

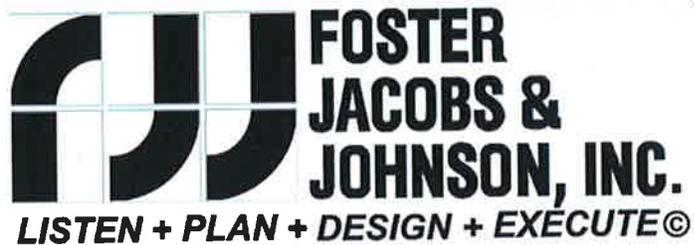
# GROTON AREA PUBLIC SCHOOLS



## PROPOSED BUILDING IMPROVEMENT MEASURES

“DRAFT”

5-9-16



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## HSP-1 1934 – Existing Space Improvements Option #1

\$6,783,571

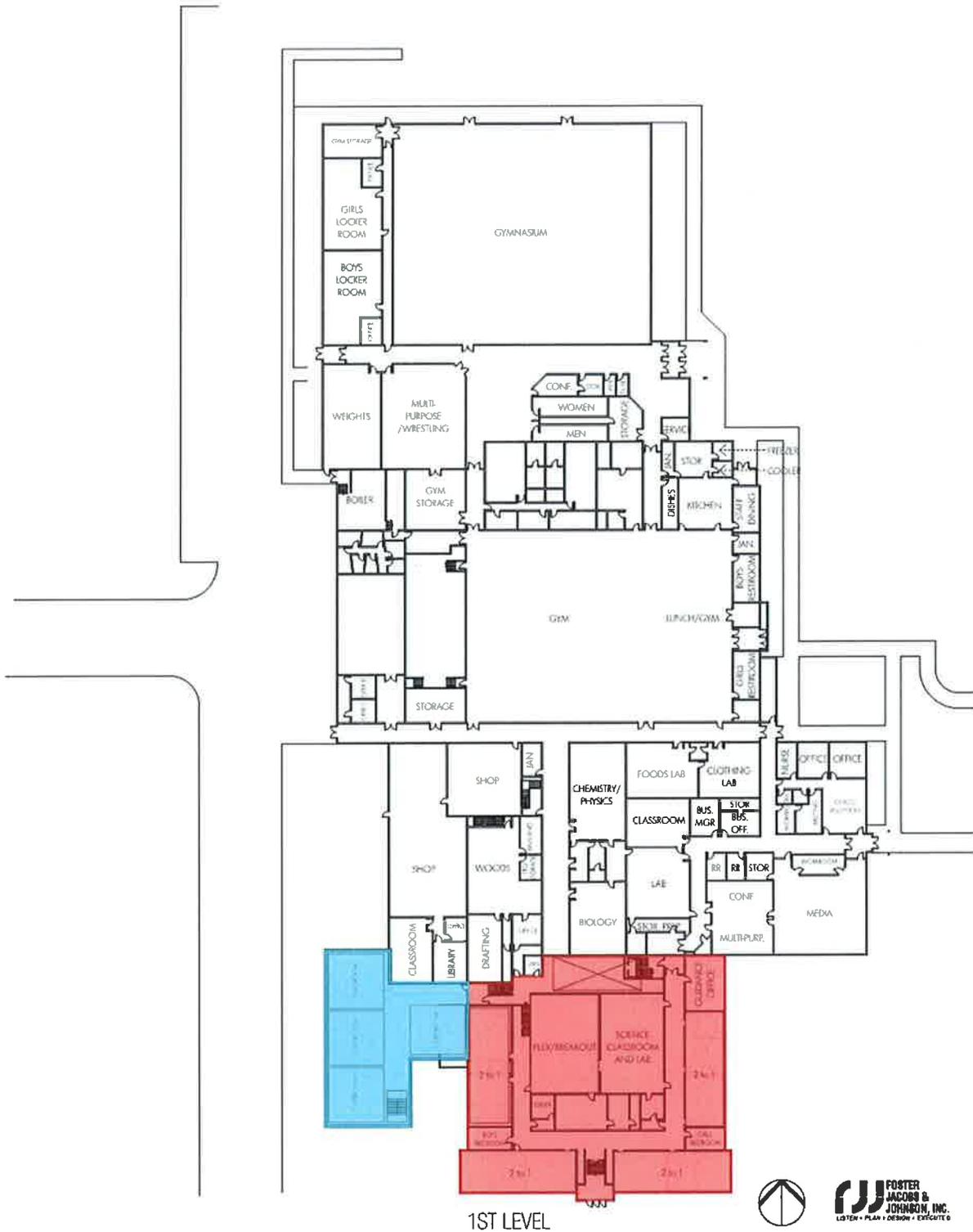
### EXISTING CONDITION:

Many of the components of the 1934 building are original and therefore 82 years old. There have been several renovation projects through the years but the classrooms remain the same size. The building consists of steam unit ventilators in a majority of the classrooms. These systems are typically loud and provide inconsistent temperatures. In addition, many of the electrical components of the building are original and in need of replacement.

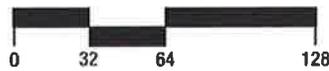
### PROPOSED SOLUTION:

The entire 1934 building will be renovated to provide a 21<sup>st</sup> Century Education. Under this option a majority of the classrooms will stay the same width, but will increase in length to gain the correct amount of square footage. The classroom size will be increased and new whiteboards, tackboards and cabinetry will be installed to provide adequate storage. The ventilation systems will be replaced with new hot water systems that provide air conditioning. The electrical system will be replaced with new. In addition the exterior envelope will be look at and the necessary caulking, painting and tuck-pointing will be performed to protect the building.





MIDDLE AND HIGH SCHOOL: OPTION 1  
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9,732,298

## HSP-2 1934 Demo and New Construction Option #2

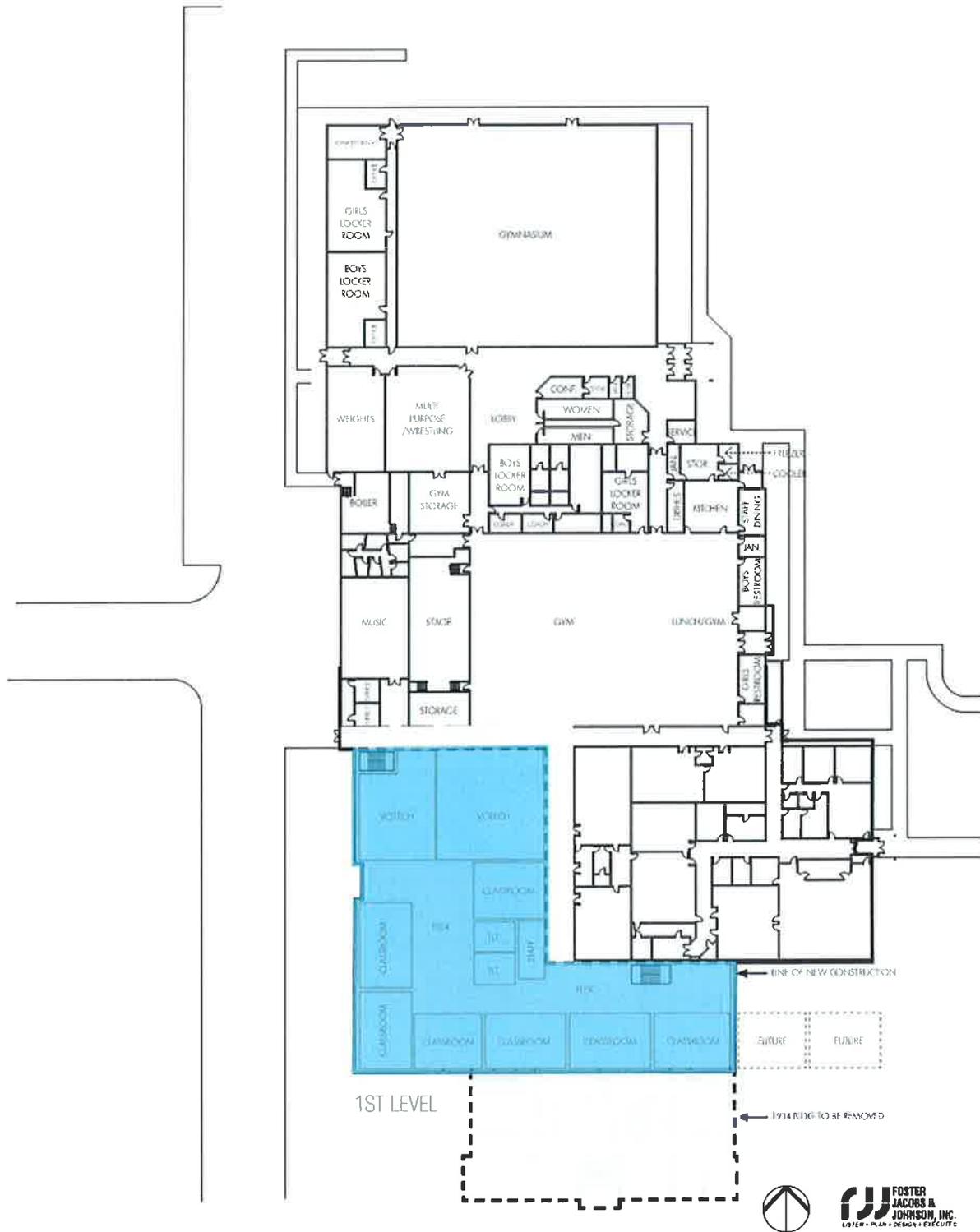
### EXISTING CONDITION:

The existing 1934 building is 82 years old and provides many challenges educationally. With the age and the structure it may be a viable option to replace this building with new.

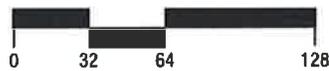
### PROPOSED SOLUTION:

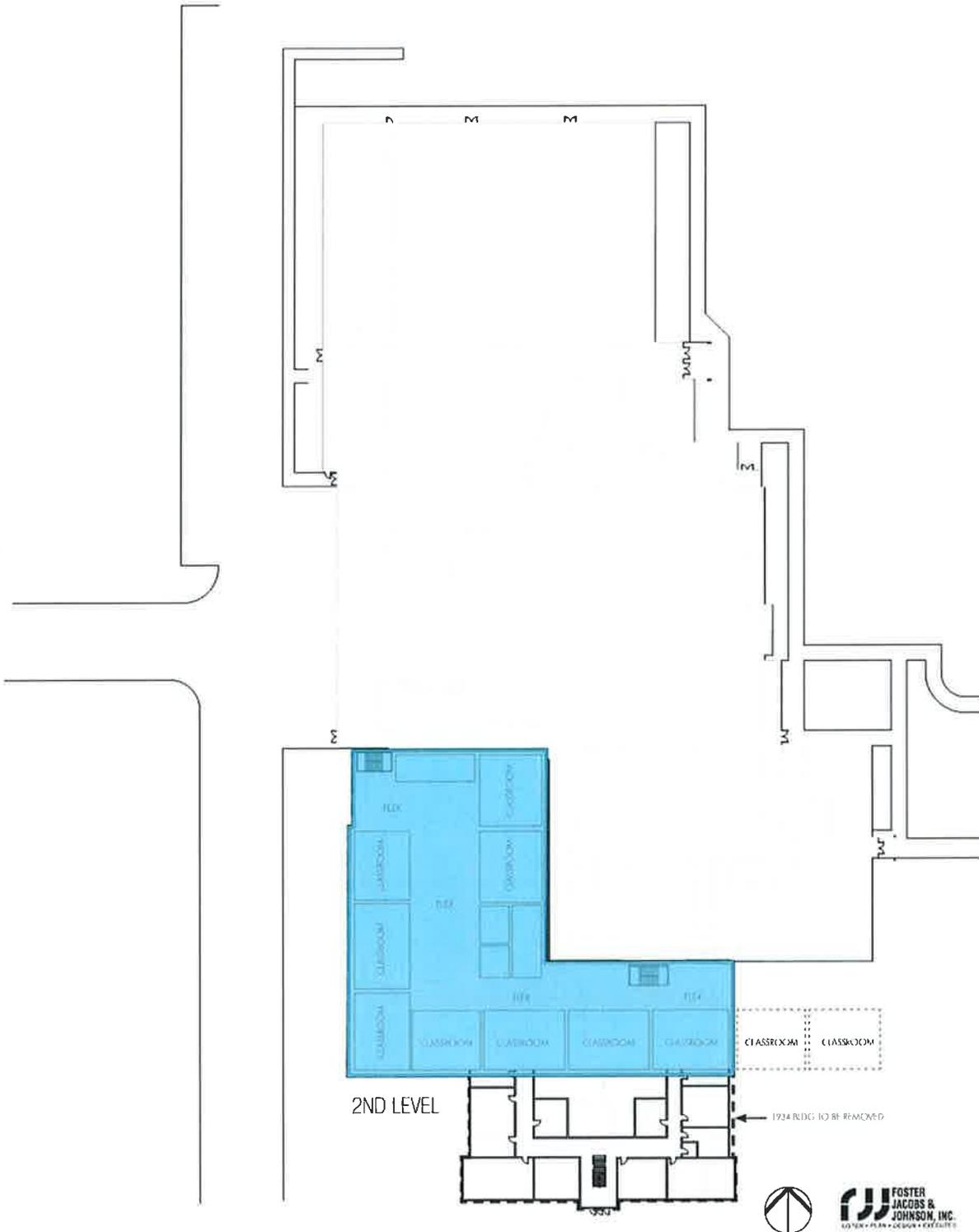
A new building will be constructed in the existing footprint of the 1934 building. During the course of construction a portion of the building will remain so that the District can still utilize this space while the new building is being constructed. The new building would provide all adequate sized classrooms and spaces for a 21<sup>st</sup> Century Education. The new structure will be provided with modern electrical, ventilation and air conditioning





MIDDLE AND HIGH SCHOOL: OPTION 2  
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### HSP-3 1934 Existing Space Improvements Option #3

*Unknown at this time*

**EXISTING CONDITION:**

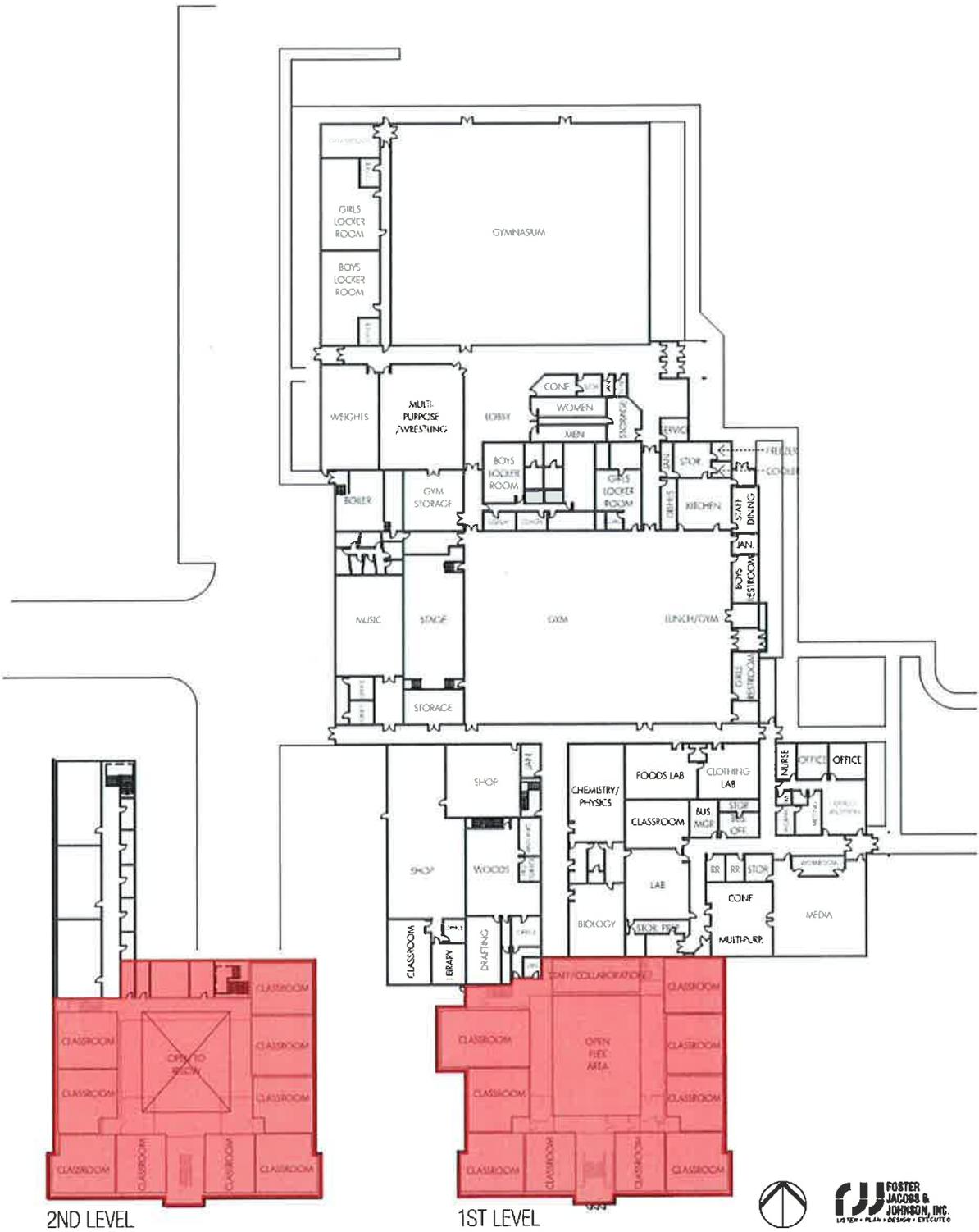
The existing 1934 building is 82 years old and provides many challenges educationally. With the age and the structure it may be a viable option to replace this building with new.

**PROPOSED SOLUTION:**

The existing 1934 building will be heavily renovated in its entirety. In this options the classrooms will be widened into what is now the hallway. The classrooms would be of adequate size, but a column would likely remain where the existing hallway wall is located. The stage, science classroom and computer lab will be removed to provide both flex space and circulation. A mezzanine will be constructed on the 2nd level which overlooks this space. This option requires extensive structural investigation. This option includes all exterior work, electrical, plumbing, ventilation and air conditioning to provide a full upgrade.

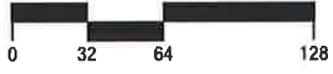


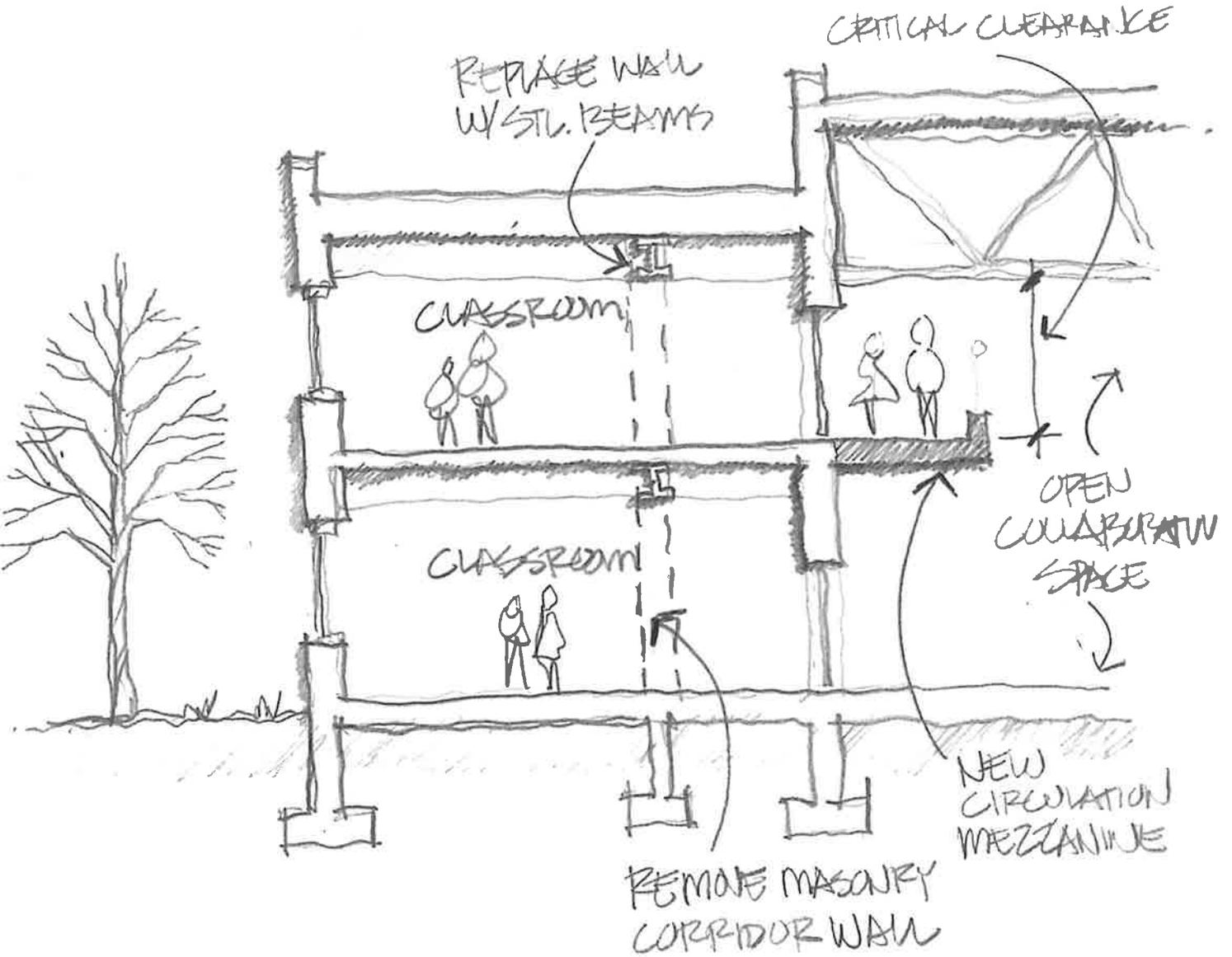
- **NOTE: At this time more investigation needs to happen before a price can be provided. This idea is shown to see if there is interest in further pursuit.**



MIDDLE AND HIGH SCHOOL: OPTION 3  
**GROTON AREA SCHOOLS**

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EXPANDED CLASSROOM CONCEPT  
NOT TO SCALE

## HSP-4 1957 Classroom Improvements

\$278,970

### EXISTING CONDITION:

The existing classrooms that were constructed in 1957 are sized adequately. However they have limited storage space within the classrooms and have outdated components. These rooms need to be updated aesthetically to provide an inviting learning environment.

### PROPOSED SOLUTION:

The classrooms would be upgraded in their entirety. The flooring will be replaced with new and the walls will receive a fresh coat of paint. There will be approximately 15-18 lineal feet of casework installed to create adequate storage space. The chalkboards and tack boards will be replaced with new whiteboards.



\$149,945

## HSP-5 Art Classroom Improvements

### EXISTING CONDITION:

The existing Art Room is undersized and outdated. There are a limited number of sinks that make it difficult when it comes time for cleanup. The space limits the amount of hands-on experiences the kids are able to gain.

### PROPOSED SOLUTION:

Under this option a renovation of the existing space would take place within its current walls. Additional casework and sinks would be provided to increase the amount of offerings are available in the program. In addition, the finishes would be upgrade to provide a better learning environment.



\$40,815

## HSP-6 Music Classroom Improvements

### EXISTING CONDITION:

The existing music has very low ceiling heights which makes the room uncomfortable during classes. In addition the music area could benefit by additional cabinetry storage space and more natural daylight.



### PROPOSED SOLUTION:

Because of the low roof deck height we are unable to gain much for ceiling height. Instead, we propose to spread acoustical wall panels throughout the room to help absorb the sound. Additional storage will be supplied in the form of cabinetry. Lastly, another window will be installed to provide additional natural daylight to the space.



## HSP-7 Staff Lunchroom/Collaborative Planning

\$ 44,148

### EXISTING CONDITION:

The existing building provides a limited amount of space for the staff lunchroom and any breakout/small conference space for the staff. The existing staff breakroom in the 1934 building could benefit from some additional casework.

### PROPOSED SOLUTION:

During the renovations space would be looked for to provide breakout space for the teachers to have small meetings or conferences with parents. This option allows for an upgrade to the teachers' lounge existing space. New casework will be installed to provide for more storage space. A small breakout conference room of approximately 200sf could be provided on one end of the space.



\$95,147

## HSP-8 Student Commons/Breakout

### EXISTING CONDITION:

The current facility does not provide seating or space for a student commons. There are several areas that provide potential if provided with adequate furniture.

### PROPOSED SOLUTION:

This option provides an allowance for the District to purchase and install furniture in several different areas. These areas include the lunch room. This space is adequately sized and was commented on by staff that it could benefit from more comfortable seating. In the Media Center if book stacks were reduced more comfortable “lounge” type seating could be provided. Lastly, in the 2004 commons area outside the arena. This area has several potential spots that include the “foyer” which has great natural daylight and the large area adjacent to the concession stand.



\$820,291

## HSP-9 Locker Rooms/Gym Improvements

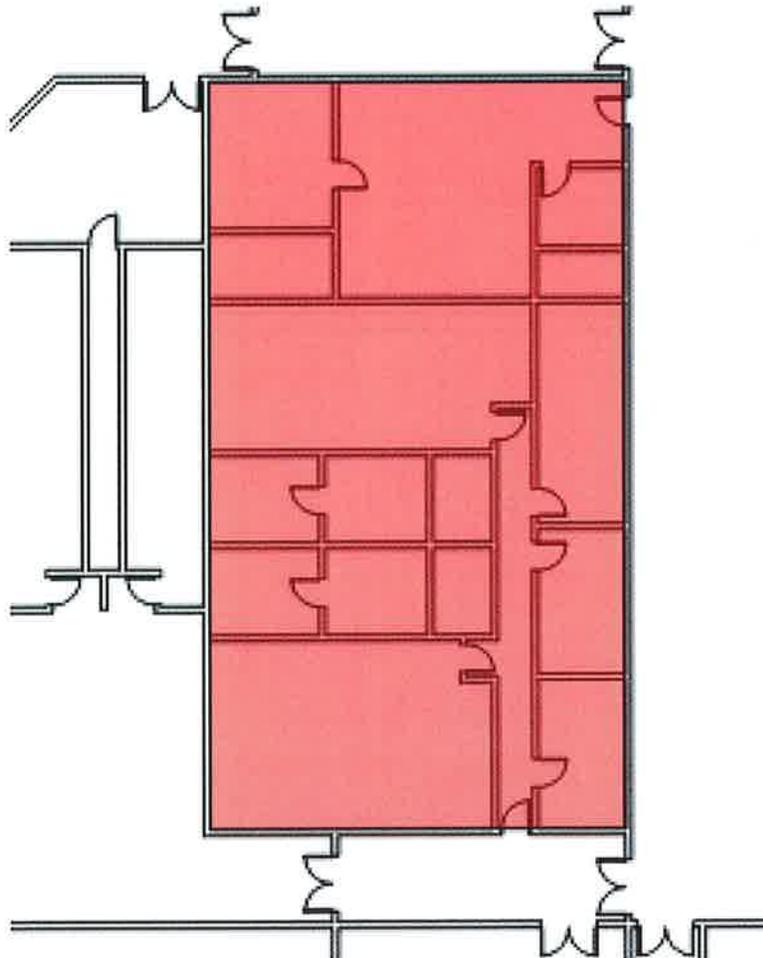
### EXISTING CONDITION:

The 1968 locker rooms are outdated and in need of some upgrades. The current shower rooms are provided with a group shower type setting. This setup makes it uncomfortable for kids to shower after classes and sports activities. The hallway in-between the locker rooms and the activities director/trainer is not ADA compliant. The gym has outdated score boards.



### PROPOSED UPGRADE:

The entire area would be renovated to accommodate the ADA accessible hallway. The Locker Rooms will be provided with new components and finishes. The scoreboards in the 1968 gym will be replaced with new ones.



\$302,024

## HSP-10 Performance Space Improvements

### EXISTING CONDITION:

The 1968 Gym Is currently used as a performance space. The District has recently upgraded the lighting components of the performance area. The other performance components are outdated and make it difficult to have great fine arts performances. The nature of the gym also makes the area challenging acoustically. The seating for fine arts programs is limited because there are not bleachers directly in front of the stage.



### PROPOSED UPGRADE:

The sound system in the area would be replaced which will provide a better fine arts space as well as a system that can be used for athletic events. One side of the bleachers would get replaced with portable theater seating to seat approximately 350. This type of seating would be able to be extended while they are against the wall or could get walked out onto the floor. The existing stage curtain will be replaced with new. Lastly, Lapendary Panels will be installed between the roof joists to provide better sound quality within the space. These panels will be carried into the cafeteria side of the gym to provide sound absorption on a daily basis. The Lapendary Panels will not only benefit the space acoustically, but by providing black and gold panels it will change the look of the space and make it feel more modern.



#12,357

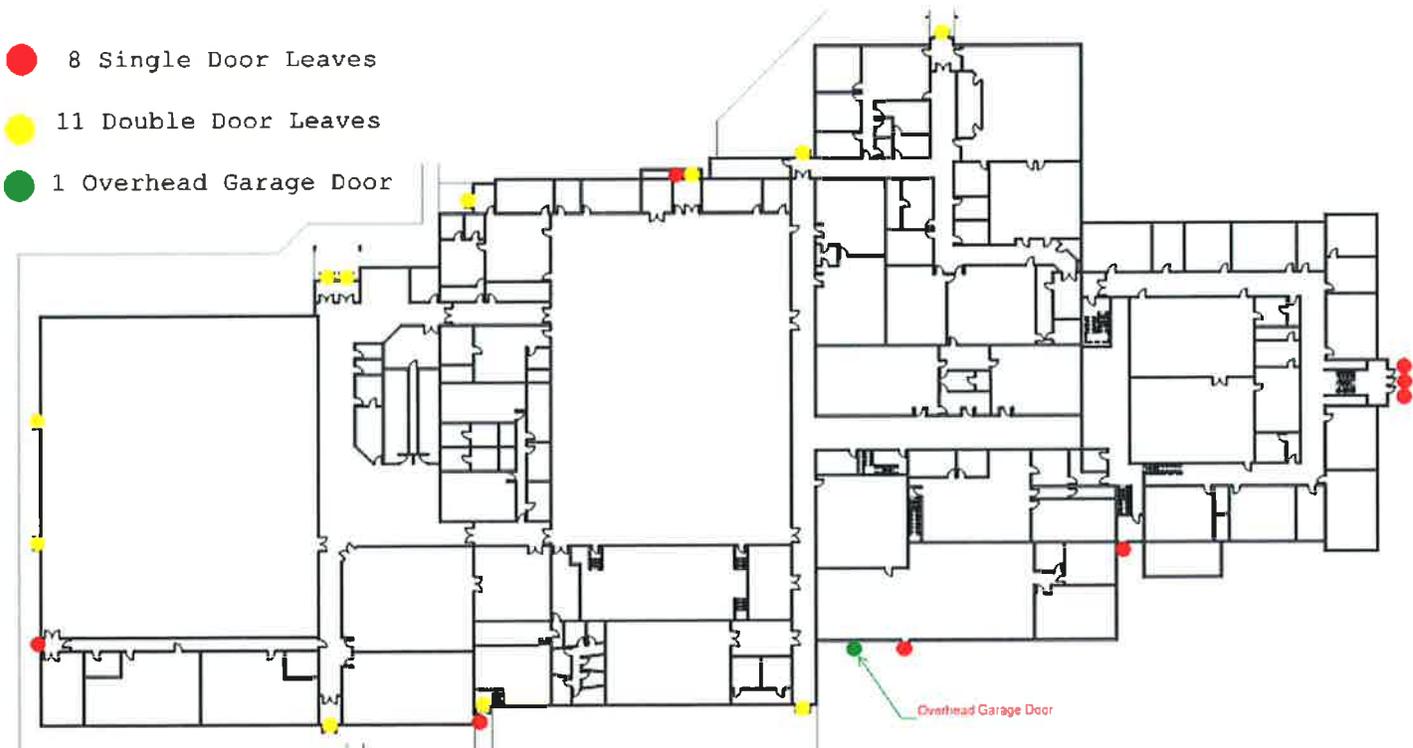
## HSP-11 Building Security Improvements

### EXISTING CONDITION:

The High School has a total of 14 entrances into the school. At the main entrance there is a secure vestibule that forces the public to enter through the office.

### PROPOSED UPGRADE:

The district has taken many measures to update and provide a secure building. However, it would be beneficial to monitor the position of all exterior doors. This type of system will notify school personnel if a door is propped open or is ajar. By doing so it ensures that all doors are secure during all times and forces all access to the building through the main office entrances.



## HSP-12 1957/68/79 Building Envelope Improvements

\$58,415

### EXISTING CONDITION:

The existing building envelope appears to be in great condition. There are several areas in which control joints should be re-caulked and steel should be painted to protect against the elements. There are also a few windows on the second level that are glass block and should be replaced to increase the efficiency.

### PROPOSED SOLUTION:

The deteriorated caulking will be removed and replaced with new. The exterior steel components that show sign of rust will be cleaned and painted. The windows on the second level in the storage rooms will be replaced with new energy efficient windows. These windows will be thermally broke and will not contain any wood.



## HSP-13 Code Related Issues

\$777,220

### EXISTING CONDITION:

The current building has multiple code issues that will need to be corrected if the District elects to perform projects.



### PROPOSED SOLUTION:

The drinking fountains will need to be replaced to accommodate dual height ADA accessible fountains. The handrails and guardrails on the stairs do not meet code and will need to be extended. The stair cases need to be enclosed to create areas of refuge per fire code. Holes will be patched in the boiler room ceiling. The 1968 restrooms will be modified to create ADA stalls. The existing doors with louvered panels will be replaced with new. The entire facility will be sprinkled to accommodate the multiple additions and code requirements.



## HSP-14 Asbestos Abatement

\$200,811

### EXISTING CONDITION:

According to the District's periodic AHERA (Asbestos Hazardous Emergency Response Act) report there are several items identified as asbestos containing. This is primarily in the flooring in various areas of the building.

### PROPOSED SOLUTION:

With the proposed upgrades in this report, these items will need to be abated in order to perform the work safely. In addition, an allowance has been provided for items that may be covered or are unforeseeable.



## HSP-15 Technology Improvements

\$21,567

### EXISTING CONDITION:

The facility is currently equipped with 4 wireless access points that provide internet connection throughout the building. The cabling to each of these devices is Cat 5.

### PROPOSED SOLUTION:

With the options laid out in this report it may make sense to replace these devices and cabling while the ceilings are removed. The devices will be replaced with new and the cabling will be changed to Cat 6 to provide faster systems. In addition we have provided for a couple of additional access points to allow more coverage throughout the facility.



## HSP-16 1968 Gym Floor Replacement

\$316,150

### EXISTING CONDITION:

The existing 1968 gym floor consists of asbestos floor tile.

### PROPOSED SOLUTION:

If the district selects to perform upgrades to the facility it may make sense to remove the asbestos floor tile in the gym at this time. In talking with District personnel it would make sense to install a urethane sports floor that is more durable than the wood floors. This flooring would extend throughout the gym and cafeteria area. After lunch the floor can be cleaned with an auto scrubber and is not susceptible to water. In addition, because the area is also the performance center for fine arts, this floor will hold up better to chairs setup in front of the stage.

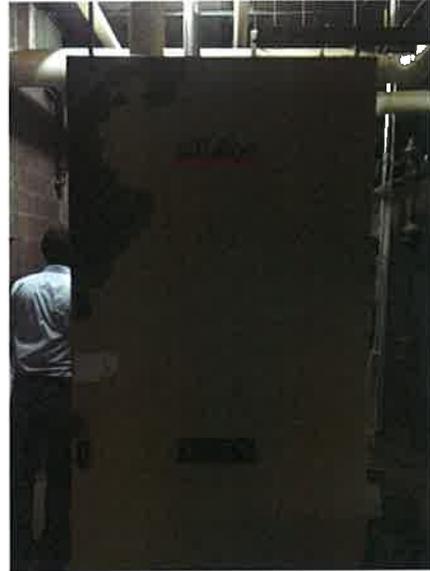


## HINF-1 Heating Plant Improvements

\$475,733

### EXISTING CONDITION:

The facility is currently being heated using 3 different sources. These systems include steam in the 1934-1968, hot water in the 2004 and geothermal in the 2009. In addition there are two separate boiler rooms that are operated using both natural gas and fuel oil. The fuel oil has not been used since 2009. It was noted that there have been many issues with the 2004 hot water boilers.



### PROPOSED SOLUTION:

The existing steam boiler system will be replaced with a new hot water system, this would include replacing the 2004 hot water boilers. The new system would be located in the 1968 boiler room and will be large enough to carry the load of the entire facility. The District does not see any savings from utilizing fuel oil, so this would be removed and the facility would run on Natural Gas.



## Ventilation / Indoor Air Quality (IAQ) Improvements

### EXISTING CONDITION:

The ventilation systems in the High/Middle School consist of a combination of air handling systems and unit ventilators. These systems are beyond their useful life and do not provide a stable temperature for the spaces.

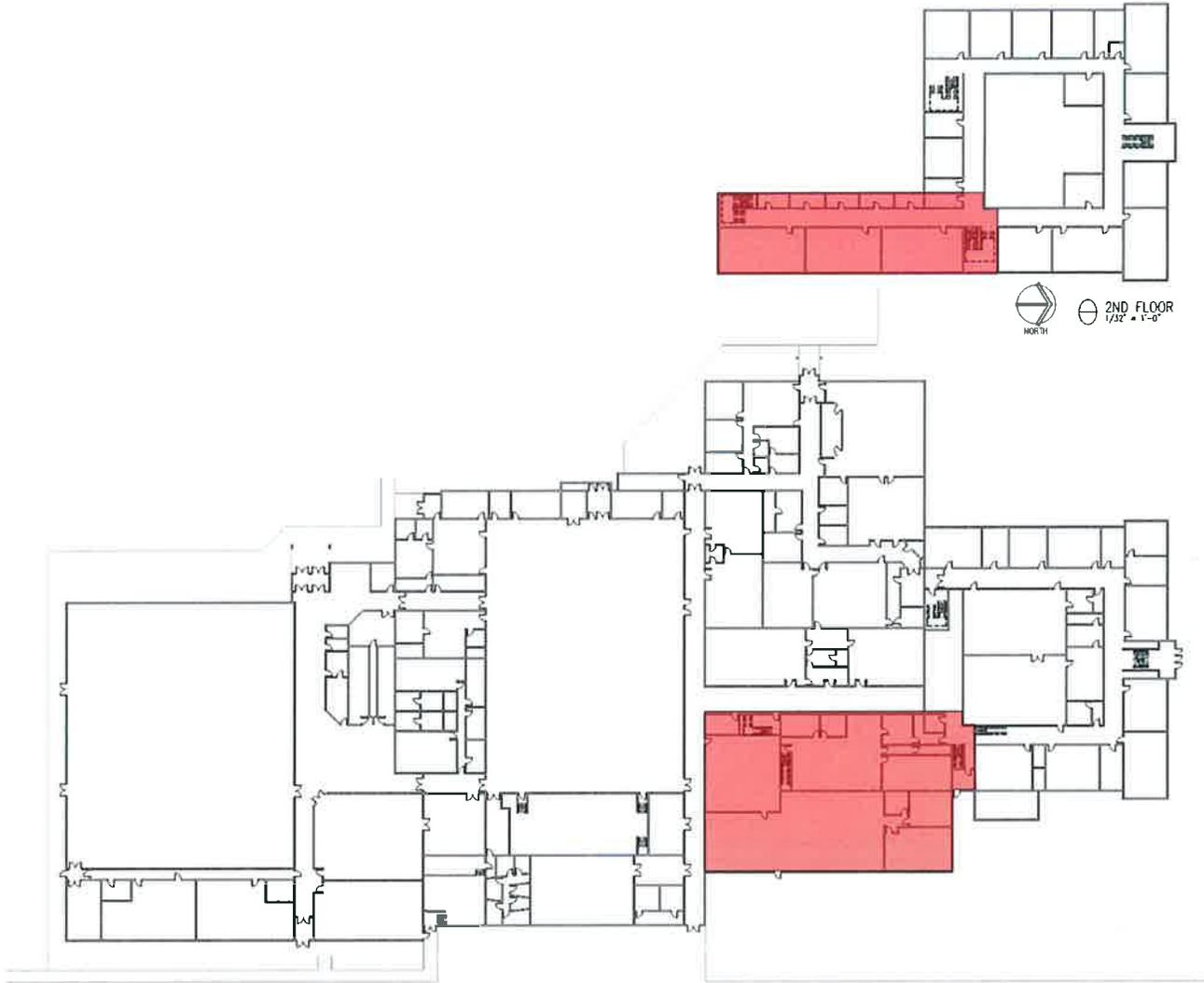
### PROPOSED SOLUTION:

The existing systems would be replaced with modern, code compliant ventilation systems. The new systems should have overhead supply and return ducting, provide high ventilation effectiveness and therefore constant and even space temperatures. As these spaces are updated the ceilings and lighting would also be included as part of the upgrades. In addition, the classroom areas will be provided with air conditioning (not included in tech ed). There is also an option to add air conditioning to the gym spaces.



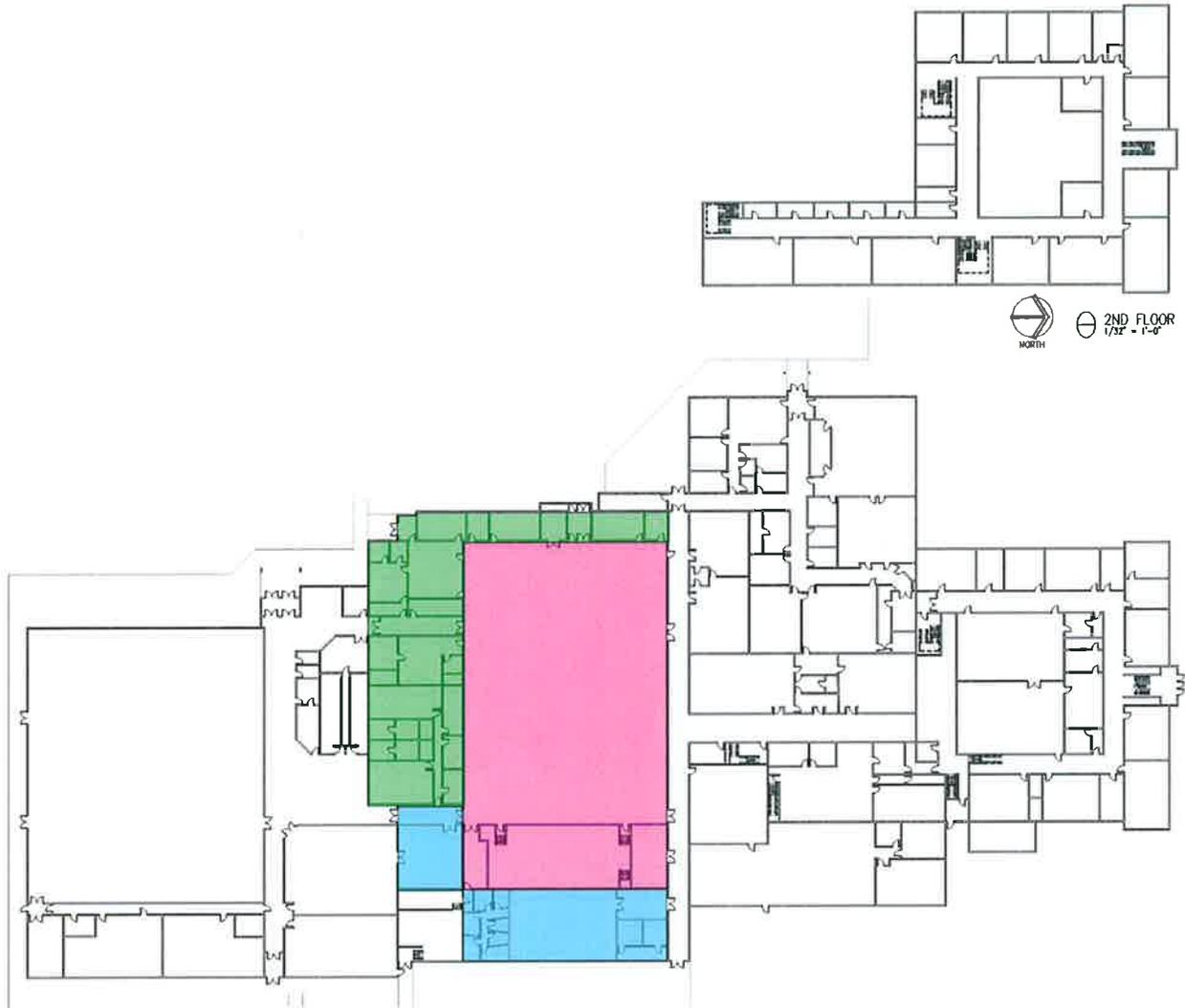
**HINF-2 1957/79 Indoor Air Quality (IAQ) Upgrades  
(Air Conditioning is not included in the tech ed area)**

*\$659,839*



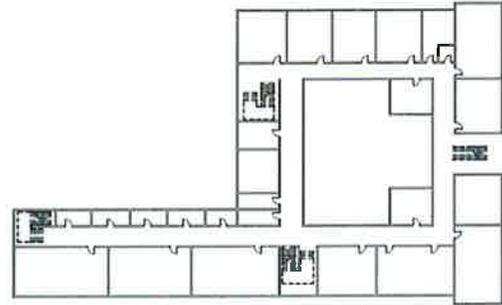
# HINF-3 1968 Indoor Air Quality (IAQ) Improvements

#914,233

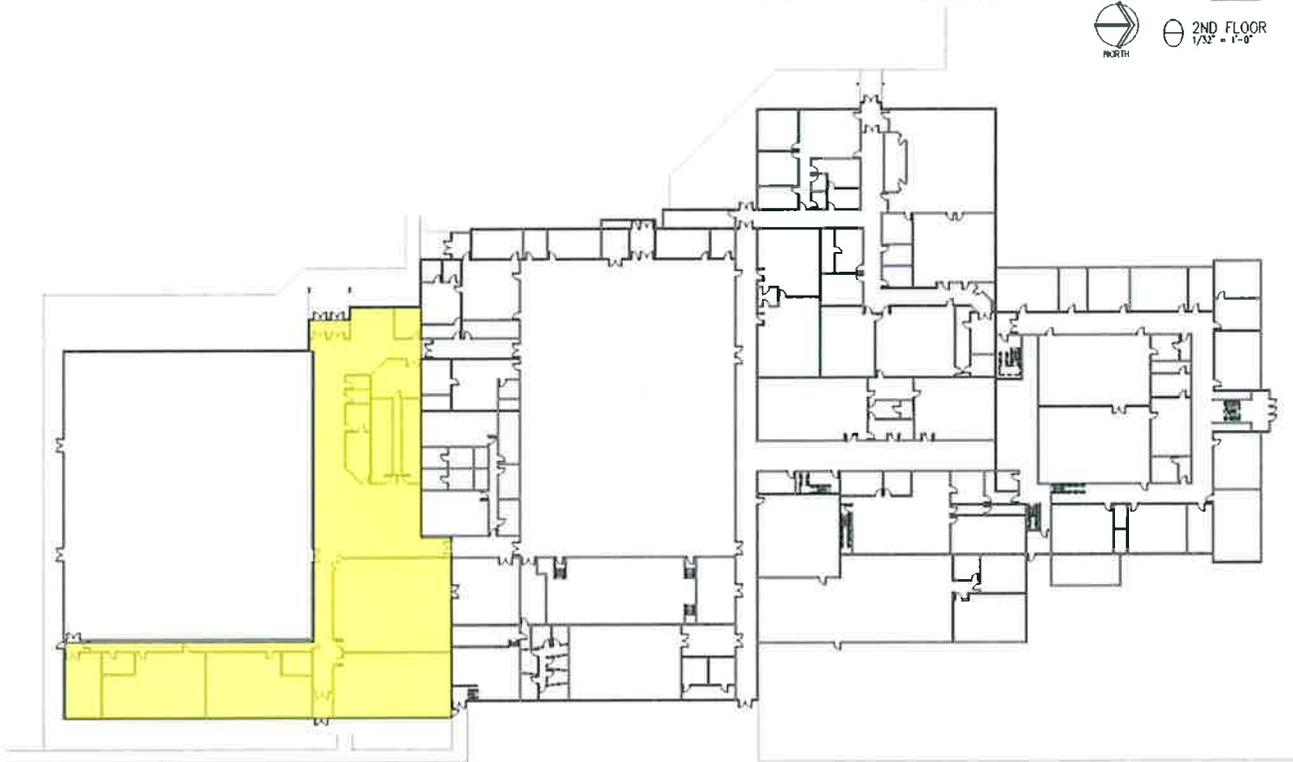


# HINF-4 2004 Unit Ventilator Indoor Air Quality (IAQ) Improvements

*\$668,304*

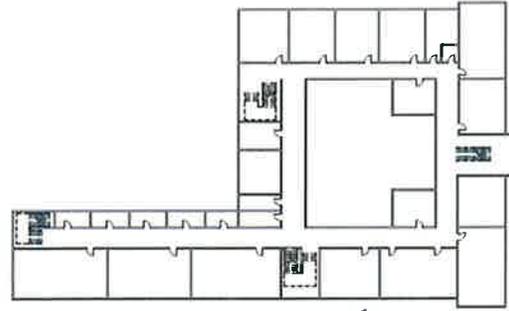


 NORTH  
 2ND FLOOR  
1/32" = 1'-0"

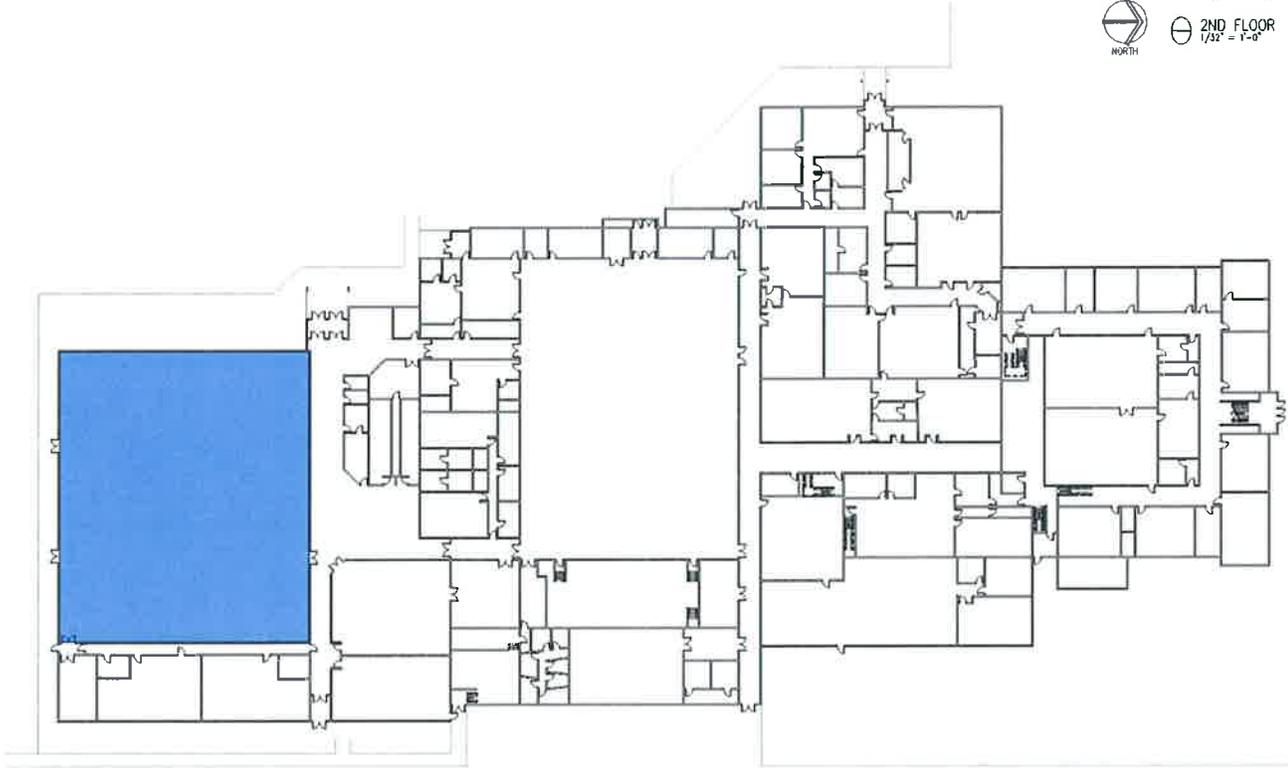


**HINF-5 2004 Gym Indoor Air Quality (IAQ) Add for Air Conditioning**

*\$395,810*



 NORTH  
 2ND FLOOR  
1/32" = 1'-0"



\$291,783

## HINF-6 Distribution Upgrades

### EXISTING CONDITION:

The existing electrical panels and feeders are original to the building. Many of these components have reached the end of their lives and should be replaced if a major project is undertaken.

### PROPOSED SOLUTION:

The electrical panels in the older portions of the buildings. In addition, the feeder wires to all of the panels will be replaced.



## HINF-7 Electrical Service Improvements

\$145,891

### EXISTING CONDITION:

The existing electrical service is original. With the addition of the potential electrical loads from the increase in dehumidification equipment throughout the facility, a new larger service could be required.

### PROPOSED UPGRADE:

Modify the existing electrical service to provide adequate capacity for the proposed, added equipment load.



*\$243,575*

## HINF-8 New Fire Alarm System

### EXISTING CONDITION:

The existing Fire Alarm system is comprised of two different systems in the building. The two panels are tied together, but create issues when an alarm is activated and requires a person at each end of the building to reset the alarm. In addition, per the Fire Marshal inspection reports, there are areas that are not covered that need to be brought up to code.

### PROPOSED UPGRADE:

A new code compliant Fire Alarm System will be installed in the entire building. The system would be seamless throughout.



## HINF-9 1968 Gym Lighting

*\$64,446*

### EXISTING CONDITION:

The existing light fixtures in the 1968 gym are T-12 and should be replaced with new energy efficient fixtures.

### PROPOSED UPGRADE:

New energy efficient high bay LED fixtures will be installed throughout the gym space.



## HINF-10 Tech Ed Shop Lighting and Controls

852,172

### EXISTING CONDITION:

The existing light fixtures in the shop area have been retro-fitted to T-8 Fixtures. The lighting is currently turned on using the breakers located in the electrical panels.

### PROPOSED UPGRADE:

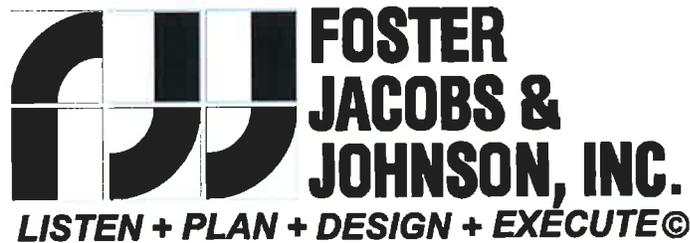
New LED fixtures will be installed to provide a better source of lighting. In additions light switches will be installed to minimize the amount of time a kid spends in the electrical panel.



## GROTON AREA PUBLIC SCHOOLS



### PROPOSED BUILDING IMPROVEMENT MEASURES “ELEMENTARY SCHOOL DRAFT”



## ESP-1 Classroom Space Improvements

\$869,921

### EXISTING CONDITION:

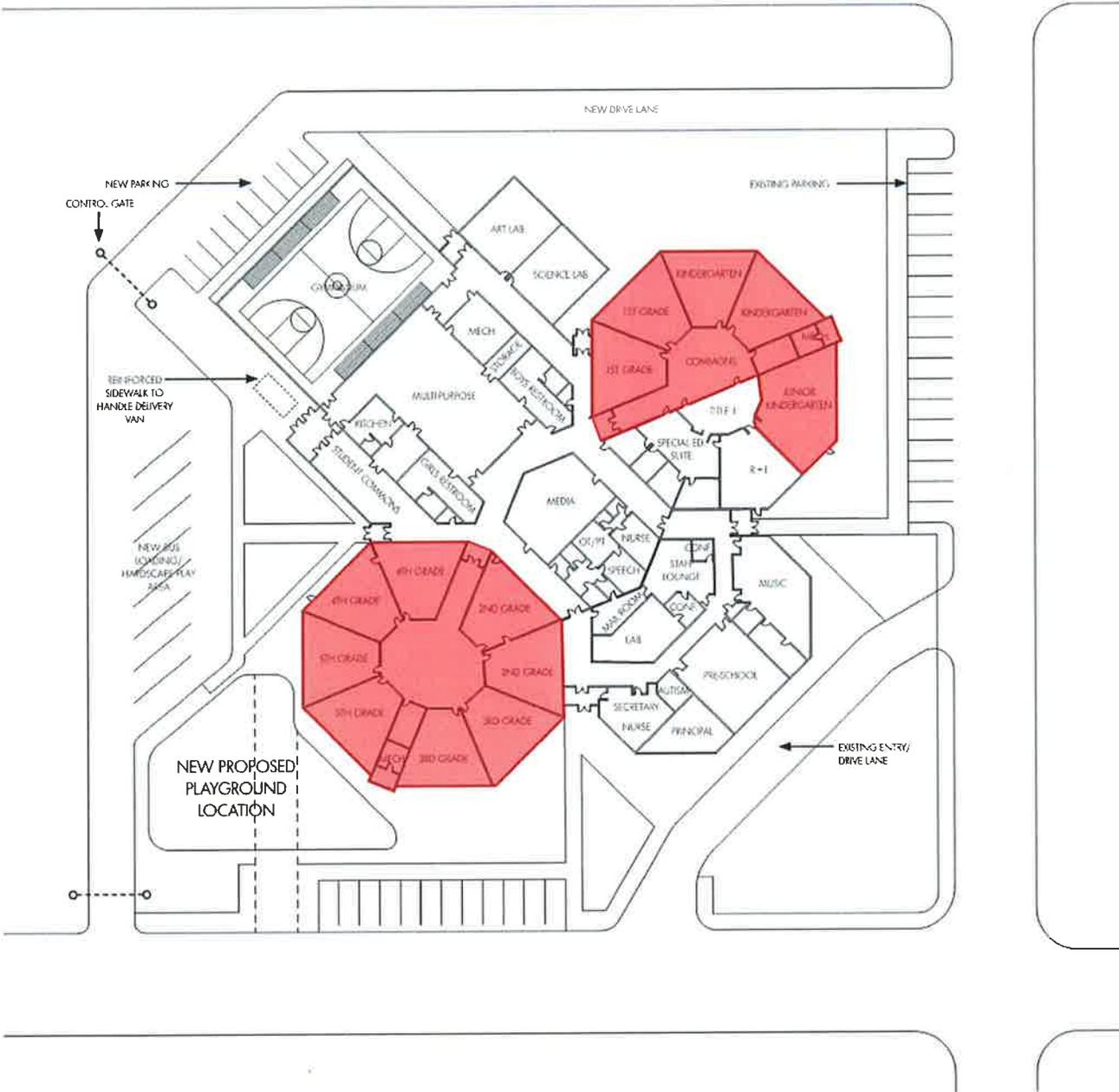
The existing configuration of the 1968 building provides some challenges to the learning environment of the spaces. Because of the shape and the configuration to the spaces the areas lack adequate storage and flow. Many of the components of the building are original and are in need of upgrading.



### PROPOSED SOLUTION:

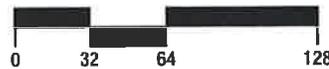
The classroom wings of the building will be renovated to provide a better educational layout. The center area of the pods will be opened up to provide an open area that can be utilized as breakout space. The classrooms will all be fully enclosed with a wall that extends to the deck to provide better acoustical separation. The walls in the classrooms will be painted and the flooring will be replaced. By doing this project we are removing the common storage space. This will be offset by providing approximately 18lf of cabinetry in each room. The chalk boards will be replaced with new white boards. Lastly, the sinks and cabinets will be replaced with new.





ELEMENTARY SCHOOL  
**GROTON AREA SCHOOLS**

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## ESP-2 Multi-Purpose Addition

\$1,847,113

### EXISTING CONDITION:

The current gymnasium doubles as the cafeteria. During most school days this space is utilized 12+ hours per day. Being that this is a shared space it provides challenges to the District when it comes to giving the kid's adequate active time during the day. This area does not offer an adequate seating area or buffer zone when it comes to having games.



### PROPOSED SOLUTION:

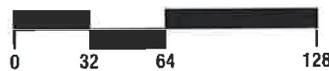
A new multi-purpose addition would be provided on the south side of the building. This space would be a full size High School basketball court along with seating for 300+. A corridor would connect the gym to the main hallway of the school. This would also double as a common space and provide another area for students to assemble before or after school.





ELEMENTARY SCHOOL  
**GROTON AREA SCHOOLS**

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## ESP-3 Security Improvements

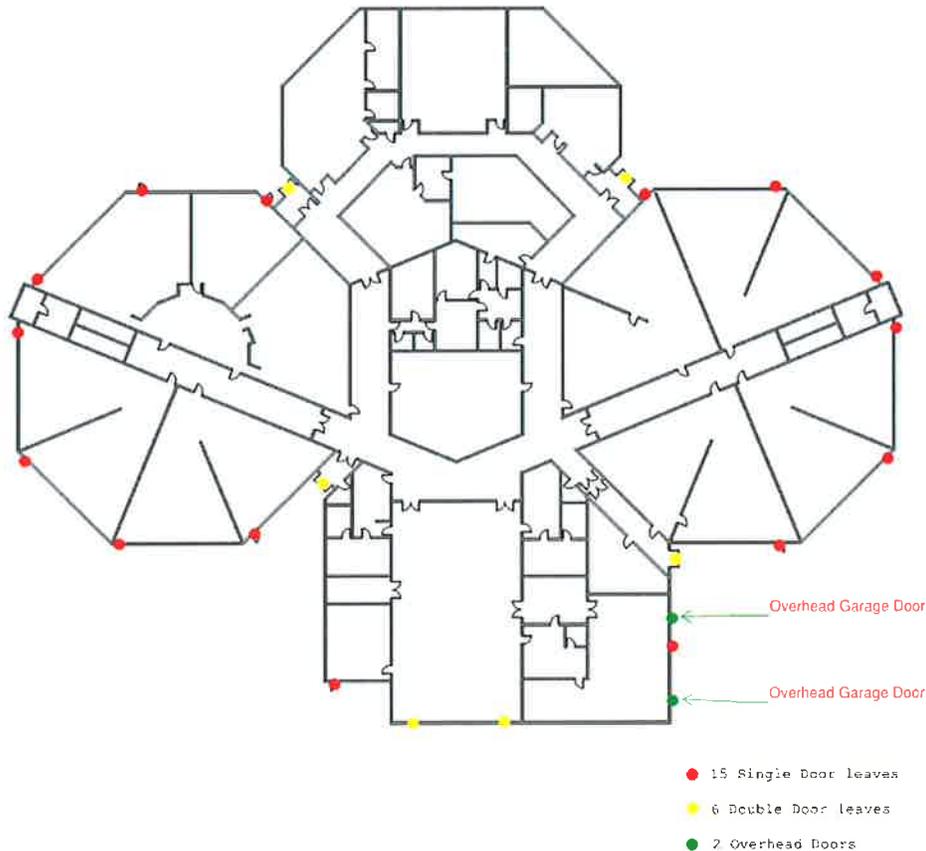
\$12,277

### EXISTING CONDITION:

The Elementary facility has a safe and secure entrance at the main door to the school. This forces the public to enter and check in at the office. However, each classroom in each pod has a door that opens to the outside which could create a safety hazard if the door gets propped open.

### PROPOSED SOLUTION:

The district has taken many measures to update and provide a secure building. However, it would be beneficial to monitor the position of all exterior doors. This type of system will notify school personnel if a door is propped open or is ajar. By doing so it ensures that all doors are secure during all times and forces all access to the building through the main office entrances.



## ESP-4 Nurse/Staff Break-Out Improvements

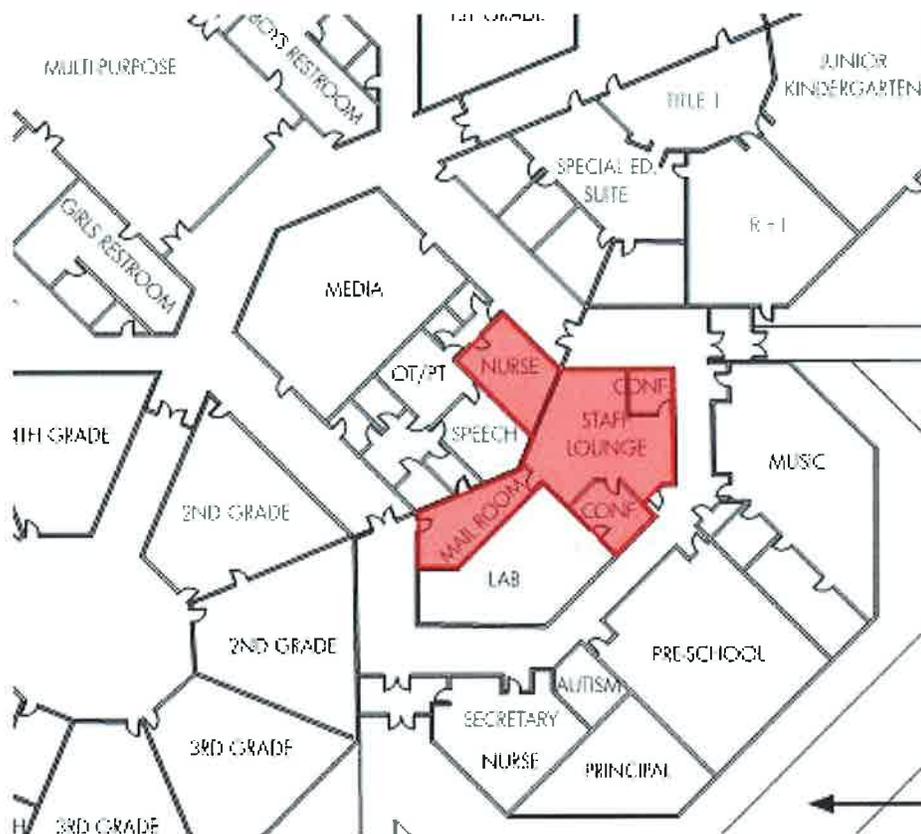
\$183,316

### EXISTING CONDITION:

The nurse's office is currently positioned in the elementary office. The students come in and are placed in a small area with a couple of cots. There is also a restroom available within the office area. The current teachers' lounge does not provide an adequate space for collaboration/conferences or break-out area. Currently any of these are scheduled to be in the Principals' office.

### PROPOSED SOLUTION:

The nurse will be relocated to the current teachers' lounge. This creates an adequate and private space for several cots as well as access to water. There are two restrooms adjacent to this space that will serve as both the staff and nurses restrooms. The current computer lab will be converted into a new teachers lounge. Within this space a 200sf conference room will be created for the breakout work. In addition the office located between the two existing computer labs could be used as a second space. A door will be cut in between the new teachers' lounge and the staff mail room to create flow between the two spaces.



**ESP-5 Art/Science Classroom Addition**

*\$817,601*

EXISTING CONDITION:

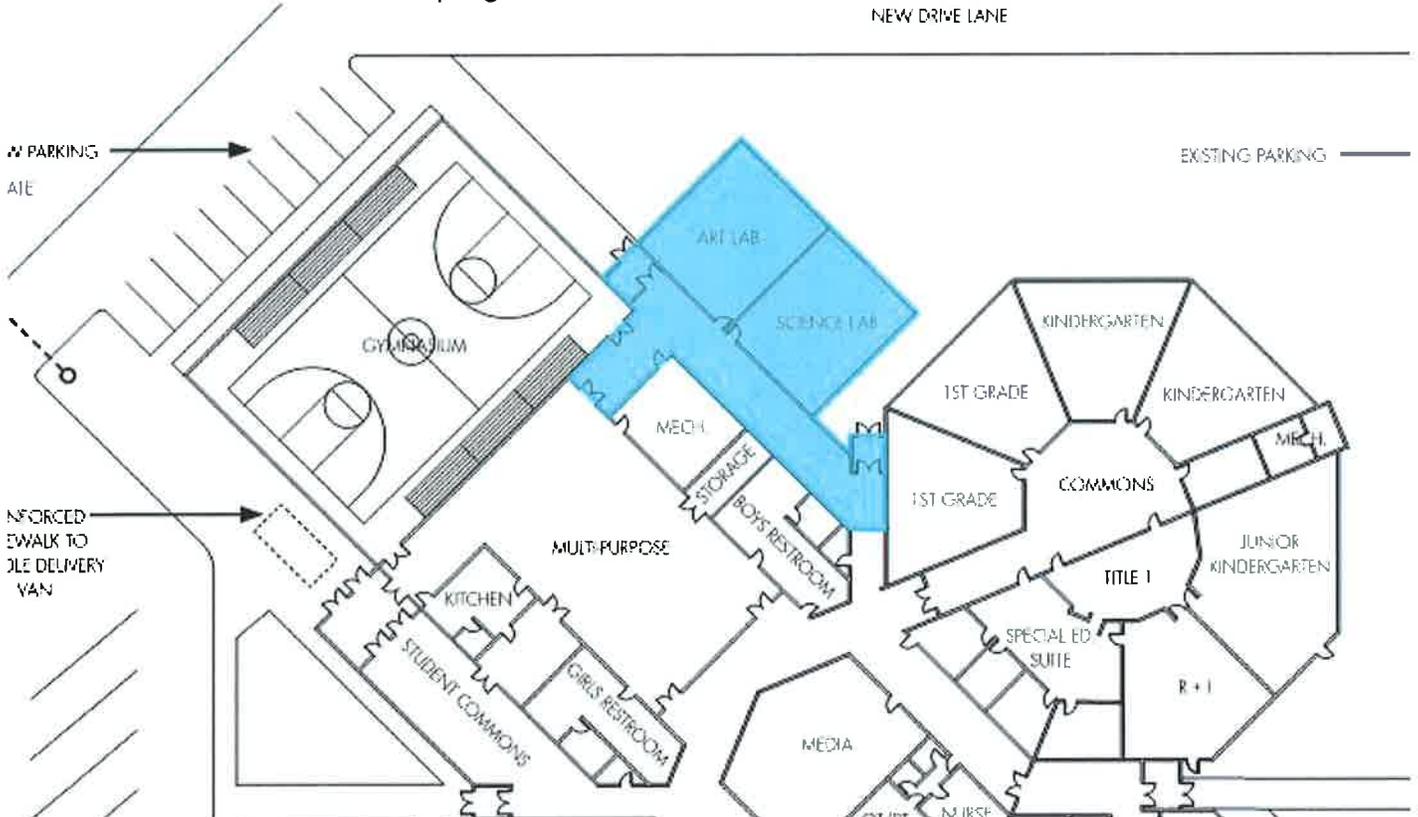
The elementary building does not provide for a separate art or science space. This hands on activities are currently being performed within the classrooms. Because of the finishes and the lack of space it makes it difficult to provide an adequate education.



PROPOSED SOLUTION:

A two classroom addition will be provided on the north side of the building. This addition would tie in with the north corridor and if selected the new gymnasium. In many school districts these programs are combined in one classroom. If Groton opted to do this it would free up an additional classroom for other programs.

NEW DRIVE LANE



\$21,455

## ESP-6 Music Classroom

### EXISTING CONDITION:

The music classroom in its current setting is slightly undersized for what it provides. Ideally the ceilings would be in the 15-18' in height range to provide better acoustics for both choral and band activities. There is currently no water available within this space.



### PROPOSED SOLUTION:

Because of the height of the ceiling structure we are unable to gain a lot of height within this area. Instead, we will line the room with acoustical wall panels to help absorb the sound. A sink will be installed in the space for use with the 5<sup>th</sup> and 6<sup>th</sup> grade band program.



## ESP-7 Student Commons/Breakout Space

\$152,235

### EXISTING CONDITION:

The facility offers little space for the students to work in small groups. The current media center has potential to be a great space for this, but because of the current layout it provides challenges.



### PROPOSED SOLUTION:

The media center will be renovated in its entirety to provide a better space for small group and breakout. The circulation desk will be moved to provide better through the space and the finishes will be upgraded.

## ESP-8 Playground Site Suitability

\$89,260

### EXISTING CONDITION:

As an option the playground would remain in its current location. The equipment on this playground is outdated and could benefit from some items being replaced. In addition the current pea gravel is not handicap accessible and does not provide a good source of fall protection. According to the Public Playground Safety Handbook 9" of pea gravel only provides an adequate fall height of 5'.



### PROPOSED SOLUTION:

In its current location the pea gravel will be replaced with engineered wood fiber to a depth of 9". This amount of material will provide a fall height of 7-10' depending on the material selection. In addition there is an allowance to replace equipment with new.

## ESP-9 Parking and Bus Drop-off

\$676,175

### EXISTING CONDITION:

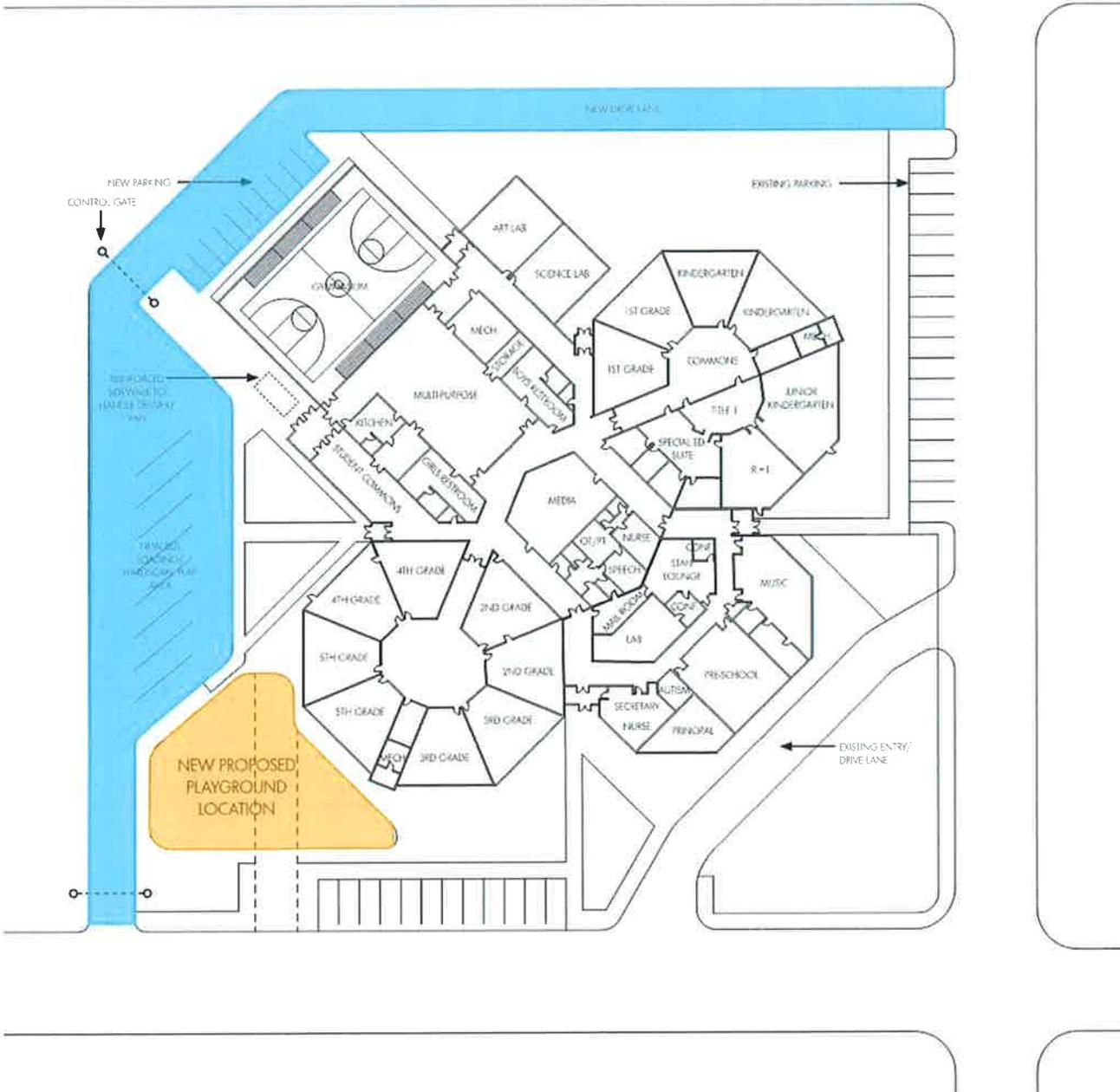
The facility currently has a bus drop located in the front of the school. During the morning this is a shared drop-off between the parents and the buses that are coming in at different times. During the afternoon the buses line up here and parents are typically lined up on the street to pick up their students. Because of the mixed use and limited



secondary options this has become a safety concern among the District. In the Areas for Improvement exercise there were 14 comments in regard to the drop off.

### PROPOSED SOLUTION:

If the multi-purpose addition were selected this option would tie the two pieces together. A new bus drop-off/pick-up will be installed on the south side of the building to provide separation from the parent drop-off. The bus staging area would double as a hard surface for the playground. With this option the playground would need to get relocated to the east side of the school. This option would provide a much needed wind break for the students. The loop would extend around the south side of the school to provide additional parking on the south side. Of the building.



## ESP-10 Technology Improvements

\$10,149

### EXISTING CONDITION:

The facility is currently equipped with 4 wireless access points that provide internet connection throughout the building. The cabling to each of these devices is Cat 5.

### PROPOSED SOLUTION:

With the options laid out in this report it may make sense to replace these devices and cabling while the ceilings are removed. The devices will be replaced with new and the cabling will be changed to Cat 6 to provide faster systems. In addition we have provided for a couple of additional access points to allow more coverage throughout the facility.



## ESP-11 Special Education Space Improvements

\$241,140

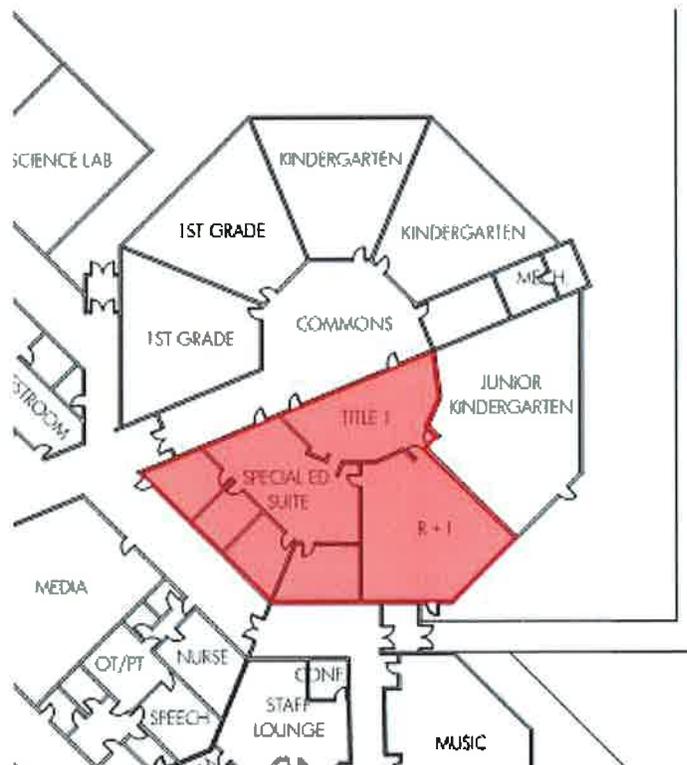
### EXISTING CONDITION:

The current layout of the special education classrooms is a large open classroom that has a couple of dividers to make a more private area. In addition the main entrance to the space is used as a breakout type space which is impacted when people are coming and going from the classrooms. This space as a whole creates some challenges for the education and the needs of the students.



### PROPOSED SOLUTION:

The existing classroom will be renovated to provide a “Suite” type space. There would be a large open classroom that can be used for some general education and larger breakout areas. A series of small rooms will be created to provide separation and flexibility within the space. The main entrance from the corridor will remain as another option to the breakout space and will be provided with a full height wall to the corridor.

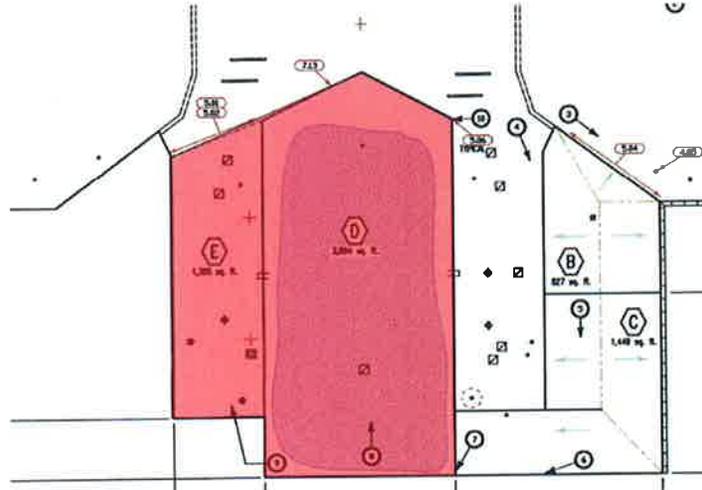


\$310,666

## ESP-12 Building Envelope

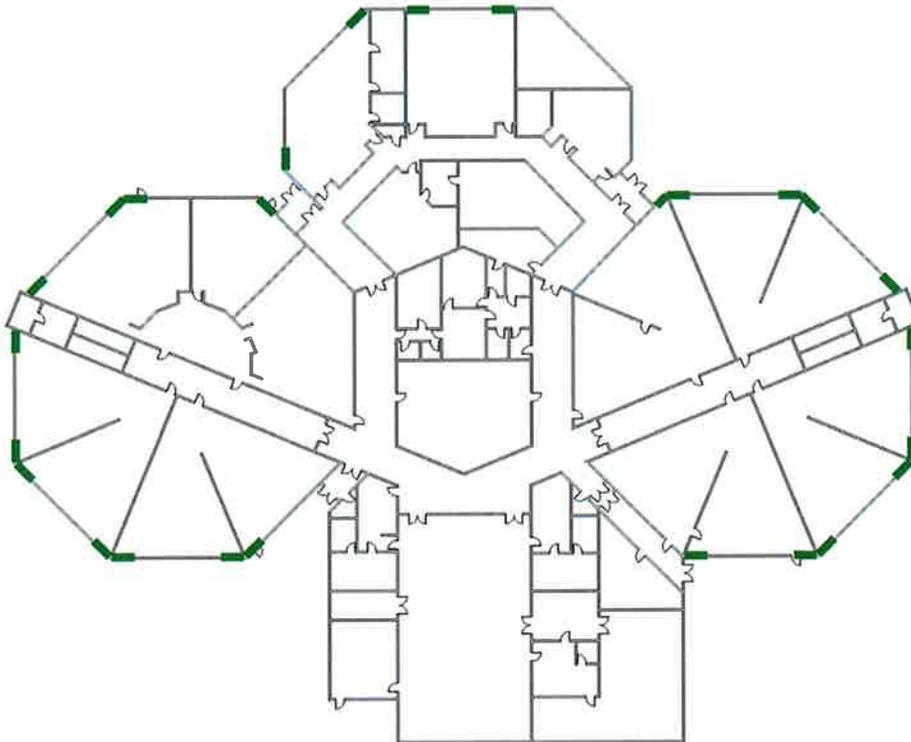
### EXISTING CONDITION:

The classrooms as a whole lack natural daylight. Most have two small windows in the corners of the rooms and because of the shape the light is not broadcast through the space well. The exterior of the building is in good shape, but there are several areas in which caulking and painting should occur. The roof areas above the Gym and mechanical area have reached the end of their life cycle.



### PROPOSED SOLUTION:

The windows/door systems in the classrooms will be replaced with larger windows to allow additional natural daylight into the space. The exterior caulking and painting of the miscellaneous metal will be addressed. At the roofs above the gym and mechanical space will be replaced with new built-up roofing systems.



\$644,068

## ESP-13 Code Related Issues

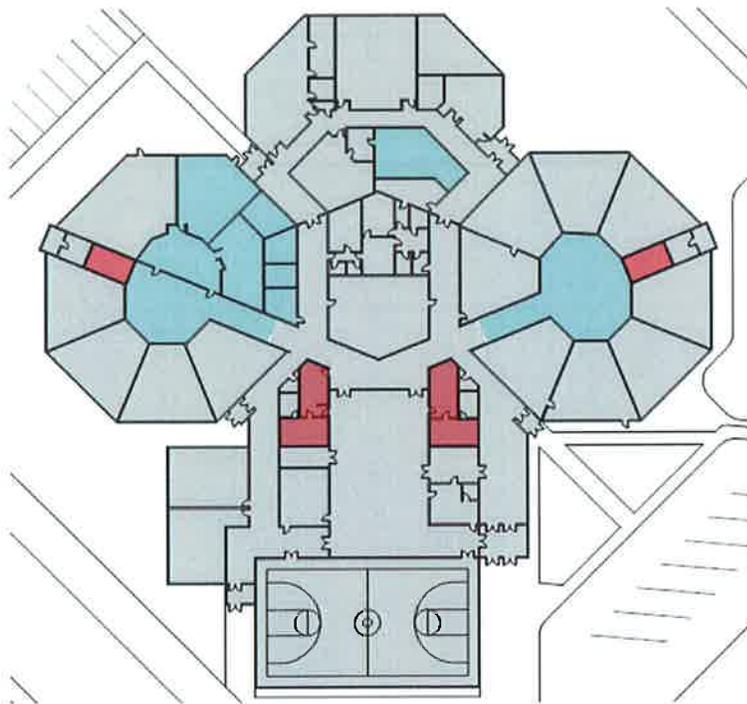
### EXISTING CONDITION:

The current building has multiple code issues that will need to be corrected if the District elects to perform projects. The current drinking fountains are not ADA. The restrooms are not ADA. There are doors that lead to the corridor that have louvers.



### PROPOSED SOLUTION:

The drinking fountains will need to be replaced to accommodate dual height ADA accessible fountains. The restrooms at the end of each of the pods will be converted into Uni-Sex restrooms. The restrooms located adjacent to the gym will be renovated to provide additional fixtures as well as to provide ADA accessibility. This renovation would take over the current lockers and possibly the shower rooms. The doors with louvers will be replaced with new. The remaining building will be sprinkled to prevent further work to be performed per fire code (the 1992 building is already sprinkled).



\$63,431

## ESP-14 Asbestos Abatement

### EXISTING CONDITION:

According to the District's periodic AHERA (Asbestos Hazardous Emergency Response Act) much of the building asbestos has been abated.

### PROPOSED SOLUTION:

With the proposed upgrades in this report, we may run into asbestos containing material that is concealed within walls or ceilings or unforeseeable. This is an allowance for these circumstances.



## EINF-1 Heating Plant Improvements

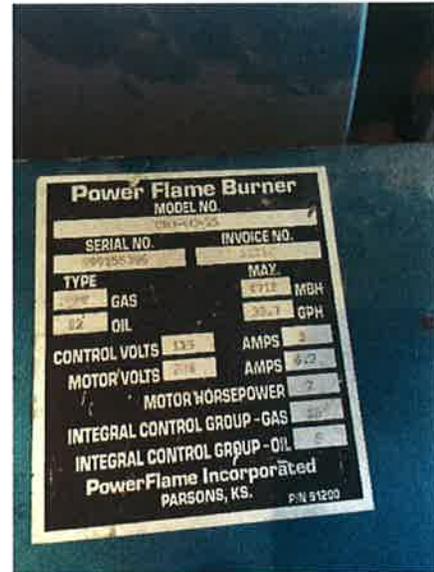
\$ 253,724

### EXISTING CONDITION:

The facility is currently being heated using a hot water boiler system. The system can be run on both natural gas and fuel oil. During the 2015-2016 heating season one of the boilers went down leaving no backup. The District plans on replacing with a used boiler for the 2016-17 heating season.

### PROPOSED SOLUTION:

The existing Hot Water boiler system will be replaced with a new hot water system. Since the fuel oil is no longer used it will be eliminated from the facility. The new boilers will provide an energy efficient natural gas heating source and will be sized for the entire building. Multiple boilers will be used to provide redundancy.



## Ventilation / Indoor Air Quality (IAQ) Improvements

### EXISTING CONDITION:

The ventilation systems in the Elementary consist of a combination of air handling systems and unit ventilators. The 1968 Air Handlers are beyond their useful life and do not provide a constant temperature within the space. The 1992 addition uses ceiling hung unit ventilators. These pieces of equipment are noisy in a classroom space and do not provide a good source of ventilation.



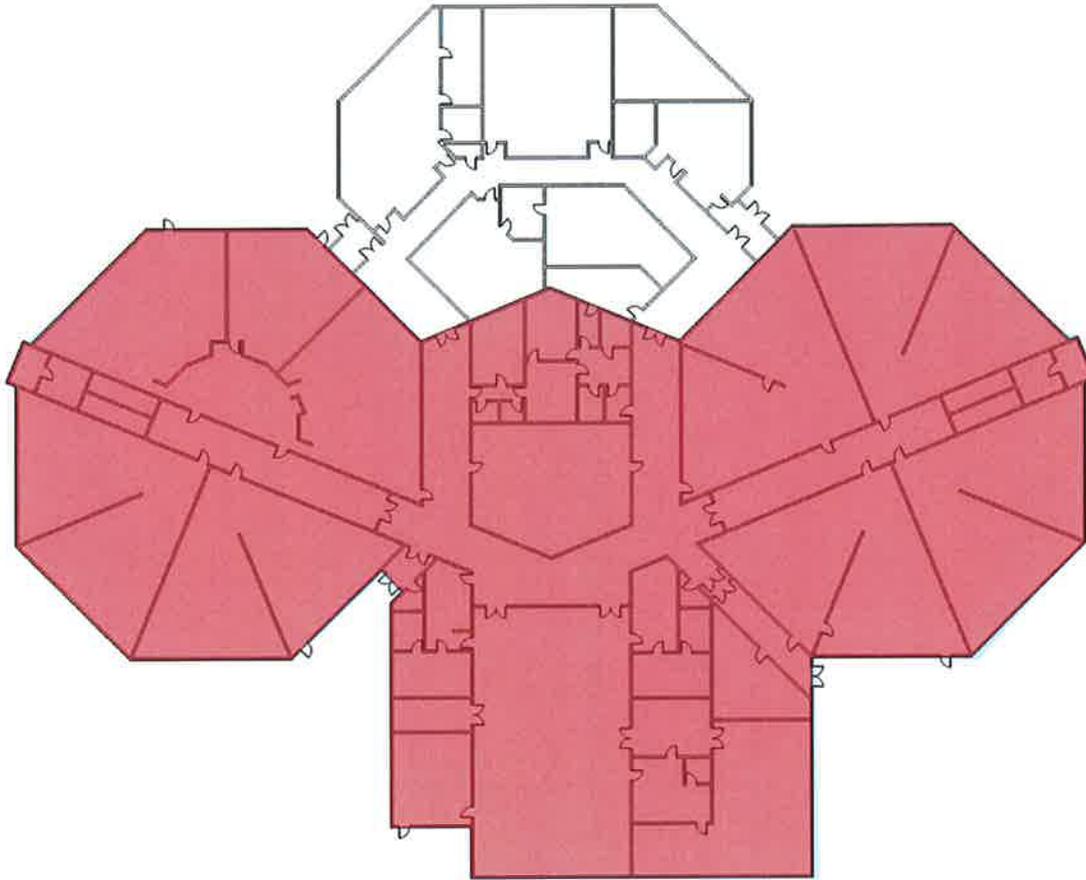
### PROPOSED SOLUTION:

The existing systems would be replaced with modern, code compliant ventilation systems. The new systems should have overhead supply and return ducting, provide high ventilation effectiveness and therefore constant and even space temperatures. As these spaces are updated the ceilings and lighting would also be included as part of the upgrades. All spaces will be provided with air conditioning as part of the upgrade.



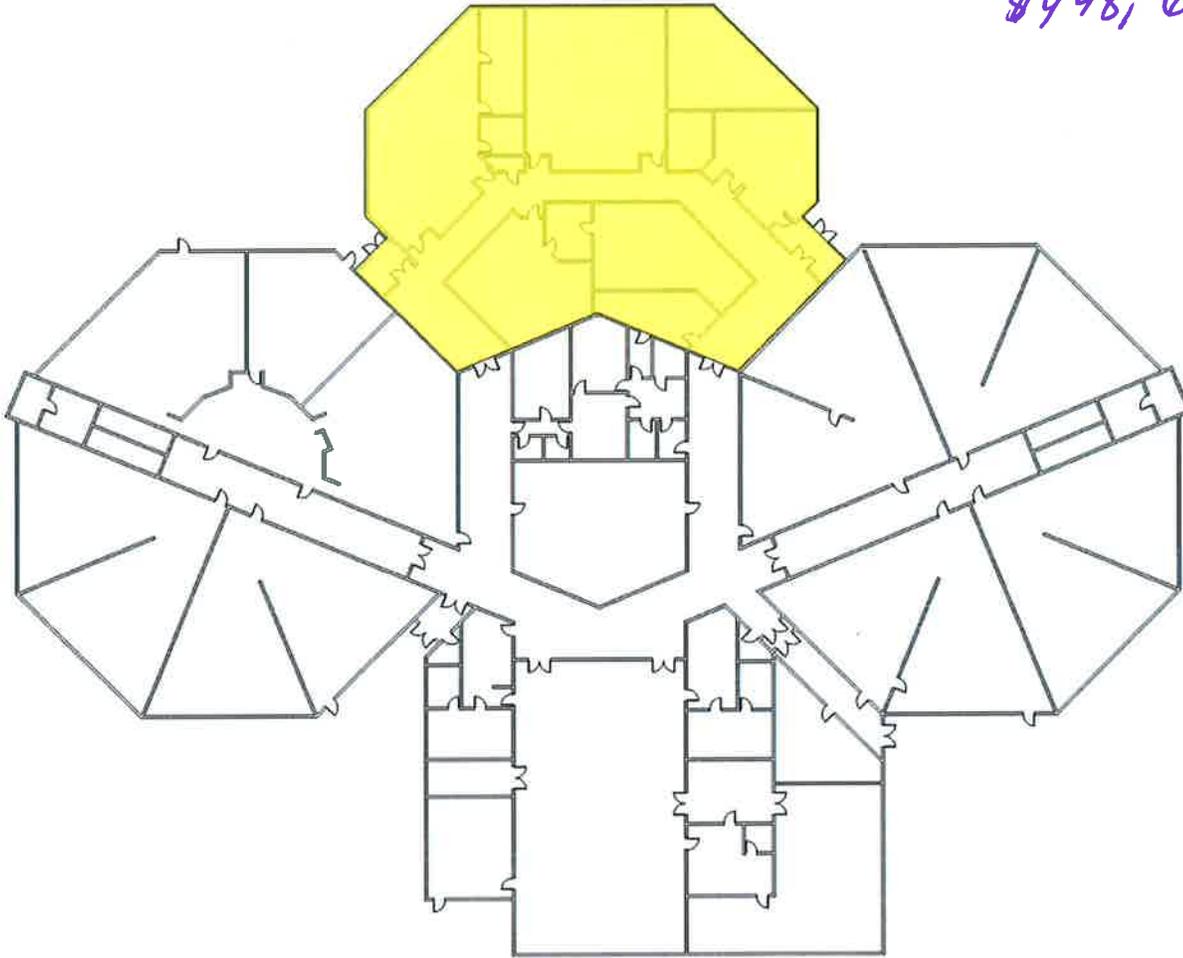
**EINF-2 1968 Indoor Air Quality (IAQ) Upgrades**

*\$1,737,579*



**EINF-3 1992 Unit Ventilator Indoor Air Quality (IAQ) Improvements**

8448, 682



## EINF-4 Electrical Service Improvements

#247,381

### EXISTING CONDITION:

The existing electrical service is original. With the addition of the potential electrical loads from the increase in dehumidification equipment throughout the facility, a new larger service could be required. In addition the electrical panels throughout the building are original.

### PROPOSED UPGRADE:

Modify the existing electrical service to provide adequate capacity for the proposed, added equipment load. This includes replacing the main switchboard, panels and supplying all new feeders.



## EINF-5 New Fire Alarm System

\$ 97,670

### EXISTING CONDITION:

The fire alarm has been replaced at somepoint during its life cycle. The panel is currently a zone type system which creates issues when a device goes bad or is activated.

### PROPOSED UPGRADE:

A new addressable fire alarm system will be installed. This system will relay to the person operating where the issue is located which saves time in emergencies or maintenance.



\$ 15,325

## EINF-6 1968 Gym Lighting

### EXISTING CONDITION:

The elementary gym is currently being lit with T-8 fluorescent light fixtures. While these are more energy efficient than the older metal halide they do not provide a great source of light when being installed in areas with higher ceilings.



### PROPOSED UPGRADE:

New energy efficient high bay LED lights will be installed to provide better lighting.

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**APPENDIX:**

## ASHRAE Equipment Life Expectancy chart

ASHRAE is the industry organization that sets the standards and guidelines for most all HVAC-R equipment.  
For additional info about ASHRAE the website is [www.ashrae.org](http://www.ashrae.org).

Equipment Item	Median Years	Equipment Item	Median Years	Equipment Item	Median Years
<b>Air conditioners</b>		<b>Air terminals</b>		<b>Air-cooled condensers</b>	20
Window unit	10	Diffusers, grilles, and registers	27	Evaporative condensers	20
Residential single or Split Package	15	Induction and fan coil units	20	<b>Insulation</b>	
Commercial through-the wall	15	VAV and double-duct boxes	20	Molded Blanket	20 24
Water-cooled package	15	<b>Air washers</b>	17	<b>Pumps</b>	
<b>Heat Pumps</b>		<b>Ductwork</b>	30	Base-mounted	20
Residential air-to-air	15	<b>Dampers</b>	20	Pipe-mounted	10
Commercial air-to-air	15	<b>Fans</b>		Sump and well	10
Commercial water-to-air	19	Centrifugal	25	Condensate	15
<b>Roof-top air conditioners</b>		Axial	20	<b>Reciprocating engines</b>	20
Single-zone	15	Propeller	15	<b>Steam turbines</b>	30
Multi-zone	15	Ventilating roof-mounted	20	<b>Electric motors</b>	18
<b>Boilers, hot water (steam)</b>		<b>Coils</b>		<b>Motor starters</b>	17
Steel water-tube	24 (30)	DX, water, or steam	20	<b>Electric transformers</b>	30
Steel fire-tube	25 (25)	Electric	15	<b>Controls</b>	
Cast iron	35 (30)	<b>Heat Exchangers</b>		Pneumatic	20
Electric	15	Shell-and-tube	24	Electric	16
<b>Burners</b>	21	<b>Reciprocating compressors</b>	20	Electronic	15
<b>Furnaces</b>		<b>Packaged chillers</b>		<b>Valve actuators</b>	
Gas- or oil-fired	18	Reciprocating	20	Hydraulic	15
<b>Unit heaters</b>		Centrifugal	23	Pneumatic	20
Gas or electric	13	Absorption	23	Self-contained	10
Hot water or steam	20	<b>Cooling towers</b>			
<b>Radiant Heaters</b>		Galvanized metal	20		
Electric	10	Wood	20		
Hot water or steam	25	Ceramic	34		