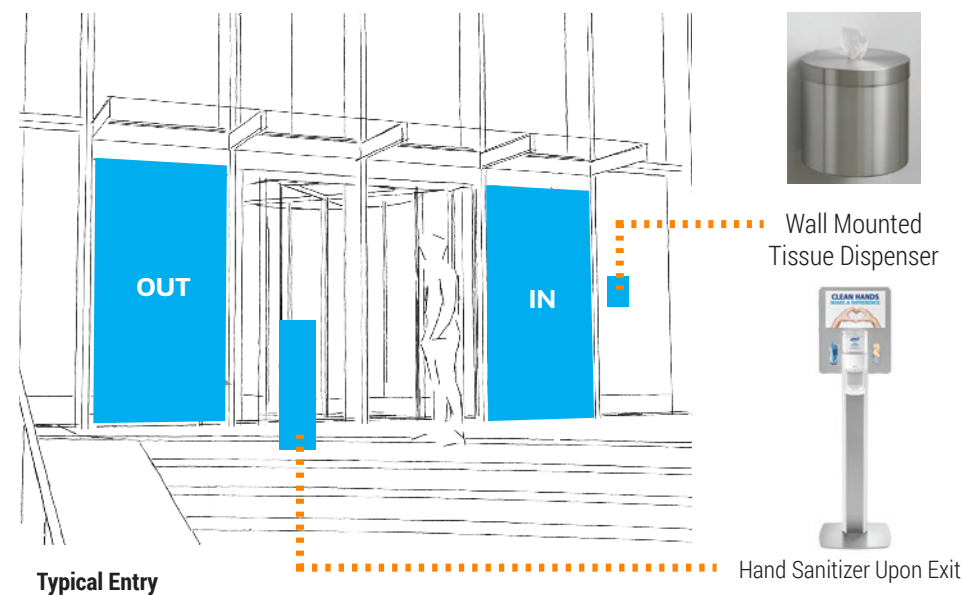
Exterior Building Entrance

BEST PRACTICES

- 1** Directional signage / wall graphics, identify doors as 'Entrance' or 'Exit'.
- 2** Building information signs with floor layouts, queuing and waiting instructions:
 - a. Building and space guidelines for use
 - b. Hygiene and wellness stations
 - c. Reception desk and security area protocol
- 3** Add automatic door operators to all doors with bar type, foot activated
- 4** Add entrance canopies complete with seating, queuing markers, and sanitation stations.
- 5** At receptionist desk, add (1) Queuing Markers, (2) "Sneeze Guard" Barrier, and (3) Transaction Table.
- 6** Create wellness station, preferably outside or immediately adjacent to the entry. Nurse or health care attendant can check temperature. The station should also have immediate access to an isolation room where visitors showing symptoms can wait.



Johnson High School | Hays CISD - Buda, TX



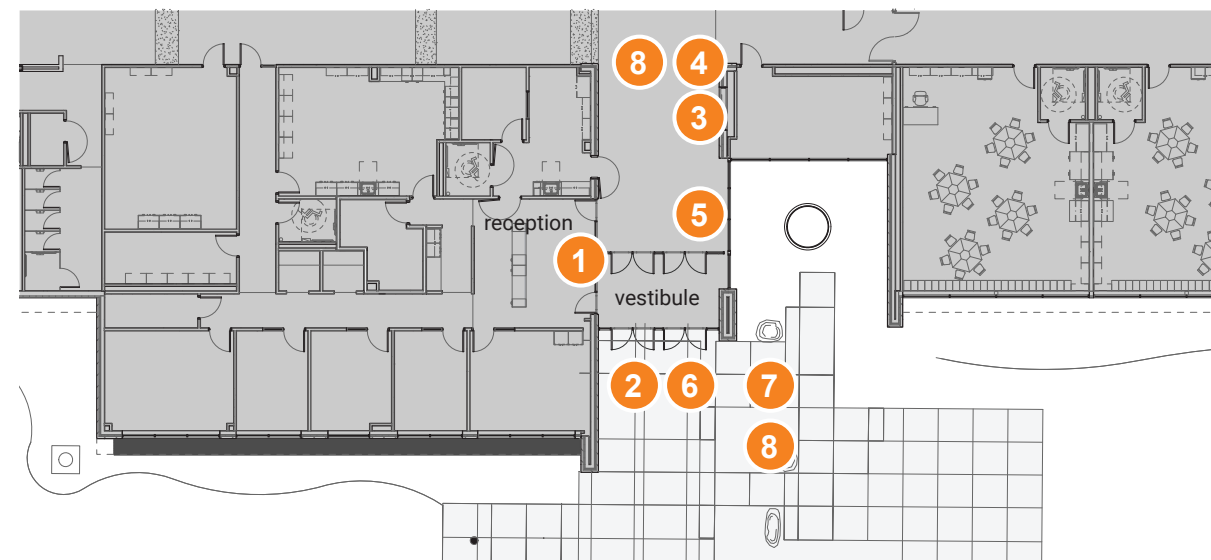
Interior Building Entrance

BEST PRACTICES

- 1 Hand sanitizer: no-touch, automated, and at all building entries
- 2 Directional signage / wall graphics, identify doors as 'Entrance' or 'Exit'.
- 3 Wellness kiosks with wellness ambassadors, health and wellness information, hand sanitizer, hand washing stations, face masks, and temperature check station, as examples.
- 4 Orientation packages with face masks for staff, students, faculty, and Wellness Ambassadors [branded by function and/or faculty]
- 5 Shoe sanitation at all entrances
- 6 Add automatic door operators to all doors with bar type, foot activated
- 7 Add entrance canopies complete with seating.
- 8 Temperature station



Pearland Junior High West - Additions/Renovations | Pearland ISD - Pearland, TX



Entry / Exit & Security Vestibule

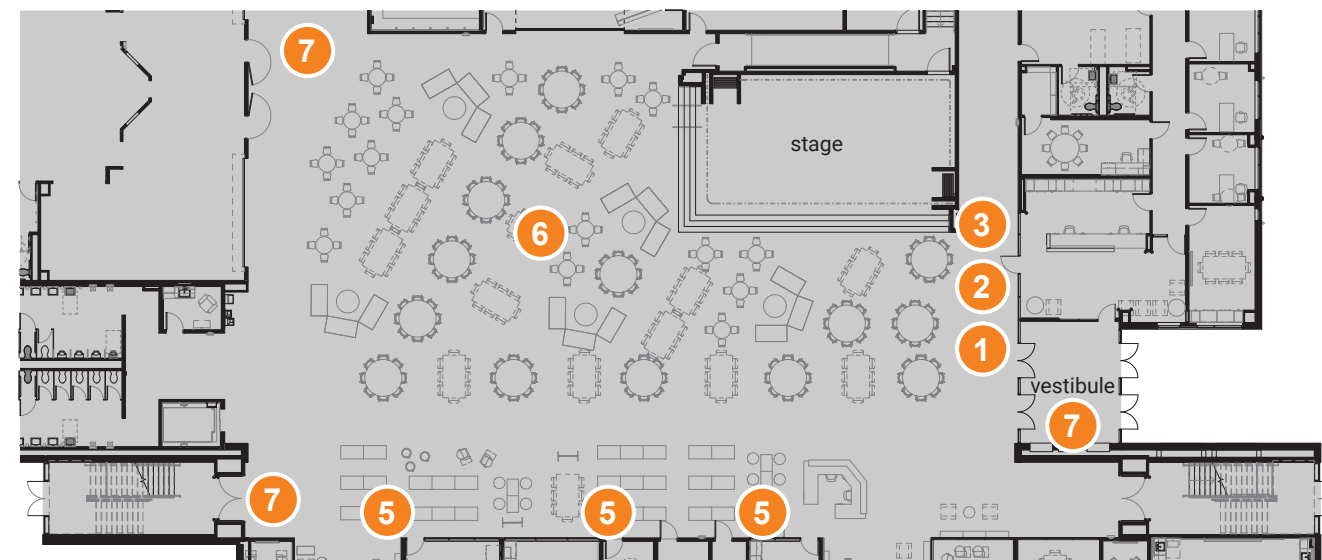
Student Commons

BEST PRACTICES

- 1** Wellness kiosks with wellness ambassadors, health and wellness information, hand sanitizer, hand washing stations, face masks, and temperature check station, as examples. Hand sanitation stations should be dispersed across the commons space and at all entry points.
- 2** Orientation packages with face masks for staff, students, faculty, and Wellness Ambassadors [branded by function and/or faculty]
- 3** Isolation rooms: identify rooms to isolate staff, students, or faculty showing symptoms
- 4** Testing sites: identify places on campus for testing
- 5** Door stops [branded for health, wellness, and faculty] at classroom entrances to hold doors open
- 6** Increase WiFi coverage / density.
- 7** Directional signage / floor graphics stencil traffic flow directions and line-up markers on floors
- 8** Consider air decontamination using UV-B or UV-C lighting in high-ceiling areas. Light to be aimed up and properly shielded from space. Care should be taken to ensure surfaces and finishes exposed to UV lighting are not UV-sensitive.
- 9** Visible light disinfection added to LED general lighting luminaries [specific wavelength] , anti-bacterial [limited anti-viral effect]



Manor New Tech Middle School | Manor, TX



Student Commons

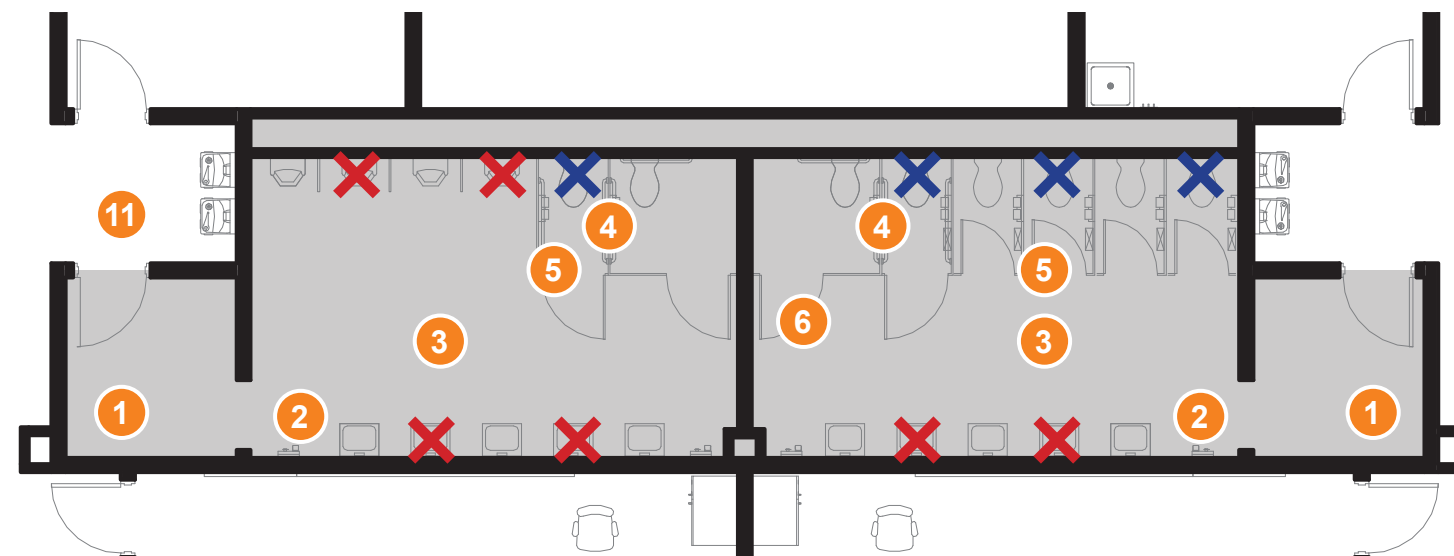
Washrooms

BEST PRACTICES

- 1 Location of garbage cans
- 2 Paper towels drying process
- 3 Wet seals at floor drains
- 4 Provide spray sanitizer in stalls to allow for self-disinfecting
- 5 Install occupant indicator to show occupied / available.
- 6 Install hooks on back of all stall doors.
- 7 Convert all washrooms and hand-wash faucets to automatic.
- 8 Washrooms air exhausted
- 9 Consider integrating UV-A or near-UV lighting to general lighting. This is considered safe for occupants and has antibacterial properties, although anti-viral effect is limited.
- 10 Consider removal of doors, or securing them on open position, where possible.
- 11 To allow for appropriate distancing, eliminate the use of every other urinal stall, toilet stall, and hand wash station.



Stantec Office - Water Closet / Washroom | Winnipeg, MB



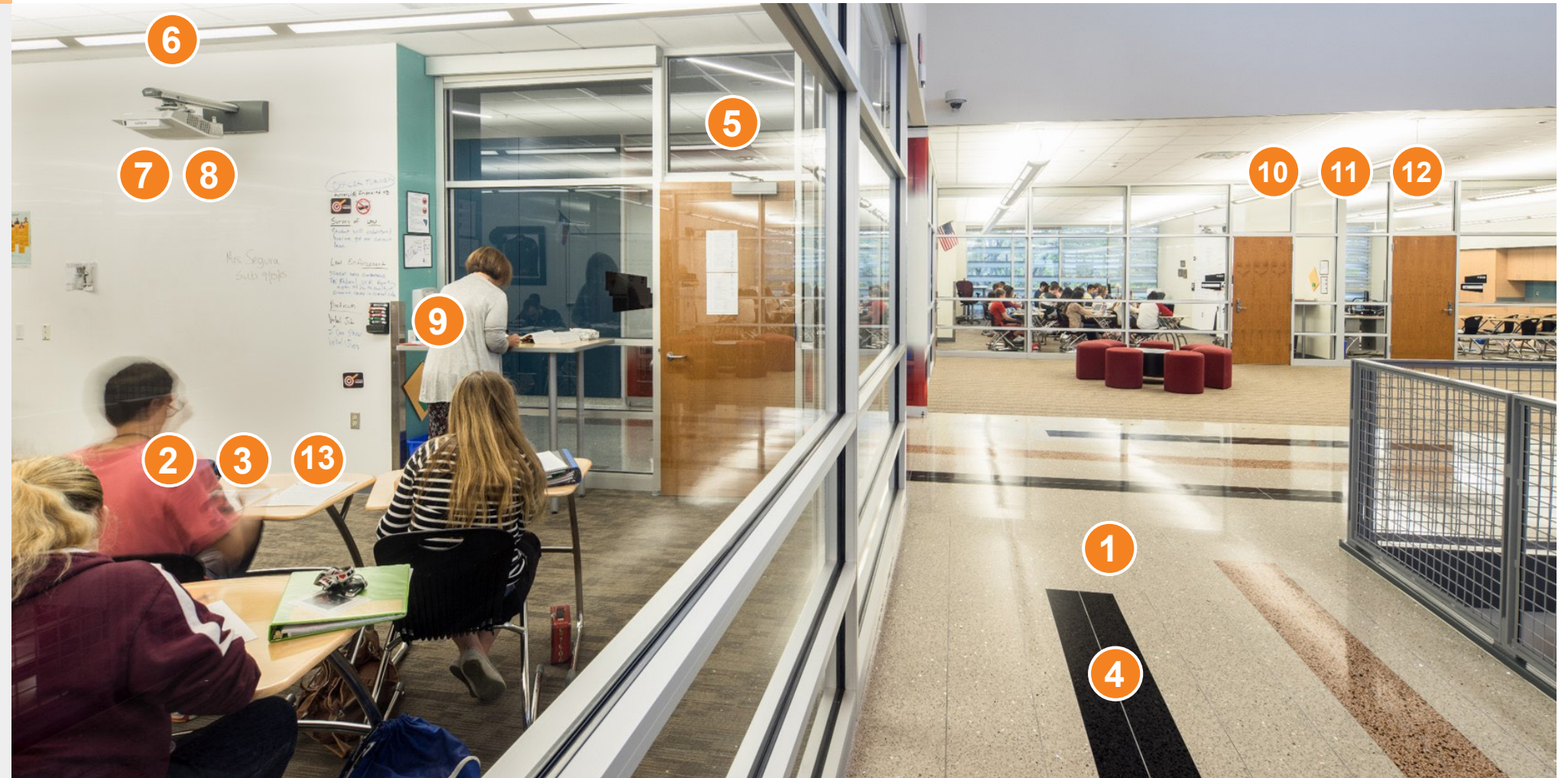
Typical Gang Restroom Plan

- ✗ Restricted use for distancing
- ✗ Optional restricted use for distancing based on site-specific evaluation

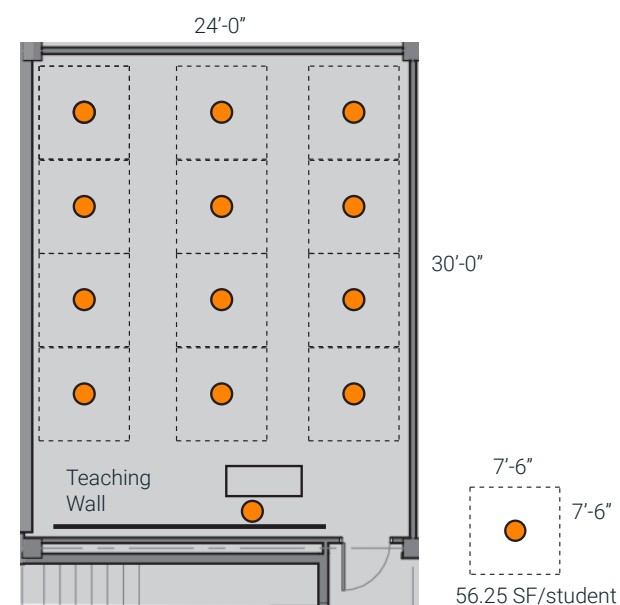
Classroom

BEST PRACTICES

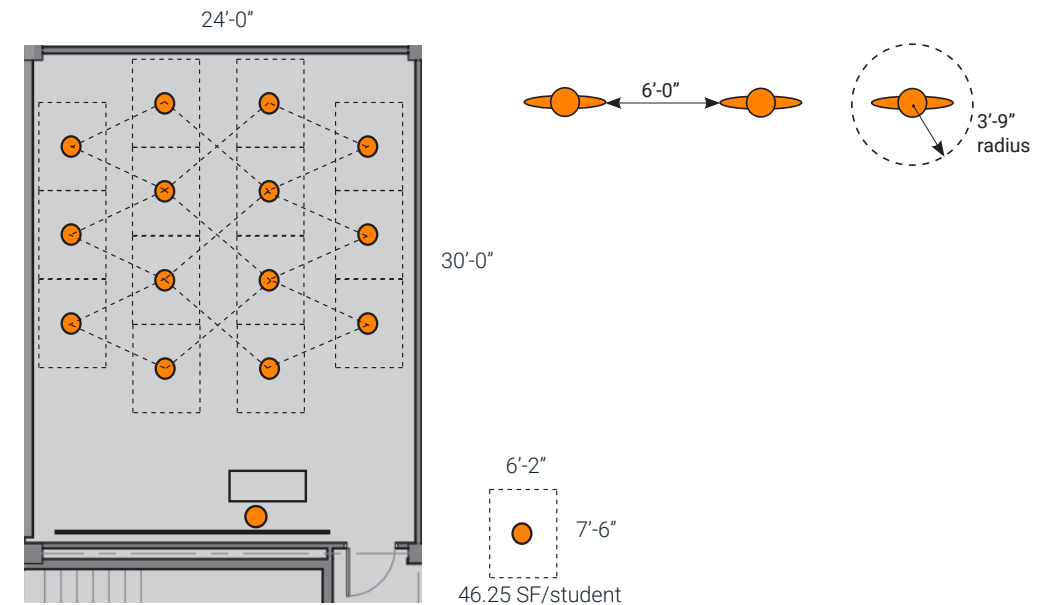
- 1** At class change, teacher should quickly release class to prevent cross contamination with incoming students and to prevent waiting in corridors. Teacher should be the owner of the door, propping open during class changes to prevent students from touching door.
- 2** Schedule more, and smaller class size with more time between classes.
- 3** Increase spacing between occupants to accommodate physical distance.
- 4** Directional signage / floor graphics stencil traffic flow directions and line-up markers on floors
- 5** Door stops [branded for health, wellness, and faculty] to keep classroom doors open
- 6** Increase WiFi coverage / density.
- 7** Increase A/V linking multiple classrooms.
- 8** Increase A/V technology to expand opportunities for remote learning.
- 9** Office hours: schedule virtual meetings only
- 10** Consider integrating UV-A or near-UV lighting to general lighting. This is considered safe for occupants and has antibacterial properties, although anti-viral effect is limited.
- 11** Visible light disinfection added to LED general lighting luminaries [specific wavelength], anti-bacterial [limited anti-viral effect]
- 12** Increase use of automated lighting controls – occupancy sensor / daylight harvesting.
- 13** When possible, students should remain in the same classroom and teachers should rotate between classrooms as instruction changes.



Frisco Career and Tech Center | Frisco, TX



Plan 2 - Typical Classroom 720 SF



Plan 1 - Typical Classroom 720 SF

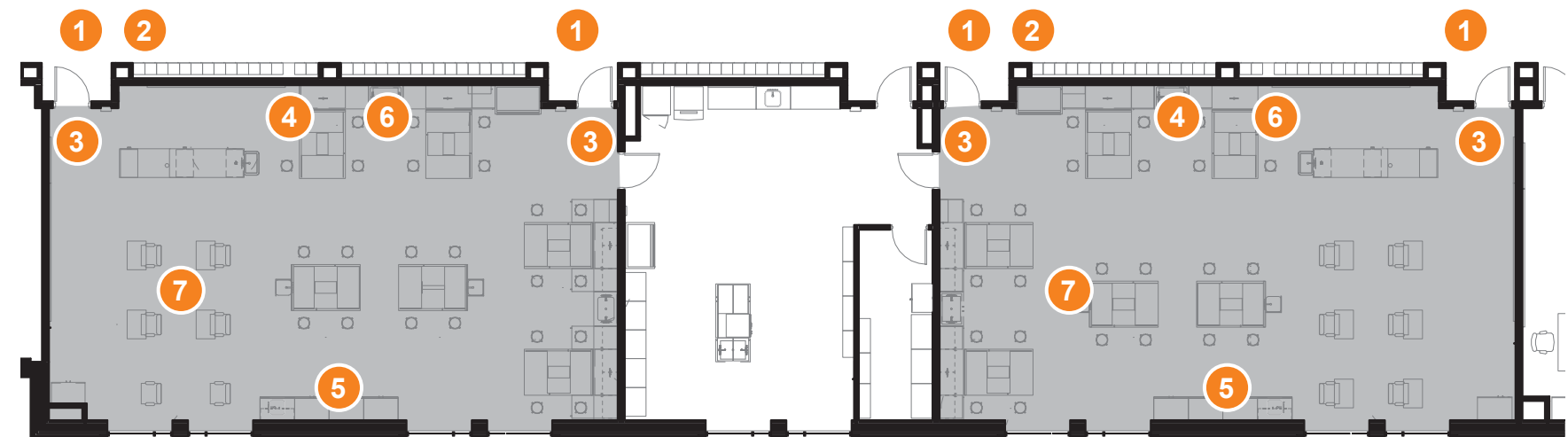
Laboratory

BEST PRACTICES

- 1** At class change, teacher should quickly release class to prevent cross contamination with incoming students and to prevent waiting in corridors. Teacher should be the owner of the door, propping open during class changes to prevent students from touching door.
- 2** Schedule more, and smaller class size with more time between classes.
- 3** Directional signage / floor graphics stencil traffic flow directions and line-up markers on floors
- 4** Secured PPE stations and sanitation stations for shared equipment
- 5** Standardized laboratory and / or shop clothing, laundry, and lockers to limit cross contamination from home to school
- 6** Hand-washing / sanitation stations outside or inside of each laboratory / shop
- 7** Increase spacing around work areas to accommodate physical distance.
- 8** Increase WiFi coverage / density.
- 9** Increase A/V technology to expand opportunities for remote learning or to link multiple classrooms.
- 10** Office hours: schedule virtual meetings only
- 11** Consider integrating UV-A or near-UV lighting to general lighting. This is considered safe for occupants and has antibacterial properties, although anti-viral effect is limited.
- 12** Visible light disinfection added to LED general lighting luminaries [specific wavelength], anti-bacterial [limited anti-viral effect]
- 13** Increase use of automated lighting controls, occupancy sensor, daylight harvesting, etc.



Harlingen School of Health Professions | Harlingen, Texas



Typical Laboratory Plan

Workshop

BEST PRACTICES

- 1** At class change, teacher should quickly release class to prevent cross contamination with incoming students and to prevent waiting in corridors. Teacher should be the owner of the door, propping open during class changes to prevent students from touching door.
- 2** Schedule more, and smaller class size with more time between classes.
- 3** Directional signage / floor graphics stencil traffic flow directions and line-up markers on floors
- 4** Secured PPE stations and sanitation stations for shared equipment
- 5** Standardized laboratory and / or shop clothing, laundry, and lockers to limit cross contamination from home to school
- 6** Hand-washing / sanitation stations outside or inside of each laboratory / shop
- 7** Increase spacing around work areas to accommodate physical distance.
- 8** Increase WiFi coverage/density.
- 9** Increase A/V technology to expand opportunities for remote learning or to link multiple classrooms.
- 10** Office hours - schedule virtual meetings only.
- 11** Consider integrating UV-A or near-UV lighting to general lighting. This is considered safe for occupants and has antibacterial properties, although anti-viral effect is limited.
- 12** Visible light disinfection added to LED general lighting luminaries [specific wavelength], anti-bacterial [limited anti-viral effect]
- 13** Increase use of automated lighting controls, occupancy sensor, daylight harvesting, etc.



Sterling Aviation Early College High School | Houston, TX



Typical Workshop Plan

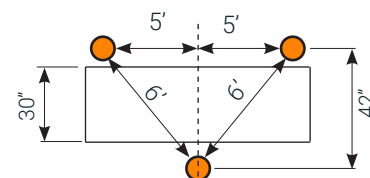
Cafeteria

BEST PRACTICES

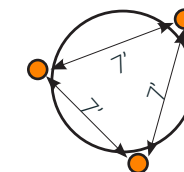
- 1 Online ordering app
- 2 Pick-up only
- 3 Eating in designated areas only
- 4 Reduce seats and tables to facilitate physical distancing.
- 5 Directional signage / floor graphics stencil traffic flow directions and line-up markers on floors
- 6 Increase WiFi coverage / density.
- 7 When possible, students should remain in classrooms or outdoors to eat.
- 8 Provide hand sanitation at each entry door.



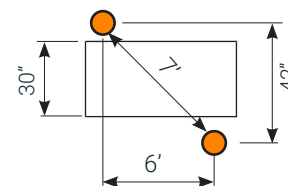
North Belton Middle School | Belton, TX



3 people can sit @ an 12'-0"
long table



3 people can sit @ an
5'-0" diameter round
table



2 people can sit @ a 8'-0"
long table

Typical Distancing at cafeteria table

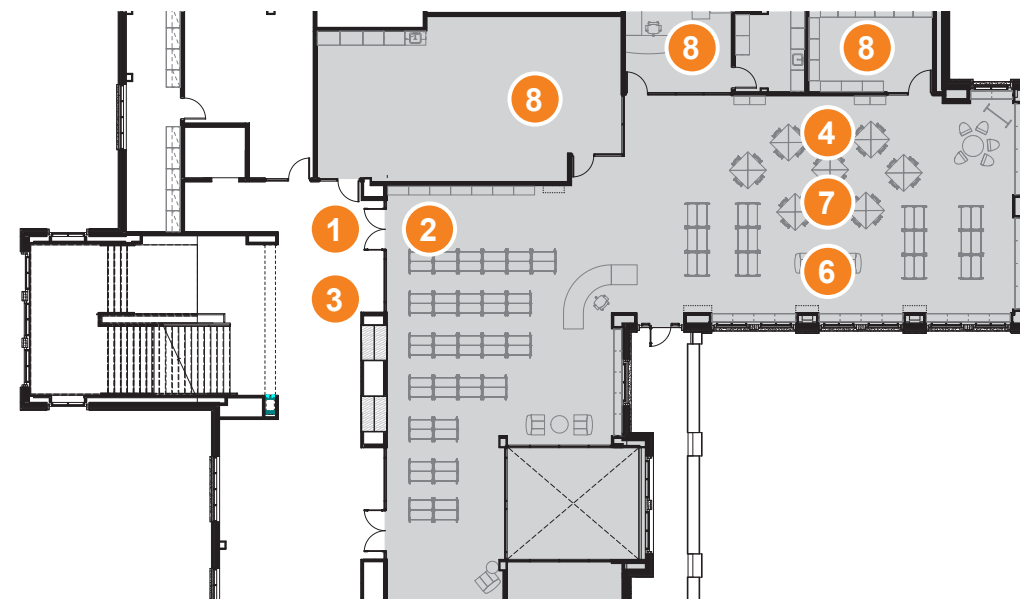
Library

BEST PRACTICES

- 1 No waiting
- 2 Directional signage/ floor graphics stencil traffic flow directions and line-up markers on floors
- 3 Scheduled library time only
- 4 Reduce library seats and carrels to facilitate physical distancing, numbering and scheduling times for each seat
- 5 Increase WiFi coverage / density.
- 6 No food or drink
- 7 Regular cleaning
- 8 Larger meeting rooms with wipe boards and A/V technology for larger group learning / assignments



Boone Elementary School | Highland Park, TX



Typical Library Plan

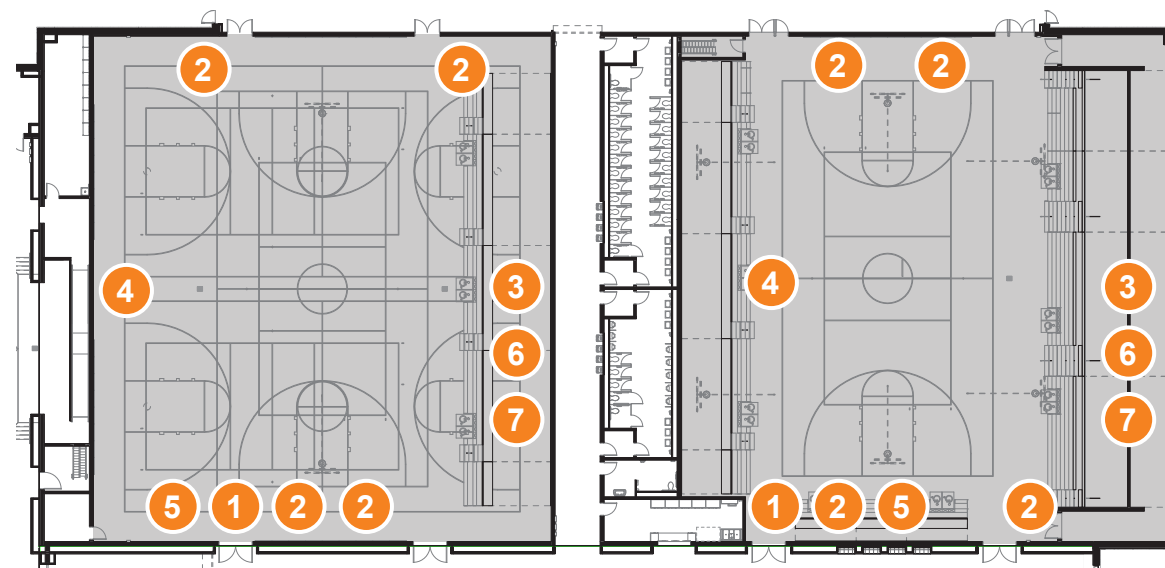
Physical Education & Athletics

BEST PRACTICES

- 1 Wellness kiosks with wellness ambassadors, health and wellness information, hand sanitizer, hand washing stations, face masks, temperature check station, as examples.
- 2 Hand sanitizer: no-touch, automated, and spaced regularly throughout
- 3 Provide spray sanitizer to allow for equipment disinfectant prior to use.
- 4 Directional signage / floor graphics stencil traffic flow directions and line-up markers on floors
- 5 Shoe sanitation at all entrances
- 6 Increase spacing around equipment areas to accommodate physical distance.
- 7 Increased regular cleaning
- 8 Increase WiFi coverage / density.
- 9 Air Handling Unit (AHU) Filtration – increased Minimum Efficiency Reporting Value (MERV) level beyond code minimum.
- 10 Consider integrating UV-A or near-UV lighting to general lighting.
- 11 Visible light disinfection added to LED general lighting luminaries [specific wavelength], anti-bacterial [limited anti-viral effect]
- 12 Increase fresh air percentage.
- 13 Ionizing filtration
- 14 Add ultraviolet light to AHU's
- 15 Increase use of automated lighting controls, occupancy sensor, daylight harvesting, etc.



Olathe West High School | Olathe, KS



Typical Gym Plan

Building Mechanical Equipment

BEST PRACTICES

- 1 Air Handling Unit (AHU) Filtration – increased Minimum Efficiency Reporting Value (MERV) level beyond code minimum
- 2 Increase fresh air percentage
- 3 High-Efficiency Particulate Air (HEPA) filtration
- 4 Bipolar ionizing filtration
- 5 Add Ultraviolet Germicidal Irradiation (UVGI) to AHUs.
- 6 Photocatalytic oxidation
- 7 Electrostatic filtration

* SEE SECTION 4 FOR MORE ON MECHANICAL SYSTEM RECOMMENDATIONS.





3 FACILITY PROTOCOL RECOMMENDATIONS

Responding to COVID-19

Quick Reference Capacity Planning Guide

In order to plan for the fall, schools need to understand capacities in their existing facilities to maintain social distancing while conforming to state guidelines. We have included two planning and assessment tools that will help districts evaluate capacity at existing campuses and assess capacity of existing classrooms.

This planning tool will help districts quickly determine capacity at existing campuses based on student enrollment of the existing facilities. Building utilization is factored at the elementary, middle, and high school grade levels to determine the number of existing classrooms. Student capacity is then calculated based on social distancing and classroom capacity to determine the number of students served at each campus.

This tool assumes that only designated classrooms are used for teaching and the classroom size meets or exceeds the minimum prescribed classroom size of 720 SF as described in the Texas Education Agency School Facilities Standards found in Chapter 61 of the Texas Administrative Code. Note that Texas guidelines are used for the purpose of this example.

Quick Reference Capacity Planning Guide for Determining Secondary School Capacity

Classroom Capacity with COVID-19 restrictions

Based on Standard Classroom Capacity of 24:1

			Texas Education Agency Guidelines				Governor's Guidelines for Opening Texas					
Existing Facility Capacity			Social Distance Max Capacity		10 Students per class		25%		50%		75%	
Student Capacity	Existing Classroom Capacity	Number of Classrooms	Students per Class	Total Students	Students per class	Total Students	Students per class	Total Students	Students per class	Total Students	Students per class	Total Students
900	675	28	15	422	10	281	6	169	12	338	18	506
1000	750	31	15	469	10	313	6	188	12	375	18	563
1200	816	34	15	510	10	340	6	204	12	408	18	612
1400	1050	44	15	656	10	438	6	263	12	525	18	788
1500	1020	43	15	638	10	425	6	255	12	510	18	765
1800	1224	51	15	765	10	510	6	306	12	612	18	918
2000	1360	57	15	850	10	567	6	340	12	680	18	1020
2200	1540	64	15	963	10	642	6	385	12	770	18	1155
2400	1680	70	15	1050	10	700	6	420	12	840	18	1260
2600	1820	76	15	1138	10	758	6	455	12	910	18	1365
2800	1960	82	15	1225	10	817	6	490	12	980	18	1470
3000	2220	93	15	1388	10	925	6	555	12	1110	18	1665
3200	2368	99	15	1480	10	987	6	592	12	1184	18	1776
3400	2516	105	15	1573	10	1048	6	629	12	1258	18	1887
3600	2772	116	15	1733	10	1155	6	693	12	1386	18	2079
3800	2926	122	15	1829	10	1219	6	732	12	1463	18	2195
4000	3107	129	15	1942	10	1295	6	777	12	1554	18	2330

Determine existing building capacity and scroll to the right to give an estimate of the student capacity based on the appropriate utilization factor.

Notes: This table assumes that only designated classrooms are used for teaching.

Quick Reference Capacity Planning Guide for Determining Elementary School Capacity

Classroom Capacity with COVID-19 restrictions

Based on Standard Classroom Capacity of 22:1

			Texas Education Agency Guidelines				Governor's Guidelines for Opening Texas					
Existing Facility Capacity			Social Distance Max Capacity		10 Students per class		25%		50%		75%	
Student Capacity	Existing Classroom Capacity	Number of Classrooms	Students per Class	Total Students	Students per class	Total Students	Students per class	Total Students	Students per class	Total Students	Students per class	Total Students
500	450	20	15	307	10	205	6	123	12	245	18	368
600	540	25	15	368	10	245	6	147	12	295	18	442
700	630	29	15	430	10	286	6	172	12	344	18	515
800	720	33	15	491	10	327	6	196	12	393	18	589
900	810	37	15	552	10	368	6	221	12	442	18	663
1000	900	41	15	614	10	409	6	245	12	491	18	736

Determine existing building capacity and scroll to the right to give an estimate of the student capacity based on the appropriate utilization factor.

Notes: This table assumes that only designated classrooms are used for teaching.

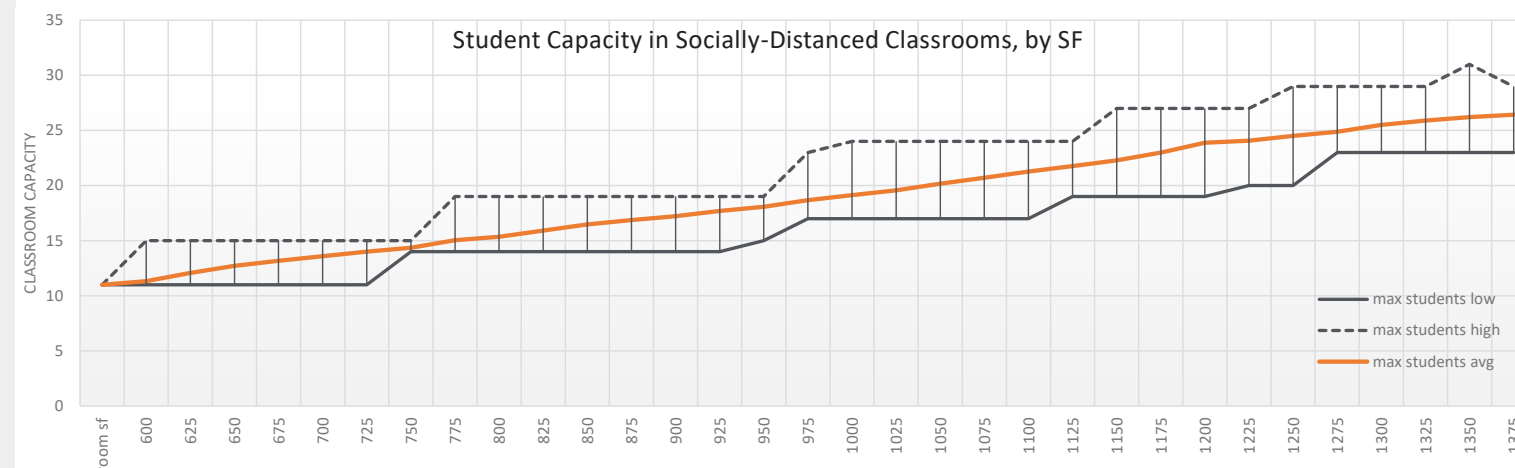
Quick Reference Classroom Assessment Guide

In order to plan for the fall semester, districts need to understand capacities in their classrooms to maintain social distancing while conforming to state guidelines.

This assessment tool will help districts quickly determine capacity at existing classrooms based on the size of the existing classrooms. Student capacity is determined based on social distancing and classroom capacity guidelines to determine the number of students each space can serve.

Quick Reference Classroom Assessment Guide

room sf	max students		max students avg	avg sf/student	Model parameters	
	low	high				
600	11	11	11.0	54.5	social distancing 'nose to nose'	7.5
625	11	15	11.3	55.6	additional personal space	0
650	11	15	12.1	54.7	avg fixed furniture depth	2
675	11	15	12.7	54.1	spaces for teacher	1
700	11	15	13.2	54.0	utilization factor	1.00
725	11	15	13.6	54.1		
750	11	15	14.0	54.0		
775	14	15	14.4	54.0		
800	14	19	15.0	53.7		
825	14	19	15.4	54.3		
850	14	19	15.9	54.2		
875	14	19	16.5	53.9		
900	14	19	16.9	54.2		
925	14	19	17.2	54.4		
950	14	19	17.7	54.1		
975	15	19	18.1	54.1		
1000	17	23	18.7	53.9		
1025	17	24	19.1	54.2		
1050	17	24	19.6	54.3		
1075	17	24	20.2	54.1		
1100	17	24	20.7	53.8		
1125	17	24	21.3	53.5		
1150	19	24	21.8	53.3		
1175	19	27	22.3	53.3		
1200	19	27	23.0	52.6		
1225	19	27	23.9	51.6		
1250	20	27	24.1	52.2		
1275	20	29	24.5	52.4		
1300	23	29	24.9	52.6		
1325	23	29	25.5	52.3		
1350	23	29	25.9	52.6		
1375	23	31	26.2	52.9		
1400	23	29	26.4	53.4		



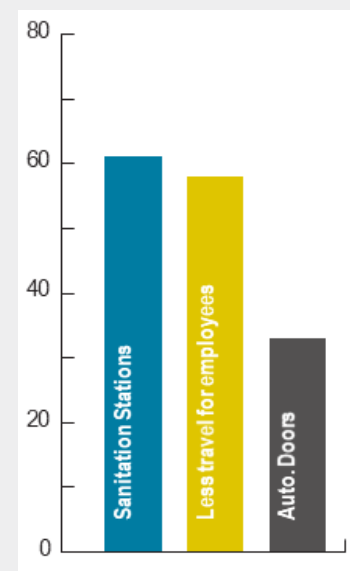
Safety & Health Recommendations

Humans—our number one asset—were designed to work together. That’s why it’s so important for our buildings to help us stay healthy [upon returning to work, and while at work] – so we can continue to work together safely.

Top Three Concerns Organizations have for Return



Organizations are Considering these Long-Term Solutions to Help Accommodate the Benefits of Working in the Office



OCCUPANT SAFETY & HEALTH

- **Provide resources and an educational environment that promotes good personal hygiene.**
 - Tissues
 - No-touch trash cans
 - Touch-less soap dispensers
 - Alcohol-based hand wipes (60% alcohol)
 - Disposable towels for cleaning personal work surfaces
 - Touch-less faucets
 - Touch-less sanitation dispensers
 - Face masks
- **Install easy-to-follow, helpful signage.**
 - Mindful hand washing – 20 seconds immediately upon arrival, after touching public surfaces, after using the restroom, and supplemental throughout the day.
 - Avoid touching eyes, nose, and mouth.
 - When sneezing, cover your nose and mouth with a tissue, dispose of it into an appropriate (preferably closed) container, and wash or sanitize hands.
 - Signage at the Elementary School level may look different than the Middle School or High School levels.
- **Clean shared areas after use.**
- **Consider staggered staff and student schedule by day or by remote working.**
- **Maintain 6’ distance for circulating and desk distance.** Work with your design professional to help in this assessment.
- **One-way circulation paths when 6’ distances can’t be maintained (conform with code requirements for travel distance).**
- **For in-person meetings maximum of (10) people while maintaining 6’ distance**
- **Occupants/ staff that have fever and/or symptoms should stay home.**
- **Individuals that have a positive diagnosis should stay home and follow quarantine guidelines from the CDC.**
- **Proper and regular cleaning will help diminish concern while at school.**

CLEANING & DISINFECTING

- **Prior to occupants re-entering building, consider a deep cleaning service, for biohazard remediation that follows OSHA and CDC Pathogen Standards for a science- based, safe approach to ensure potential contaminations are properly disinfected.**
- **Follow EPA recommendations for all cleaners and disinfectants.**
- **Increase frequency of daily cleaning throughout the day.**
 - Maintain restrooms, break room, and common area facilities by cleaning hard surfaces with disinfectant throughout the day.
- **Request and receive photos and documentation ensuring that all surfaces and areas have been properly disinfected from deep cleaning contractor and/or regular cleaning crews.**
 - Clean carpet/soft surfaces. Note that according to the EPA there is not a disinfectant that can claim to disinfect soft surfaces or carpet.
 - Regular vacuuming is best. Use vacuum and equipment with HEPA filters that trap 99.97% of airborne particles.
 - Ensure that equipment has been properly maintained and filters are free of particulates prior to cleaning.
 - Wipe down equipment with an approved disinfectant wipe or spray.
- **Furnishings**
 - Consider removing some furnishings or re-purpose them in areas less populated to accomplish improved social distancing.
 - Have individuals maintain / clean their own areas (and don’t share with others).

Remember when evaluating short-term changes that egress codes, fixture counts, and accessibility guidelines still need to be met.

Building Signage Recommendations

Building signage will be useful to occupants to communicate social distancing, and occupancy and operational protocols to provide safer environments for students and staff.

We have included representative examples of signage that may be deployed throughout a facility.

Please reach out to one of the Stantec market leaders listed on the last page if you would like us to send you a fully editable signage package for use in your school.

Please Remember



Wash your Hands
for **20 seconds**

Please Remember



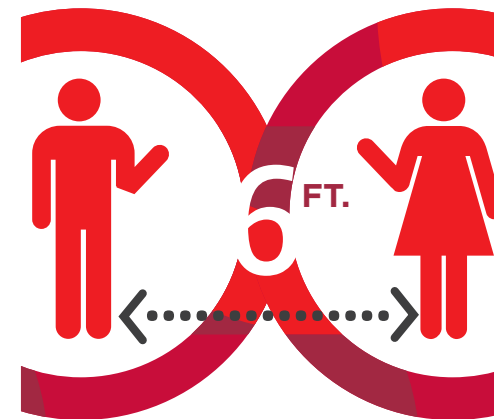
Wear a Face Mask
over your mouth & nose

Please Remember



Keep Surfaces Clean
before & after your use

Please Remember



Keep Your Distance

ONE WAY



ONE WAY

Building Signage Recommendations

Building signage will be useful to occupants to communicate social distancing, occupancy and operational protocols to provide safer environments for students and staff.

We have included representative examples of signage that may be deployed throughout a facility.

Please reach out to one of the Stantec market leaders listed on the last page if you would like Stantec to send you a fully editable signage package for use in your school.

Please Remember



This Space Closed

1 Person



Maximum Occupancy

Give a Care



Don't Share
Personal Items

1 Person



Maximum Occupancy

Please Remember



Keep Backpacks
Off Desktop



4 MECHANICAL SYSTEM RECOMMENDATIONS

Responding to COVID-19

School MEP SYSTEMS

First Steps

Well-designed, installed, and monitored mechanical and plumbing systems produce healthy indoor environments where pathogens are filtered, diluted, and removed from the occupant breathing zone. Our mechanical engineers apply fundamental principles of thermodynamics and building physics (humidity, air flow, differential pressurization), smart controls and sequencing of operations, and innovative ventilation and filtration technologies to mitigate the presence and spread of potential pathogens and allergens. With drastic changes to school schedules and operations suspending these systems, some actions need to be taken to bring our buildings back to a healthy standard.

1. FLUSH HVAC + PLUMBING SYSTEMS

HVAC

- We recommend providing one of the following measures after a deep cleaning of the building: Provide an air system flush out of 100% outside air, if the HVAC equipment can maintain indoor conditions, ideally between 40% and 60% relative humidity.

Flushing time is dependent on system capacity and air change rates. Sustainability organizations have posted guidelines to assist in flushing rates. In the absence of calculated rates, consider a 3 day flush out period without any building occupants after a deep cleaning has been performed.

- Geographies and climate zones, along with building envelope, mechanical system type, or interior finishes may preclude flushing to the levels listed above. 40% minimum relative humidity may cause moisture accumulation and may not be practical in some cold climate zones. If this is the case, consult an engineer to develop a custom approach for your building.

PLUMBING

- Extended periods of time with stagnated and unheated water can lead to numerous water safety concerns, including microbiological growth, increased risk of Legionella and Legionnaires, and heavy metals leeching. We recommend a flushing regime is established and completed before each building experiences occupancy.

The flushing regime should include both hot and cold water, any recirculation loops, all associated equipment and appliances, and all outlets including ice machines and water features. Building systems should be tested for Legionella by a certified laboratory.

- The longer the service is interrupted, the more effort will be required for restoration.
- Flushing regime is dependent on system layout; consult an engineer to develop a custom approach for your building
- All aerators should be removed and cleaned or replaced prior to reinstalling.
- Regular testing should be conducted to monitor contamination levels and disinfectant concentrations.

2. CHANGE ALL FILTERS IN HVAC EQUIPMENT

- We recommend replacing dirty/used filters. When replacing filters, the level of filtration should be increased to the maximum level that the system can support. Ideally, MERV 13 greater filters with MERV 8 pre-filters should be provided.

3. PERFORMING ASSESSMENT

- Various aspects can impact a building's indoor air quality (IAQ) over its lifetime, many times undetectable to its occupants. Conduct air quality assessment and testing, and request engineering guidance to improve ventilation effectiveness of existing HVAC systems, support long-term air quality monitoring, and create air-quality awareness.
 - Consult an engineer or HVAC equipment manufacturer to request an indoor air quality assessment to be conducted on your building.

IMMEDIATE ACTIONS

1

CHANGE ALL FILTERS IN
AHU EQUIPMENT.

2

PERFORM AIR QUALITY
ASSESSMENT.

3

INCREASE CONCENTRATION OF
OUTDOOR AND RELIEF AIR.

Response to COVID-19

Indoor Air Quality

Additional Potential Options

Stantec has contacted industry leading equipment manufacturers to discuss the various mechanical HVAC design strategies as it relates to airborne-type pathogens due to the ongoing pandemic. During discussions with equipment manufacturers, it has been stressed that testing for the current virus, COVID-19, is extremely limited, as the ability to obtain the specimens is not readily available. As a result, the testing is conducted on similar specimens that are slightly larger than the current virus but also much more difficult to eliminate. In addition, the design strategies presented are able to reduce and eliminate the various pathogens that are potentially introduced via the ventilation system.

1. INCREASE VENTILATION

FLUSH PATHOGEN

Increase the volume of air turn-over, increase frequency of air duct cleaning and air filtration replacement.

BENEFITS:

- Increase air quality within the building
- Can be easily implemented
- Increased outside air can be directed towards LEED accreditation points

CONSIDERATION:

- Increased physical size of energy recovery unit at roof level
- Increased physical size of outside air ductwork
- Increased operational cost to condition additional outside air (electrical fan power, chilled water consumption and hot water consumption)

2. HIGH EFFICIENCY PARTICULATE AIR (HEPA) FILTRATION

TRAP PATHOGEN

HEPA filtration has been shown to have the most effectiveness in capturing airborne pathogens prior to entering an occupied space. HEPA filters are required to capture 99.97% of particulates in passing air.

Note that HEPA filtration is expensive to maintain and has high pressure drops, so retrofit of these systems may not be practical or cost effective.

BENEFITS:

- Maximum air filtration of air prior to delivery into the space
- Lowest-rated HEPA filter traps particulates as small as 0.3 microns.
- Can be implemented either at the unit or at the air outlet

CONSIDERATION:

- HEPA filters are significantly more expensive than standard MERV 8 and MERV 13 filters due to their strict guidelines.
- Filters are designed for one-time use.
- Filters require special procedure to remove/replace, may require 3rd party contractor to perform maintenance
- Increased fan electrical operating cost and requires motor to be up-sized to overcome air pressure of filters

3. ELECTROSTATIC FILTERS

TRAP PATHOGEN

Electrostatic filters help interact with airborne particles, germs, and gaseous contaminants to reduce airborne mold, bacteria, VOCs and odors. This option may work in certain geographic areas better than others.

BENEFITS:

- They are an easy retrofit into an existing system with minimal added pressure drop
- Significantly assists with pathogen removal
- Improves filter life

CONSIDERATION:

- System intent is for removal of odors, and VOCs

4. ULTRAVIOLET GERMICIDAL IRRADIATION

KILL PATHOGEN

Ultraviolet Germicidal Irradiation (UVGI) can be employed to help eradicate the virus when it aerosolizes. UVGI systems come stand alone, as a supplement to air supply systems, integrated with lighting fixtures, etc.

BENEFITS:

- Low electrical cost to operate
- Can be implemented in air handling unit or in duct-mounted solutions
- Minimal air pressure drop for mechanical fan
- Keeps coils clean and reduces maintenance

CONSIDERATION:

- Ultraviolet light cleans only surface contaminants that are on physical surfaces; it does not disinfect the air stream.
- Ultraviolet light is destructive to materials within the light stream. Retrofit will require instrumentation and wiring to be rerouted around UV section.
- Annual maintenance to replace UV bulbs

Response to COVID-19 INDOOR AIR QUALITY Additional Potential Options

5. BIPOLAR IONIZATION

TRAP PATHOGEN

An ionizer produces positive and negative charged oxygen ions which travel through the duct systems and are supplied into the room where they interact with airborne particles, germs, and gaseous contaminants. These charged ions trigger cell oxidation, reducing airborne mold and bacteria, and they help eliminate volatile organic compounds and odors.

BENEFITS:

- Increased Indoor Air Quality
- Inexpensive operational cost
- Controls mold growth / eliminates odors
- Can be retrofitted into either main air handler or duct -mounted solutions
- Increases filter effectiveness

CONSIDERATION:

- System intent is for removal of odors and VOCs
- No third-party performance certifications for bipolar ionization
- Some modifications may be required to existing units to accommodate the addition of bipolar equipment
- Adequate power and controls required per equipment manufacturer specifications

6. PHOTOCATALYTIC OXIDATION (PCO)

KILL PATHOGEN

Photocatalytic oxidation is a combination of ultraviolet technologies with the use of a catalyst material. Industry standard for the catalyst material is titanium oxide.

Particulates are directed through the ultraviolet light and the catalyst. The particulates are then rapidly decomposed into carbon dioxide and water.

BENEFITS:

- Combines the benefits and effectiveness of UVGI with PCO
- Effective against bacteria and viruses

CONSIDERATION:

- Some modifications may be required to existing units to accommodate the addition of PCO equipment.
- Adequate power and controls required per equipment manufacturer specifications

7. INDOOR HUMIDITY MANAGEMENT

MAINTAIN 40-60% RH

Pathogen are more infectious when relative humidity within spaces is >40% (see chart below indicating virus viability (%) vs space RH). Typical HVAC designs provide dehumidification to maintain spaces with max RH of 50–60% but do not typically provide humidification unless specifically requested by client or as required by specific space requirements. Humidification can be provided through space or air handler installed equipment.

BENEFITS:

- Decreases number of airborne infectious aerosols in the breathing zone
- Limits spread of virus airborne droplets
- Optimizes hand and surface cleaning by decreasing resuspension and resettling
- Provides immediate reduction in virus transmission vs filtration which requires pass-through air handling equipment first

CONSIDERATION:

- Raising humidity levels of perimeter spaces can cause condensation and mold to form if envelope construction is poor. Careful analysis is required to determine if raising humidity levels within new or existing buildings will not be detrimental to building envelope
- Requires the existing unit footprint to be increased (if humidification is provided through air handling equipment)



5 REFERENCES AND ADDITIONAL RESOURCES

Responding to COVID-19

References & Additional Resources

NATIONAL RESOURCES

Center for Disease Control and Prevention (CDC)

[CDC Activities and Initiatives Supporting the COVID-19 Response and the President's Plan for Opening America Up Again \(PDF\)](#)

Release : May 2020

[Considerations for Schools - Get Your Schools Ready for Pandemic Flu \(WEB\)](#)

Release : 2017

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

[ASHRAE Epidemic Task Force Reopening Schools \(PDF\)](#)

[COVID-19 Resources \(WEB\)](#)

Release : May 2020

The School Superintendents Association (AASA)

[Guiding Principles & Action Steps for Reopening Schools \(WEB\)](#)

[COVID - 19 Resources \(WEB\)](#)

Release : Expected June 2020

American Institute of Architects (AIA)

[Re-Occupancy Assessment Tool \(WEB\)](#)

[Reopening America: Strategies for Safer Schools \(WEB\)](#)

Release : Expected July 2020

Chiefs for Change (CFC)

[The Return : How Should Education Leaders Prepare for Reentry and Beyond? \(PDF\)](#)

Release : May 2020

American Enterprise Institute (AEI)

[A Blueprint for Back to School \(WEB\)](#)

Release : May 2020

STATE OF TEXAS

Texas Education Agency (TEA)

[Summer Instruction, Activities and School Visits: Guidance for Reopening and Student Interaction \(PDF\)](#)

[COVID-19 Resources by Region \(WEB\)](#)

Release : May 2020

Texas Association of School Boards (TASB)

[COVID-19 Resources \(WEB\)](#)

Release : No reopening guidelines as of 6/10/2020

Texas Association of School Administrators (TASA)

[Remote Learning + COVID-19 Resources and Training \(WEB\)](#)

Release : No reopening guidelines as of 6/10/2020

Southern Regional Educational Board (SREB) (16 states including Texas)

[K-12 Education Recovery Playbook \(WEB\)](#)

[COVID-19 Resources \(WEB\)](#)

Release : In-progress

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Thank You.

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