Radical Flexibility

COVID-19 Response: Planning for the New Normal

CASE STUDY

SAR Academy & High School

IN THIS TOGETHER

(6 FEET APART)

Hila Stern, HSB Architecture & Design
Esther Sperber, Studio ST Architects

Introduction

SAR, comprised of SAR Academy and SAR High School, is a private Jewish school in New York City. It serves approximately 1,600 students from across the city, Westchester, Connecticut and New Jersey.

The school believes that every child possesses a divine spark, has unique worth as an individual, and should be encouraged to achieve according to his or her ability. The school values excellence in learning and also seeks to foster the religious, social and emotional growth of each student.

SAR has a robust digital technology program and provides all students in the Middle School and High School with iPads to promote digital fluency.

On March 3, 2020, SAR Academy and High School were informed that the parent of a student was hospitalized and diagnosed with COVID-19. The entire school was closed, and all students were instructed to quarantine for two weeks. As the first school in the New York City area to close, SAR was by necessity a trailblazer in the shift to remote teaching.

While the school managed a swift response to the sudden and unprecedented circumstances of the coronavirus that spring, administrators recognized it was necessary to plan for the fall of 2020. Accordingly, the school convened a collaborative team of administrators, facility managers, architects, mechanical engineers, graphic designers and medical experts in preparation for the eventual reopening of the school buildings.

SAR recognizes that much is still unknown about the coronavirus, as well as local and regional health and education authority guidelines for reopening. However, the administration realizes the need to assess building facilities and operations, class schedules and sizes, and other factors in order to craft a flexible plan that will permit the school to open safely in the fall.

Rabbi Krauss has tasked us with drawing up plans for what we call “radical flexibility,” a return to the school buildings that reflects the day’s concerns, and recognizes that adjustments and improvements will likely be required along the way.

Hila and Esther

Executive Summary

SAR established the following priorities to guide the design and planning process for the return to the school buildings

1. Safety and Health

SAR has no more important responsibilities than the safety and health of students, teachers, staff, parents and its larger community.

2. Educational Excellence

SAR seeks to utilize every tool at the school's disposal to promote excellent teaching and learning, including a mix of in-person and remote teaching.

3. Social and Emotional Growth

"It's not just what you learn. It's who you become." SAR's motto reflects a commitment to the social and emotional strength of its students and to their learning experience.

4. School as Community

While SAR can not predict all upcoming guidelines and regulations, it expects to design and reserve spaces to allow for some grade-wide, socially distanced assemblies in the coming academic year.

5. Age-Appropriate Plans

SAR will customize plans to meet the needs of students in different age groups. Smaller, insular groups may be appropriate for the Lower School; social distancing and mask may be better solutions for the High School; SAR will take specific steps to maintain diversity of classes and tracked levels.

6. Budget Considerations

The coronavirus pandemic has put tremendous financial strain on institutions and families. SAR is mindful of costs and will pursue solutions and proposals that will not burden the school with unnecessary spending. This said, SAR believes that some changes, particularly to HVAC systems and restrooms, will be valuable long-term improvements.

The Collaborative Team

School Administration

Rabbi Binyamin Krauss, SAR Academy
Rabbi Tully Harcsztark, SAR High School
Rabbi Jonathan Kroll, SAR High School

School Facility Department

Seth Botnick, SAR Academy
Nick Fadda, SAR Academy & High School
Nava Cohen, SAR High School
Jenny Horowitz,PE teacher

Architectural Design Team

Hila Stern, Hila Stern Architecture & Design
Esther Sperber, Studio ST Architects
Kellen Thayer, Studio ST Architects

Mechanical Engineering

David Salamon, Salamon Engineering
Niall Cooper, Derive Engineering

Graphic Design

Dov Abramson Design
John Kudos, Kudos Design Collaborative™
Lia Goldberger, LSG Graphics

Editing

Paris Stulbach

Medical Advisory Team

Nimrod Dayan, MD
Josh Milner, MD
Yardaena Osband, MD
Jeremy Rosenblum, MD
David Salamon
Shoshana Shendelman, PhD
Jeremy Simon, MD
Seth Sokol, MD

The Architectural Team

Hila Stern Architecture & Design

WWW.HSBARC.COM

HSB Architecture & Design is a full-service architecture and interior design firm based in New York City. HSB is at the forefront of planning educational settings, in addition to an ever-expanding roster of residential projects. HSB's learning landscapes include a recently completed 30,000-sqf project for Kohelet Lab School in Pennsylvania; a new ELC for SAR Academy in NYC; and a community center and library at JKHA/RKHS in NJ. The firm's designs empower all types of learners and educators to explore and achieve their greatest potential. HSB's residential projects include several high-end, ground-up homes in Brooklyn, renovations and restorations of both modern and landmark buildings.

Architect Hila Stern Bornstein graduated with honors from the David Azrieli School of Architecture at Tel Aviv University. Before establishing her own firm in 2017, Hila worked for over a decade as an executive architect for internationally recognized firms in both Tel Aviv and New York City.

Studio ST Architects

WWW.STUDIO-ST.COM

Studio ST Architects is a full-service, woman-owned, architectural firm located in Manhattan. Studio ST is currently constructing a 22,000-square-foot multi-family apartment building in Jersey City, New Jersey. The firm is also renovating a number of synagogues, including Ansche Chesed in New York City and Skokie Valley Agudath Jacob in Skokie, Illinois. It has renovated community centers, art galleries, schools and restaurants. The firm has also completed many residential projects, ranging from high-end apartments to low-cost apartment buildings, and duplex combinations of single-family homes.

Esther Sperber founded Studio ST Architects in 2003. Sperber writes and lectures on architecture, culture and psychoanalysis. Her articles have appeared in the New York Times, Lilith Magazine, and The Huffington Post, among other publications. Born and raised in Jerusalem, Israel, Sperber studied architecture at the Technion in Haifa, Israel, and Columbia University in New York City.

Planning Goals

Rethink school in a creative, innovative way to adjust to new circumstances

Craft a multi-layered process in which design fosters health, education, community and responsibility

Core Values

- ➔ Maintain the school's vision while it faces the challenges of the unprecedented coronavirus pandemic
- ➔ Support our community with a school routine while meeting all of our students' social-emotional and individual educational needs.

Radical Flexibility

- ➔ In uses of the available building spaces
- ➔ In communicating with teachers, staff, students and families
- ➔ In responding to latest research and guidelines

Safety

- ➔ Recognize school's responsibility to the health of each student, teacher, and staff member
- ➔ Recognize school's responsibility to the larger community
- ➔ Minimize coronavirus exposure
- ➔ Plan response to potential contagion

Budget

- ➔ Maximize use of existing facilities
- ➔ Limit expenses whenever possible
- ➔ Design reversible, adaptable plans whenever possible in expectation of changing conditions

Rethink the Buildings

Review all available spaces within buildings

Design new classrooms for safe learning

Convert offices and specialty rooms into classrooms

Locate new classrooms throughout buildings

Utilize available outdoor spaces for lunch, movement and teaching

Map circulation/traffic paths from arrival to dismissal

Adapt all restrooms

Designate nurse and quarantine stations

Mark outdoor and assembly spaces for social distancing

Upgrade technology for remote and in-person learning

Modify HVAC systems

Create signage explaining the required behavior and assisting with wayfinding

Age-Appropriate Planning

ELC & Lower School (Nursery, Grades K-5)

- All students in the building
- Pods of 12–15 students
- Two teachers per pod
- Limited movement
- Limited interaction between pods

Middle School (Grades 6-8)

- All students in the building
- Pods of 15 students
- Two teachers per pod
- Remote learning in classroom for tracked subjects
- Limited movement
- Limited interaction between pods

High School (Grades 9-12)

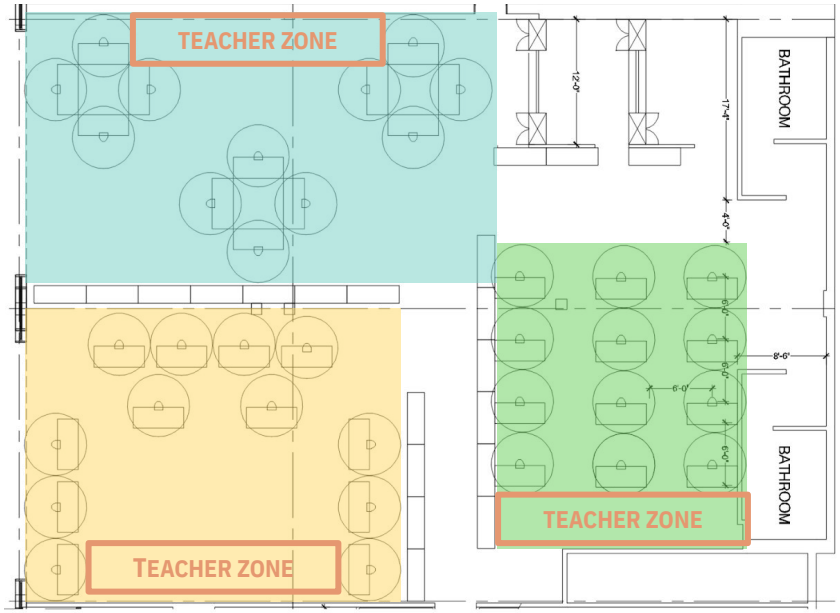
- Three grades at a time in building
- Regular class sizes of 24 students
- Remote learning one day per week
- Movement within grade to maintain learning tracks
- Social distancing and masks

Age Comparison

Age	Masks	Distancing	Class Size	In School	On Zoom
Early Childhood					
Lower School K–5					
Middle School					
High School					

Lower & Middle School

Design the Classrooms



Distancing
Six-foot social distancing “bubble” around students

Core Values
Maintain school’s value of collaborative learning while adhering to health guidelines

Desk Layout
Study layout options for each space to maximize number of students while maintaining social distancing. Test hexagonal vs. linear desk arrangements

Protection
Require masks or shields when students leave their pods

Food Distribution
Lunch to be served in each pod

Supplies
Students will use their own supplies

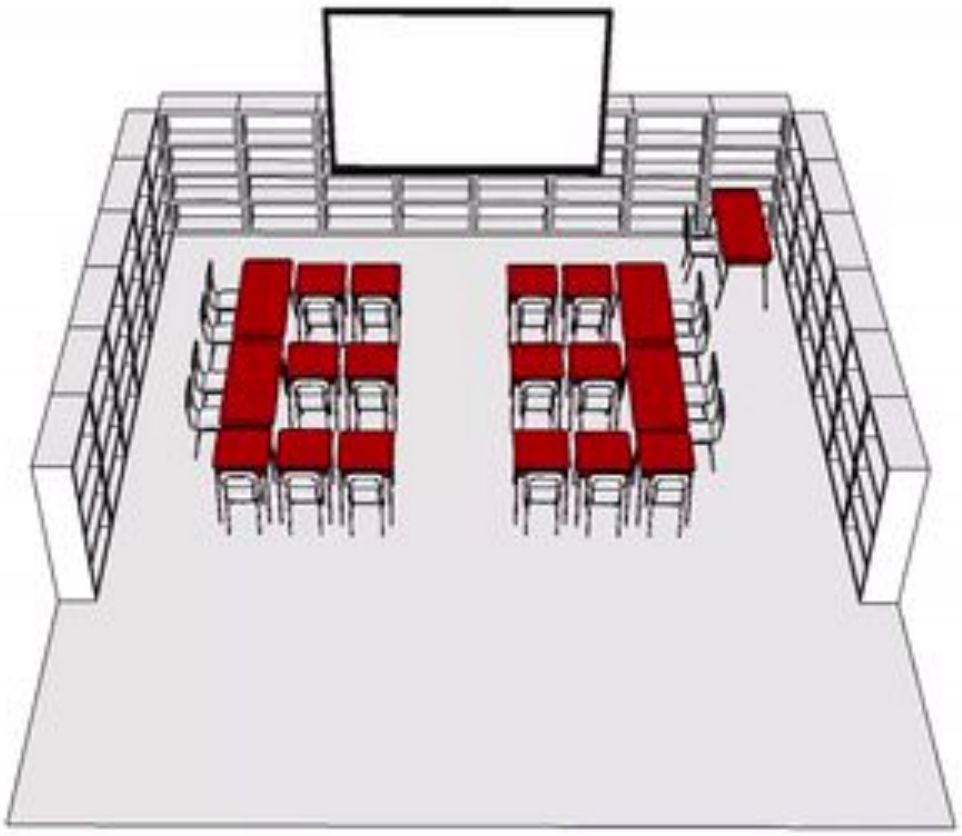
Cubbies
Reduce number of cubbies by half and stagger locations

Specialty Classes
Specialty classes to be taught in students’ pods

Teacher Zone
Teachers use designated area in the front of classroom

Classroom Transformation

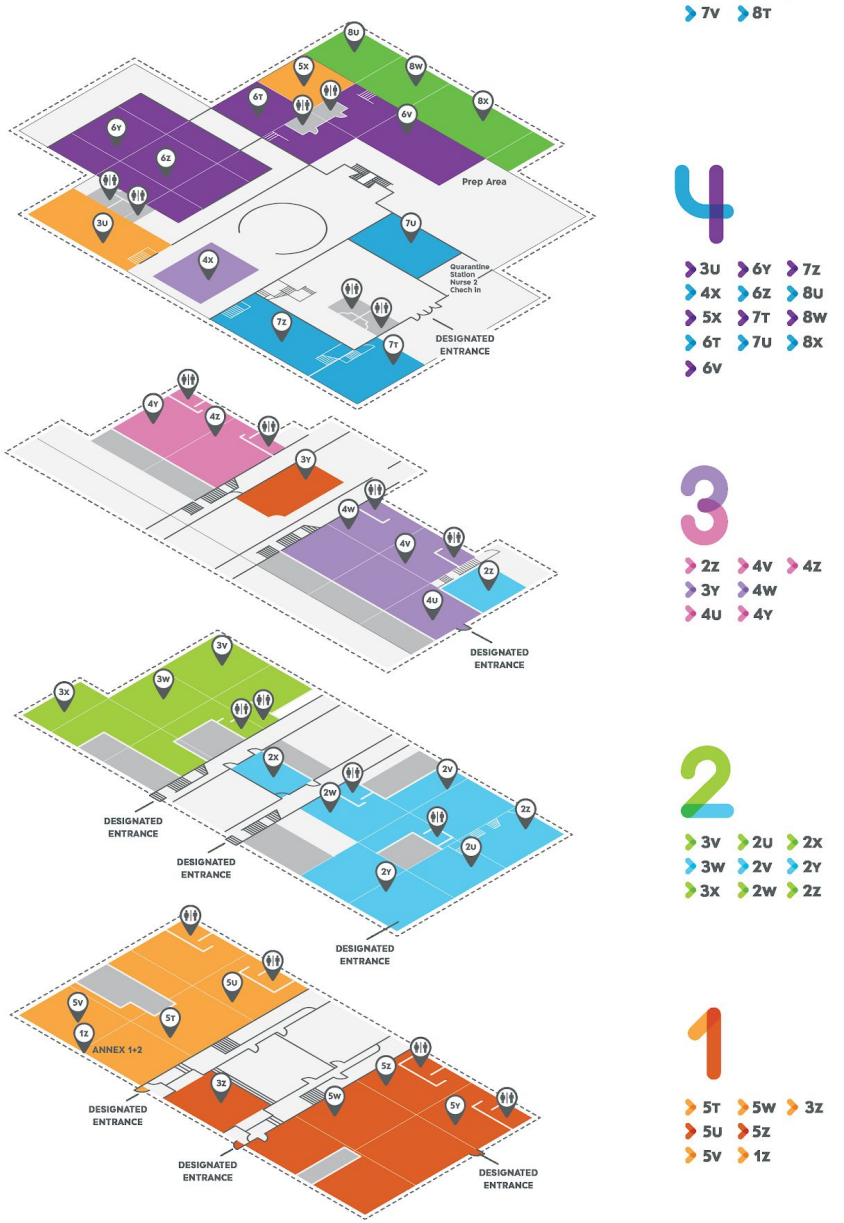
- ➔ Reduce each class from 24 to 12
- ➔ Space out desks to maintain social distancing and create a teacher's zone
- ➔ Maintain the opportunity for collaborative learning while adhering to health guidelines



Design Methodology

CLASS AND STUDENT SPREADSHEET

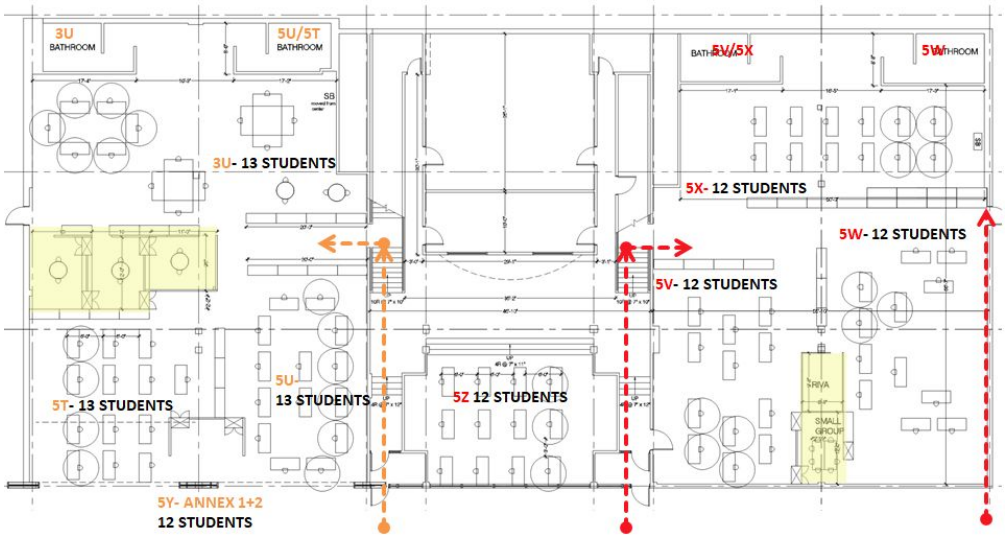
	A	B	C	D	E	F	G	H
1	Space Location	Level	Space Name	Allocati	Class	Numl	Bathroom Location (g	Furniture
34	Middle School	10	New 6th grade	6th grade	6T	14	6th grade bathrooms	MS desks
35	Middle School	10	New 6th grade	6th grade	6U	14	6th grade bathrooms	MS desks
36	Old Gym	7-9	New 6th grade	6th grade	6W	13	6th grade bathrooms	
37	Old Gym	7-9	New 6th grade	6th grade	6X	13	6th grade bathrooms	MS desks
38	Middle School	10	Old Gym 1/2	6th grade	6Y	14	Gym Bathrooms	Move in desks
39	Middle School	10	Old Gym 1/2	6th grade	6Z	14	Gym Bathrooms	Move in desks
40	ED Tech Center	7-9	STEAM Room	7th grade	7T	14	Guest Bathroom near Atriu	Move in desks
41	Business Office	7-9	Business Office	7th grade	7U	14	Guest Bathroom near Atriu	Move in desks
42	Middle School	10	Beit Midrash	7th grade	7V	14	MS Bathroom	Use tables
43	Middle School	10	Area 3	7th grade	7W	14	MS Bathroom	MS desks
44	Middle School	10	Area 4	7th grade	7X	14	MS bathrooms	MS desks
45	NEW MPR	7-9	New MPR 1					
46	NEW MPR	7-9	New MPR 2	7th grade	7Y	14	Lunchroom bathrooms	Move in desks
47	NEW MPR	7-9	New MPR 3	7th grade	7Z	14	Lunchroom bathrooms	Move in desks
48	Lower Lunchroom	7-9	1/2 Lower Lunchroom	8th grade	8T	15	Lunchroom bathrooms	Move in desks
49	Labs	7-9	LS lab	8th Grade	8U	15	Lunchroom bathrooms	Move in desks
50	Middle School	10	Area 7+8	8th grade	8X	15	MS bathrooms	MS desks
51	Middle School	10	Areas 10-12	8th grade	8Y	15	MS bathrooms	MS desks
52	Middle School	10	Upper Lunchroom	8th Grade	8Z	15	MS bathrooms	Move in desks
53	Middle School	10	Area 5+6	7th grade	8Y	15	MS bathrooms	MS desks
54	Middle School	7-9	Area 1+2	8th Grade	8Z	15	MS Bathrooms	MS desks



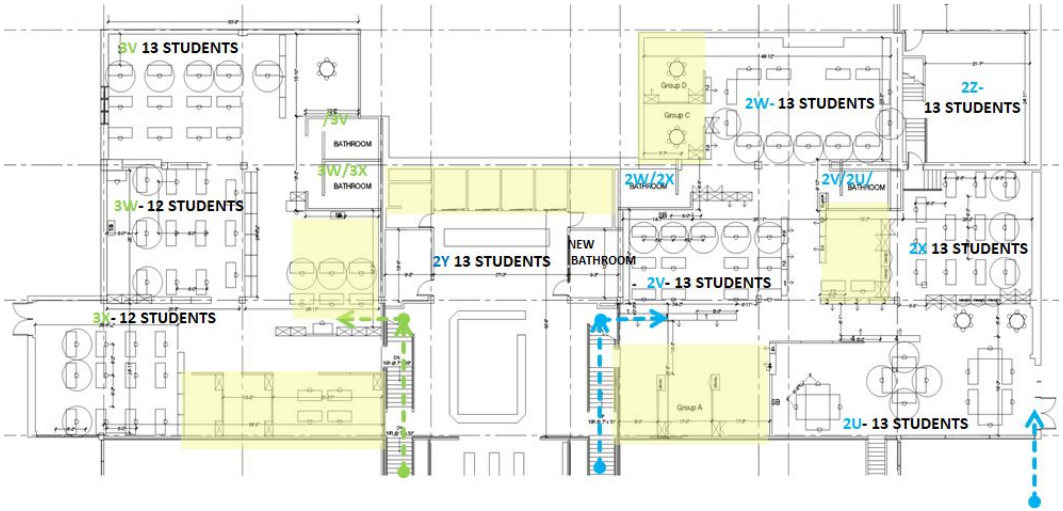
BUILDING PLANS

Floor Plans

FLOOR 1-2

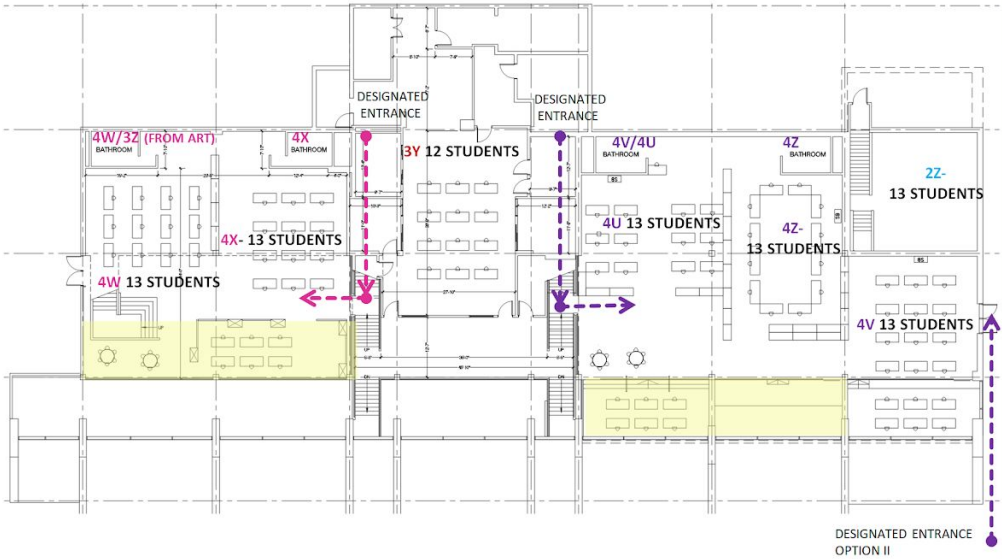


FLOOR 3-4

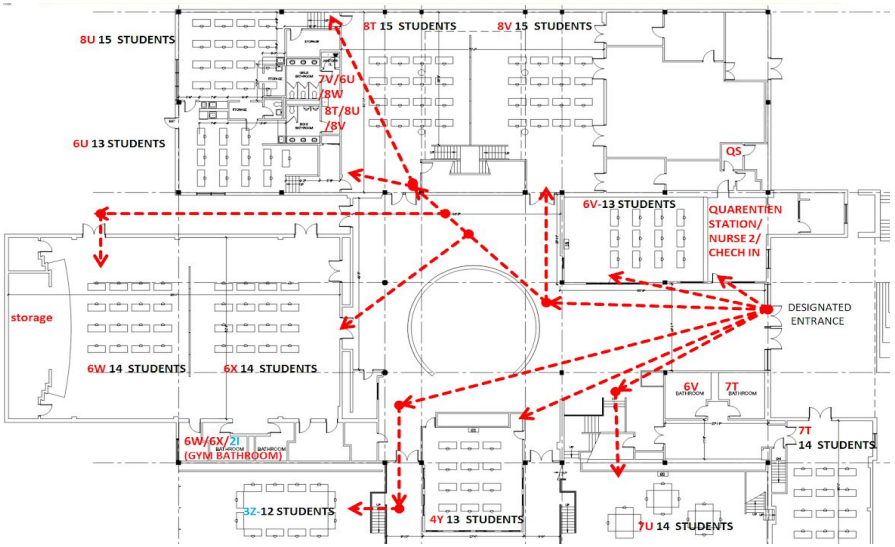


Floor Plans

FLOOR 5-6

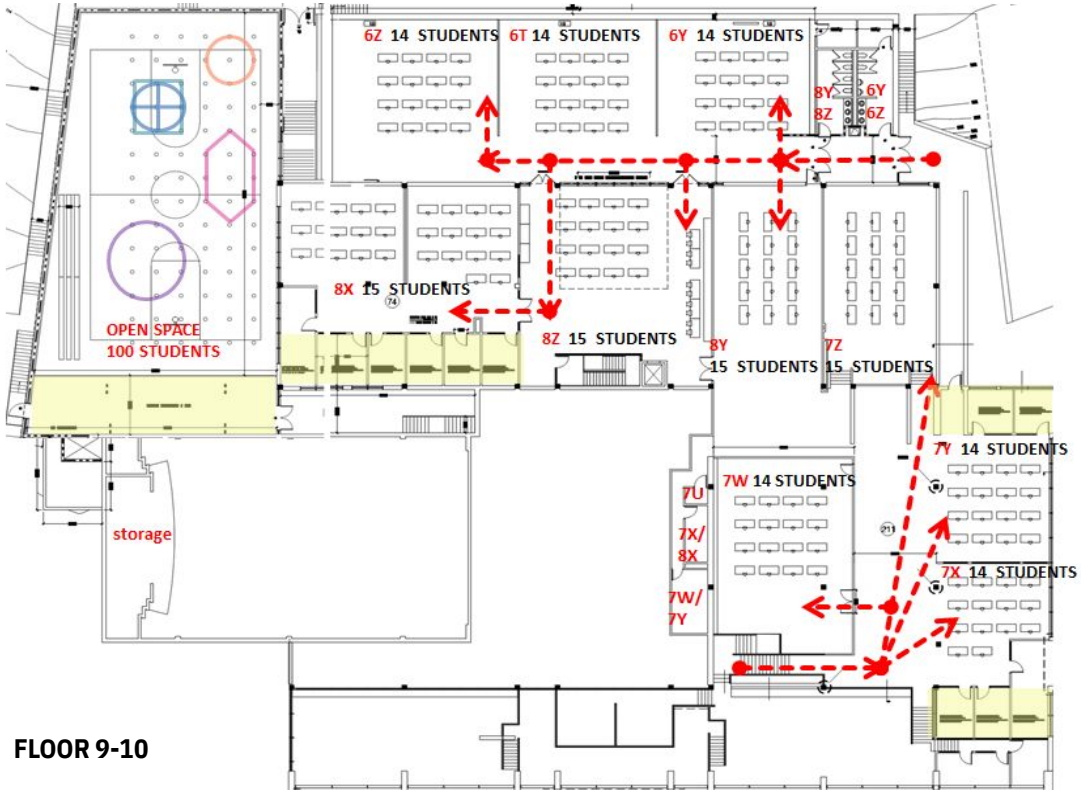


FLOOR 7-8



Circulation: Mapping a Safe Path

- ➔ Students to stay in their pods to reduce contact
- ➔ Stairwells and hallways to be designated for single direction traffic with social distancing required
- ➔ Signage will remind everyone of rules, assuring adherence and increased safety



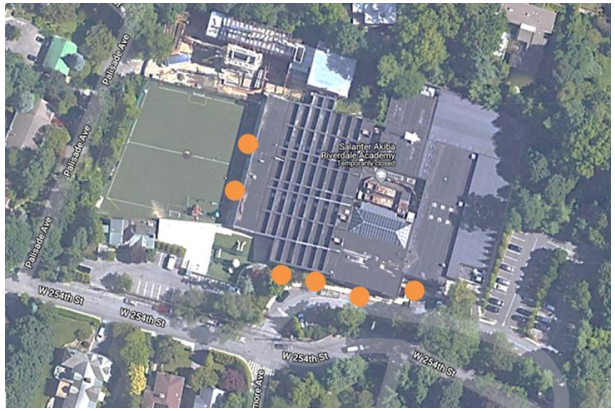
FLOOR 9-10

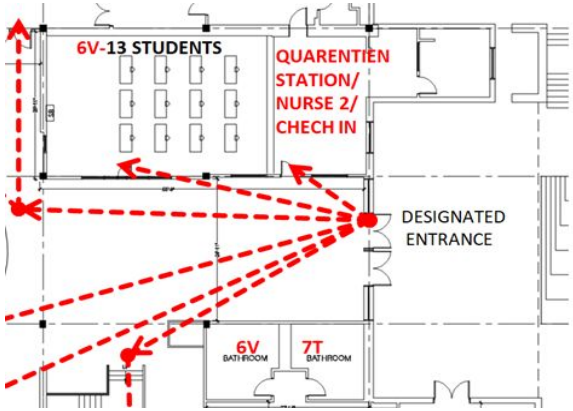
Arrival Sequencing and Quarantine Station

- ➔ Identify and leverage multiple entrances and exits for drop-off and pick-up
- ➔ Evaluate sidewalk capacity for social distancing
- ➔ Stagger drop-off and pick-up hours, locations
- ➔ Mandate that teachers, staff arrive before students
- ➔ Locate quarantine station at main entrance for symptomatic students
- ➔ Evaluate queuing wait time in uncovered outdoor areas, review options of portable tents to protect students from harsh sun exposure or rain

Protocols to be determined by New York City, New York State and CDC guidelines

- ➔ Students and staff to provide emergency and medical forms
- ➔ Students and staff to submit digital health form daily
- ➔ Students to designate emergency contact who can remove them from school building within an hour in case of symptoms
- ➔ School to monitor students' temperatures

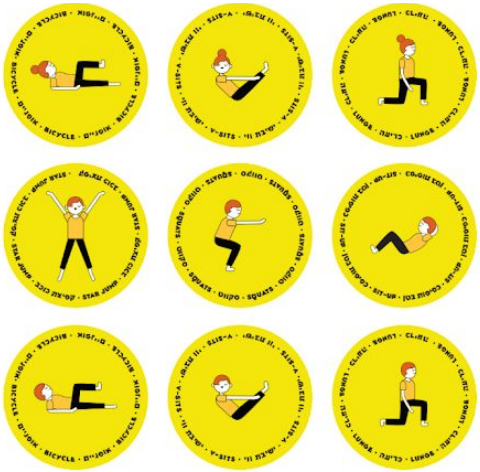


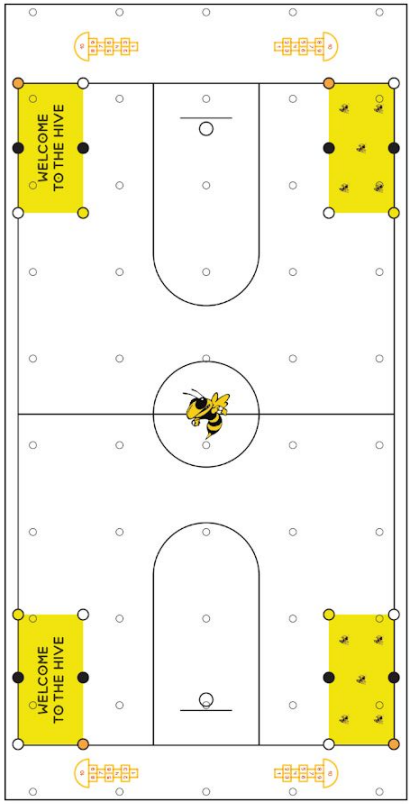


Assembly Spaces

To maintain flexibility and allow for larger but safe, socially distanced gatherings when health guidelines permit, SAR will identify and reserve a number of spaces within the building. These spaces may be used for:

- ➔ Larger group assemblies
- ➔ Physical education
- ➔ Informal recess





Designing the Movement spaces

- ➔ Each student can have a safe spot to exercise in all locations (field, playground and gym)
- ➔ Each section is clearly marked by color or shape to help students understand how areas are divided
- ➔ Each group will have a Hopscotch and Four Square game
- ➔ Spots/shapes can be used for games/activities in all three different locations
- ➔ The floor shapes can be utilized for multiple uses
- ➔ 36-inch cones help separate sections
- ➔ The Physical Education team is developing a program that emphasis passive active exercise (ie yoga and stretching) instead of high contact team sports.

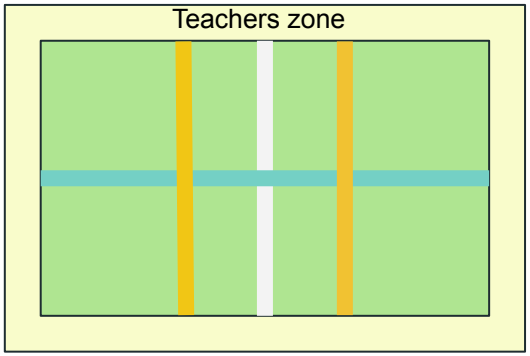
Outdoor Spaces

Outdoor spaces are valuable because risk of virus contagion is much lower outdoors. SAR Academy will divide its field into flexible spaces to be used by class pods while maintaining distance from other groups of students and teachers.

The physical education department will develop a program for safe movement and sport activities, utilizing the indoor gyms, outdoor field, roofs and playgrounds.

The field will be divided to accommodate two, three or four groups.
White Line — two groups
Yellow Lines — three groups
White and Blue Lines — four groups

- ➔ Grades will have a designated outdoor time
- ➔ Classes will be assigned to areas in the field or playground
- ➔ Groups must stay in their assigned area
- ➔ A teacher will monitor safety and distancing during outdoor time
- ➔ Movement and physical education teacher will oversee activities in different zones
- ➔ Use of equipment will follow CDC and local government recommendations

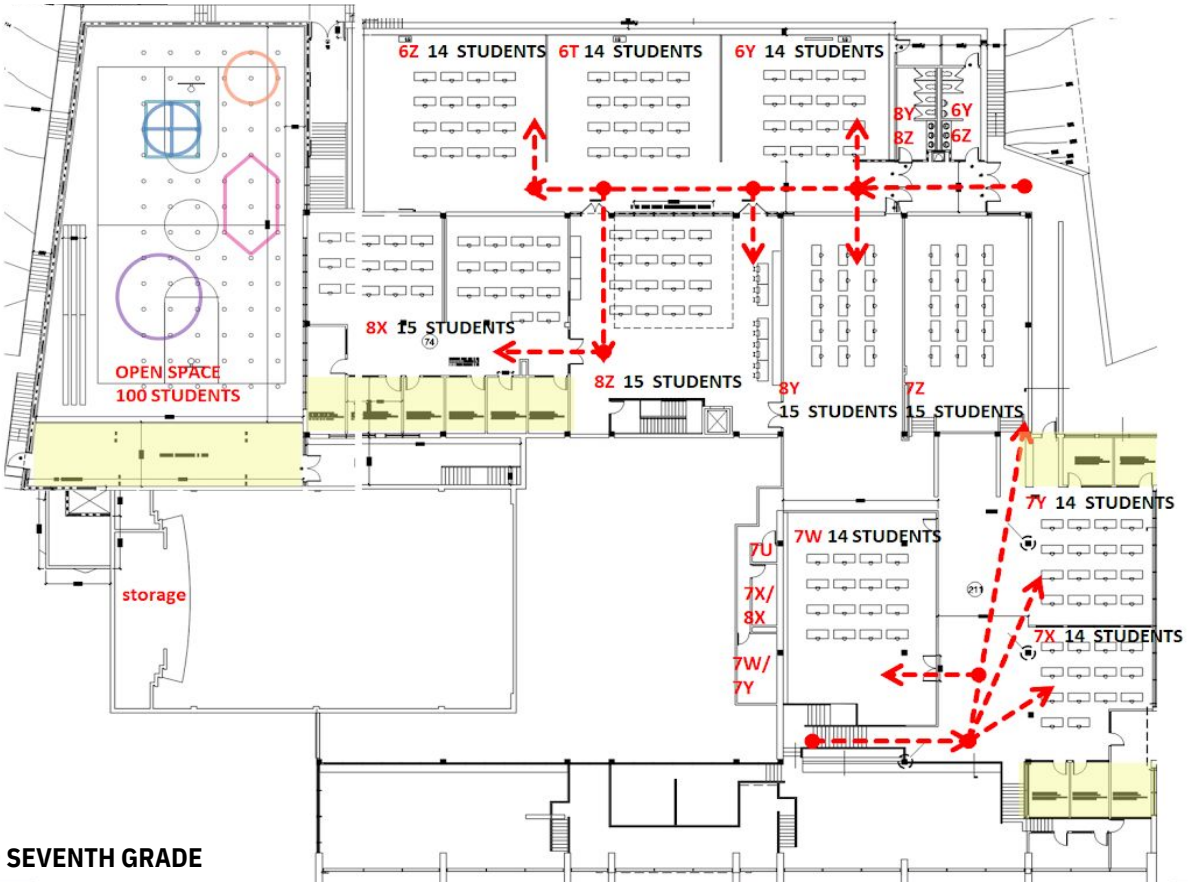


Lower School Classroom Photos

Middle School

Middle School

- All students in the building
- Pods of 15 students
- Two teachers per pod
- Remote learning in classroom for tracked subjects
- Limited movement
- Limited interaction between pods



SIXTH AND SEVENTH GRADE

In-School Zoom Learning

SAR Middle School students occupy a unique position. While many students were mature enough to manage the challenges of remote learning this past academic year, it was apparent that some needed more in-person supervision. It was therefore decided that Middle School students will attend school everyday in the fall, and learn in small pods much like in the Lower School.

SAR believes in the value of heterogeneous classes, in which student see, and learn from, peers who have different learning styles. Students' home room, or pods, will remain hetrogeniusand while isolated from other groups. However, the school will still provide tracked study for particular subjects, in which students learn with others at their academic level. This will be achieved using Zoom within the classroom. For math, Talmud and Hebrew language study, students will remain in their homeroom pod but learn on Zoom with a teacher and students *in other pods*.

We hope that this hybrid method will allow students to have the best of all worlds: safety, in-school learning and level-specific study.

- ➔ All students in building
- ➔ 15-student pods
- ➔ Two teachers per pod
- ➔ Tracked, in-class Zoom study for math, Hebrew and Judaic studies

Middle School Classroom Photos

High School

Blended Learning - In School and at Home

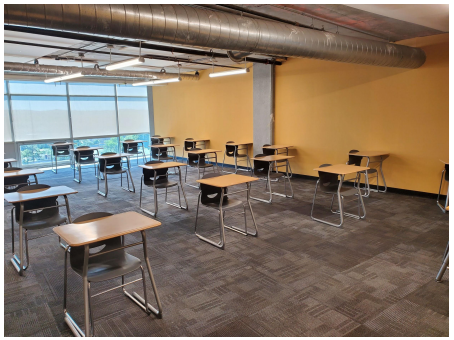
SAR High School students adapted best to the shift to online learning from home last spring. As more mature and independent learners, they took advantage of the new schedule and educational technologies. Students liked some aspects of remote learning; with no commutes and a later class start time, they appreciated the chance to get more sleep and devote time to personal interests and independent study. They were also able to eat healthier, homemade lunches.

Nevertheless, both students and teachers missed the in-person connections of the SAR building and community, which are central to a successful experience of school as a place for learning and social and emotional growth.

The High School curriculum emphasizes teaching each student at the level best suited to their interests and capabilities. Students can be placed in tracked classes for many subjects including math, science, foreign language, gemara and Hebrew. This important tailoring to each students is not possible with pod-like compartmentalization.

Thus, the model selected for the High School is a blended week in which each grade studies at school three or four days per week, and on Zoom from home the other one or two.

SAR believes it can partner with its students; SAR trusts them to take remote learning seriously when they learn at home, but also adhere to health requirements such as wearing masks, disinfecting desks and social distancing while in the school building.



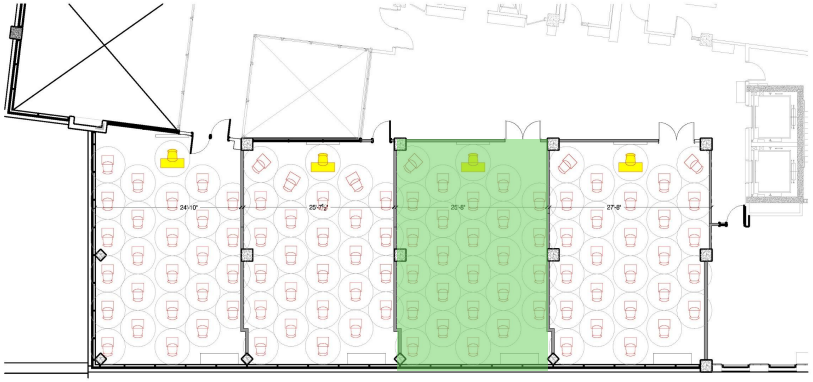
Design the Classrooms

EXISTING CLASSROOMS

- ➔ Four classrooms on the east side
- ➔ Flexible central core
- ➔ 24 students
- ➔ Approximately 600 square feet per class

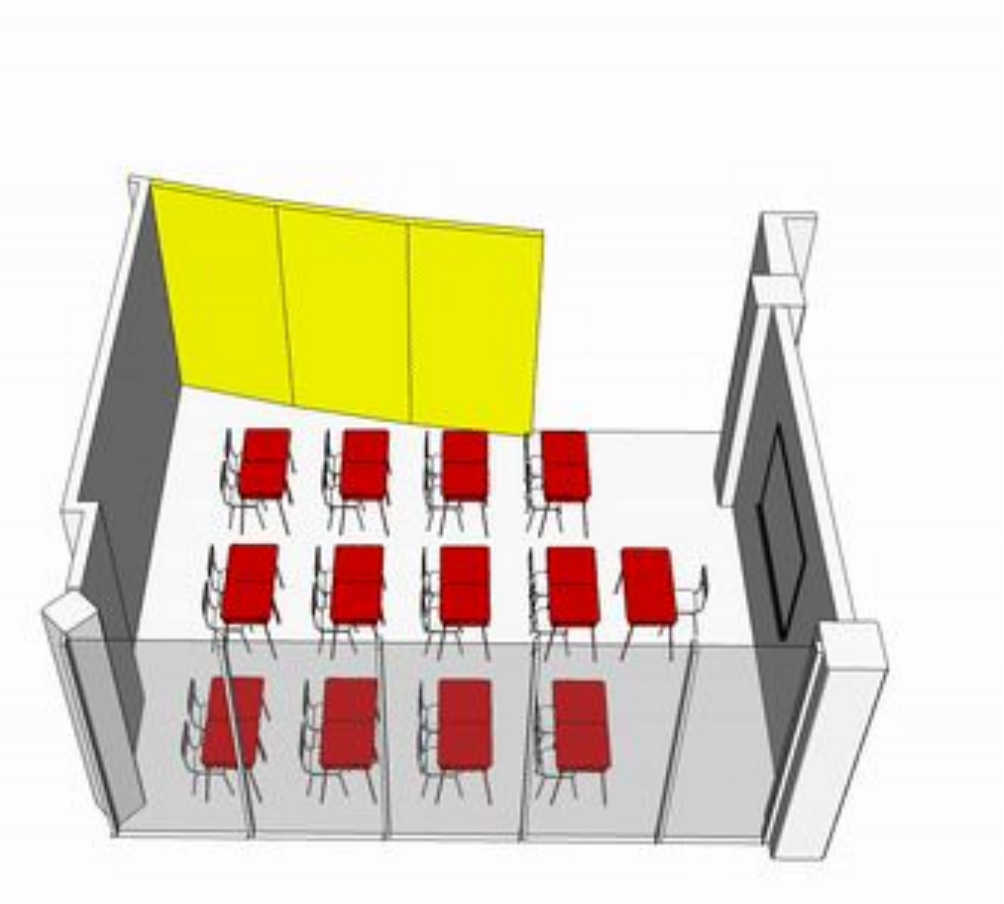
NEW CLASSROOMS

- ➔ Three classrooms on the east side
- ➔ Approximately 900 square feet per class
- ➔ Six-foot social distancing “bubble” around students
- ➔ Define circulation space
- ➔ Define protective “Teacher Zone”
- ➔ 24 students in a class
- ➔ Reduce flexible core to enlarge classes



Classroom Transformation

- ➔ Enlarge classroom to accommodate social distancing
- ➔ Maintain class size of 24 students
- ➔ Reorient classroom to maximize distancing



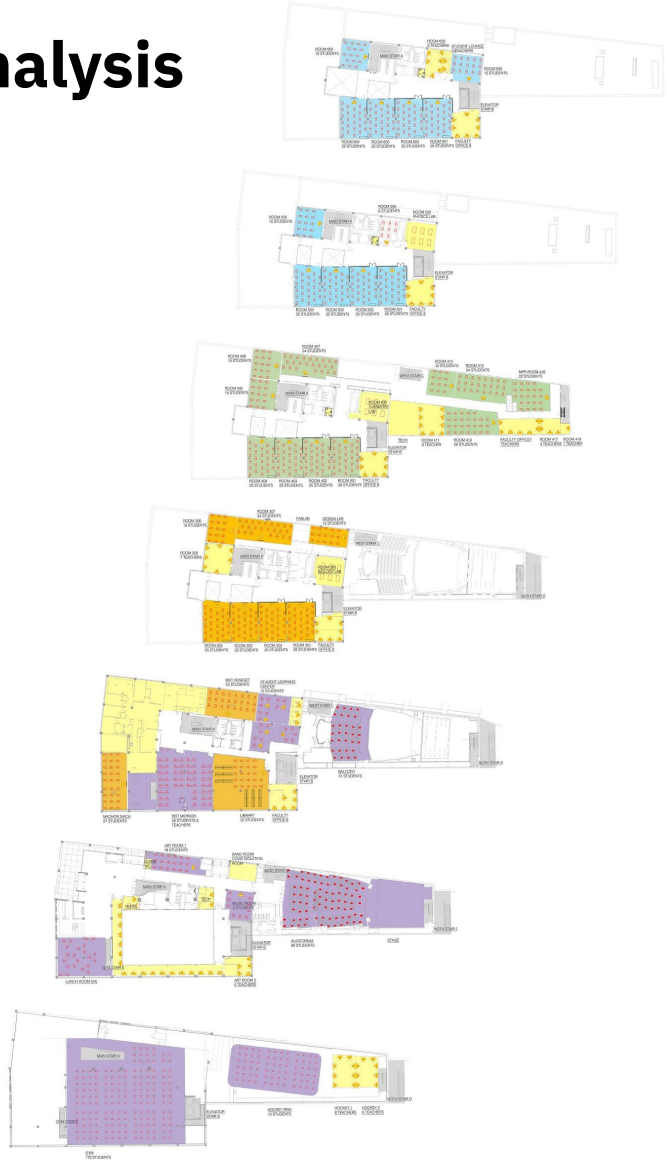
Design Methodology - Spatial Analysis

Identify all available spaces on campus

Calculate number of students in each class (24) and number of classes per grade (seven to eight)

Enlarge existing classrooms to allow for social distancing

Determine how many grades can learn in building based on space in enlarged classrooms



Design Methodology - Scheduling Analysis

Plan for appropriate number of students in building

Create hybrid curriculum with mix of both in-school and remote teaching

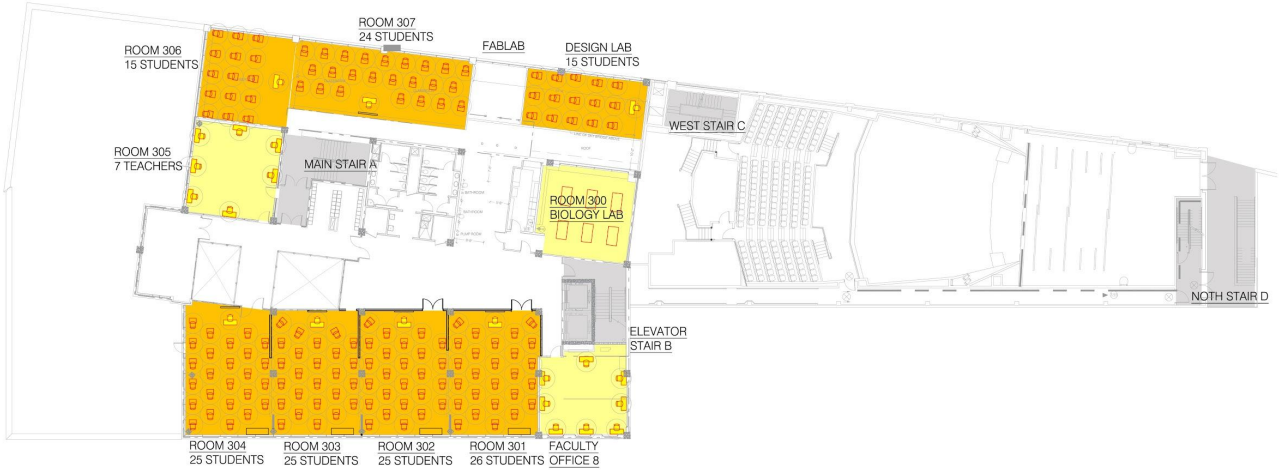
Evaluate the positive aspects of remote learning and incorporate them into a new curriculum

Support teachers in their efforts to combine online and in-person lesson plans

	Gym Stair E							Main Stair A					Elevator Stair B	West Stair C									North Stair D	Studen / Fl	Classe s	Grades
Sixth Floor		25 Class 601	25 Class 602	25 Class 603	26 Class 604	[15] Lab 605	6 Class 606			[15] Class 600		8 Faculty												115	8	202 Grade A
Fifth Floor		25 Class 501	25 Class 502	25 Class 503	26 Class 504	[15] Lab 505	[8] Class 506			6 Physics Lab		8 Faculty												115		
Fourth Floor		25 Class 401	25 Class 402	25 Class 403	26 Class 404	[15] Lab 405	[15] Class 406		24 Class 407	6 Chemistry Lab		8 Faculty			6 Tech	[15] Annex 410	9 Annex 411	24 Annex 412	26 Annex 413	22 Annex 416	7 Faculty	4 Annex 417		237	8	197 Grade B
Third Floor		25 Class 301	25 Class 302	25 Class 303	26 Class 304	7 Lab 305	[15] Room 306		24 Class 305	6 Biology Lab	[15] Design Lab	8 Faculty												146	9	198 Grade C
Second Floor		27 Machon Siach	Beit Midrash 1		22 Library				24 Beit Keneset	[15] SLC									30 Balcony					73		
Ground Floor		[24] Lunch room			18 Gym Balcony				[9] Music											Auditorium		Stage		18		
Cellar					170 Gym															72 Hockey 1	8 North 1	8 North 2				129 Teachers

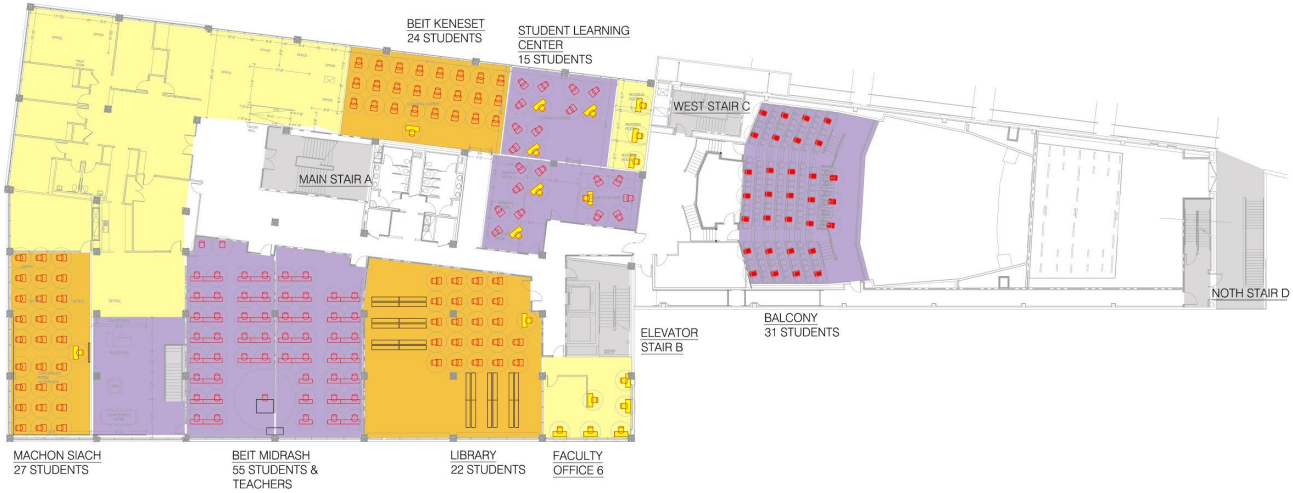
Floor Plans

Enlarge four east classrooms
Combine two west classrooms



THIRD FLOOR

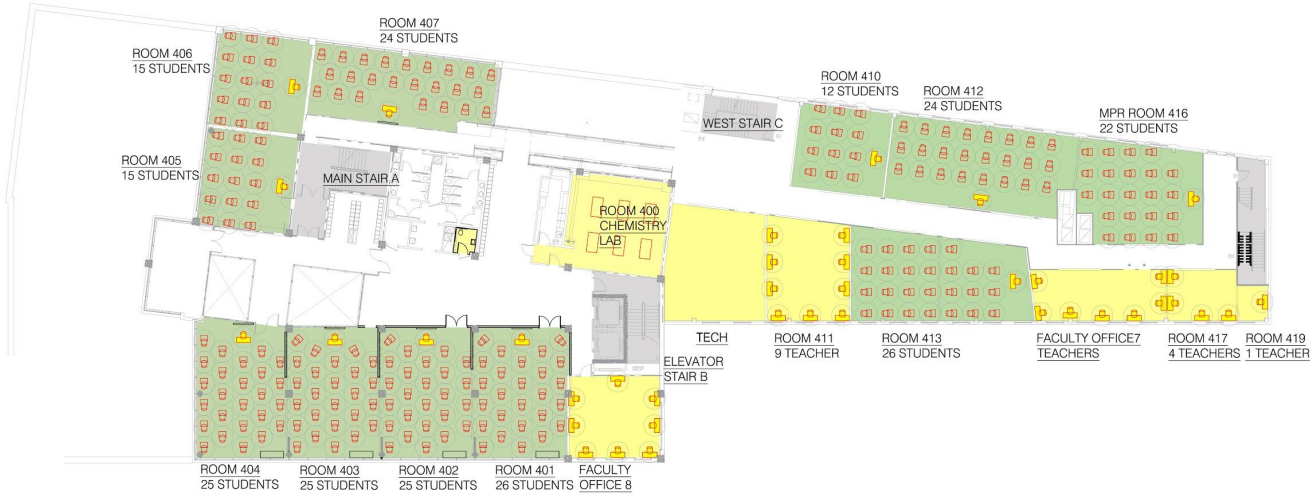
Convert Beit Knesset (chapel), library and conference area into classrooms



SECOND FLOOR

Floor Plans

FIFTH & SIXTH FLOOR

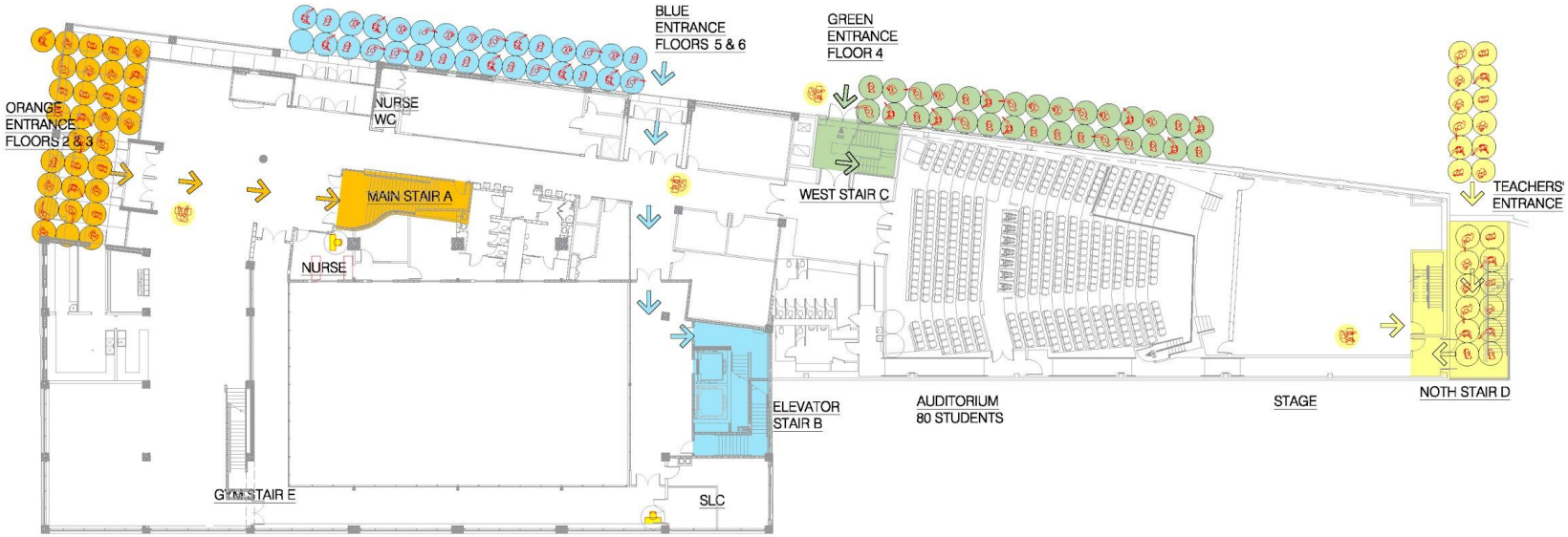


FOURTH FLOOR

High School Classroom Photos

Arrival Sequence

- ➔ Use all available entrances
- ➔ Assign stairwells to each grade
- ➔ Designate teachers' entrance and stairwell
- ➔ Stagger arrival schedule
- ➔ Evaluate queuing wait time in uncovered outdoor areas, review options of portable tents to protect students from harsh sun exposure or rain.



Assembly Spaces

To maintain flexibility and allow for larger but safe, socially distanced gatherings when health guidelines permit, SAR will identify and reserve a number of spaces within the building. These spaces may be used for:

- ➔ Larger group assemblies
- ➔ Prayer services
- ➔ Physical education
- ➔ Informal lunches

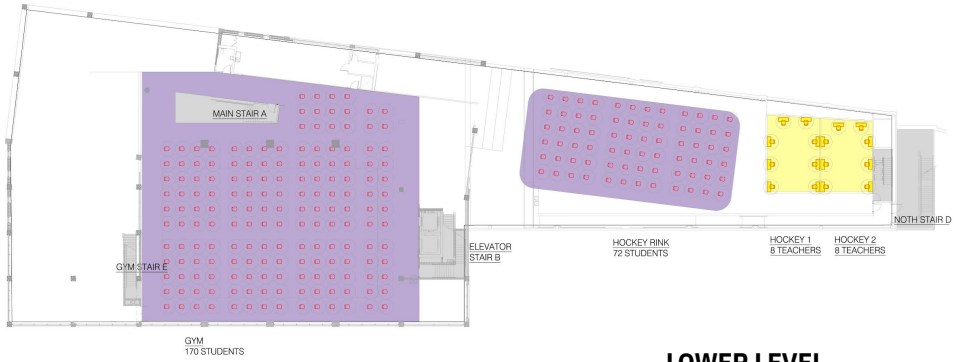
Available Room Capacity with Social Distancing:

Gymnasium — 170 students

Floor Hockey Rink — 72 students

Lunch Room — 32 students

Auditorium — 110 students



LOWER LEVEL

Outdoor Spaces

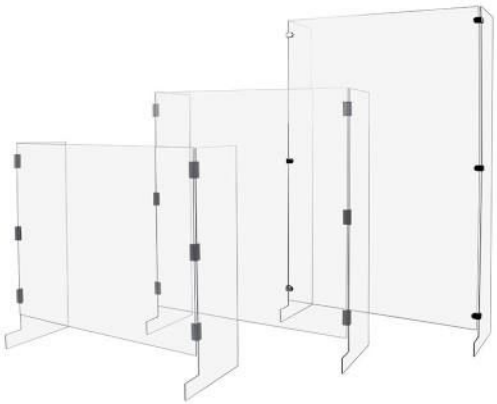
The risk of contagion is minimal outdoors. It is therefore recommended the school use all available outdoors spaces for both formal and informal activities. SAR will consider:

- ➔ Refurbishing outdoor field and upper roof
- ➔ Adding shading and rain shelter
- ➔ Installing outdoor furniture adapted for social distancing

All-Grade Interventions

Personal Protective Equipment

- ➔ Coordinate mask color with pod color
- ➔ Consider face shield if permitted
- ➔ Place sanitation kit in each pod or classroom
- ➔ Customize graphics for standard hand sanitizer
- ➔ Provide partition shields as needed
- ➔ Provide High School students with hand sanitizers, wipes to disinfect desks and chairs at start of each class period



Adapt Restrooms

- ➔ Designate restrooms for specific pods or grades
- ➔ Designate teacher and staff restrooms
- ➔ Install touchless faucets, soap dispensers, paper towel dispensers and flushometers
- ➔ Replace stall partitions with taller designs
- ➔ Increase frequency of cleaning and disinfecting of surfaces
- ➔ Convert drinking fountains into bottle fillers




TOUCHLESS TOWEL AND SOAP DISPENSERS, FLUSHOMETERS, AND FAUCETS

REPLACE BATHROOM PARTITIONS

Upgrade Air Circulation and HVAC System

Windows — open windows when sensible

Fresh Air — increase HVAC fresh air intake to 30 to 40 percent

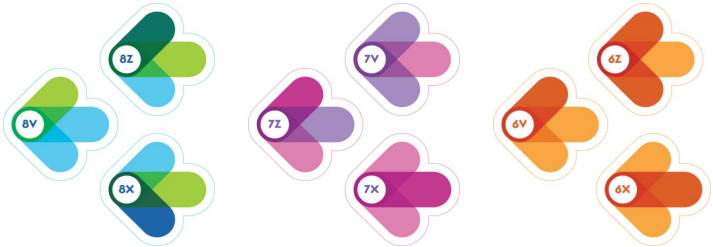
Ionization — install plasma ionization system within the supply air system. This system introduces an electrical charge that attracts and deactivates virus particles in the ductwork and upon distribution into the room.

Air Filtration — consider adding free-standing disinfecting filtration systems. DFS units have physical filters that remove contaminants from the air but also disinfect this particle gathered in the filter.

Sanitization — consider sanitizing HVAC ducts with UV cleaning.

Signage and Graphics

- ➔ Identify and sign circulation paths to each classroom
- ➔ Remind students to maintain social distancing
- ➔ Remind students to wear mask and wash hands
- ➔ List maximum occupancy for rooms
- ➔ Reduce anxiety by clarifying the new protocol



“Let’s Move”

Physical education and movement are important for students’ health and wellbeing. With reduced opportunities for informal recess, play and team sports, SAR is researching new ways to get students moving.

- ➔ Consider exercise equipment in classrooms and pods
- ➔ Review available outdoor and larger spaces for physical education
- ➔ Design a physical education program appropriate for social distancing and reduced touch

Checklist & Timeline — Test, Adapt and Revise

Immediately:

- ➔ Create a collaborative planning team
- ➔ Select strategy that addresses the physical buildings, scheduling, protocols and operations
- ➔ Mock-up one classroom

Six to Eight Weeks Before School Starts:

- ➔ Begin classroom construction and renovation
- ➔ Adapt restrooms - install touchless technologies
- ➔ Review existing furniture, order new desks if necessary
- ➔ Review available technology for in-person and remote teaching
- ➔ Engage graphic designer if necessary

Four Weeks before School Starts:

- ➔ Arrange classroom furniture
- ➔ Install smart boards in each class
- ➔ Purchase laptops and iPad as necessary for remote learning
- ➔ Create arrival and dismissal protocol
- ➔ Design food service program with grab-and-go meals and in-class service

Two Weeks Before School Starts:

- ➔ Reassess arrival and dismissal protocol based on latest recommendations
- ➔ Engage staff and teachers to review protocols
- ➔ Install graphic signage
- ➔ Test technology

Thank You

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