South Shore Vocational Technical School

District Facilities Master Plan

Drummey Rosane Anderson Inc.

Final Report – 02/09/18

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Section 1

Introduction

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Introduction

In the Fall of 2017, the South Shore Regional School District hired DRA to help them develop a 10-year comprehensive plan for the South Shore Vocational Technical High School, located in Hanover, MA. The regional school district is comprised of the following towns: Abington, Cohasset, Hanover, Hanson, Norwell, Rockland, Scituate, and Whitman. The existing South Shore Vocational Technical High School is a single level building which opened its doors in 1962. There were additions constructed to the original building in 1978 and 1992 and the campus consists of smaller out buildings (concessions building, maintenance building, and storage barn) and several shed type storage buildings for the various shops.

The goal of the plan was to help guide the district's capital investments to:

1. Maintain and modernize its existing building and grounds and
2. Help make well-informed decisions for future building renovations and additions to address lack of space and growing school enrollment.

The school district provided DRA with a significant amount of information regarding the existing building and grounds. This information included, but was not limited to the following:

1. Existing condition plans for both the original school building (built in the early 1960's) and the building addition from the early 1990's.
2. Plans for the out buildings which include the concessions building, the maintenance building (currently under construction) and the storage barn.
3. Barn repurpose study
4. Plans for the modular building and its proposed enclosure
5. Plans for the boiler room renovation
6. Plans for the 2011 roof and window replacement project
7. Development of an ANRAD plan for the wetlands along the southern and western boundaries of the property
8. Plans for the canopy addition at the construction shop
9. 3-Year AHERA re-inspection report of April 2017 and the asbestos abatement final project history report by the Vertex Companies, Inc.
10. Current enrollment data

In late November / early December, DRA and its consultant team performed site visits to the existing facility to perform an existing conditions assessment and well as reviewing the information provided by the Owner. The bulk of this documentation is provided in the Existing Conditions Report (ECR) and various Appendices for the individual consultant reports. An existing space study analysis was also provided and is also included in the ECR. This space study analysis looked at the size of the existing vocational shops and compared them to the Chapter 70 recommendations for square foot per students and current enrollments. This helped to determined which of the existing vocational shops were undersized. A similar analysis was done for academic classroom and other program spaces and compared them to the MSBA High School space study standards.

This existing condition analysis also looked at other various infrastructure and finishes and help develop a list of recommendations for work to be included in future renovations/building additions. This list of recommendations was then reviewed with the capital project committee and were categorized by priority (high, medium, and low).

Due to the lack of space and growing enrollments, DRA also looked at potential options for additions to the existing facility to help minimize the space constraints. The various options are shown in the Potential Options section. Preliminary cost data was also developed for both the potential options and list of recommendations.

Section 2

Existing Conditions Report

Existing Conditions Report (ECR)

Original Building (including the 1978 addition)

Structure: This structure is comprised mostly of concrete footings and foundation walls, concrete floor slabs and structural steel with metal roof deck. Generally these appear to be in good shape with no major concerns or recommendations

Interiors Finishes - Walls:

Corridors: Typically these are either glazed CMU block or painted CMU block are generally in good condition. The corridor in the science wing is painted CMU block with some exposed brick.

Lobby: Walls and either exposed brick or glazed CMU block and are generally in good condition.

Vocational Shops: Typical demising partitions in the vocational shops are painted CMU. There are a few locations where there is glazed CMU and some gypsum wallboard (Allied Health). Generally the walls are in good condition.

Academic and Related Classrooms: Typical demising walls at the classrooms are gypsum wallboard or plaster. There is some wood paneling added to these walls. Most of these rooms were revised recently. Generally they are in good condition.

Science Classrooms: Walls here are painted CMU block and are generally in good condition.

Modular Classrooms: Walls are modular wall panels and are generally in fair condition.

Vocational Shops: Walls is the vocational shops are typical painted CMU. There are a few locations where there is glazed CMU and some gypsum wallboard. Generally the walls are in good condition.

Gymnasium: Walls at the gym are both glazed CMU block and painted CMU block and are generally in good condition.

Locker Rooms: Walls are typically either glazed CMU block or painted CMU block and are in good to fair condition (there was some areas of damaged glazed block by exterior locker room entrance).

Weight Room: Walls are gypsum wallboard and are in fair condition.

Cafeteria: Walls at the entrance nodes to the cafeteria are exposed brick. The walls at the server is painted CMU. Walls between the entrance node at the corridor are gypsum wallboard. All walls are generally in good condition.

Kitchen: Walls in the kitchen are glazed CMU and are in good condition.

Teacher Dining: Walls at teacher dining area are a mix of painted CMU block and gypsum wallboard – both in good condition.

Library: Walls at the library are similar to those at the academic classrooms.

Administration and Guidance areas: Walls at these spaces are typically gypsum wallboard and are generally in good condition. There are a few painted CMU walls within the main administration suite. Some walls in offices also contain wood paneling (in good to fair condition).

Nurse: Walls in the nurse's area are painted CMU and are in good condition.

Wall Base: Wall base throughout the building is a vinyl base of varying heights. Generally, it is in good to fair condition. DRA would recommend some select areas for replacement.

Interiors Finishes - Floors:

Corridors: Floors in the corridor are terrazzo and are in excellent condition (minimal signs of cracks). The corridor in the science wing is VCT and is original to its construction date. Replacement would be recommended as part of a renovation project.

Lobby: Similar to corridors noted above.

Shops: Most of the vocational shops have a concrete floor with sealer. Most are in good condition. Some areas of cracking should be patched. Floors should be sealed every three to five years. The MET #1 shop has a new epoxy flooring which is in excellent condition. The Carpentry shops has an existing wood floor that is in fair condition. It will most likely need replacement in the near future. The Allied Health shop has VCT flooring.

Academic and Related Classrooms: All classrooms have VAT flooring which should be replaced as part of a major renovation project.

Science Classrooms: Science classrooms have 12 x 12 VCT that was recently replaced.

Modular Classrooms: The modular classrooms also have VCT in fair conditions. There were some areas of cracking noticed.

Gymnasium: The wood flooring in the gymnasium is in fair condition. It is original to the 1962 project and is reaching the end of its useful life. Replacement of this flooring should be part of a renovation project.

Locker Rooms: The boy's locker room floor is a painted concrete (not sealed). It is in fair to poor condition and should be refinished in the near future. The girl's locker room floor has a thin coat epoxy floor which is peeling. A thicker epoxy flooring would be recommended as a replacement.

Weight Room: The weight room floor is an athletic rubber tile in good to fair condition.

Cafeteria: The cafeteria floor is a 12 x 12 VCT floor that was replaced well the 1990's addition was completed. While it is in good to fair condition, we would recommend replacement as part of a renovation project.

Kitchen: The kitchen floor is quarry tile and is in good condition.

Teacher Dining: Similar to cafeteria noted above.

Library: The library floor is carpet and is in fair condition. Replacement would be recommended as part of a renovation project.

Administration and Guidance areas: The administration suite has VCT similar to the cafeteria. The guidance suite has carpet in fair condition.

Nurse: The nurse's area has VAT similar to the typical classroom. The toilet room within the nurse's suite does have ceramic tile flooring.

Interior Finishes – Ceilings:

Corridors: Ceilings in the 1960's corridors are plaster in good to fair condition. There are also several skylights within the ceiling. Some have been blocked up as part of the recent roof replacement project. In general, existing plaster ceilings will be recommended for removal and replacement with a high noise reducing acoustic panel ceiling. The corridor in the science wing is ACT in fair condition. There were areas noted where the panels are sagging.

Lobby: Similar plaster ceiling as noted in corridors above.

Shops: Typical vocational shops have exposed ceilings to the roof structure. Some also contain skylights. The Allied Health shop has a 2x4 ACT ceiling in good to fair condition.

Academic and Related Classrooms: The typical classrooms also have a plaster ceiling. It is noted that these ceiling have been tested and do not contain asbestos.

Science Classrooms: The science classrooms have 2x4 ACT ceilings in fair condition. There were areas where stained tiles where noted.

Modular Classrooms: The modular classrooms have a modular panel ceiling that looks similar to gypsum wallboard. They are in good to fair condition.

Gymnasium: The gymnasium also has an exposed ceiling and is in good condition.

Locker Rooms: The boy's locker room has an exposed ceiling and the girl's locker room has an ACT ceiling is fair condition (some sagging tiles).

Weight Room: The weight room has a gypsum wallboard ceiling in good condition.

Cafeteria: The ceiling in the cafeteria is a plaster ceiling with some 1x1 panels adhered to the plaster ceiling. We would recommend replacing the ceiling with a high NRC panel for acoustical reasons.

Kitchen: The kitchen has a washable 2x2 ACT ceiling in good to fair condition.

Teacher Dining: The teacher dining area has a new 2x4 ACT ceiling in good condition.

Library: The ceiling in the library is a sloped plaster ceiling in good condition.

Administration and Guidance areas: The ceiling in the administration suite is 2x4 ACT in good to fair condition. The ceiling in the guidance suite is plaster with some minor areas with ACT.

Nurse: The ceiling in the nurse's area is plaster.

Interior Finishes – Windows & Doors:

Windows: All of the exterior windows in the original building were replaced under the 2011 roof and window replacement project. They are double pane, aluminum windows and are in good condition. Most of the spaces also have window shades. The existing kalwall sections in the gymnasium were also replaced with aluminum windows. Some of the replacement windows also have metal panel section framed within the aluminum frame.

Interior Doors: Typical interior doors throughout the original building are wood doors in good to fair condition. The doors vary from solid wood doors, doors with vision panels, and door with half glass. The one exception is there are hollow metal doors within the guidance suite. As part of a larger renovation project, we would recommend replacement of these doors.

Exterior:

Exterior Structure: Typically the exterior skin is brick and in good condition. There were some minor spots where cracks in the brick were evident. The mortar is also generally in good condition. It should be noted that there was some repointing done to the mortar as part of the 2011 window and roof replacement project. There were also some minor areas of spalling identified (see photos). The weep holes within the brick appear to be open and in good working condition. At the main entrance, there is evidence of some potential water run-off from entrance canopy and the is some moss growth on one side of the brick pier. This should be investigated further as part of the potential renovation project. There were also some signs of water runoff from the existing gymnasium roof that is discoloring the bricks below.

There are some areas of exposed concrete that has held up well but there were some minor areas of cracks. There is also some exposed concrete soffits and large overhangs at the existing library.

The is a weight room addition that was added to east side of the existing gymnasium. Access to the space from the gymnasium is through stairs and is therefore not considered accessible. There is an interior exit ramp to exterior doors which lead to a concrete landing which is not level with the ground. There is no gutter at the weight roof and there is moss growth of the existing fascia board. The exterior of the addition appears to be a thin brick panel veneer that has some damaged panels.

The modular building appears to also have a thin brick panel veneer. Below the brick is some plastic sheeting panels that close the structure to the ground. Some of these panels have been damaged. There is also a wood stair and corridor platform that is showing its age. There is a secondary means of egress from the middle modular classroom that is not considered accessible.

The science area that was an addition to the original building and constructed in the late 70's. It structure's exterior skin is also brick and match the original building. There are some minor areas of spalling as effloresce present here. This structure also has some exposed concrete typically at ground level. The dust collector from the construction shop is located at a corner of the building from the loading dock is located. There is evidence of damage to the dust collector from trucks hitting it. This should be moved as part of a renovation project. There is also metal equipment attached to the walls in this building and there is some minor rusting on the brick below the equipment.

There was a canopy addition built onto the construction shop. This is an open structure which acts as overflow space for the shop. There is some damage to the fascia here that should be repaired. There is also a separate addition added onto the metal fabrication shop. This appears to be a metal building attached to the original building. The exterior skin is brick veneer panel. There is also a wood guard rail at the metal fabrication shop which worn and should be replaced.

Exterior Doors: The main entrance doors are aluminum storefront doors that are not original to the building, but unsure when they were replaced. The glazing in the window panes does not appears to be double pane. This system is showing its age and should be replaced as part of a renovation project. This would be similar for the interior vestibule doors as well. Each shop typically has an overhead sectional door and a hollow metal man door. Both are original to the building and should be replaced under a renovation. The existing metal at the section doors should be scraped and re-painted. Exterior doors should also be re-caulked. See notes below regarding accessibility issues at entrance and egress doors.

Roof: The roof on this building was replaced as part of the 2011 window and roof replacement project. The roof appears to be in good condition with no problem areas of water infiltration. The building has a metal roof edge with some areas of metal soffits below the roof edge. The soffits and roof edge appear in good condition.

<u>Accessibility Issues & Concerns:</u>

There are several accessibility issues in the original building. As part of a renovation project, these will need to be addressed by either correcting the issue or through a variance request with the Massachusetts Architectural Access Board (MAAB). Full compliance with MAAB regulations is triggered when the scope of work exceeds 30% of the full and cash value of the building and site (over a three-year period). Typically, public building is not assessed high and even minor renovation projects can trigger full compliance. The main accessibility issues are as follows:

- Entrances and egress points are generally not accessible. Compliant handicap ramps would need to be designed at these locations.
- There are several locations of entrance doors that are pair of doors less than 3'-0" wide. These doors would need to be replaced with at least one unit at 3'-0" wide.
- There are several push/pull clearances at interior doors – mostly at typical classroom entrances. The original design for these entrances is typical to that period but don't allow the proper clearances. These would need to be reconstructed.
- Some of the existing toilet room layouts have been modified to help address accessibility issues, but they would not be considered fully compliant.
- Some of the existing door hardware is non-compliant.
- There are other minor issues that will also need to be resolved as part of a renovation project.

1992 Addition

Structure: This structure is comprised mostly of concrete footings and foundation walls, concrete floor slabs and structural steel with metal roof deck. Generally, these appear to be in good shape with no major concerns or recommendations

Interiors Finishes - Walls:

Corridors: Walls in the corridors in the addition are typically glazed CMU block. They appear to be generally in good condition.

Lobby: Similar to corridors noted above.

Vocational Shops: Demising walls at vocational shops are typically gypsum wallboard and are generally in good condition. There is some wall padding on the walls in the electrical shop. The Auto Body shop has CMU block walls that are painted and in good condition.

Restaurant: Walls at the restaurant are typically gypsum wallboard and in good condition.

Culinary Kitchen: Walls in the culinary kitchen are gypsum wallboard with a ceramic tile wainscot (typically at 4'-0" A.F.F).

Academic and Related Classrooms: Demising walls at classrooms are gypsum wallboard and in good condition.

Lecture Hall: Walls at the lecture hall are gypsum wallboard and are in good condition. There are some acoustical wall panels (metal with insulation) attached to the walls.

Wall Base: Wall base throughout the building is a vinyl base of varying heights. Generally, it is in good to fair condition. DRA would recommend some select areas for replacement.

Interiors Finishes - Floors:

Corridors: Corridors in the addition are typically 12 x 12 VCT – there is no terrazzo in the addition. Generally, these are in good to fair condition but should be replaced under a renovation project.

Lobby: Similar to corridors noted above.

Vocational Shops: There is a mix of flooring in the shop areas. VCT is the flooring in the horticulture lab, cosmetology, MET #2, and computer information technology lab (CIT). Sealed concrete is the flooring in auto body, graphics, and the electrical shop. All are in good to fair condition.

Restaurant: Flooring in the restaurant is mostly carpeting.

Culinary Kitchen: The culinary kitchen has a quarry tile floor with a quarry tile base. Both are in good condition.

Academic and Related Classrooms: Classrooms in the addition have 12 x 12 VCT flooring in good to fair condition.

Lecture Hall: The lecture hall flooring is predominantly carpet with VCT under the raised seating areas. Both are in good condition.

Interior Finishes – Ceilings:

Corridors: The corridors in the addition have a hard gypsum wallboard ceiling (not plaster).

Lobby: Similar to corridors above.

Vocational Shops: Most of the shops have a 2X4 ACT ceiling except exposed ceilings in the electrical and auto body shops.

Restaurant: The restaurant ceiling is a 2X2 ACT ceiling and is in good to fair condition.

Culinary Kitchen: The culinary kitchen has a 2X4 washable ACT ceiling.

Academic and Related Classrooms: Classroom have 2X4 ACT ceilings in good to fair condition.

Lecture Hall: The lecture hall ceiling is exposed to the structure above. We would most likely recommend adding some acoustical materials to these hard surfaces.

Interior Finishes – Windows & Doors:

Windows: The windows in the addition are original to the construction date. They are aluminum frame windows, double pane, with varying operable sashes. They are starting to break varying parts handles which the Owner is finding it difficult to find replacement parts. We would recommend replacement of these systems in a larger renovation project. The windows also have a metal panel material at lower sections. These metal panels are in good to fair condition.

Interior Doors: Doors in the addition are a mix of both wood and hollow metal with hollow metal frames. Both appear in good working condition.

Exterior:

The exterior is the addition is made up primarily of jumbo size brick (larger than standard brick which is on the original building). There are also sections where there is both ground and split face CMU block. Both the brick and block appear in good condition. The mortar for the brick and CMU is also in good condition. There is also some exposed concrete in various areas around the addition. There is some minor staining at the concrete near the public entrance. There is also some rusting/staining at the curtain wall by the public entrance.

The entrance storefronts are worn and are showing their age. The caulking at these storefronts was recently replaced. There is a bump at the entrance door which may make it non-accessible. Control

appear to be in good condition – these should be replaced every 5 years. There are some sealants around the windows in the addition that are showing cracks. These sealants should be replaced in the near future.

The roof on the addition is original to its construction date and as not replaced as part of the 2011 window and roof replacement project. As of this report, the existing roof is 25 years old and will be reaching the end of its useful life. Replacement of this roof could be part of a renovation project. However, if the renovation project is several years down the line, then the roof replacement may need to take place prior to the renovation. There is typically a fascia that runs along the roof edge. There are some minor spots of rusting on this fascia.

Accessibility Issues & Concerns:

There are fewer accessibility issues or concerns with the addition. Since this building was built in the early 90's, it does follow the more recent accessibility codes, with some minor issues that don't comply with current regulations. For example, the single toilet rooms within shops are sized appropriately for current MAAB regulations. However, there is a requirement that sinks have a 30" x 42" clear space in front of them, for which doors can't swing into this clear space. Most of the existing doors swing into the spaces which conflict with the clear space. These doors would need to be flipped to comply. There also appears to be some additional handicap accessibility issues around varying entrance and exits.

Modular Building

There is a modular building to the east of the existing science labs. It is not connected to the original building and is accessed by leaving the original building and accessing an open corridor for access to the individual room of the modular. This raise some serious security concerns. The rooms within the building are also small for typical academic classrooms. The building was installed in the early 2000's. We would not recommend maintaining structure as part of a larger renovation project.

Maintenance Building

The maintenance building is currently under constructed but is slated to be complete in the near future. This will be the office area for the facilities department which will open up some space within the main school building. The building also contains a 3-bay garage with some storage space.

The Storage Barn

The storage barn is a wood-framed two story structure that mostly has unfinished space. It is typically used for storage. There are two toilet areas but the toilets are not functioning. With the maintenance building coming online, the existing storage barn could be cleared of storage and used for some potential educational space. The toilet rooms would need to be upgraded if this space was to be re-purposed.

Concessions Building

The concessions building is another out building near the paly filed area. It is also wood framed construction and was built within the last two years. It contains and area for concessions, some storage areas and individual men's and women's toilets. We would recommend no changes to this structure.

Section 2

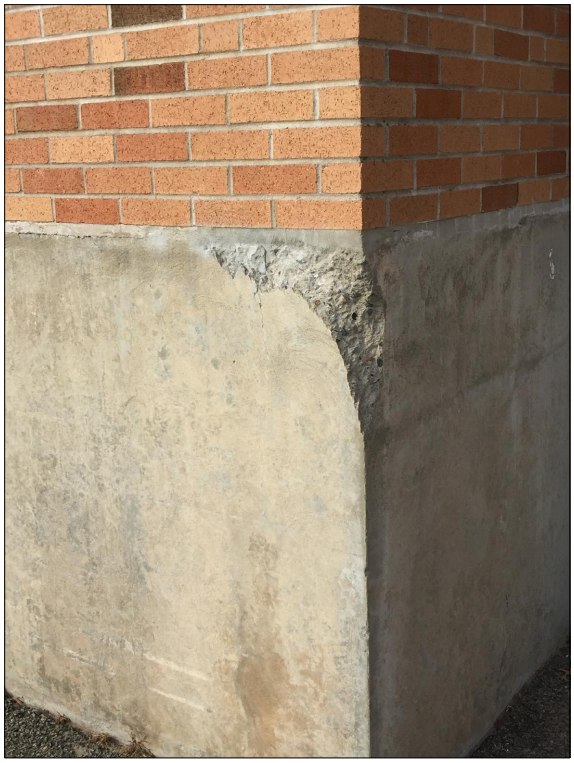
Existing Condition Report - Photographs

Evidence of moss growth on brick pier near main entrance - water runoff from canopy above

Main Student Entrance doors by student parking lot. Entrance is not considered accessible.

Photo at weight room expansion shows moss growth on existing fascia. Is there an issue with water buildup on the roof?

Damage to lower wall sheeting at the modular classroom expansion.



There are some minor sections where concrete base wall has some damage. These sections should be patched as part of a larger renovation project.

There were some areas, particulary under windows, where some masonry re-pointing would be suggested.

These appear to be some settlement cracks which should get patched.

Damage to section of dust collector - hit by trucks in the loading dock area.

Typical window assembly at the 1992 addition - windows above with operable sections and metal wall panels below.

Bump in concrete at back egress doors to the "courtyard" area - may need to be leveled for access.

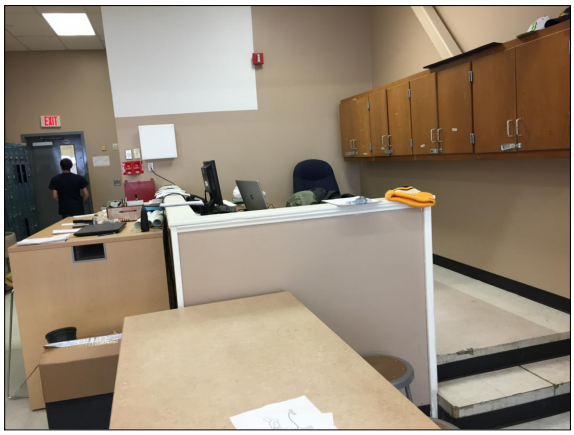
Gutter and downspout at 1992 addition - need to repair damaged fascia. Gutters and downspouts are starting to rust out.

Typical exterior column detail at the 1992 addition.

There were some minor spots of efflorescence noted in the 1992 addition.

Evidence of rusting at the windows frame in the 1992 addition.

Secondary means of egress from the cafeteria is not considered accessible.



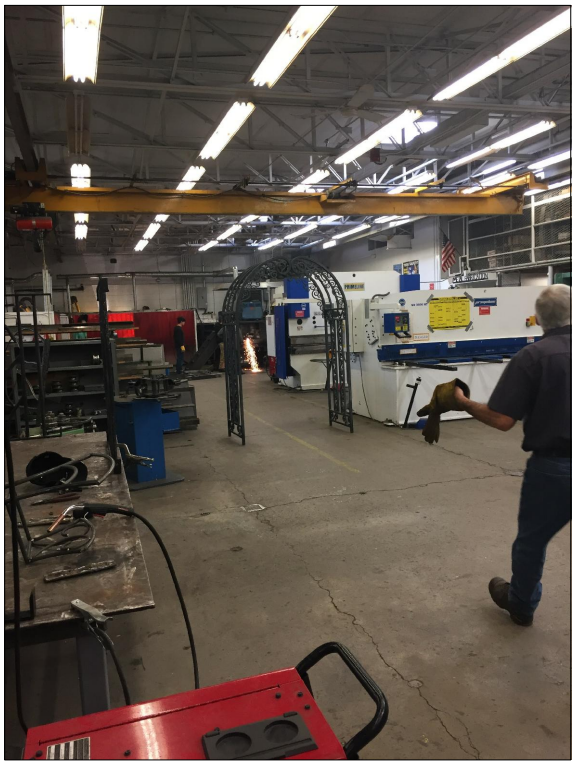
Elevated teachers areas, located in several shop areas (such as automotive and electrical shops), are not considered accessible and should be replaced.

Interior photograph of the seating at the lecture hall. Will need to provide handicap accessible spaces at both the upper and lower level seating areas.

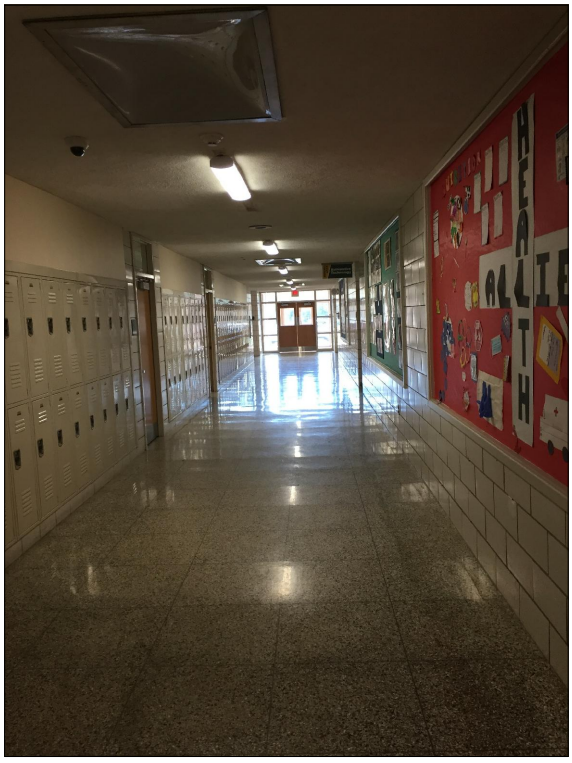
Electrical shop - elevated teacher station, not accessible. Also shows upper storage areas which is present in several shop areas.

Typical exterior hose bib connection - masonry to repaired / patched.

Interior of the carpentry shop. The shed structure is the office area and is not accessible.



Interior of the Metal fabrications shop. Finishes are typical for most large vocational shop areas.



Typical corridor within the existing building. Finishes are typical - terrazzo flooring, glazed CMU block and plaster ceiling with skylights (some have been covered).

Pair of doors at egress at a pair of 2'-8" doors which are not considered accessible. Doors should be replaced with one leaf at least 3'-0" wide.

Modular classroom expansion with wood frame entrance stairs and ramp.

Section 3

Existing Space Analysis

Space Summary Analysis

As part of the existing conditions review of the facility, DRA has performed an existing space analysis. The first thing that was analyzed were the existing vocational shops. For this analysis, we gathered the current enrollment for each of the shops from the District. We then reviewed *"Chapter 74 Manual for Vocational Technical Education Programs"* from the Massachusetts Department of Elementary & Secondary Education which indicates a recommended area per pupil for each shop to help determine minimum shop area. The attached chart shows the proposed minimum shop area per the Chapter 74 guidelines and compares this to the existing square footage of each shop. The shops indicated in red are considered significantly undersized per these guidelines (more than 10% undersized). The chart shows that approximately half of the existing shops are significantly undersized (they range from 20% - 45% undersized). There were a few shops that are currently appropriately sized (shown in green) and a few that are oversized, like metal fabrications (shown in blue).

We then looked at all other spaces within the existing building and compared them to the Massachusetts School Building Authority (MSBA) space summary standards. This analysis showed the following results:

- Most general classrooms were appropriately sized (refer to attached floor plans) with a few exceptions (primarily the classrooms in the modular building which were significantly undersized).
- There are 5 existing science classrooms with some lab areas. All are significantly undersized and would not meet current MSBA space summary guidelines.
- The cafeteria is slightly undersized but this is mainly due to servery functions located within the cafeteria. The existing kitchen is significantly undersized and the school's freezer is located within the building's receiving area.
- The gymnasium is large enough to contain a high school basketball court but is significantly undersized per MSBA standards. The locker room areas and the weight room addition are also significantly undersized.
- The existing media center is significantly undersized and is located at one end of the building. The school district indicated that they would like this more centrally located with the building.
- While the administration and guidance areas are sized appropriately, they are bunched together near the main entrance. The district expressed a concern for this current layout as there is very little administrative presence in the 1992 addition which also houses the public entrance to the building. The current nurses area is undersized but is located in the shop wing which is the preference of the district.
- There is no auditorium, but there is a lecture hall that was built in the 1992 addition. Per MSBA guidelines, it is undersized.

The above analysis along with the information gathered from the school district, were instrumental in helping form the various potential expansion options that are shown in Section 5 of this District Facilities Master Plan.

South Shore Vocational Technical High School
Vocational Shops Space Study

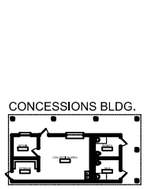
Drummey Rosane Anderson Inc.
2/9/2018

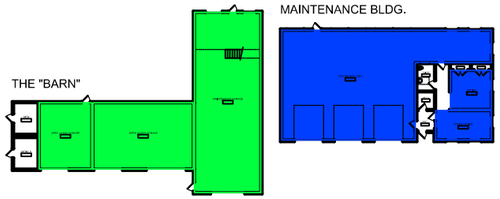
Existing Condition

Vocational Program	# Students	Area per Pupil	Minimum Shop Area	Existing Shop Area	Delta	%	%	Support SF
Automotive Collison Repair & Refinishing	17	275	4,675	3,845	830	-17.75%	82.25%	280
Automotive Technology	26	275	7,150	4,725	2,425	-33.92%	66.08%	430
Carpentry	30	225	6,750	5,090	1,660	-24.59%	75.41%	730
Cosmetology	25	125	3,125	3,000	125	-4.00%	96.00%	375
Culinary Arts	29	125	3,625	4,250	625	17.24%	117.24%	685
Electricity	33	225	7,425	3,885	3,540	-47.68%	52.32%	90
Graphic Communications	24	150	3,600	3,435	165	-4.58%	95.42%	165
Health Assisting	24	125	3,000	1,565	1,435	-47.83%	52.17%	360
Horticulture	24	175	4,200	4,320	120	2.86%	102.86%	340
HVAC & R	24	200	4,800	3,090	1,710	-35.63%	64.38%	0
Information Support Services & Networking	28	110	3,080	1,695	1,385	-44.97%	55.03%	0
Metal Fabrication & Joining Technologies	26	200	5,200	7,440	2,240	43.08%	143.08%	705
MET - Manufacturing Engineering Technologies	42		5,700	5,665	35	-0.61%	99.39%	110
Drafting / Electronics	30	110	3,300	2,490	810	-24.55%	75.45%	0
Machine Tool Technology	12	200	2,400	3,175	775	32.29%	132.29%	110

Other Spaces

General Classrooms			13,600	11,385	2,215	-16.29%	83.71%	-
Science Classriooms			6,400	3,830	2,570	-40.16%	59.84%	-
Cafeteria			3,100	2,850	250	-8.06%	91.94%	-
Kitchen / Servery			1,920	1,440	480	-25.00%	75.00%	-
Gymnasium			12,000	7,150	4,850	-40.42%	59.58%	-
Boys Locker Room			1,750	1,600	150	-8.57%	91.43%	-
Girls Locker Room			1,750	935	815	-46.57%	53.43%	-
Weight Room			3,000	590	2,410	-80.33%	19.67%	-
Media Center			3,775	2,210	1,565	-41.46%	58.54%	-
Auditorium / Lecture Hall			4,133	2,285	1,848	-44.71%	55.29%	-
Administration / Guidance			3,550	3,520	30	-0.85%	99.15%	-
Nurse			710	405	305	-42.96%	57.04%	-





LEGEND:

- SPACE IS SIGNIFICANTLY UNDERSIZED (GREATER THAN 10%)
- SPACE IS SLIGHTLY UNDERSIZED (WITHIN 10%)
- SPACE IS APPROPRIATELY SIZED (WITH 5%)
- SPACE IS SIGNIFICANTLY OVERSIZED (GREATER THAN 10%)

SOUTH SHORE VOCATIONAL TECHNICAL HIGH SCHOOL - SPACE ANALYSIS

Section 4

List of Recommendations

SOUTH SHORE REGIONAL SCHOOL DISTRICT - DISTRICT FACILITIES MASTER PLAN

ELLANA Construction Cost Consultants

D·R·A

	List of Recommendations - DRAFT	Quantity	Unit	Rate	Cost	S.A.	L.P.	Priority	Notes
	Total Repair Lists on this Table (ECC)				**$11,775,145.00**				*** Denotes could be done as stand alone project**
									**** Denoted to be packaged together as part of a larger MSBA funded project**
#	**ADA/MAAB/CODE/HAZMAT RELATED WORK**				**$4,515,145.00**				**Repairs Preliminary Budget Estimate 1/16/18 - DRAFT**
1	Make exterior entrance and egress points accessible	5	EA	$15,000.00	$75,000.00	*		Short	Typical egress stair has concrete platform with stairs, no ramps
2	Modify curb cuts at key locations to make sure all entrance are accessible (including out buildings)	6	EA	$1,500.00	$9,000.00	*		Short	
3	Provide repairs/upgrades to existing sewer system	1	LS	$250,000.00	$250,000.00	*		Short	Allow 200' @ $750 + two manholes plus demolition plus connection
4	Add security to existing doors and replace existing doors that don't have a minimum 3'-0" wide leaf	6	EA	$10,000.00	$60,000.00			Short	See attached security report
5	Provide minor re-pointing at exterior original building	1,000	SF	$12.00	$12,000.00	*		Long	
6	Repair existing brick masonry and minor cracks in foundation wall (original building)	1	LS	$25,000.00	$25,000.00	*		Medium	
7	Re-coat existing exposed steel columns at 1992 addition	43	EA	$750.00	$32,250.00	*		Long	
8	Replace pre-finished metal soffit panel - maintain existing metal framing and plywood sheathing	4,800	SF	$45.00	$216,000.00		**	Medium	
9	Abate VAT in classroom areas	11,800	SF	$4.00	$47,200.00		**	Medium	
10	Install linoleum in classroom areas	11,800	SF	$6.00	$70,800.00		**	Medium	
11	Replace VCT flooring in science classrooms and lab with linoleum	4,600	SF	$7.00	$32,200.00		**	Long	Originally built in 1978 - no asbestos mastic
12	Replace existing ACT in science wing with new 2x2 ACT panels	5,700	SF	$7.00	$39,900.00		**	Medium	
13	Modify typical classroom entrances to make them accessible	20	EA	$4,500.00	$90,000.00			Medium	
14	Replace windows in the 1992 addition with aluminum framed units	4,175	SF	$95.00	$396,625.00	*		Medium	
15	Replace metal panels units under windows in the 1992 addition	2,400	SF	$60.00	$144,000.00	*		Medium	

SOUTH SHORE REGIONAL SCHOOL DISTRICT - DISTRICT FACILITIES MASTER PLAN

ELLANA Construction Cost Consultants

D·R·A

	List of Recommendations - DRAFT	Quantity	Unit	Rate	Cost	S.A.	L.P.	Priority	Notes
16	Replace existing roof at the 1992 addition - try to match re-roof material on the original building	38,650	SF	$32.00	$1,236,800.00	*		Short	
17	Provide acoustical treatment in existing cafeteria	1	LS	$75,000.00	$75,000.00	*	**	Medium	Assume adding 3000sf 0f fabric wrapped acoustical panels
18	Replace existing plaster ceiling at cafeteria with new 2x2 ACT ceiling	3,330	SF	$10.00	$33,300.00		**	Medium	
19	Replace existing wood floor in gymnasium with new wood athletic flooring	7,150	SF	$22.00	$157,300.00	*	**	Long	
20	Abatement mastic at existing wood flooring in gymnasium	7,150	SF	$4.00	$28,600.00	*	**	Long	
21	Provide epoxy flooring at both boys and girls locker rooms	3,400	SF	$16.00	$54,400.00	*	**	Medium	
22	Replace existing ACT ceiling in girls locker room with 2x2 ACT ceiling	1,430	SF	$9.00	$12,870.00		**	Long	
23	Provide acoustical treatments in lecture hall	1	LS	$50,000.00	$50,000.00	*	**	Medium	Assume adding 2000sf of fabric wrapped acoustical panels
24	Remove plaster ceiling in the classrooms and replace with high NRC ACT panels	11,800	SF	$9.00	$106,200.00		**	Long	
25	Remove plaster ceiling in the corridors and replace with high NRC ACT panels	11,800	SF	$9.00	$106,200.00		**	Long	
26	Replace plaster ceiling at library with new 2x2 ACT ceiling	2,400	SF	$9.00	$21,600.00		**	Long	
27	Replace carpeting in library with new carpeting	2,400	SF	$6.00	$14,400.00	*	**	Long	
28	Replace plaster ceiling at guidance area with new 2x2 ACT ceiling	1,600	SF	$9.00	$14,400.00		**	Long	
29	Provide modifciations at toilets for accessibility (original building)	1	LS	$450,000.00	$450,000.00		**	Medium	Would only be done as part of a major renovation project
30	Provide minor adjustments at toilets for accessibility (1992 addition)	1	LS	$45,000.00	$45,000.00		**	Medium	
31	Add sprinkler to original building	83,100	SF	$6.00	$498,600.00		**	Long	
32	Remove and replace non-accessible plumbing sinks in shops areas	8	EA	$3,500.00	$28,000.00	*		Medium	Remove bradley type sinks and patch slab - replace with a large double bay handwashing sinks and a handicapped accessible handwashing sink
33	Replace existing wood floor at construction shop	3,750		$18.00	$67,500.00		**	Long	
34	Abatement of mastic at existing wood floor at construction shop	3,750		$4.00	$15,000.00		**	Long	

SOUTH SHORE REGIONAL SCHOOL DISTRICT - DISTRICT FACILITIES MASTER PLAN

ELLANA Construction Cost Consultants

D·R·A

	List of Recommendations - DRAFT	Quantity	Unit	Rate	Cost	S.A.	L.P.	Priority	Notes
	HVAC AND SYSTEM UPGRADES	**120,000**	**SF**	**$60.50**	**$7,260,000.00**				Assume 120k of existing building to be addressed. Norrmally I'd put all this in renovation at these SF rates
35	Upgrade the HVAC control system to a new electronic system	120,000	SF	$6.00	$720,000.00		**	Medium	
36	Remove and replace existing unit ventilators, cabinet heaters and finned tube radiation	120,000	SF	$5.00	$600,000.00		**	Medium	
37	Provide new CO2 sensors and connect to building management system	120,000	SF	$2.00	$240,000.00		**	Medium	
38	Consider replacing the existing zoned fire alarm system to an addressable type system	120,000	SF	$4.00	$480,000.00		**	Medium	
39	Replace original buildings existing electrical infrastructure	120,000	SF	$20.00	$2,400,000.00		**	Medium	
40	Upgrade interior lighting with new fixtures using LED technology	120,000	SF	$17.00	$2,040,000.00	*	**	Low	
41	Update lighting controls throughout the building to meet latest energy code requirements	120,000	SF	$6.00	$720,000.00		**	Medium	
42	Provide additional security system components, such as cameras, to provide full building coverage	120,000	SF	$0.50	$60,000.00	*		High	District is currently adding additional cameras - will be reviewed after this project is completed

Section 5

Potential Expansion Options

Potential Expansion Options

Overview

To meet current space-use needs the existing building must be expanded and specific spaces must undergo major renovations. In some instances these changes could be phased. Four Options have been developed that differ in where, how and when new space could added and what spaces must be renovated and to what extent. To insure a proper environment, some existing building systems / materials must be upgraded or replaced. The upgrades and replacement would be similar for All Options. Site circulation and location of parking and service would remain fundamentally unchanged and similar for All Options. Following is a brief description of each Option.

Option A1

- New Classrooms, and Science Labs would be added at the east end of the Academic Wing. The adjacent Existing Library would be expanded. A new outdoor courtyard would be created.
- New space would be added to the Carpentry and HVAC Shops and a new Greenhouse added to the Horticulture Shop.
- Major renovations to the Metal, Automotive and HVAC Shops, Kitchen, Girls and Boys Locker Rooms, Weight / Training Room and Nurse's Office. The Guidance Offices would be relocated to within the Shop Wing.
- Minor renovations to remainder of the building.

Option B2

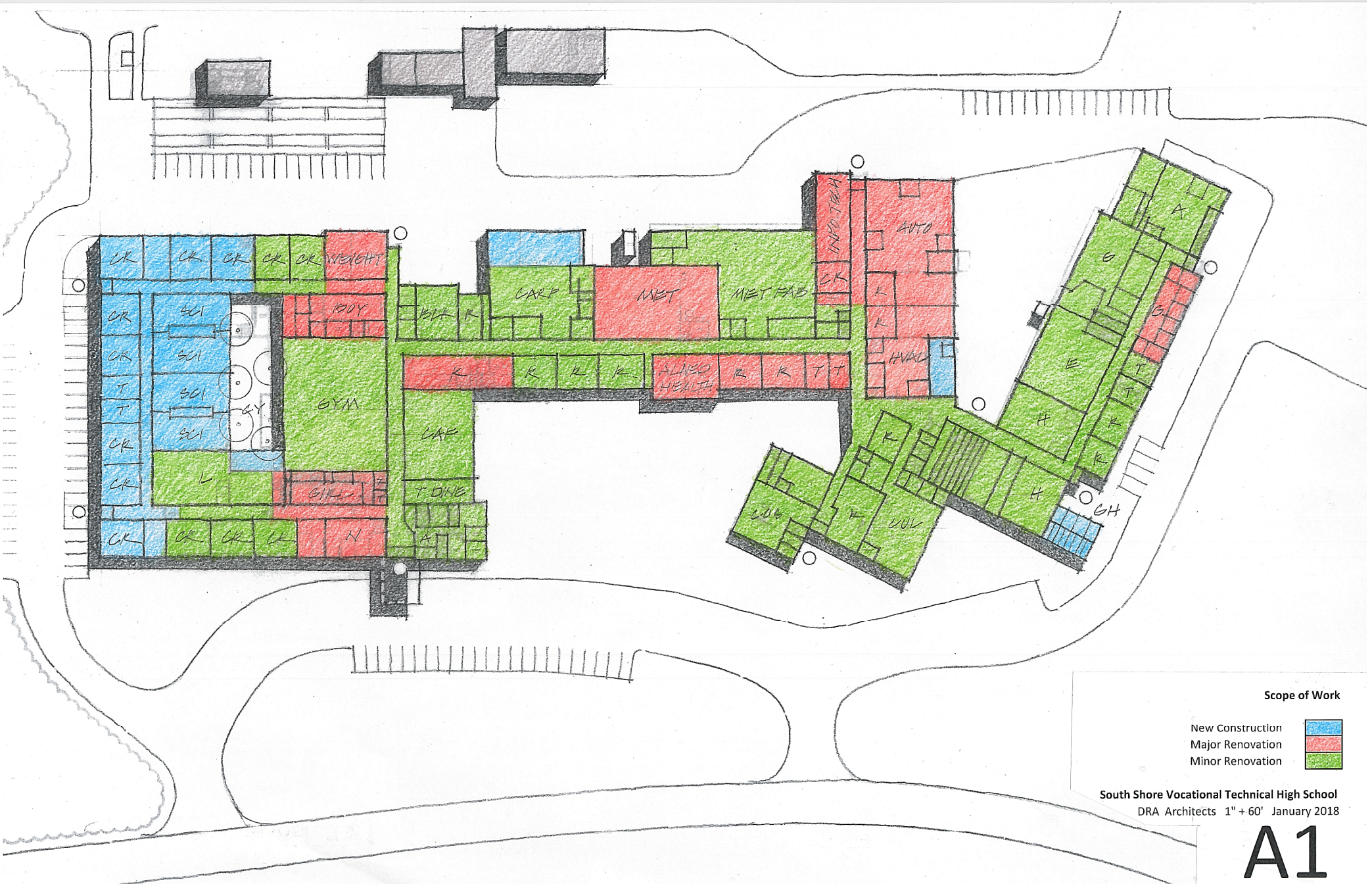
- New Science Labs, Library, Administrative and Nurses Offices would be added at front of the existing building linking the Shop and Academic Wings. Two new outdoor courtyards would be created.
- New Space would be added to the Carpentry and HVAC Shops and a new Greenhouse added at rear of site.
- Major renovations to the Metal, Automotive and HVAC Shops, Kitchen, Girls and Boys Locker Rooms, Weight / Training Room. Guidance Offices would be relocated to within the Shop Wing.
- Minor renovations to remainder of the building.

Option C1

- New Science Labs, Classrooms and Auxiliary Gym added at the east end of the Academic Wing.
- New Space would be added to Carpentry, Metal, Automotive, Auto Body, HVAC and Horticulture Shops. Library relocated to center of plan and expanded.
- Major renovations to the Metal, Auto and HVAC Shops Kitchen, Girls and Boys Locker Rooms, Weight / Training Room. Guidance Offices would be relocated to within the Shop Wing.
- Minor renovations to remainder of the building.

Option C2

- The 1978 Addition southeast of the existing Gym would be demolished.
- New Two Story Space containing Science Labs, Classrooms, Stairs and Elevator would be added in this location. New Auxiliary Gym added at southeast end of Existing Gym, possibly opening to the Gym.
- Space added to the Carpentry, Metal, Automotive, Auto Body, HVAC and Horticulture Shops. Library relocated to center of plan and expanded.
- Major renovations to existing Metal, Auto and HVAC Shops, Kitchen, Girls and Boys Locker Rooms, Weight / Training Room. Guidance Offices relocated to within the Shop Wing.
- Minor renovations to remainder of the building.

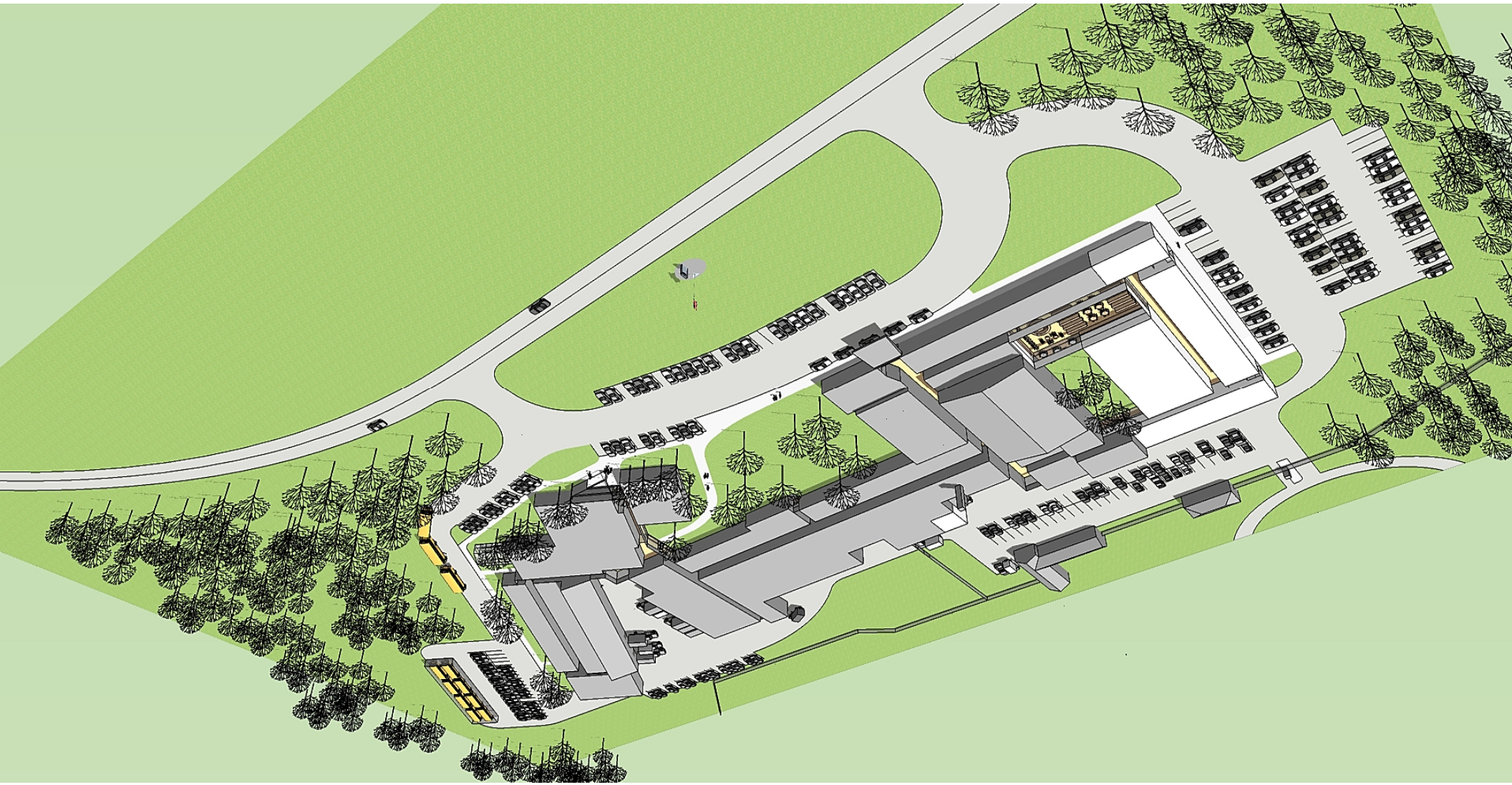


Scope of Work

New Construction
Major Renovation
Minor Renovation

South Shore Vocational Technical High School
DRA Architects 1" = 60' January 2018

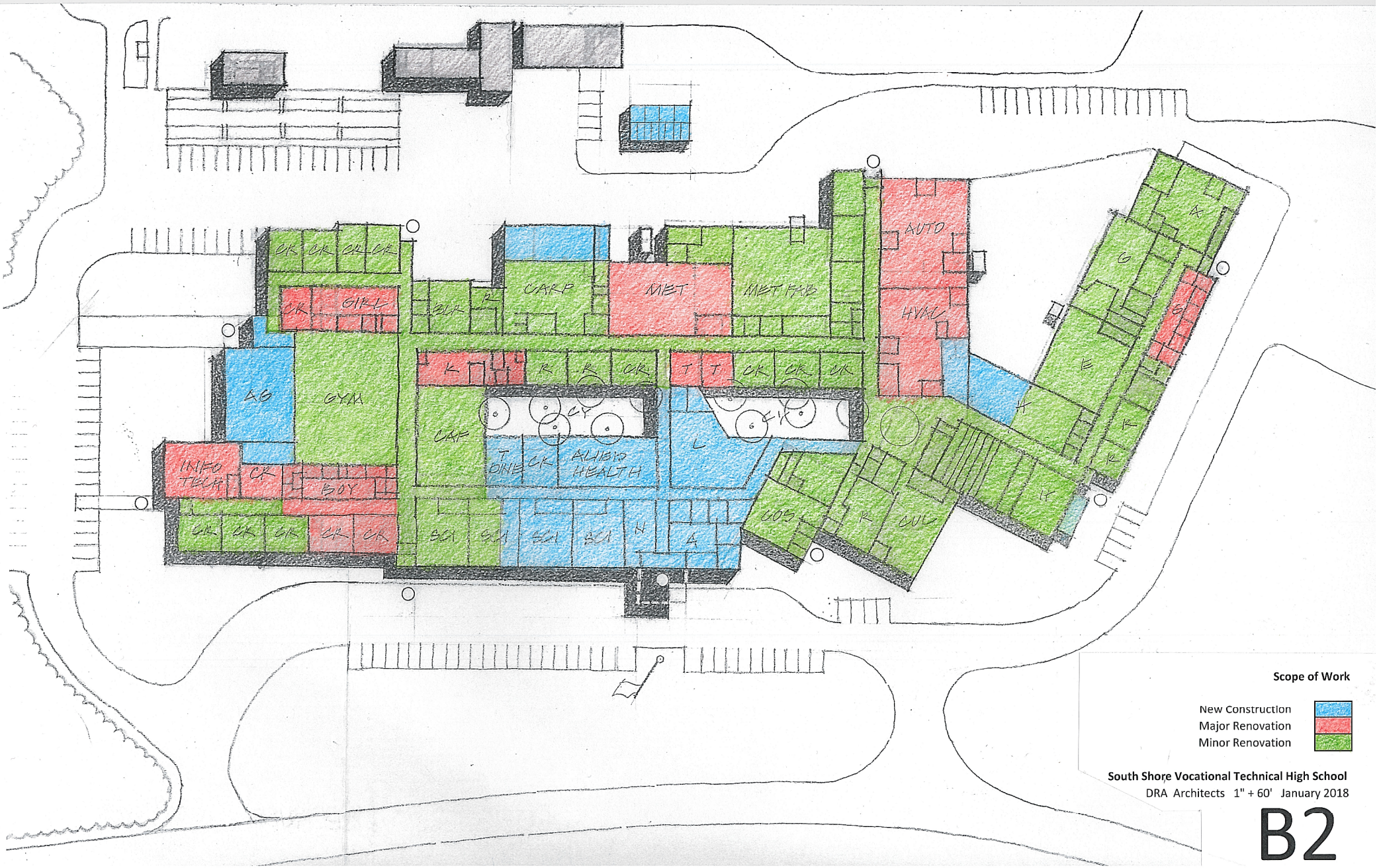
A1



South Shore Vocational Technical High School
Vocational Shops Space Study

Drummey Rosane Anderson Inc.
Revised 1/24/2018

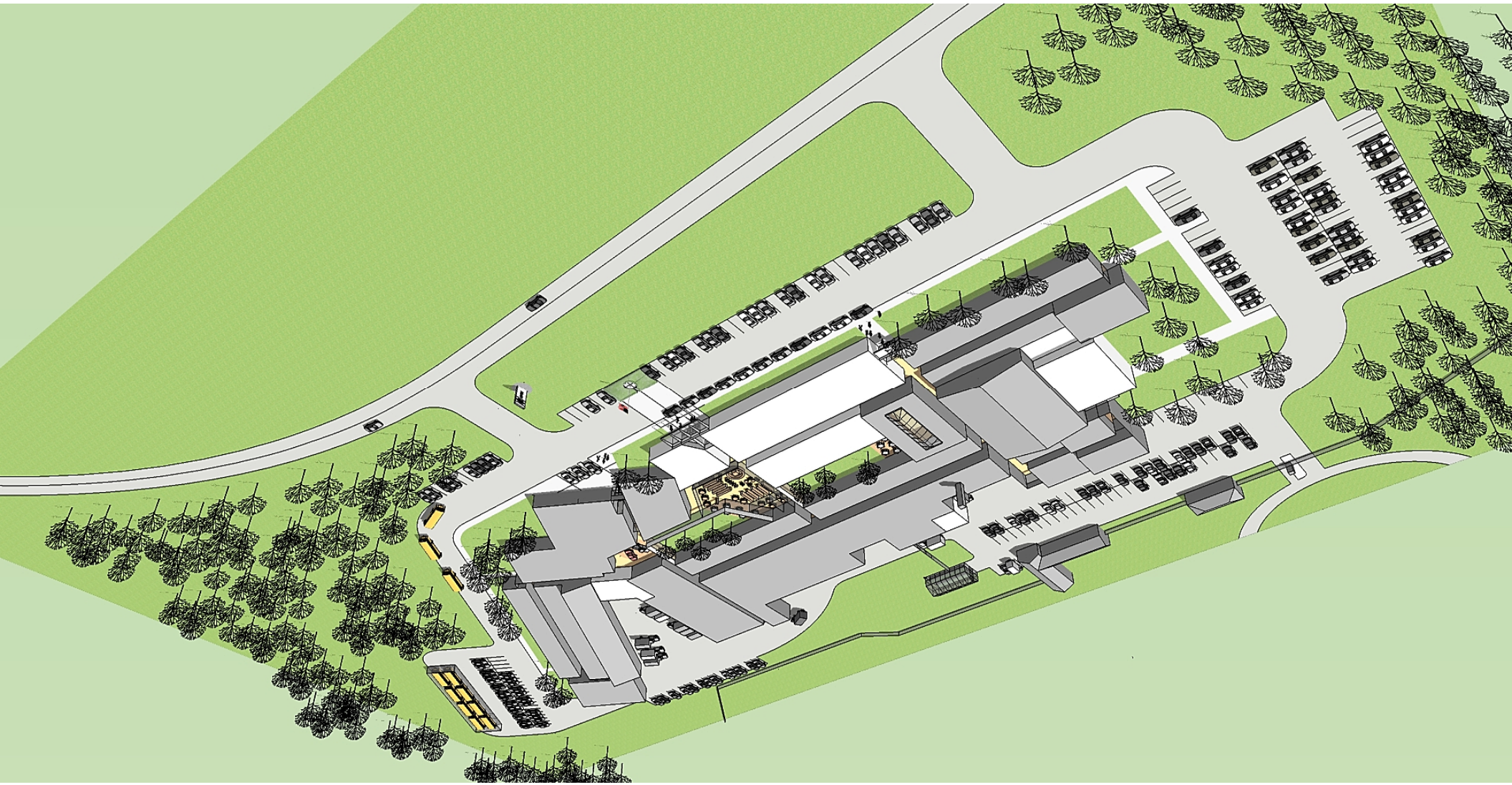
Existing Condition									Scheme A1			
Vocational Program	# Students	Area per Pupil	Minimum Shop Area	Existing Shop Area	Delta	%	%	Support SF	Shop Area	Delta	%	%
Automotive Collison Repair & Refinishing	17	275	4,675	3,845	830	-17.75%	82.25%	280	3,845	830	-17.75%	82.25%
Automotive Technology	26	275	7,150	4,725	2,425	-33.92%	66.08%	430	5,925	1,225	-17.13%	82.87%
Carpentry	30	225	6,750	5,090	1,660	-24.59%	75.41%	730	6,500	250	-3.70%	96.30%
Cosmetology	25	125	3,125	3,000	125	-4.00%	96.00%	375	3,000	125	-4.00%	96.00%
Culinary Arts	29	125	3,625	4,250	625	17.24%	117.24%	685	4,250	625	17.24%	117.24%
Electricity	33	225	7,425	3,885	3,540	-47.68%	52.32%	90	3,885	3,540	-47.68%	52.32%
Graphic Communications	24	150	3,600	3,435	165	-4.58%	95.42%	165	3,435	165	-4.58%	95.42%
Health Assisting	24	125	3,000	1,565	1,435	-47.83%	52.17%	360	3,040	40	1.33%	101.33%
Horticulture	24	175	4,200	4,320	120	2.86%	102.86%	340	4,300	100	2.38%	102.38%
HVAC & R	24	200	4,800	3,090	1,710	-35.63%	64.38%	0	4,350	450	-9.38%	90.63%
Information Support Services & Networking	28	110	3,080	1,695	1,385	-44.97%	55.03%	0	2,920	160	-5.19%	94.81%
Metal Fabrication & Joining Technologies	26	200	5,200	7,440	2,240	43.08%	143.08%	705	6,400	1,200	23.08%	123.08%
MET - Manufacturing Engineering Technologies	42		5,700	5,665	35	-0.61%	99.39%	110	5,440	260	-4.56%	95.44%
Drafting / Electronics	30	110	3,300	2,490	810	-24.55%	75.45%	0	3,150	150	-4.55%	95.45%
Machine Tool Technology	12	200	2,400	3,175	775	32.29%	132.29%	110	2,250	150	-6.25%	93.75%
Other Spaces									Scheme A			
General Classrooms			13,600	11,385	2,215	-16.29%	83.71%	-	13,600	0	0.00%	100.00%
Science Classriooms			6,400	3,830	2,570	-40.16%	59.84%	-	6,400	0	0.00%	100.00%
Cafeteria			3,100	2,850	250	-8.06%	91.94%	-	3,330	230	7.42%	107.42%
Kitchen / Servery			1,920	1,440	480	-25.00%	75.00%	-	2,090	170	8.85%	108.85%
Gymnasium			12,000	7,150	4,850	-40.42%	59.58%	-	7,150	4,850	-40.42%	59.58%
Boys Locker Room			1,750	1,600	150	-8.57%	91.43%	-	1,600	150	-8.57%	91.43%
Girls Locker Room			1,750	935	815	-46.57%	53.43%	-	1,600	150	-8.57%	91.43%
Weight Room			3,000	590	2,410	-80.33%	19.67%	-	1,800	1,200	-40.00%	60.00%
Media Center			3,775	2,210	1,565	-41.46%	58.54%	-	2,400	1,375	-36.42%	63.58%
Auditorium / Lecture Hall			4,133	2,285	1,848	-44.71%	55.29%	-	2,285	1,848	-44.71%	55.29%
Administration / Guidance			3,550	3,520	30	-0.85%	99.15%	-	3,600	50	1.41%	101.41%
Nurse			710	405	305	-42.96%	57.04%	-	750	40	5.63%	105.63%



South Shore Vocational Technical High School

DRA Architects 1" = 60' January 2018

B2



South Shore Vocational Technical High School
Vocational Shops Space Study

Drummey Rosane Anderson Inc.
Revised 1/24/2018

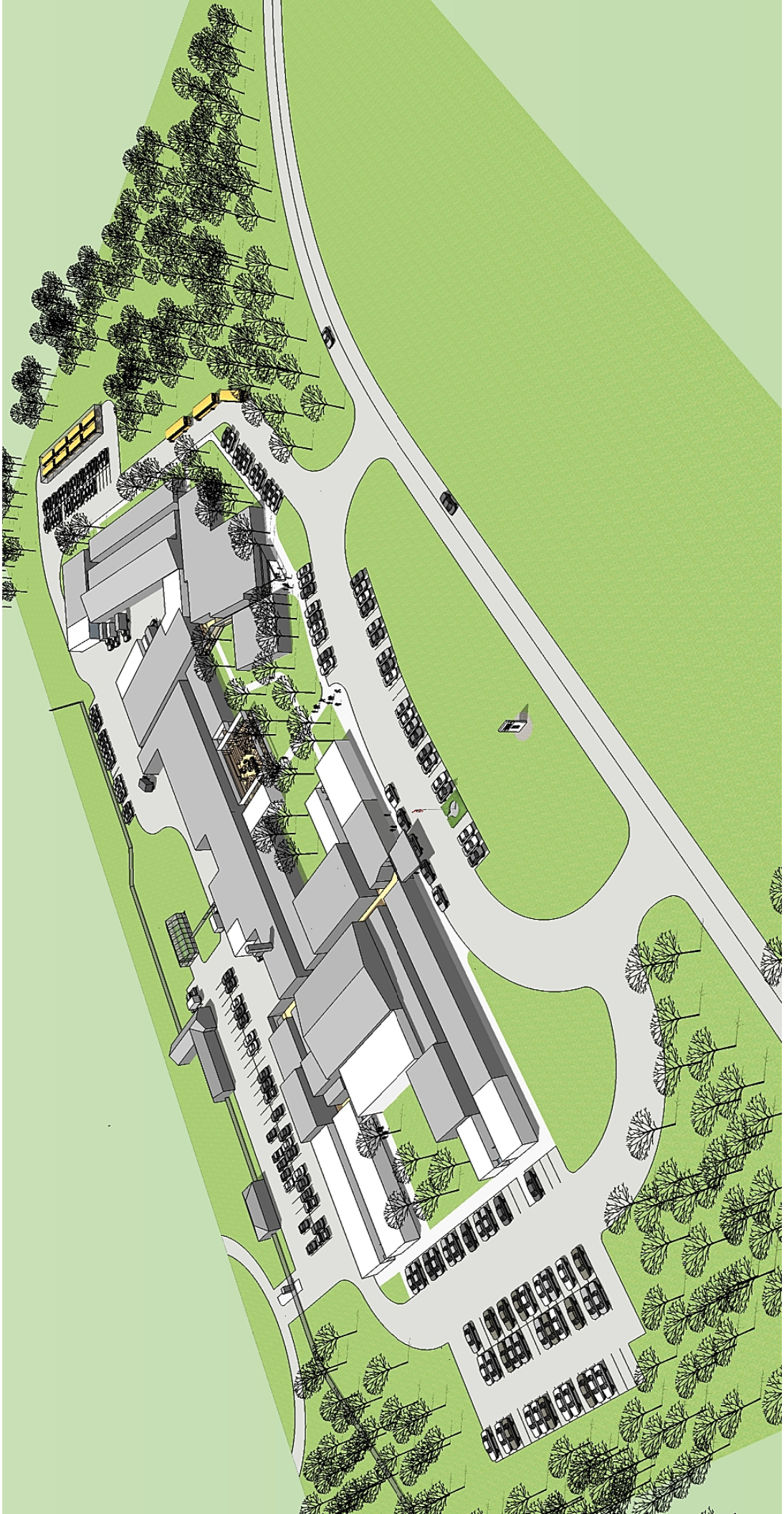
Existing Condition									Scheme B2			
Vocational Program	# Students	Area per Pupil	Minimum Shop Area	Existing Shop Area	Delta	%	%	Support SF	Shop Area	Delta	%	%
Automotive Collison Repair & Refinishing	17	275	4,675	3,845	830	-17.75%	82.25%	280	3,845	830	-17.75%	82.25%
Automotive Technology	26	275	7,150	4,725	2,425	-33.92%	66.08%	430	6,720	430	-6.01%	93.99%
Carpentry	30	225	6,750	5,090	1,660	-24.59%	75.41%	730	6,760	10	0.15%	100.15%
Cosmetology	25	125	3,125	3,000	125	-4.00%	96.00%	375	3,000	125	-4.00%	96.00%
Culinary Arts	29	125	3,625	4,250	625	17.24%	117.24%	685	4,250	625	17.24%	117.24%
Electricity	33	225	7,425	3,885	3,540	-47.68%	52.32%	90	3,885	3,540	-47.68%	52.32%
Graphic Communications	24	150	3,600	3,435	165	-4.58%	95.42%	165	3,435	165	-4.58%	95.42%
Health Assisting	24	125	3,000	1,565	1,435	-47.83%	52.17%	360	3,000	0	0.00%	100.00%
Horticulture	24	175	4,200	4,320	120	2.86%	102.86%	340	4,200	0	0.00%	100.00%
HVAC & R	24	200	4,800	3,090	1,710	-35.63%	64.38%	0	4,350	450	-9.38%	90.63%
Information Support Services & Networking	28	110	3,080	1,695	1,385	-44.97%	55.03%	0	2,950	130	-4.22%	95.78%
Metal Fabrication & Joining Technologies	26	200	5,200	7,440	2,240	43.08%	143.08%	705	6,400	1,200	23.08%	123.08%
MET - Manufacturing Engineering Technologies	42		5,700	5,665	35	-0.61%	99.39%	110	5,440	260	-4.56%	95.44%
Drafting / Electronics	30	110	3,300	2,490	810	-24.55%	75.45%	0	3,150	150	-4.55%	95.45%
Machine Tool Technology	12	200	2,400	3,175	775	32.29%	132.29%	110	2,250	150	-6.25%	93.75%
Other Spaces									**Scheme B**			
General Classrooms			13,600	11,385	2,215	-16.29%	83.71%	-	13,600	0	0.00%	100.00%
Science Classriooms			6,400	3,830	2,570	-40.16%	59.84%	-	6,400	0	0.00%	100.00%
Cafeteria			3,100	2,850	250	-8.06%	91.94%	-	3,330	230	7.42%	107.42%
Kitchen / Servery			1,920	1,440	480	-25.00%	75.00%	-	2,105	185	9.64%	109.64%
Gymnasium			12,000	7,150	4,850	-40.42%	59.58%	-	7,150	4,850	-40.42%	59.58%
Boys Locker Room			1,750	1,600	150	-8.57%	91.43%	-	1,600	150	-8.57%	91.43%
Girls Locker Room			1,750	935	815	-46.57%	53.43%	-	2,000	250	14.29%	114.29%
Weight Room			3,000	590	2,410	-80.33%	19.67%	-	3,000	0	0.00%	100.00%
Media Center			3,775	2,210	1,565	-41.46%	58.54%	-	3,600	175	-4.64%	95.36%
Auditorium / Lecture Hall			4,133	2,285	1,848	-44.71%	55.29%	-	2,285	1,848	-44.71%	55.29%
Administration / Guidance			3,550	3,520	30	-0.85%	99.15%	-	3,600	50	1.41%	101.41%
Nurse			710	405	305	-42.96%	57.04%	-	750	40	5.63%	105.63%

Scope of Work

New Construction
Major Renovation
Minor Renovation

South Shore Vocational Technical High School
DRA Architects 1" + 60' January 2018

C1



South Shore Vocational Technical High School
Vocational Shops Space Study

Drummey Rosane Anderson Inc.
Revised 1/24/2018

Existing Condition									Scheme C1			
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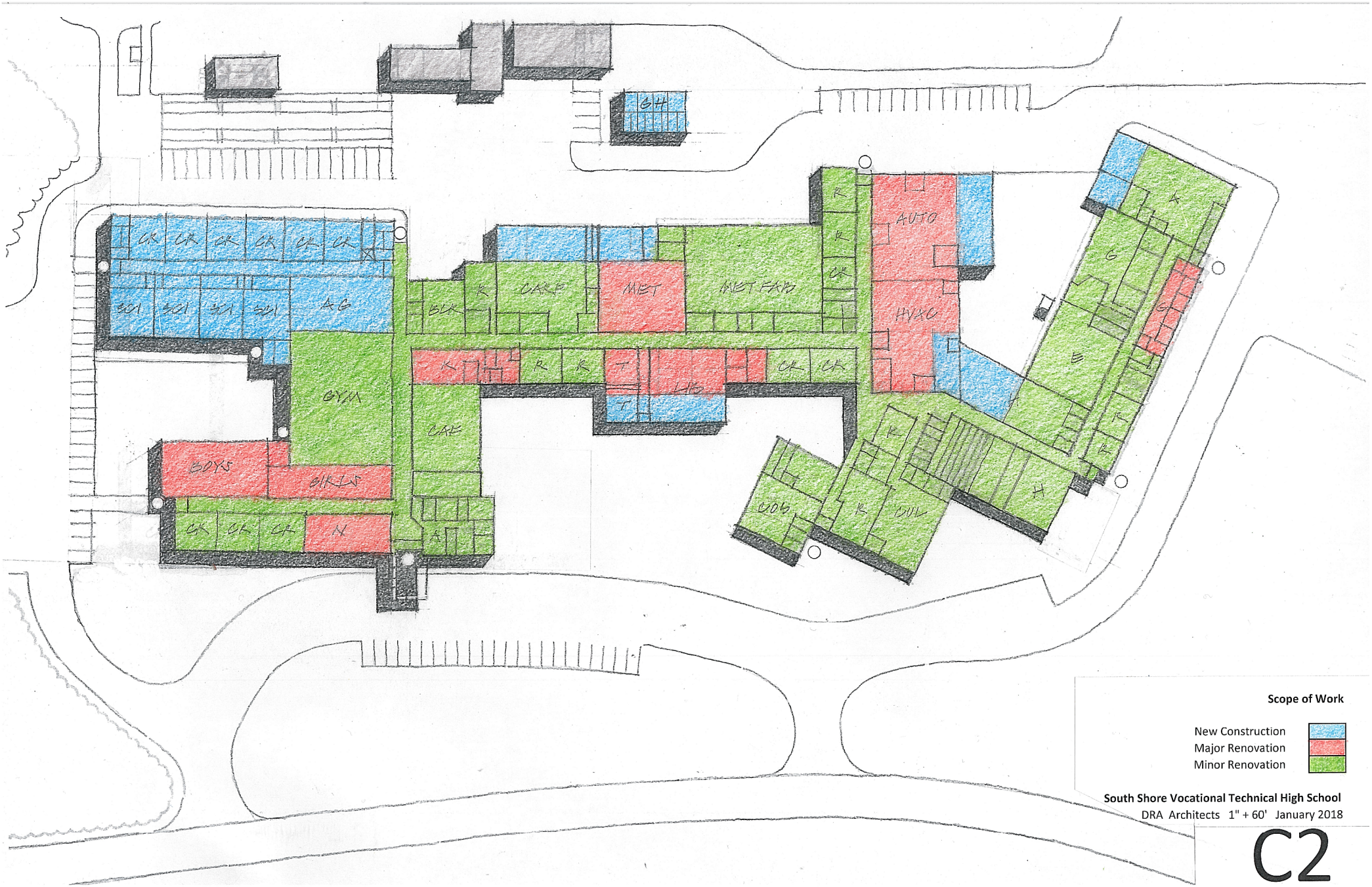
Automotive Collison Repair & Refinishing	17	275	4,675	3,845	830	-17.75%	82.25%	280	4,800	125	2.67%	102.67%
Automotive Technology	26	275	7,150	4,725	2,425	-33.92%	66.08%	430	7,200	50	0.70%	100.70%
Carpentry	30	225	6,750	5,090	1,660	-24.59%	75.41%	730	6,800	50	0.74%	100.74%
Cosmetology	25	125	3,125	3,000	125	-4.00%	96.00%	375	3,000	125	-4.00%	96.00%
Culinary Arts	29	125	3,625	4,250	625	17.24%	117.24%	685	4,250	625	17.24%	117.24%
Electricity	33	225	7,425	3,885	3,540	-47.68%	52.32%	90	3,885	3,540	-47.68%	52.32%
Graphic Communications	24	150	3,600	3,435	165	-4.58%	95.42%	165	3,435	165	-4.58%	95.42%
Health Assisting	24	125	3,000	1,565	1,435	-47.83%	52.17%	360	3,000	0	0.00%	100.00%
Horticulture	24	175	4,200	4,320	120	2.86%	102.86%	340	4,200	0	0.00%	100.00%
HVAC & R	24	200	4,800	3,090	1,710	-35.63%	64.38%	0	5,160	360	7.50%	107.50%
Information Support Services & Networking	28	110	3,080	1,695	1,385	-44.97%	55.03%	0	2,950	130	-4.22%	95.78%
Metal Fabrication & Joining Technologies	26	200	5,200	7,440	2,240	43.08%	143.08%	705	7,000	1,800	34.62%	134.62%
MET - Manufacturing Engineering Technologies	42		5,700	5,665	35	-0.61%	99.39%	110	5,810	110	1.93%	101.93%
Drafting / Electronics	30	110	3,300	2,490	810	-24.55%	75.45%	0	3,400	100	3.03%	103.03%
Machine Tool Technology	12	200	2,400	3,175	775	32.29%	132.29%	110	2,410	10	0.42%	100.42%
Other Spaces									**Scheme C**			
General Classrooms			13,600	11,385	2,215	-16.29%	83.71%	-	12,635	965	-7.10%	92.90%
Science Classriooms			6,400	3,830	2,570	-40.16%	59.84%	-	6,400	0	0.00%	100.00%
Cafeteria			3,100	2,850	250	-8.06%	91.94%	-	3,330	230	7.42%	107.42%
Kitchen / Servery			1,920	1,440	480	-25.00%	75.00%	-	2,105	185	9.64%	109.64%
Gymnasium			12,000	7,150	4,850	-40.42%	59.58%	-	7,150	4,850	-40.42%	59.58%
Boys Locker Room			1,750	1,600	150	-8.57%	91.43%	-	1,600	150	-8.57%	91.43%
Girls Locker Room			1,750	935	815	-46.57%	53.43%	-	1,800	50	2.86%	102.86%
Weight Room			3,000	590	2,410	-80.33%	19.67%	-	2,100	900	-30.00%	70.00%
Media Center			3,775	2,210	1,565	-41.46%	58.54%	-	3,600	175	-4.64%	95.36%
Auditorium / Lecture Hall			4,133	2,285	1,848	-44.71%	55.29%	-	2,285	1,848	-44.71%	55.29%
Administration / Guidance			3,550	3,520	30	-0.85%	99.15%	-	4,110	560	15.77%	115.77%
Nurse			710	405	305	-42.96%	57.04%	-	700	10	-1.41%	98.59%

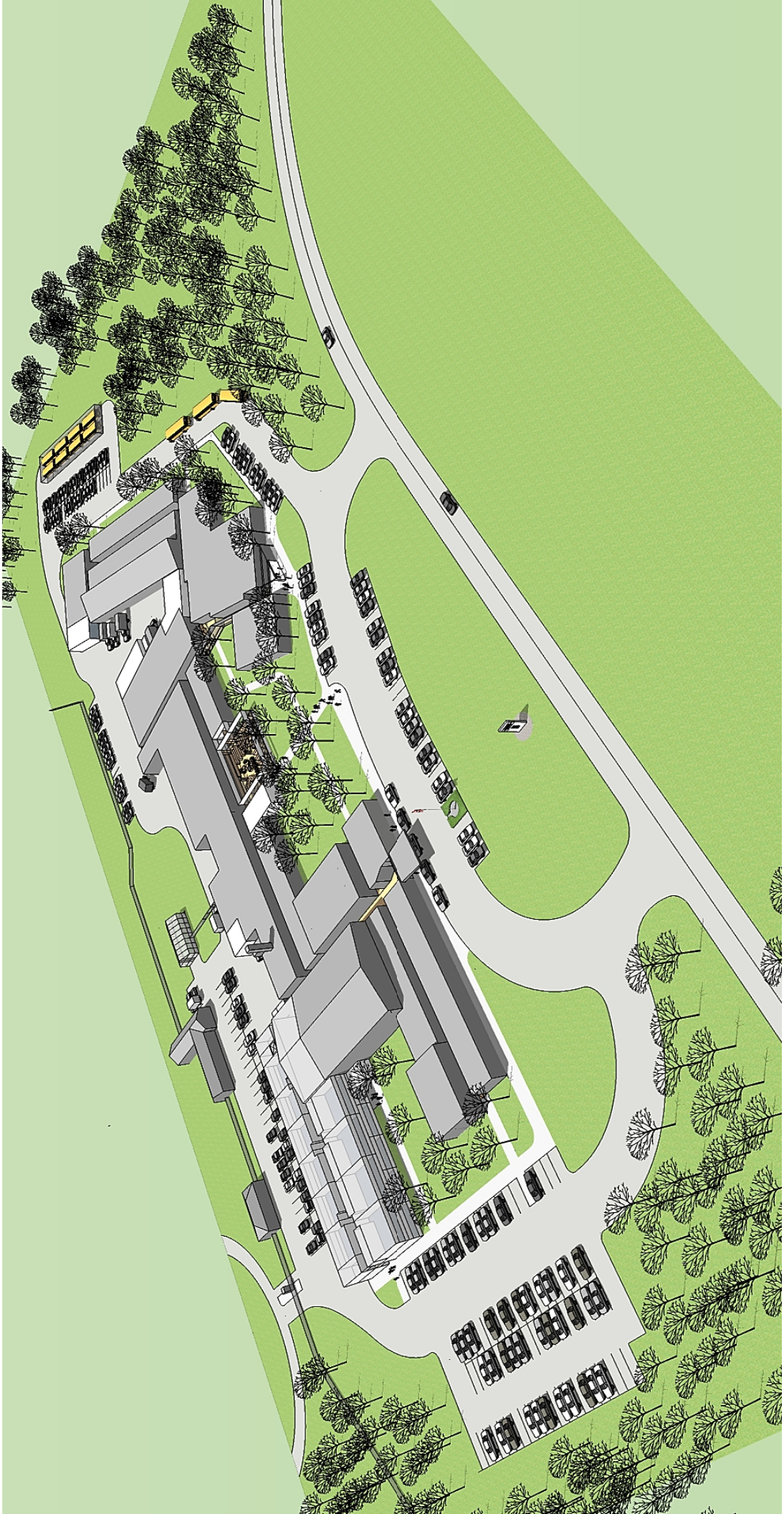


Scope of Work

New Construction
Major Renovation
Minor Renovation

South Shore Vocational Technical High School
DRA Architects 1" + 60' January 2018

C2



South Shore Vocational Technical High School
Vocational Shops Space Study

Drummey Rosane Anderson Inc.
Revised 1/24/2018

Existing Condition									Scheme C2			
Vocational Program	# Students	Area per Pupil	Minimum Shop Area	Existing Shop Area	Delta	%	%	Support SF	Shop Area	Delta	%	%
Automotive Collison Repair & Refinishing	17	275	4,675	3,845	830	-17.75%	82.25%	280	4,800	125	2.67%	102.67%
Automotive Technology	26	275	7,150	4,725	2,425	-33.92%	66.08%	430	7,200	50	0.70%	100.70%
Carpentry	30	225	6,750	5,090	1,660	-24.59%	75.41%	730	6,800	50	0.74%	100.74%
Cosmetology	25	125	3,125	3,000	125	-4.00%	96.00%	375	3,000	125	-4.00%	96.00%
Culinary Arts	29	125	3,625	4,250	625	17.24%	117.24%	685	4,250	625	17.24%	117.24%
Electricity	33	225	7,425	3,885	3,540	-47.68%	52.32%	90	5,895	1,530	-20.61%	79.39%
Graphic Communications	24	150	3,600	3,435	165	-4.58%	95.42%	165	3,435	165	-4.58%	95.42%
Health Assisting	24	125	3,000	1,565	1,435	-47.83%	52.17%	360	3,000	0	0.00%	100.00%
Horticulture	24	175	4,200	4,320	120	2.86%	102.86%	340	4,000	200	-4.76%	95.24%
HVAC & R	24	200	4,800	3,090	1,710	-35.63%	64.38%	0	5,160	360	7.50%	107.50%
Information Support Services & Networking	28	110	3,080	1,695	1,385	-44.97%	55.03%	0	2,950	130	-4.22%	95.78%
Metal Fabrication & Joining Technologies	26	200	5,200	7,440	2,240	43.08%	143.08%	705	7,000	1,800	34.62%	134.62%
MET - Manufacturing Engineering Technologies	42		5,700	5,665	35	-0.61%	99.39%	110	5,810	110	1.93%	101.93%
Drafting / Electronics	30	110	3,300	2,490	810	-24.55%	75.45%	0	3,400	100	3.03%	103.03%
Machine Tool Technology	12	200	2,400	3,175	775	32.29%	132.29%	110	2,410	10	0.42%	100.42%
Other Spaces									**Scheme C**			
General Classrooms			13,600	11,385	2,215	-16.29%	83.71%	-	13,600	0	0.00%	100.00%
Science Classriooms			6,400	3,830	2,570	-40.16%	59.84%	-	6,400	0	0.00%	100.00%
Cafeteria			3,100	2,850	250	-8.06%	91.94%	-	3,330	230	7.42%	107.42%
Kitchen / Servery			1,920	1,440	480	-25.00%	75.00%	-	2,105	185	9.64%	109.64%
Gymnasium			12,000	7,150	4,850	-40.42%	59.58%	-	7,150	4,850	-40.42%	59.58%
Boys Locker Room			1,750	1,600	150	-8.57%	91.43%	-	2,000	250	14.29%	114.29%
Girls Locker Room			1,750	935	815	-46.57%	53.43%	-	2,000	250	14.29%	114.29%
Weight Room			3,000	590	2,410	-80.33%	19.67%	-	3,000	0	0.00%	100.00%
Media Center			3,775	2,210	1,565	-41.46%	58.54%	-	3,600	175	-4.64%	95.36%
Auditorium / Lecture Hall			4,133	2,285	1,848	-44.71%	55.29%	-	2,285	1,848	-44.71%	55.29%
Administration / Guidance			3,550	3,520	30	-0.85%	99.15%	-	4,110	560	15.77%	115.77%
Nurse			710	405	305	-42.96%	57.04%	-	700	10	-1.41%	98.59%

Section 6

Preliminary Cost Data

ELLANA Construction Cost Consultants

South Shore Regional Vocational School
Preliminary Estimate
Based on Scope dated 1/11/18

preliminary only

Version 1.0
1/16/2018

Description	SF totals	pct	SF areas	Rate (ECC)	Scheme A1 Areas	Esc.	Scheme A1 ECC $	Scheme B2 Areas	Pct Cost	Scheme B2 ECC $	Scheme C1 Areas	Esc.	Scheme C1	Scheme C2 Areas	Esc.	Scheme C2
							48,131,000			**51,802,000**			**50,864,000**			**51,940,000**
New construction	**24,700**		**24,700**				**10,362,000**			**14,137,000**			**13,403,000**			**17,116,000**
GFA Areas	**24,700**	100%	**24,700**	$388.43	**24,700**	8%	10,362,000	**33,700**	8%	14,137,000	**31,950**	8%	13,403,000	**40,800**	8%	17,116,000
Major Renovation							**9,411,000**			**8,425,000**			**7,812,000**			**7,305,000**
GFA Areas	**35,300**	100%	**35,300**	$246.86	**35,300**	8%	9,411,000	**31,600**	8%	8,425,000	**29,300**	8%	7,812,000	**27,400**	8%	7,305,000
Lite Renovation							**15,094,000**			**15,976,000**			**16,385,000**			**14,960,000**
GFA Areas	**84,700**	100%	**84,700**	$165.00	**84,700**	8%	15,094,000	**89,650**	8%	15,976,000	**91,950**	8%	16,385,000	**83,950**	8%	14,960,000
Demolition, Hazmat and Protection							**270,000**			**270,000**			**270,000**			**420,000**
Protection for active school	120,000	20%	24,000	$5.00	120,000	8%	130,000	120,000	8%	130,000	120,000	8%	130,000	120,000	8%	130,000
Encapsulation for HAZMAT	120,000	20%	24,000	$5.00	120,000	8%	130,000	120,000	8%	130,000	120,000	8%	130,000	120,000	8%	130,000
Full Building Demolition	500		500	$20.00	500		10,000	500		10,000	500		10,000	8,000		160,000
ADA/MAAB/CODE/ROOF REPAIRS							**4,862,000**			**4,862,000**			**4,862,000**			**4,538,000**
Complete as per sheet	**120,000**	100%	**120,000**	$37.52		8%	4,862,000	**120,000**	8%	4,862,000	**120,000**	8%	4,862,000	**112,000**	8%	4,538,000
MEP SYSTEMS REPLACEMENTS							**7,970,000**			**7,970,000**			**7,970,000**			**7,439,000**
Complete as per sheet	**120,000**	100%	**120,000**	$61.50		8%	7,970,000	**120,000**	8%	7,970,000	**120,000**	8%	7,970,000	**112,000**	8%	7,439,000
Site							**162,000**			**162,000**			**162,000**			**162,000**
Demolition and Earthworks	(areas)						**38,000**			**38,000**			**38,000**			**38,000**
Demolition - paving and car parks	15,000	100%	15,000	$2.00		8%	32,000	1	8%	32,000	1	8%	32,000	1	8%	32,000
Demolition - other site	10,000	100%	10,000	$1.00		8%	6,000	1	8%	6,000	1	8%	6,000	1	8%	6,000
Paving and Carparks	(areas)						**85,000**			**85,000**			**85,000**			**85,000**
Roadways and Bus Areas	3,000	100%	300	$35.00		8%	11,000	1	8%	11,000	1	8%	11,000	1	8%	11,000
Carpark - on grade	10,000	100%	1,100	$35.00		8%	42,000	1	8%	42,000	1	8%	42,000	1	8%	42,000
Carpark lighting	4	100%	4	$7,500.00		8%	32,000	1	8%	32,000	1	8%	32,000	1	8%	32,000
General	(areas)						**39,000**			**39,000**			**39,000**			**39,000**
Landscaping and grassing	12,000	100%	12,000	$2.00		8%	26,000	1	8%	26,000	1	8%	26,000	1	8%	26,000
Site drainage	12,000	100%	12,000	$1.00		8%	13,000	1	8%	13,000	1	8%	13,000	1	8%	13,000

Appendix A-i

Mechanical / Electrical / Plumbing Report

DRAFT

Mechanical, Electrical, Plumbing and Fire Protection Systems
Existing Conditions Narrative

South Shore Vocational Technical High School
Hanover, Massachusetts

December 18, 2017

Prepared By
Consulting Engineering Services, LLC
128 Carnegie Row Suite 204 Norwood, MA 02062
CES Project No. 2017326.00

APPLICABLE CODES AND STANDARDS

The mechanical, electrical, plumbing, and fire protection systems will be reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements.

1. Massachusetts Building Code
2. International Building Code (IBC)
3. International Existing Building Code (IEBC)
4. International Plumbing Code (IPC)
5. International Mechanical Code (IMC)
6. 205 International Energy Conservation Code (IECC)
7. Illuminating Engineering Society Lighting Handbook (IESNA)
8. NFPA 70 - National Electrical Code
9. NFPA 101 – Life Safety Code
10. NFPA 13 – Automatic Sprinkler Systems
11. NFPA 54 – National Fuel Gas Code

FIRE PROTECTION SERVICE

1. The 1992 building addition is served by a 6" fire protection water service fed from the local water company (see picture PFP1). The fire service equipment includes, two wet sprinkler risers which serve various areas of the building, a backflow preventer and two isolation valves that can isolate the backflow preventer for service or shut off the fire protection service to the building. Each wet sprinkler riser is equipped with a tamper and flow switch. The fire service also includes a single fire department connection equipped with check valve and a water gong, which are located on the exterior wall of the fire service room.

2. The sprinklers throughout the 1992 building consist of concealed type pendants and exposed upright heads.

3. There is currently no fire protection in the original building constructed in 1962.

PLUMBING SYSTEMS:

Existing Plumbing Utilities

1. Domestic Water:

    A. The 1962 building is currently served by a 4" domestic water main fed from the local water company. The 4" water service serves the original 1962 building and enters the building from below grade into room #180. The water main serving the 1962 original building reduces to 3" after the water meter and then is distributed throughout the building.

    B. A second 4" water service serves the 1992 addition and enters the building in the fire protection service room. The water service main includes a separate water meter from the original building and is protected by a WATTS 909 reduced pressure backflow preventer.

2. Natural Gas Service:

    A. The 1962 building is currently served by a 1-1/4 natural gas service from the street. The gas service goes through a pressure regulator and gas meter before increasing to 3" and being distributed to all gas fired appliances (see picture PFP2). The 1962 gas service was also extended to serve the updated kitchen equipment as well as the science areas during the 1992 renovation/addition project.

    B. The 1992 building is currently served by a 6" natural gas service that enters the building outside of cosmetology Shop 100 and runs above ceiling to distribute throughout the building. The gas service serves the gas fired roof top units for the 1992 building addition.

    C. Overall, the gas service seems to be in good condition and is operating correctly.

3. Sanitary Service: The existing building is currently provided with several sanitary waste water laterals. The existing piping material is cast iron. The piping is approximately 55 years old and nearing the end of its useful life expectancy. The waste water system is served by a septic tank and leaching field, which is not part of this report.

4. Storm Service: The existing building is provided with roof drains connected to cast iron storm piping. There are no overflow drains. The storm drains were noticed to be in poor condition with some of the drain guards corroded and missing.

Plumbing Fixtures and Specialties

1. Water closets are wall and floor mounted vitreous china fixtures with sensor operated flush valves. The flush valves are in like new condition along with the fixtures. ADA compliant fixtures are provided in most spaces as required. (see picture PFP3)

2. Urinals are wall mounted vitreous china fixtures with sensor operated flush valves. The fixtures are in good condition and ADA compliant fixtures are provided. (see picture PFP4)

3. Lavatories are wall mounted vitreous china with sensor faucets. Lavatories are provided with insulation wrap for exposed piping below. Lavatory insulation wrap appears to be damaged or not installed correctly on some fixtures. The sensor faucets and fixtures are in good condition. (see picture PFP5).

4. Drinking fountains/ bottle fillers are stainless steel wall mounted and appear to be ADA compliant. Drinking fountains/ bottle fillers appear to be fairly new and in good condition.

5. There are classroom sinks provided in most of the technical classrooms. Sinks are made up of floor mounted cast iron trough type sinks or floor mounted sinks with foot activated faucets (Refer to picture PFP6 & 7). These sinks appear to be in fair condition.

6. The kitchen has hand sinks, prep sinks, three bay sink, and above grade grease interceptors (Refer to picture PFP8 and PFP9). The above grade grease interceptors seem to be in fair/ poor condition. The kitchen also consists of a full cooking range and hood with fire suppression system (see picture PFP14) along with kettles, walk in refrigerators and freezers and dishwasher. Much of the kitchen equipment appears to be in fair condition.

7. Janitor/Utility sinks are located throughout the building. Sinks are in fair condition with many of the sinks being original to the building.

8. Emergency eyewash & emergency showers (see picture PFP10) are provided throughout the building in technical classrooms where required. Eye washes and emergency showers appear to be in good condition. Eyewashes/ emergency showers were noticed to have the waste piped into a bucket in lieu of a floor drain as standard practice.

9. Floor cleanouts are provided to serve the buried waste system. Floor drains appear to be in fair condition.

Domestic Hot Water Systems

A. The building domestic hot water is provided by (2) HTP 299 MBH gas fired, condensing hot water heaters with a 200 gallon hot water storage tank (Refer to picture PFP11 & PFP12). The hot water heaters and storage tank were installed in 2013 and are in good condition. Domestic hot water is distributed throughout the building via (5) circulation pumps with aquastats and (2) high/ low tempering/mixing valves (see picture PFP13). Pumps and mixing valves were installed in 2013 and appear to be in good condition.

B. Water is distributed at multiple temperatures throughout the building. The kitchen is served with a 140 F water line for dishwashing equipment, while sinks and most lavatory fixtures are provided with 120 F water. In the original building, electric- tank type water heaters were noticed to serve larger bathroom groups.

Specialty Systems

A. Acid Waste System: An acid waste system serves the science labs located in the 1962 building. (2) 15 gallon acid neutralization tanks are provided to treat the acid waste before it enters the overall building sanitary system.

B. Oxygen- Acetylene System: The oxygen- acetylene system is located in the gas storage house which is outside, adjacent from room 228 and 284 in the original 1962 building. Each system is piped into the building underground and runs to a manifold which serves the welding stations in the school.

C. Waste Oil: A waste oil collection tank is located outside of room 324. A collection tray is located on the inside of the building and is piped to the buried tank on the exterior of the building. The waste oil tank is equipped with a pump out line so that an oil truck can come and service the tank.

D. Car Hoist System: Buried oil tank with valving and air compressor for operation of car hoist system.

MECHANICAL SYSTEMS:

1. The current building hydronic hot water system is served by (3) Camus Dynaforce 3000 condensing, gas fired boilers, which were recently installed in 2016 (see picture M1 and M2). These boilers are rated at 283.5 MBH with a 15:1 turn down ratio. Each condensing boiler is provided with a dedicated in-line pump that ensures minimum flow through the boiler at all times. The pumps are model Flo Fab 880 and appear to be in good working condition. The boilers are served by natural gas and are vented separately through the roof. An existing cast iron boiler (from 1962) has been left as an emergency back-up boiler and must be started manually, if needed. The existing boiler is dual fuel utilizing natural gas and oil. The oil is provided by an above ground, exterior tank, which is located outside of the boiler room. The oil tank has an approximate capacity

of 10,000 gallons (see picture M3). The new boiler plant appears to be in good condition and operating correctly.

2. Hot water is distributed throughout the building via (2) TACO 5010 15 HP hot water pumps that were upgraded over the existing hot water pumps in 1992 (see picture M4). These pumps are floor mounted and seem to be in good condition. The pumps are constant flow pumps and are not equipped with VFD's. Hot water is distributed throughout the building via piping above the ceilings. The hot water piping serves terminal units such as perimeter radiation, unit ventilators, cabinet unit heaters, unit heaters and fan coil units. The piping serving the terminal units is original to the building and is in poor to fair condition. Many cabinet unit heaters, fin tube radiation and unit ventilators are original to the building and are currently operating past there useful life expectancy (Refer to picture M5, M6, M7 & M19).

3. The ventilation for the 1962 building consists of exhaust fans, unit ventilators/ fan coil units (wall or ceiling hung) (see picture M8), and operable windows. Some classrooms also have paddle fans to help with "cooling" during the warmer months (see to picture M10). All of the exhaust fans and unit ventilators are in poor to fair condition and should be replaced.

4. The ventilation for the 1992 building addition consists of ceiling suspended fan coil units ducted to the exterior providing OA to the space (see picture M11). Units are equipped with hot water coils for heating, and no cooling. For areas such as the restaurant, classroom/ lecture and cosmetology, the spaces are served by a dedicated gas fired rooftop unit with on-board DX cooling that provides ventilation, heating and cooling to the spaces (see picture M12). These units were replaced last year and are in good condition. The auto body shop and culinary arts classrooms are also served by dedicated gas fired rooftop units, except these units are heating only. The units seem to be in fair condition.

5. Dedicated cooling units have been added overtime and were noticed in multiple areas throughout the buildings. Window AC units and single split VRF units. VRF units were observed in the nurses office and in Graphics Art. These units are in good condition (Refer to picture M13 & M14).

6. Gymnasium: The gym is served by (2) 5,500 CFM fan coil units, which are suspended from the structure (see picture M15). The fan coil units are ducted to the outdoors and provide ventilation to the space as well as heating through hot water coils which are provided inside the unit. The units are original to the building and are in fair condition. Two paddle type ceiling fans are provided in the space to assist with air stratification in the space and cooling during the summer months. The fans are provided with cages that appear to have been damaged over the years.

7. Kitchen Area: The existing kitchen was upgraded in 1992 with a 2,800 CFM dedicated outdoor air unit which provides make-up air for the space. The make-up air unit (RTU-3) is a gas fired unit with no cooling capability. The kitchen and dishwasher exhaust fans were also upgraded in 1992 (see picture M16). The fans are roof mounted up-blast type fans. Fans and make up air unit seem to be in fair condition and are approaching their life expectancy.

8. Woodworking: The space is served by a dedicated fan coil unit that is ducted to the outside for ventilation air. Heating is provided to the space via a hot water coil located inside the fan coil unit. Ceiling suspended air filtration system (air scrubbers) (see picture M9) are provided in the space to reduce the amount of dust and debris that have been introduced to the air via the wood working equipment. The wood working equipment is hard ducted and exhausted to an outdoor dust collector (see picture M17). The dust collector appears to be in good condition.

9. Auto body/ Auto repair shop: Both areas contain an arrangement of hydraulic lifts, dedicated exhaust fans, paint booths and car exhaust systems. All systems appear to be in fair condition and operating correctly.

10. The existing temperature control system in the building is pneumatic, including valves and thermostats. There is a central air compressor with air dryer located in the boiler room. The air compressor is in fair to poor condition and is past its useful life. Recently added equipment such as the boilers and water heaters are provided with their own on-board controls. The school is currently not using a building wide BMS system, although a small Alerton system was installed in 2012.

Electrical Systems:

1. The existing electrical service, which serves the original building, is a 2,000amp, 208/120volt, 3-phase, 4-wire service that consists of a main disconnect switch and distribution section switchboard. The CT cabinet and utility company meter are remote from the switchboard. The switchboard is manufactured by General Electric and was installed during the original construction of the building. The service equipment is in fair condition. (see picture E1 thru E5)

2. The original building utility company transformer is located in a room inside the building. Access to this space is restricted.

3. The original building has an indoor natural gas fired 60 kilowatt Onan emergency generator with a 200 amp automatic transfer switch. (see picture E7)

4. The building addition electrical service, is a 1,600 amp, 208/120volt, 3-phase, 4-wire service that consists of a main disconnect switch and distribution section switchboard. The CT cabinet is integral to the switchboard with the utility company meter remote from the switchboard. The switchboard is manufactured by General Electric and was installed during the building addition project. The service equipment is in good condition. (see picture E6)

5. The building additions utility company transformer is pad mounted located outdoors adjacent to the building additions emergency generator.

6. The building addition has an outdoor natural gas fired Olympian emergency generator with an automatic transfer switch. The size of this generator could not be verified (unit appears larger than the 30 kilowatt unit depicted on the original building addition drawings). (see pictures E8 & E9)

7. The electrical power is distributed through the building by circuit breaker type panelboards, grounded type duplex receptacles with GFCI type receptacles located in toilet rooms, kitchens, etc. This equipment ranges from fair condition (those panels original to the building) to good condition for those panels added during the last renovation/addition. (see picture E13, E14 & E20 & E22)

8. Lighting throughout the facility consists of a number of type of light fixtures including but not limited to the following see picture E15, E16, E18 & E19):

    a. Recessed 2x4 indirect/direct fluorescent fixtures

    b. Surface mounted wraparound fluorescent fixtures

    c. Surface or pendant mounted industrial fluorescent fixtures

    d. Surface mounted LED wraparound fixtures in the Gymnasium

e. Recessed downlights

f. Lamps

i. T8 fluorescent lamps

ii. U bent tube T8 lamps

iii. LED

9. The fire alarm system consists of a EST zoned fire alarm control panel (20 active zones), remote graphic annunciator, manual fire alarm pull stations, horn strobes devices, smoke detectors, and duct smoke detectors. The fire alarm control panel is in fair condition. The majority of the manual fire alarm pull stations are not ADA compliant (mounted too high above floor level). The horn strobe units appear to be ADA compliant. Additional fire alarm horn strobes may be required to meet current code requirements. (see picture E10 thru E12)

10. The exit signs throughout the building are white plastic with integral batteries. These units are in fair condition. (see picture E17)

11. The emergency lighting throughout the original building is recessed downlights, within the building addition emergency power is wired to the ceiling mounted light fixture, such that approximately every fourth corridor light fixture is on emergency power. This equipment is in fair to good condition. A test of this equipment should be done to assure proper emergency lighting is provided.

12. The site lighting consists of wall mounted fixtures, wall mounted flood light fixtures and pole mounted light fixtures. The fixtures are in fair condition. A nighttime survey was not provided to determine proper lighting levels.

13. Security features in the building consist of intrusion detection, and access control at various doors around the building as well as closed circuit television cameras. All of this equipment is in good condition.

MEP/FP Systems Recommendations:

- Overall the condition of the MEP/FP systems are fair to good. The systems seem to be operating without many problems, but many of the systems are aged and beyond their useful life expectancy.

- Provide fire protection throughout the entire building.

- Upgrade the HVAC control system to a new electronic system with energy management capability. Recommended for energy efficiency and savings. This would require removal of all of the pneumatic equipment and piping and replace with new electronic valves, wiring, and control panels.

- Remove and replace the existing unit ventilators, cabinet heaters and finned tube radiation. This equipment is beyond its expected service life and should be replaced with modern energy efficient systems that meet current code requirements, ventilation requirements and energy efficiency standards.

- Provide new CO sensors and connect them to the building management system monitoring and notification of alarms.

- Considerations should be given to replace the existing zoned fire alarm system to an addressable type system. In addition add fire alarm system devices to comply with latest code requirements. This would require the addition of additional power supplies, electrical branch circuit wiring, fire alarm devices and programming. Voice evacuation systems should be provided in the Gymnasium and Cafeteria.

- Replace the original buildings existing electrical infrastructure. The existing equipment is beyond its expected service life and should be replaced. Parts for the existing electrical panels are no longer readily available. This would include an evaluation of the electrical needs of the school, including the addition of air conditioning and a new electrical service be provided with branch circuit panelboards and feeders to replace the existing.

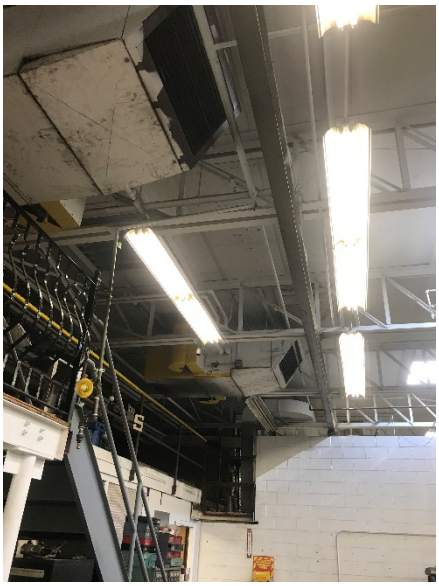
- Upgrade the interior lighting with new fixtures using LED technology.

- Upgrade lighting controls throughout the building to meet the latest energy code requirements. Also recommended for energy savings and lower maintenance cost.

- Provide additional security system components, such as cameras to provide full building coverage.

Mechanical Pictures

		
M1 - (3) Camus boilers installed in 2016		M2 - Ceiling hung expansion tanks
		
M3 - Exterior above grade oil tank		M4 - Hydronic base mounted hot water pumps.

		
M5: Typical hydronic cabinet unit heater		M6 - Typical hydronic radiation
		
M7 – Typical Unit Ventilator		M8 - Typical ceiling suspended fan coil unit

		
M9 - Air scrubber installed in woodworking room		M10 - Typical paddle fan throughout some shops
		
M11 - Typical ducted fan coil unit.		M12 - Typical packaged roof top unit with on board DX cooling

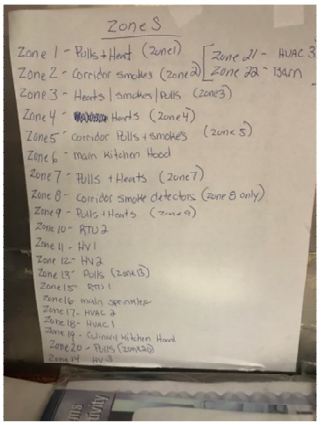
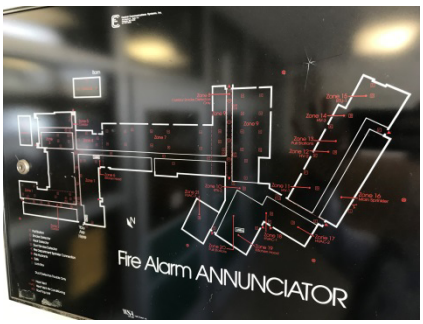
		
M13 - Outdoor condensing unit for indoor VRF wall mounted split unit		M14 – A/C split units installed in classroom.
		
M15 - Typical ceiling suspended fan coil unit. Two units serve gymnasium		M16 - Kitchen exhaust fan

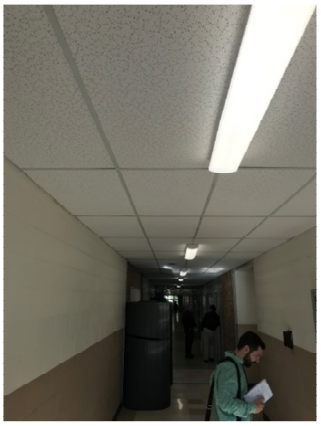
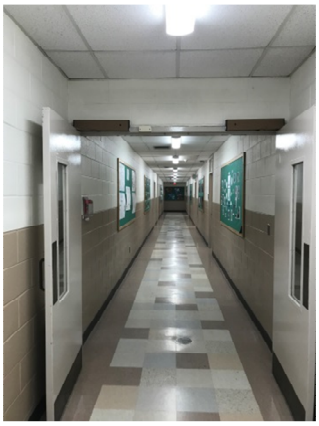
		
M17 - Dust collector on exterior of building		M19 - Ceiling suspended unit heaters

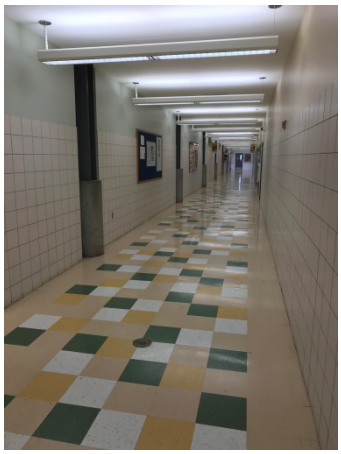
Electrical Pictures

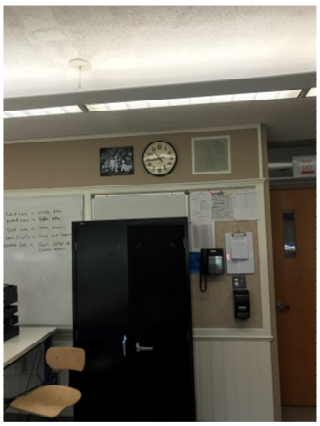
		
E1 – Original Building Main Disconnect Switch		E2 – CT Cabinet and Meter
		
E3 – Electrical Distribution		E4 – Electrical Distribution

		
E5 – Electrical Distribution		E6 – Addition Electrical Service
		
E7 – Original Building Generator		E8 - Addition Generator

		
E9 – Building Addition Transfer Switch		E10 – Main Fire Alarm Panel
		
E11 – Fire Alarm Zones		E12 – Fire Alarm Annunciator Panel

		
E13 – Motor Control Center		E14 – Motor Control Center
		
E15 – Corridor Lighting		E16 – Corridor Lighting

		
E17 – Exit Signage/Security Camera		E18 – Gymnasium Lighting
		
E19 – Addition Corridor		E20 – Kitchen Panels

		
E21 – Typical Classroom Technology		E22 – Typical Shop Panel

Plumbing/Fire Protection Pictures

		
PFP1 – Fire Protection and domestic water service serving 1992 addition		PFP2 – Natural gas service 1962 building
		
PFP3 – Wall mounted water closet		PFP4 – Wall mounted urinal

		
PFP5 – Wall mounted lavatories		PFP6 – Floor mounted sink in shop
		
PFP7 – Floor mounted sink in shop		PFP8 – Grease trap mounted below kitchen sink

		
PFP9 – Kitchen 3-bay sink with inline grease trap		PFP10 – Emergency shower/eye wash with discharge into bucket
		
PFP11 – Gas fired domestic water heaters		PFP12 – Domestic hot water storage tank

		
PFP13 – Domestic hot water tempering valves		PFP14 – Kitchen hood fire suppression system

Appendix A-ii

Civil Report

SITE EVALUATION MEMORANDUM

Re: South Shore Vocational Technical H.S. – Site Evaluation SCI # 17220.00

To: Judd Christopher, DRA Architects

From: Paul Carey, PE Revised: January 19, 2017

This memorandum provides a summary of our evaluation of specific site conditions and deficiencies at South Shore Vocational Technical High School located in Hanover, Massachusetts.

SCOPE OF EVALUATION

The evaluation includes review of available drawings and reports and site observations made on our December 15, 2017 site visit. The scope of the evaluation was to evaluate site elements from a 10-year outlook perspective and was developed from discussions with the project manager and Bob Moorhead, the Director of Buildings and Grounds at the School, as listed below:

1. Review drainage issues in the northeast quadrant of the football and track and field facility.
2. Review drainage issues in the outfield of the baseball field.
3. Feasibility of replacing the stone dust track with an asphaltic surface.
4. Feasibility of a constructing a detached out-building on the southwest portion of the property.
5. Review of the existing sewage collection, distribution and discharge system.

The map enclosed as SKCE-001 shows an aerial view of the site with water resource protection areas and specific locations of each scope item.

EXISTING CONDITIONS

The site, 476 Webster Street, identified on the Hanover Assessors Map 10 as Lot 19, is a 46.60-acre parcel consisting of primarily uplands with wetlands on the north, east and southern edges of the site. There is also a wetland across Webster Street to the northwest of the site.

The main building of the school was built in or around 1961 and there was an addition built at the southwest end of the original building in or around 1992. The buildings are located approximately 200 ft from Webster Street with two out-buildings including a garage with new addition directly south of the main school building and a concessions facility with restrooms near the northwest corner of the track. Parking for visitors, staff, and faculty is located in the front (north) of the school buildings and there is additional parking in the rear of the building between the building and the sports fields. There are two smaller parking areas adjacent to the northeast and southwest ends of the school.

The baseball field with an outfield that appears to be used for soccer / lacrosse is located southeast of the building. The football field, surrounded by a stone dust track, is located in the southeastern portion of the site.

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There is an unnamed stream that is shown as beginning at the outfall of a 30" RCP on the USGS Topographic Map as shown on SKCE-001. There are some isolated streams shown on the Hanover GIS map (See Figure 1). These likely only run intermittently during wet periods and act as drainage ditches. They are not protected under the Rivers Protection Act since they are not shown on the USGS Topographic Maps. The two headwalls shown on the Hanover GIS Map are connected by a pipe as shown in Figure 1.

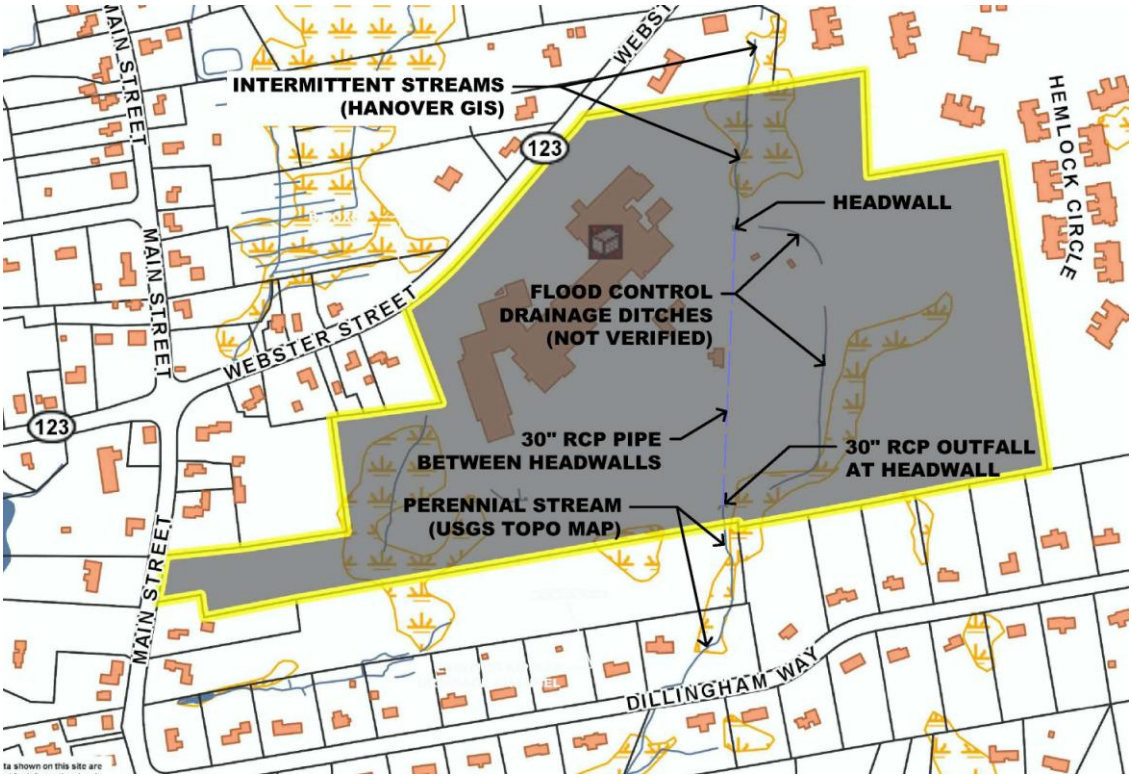

Figure 1 - Hanover GIS Map Showing Regulated & Unregulated Streams

FOOTBALL FIELD & TRACK DRAINAGE ISSUE

The minor flooding on the football field develops in the northeast portion of the field as shown in SKCE-001. This flooding, which was not observed during our site visit, appears to cover approximately 8,000 sf of the field adjacent to the softball diamond and may include a small portion of the track.

There is a drainage ditch along the north and west sides' of the field just beyond the track at the edge of the wooded area. These ditches were observed holding water that froze during the cold period just prior to our site visit (See Figure 2).

Potential remediation of flooding in this area might include some minor grading with placement of an area drain at the low point of the grading with a discharge pipe connected to the drain pipe between the two headwalls.

Permitting this remedial work may include a Request for Determination of Applicability (RDA) or Notice of Intent (NOI) from the Hanover Conservation Commission with the areas within 100 ft of the work being evaluated by a wetland scientist.

Figure 2 – Drainage Ditch Adjacent to Track

BASEBALL OUTFIELD DRAINAGE ISSUE

The minor flooding on the baseball field develops in the southeast (left field) portion of the field as shown in SKCE-001. This flooding, which was not observed during our site visit, appears to cover approximately 10,000 sf of left field adjacent to what would be the left field foul line approximately 50 ft south of the edge of the baseball diamond.

As with the minor flooding at the football field location, potential remediation of flooding in this area might include some minor grading with placement of an area drain at the low point of the grading, off of the playing surface with a discharge pipe connected to the unverified drain pipe between the two headwalls.

Permitting this construction may include an RDA or NOI from the Hanover Conservation Commission with the areas within 100 ft of the construction work being evaluated by a wetland scientist.

RESURFACING TRACK

During our site visit Mr. Moorhead suggested that we look into replacement of the stone dust track (See Figure 3) with an asphalt track. With the sense of minimal use of the track we evaluated the costs of an asphalt track within the footprint of the existing stone dust track (i.e. we did not look into design of standard requirements of a track used for competitive athletic events. A summary of costs is provided in the Cost Summary Section.

Figure 3 – Existing Stone Dust Track

Permitting this construction may include an RDA or NOI from the Hanover Conservation Commission with the areas within 100 ft of the construction work being evaluated by a wetland scientist.

Construction of Detached Building

As described by Mr. Moorhead, there is a potential plan to be developed to construct a small detached building for use(s) to be determined south of the southeast addition of the main building (see SKCE-001).

This location is within the 100-ft buffer zone to a recently flagged wetland therefore permitting this construction would likely include a NOI filing with the Hanover Conservation Commission. The wetlands will need to be reflagged and surveyed unless the current flagging is still in place and was done less than three years prior to future permitting. This project would likely require Title 5 permitting with the Hanover Board of Health as well.

REVIEW OF EXISTING SEWAGE DISPOSAL SYSTEM

Title 5 design flows were calculated using enrollment and faculty staffing data for the 2016-2017 school year. These calculations are summarized in Table 1 below.

Table 1 - Title 5 Daily Design Flow Calculations

School Year	2017 - 2018	
Students	650 [1]	
Faculty & Staff	130 [1]	
Total Population	780	
Unit Flow (310 CMR 203)	20	gpd/person
Title 5 Design Daily Flow	15,600	gpd

This design flow exceeds the maximum Title 5 flow of 10,000 gpd and even the 15,000 gpd that may be allowable for schools with a variance from the Massachusetts Department of Environmental Protection (DEP). However, it is common

[1] Email correspondence from Thomas Hickey, Superintendent (17 Jan 2018)

for schools to use less water than the Title 5 design criteria of 20 gpd/person and Title 5 allows schools to seek a variance from the 10,000 gpd limit, up to 15,000 gpd, provided the design flow is proven by a water use analysis quantifying actual water use for the school while the school is in session.

While a full Title 5 Inspection of the Sewage Disposal System (SDS) was outside of the scope of this evaluation we did complete a cursory inspection of all accessible components of the SDS during our site visit including the following components of the system:

- The grease trap that receives flows from the kitchen sinks
- The grease trap sewer manhole
- The septic tank / pump station south of the building
- The pump station north of the building and,
- The two Distribution Boxes that distribute flow to two leaching systems in the lawn area along Webster Street.

The grease trap, with an estimated at 10,000 gallons of capacity, appeared to be serviceable (See Figure 4). The grease trap receives flows from the cafeteria kitchen sinks to allow fats, oils, and grease (FOG) to separate from the water column by floatation as the water cools. As describe by Mr. Moorhead, this tank is pumped out on an annual preventative maintenance basis.

Figure 4 – Grease Trap Showing only Light Accumulation of FOG

The sewer manhole directly downstream of the grease trap outlet is also in serviceable condition. It appears that this manhole also accepts wastewater from the pump station serving the concession facility near the sports field (See Figure 5) although this could not be verified during our site visit.

Figure 5 – Sewer Manhole with what is Believed to be the Force Main from the Concession Stand

There is an approximately 130-ft 4-in pipe that connects this manhole to the septic tank. During our visit Mr. Moorhead informed us that this pipe has sag(s) in it as confirmed by camera inspection. Mr. Moorhead has this pipe cleaned annually as part of a preventative maintenance program to avoid clogging at the sag(s).

The septic tank is located approximately 10-ft from the southern face of the school across from the new maintenance building that was under construction during our site visit. The septic tank also receives wastewater flows from the main building sewer and from the new 1,000 gallon septic tank located in front of the new maintenance building. There is a lot of concrete corrosion evident in the tank risers and most of the manway ladder steps were corroded in many cases to the point where the cross steps were corroded completely off (See Figure 6).

Figure 6 – View of Septic Tank Manway with Corroded Steps

There also a pump chamber / compartment associated with the septic tank (See Figure 7). This chamber pumps the septic tank effluent around the west side of the school and discharges to a second pump chamber located in front of the school building (See SKCE-001). Similar to the septic tank/compartment the risers and steps have undergone sever corrosion and Mr. Moorhead told us that he recently had a pump fail due to becoming jammed by a piece of concrete that corroded off the tank.

We only discovered one visible manhole cover associated with the pump chamber located north of the school. Unfortunately, the manhole cover could not be removed during our site visit to inspect the inside of the chamber.

Figure 7 – View of Pump Chamber Manway with Power & Control Wiring

The septic tank effluent is pumped from this pump chamber to two separate distribution boxes (D-Boxes); each D-Box distributes flow to two separate soil absorption systems (SAS). Both D-boxes were inspected and show no signs of backup from the SAS (See Figure 8 & 9) however both show signs of leaking or uneven flow as the water level in the D-box sumps was not at all the inverts of the discharge pipes.

This condition may not require remediation since the pumped effluent should discharge into the D-boxes at a rate that would surcharge the D-box above the inverts of all distribution pipes minimizing unequal flow to the SAS.

Figure 8 – View of D-box Serving the West Side Soil Absorption System

Figure 9 – View of D-box Serving the East Side Soil Absorption System

The SAS, constructed during the 1992 addition project, were identified as leaching fields on the 1992 Plan Set, but this could not be field verified during our site visit. The SAS on the east side of the north yard is shown to be approximately 18,700 sf and the SAS to the west is shown to be approximately 4,900 sf on the 1992 plan set for a total leaching area of 23,600 sf. The closest test pit to the leaching fields is TH#1 as shown on SKCE-001 which was conducted during the initial 1961 design. The test pit log for TH#1 describes the parent soil layer as sand. A perc-test was not performed near this test pit, but most sands will perc at a rate less than 5 minutes per inch with a corresponding long term acceptance rate of 0.74 gpd/sf of leaching area. This results in enough leaching capacity for 17,464 gpd, well above the calculated Title 5 design flows.

However, the TH#1 soil log also shows that groundwater was encountered at 2-ft below grade. This should be verified by a Title 5 Soil Evaluation to document weather the SAS is connected to seasonal high groundwater.

REGULATORY CONSIDERATIONS

Water Resource Protection Zones

As discussed previously, the site is primarily uplands with wetlands on the north, east and southern edges of the site. There is also a wetland across Webster Street to the northwest of the site. There is an unnamed stream that is shown as

beginning at the outfall of a 30" RCP on USGS Topographic Map as shown on SKCE-001. There are also isolated streams shown on the Hanover GIS Map of the area. These likely only run intermittently during wet periods and act as drainage ditches and are not protected under Rivers Protection Act since they are not shown on the USGS Topographic Maps however the current status of these areas will likely require evaluation by a wetland scientist to determine if they will be subject to the Wetlands Protection Act. Projects in the areas of these protected water resources will require evaluation to determine if permitting under the Wetland Protection Act and the Town of Hanover Wetlands By-laws will be required.

Title 5 (Sewage Disposal System) Considerations

As mentioned above, the design flow limit for onsite Title 5 systems is 10,000 gpd. Schools with design flows between 10,000 and 15,000 gpd may be allowed provided special procedures and conditions are met. The calculated design flow for the system is 15,600 gpd. It is anticipated that analysis of water consumption records will show that the actual design flow calculated from these records will be below 15,000 gpd which is within the acceptable range to obtain a variance from Title 5.

Title 5 does not allow any non-sanitary wastewater flows such as industrial wastes from sources that include, but are not limited to, wash water from janitor closets, science classroom laboratories, shop classrooms, and graphic arts classrooms, into Title 5 systems. These flows are typically handled by separate sewers directed to holding tanks that require pumping periodically.

RECOMMENDATIONS

1. Have the areas of flooding at the football and baseball fields surveyed and review practical options for mitigating the flooding beyond those stated in this memorandum.
2. Analyze existing water use data to calculate sanitary wastewater design flows.
3. Have a full Title 5 inspection of the sewage disposal system completed including pumping and entering the tanks to determine structural integrity and assess the likelihood of providing service over the 10-year plan period with normal maintenance attention.
4. Have the soils in the area of the leaching systems evaluated to verify soil textural class and determine estimated seasonal high groundwater elevation.
5. Develop a plan of sequencing wetland evaluations and flagging to coincide with project scheduling to avoid the need to refresh flagging.
6. Evaluate alternative materials, methods and costs for replacing the stone dust track.

If you have any questions, or require further information, please do not hesitate to call me at (508) 877-6688 ext. 25 or Steve Garvin at ext. 13.

Appendix A-iii

Structural Report

South Shore Vocational Technical High School

Hanover, Massachusetts

Structural Assessment

December 27, 2017

STRUCTURAL ASSESSMENT

The purpose of this report is to describe, in broad terms, the structure of the existing building; to comment on the condition of the existing building; and on the feasibility of renovation and expansion of the school.

Scope

1. Description of existing structure.
2. Comments on the existing condition.
3. Comments on the feasibility of renovation and expansion.

Basis of the Report

This report is based on our visual observations during our site visit on December 21, 2017; a review of the drawings of the original construction prepared by Korslund, LeNormand & Quann, Inc., Architects, dated April 21, 1961; and, a review of the drawings for the addition prepared by HKT Architects, Inc., dated September 15, 1992.

During our site visit, we did not remove any finishes or take measurements, so our understanding of the structure is limited to the available drawings and observations of the exposed structure and the exterior facade.

Building Description

The school is located on Webster Street in Hanover, Massachusetts. The entire school is essentially a single story steel and concrete structure. The original school was constructed in 1961. The school was constructed in 1961. The school was expanded in 1992, the addition housed additional vocational shops, classrooms and lecture halls.

The typical roof of the original structure is poured gypsum on form board supported between bulb tees. The bulb tees span between steel beams which in turn span between steel trusses. At some areas of the roof structure, the bulb tees span between long span open web steel joists. The trusses are supported on precast concrete columns. The joists are supported on precast concrete beams that span between precast concrete columns. The columns and the exterior walls are supported on reinforced concrete foundations. The first floor is a concrete slab-on-grade.

The typical roof of the addition is a 1 1/2 in. metal deck spanning between open web steel joists which span between structural steel girders and wide flange columns. The columns and the exterior walls are supported on reinforced concrete foundations. The first floor is a concrete slab-on-grade.

EXISTING CONDITIONS

Based on our observations, the school structure is performing well based on the age of the school. We observed some signs of water leakage at a few locations. We observed minor cracks in the interior masonry walls at some locations. We observed some cracks in the exterior masonry façade and signs of past repairs. We observed some minor spalling of concrete at the corners.

We did not observe any signs of foundation settlement. We did not observe any undue vibrations due to footfall on the supported floor slab.

PROPOSED SCHEMES

Based on our observations and our analysis of the existing drawings, no structural upgrades are required for any proposed scheme that has limited renovation scope and does not require any structural modifications. The extent of the code required structural upgrades is dependent on the extents of the proposed renovations. The following is a description of the compliance methods that may be triggered depending on the extents of the proposed schemes as dictated by other disciplines.

GENERAL CODE CONSIDERATIONS

Primary Structural Code Issues Related To the Existing Structure

If any repairs, renovations, additions or change of occupancy or use are made to the existing structures, a check for compliance with 780 CMR, Chapter 34 “Existing Building Code” (Massachusetts Amendments to The International Existing Building Code 2015) of the Massachusetts Amendments to the International Building Code 2015 (IBC 2015) and reference code “International Existing Building Code 2015” (IEBC 2015) is required. The intent of the IEBC and the related Massachusetts Amendments to IEBC is to provide alternative approaches to alterations, repairs, additions and/or a change of occupancy or use without requiring full compliance with the code requirements for new construction.

The IEBC provides three compliance methods for the repair, alteration, change of use or additions to an existing structure. Compliance is required with only one of the three compliance alternatives. Once the compliance alternative is selected, the project will have to comply with all requirements of that particular method. The requirements from the three compliance alternatives cannot be applied in combination with each other.

The three compliance methods are as follows:

1. Prescription Compliance Method.
2. Work Area Compliance Method.
3. Performance Compliance Method.

Comment

The approach is to evaluate the compliance requirements for each of the three methods and select the method that would yield the most cost effective solution for the structural scope of the project. The selection of the compliance method may have to be re-evaluated after the impact of the selected method is understood and after analyzing the compliance requirements of the other disciplines, Architectural, Mechanical, Fire Protection, Electrical and Plumbing.

Since the existing building contains un-reinforced masonry wall structures, the anchorage of the walls to the floor and roof structure will have to be evaluated if the work area of the project exceeds 50 percent of the aggregate floor and roof area of the building.

Prescriptive Compliance Method

In this method, compliance with Chapter 4 of the IEBC is required. As part of the scope of this report, the extent of the compliance requirements identified are limited to the structural requirements of this chapter.

Additions

Based on the project scope, the following structural issues have to be addressed:

- All additions should comply with the code requirements for new construction in the IBC.
- For additions that are not structurally independent of an existing structure, the existing structure and its addition, acting as a single structure, shall meet the requirements of the Code for New Construction for resisting lateral loads, except for the existing lateral load carrying structural elements whose demand-capacity ratio is not increased by more than 10 percent, these elements can remain unaltered.
- Any existing gravity, load-carrying structural element for which an addition or its related alterations causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.

Alterations

- Any existing gravity, load-carrying structural element for which an addition or its related alterations causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.
- For alterations that would increase the design lateral loads or cause a structural irregularity or decrease the capacity of any lateral load carrying structural element, the structure of the altered building shall meet the requirements of the Code for New Construction, except for the existing lateral load carrying structural elements whose demand-capacity ratio is not increased by more than 10 percent, these elements can remain unaltered.

Work Area Compliance Method

In this method, compliance with Chapter 5 through 13 of the IEBC is required. As part of the scope of this report, the extent of the compliance requirements identified are limited to the structural requirements of these chapters.

In this method, the extent of alterations has to be classified into LEVELS OF WORK based on the scope and extent of the alterations to the existing structure. The LEVEL OF WORK can be classified into LEVEL 1, LEVEL 2 or LEVEL 3 Alterations. In addition, there are requirements that have to be satisfied for additions to the existing structure.

The extent of the renovations (includes Architectural, FP and MEP renovations) for this project exceeds 50 percent of the aggregate area of the building, thus, the LEVEL OF WORK for this project would be classified as LEVEL 3 Alterations. This would require compliance with provision of Chapter 7, 8 and 9 of the IEBC. If the scope of the project includes new additions to the existing structure; this would trigger compliance with provisions in Chapter 11 of the IEBC.

Level 3 Alterations

- Any existing gravity, load-carrying structural element for which an alteration causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.
- For alterations where more than 30 percent of the total floor area and roof areas of a building or structure have been or proposed to be involved in structural alterations within a 12 month period, the evaluation and analysis shall demonstrate that the altered building complies with the full design wind loads as per the code requirements for new construction and with reduced IBC level seismic forces.
- For alterations where not more than 30 percent of the total floor and roof areas of a building are involved in structural alterations within a 12 month period, the evaluation and analysis shall demonstrate that the altered building or structure complies with the loads at the time of the original construction or the most recent substantial alteration (more than 30 percent of total floor and roof area). If these alterations increase the seismic demand-capacity ratio on any structural element by more than 10 percent, that particular structural element shall comply with reduced IBC level seismic forces.
- Existing anchorage of all unreinforced masonry walls to the structure have to be evaluated.

Additions

- All additions shall comply with the requirements for the Code for New Construction in the IBC.
- Any existing gravity, load-carrying structural element for which an addition or its related alterations cause an increase in design gravity load of more than 5 percent shall be strengthened, supplemented or replaced.
- For additions that are not structurally independent of any existing structures, the existing structure and its additions, acting as a single structure, shall meet the requirements of the Code for New Construction in the IBC for resisting wind loads and IBC Level Seismic Forces

(may be lower than loads from the Code for New Construction in the IBC), except for small additions that would not increase the lateral force story shear in any story by more than 10 percent cumulative. In this case, the existing lateral load resisting system can remain unaltered.

Performance Compliance Method

Following the requirements of this method for the alterations and additions may be onerous on the project because this method requires that the altered existing structure and the additions meet the requirements for the Code for New Construction in the IBC.

PARTICULAR REQUIREMENTS OF COMPLIANCE METHODS

For our project, in order to meet compliance with one of the two compliance methods "Prescriptive Compliance Method" or the "Work Area Compliance Method", we have to address the following:

Prescriptive Compliance Method

Additions

The proposed additions would be designed structurally independent of the existing structures, thus, would not impart any additional lateral loads on the existing structure.

If the proposed alterations are such that the alterations increase the design lateral loads on the existing building or cause any structural irregularity of decrease the lateral load carrying capacity of the building, the structure of the altered building shall meet the requirements of the Code for New Construction in the IBC.

If the proposed additions increase the design gravity load on portions of the existing roof members, these members would have to be reinforced and this incidental structural alteration of the existing structures would have to be accounted for in the scope of the alterations to the existing school and would trigger requirements for alterations.

Alterations

Alterations that would increase the design gravity loads by more than 5 percent on any structural members would have to be reinforced.

If the proposed alterations of the structure increases the demand-capacity ratio of any lateral load resisting element by more than 10 percent, the structure of the altered building or structure shall meet the requirements for the Code for New Construction.

Work Area Compliance Method

Level 3 Alterations

If the proposed structural alterations of an existing structure are less than 30 percent of the total floor and roof areas of the existing structure, we have to demonstrate that the altered structure

complies with the loads applicable at the time of the original construction and that the seismic demand-capacity ratio is not increased by more than 10 percent on any existing structural element. Those structural elements whose seismic demand-capacity ratio is increased by more than 10 percent shall comply with reduced IBC level seismic forces.

If the proposed structural alterations of an existing structure exceed 30 percent of the total floor and roof areas of an existing structure, we have to demonstrate that the altered structure complies with the IBC for wind loading and with reduced IBC level seismic forces.

Existing anchorage of all unreinforced masonry walls to the structure have to be evaluated. If the existing anchorage of the walls to the structure is deficient, the tops of the masonry walls will require new connections to the structure.

Additions

Any proposed additions would be designed structurally independent of the existing structures, thus, they would not impart any additional lateral loads on the existing structures.

Comment

The compliance requirements of the two methods, in most respects, are very similar. The Prescriptive Compliance Method would require that the existing lateral load resisting systems meet the requirements of the Code for New Construction of the IBC, even for small increases of design lateral loads. The requirements of both methods will require anchorage of all existing masonry walls. Based on this, we would recommend the Work Area Compliance Method for the project.

SUMMARY

The existing school structure appears to be performing well. All of the structural components that are visible appear in sound condition.

No structural upgrades would be required for any proposed scheme that has limited renovation scope and does not require any structural modifications to the existing structure.

Any major, proposed renovations and additions would likely require that the structure be updated to meet the requirements for Code for New Construction. This may require addition of some shear walls, connecting the floor and roof diaphragms to the existing masonry walls and the clipping of non-structural masonry walls to the structure. All of the existing masonry walls would have to be adequately connected to the roof and floor structure.

Appendix A-iv

Security Report

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December 19, 2017

R. Judd Christopher
Drummey Rosane Anderson, Inc.
235 Bear Hill Rd., 4th Floor
Waltham, MA 02451

Via Email: jchristopher@draws.com
Subject: Access Control System Schematic Design Report
South Shore Vocational Technical High School
Acentech Project Number: P629789

Dear Judd,

Enclosed is our Access Control System Schematic Design Report for South Shore Vocational Technical High School security project. The enclosed document is our deliverable for the Schematic Design phase of work outlined in our proposal dated November 14, 2017.

After you have reviewed and commented on the narrative, we can revise to suit if there's anything to add.

Please contact me if you have any questions about the program. You can reach me at (617) 499-8024 or at jepstein@acentech.com.

Sincerely,

Jay Epstein

Senior Consultant

Encl: Access Control System Schematic Design Report

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ACCESS CONTROL SYSTEM SCHEMATIC DESIGN REPORT
South Shore Vocational Technical High School

Submitted to:

R. Judd Christopher
Drummey Rosane Anderson, Inc.
235 Bear Hill Rd., 4th Floor
Waltham, MA 02451

Acentech Project Number: P629789
December 19, 2017

The purpose of this program report is to summarize the proposed upgrades on select doors and include budgetary pricing for the South Shore Vocational Technical High School in Hanover, MA. Please review this document for conformity to project requirements. Other related systems and budgets such as door frames, doors, door hardware, painting and patching of walls and ceilings and electrical systems may need to be reviewed in conjunction with this narrative to provide a complete picture of the Security system costs.

Acentech prepared the report and is an independent consulting firm specializing in architectural acoustics and the design of Security systems. In order to provide unbiased consulting and design services, Acentech does not sell or install equipment and does not represent any dealer, distributor, or manufacturer.

The design report narratives below are based on our meeting with you and the stakeholders at the site on November 30, 2017, and our experience on prior projects.

BUDGET ESTIMATE SUMMARY

Security System(s) Budget Summary:

1.	Access Control System	$9580
	Add alternate for one Video intercom door A7	$1015

PROJECT OVERVIEW:

The South Shore Vocational Technical High School currently does not have an access control system. There will be six doors on a new access control system. Four doors will be wired to one access control panel. Two doors will be wired to another access control panel. The two access control panels will be connected to each other with control wiring. All doors will have the ability to be locked and unlocked remotely. There will be one Client workstation with the access control software and enrollment station. The enrollment station is used to activate credentials onto the proximity cards. There will be on video intercom on one door. And add alternate for video intercom on a second door. Master video intercom station will be at the main office.

Excluded from budgetary pricing are:

Doors, door frames, door locking hardware, conduit, outlet boxes and 120VAC outlets.

1. ACCESS CONTROL SYSTEM:

A. The Access Control System is based on an AMAG Technology access control system.

B. The head end software system is the AMAG Symmetry Professional 8 Reader Software. Database is SQL Express and includes licenses, one year of Gold service agreement.

C. Symmetry M2150 2 reader IP Pack access control panels (ACP), CAB3A enclosure, PSU-KIT power supply, WIM2, NIC-4 and Trans-75-UL power supply.

D. Video intercom system is based on the Aiphone JFS-2AEDV video intercom system.

E. ACP East will be located in Guidance Storage Room.

F. ACP West will be located in Storage room on west side of school.

G. Doors A3 will be wired to ACP East. A3 will have new electric lock, request to exit and door contacts. No card reader is required however, the door will have ability to be locked and unlocked remotely.

H. Door C9 will be wired to ACP East. C9 will have new electric lock, request to exit and door contacts and card reader.

I. Door A7, B3 and C4 will be wired to ACP West. These doors will have card readers, electric locks, request to exit devices and door contacts.

J. Door B1 will be wired to ACP West. B1 will have new electric lock, request to exit and door contacts. No card reader is required however, the door will have ability to be locked and unlocked remotely.

K. Provide video intercom at door B1.

A. <u>Door Hardware:</u>

a. The door hardware consultant will specify door locks and will ensure that ADA and egress codes are maintained with their choice of locksets.

b. The security consultant will coordinate with the door hardware consultant to provide access control card readers at specified entry points.

c. This electrified hardware will also identify door status, i.e. Open, Close, Held Open.

d. The security contractor will homerun door wiring back to the access control head end panels.

B. <u>Request to Exit PIR Detectors (REX):</u>

a. It is assumed that the request to exit devices will be integral to the door hardware.

C. <u>Low Voltage Power:</u>

a. Low voltage power supplies that control the electronic locking of the doors will be

provided and installed by the Security contractor

b. Power supplies will be located with the access control panels. ACPs in the designated Storage Rooms.

c. 120VAC power required.

d. Battery backup to allow the doors to be operated in case of system wide power failure.

D. Card Readers:

a. Proximity-style card readers installed at the exterior doors that will receive electrified door locking hardware.

b. Integrated LED will provide feedback of status of entry for the door.

c. (68) Exterior Doors.

E. Credentials:

a. A mixture of contactless credentials using Wiegand protocol will be provided that are compatible with the chosen proximity card readers.

i. 100 card style credentials

ii. 10 key fob credentials should be purchased for the initial system.

F. Remote Door Unlocking:

a. A door release button will be provided at the security office near the main entry for remote unlocking of doors A3 and B1.

b. The software based access control system can allow for an authorized user to provide remote unlocking of doors.

a. Cables:

i. 18 AWG, 2 conductor plenum rated cable.

ii. 22 AWG shielded plenum rated cable.

iii. Estimated 200’ of cable per door.

G. Conduit and outlet boxes:

a. Conduit and outlet boxes will be by the electrician.

H. Video Intercom:

b. Add alternate for video intercom at door A7.

BUDGET NOTES

The budgets assume that the labor cost is 40% of the equipment cost (unless otherwise noted). A 5% contingency is also added to the cost.

The installed costs of the systems are approximate. It assumes the use of new equipment professionally installed by a qualified Security systems contractor, which are provided with as-built documentation and a one-year warranty covering parts and labor.

The estimate does not include costs for requirements such as electrical power, conduit, casework or any special architectural requirements. Technical administration and staffing, as well as vendor-supplied system service and maintenance beyond the initial one-year parts and installation warranty are not included in this estimate.

This budget incorporates the costs associated with travel, installation, documentation, training and on-site maintenance for one year. Installation cost is the greatest variable and is heavily dependent on factors such as site conditions, divisions of work between the Security system contractor and other contractors, local market conditions and requirements for union labor.

ARCHITECTURAL & ELECTRICAL CONSIDERATIONS

Architectural:

The following items should be considered for proper coordination between Security system components and other trades:

Door frames, electrified doors, electrified hinges specified by architect.

Mounting elevations for security devices.

Electrical:

The following items should be considered for proper coordination between the Security system components and other trades:

The AC power system will be designed and specified by the electrical engineer and will include conduit, outlet boxes and dedicated AC outlets.

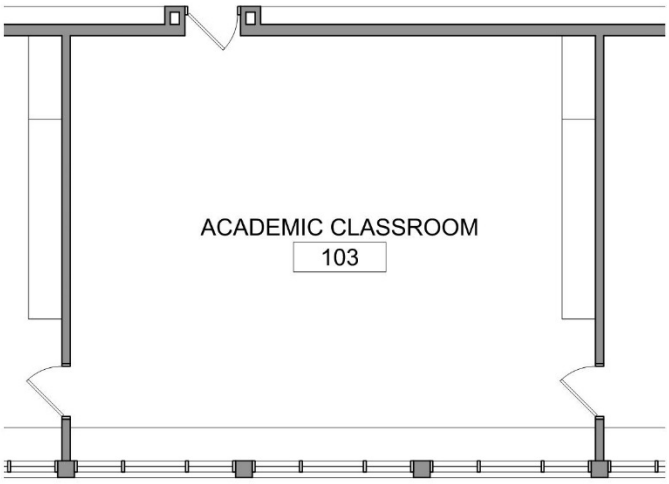
It is estimated that the wall-mounted ACP's in the storage rooms will require one (1) hard-wired 20-amp AC circuits for electrical door locking.

*** End of Program ***

Appendix A-v

Individual Room Existing Conditions Analysis

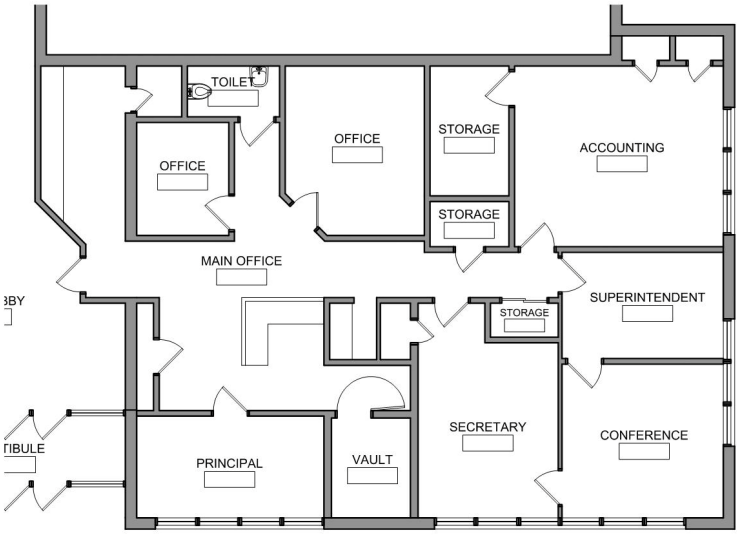
Academic Classrooms	Typical to the 1960's Building
Existing Square Footage	Most are between 740 to 820 square feet (modulars are smaller)
Ideal Square Footage	805 square feet (825sf minimum per MSBA requirements)
Floor Material	9x9 VAT tile (does contain asbestos)
Base Material	Vinyl base
Walls	Gypsum wallboard with low wood paneling (recently added)
Ceilings	Plaster ceiling (does not contain asbestos)
Windows	Aluminum with operable units and shades (recently replaced - 2011)
Doors	Wood doors (entrance door not accessible - push/pull clearance)
Casework	Shelving along window wall - other casework has been removed
Equipment	Smartboard, MB/TB, clock, phone - typical for each classroom
Notes	Rooms were recently renovated - classroom entrance not accessible



Recommendations	Replace VAT flooring with linoleum flooring (less maintenance)
	Replace plaster ceiling with new high NRC ACT panels
	Replace light fixtures with new LED light fixtures
	Add sprinklers / upgrade fire alarm system
	Modify entrance doors to make room accessible

Administration

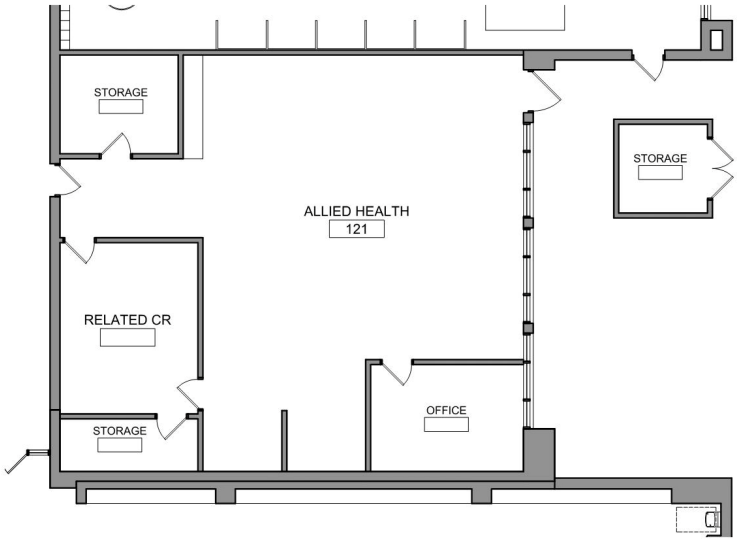
	In the original building, by the main entrance
Existing Square Footage	3,520 square feet (includes district offices)
Ideal Square Footage	3,550 square feet
Floor Material	12 x 12 VCT, perimeter offices have carpet
Base Material	Vinyl cove base
Walls	Both GWB and CMU, painted (wood paneling at principals office)
Ceilings	2x4 ACT, fair condition
Windows	Aluminum windows at perimeter offices
Doors	Wood interior doors
Casework	Office partition at main check-in area
Equipment	Copiers, computers
Notes	Contains Avaya phone system and new fire alarm panels (both 2007)
	(small lunch room with casework and ceramic tile finishes)



Recommendations	Would prefer to be more centrally located
	Install new fire protection system
	Replace existing ceiling with new high NRC 2x2 ACT ceiling
	Install new LED lighting with new lighting controls
	Replace existing carpeting

Allied Health

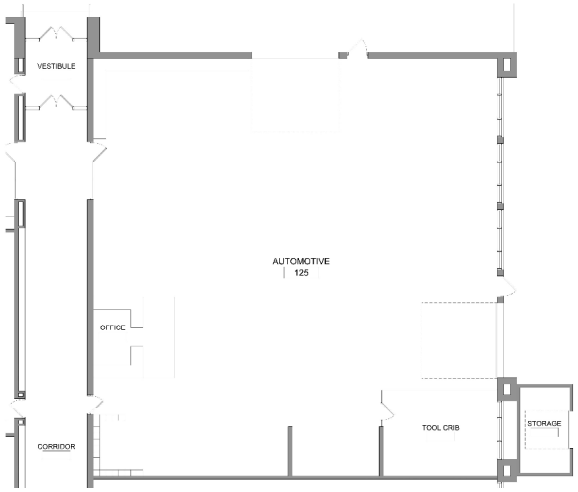
	In the 1960's building
Existing Square Footage	1,565 square feet
Ideal Square Footage	3,000 square feet
Floor Material	VCT
Base Material	Vinyl base
Walls	CMU, painted / Gypsum Wallboard
Ceilings	2x4 ACT
Windows	Aluminum (replaced on 2011) - no overhead door
Doors	Wood, interior / Hollow metal, exterior
Casework	Cabinets, with sink
Equipment	3 bed areas
Notes	Contains office, storage and small related classroom



Recommendations	Install fire protection system
	Replace 2x4 ACT ceiling with new high NRC 2x2 ACT ceiling
	Space is significantly undersized - may need relocation
	Install new LED lighting and new lighting controls

Automotive

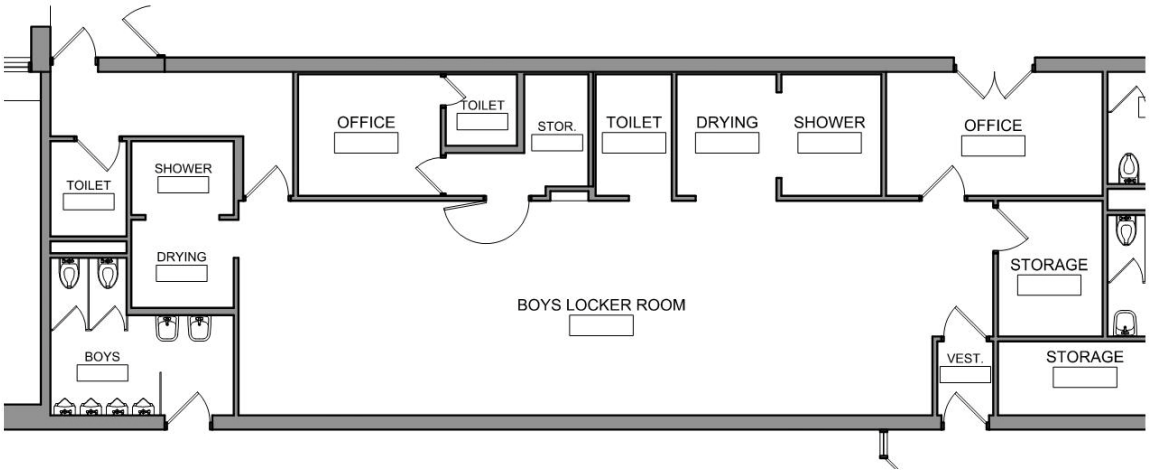
	In the original building
Existing Square Footage	5,170 square feet
Ideal Square Footage	7,150 square feet
Floor Material	Concrete (sealed / painted)
Base Material	None
Walls	CMU, painted - some glazed CMU
Ceilings	Exposed - structure is painted (some skylights)
Windows	Aluminum (replaced in 2011) - overhead doors (2)
Doors	Wood - interior / Hollow metal - exterior
Casework	Student lockers - raised wood teacher's area
Equipment	Shop equipment
Notes	Tool crib, locker area with sink



Recommendations	Shop is too small - needs expansion
	Remove raised teacher's station (not accessible)
	Add fire suppression system
	New LED lighting and controls

Boys Locker Room

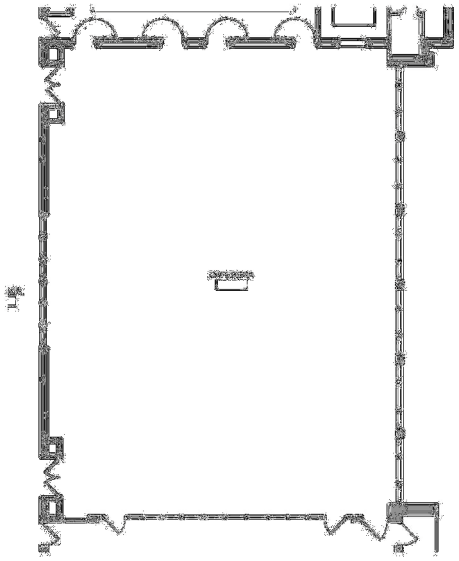
	In the original building
Existing Square Footage	1,600 square feet
Ideal Square Footage	1,750 square feet
Floor Material	Painted concrete (not sealed) - fair to poor condition
Base Material	None - some glazed CMU goes to the floor
Walls	Glazed CMU (low) and CMU painted (high)
Ceilings	Exposed concrete
Windows	None
Doors	Wood doors on the interior - in fair condition
Casework	Wood benches by the lockers
Equipment	Several different sizes of lockers
Notes	Room is somewhat cramped



Recommendations	Install fire protection system
	Install epoxy flooring over the existing concrete
	Should find some additional space under renovation project

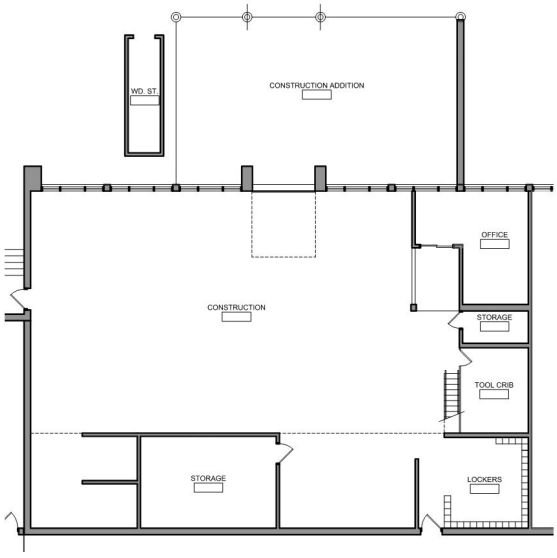
Cafeteria

	Part of the original building
Existing Square Footage	2,850 square feet (contains some servery space)
Ideal Square Footage	3,100 square feet
Floor Material	12x12 VCT, was replaced with the 1992 addition
Base Material	Vinyl base / glazed CMU
Walls	Brick at entrances, CMU at serving wall, GWB at corridor wall
Ceilings	Plaster ceiling with some 1x1 ACT panel clouds
Windows	Aluminum windows - were replaced in 2007
Doors	Wood doors at entrances (double doors with small leafs)
Casework	Trophy case added at corridor wall
Equipment	Vending machines / servery equipment
Notes	Some circulating fans at the ceiling / UV along window wall



Recommendations	Replace existing plaster ceiling with new high NRC 2x2 ACT ceiling
	Replace entrance doors with a doors at least 3'-0" wide
	Install fire protection system
	Install new LED lighting and new lighting controls

Construction Shop	In the 1960's building
Existing Square Footage	5,090 square feet
Ideal Square Footage	6,750 square feet
Floor Material	Wood floor (fair to poor condition) - epoxy flooring at locker area
Base Material	None
Walls	CMU - both painted and unfinished
Ceilings	Exposed structure
Windows	Aluminum (replaced in 2011) - overhead door (1)
Doors	Wood, interior / Hollow metal, exterior
Casework	Wood storage unit and carrels
Equipment	Shop equipment
Notes	Contains office, tool crib and storage room

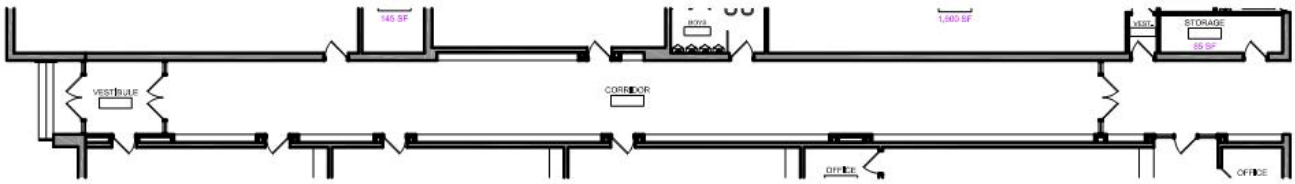


Recommendations	Wood floor should be replaced (will require abatement of mastic)
	Install fire protection system
	Install new LED lighting and lighting controls

Corridors

Typical Corridors in the 1960's Building

Existing Square Footage	N/A
Ideal Square Footage	N/A
Floor Material	Terrazzo - wgood condition
Base Material	None
Walls	Glazed CMU blocks - good condition
Ceilings	Plaster with some skylights (some are covered)
Windows	None
Doors	Aluminum storefront doors at egress point - hollow metal at cross corridor
Casework	None
Equipment	New metal lockers (with gypsum wall above)
Notes	Some of the corridors have received new LED lights this year



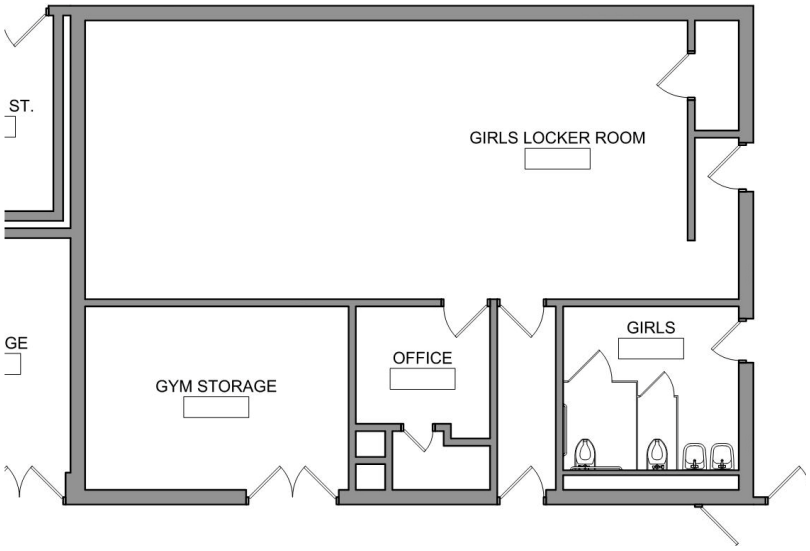
Recommendations

- Replace plaster ceiling with new high NRC ACT panels
- Delete cross corridor doors - patch floor as required

Note: corridor at gym / cafe has similar finishes except some exposed brick walls

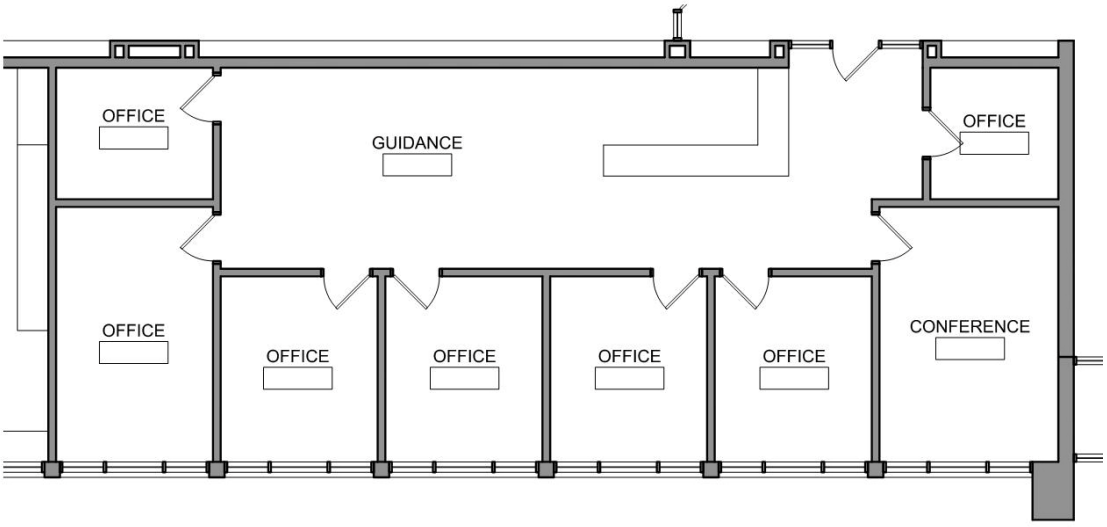
Girls Locker Room

	Built as part of the 1978 addition
Existing Square Footage	935 square feet
Ideal Square Footage	1,750 square feet
Floor Material	Thin coat epoxy flooring, poor condition (peeling)
Base Material	Ceramic tile cove base
Walls	CMU, painted
Ceilings	2x4 ACT ceiling (some tiles are sagging)
Windows	None
Doors	Wood doors
Casework	Changing stations (17) and shower stalls (4), good condition
Equipment	Vinyl benches and double-tier metal lockers (total of 35)
Notes	Some rubber mats on the floor



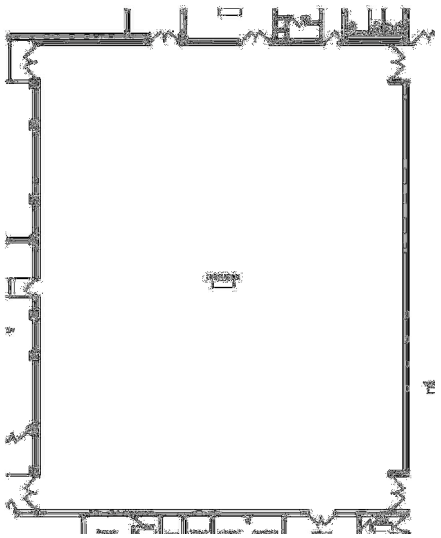
Recommendations	Install thicker coat of epoxy flooring
	Install fire protection system
	Replace 2x4 ACT ceiling with new high NRC 2x2 ACT ceiling

Guidance	In the original building near the main entrance (in classroom areas)
Existing Square Footage	Included in the administration square footage
Ideal Square Footage	Included in the administration square footage
Floor Material	Carpet, fair condition
Base Material	Vinyl cove base, fair condition
Walls	GWB, painted (good condition)
Ceilings	Mostly plaster, some areas of ACT (fair condition)
Windows	Aluminum frame windows at the perimeter offices
Doors	Wood interior doors
Casework	Office furniture, filing cabinets, storage cabinets
Equipment	Reception desk, clock, small refrigerator
Notes	



Recommendations	Install new fire protection system
	Replace existing ceiling with new high NRC 2x2 ACT ceiling
	Install new LED lighting with new lighting controls
	Replace existing carpeting and wall base

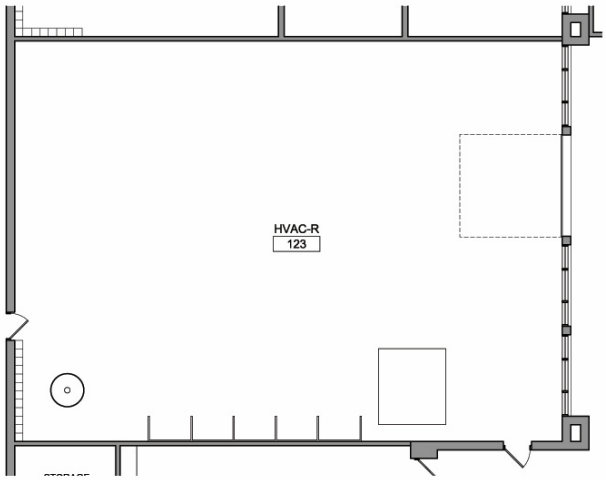
Gymnasium	In the original building
Existing Square Footage	7,150 square feet
Ideal Square Footage	12,000 square feet
Floor Material	Wood flooring, fair condition (original to building)
Base Material	Vented vinyl base
Walls	CMU / Glazed CMU (wall pads at each end)
Ceilings	Exposed structure
Windows	Kalwall (was replaced in 2011)
Doors	Wood, interior / Hollow metal, exterior
Casework	2 main basketball hoops, 4 side basketball hoops
Equipment	Bleachers on both sides, fairly new (16-18 years old)
Notes	Side folding curtain



Recommendations	Replace wood flooring with new (includes mastic abatement)
	Install fire protection system
	Install new LED lighting and new lighting controls

HVAC-R

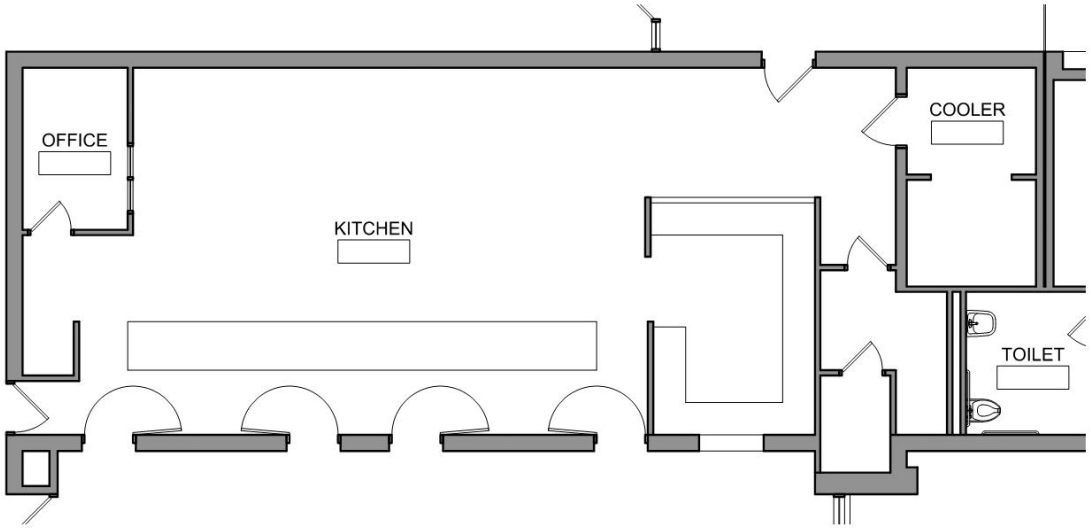
	In the original building
Existing Square Footage	3,090 square feet
Ideal Square Footage	4,800 square feet
Floor Material	Concrete / thin epoxy at entrance area
Base Material	None
Walls	CMU, painted
Ceilings	Exposed - structure is painted (some skylights)
Windows	Aluminum (replaced in 2011) - overhead door (1)
Doors	Wood, interior / Hollow metal, exterior
Casework	Lockers
Equipment	Shop equipment
Notes	Teacher area within shop - no related classroom



Recommendations	Shop is undersized - need expansion
	Replace bradley type sink with new accessible sink
	New fire suppression system
	New LED lighting with new lighting controls

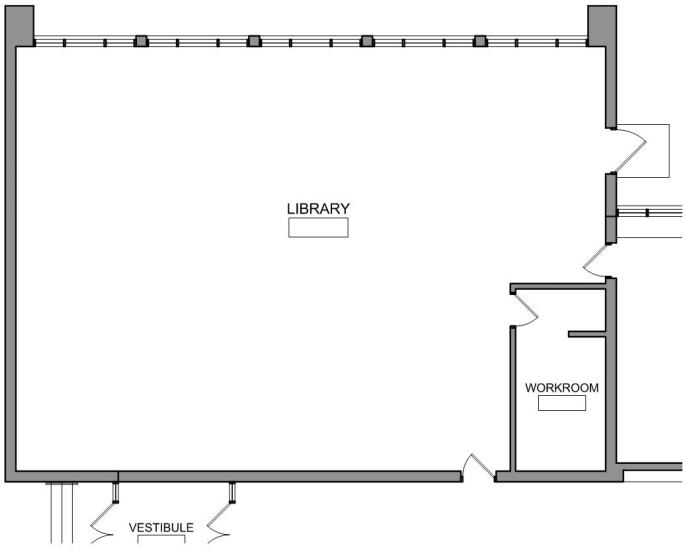
Kitchen

	In the original building
Existing Square Footage	1,440 square feet
Ideal Square Footage	1,920 square feet
Floor Material	Quarry tile
Base Material	None (glazed block)
Walls	Glazed CMU
Ceilings	2x2 washable ACT
Windows	None
Doors	Wood interior doors
Casework	Food service casework
Equipment	Food service equipment
Notes	The freezer is located across the hall in the loading area



Recommendations	Install new fire protection system - tie into ansul system at hood
	Would like additional space as part of a larger renovation project

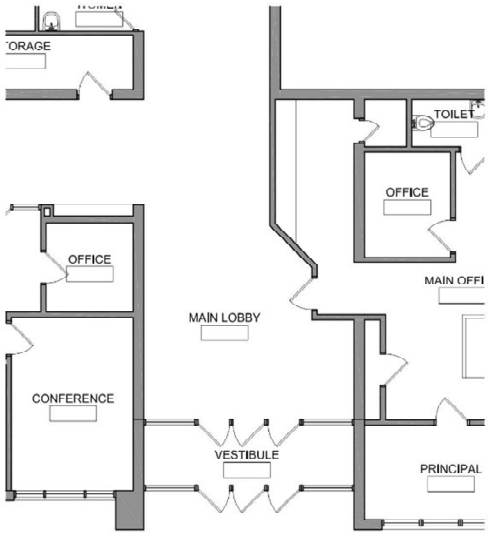
Library	In the original building
Existing Square Footage	2,210 square feet
Ideal Square Footage	3,775 square feet
Floor Material	Carpet, fair condition
Base Material	Vinyl cove base, fair condition
Walls	GWB, painted, good condition
Ceilings	Sloped plaster ceiling, good condition
Windows	Aluminum (recently replaced) - some casement windows
Doors	Wood doors, interior / Hollow metal, exterior (with half-glass)
Casework	Wood library book shelves, tables and chairs
Equipment	Computer tables, copiers, TV screen
Notes	Their is a work room off the library



Recommendations	Install fire protection system
	Install new LED lighting with new lighting controls
	Replace carpet and vinyl base
	Install new high NRC 2x2 ACT ceiling
	Would want to expand as part of a larger renovation project

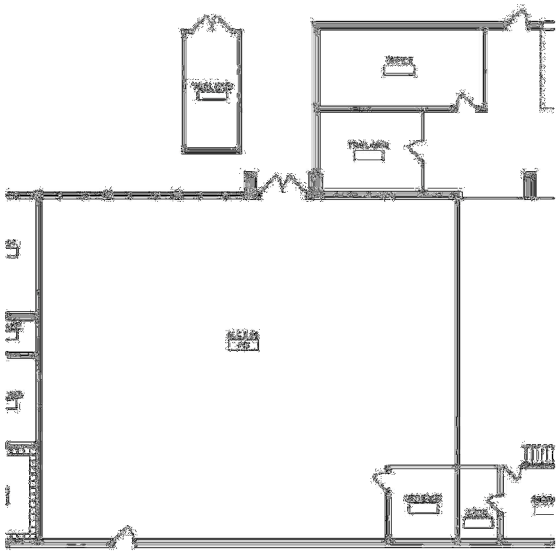
Main Lobby

	1960's Building
Existing Square Footage	N/A
Ideal Square Footage	N/A
Floor Material	Terrazzo in good condition (minimal cracks)
Base Material	None
Walls	Exposed brick / glazed CMU block (both in good condition)
Ceilings	Plaster ceiling in good condition - some skylights (some covered)
Windows	Aluminum storefront at main entrance (not original - fair condition)
Doors	See note above
Casework	Wood trophy case - good to fair condition
Equipment	Computer login machine
Notes	Some throw down rugs



Recommendations	Install recessed entrance floor mats at exterior vestibule
	Replace existing main entrance aluminum storefront system
	Update security at main entrance doors
	Replace plaster ceiling with new high NRC ACT panels

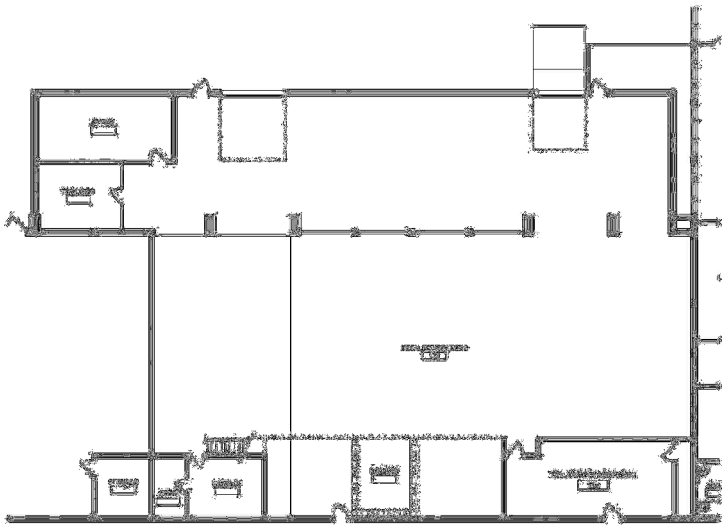
MET #1	In the original building
Existing Square Footage	5,665 square feet (combined with MET #2 and related classroom)
Ideal Square Footage	5,700 square feet
Floor Material	Epoxy flooring (recently installed - excellent condition)
Base Material	Epoxy base
Walls	CMU, painted
Ceilings	Exposed - structure is painted
Windows	Aluminum (replaced in 2011) - overhead door (1)
Doors	Wood, interior / Hollow metal, exterior
Casework	Lockers at entrance - wood counter above lockers
Equipment	Shop equipment
Notes	Has a smartboard / overhead bus duct



Recommendations	The two (2) shops with related classroom is appropriately sized
	Install new fire suppression system
	Install new LED lighting with new lighting controls

Metal Fabrications

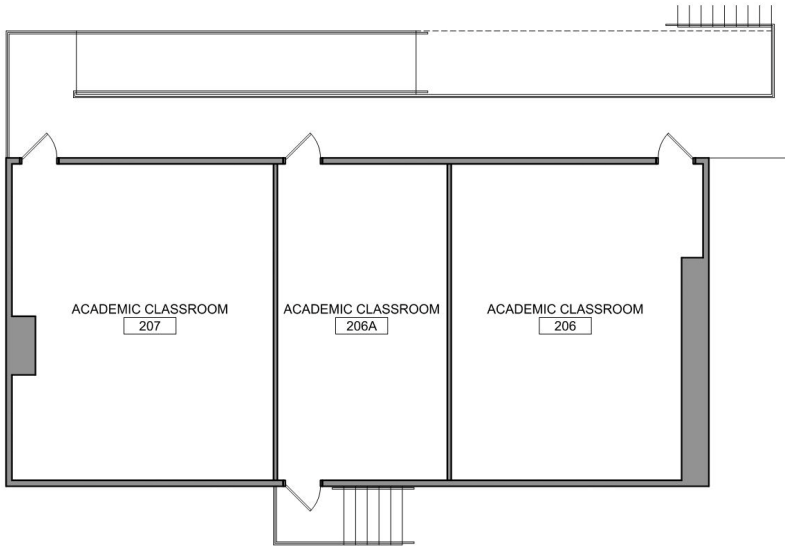
	In the original building
Existing Square Footage	7,975 square feet
Ideal Square Footage	5,200 square feet
Floor Material	Concrete - no sealer
Base Material	None
Walls	CMU, painted
Ceilings	Exposed - structure is painted (some skylights)
Windows	Aluminum (replaced in 2011) - overhead door (1)
Doors	Wood, interior / Hollow metal, exterior
Casework	Lockers
Equipment	Shop equipment
Notes	Upper storage area, small related classroom, storage area



Recommendations	Shop is over-sized - could recommend giving up some space
	Install new fire suppression
	Install new LED lighting with new lighting controls
	Create larger related classroom area

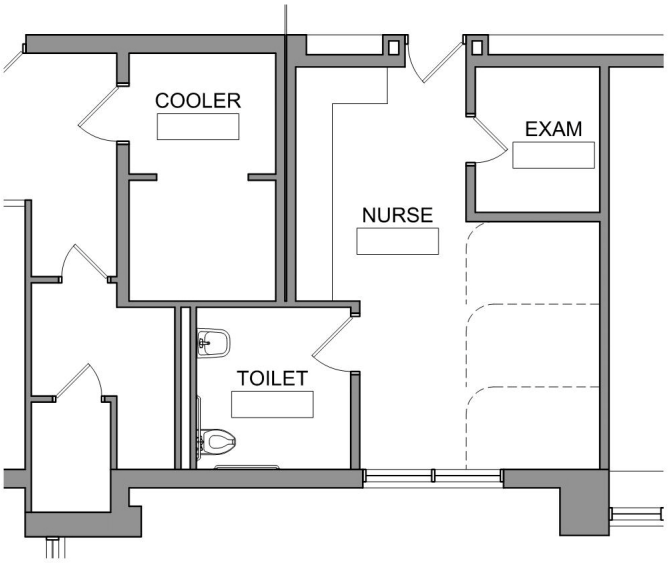
Modular Classrooms

	Installed around 2001
Existing Square Footage	Two around 550 sf and one at 375 sf
Ideal Square Footage	Typical classroom to be 850 square feet (minimum of 825)
Floor Material	VCT, fair condition (some cracked tiles)
Base Material	Vinyl cove base, good condition
Walls	Modular panels (GWB)
Ceilings	2x4 ACT
Windows	Aluminum sliding units
Doors	Hollow metal doors (some with half glass)
Casework	Some general storage units
Equipment	Marker boards and tack boards
Notes	All classrooms are significantly undersized



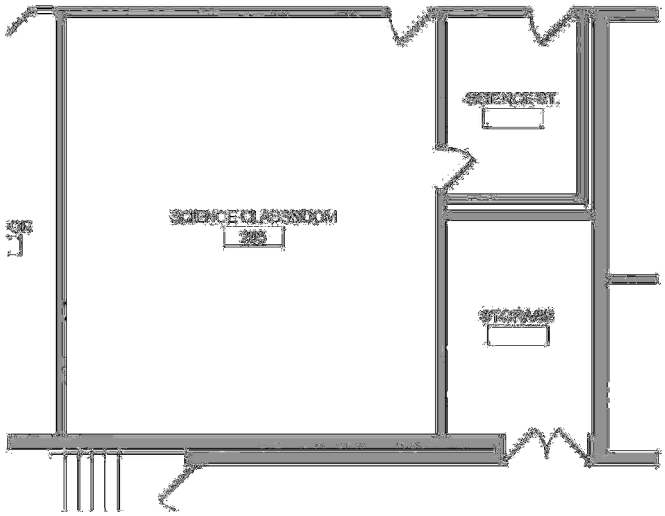
Recommendations	Could enclose entrance ramp to make building access more secure
	Wouldn't recommend other upgrades

Nurse	In the original building (shop wing)
Existing Square Footage	405 square feet
Ideal Square Footage	710 square feet
Floor Material	9x9 VAT
Base Material	Vinyl base
Walls	CMU, painted
Ceilings	Plaster ceiling
Windows	Aluminum windows (replaced in 2010)
Doors	Wood interior doors
Casework	Upper and lower cabinets with sink, 3 resting beds with cubicle curtains
Equipment	Lockable medical storage cabinet, small refrigerator
Notes	Their is an exam room with similar finishes
	Their is a toilet room with ceramic tile floor and wall wainscot - GWB above



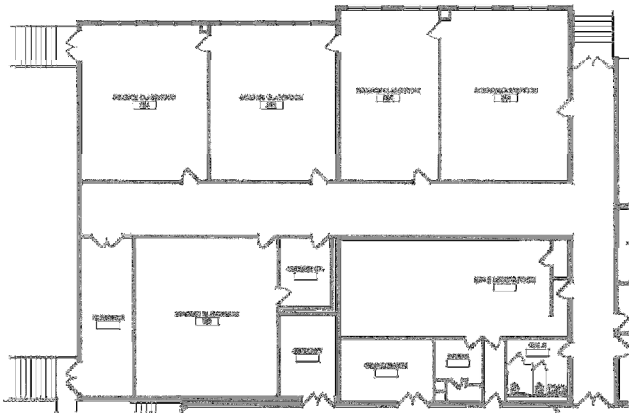
Recommendations	Would require additional space as part of a larger renovation project
	Replace existing ceiling with new high NRC 2x2 ACT ceiling
	Install new fire protection system
	Install new LED lighting with new lighting controls

Science Classrooms	In the 1978 building addition
Existing Square Footage	Typically 800 square feet each (total of five classrooms)
Ideal Square Footage	1,600 square feet with prep room
Floor Material	12 x 12 VCT (original) - fair condition
Base Material	Vinyl cove base
Walls	CMU, painted
Ceilings	2x4 ACT ceiling - some stained tiles
Windows	Aluminum (replaced in 2011), some operable
Doors	Wood, interior / Hollow metal, exterior
Casework	Some typical science top cabinets - one lab with sinks
Equipment	Each room has short throw projector and smartboard
Notes	There is gas in two of the labs (room 201 & 205)



Recommendations	Labs are typically small - should be upgraded under renovation
	Replace VCT with linoleum
	Replace 2x4 ACT ceiling with new high NRC 2x2 ACT ceiling
	Install fire protection system
	Install new LED lighting with new lighting controls

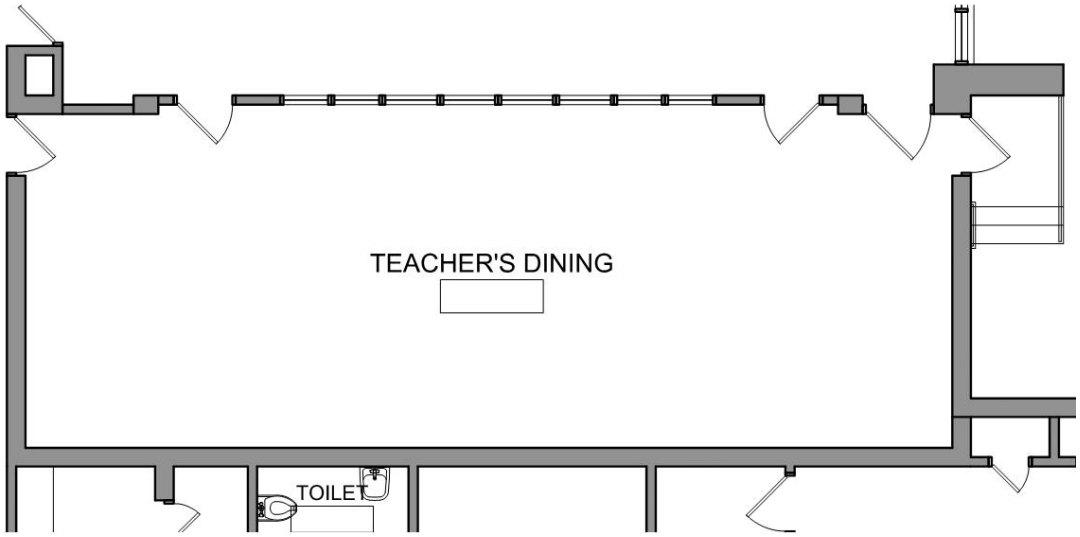
Corridors	Corridor at Science Wing - 200's
Existing Square Footage	N/A
Ideal Square Footage	N/A
Floor Material	VCT - good to fair condition
Base Material	Vinyl cove base
Walls	Painted CMU - some exposed brick
Ceilings	2x4 ACT in fair condition - some sagging tiles
Windows	None
Doors	Hollow metal doors at egress - maybe small (pair of 2'-8"?)
Casework	Small small display cases
Equipment	Cabinet unit heaters
Notes	Some tack boards along corridor walls



Recommendations	Replace existing ACT ceiling with new high NRC ACT panels (2x2)
	Replace VCT with linoleum and new wall base
	Replace hollow metal doors at egress with accessible doors
	New LED light fixtures

Teacher's Dining

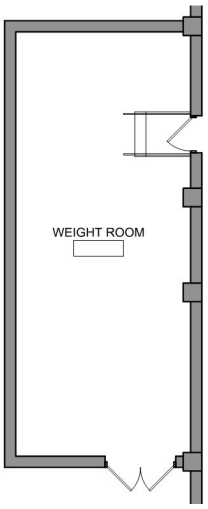
	In the original building
Existing Square Footage	900 square feet
Ideal Square Footage	
Floor Material	12 x 12 VCT - replaced with cafeteria
Base Material	6" vinyl cove base
Walls	GWB and CMU, painted (both in good condition)
Ceilings	2x4 ACT (fairly new)
Windows	Aluminum windows with operable sections (good condition)
Doors	Wood doors at entrance, other doors are hollow metal
Casework	Wood storage cabinets, mailboxes, lecturn, sink
Equipment	Copier, desk with computer
Notes	



Recommendations	Replace VCT with linoleum
	Replace 2x4 ACT with new high NRC 2x2 ACT
	Install new fire protection system
	Install new LED lighting with new lighting controls

Weight Room

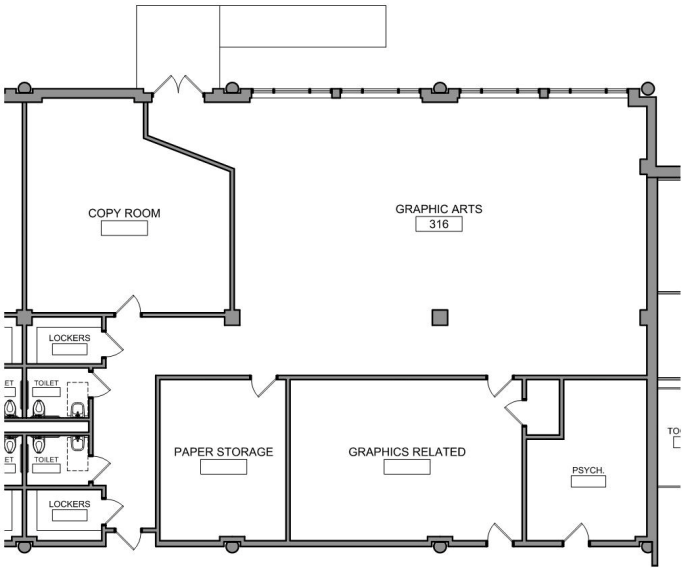
	Addition built unto gymnasium (not sure timeframe)
Existing Square Footage	590 square feet
Ideal Square Footage	3,000 square feet
Floor Material	Rubber tile (athletic type), good to fair condition
Base Material	None - appears to be low concrete foundation wall, painted
Walls	Gypsum wallboard with some brick bump-outs on gym side
Ceilings	Gypsum wallboard
Windows	Aluminum casement windows (high on wall - total of 3)
Doors	Wood, interior / Hollow metal, exterior
Casework	Storage cabinets / carts
Equipment	Weight room equipment
Notes	Contains an accessible ramp to exterior (to step with no ramp)



Recommendations	Recommend replacement as part of larger renovation project
	Make exterior step outside accessible

Graphic Arts

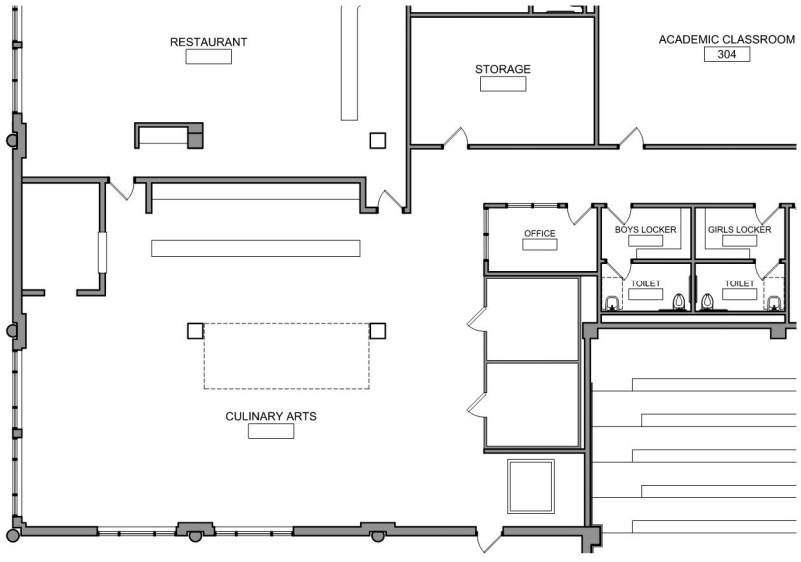
	In the 1992 Addition
Existing Square Footage	3,435 Square Feet
Ideal Square Footage	3,600 Square Feet
Floor Material	Concrete (sealed/painted)
Base Material	Vinyl base
Walls	Gypsum wallboard, painted
Ceilings	2x4 ACT (low) / exposed structure (high)
Windows	Aluminum with some operable sections
Doors	Hollow metal, both interior and exterior
Casework	Some wood shelves
Equipment	Shop equipment
Notes	Copy room, related CR, paper room, separate toilets, flammable st.



Recommendations	Replace existing aluminum windows
	Replace 2x4 ACT ceiling with new 2x2 high NRC ACT ceiling
	Reseal existing concrete floor

Culinary Kitchen

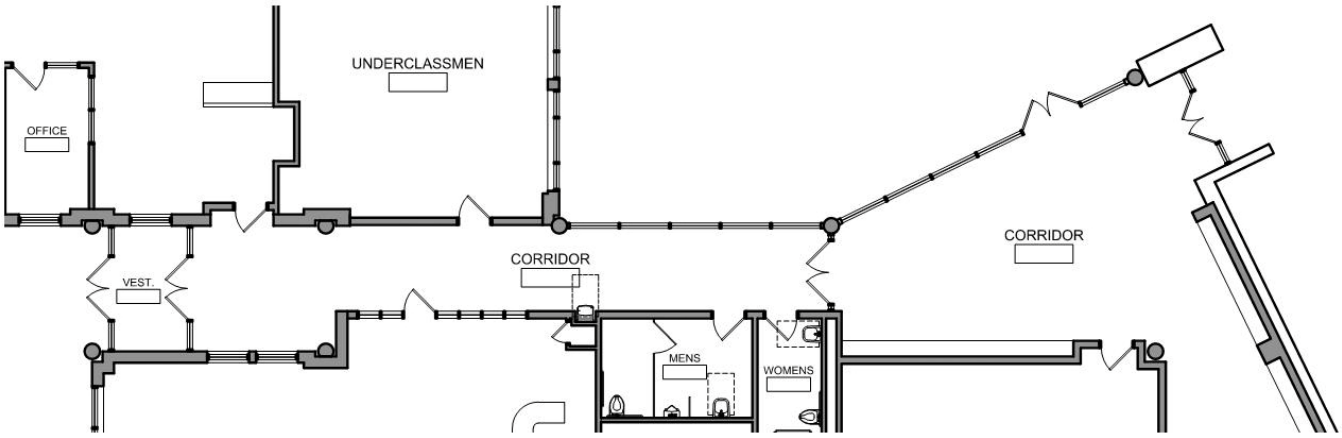
	In the 1992 Addition
Existing Square Footage	4,250 Square Feet (include total culinary Program)
Ideal Square Footage	3,625 Square Feet
Floor Material	Quarry tile (good condition) - VCT and carpet in restaurantw
Base Material	Quarry tile base
Walls	Ceramic tile (low) / Gypsum wallboard (high - 4'-0" AFF)
Ceilings	2x4 ACT (fair condition)
Windows	Aluminum with some operable sections
Doors	Hollow metal, both interior and exterior
Casework	Chair and tables in restaurant
Equipment	Shop / kitchen equipmet
Notes	Wood paneling vs. ceramic tile for walls at restaurant



Recommendations	Replace existing aluminum windows
	Replace ACT with new high NRC 2x2 ACT in restaurant
	Replace ACT in kitchen

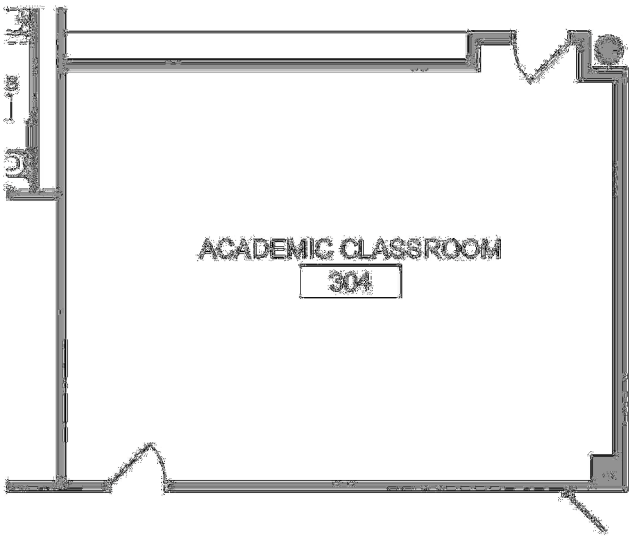
Corridors - Addition

	Typical finishes for corridors in the 1992 addition
Existing Square Footage	-
Ideal Square Footage	-
Floor Material	12x12 VCT (fair condition)
Base Material	Vinyl base
Walls	Typically glazed CMU
Ceilings	Gypsum wallboard
Windows	Aluminum with some operable sections - some HM not curtain wall
Doors	Most are hollow metal
Casework	-
Equipment	-
Notes	No terrazzo, wood slat ceiling outside lecture hall



Recommendations	Replace VCT with rubber flooring
	Delete gypsum wallboard ceiling - replace with high NRC ACT ceiling

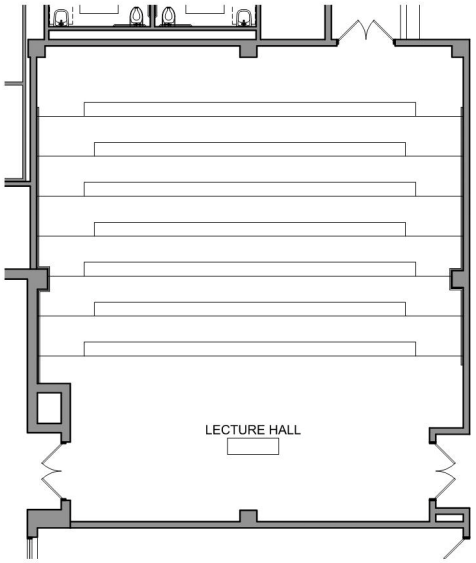
CR - Addition	Academic classroom in the 1992 addition
Existing Square Footage	690 Square Feet
Ideal Square Footage	825 Square Feet (minimum - MSBA guideline)
Floor Material	12x12 VCT (fair condition)
Base Material	Vinyl base
Walls	Gypsum wallboard, painted
Ceilings	2x4 ACT (fair condition)
Windows	None
Doors	Hollow metal interior doors
Casework	Wood storage cabinets
Equipment	SB / MB / TB at front of classroom
Notes	



Recommendations	Replace existing ACT with new high NRC 2x2 ACT ceiling
	Replace existing VCT with linoleum

Lecture Hall

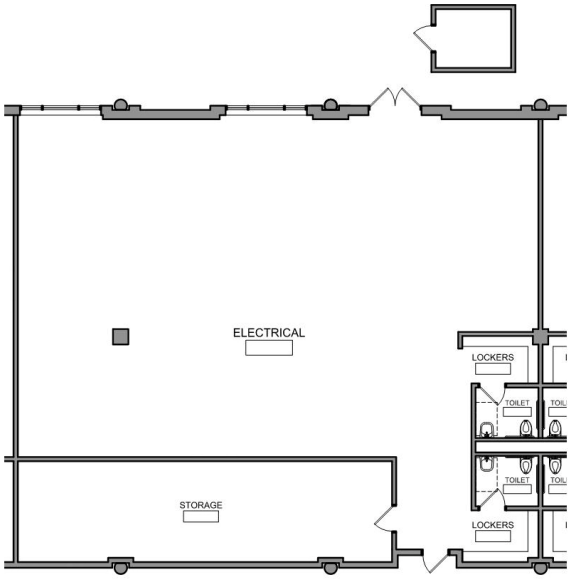
	In the 1992 Addition
Existing Square Footage	2,285 Square Feet
Ideal Square Footage	4,133 Square Feet
Floor Material	VCT and carpet (VCT under seating)
Base Material	Vinyl base
Walls	Gypsum wallboard, painted
Ceilings	Exposed structure
Windows	None
Doors	Hollow metal, both interior and exterior
Casework	Lectern
Equipment	Ceiling mounted projector (no smart board)
Notes	No access to back of lecture hall (carpet, VCT and seats replace 5 yrs ago)



Recommendations	Add additional acoustical measures
	May need wheelchair at back hall entrance (major renovation project)

Electrical

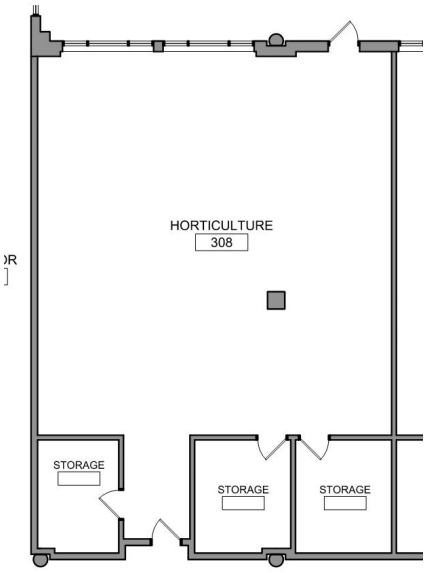
	In the 1992 Addition
Existing Square Footage	3,885 Square Feet
Ideal Square Footage	7,425 Square Feet
Floor Material	Concrete, painted/sealed
Base Material	Vinyl base
Walls	Gypsum wallboard (? - cover in padding)
Ceilings	Exposed structure
Windows	Aluminum with some operable sections
Doors	Hollow metal, both interior and exterior
Casework	Shop carrels
Equipment	Shop equipment
Notes	Raised teachers station, upper student carrels, lockers and toilets



Recommendations	Replace existing aluminum windows
	Remove raised teachers station
	Provide minor accessibility modifications at existing toilet rooms
	Needs additional shop space``

Horticulture

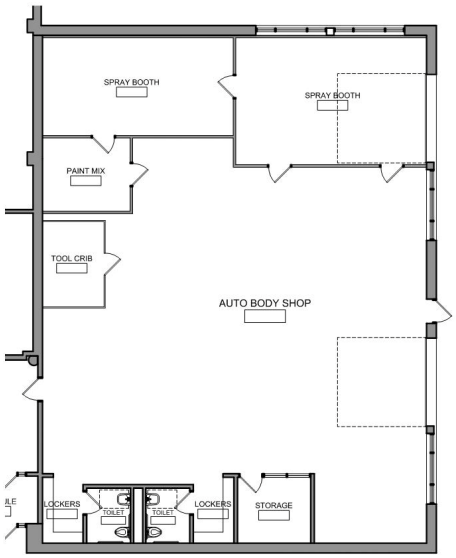
	In the 1992 Addition
Existing Square Footage	4,320 Square Feet
Ideal Square Footage	4,200 Square Feet
Floor Material	12x12 VCT, crack at column line (fair condition)
Base Material	Vinyl base
Walls	Gypsum wallboard, painted
Ceilings	2x4 ACT - exposed at high section
Windows	Aluminum some some operable sections
Doors	Hollow metal, both interior and exterior
Casework	Some wood storage cabinets
Equipment	Tables, chairs, computers, TV
Notes	Raised teachers station (not accessible)



Recommendations	Replace existing aluminum windows
	Replace 2x4 ACT ceiling with new high NRC 2x2 ACT ceiling
	Replace VCT flooring with linoleum flooring
	Remove raised teacher's station

Auto Body

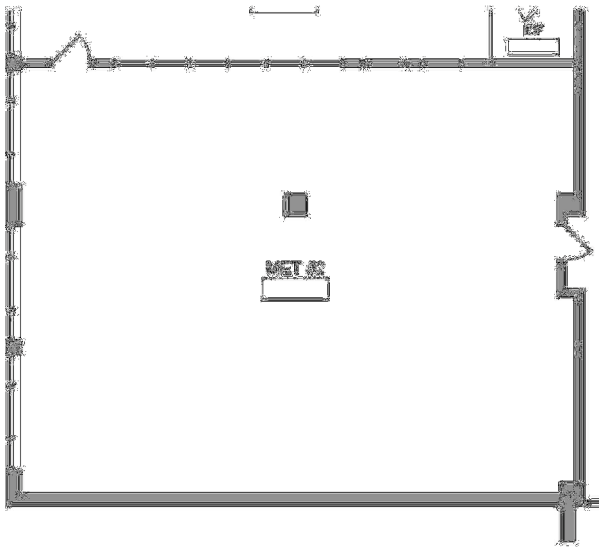
	In the 1992 Addition
Existing Square Footage	3,845 Square Feet
Ideal Square Footage	4,675 Square Feet
Floor Material	Concrete, sealed
Base Material	Vinyl base
Walls	CMU, painted
Ceilings	Exposed structure
Windows	Aluminum with some operable sections
Doors	Hollow metal, both interior and exterior - two (2) overhead doors
Casework	Some storage cabinets
Equipment	Shop equipment, bradley sink
Notes	Contains office, tool crib, locker areas, and two toilet rooms



Recommendations	Replace existing aluminum windows
	Replace bradley type sink with accessible sink
	Provide minor accessibility modifications at existing toilet rooms

M.E.T #2

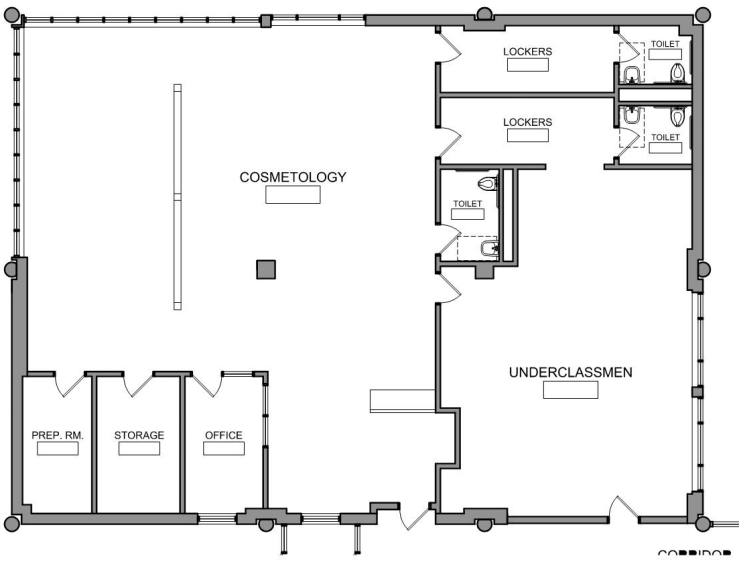
	In the 1992 Addition
Existing Square Footage	2,490 Square Feet
Ideal Square Footage	3,300 Square Feet
Floor Material	12x12 VCT (good condition)
Base Material	Vinyl base
Walls	Gypsum wallboard, painted
Ceilings	2x4 ACT (good condition)
Windows	Aluminum with some operable units
Doors	Hollow metal interior doors
Casework	Storage units with a sink
Equipment	Shop equipment, smart board, ceiling mounted projector
Notes	Laid out as a computer lab (engineering)



Recommendations	Replace existing aluminum windows
	Replace existing 2x4 ACT ceiling with new high NRC 2x2 ACT ceiling

Cosmetology

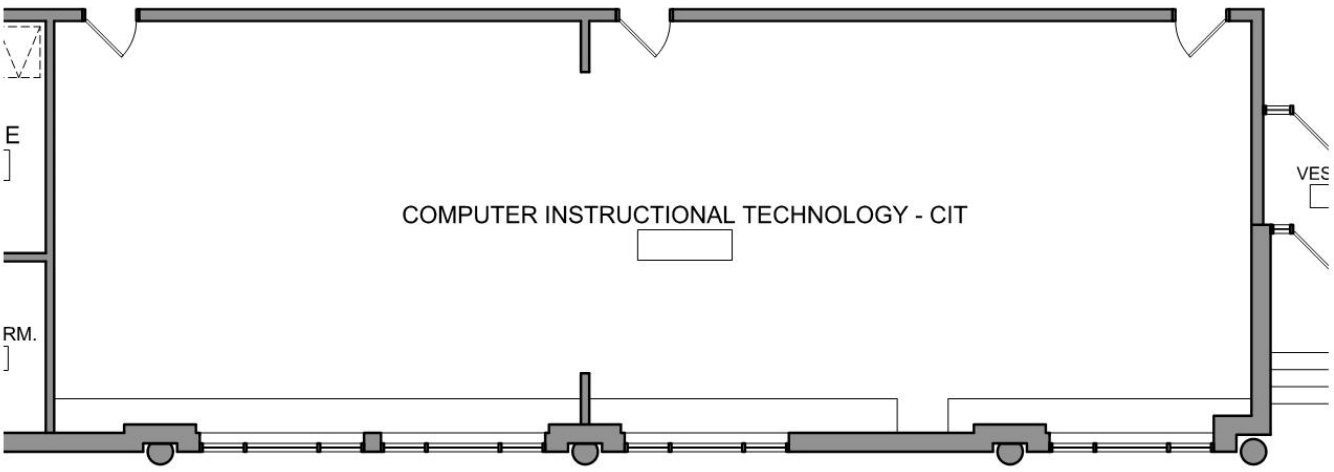
	In the 1992 Addition
Existing Square Footage	3,000 Square Feet
Ideal Square Footage	3,125 Square Feet
Floor Material	12x12 VCT (good condition)
Base Material	Vinyl base
Walls	Gypsum wallboard, painted
Ceilings	2x4 ACT, some stains (fair condition)
Windows	Aluminum with some operable units
Doors	Both wood and hollow metal interior doors (no exterior doors)
Casework	Storage cabinets
Equipment	Shop equipment, sinks
Notes	Contains office, storage room and prep room



Recommendations	Replace existing aluminum windows
	Replace existing ACT ceiling with new high NRC 2x2 ACT ceiling
	Minor modifications to existing toilets for accessibility

C.I.T. Computer Information Technology

Existing Square Footage	1,695 Square Feet
Ideal Square Footage	3,080 Square Feet
Floor Material	12x12 VCT
Base Material	Vinyl base
Walls	Gypsum Wallboard, painted
Ceilings	2x4 ACT (fair condition)
Windows	Aluminum with some operable section - original to 1992 addition
Doors	Hollow metal, interior
Casework	Wood storage cabinets
Equipment	Shop equipment, computer equipment
Notes	This space was originally two smaller classrooms



Recommendations

- Replace existing aluminum windows
- Replace existing 2x4 ACT ceiling with new hign NRC 2x2 ACT ceiling