

CARVER-PIEDMONT AGRICULTURAL INSTITUTE FACILITY ASSESSMENT



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1. EXECUTIVE SUMMARY

A. INTRODUCTION

In 2015, Rappahannock-Rapidan Regional Commission (RRRC) commissioned Spectrum Design to prepare a Facility Assessment of the former George Washington Carver Regional High School and the other buildings on the campus. The school, located in Culpeper, Virginia, was constructed in 1948 and various out buildings have been added to the property since that time.

RRRC, in conjunction with the George Washington Carver Agricultural Research Center and the Virginia Food Enterprise Centers, is interested in the ability of a building on campus to house a new Carver-Piedmont Agricultural Institute. The institute will provide training and commercial kitchen facilities for community use.

B. OVERVIEW

A visual inspection of the condition of the buildings on the George Washington Carver campus was conducted by the architects and engineers of Spectrum Design. The condition of the site and building systems were analyzed with the following approach:

- Compliance with current building codes and standards.
- Operating and life cycle costs of building systems.
- Cost-effective corrective strategies.
- The ability of the facility to undergo a major renovation.

C. RECOMMENDATIONS

The report provides a description of each building on the property and its deficiencies. Recommendations are made for renovation of each facility in terms of its suitability for use as the Carver-Piedmont Agricultural Institute. A Cost Summary is provided to estimate repair and replacement costs for major building systems.



George Washington Carver Regional High School



CARVER-PIEDMONT
AGRICULTURAL INSTITUTE

2. INTRODUCTION

A. INTRODUCTION

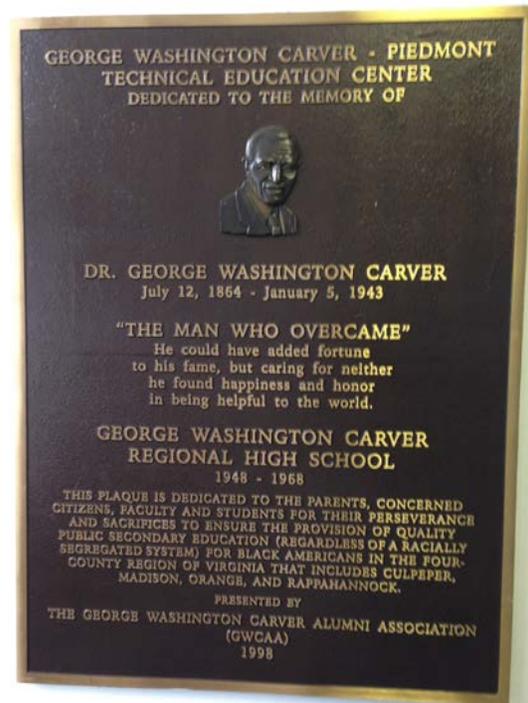
The former George Washington Carver Regional High School, located on Route 15 in Culpeper, Virginia, was constructed in 1948 and served as the regional high school for African American students in Rapidan. The school closed in 1968 when Virginia's public schools were desegregated. Because of strong support of the Alumni Association, the school was renamed the George Washington Carver-Piedmont Technical Education Center in the late 1980's and was a vocational hub for the students from Orange and Culpeper Counties. Currently the school's campus houses a variety of community organizations, including multiple churches, and provides training areas and storage for local police.

Although the structure is not on the National or State Register of Historic Places, the history of the school and strong alumni support have made the former school an important part of the community.

The Rappahannock-Rapidan Regional Commission (RRRC), in conjunction with the George Washington Carver Agricultural Research Center (GWCARC) and the Virginia Food Enterprise Centers (VAFEC), has commissioned this Facility Assessment to evaluate the buildings on the campus for their ability to be renovated into a multi-use food processing and agricultural research and training facility.



Front of Main School Building



Dedication Plaque

2. INTRODUCTION

B. CAMPUS OVERVIEW

The GW Carver site is a campus with multiple buildings. This report will refer to the structures by the designations indicated on the Campus Aerial Plan, below: Main School, Boiler Building, and the outbuildings are designated Building A, B, C and D. For discussion, North will be aligned with Route 15, such that the front of the Main School is referred to as the west face.



Campus Aerial Map

2. INTRODUCTION

The Main School Building is a brick and masonry building constructed in 1948. The front section of the building consists of a two story class room wing. The second story of the classroom wing is accessed by stairs at each end. There is no elevator for vertical circulation. A centrally located Auditorium divides the classroom wing from the rear section of the building.

The rear section of the building is primarily single story, with the original kitchen and cafeteria on the south and the former shop areas at north. The central area of this wing is two stories with the original music room in the center and a group of classrooms on the second level that are accessed by stairs on the north side. Overhead doors have been added to the music room and it now serves as shop/storage space.

Grade falls between the front wing and back wing of the building and the ground floor elevations of these two sections vary by approximately four feet. Stairs are located on each side of the auditorium. No elevators or chairlifts are present in the Main School Building.

RRRC had identified a portion of this building for possible use as the Carver-Piedmont Agricultural Institute. Option One is to locate the commercial kitchen in the former shop in the northeast area of the building, and to utilize the central vocational area in the back wing for storage. RRRC is considering using the upper level of the rear of the school for offices.

The Boiler Building is located behind the main school building. The small structure houses the mechanical equipment for the central steam distribution for the Main School Building. No heating is provided to the Outbuildings from the Boiler Building.



Main School Building East Façade



Main School Building, Aerial Photo



Boiler Building

2. INTRODUCTION

Building A is a single story masonry building with brick veneer that was built as a gymnasium and later housed an Auto Mechanics Shop. The building consists of a large open high-bay shop area with multiple garage doors to the North and small support spaces on the east side. Mechanical equipment is located on a lower level basement under the east side. Building A is currently used by the Sherriff's department.

RRRC feels that Building A would be a viable home for their commercial kitchen because the garage doors would allow for separate spaces for each kitchen.

Building B is a single story metal building structure. The front of the building (south face) is at grade level while the back of the building is supported on masonry foundation wall.

Building B was most recently used as a church and for Police K-9 training.

Building C is a single story structure with wood roof trusses. The north end of the building is open shop-type area with high ceilings and clerestory windows on the east and west sides. The space is accessible through a man door and overhead door on the north face of the building. The rear of the building has toilets and other small support areas. Building C is also considered as a possible location for the commercial kitchen.

Building D is a single story metal building structure with a single story masonry addition on the east side. Building D is currently used by the Police and Sherriff's departments.

Sections 3 through 7 of the report will present the conditions of each building independently and Section 8 will address any site concerns.



Building A South Façade



Building B South Façade



Building C, Northeast Corner



Building D, West Façade

3. MAIN SCHOOL AND BOILER BUILDINGS

A. INTRODUCTION

The **Main School Building** is a brick and masonry building constructed in 1948. The front section of the building consists of a two story class room wing. The second story of the classroom wing is accessed by stairs at each end. There is no elevator for vertical circulation. A centrally located Auditorium divides the classroom wing from the rear section of the building.

The rear section of the building is primarily single story, with the original kitchen and cafeteria on the south and the former shop areas at north. The central area of this wing is two stories. The lower level in the middle section was originally the music room with a group of classrooms on the second level that are accessed by stairs on the north side. The music room was converted at some point to a shop area and overhead doors were added on the east side.

B. ARCHITECTURAL

ARCHITECTRUAL OVERVIEW

The Main School Building is a two-story masonry and steel structure and would be considered construction Type II-B, non-combustible unprotected, in today's building code. The exterior walls are constructed of concrete masonry block bearing walls and a red brick veneer on top of finished concrete foundation walls. Vents in the foundation walls indicate a crawlspace or pipe chase below. There main entrance to the school is a stone masonry element at the west façade.

EXTERIOR WALLS

The walls are solid uninsulated masonry. Typical for buildings of this age, there are no control joints in the brick or concrete masonry. Cracks were observed in the brick. These cracks appear to be from movement of the brick and concrete masonry.



Main School Building East Façade



Main School Building, Aerial Photo



West Elevation

3. MAIN SCHOOL AND BOILER BUILDINGS

ACCESSIBILITY REQUIREMENTS

There are numerous deficiencies related to accessibility and the Americans with Disabilities Act (ADA).

The main entrance is at grade but the majority of other doors have steps. ADA requires that an accessible route be provided at exits required for egress. Ramps would be required at some exterior exits to comply with this regulation. The existing wooden ramp at the south Cafeteria entrance which is in poor condition and does not comply with the ADA.

VERTICAL CIRCULATION

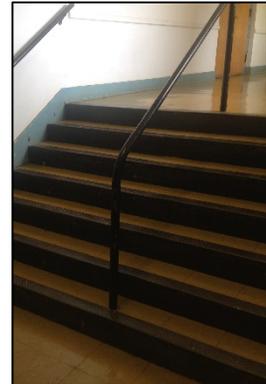
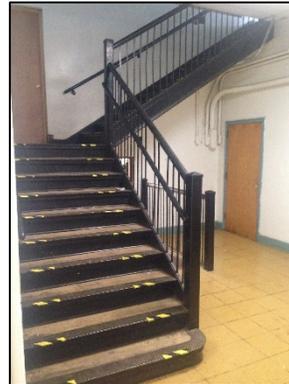
Two stairs are open to the corridors, accessing the second floor. There is no fire rated separation. The existing stair treads are stone with a metal nosing. The existing handrails do not meet current code and ADA requirements for handrails and guardrails. At present time the northern stair has been closed with a drywall partition at the second floor. If the second floor is to be occupied the stair should be re-opened.

There is currently no elevator. If the second floor of the school building is utilized, and elevator is required to meet the ADA code. A lift or ramp to access the auditorium stage is also required.

At each side of the auditorium there are two half-flight stairs in the corridor leading down to the former cafeteria and carpentry shop level. In addition there are two open stairs accessing the second floor classrooms behind the auditorium. The stair treads are vinyl tile, possibly asbestos containing, with a metal nosing. The existing handrails do not meet current code and ADA requirements for handrails and guardrails. All railing at stairs and ramps must have ADA compliant handrails. Modification to railings should include 12-inch extensions at all landing on both sides of the stairs. Any stair guard rail shall not have an opening of more than 4 inches.



Typical Building Access Points



Non-ADA Compliant Rails



Typical Stair Open to the Corridor

3. MAIN SCHOOL AND BOILER BUILDINGS

ROOFING

We were not able to access the roof on the day of our site visit, but we could observe an EPDM roof membrane on the low slope structure which is drained by a surface mounted gutter and downspouts at the east, leading to cast iron boots and the site drainage piping. There are through the wall scuppers and downspouts at both east and west elevations of what appears to be small additions at the building's north and south. Some signs of minor water damage were observed in the interior of the building and the condition of the roof and the expected remaining life should be investigated further. The expected life of an EPDM roof is 20 years.

WINDOWS AND GLAZING

The windows are steel single glazed with operable awning/hopper sashes, typical of mid-20th century school construction. The glazing compound is in poor condition. There are many locations of window unit air conditioners installed in the window openings and in the brick below the windows. There are also many locations where the window openings have been bricked in, primarily on the back (east) façade.

DOORS

Exterior doors are half-glazed wood panel doors in wood frames with glass transoms above. The doors are in functional condition, with much wear and damage from weathering. Most hardware appears to be original. Most hardware sets appear to be functional, but do not comply with the ADA. The “egress bar” hardware at most exterior doors are the type that could be chained shut, and are therefore not recommended to remain in place.

The interior doors are half-glazed wood panel or flush face solid wood doors. The interior door hardware is not ADA compliant. The interior door frames at the corridors are hollow metal, but there are no fire rating labels.



Typical Window Glazing



Typical Exterior Door



Typical Door Hardware



Typical Interior Doors

3. MAIN SCHOOL AND BOILER BUILDINGS

INTERIOR FINISHES

The walls are typically plaster or painted concrete block. There is one wood paneled room at the first floor. The base is typically painted wood. Flooring is vinyl composition tile (VCT), painted concrete, exposed concrete, or in limited areas carpet. The original ceilings are plaster but many spaces have 2 x 4 lay in ceilings suspended below the plaster.



Typical Classroom Finishes

PUBLIC RESTROOMS

The public restrooms have ceramic tile walls, mosaic tile floor, marble stall partitions, and plaster ceilings. The restrooms are not accessible per the ADA. Accessibility deficiencies were observed related to fixture height, clear floor areas, stall size and configuration, and grab bars. There are also several smaller individual restrooms which are not ADA compliant due to door size, fixture height, and clearances.



Typical Toilet and Toilet Partitions

3. MAIN SCHOOL AND BOILER BUILDINGS

AUDITORIUM

The Gym / Auditorium has a flat floor and a portion of the room has a double height ceiling. There is fixed theatre seating under the lower ceiling area in the back of the room. The flooring is VCT, walls are painted CMU, and the ceiling is 2 x 4 lay in tile. The finishes are serviceable. An elevated stage is accessed from the auditorium by portable stair risers. The risers are not code compliant since they have no handrails. There is no ADA accessibility to the stage.



Auditorium

KITCHEN AND CAFETERIA

The Cafeteria is a large high ceiling space. The flooring is VCT, walls are plaster, and the ceiling is 2 x 4 lay in tile. The finishes are worn but the space is serviceable. There is not an accessible route to the Cafeteria from the building's interior due to the stairs at the interior corridor. The accessible entrance from the exterior (south) will require replacement of the existing wooden ramp with ADA compliant entry.



Cafeteria

The Kitchen is also finished with plaster walls, VCT floor, and lay in ceiling. These materials are not ideal to meet current health requirements. Replacement of finishes to materials that are nonporous and scrub-able may be required if food production exists in the future. There is no dedicated hand wash sink in the kitchen. One must be added to meet health requirements. The dish sink is a two-compartment type, which would need to be replaced with a three-compartment sink to meet current health department requirements. There is an electric griddle which does not have a hood. If this equipment is to be used in the future it will require a commercial kitchen hood with fire suppression.

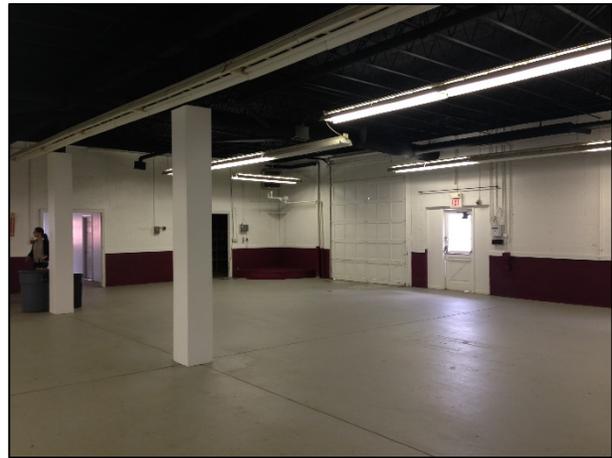


Kitchen

3. MAIN SCHOOL AND BOILER BUILDINGS

CARPENTRY SHOP

The former Carpentry Shop is a large high ceiling space with a row of columns in the center of the room. The floor is concrete, the walls are painted CMU, and the ceiling is exposed bar joists and cement fiber deck (Tectum). The space access from the corridor adjacent to the Auditorium and directly from the outside by doors at the north and an overhead door to the east. This space could easily lend itself to the proposed agricultural/food uses. Depending of the ultimate use, upgrades to floor and wall finishes, and the addition of plumbing, ventilation, power and lighting will be required to meet USDA and state health department requirements.



Carpentry Shop

C. STRUCTURAL

STRUCTURAL OVERVIEW

No major structural problems were observed in the Main School building or the boiler building. In general, concrete masonry and brick masonry was observed to be in good condition with limited areas of damage noted below. The precast concrete entrance had no visible signs of damage. No settlement of floor slabs or foundations was observed.

Framed floor and roof structures that were observed appeared in good condition with no visible signs of damage. The concrete floor slab was damaged in the second level bathroom above the music room.



Repaired Brick at North Face of School

STRUCTURAL RECOMMENDED REPAIRS

Past brick repairs can be seen in the north face of the school building. This repairs should be examined to determine if a suitable repair material was used, and the brick be repointed.

Brick at the Boiler Building is showing signs of age and possible water damage. And roof leaks or damage to the roof edge should be repaired to prevent further damage to the wall. The brick should be cleaned and repointed to prevent further damage.



Brick at Northeast Corner of Boiler Building

3. MAIN SCHOOL AND BOILER BUILDINGS

Cracks in the concrete foundation wall were present at many corners of the Main School Building. These cracks should be cleaned and injected with an epoxy crack filler to prevent water from entering the foundation walls and causing further damage.



Damage to Foundation Corners

D. MECHANICAL & PLUMBING OVERVIEW

HVAC

The building is heated by steam from the Boiler House. Steam and condensate piping are routed beneath the first floor in small tunnels and are routed upward through the floor to individual steam convectors. The steam convectors are generally 5 ft long and 3 ft tall. The manual temperature adjustment valves on these units look in good condition. The heating system looks good, and based on discussions with maintenance personnel, operates properly. In the last year, the majority of steam and condensate beneath the building was replaced with galvanized steel piping.



Typical Heating Unit

The back area of the main school has a large roll up door and is heated with four steam unit heaters suspended from the ceiling. This area also has two sidewall propellers fans used for exhaust, with make-up air grilles in the ceiling to maintain space pressurization.

The building has a nine spaces serves by window air conditioners, using R-22 refrigerant and operating at 9.0 EER.

The building does have a toilet exhaust fan system, although this was not operating during the field investigation.

There are several spaces which have split system HVAC units in fair condition, to include Classroom 13 (non-ducted heat pump suspended from ceiling), the cafeteria outside of the kitchen (floor mounted unit with



Steam Unit Heater

3. MAIN SCHOOL AND BOILER BUILDINGS

ductwork above ceiling) and the auditorium. These systems appear to be in good shape and should be expected to function in their current condition for several years. It was not possible to fully observe the return air ductwork, but it appears that none of the split systems provide ventilation air to the spaces, nor do they have the capability to operate in economizer mode. Both issues would likely have to be addressed if the units were ever to be replaced.

Currently, the building has no dedicated mechanical ventilation, as the building uses natural ventilation via use of operable windows. Ventilation is required for a code-compliant occupied building. Use of natural ventilation in a building can be problematic due to inability to control humidity, cold drafts or rain. The 2012 VUSBC requires all openings used for natural ventilation to be installed with insect screens for non-residential buildings. The mechanical code allows for natural ventilation if the total window openings represent 4% of the individual space being ventilated, or 8% of an adjacent space provided that there is a minimum 25 square foot opening between the spaces.

The existing kitchen contains a commercial type electric flat-top griddle/oven. However, there is no exhaust hood, and therefore should not be used for cooking. The mechanical code requires a Type I grease exhaust hood for cooking appliances that produce grease or smoke, or a Type II hood for appliances that produce heat or moisture. Should the Authority Having Jurisdiction rule that neither a Type I or Type II hood is required, the code would still require an operable exhaust providing 0.7 cfm per square foot of kitchen space. It is noted that there once was a working exhaust fan above the oven.



Typical Outdoor Unit for Split System



Commercial Griddle/Oven

3. MAIN SCHOOL AND BOILER BUILDINGS

PLUMBING

The existing kitchen utilizes a two-compartment sink that is connected to an underground grease interceptor. The interceptor appeared filled, with a few pieces of grease floating on top. It is not clear if the interceptor is working properly or if the existing kitchen has a low use of grease.

It is recommended that the grease interceptor and associated upstream piping be thoroughly cleaned as part of routine building maintenance.

The existing kitchen uses domestic hot water provided by 4.5 kW electric water heater, which look new. There are other electric water heaters in the building, and they appear to be in good condition.

Most of the plumbing fixtures are original to the building and are showing wear.

FIRE PROTECTION

The building has no fire suppression system.

BOILER HOUSE

HVAC

The building does not have standard HVAC as it is not an occupied building. It contains two cast iron boilers and steam appurtenances that generate steam for heating of the main school building. All of the steam generating equipment inside the building looks in good condition, and it is obvious that several of the components have been replaced and/or upgraded recently (including the condensate receiver). The combustion flue pipes are not insulated and show significant surface rust, but are otherwise solid and do not need to be replaced.

The boilers are Smith 28A series, generating 15 psi of steam. The oil-fired burners are Beckett model CF2500 with modern



Existing Two-Compartment Sink



Smith 28A Boiler

3. MAIN SCHOOL AND BOILER BUILDINGS

Honeywell controls, with a capacity to burn 25 gallons per hour (3.5 million BTU/hr input). Although there was no specific nameplate data on the boiler (and performance varies based on burner type and heating surface area), the IBR output capacity of the boiler is probably around 2.1 million BTU/hr for steam. The boiler plant controls are Heat-Timer SQ-Elite-8S, which sequence the boilers on run time and modulates the boiler burners to maintain steam pressure to the building.

The steam pit is a recessed area in the floor where steam and condensate are piped underground through a small tunnel to the main school. The condensate receiver in the pit looks new.

The steam and boiler feedwater piping connected to the boiler is not insulated. Combined with the uninsulated flue piping, it would appear that the lack of insulation is deliberate to allow for heat gain to the space to keep water from freezing.

It is recommended that all flue piping below 7 feet above finished floor be insulated, as OSHA generally requires an Owner to protect employees from receiving burns as a result of touching hot surfaces. General industry standards are 7 feet above the floor and a maximum surface temperature of 140 deg F.

The building lacks code compliant combustion air intakes.

PLUMBING

The building has no domestic water or sanitary fixtures.

The building has two well water hydro pneumatic storage tanks are new. These tanks store pumped well water under pressure and deliver it to the main school building. Well water is delivered to the main school in an underground tunnel shared with the steam and condensate piping.



Controls



Steam Pit



Well Tanks

3. MAIN SCHOOL AND BOILER BUILDINGS

The steam pit has two small leaks in the foundation, which were noticeable due to the large amount of rain that had occurred in the days preceding the field investigation. The leaking water collected in the bottom of the pit, where it was pumped out from the duplex sump pumps located in the bottom of the pit.

FIRE PROTECTION

The building has no fire suppression.

E. ELECTRICAL OVERVIEW

ELECTRICAL DISTRIBUTION

The main service to the building has been upgraded in recent years, and a new 1600A, 208/120V aerial service lateral has been installed to the east side of the building, where there is a new riser.

The main switchgear in the building is a modern Eaton Cutler Hammer 1600A switchboard with an electronic trip main power circuit breaker and a distribution section with 6-200A feeders and 1-600A feeder. The existing legacy building distribution system is powered by the 600A feeder, which is connected at the old building main service in the adjacent room behind the auditorium, and feeds directly to an old GE distribution panel and a modern Eaton Cutler Hammer distribution panel (assumed to have been installed in the electrical upgrade). The 200A feeders feed six new 225A main lugs distribution panels installed throughout the building. The 225A panels were obviously installed at the same time as the new 1600A main switchgear.



Aerial Service



Main Service Equipment



Old Main Service



GE Service Panel



New 225A Panel - Typical

3. MAIN SCHOOL AND BOILER BUILDINGS

The new distribution system feeds primarily the classroom wings, and is assumed to serve the lighting and receptacles in these areas (the panels are not marked). The legacy distribution system appears to feed the auditorium, shops, cafeteria, and other auxiliary spaces in the rear wing of the building. The panels in the shops, auditorium, and cafeteria are either original or of older vintage, and are obsolete and past their useful service lives.

The legacy distribution systems in the building are largely original, and have reached the end of their useful lives. The new switchboard and panel network is modern and is in very good condition.



Cafeteria Panels



Old Shop Panels

3. MAIN SCHOOL AND BOILER BUILDINGS

LIGHTING

Lighting varies throughout the building. In areas with acoustic ceilings there are 2'x4' lay-in fluorescent troffers, assumed equipped with T12 lamps, in good condition. In some of the shop spaces, there are 8' linear 2-tube chain-hung T12 fluorescent fixtures in good condition. The auditorium and cafeteria both utilize 2'x4' lay-in fixtures, in fair to good condition, also assumed to be lamped with T12 tubes.

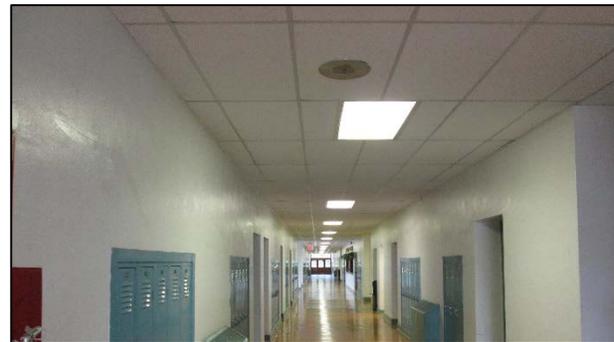
Exterior lighting is limited to minor architectural lighting at portals. There are no wall packs or other significant lighting devices installed on the building exterior to provide adequate security lighting.

WIRING AND WIRING DEVICES

The wiring and devices in the building are primarily a mix of original and older systems, with some limited upgrades associated with the new main distribution panels. As most of the wiring is concealed, it is hard to determine what percentage was replaced to connect the new distribution panels to the lighting and receptacle circuits. The main distribution systems installed during the service upgrade are in very good condition.



Fluorescent Lighting – Shop



Lay-In Lighting



New Feeders



Existing Wiring

3. MAIN SCHOOL AND BOILER BUILDINGS

COMMUNICATIONS SYSTEMS

The building is equipped with apparently operable telephone systems, however the main telephone backboard show a lot of out of service equipment and wiring. It is unlikely that the existing systems would support any major upgrades in the facility requiring modern communications equipment.



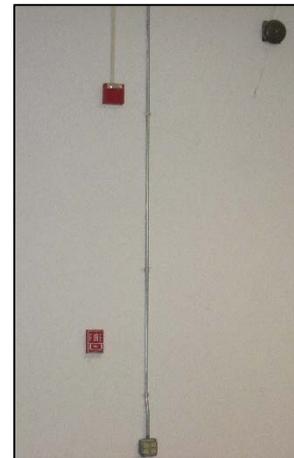
Existing Telephone Backboard

FIRE ALARM AND SECURITY SYSTEMS

The building is equipped with a complete, but older, fire alarm system consisting of pull stations and horn/strobe notification devices. The main FACP, a First Alert non-addressable system, appears to be non-operational, as it has internal components disconnected. It does not appear that the system is set up to dial a central station, but acts as a stand-alone fire alarm.



Fire Alarm Control Panel



Fire Alarm Devices

LIFE SAFETY SYSTEMS

The building is equipped with modern battery-powered combination exit sign / emergency lights throughout egress paths. There are some minor parts of the facility that are not completely covered with exist signs and egress lighting.

There is no exit discharge lighting installed.



Emergency Exit Light

3. MAIN SCHOOL AND BOILER BUILDINGS

BOILER HOUSE

ELECTRICAL DISTRIBUTION

The main electrical distribution in the building consists of a 100A, main lugs panelboard at 208/120V that feeds pumps and a 60A main lugs subpanel that feeds the boilers and associated controls. The 100A panelboard is modern and in very good condition. The 60A subpanel is fed from the 100A panel and is older and in fair to good condition.

It appears that the main service to the building has been upgraded concurrently with an electrical upgrade performed in the main school building.

LIGHTING

Lighting in this building comprises modern 8' linear 2-tube T8 fluorescent fixtures. These have been recently upgraded and are in very good condition. No exterior lighting was observed.

WIRING AND WIRING DEVICES

Wiring and devices are a mixture of modern and original, with the majority of equipment-related wiring being relatively new. There has been significant work done in the boiler building, and the important circuits that serve the boiler equipment are all modern and in good condition.

COMMUNICATIONS SYSTEMS

There is a communications connection for monitoring the boiler controls, but no telephone or other data connections.

FIRE ALARM AND SECURITY SYSTEMS

There are no fire alarm or security systems in the facility.



Main Service Panel



60 AMP Subpanel



Existing Wiring

3. MAIN SCHOOL AND BOILER BUILDINGS

LIFE SAFETY SYSTEMS

The building is not equipped with emergency lights, exit signs or lights, or exit discharge lighting.



Existing Wiring

4. BUILDING A

A. INTRODUCTION

Building A is a primarily single story masonry building with brick veneer and a steel framed roof. Built circa 1962 as the school's gymnasium, a renovation in 1968 transformed the building into shop space for the Auto Mechanics program. During this renovation, four overhead doors were added to the north side of the building. It appears as if an area of framed floor on the east side of the building over what was once the fuel room where coal was stored may have also been added during this renovation. A locker room on the south east corner of the building is no longer in service and is currently used for storage.

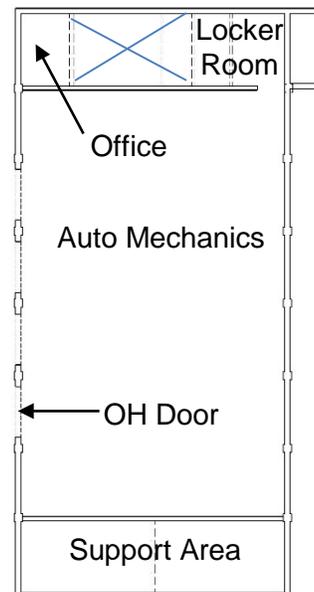
Building A has approximately 9100 square feet of useable space and a lower level mechanical room. The main high-bay space is 6900 square feet of open shop area with four overhead doors providing access to the north of the building. The east sides of the building has approximately 1300 square feet of support space. The west side of the building house approximately 220 square feet of office space and 560 SF of original locker room. The office on the west side is supported floor with the original fuel storage room below.



Building A South Elevation



Building A North Elevation



Building A Floor Plan

4. BUILDING A

B. ARCHITECTURAL

Building A is a single-story masonry and steel structure with no sprinkler system. The building would be considered Type II-B, non-combustible unprotected, as classified by the 2012 International Building Code.

The roof structure is exposed bar joists and cement fiber deck. A commonly known brand of cement fiber deck is Tectum. This type of roof deck was common in the 1960s and is often used in large open areas without ceilings for its sound attenuation properties.

The original roofing material was built up roofing with a gravel stop. This roof has been replaced by an EPDM rubber roofing membrane. Existing drawings indicate a flat roof structure. The low slope for drainage is most likely accomplished with tapered insulation. The roof is drained to surface mounted gutters and downspouts. Some signs water damage were observed in the interior of the building and the condition of the roof and its age should be investigated to determine the membrane's remaining life. In general, EPDM roof membranes have an expected useful life of 20 years.

The exterior masonry walls are brick and concrete masonry. The condition of these walls is discussed in the Structural section of this chapter.

There are numerous deficiencies related to accessibility and compliance with the ADA Accessibility Guidelines. All exterior doors have steps. At minimum 50% of the entry doors should be adapted such that the egress path is accessible. This is achieved by providing ADA compliant ramps to grade and door hardware that is ADA compliant.



Roof Joist Framing with Tectum Deck



Water Damage At Interior CMU



Non-ADA Compliant Egress

4. BUILDING A

C. STRUCTURAL

The structural condition of Building A varies. Existing drawings indicate the building is founded on concrete wall footings and stem walls. Masonry above is 8-inch unreinforced concrete masonry and 4-inch brick. The masonry construction is single wythe with no air gap. The roof structure is bar joists which span in the north-south direction. In general, the floor construction is slab-on-grade.

Structural drawings for the original gymnasium indicate that steel columns are provided within six of the masonry pilasters to provide for an alternate structural system at the center of the gym. There is no change in the roof framing system and the presence of these columns was not visually confirmed.

Masonry control joints were provided in the brick at multiple locations along the long walls to allow for expansion in the brick. Control joints were not observed in the CMU, however locked interior partition constructed by tenants made observation of some areas difficult.

Water damage on the interior of the concrete masonry walls is evident. This may be due to failure of the roof system.

Overall, the brick on the exterior of the building is in good condition. Some damage to the brick work at the pilasters will be discussed later. Concrete foundation walls are damaged at the corners. The force created as the brick expands pushes outward on the corner. The mortar between the brick and concrete “grabs” the corners of the concrete and can cause them to spall off.



Building A Roof Structure



4. BUILDING A

Extensive cracking and damage was observed in the Auto Mechanics area and west side of the building. Representatives present during Spectrum's site visit indicated the structural damage may not have been present prior to the earthquake in 2011 whose epicenter was in nearby Louisa County.

Cracking is observed in the interior face of the masonry walls in the Auto Mechanics area. Cracks appear in the corners of the walls, as well as along the length of the east and west walls, which are the short walls of the former gymnasium. The pattern and location of cracks are indicative of earthquake damage. The cracks in the short walls form an "x", indicating in-plane movement of the masonry wall. The structural failure of the masonry is extensive enough that repair of the walls is suggested.

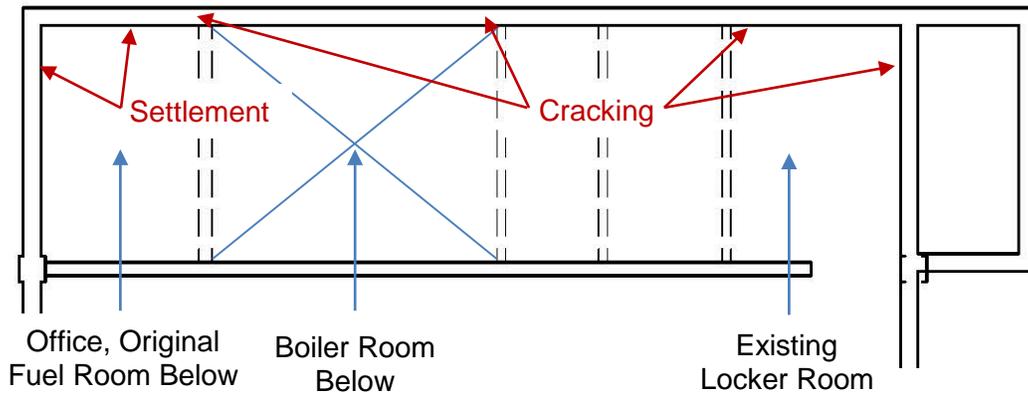
Cracking and settlement is also evident in the east area of the building. The plan below shows the spaces in the east area with labels for discussion.



Cracks in CMU walls at Auto Mechanics



Framed Floor Above Fuel Room



Plan, East End of Building A

4. BUILDING A

The ground floor level of the building steps up approximately 5 inches into an area of framed floor over the fuel room. Based on information in existing drawings, it appears likely this area of floor was added to the building during the conversion from a gymnasium to an Auto Mechanics shop in 1967.

The framed floor above the fuel room is constructed of steel bar joists supporting concrete slab on metal deck. The bar joists bear on the concrete foundation wall. The bar joists span in the north-south direction between the exterior wall and an interior CMU bearing wall between the fuel room and the boiler room.

This area of framed floor has dropped approximately one inch from its original location and a crack in the floor can be seen at the door to the exterior along the north side. Cracks in the walls and damage to the roof from the earthquake may be allows water to infiltrate the wall system. Water damage on the CMU near the location of the settlement may be causing degradation of the steel floor structure.

Extensive cracking can be seen in the walls of the locker room and boiler room. These horizontal cracks are indicative of movement of the wall out-of-plane. The size of the cracks indicates that the wall has been structurally compromised and requires repair.



Settlement and Water Damage



Horizontal Cracks at Locker Room

4. BUILDING A

Cracks are evident at the pilasters, where the brick work is toothed into the wall. This cracking appears to also be from movement of the structure during an earthquake event.

STRUCTURAL REPAIR RECOMMENDATIONS

The concrete masonry in the Auto Mechanics area has been damaged and requires repair. The masonry should be cleaned and the mortar joints repointed in the areas where cracking has occurred. Because the masonry is unreinforced, flexural strength must be added to the wall for it to regain its structural integrity. This can be done by adding reinforcing steel and grouted cells into the existing masonry walls or by applying a strips of carbon fiber reinforcement to the interior face of the wall.

The exterior and interior walls on the west sides of the building that are showing horizontal cracking are not structurally sound. The walls have been compromised to the extent that their replacement may be required. These areas of the building should be removed and replaced with reinforced masonry construction to meet the current building code.

Pilasters that have been damaged also require repair. Brickwork should be removed and rebuilt at the pilasters.

In areas where the interior of the CMU walls have water damage, the roof system should be repaired to avoid further damage and the masonry cleaned and repainted



Cracks at Brick Pilasters

4. BUILDING A

D. MECHANICAL & PLUMBING OVERVIEW

HVAC

The building has been heated by steam in the past, with steam being produced by an oil-fired steam boiler located in a dedicated boiler room that can be accessed from outside the building. The boiler system has been shut down for approximately two years due to a valve failure in the steam piping manifold inside of the high bay. The local sheriff's department contacted a local contractor to investigate and was told that price to replace the valve and make repairs would be between \$3000 and \$5000.

Except in the localized area of the valve failure, the piping and insulation appear to be in fair to good condition. However, one of the maintenance personnel said that the condensate receiver seems to be too small because the system seems to use a lot of make-up water. From an engineering perspective, it is not clear as to why this would be true. The condensate receiver serves only the steam system in Building A, whereas the hot water portion of the boiler serves Building B. If it is true that the system uses a lot of make-up water, it should be assumed that the system has a leak at some location, be it in Building A or in Building B, or in the piping between the two buildings.

The building was originally heated with steam unit heaters and steam convectors (radiators). The six downflow propeller unit heaters in the high bay appear to be in good condition, but the steam convectors are beyond their useful life. The unit heaters are operated by wall mounted electric thermostats.

The boiler was installed in 2004 (Hurst boiler model 2163) and was reported to be functional and well maintained prior to the system shutdown. The boiler system's condensate receiver/pump appears to be good condition. The boiler room lacks required dedicated



Boiler Room Equipment



Existing Piping and Valves



High-bay Unit Heater

4. BUILDING A

combustion air intakes, as required by code.

A heating water pump is used to pump water from the bottom portion of the steam boiler to the nearby Building B (chapel), where the hot water was used in unit heaters. An expansion tank is located in the boiler room for the heating water system. However, the heating system requires that the steam boiler be in operation, and it was noted that the heating water system has been shut off by valves.

It is assumed that the steam and condensate piping was installed in 2004, and therefore the piping should be in functional condition. It is recommended that the boiler and piping systems be chemically cleaned and flushed before re-use of system, so as to remove scale deposits and rust inside of the system.

The boiler operates using #2 fuel oil. Fuel oil is stored in a 5000 gallon underground storage tank located outside of the boiler room.

There are two exhaust fan systems with galvanized steel ducts routed below the concrete floor with exhaust being to the out of doors. It was not possible to determine the termination points, but it is noted that there is a hydraulic jack system located beneath the slab.

The building was equipped with a pneumatic air system for tools. There is no longer an air compressor, but the piping could be re-used.

Building has no air conditioning or mechanical ventilation. The mechanical code has special ventilation and exhaust requirements for automotive maintenance facilities, should the facility be re-used in that capacity. Natural ventilation appears to meet minimum ventilation requirements (operable openings are 4% of floor area).



Water Pump and Expansion Tank



Underground Fuel Tanks

4. BUILDING A

PLUMBING

Domestic water is part of the well system. Water is piped below grade and enters the building most likely in a space once used as a toilet room. The toilet room is currently used for storage and it was not possible to observe the actual point of entry. The plumbing fixtures have all been removed from the two rear toilet rooms.

The domestic water service has been shut-off for two years. The lack of heating in the building caused the piping to freeze and burst. The location of the pipe leak is reported to have been found by observing water leaking through the wall of the boiler room. It is believed that the water piping is likely ruptured inside of a wall near the boiler room.

All plumbing fixtures in the building need to be replaced.

FIRE PROTECTION

The building has no fire suppression.

E. ELECTRICAL OVERVIEW

ELECTRICAL DISTRIBUTION

The main service to the building is 225A at 208/120V. The service originates at a utility pole to the south of the building, and is connected to a service mast on the east side of the structure with aerial triplex cable. The main service panel is an older GE NLAB style panel. This panel is beyond its useful life, and would need to be replaced if the building is to be re-purposed.

There are several other panels and load centers throughout the building of various ages, the oldest being a 200A Kinney panel that appears to be original to the structure. None of these panels are modern, and all would need to be replaced.



Out of Date Plumbing Fixtures



Main Service Disconnect



Aerial Service

4. BUILDING A

None of the existing main distribution systems in the building would be adequate to support the operation of a commercial kitchen, and replacement would have to be planned into any remodeling actions.



Obsolete Panel

LIGHTING

The majority of the building is equipped with 8' linear 2-tube T12 fluorescent fixtures. These are mounted using various methods including chain hung, stem hung, and surface mount. These fixtures are obsolete, and are no longer specified due to energy efficiency. The fixtures do appear to be largely in working order, and could be used, though it is recommended to replace the entire lighting system in a remodeling project.



Fluorescent Lighting

Exterior lighting is scarce, and consists of several incandescent wall fixtures and one mercury vapor area light mounted to the building above the garage doors. All fixtures are vintage and in poor condition. These would be recommended for replacement and enhancement in a remodeling effort.



Outdoor Light Fixture

4. BUILDING A

WIRING AND WIRING DEVICES

Wiring and wiring devices within the building appear to be largely original, and appear to be in working order. Any reconfiguration of the facility would require a great deal of modification to the systems and in light of their age, it is recommended that all wiring and devices be replaced.



Existing Wiring

COMMUNICATIONS SYSTEMS

The building has an aerial telephone drop that originates at a utility pole to the south of the structure. This service appears to be a small pair count, and is of original vintage. There is no apparent data connection to the structure. Data and telephone systems would need to be completely replaced in order to provide modern services to the facility.

There is an old intercom and bell system evident in the building, however it appears to be in non-working condition.



Telephone Drop



Intercom and Alarm Bell

LIFE SAFETY SYSTEMS

There are modern battery powered combination exit light / emergency light fixtures in the building in the correct locations. There is no exit discharge lighting installed.



Emergency Exit Signs

4. BUILDING A

FIRE ALARM AND SECURITY SYSTEMS

There is no fire alarm system in the building. The current use of the structure is police evidence storage. As such, there is a modern Honeywell security system installed. This system is a typical wireless residential-grade system with wireless motion sensors and door switches. The system is connected to a monitored alarm center by telephone.



Security System



Door Sensors

5. BUILDING B

A. INTRODUCTION

Building B is a single story pre-engineered metal building structure approximately 140-feet long by 60-feet wide. The date of construction for the 8,400 square foot building is unknown, but it appears to have been built in the 1970s. Building B has most recently been used by a church and local law enforcement for police dog training.



Building B South Elevation

B. ARCHITECTURAL

The exterior walls of Building B are prefinished metal panels on an exposed CMU block foundation. The building is insulated by batt insulation draped from the structural purlins. This insulation value is less than the minimums required by the current building code.



Typical Exterior Metal Door

The roof is metal panel at the 1 to 12 slope of the structure. The roof area is drained by surface mounted gutters and downspouts. The downspouts are not connected to an underground drainage system, but discharge on the block foundation which has been damaged by wet conditions. At locations of missing downspouts, there is water damage and corrosion in the wall panels.

The windows are aluminum sliding units, single glazed. The exterior doors are painted hollow metal. The hardware is not ADA compliant. There are steps at all exterior doors.

The interior of the building shows much damage from water infiltration. There is evidence of mold and other water related damage to interior finishes and building materials. Much of the drywall partitions would need to be removed or replaced if this building was to be occupied.



Typical Batt Insulation

The restrooms are not ADA compliant.

5. BUILDING B

C. STRUCTURAL

The floor of the metal building is at grade on the south side. As grade drops to the north, the building is supported on a masonry foundation wall. Concrete pilasters are provided to support the metal building columns. The floor system is slab-on-grade.

The metal building frames and roof purlins are exposed in areas of the building and appear to be in acceptable condition. Deficiencies in the metal building cladding is discussed in the architectural section.

Extensive erosion of the foundation wall is evident on the north side of the building. Down spouts discharge water to grade and do not direct the water away from the foundation wall. Depressions in the grade around the north side of the building allows standing water to pond around foundations.

In addition to the poor grading conditions, the construction of the building is such that the metal wall panel stops above the masonry foundation wall and is inside the plane of the wall. This allows water to enter and deteriorate the foundation wall. Good structural details would allow the metal wall panel to bypass the foundation wall with a drip edge to discourage water from entering the foundation wall system. Water infiltration in the foundation wall has caused erosion of the foundation wall. Face shells and webs of the masonry wall are damaged and missing creating an unsafe condition.

In order to utilize Building B, it is necessary that the foundation walls be repaired. Downspouts should be directed away from the building and the site around the building should be re-grading so that water drains away from the building foundations.



Building B Foundation Damage

5. BUILDING B

D. MECHANICAL & PLUMBING OVERVIEW

HVAC

Building has no mechanical ventilation. Ventilation is required for a code-compliant occupied building. Building lacks sufficient windows and roll-up doors to provide natural ventilation.

Two spaces of the building are cooled by split system refrigerant based fan coil units suspended from the roof structure above lay-in ceilings. These units use galvanized steel ducts and operate via wall mounted thermostats. These split systems were not functioning at the time of the visit, but the indoor units appeared in good condition and the outdoor condensing units appeared to be fair condition. No nameplate data was observed, but the two systems are likely four to five tons in size. The units have no outside air. The median life expectancy of air cooled split systems is 10 years. By appearance, these units are approaching the end of their useful life and should be replaced if the building is re-purposed.

Due to the boiler being shut down in Building A causes Building B to have no heating. However, it was previously conditioned by heating water pumped from Building A (Automotive) prior to the boiler system being shut down. Heating water was pumped out of the bottom of the steam boiler and piped above grade to Building B. Heating inside Building B was provided by unit heaters suspended from the roof structure. The unit heaters are in poor to fair condition.

The rear area of the building is a garage space that has a wall propeller exhaust fan, which is likely utilized when the garage doors are open. The fan is in poor to fair condition. The toilet room has a small exhaust fan. Both fans appear to be in poor condition. Although the fans could be re-conditioned, it is recommended that new fans be installed if the building is to be re-purposed.



Indoor Mechanical Unit



Piping Between Buildings A and B



Unit Heater

5. BUILDING B

It is important to note that Building B's heat source is the boiler in Building A. Without proper functionality of the Building B boiler, a new heating water system is required. Use of a new boiler would require a dedicated boiler room.

Due to the boiler being shut down for at least two years, the piping has been left sitting empty which allows for accelerated corrosion to occur. It is likely that the interior of the piping is rusted beyond its useful life.

PLUMBING

The building has a small toilet room with a lavatory and toilet, and also a group hand washing station. All plumbing fixtures above grade are beyond their useful life.

FIRE PROTECTION

The building has no fire suppression.



Plumbing Fixtures

5. BUILDING B

E. ELECTRICAL OVERVIEW

ELECTRICAL DISTRIBUTION

The main service to the building is 400A at 208/120V. The service originates at a utility pole to the south of the building, and is connected to a service mast on the south side of the structure with aerial triplex cable. The main service disconnect is an original 400A safety switch, and this switch serves 4 panels of various vintage throughout the building. All panels are beyond their useful life, and would need to be replaced if the building is to be re-purposed.

None of the existing main distribution systems in the building would be adequate to support the operation of a commercial kitchen, and replacement would have to be planned into any renovation.



Main Service Disconnect



Service Drop



Obsolete Panel

5. BUILDING B

LIGHTING

The building is equipped with 8' linear 2-tube T12 fluorescent fixtures, T12 lay-in fluorescent fixtures, and a few CFL recessed can fixtures. The majority of the fixtures are in poor condition and obsolete, and are no longer specified due to energy efficiency. It is unclear as to which of the fixtures work, and it is recommended to replace the entire lighting system in a remodeling project.

There is no exterior lighting installed.



Fluorescent Fixtures

WIRING AND WIRING DEVICES

Wiring and wiring devices within the building appear to be largely original, and may be in working order, though this could not be confirmed during the survey. Any reconfiguration of the facility would require a great deal of modification to the systems and in light of their age, it is recommended that all wiring and devices be replaced.



Existing Wiring

COMMUNICATIONS SYSTEMS

The building has an aerial telephone drop that connects to the south face of the structure. This service appears to be a small pair count, and is of original vintage. There is evidence of old data lines in the building, but they would have been DSL based. Data and telephone systems would need to be completely replaced in order to provide modern services to the facility.



Old Data Connection

5. BUILDING B

FIRE ALARM AND SECURITY SYSTEMS

There is no working fire alarm system in the building. There is evidence of an old, non-working fire bell system in the facility.



Old Fire Bell

LIFE SAFETY SYSTEMS

There are modern battery powered combination exit light / emergency light fixtures in the building in the correct locations. There is no exit discharge lighting installed.



Emergency Exit Sign

6. BUILDING C

A. INTRODUCTION

Building C is an approximately 6,120 square foot building. The construction date of Building C is unknown, but it appears to be the most recently constructed building on site. The building is single story barn-type structure with a large open work area in the front of the building accessible by an overhead door and man door on the north side. The open work area is estimated to be 5,200 square feet. Support areas are located in the rear of the building.

B. ARCHITECTURAL

The exterior walls of Building C are a prefinished metal panels on an exposed CMU block foundation. The roof is metal panel at the 3 to 12 slope of the trusses. The roof area is drained by surface mounted gutters and downspouts. The downspouts are not connected to an underground drainage system, but discharge on the block foundation. There are signs of the foundation wall being wet, but it does not show the deterioration seen on Building B.

The window are aluminum sliding units, single glazed. The exterior doors are painted hollow metal. The hardware is not ADA compliant. There are steps at all exterior doors.

The ceiling is made of linear metal panels attached to the bottoms of the trusses. The support spaces are painted CMU. While there are some accessible features and restroom accessories, the restrooms are not ADA compliant.

The floor to the east has cracked and there is evidence of the floor slab settling along the east wall.



Building C North Elevation



Non-ADA Compliant Exits



Garage Door and Metal Ceiling Panels

6. BUILDING C

C. STRUCTURAL

Much of the structural system in the barn could not be observed because of limited access above the hard ceiling. A wood truss roof appears to be supported by columns along the east and west sides of the building. The floor structure is slab-on-grade. The slab is at grade level on the north and west sides of the building. Grade slopes down across the south and west faces. Where the floor level is above grade, the building is supported on masonry foundation walls.

Masonry foundation walls appear sound. Water damage has been limited by a proper drip edge where the metal wall panel ends and a roof overhang. Exterior stairs are damaged and in need of repair.

Floor slabs-on-grade are generally in good condition. Adequate control joints are present to control cracking. A trench drain down the center of the open work area appears in good condition, although the grate covering the drain requires replacement.

Some settlement of the slab-on-grade or foundation wall has occurred on the east side of the building. A crack has formed parallel to the east wall and the slab slopes down from the crack to the exterior wall. If Building C is renovated for future use, it is recommended that the subgrade below the settled area of slab be further investigated to determine if it is sound and repaired if necessary.



Foundation Wall and Stair at the East Elevation



Settlement of the Slab-on-Grade



Trench Drain

6. BUILDING C

D. MECHANICAL & PLUMBING OVERVIEW

HVAC

Building utilizes a boiler room with an oil-fired heating water boiler, installed in the year 1982. According to documentation inside the boiler room it appears the boiler was last inspected in the year 2006. The median expected life of a water-tube boiler is 25 to 30 years. Therefore, the boiler is beyond its useful life. The boiler room lacks code required combustion air intakes.

The classroom in the rear of the building uses a through the wall air conditioner, which is beyond its useful life. The classroom had a heating water wall convector but this has been damaged beyond repair.

High bay has four heating water unit heaters, all of which are beyond their useful life. The piping configuration for the heating water is for a single heating water supply pipe to flow water through all four unit heaters such that the return water from unit #1 is the supply water for unit #2, and so forth.

The small individual spaces at the rear of the building lack code compliant ventilation. Natural ventilation appears to meet minimum ventilation requirements (operable openings are 4% of floor area) where windows and roll-up doors are present.

It is recommended that to re-purpose the building that the entire heating system be replaced.



Existing Boiler



Classroom Air Conditioner



Unit Heater

6. BUILDING C

PLUMBING

The building has two toilet rooms, each with a lavatory and toilet. The toilet is beyond its useful life. The lavatory appears to be functional and should be replaced. The electric water heater is beyond its useful life. During the field investigation, domestic cold water was available but there was not hot water.

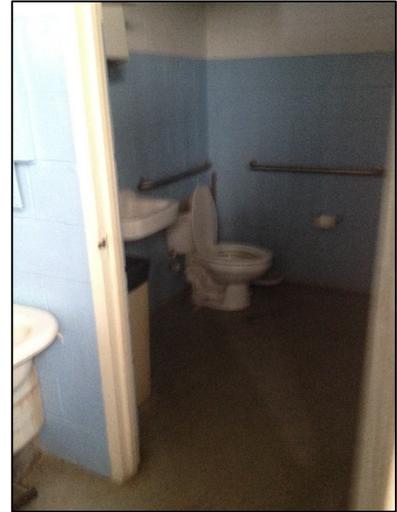
The group hand washing station is filled with water, indicating a clog. It is assumed that the clog is local to the station because no backflow was indicated at the toilet. However, if the building is re-purposed then the point of clog should be verified and repaired as required.

In the main bay, there is a floor trough. If this building is to be used for vehicle storage or vehicle maintenance, then this floor trough should be connected to an oil separator before discharging to the septic field. If the facility is not to be re-purposed with vehicle storage, then the trough should be demolished and filled in with concrete.

It is recommended that to re-purpose the building that all above grade plumbing fixtures be replaced.

FIRE PROTECTION

The building has no fire suppression.



Toilet Room



Hand Washing Station

6. BUILDING C

E. ELECTRICAL OVERVIEW

The main service to the building consists of 3-200A, 3 phase, main breaker-equipped panels at 208/120V. The service is underground, and connects at the utility meter on the west face of the building, back to back with the panels. The main service panels are original Murray panels in fair condition, and are obsolete. All service equipment is beyond its useful life, and would need to be replaced if the building is to be re-purposed.

None of the existing main distribution systems in the building would be adequate to support the operation of a commercial kitchen, and replacement would have to be planned into any remodeling actions.



Main Service Panels



Underground Electric Service

6. BUILDING C

LIGHTING

The building is equipped with 8' linear 2-tube T12 fluorescent fixtures, surface mounted. The majority of the fixtures are in good condition, though they are obsolete and are no longer specified due to energy efficiency. The fixtures do appear to be largely in working order, and could be used, though it is recommended to replace the entire lighting system in a remodeling project.

Exterior lighting consists of a few quartz halogen fixtures around the building perimeter, but not enough to provide adequate lighting for security purposes.

WIRING AND WIRING DEVICES

Wiring and wiring devices within the building appear to be largely original, and are likely in working order, though this could not be confirmed during the survey. Any reconfiguration of the facility would require a great deal of modification to the systems and in light of their age, it is recommended that all wiring and devices be replaced.

COMMUNICATIONS SYSTEMS

There is an existing telephone drop to the building, but there was no actively working communications equipment observed.

FIRE ALARM AND SECURITY SYSTEMS

There are no fire alarm or security systems in this building.

LIFE SAFETY SYSTEMS

There are no current life safety systems installed in this building.



Fluorescent Lighting



Quartz Halogen Light



Typical Wiring



Telephone Drop

7. BUILDING D

A. INTRODUCTION

Building D is a pre-engineered metal building with multiple building additions. The construction date for the metal building and additions is unknown but appears to have been built in the 1970s.. The structure is approximately 9,000 square feet and contains a garage bay that is approximately 90x60, a small masonry bearing wall addition on the west that is approximately 1,550 square feet and an addition on the south of the metal building that is 1,500 square feet. The building is currently used by local law enforcement for vehicle storage and storage of evidence and confiscated items.

B. ARCHITECTURAL

The exterior walls of Building D are a prefinished metal panels on an exposed CMU block foundation. The building is insulated by batt insulation draped from the structural purlins. This insulation value is less that the minimums now required by the building code.

The roof is metal panel at the 1 to 12 slope of the structure. The roof area is drained by surface mounted gutters and downspouts. The downspouts are not connected to an underground drainage system, but discharge on the block foundation which has been damaged by wet conditions.

The window are aluminum sliding units, single glazed. The exterior doors are painted hollow metal. The hardware is not ADA compliant. There are steps at all exterior doors. Brick has been added to the stoop and steps at the west door, making the riser heights non-compliant with the building code.



Building D: West Elevation



Building D Exterior



Building D Windows

7. BUILDING D

The interior of the building show much damage from water infiltration. Water was standing on the floor on the day we visited. Many of the CMU partitions have a powdery texture caused by moisture driven efflorescence from the block.

The restrooms are not ADA compliant.

C. STRUCTURAL

The structural members in Building D appear sound. No damage was noted in metal building frames or purlins. The condition of wall and roof panels is noted in the architectural section. Masonry walls in the west portion of the building are showing signs of water damage.



CMU Damaged by Water



Existing Toilets



Building D Typical Metal Building

7. BUILDING D

D. MECHANICAL & PLUMBING OVERVIEW

HVAC

The main high bay (front of building) is heated with a ducted oil-fired furnace rated for 80 mbh. Test report paperwork associated with the unit show test reports dating as back as February 2000. The furnace operates via wall mounted thermostat. The gas flue is routed up the wall and through the roof, adjacent to exposed plywood upper wall, and this is likely a code violation for failure to maintain clearance to combustibles.

The block-walled office area adjacent to the main high bay is served by an oil-fired horizontal furnace that is ducted only to the office area. The unit is located on top of the office. Ductwork is galvanized steel. The unit appears to be beyond its useful life. Thermostat for the horizontal gas furnace is located in the orange painted room.

The rear highbay, which is generally used for storage, has limited heating. The rear highbay is partially served by a single ducted hot air grille from the gas furnace, but the amount is insufficient to effectively heat the space for occupancy. The rear highbay has two propeller wall fans, one which is exhaust and one for ventilation. There is also a sidewall upblast fan located in the rear corner of the building, which is presumed to have been used for summer ventilation. At the front of the building there is a motorized damper and intake louver, which is assumed to be interlocked with the operation of the gas furnace or the sidewall upblast fan.

In the rear of the building there is a window mounted air conditioner, mounted in plywood, in the orange painted room. The unit is beyond its useful life.



Furnace



Propeller Wall Fan



Intake Louver

7. BUILDING D

The interior office spaces lack code-compliant ventilation. Natural ventilation appears to meet minimum ventilation requirements (operable openings are 4% of floor area) where windows and roll-up doors are present.

PLUMBING

The building has a bathroom with a shower, lavatory and toilet. All of these plumbing fixtures are beyond their useful life.

An electric water heater is located in the office area. The unit's electrical power has been disconnected and the unit is beyond its useful life.

In the main bay, there is a floor trough. If this building is to be used for vehicle storage or vehicle maintenance, then this floor trough should be connected to an oil separator before discharging to the septic field. If the facility is not to be re-purposed with vehicle storage, then the trough should be demolished and filled in with concrete.

It is recommended that to re-purpose the building that all above grade plumbing fixtures be replaced.

FIRE PROTECTION

The building has no fire suppression.

7. BUILDING D

E. ELECTRICAL OVERVIEW

ELECTRICAL DISTRIBUTION

The building is served at 208/120V from an aerial drop on the south side of the structure. The main disconnecting means consists of one 400A main breaker-equipped panel, one 400A disconnect switch (presently out of service), and one disconnect switch of undetermined rating. All distribution equipment is in poor condition, and is past its useful service life.

There are several other panels and disconnects distributed through the building, and all are in poor condition and are in need of replacement. One main distribution panel was not inspected during the survey due to a door that was permanently jammed shut.

LIGHTING

The building is primarily equipped with 8' linear T12 fluorescent fixtures mounted from conduit at ceiling height. There is a mixture of open strip fixtures and reflector fixtures. The reflector fixtures appear to be in good condition, though fixtures are mismatched throughout the front high bay area. All of the installed fixtures are obsolete.

There are a few quartz halogen fixtures installed on the exterior of the building, but not enough to provide adequate lighting for security.

The lighting in this building should be replaced in conjunction with any remodeling activity.



Aerial Service



Main Service Equipment



Fluorescent Lighting

7. BUILDING D

WIRING AND WIRING DEVICES

The wiring and devices throughout the building are a mix of original and older additions. The condition ranges from good to poor, though none of the current systems would be likely to support any changes in building program.

It is recommended that the building be rewired in conjunction with any remodeling efforts.

COMMUNICATIONS SYSTEMS

No operable communications systems were observed with the exception of a telephone connection for the security system. There is an aerial telephone line connected at the north face of the building that then extends to the building across the drive.

The building would have to be fitted with modern data and telephone infrastructure if remodeled.

FIRE ALARM AND SECURITY SYSTEMS

The building is equipped with a modern residential-grade Honeywell security system which includes smoke detectors, door switches, and motion sensors. It is connected to a monitored telephone line.

There is no conventional fire alarm system installed, as smoke detection is routed through the security system only.



Typical Wiring



Telephone Drop



Honeywell Security System

7. BUILDING D

LIFE SAFETY SYSTEMS

The building is equipped with modern battery powered combination exit / emergency lighting units, located properly.

There is no exit discharge lighting installed.



Fire and Security Sensors



Emergency Exit Sign

8. SITE ANALYSIS

George Washington Carver Regional High School sits on a multi-acre lot with numerous buildings.

SITE CIRCULATION

Parking for the facility is located on the front, front left and right sides of the building as faced from the road and is accessible from three entrances. Pavement off the main roadway and around the main building is usable, but in need of minor repairs for pot holes and edge (curb) conditions. Infrequent use lately has sustained the pavement, however if a higher demand and mix of heavy vehicles such as tractor-trailers or box delivery vehicles be desired, the pavement will deteriorate quickly. Dimensionally it appears the main roadways can receive large vehicles and can negotiate around the main building for delivery purposes.

Parallel parking along the front of the main building is possible and is used currently, however, fire lane striping if required may prohibit long term parking in this area based upon future use. Under new use, discussions with the local fire department may be required to fully understand these requirements.

Parking lots appear to have been paved at a different time than the main roadways. While the aggregate and hue of the pavement is different, the asphalt appears usable, but does require maintenance in the way of edge repair and restriping.

Service and staff vehicle parking is provided in various places in the rear and the surrounding Buildings. Spaces are undefined in certain areas and mixed with grass/asphalt parking areas. Depending upon future uses, these spaces may not require defined striping or surface improvements unless handicapped accessibility were deemed necessary to the rear or at the four out buildings.



Main Parking Lot



Parallel Parking at Front Entrance

Parking Tabulation

Front Left	34 Spaces + 2 H/C
Front	11 Spaces Parallel to Curb
Right Side	15 Spaces
Building A	
Impound Lot	Est. 30 Spaces
Rear (Service)	8 Spaces

8. SITE ANALYSIS

SITE ADA & ACCESSIBILITY

Handicapped parking does not meet current codes with respect to proximity, slopes and surfaces. Modification of the existing spaces to comply would be required should their current locations be maintained. The addition of a new parking area closer to the front door for visitor and handicapped parking is possible within the front lawn. Development of a new parking area would recommend 4 new handicapped spaces and 5 visitor spaces and cover an area approximately 45 feet in length by 60 feet in width. Depending upon the need for parking closer to the front doors, two of the above noted lots could be installed flanking either side of the flag pole and yield 4 handicapped and 15 new parking spaces total. Handicapped accessibility to at least one entry to all buildings was observed, however signage and markings were not present.

SITE DRAINAGE

The property drains predominantly from front to rear (to the east). The network of storm sewer around the campus is functioning however clogs may be present and hidden. Surface drainage in several areas is problematic. The areas of concern are:

Front left parking lot (Handicapped Spaces): Sediment build up and edge conditions along the curb face are causing water to pond. General lot maintenance may improve this condition.

Front lawn (between the sidewalk and main building face): Lawn slopes down and towards the building. This is caused by the elevation of the sidewalk being approximately 12" above the grade at the building face. Soil backfill is needed across the front of the main building's entire frontage to force drainage back to the sidewalk and pavement. This will require coordination with several mechanical units and displacement of landscaping.



Handicap Access



Drainage at Front



Sediment Build up in Parking

8. SITE ANALYSIS

Courtyards (both right and left sides of the main building): The predominant slope drains to the east and towards the lower wings of the building. Wet conditions if allowed to continue may cause foundation problems in the future. This can be corrected by adding area drains and storm piping.

There is no modern Stormwater Management Facility on the property. All storm drainage currently flows offsite undetained and without any treatment for water quality per modern codes. Applications for building alterations or site improvements may require measures to be designed and installed to meet local requirements.

SITE SANITARY SEWER

Sanitary Sewer: The buildings have separate piped laterals that combine and discharge to a duplex pumping station in the field to the rear of the property. The pump station concrete structure is in good shape, but the working components within are beyond end of life. Replacement of the pumps and guiderail systems are needed immediately. Matching pump sizes without need for redesign is possible and should be locally available. The electronic supervision (floats) were operable and do actuate one of the pumps. The controller for the station was not found, so it was not determined if the pumps work in alternating fashion or if the second pump is for high flow. Controls can be checked for proper function at the same time the pumps and rails are replaced.

Grease Interceptor: Just east of the main building is a small concrete square with a steel (loose) lid. This appears to be the original grease trap serving the kitchen. The trap is non-functioning. A large concrete vault downstream of the small trap appears to be a large septic tank. The top of this vault was not accessible on the date of inspection, but appears to be oversized for the current use.



Sewer Pumps



Sewer Pumps



Grease Interceptor

8. SITE ANALYSIS

Sanitary sewer from buildings A and D appear to be served by an E-ONE pumping system. It is believed that this system transfers flow to the main septic tank and was required only due to lack of fall to reach the septic tank by gravity.

The main duplex pump station appears to discharge to a large septic drainfield along the eastern edge of the property (rear). The grounds show signs of where drain lines might have been installed, but no visual sign of seepage to the ground surface was visible. It is believed that the system was originally rated for 600 students or an equivalent of 6000 gallons per day of effluent.

SITE WATER SYSTEM

The property is currently served by a well system located at the front (southwest) corner of the site. The well house is deteriorated and moisture/humidity have caused the well head, pressure tank, and piping to be rendered useless for overhaul. Damage caused to the well head in removing the pertinent pieces will risk losing the ability to even test the well. In addition, power lines placed directly over head of the well house now prevent drilling rig equipment to set up over the well head for testing or future maintenance. The well is currently operational, however the water produced is not potable due to pH and iron. Previously the water was being treated for alkalinity and iron, but these features have since been uninstalled. It is possible that the system can be sustained for minimal use (toilet flushing and mechanical needs) but its continued use will ultimately deteriorate the building piping and any fixtures or equipment it comes in contact with over periods of time. It is recommended that the existing well system be abandoned and a new well be drilled to serve the facility.



Well House



Well Head

8. SITE ANALYSIS

Within the Boiler Building, the water system pressure system has received recent upgrades. New tanks are installed to allow pressurization of the building system (3 x bladder tanks). Portions of the new piping have been replaced with new black steel piping. Pressure and flow control appear to not be functioning and require additional work and components to be fully operational. This work is in progress by Culpeper maintenance staff.

SITE LANDSCAPING

The site has very little landscaping other than trees in the front lawn and shrubbery within the grass space between the front sidewalk and main building face. Two trees along the main roadway appear to have been trimmed to avoid power lines and now lean towards the highway. It is recommended that these two trees be removed.



Leaning Tree

9. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

This section of the report will present recommendations for the repurposing of each building as a commercial kitchen facility for the Carver-Piedmont Agricultural Institute. Costs associated with stabilizing the building and estimates for required upgrades are provided in the Cost Summary section.

B. MAIN SCHOOL BUILDING

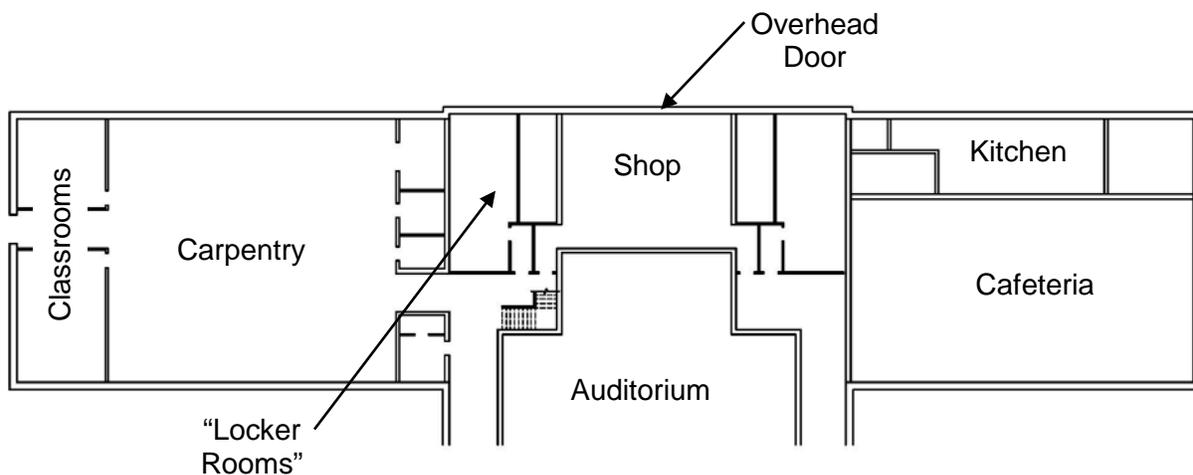
Portions of the Main School Building are well suited for renovation to suit a commercial kitchen application. Based on the observations presented in this report, it is recommended that a section of the building be used as the Carver-Piedmont Agricultural Institute. The 2-story classroom wing can be renovated incrementally to allow for classroom space, offices, and other multipurpose spaces. Using the Virginia Rehabilitation Code, the area of the building needed to meet this program could be renovation to meet current building code requirements, while the remaining building upgrades could be deferred to a later date.

RENOVATION AREA – COMMERCIAL KITCHEN SPACE

The rear wing of the school is well suited for renovation. The former Carpentry Shop in the Main Building could be renovated as the location of the Cannery / Community Kitchen with minimal alterations to the remainder of the existing Main Building.

The shop area at the rear of the building would be the suggested location for a commercial kitchen because of its high ceilings and large volume. The large open area in the center of the rear wing can be used for support spaces and the large overhead doors make it ideal for loading and unloading.

It is not recommended that the existing kitchen be repurposed for this project. The existing kitchen space is small and no existing equipment or utilities could be reused. Because grade slopes, floor level is above grade new exterior ramps would be required. It is also more remote from parking and vehicle access points.



Main Building Rear Wing Floor Plan

9. CONCLUSIONS AND RECOMMENDATIONS

Without knowledge of the future space programming needs, we estimate the following renovations are required to the space.

Carpentry Shop

The former carpentry shop is approximately 90 feet long and 58 feet wide, providing 5,220 square feet of usable space. The exposed concrete floor should be covered in a suitable for a commercial kitchen such as an epoxy resin applied over the concrete. The CMU walls may remain, but should have any voids filled and be painted with a scrub-able paint. The exposed structural beams and cementitious deck are not suitable for a commercial kitchen, so a non-porous ceiling should be installed, such as a 2 ft ceiling tile and grid system.

In a commercial kitchen, there cannot be doors or windows that open directly to the outside. Screens should be installed at operable windows. A vestibule should be constructed at the personnel doors, or an air curtain—commonly known as a “fly fan”—can be installed. If the space is acting as a commercial kitchen, the existing garage door should be removed and the opening closed in.

Adjacent Shop and “Locker Room” Space

The Shop Space (1948 Choir Room) is approximately 36.5 feet long and 28 feet wide for a useable area of 1,022 square feet. The Shop Space could add additional support space or accommodate agricultural processing functions. The existing garage door would allow unloading and transfer of agricultural products from trucks. The concrete floor and block walls are suitable for this function. We recommend sealing the floors, painting the walls, removing any remaining acoustic tiles from the ceiling and painting the plaster.

Between the shop space and carpentry shop there is a space that was the Men’s Locker Room in the original school configuration. This 30’x22’ space (660 square feet) should be cleared of all remaining plumbing fixtures and floor and wall finishes repaired to allow for its use as storage.

Toilets

It is recommended that new toilets be added within the renovated space. These toilets eliminate the requirement to upgrade the existing toilet groups to meet the current building code. The construction of a new toilet group will also help to create an ADA compliant facility.

Men’s and women’s restrooms should be constructed within the area of work to accommodate the occupants of the Cannery / Community Kitchen, thus eliminating the need to address the numerous plumbing and accessibility issues in the existing building at this time. A janitor’s closet with a mop sink would be required to be built with the kitchen space.

ADA

Confining the renovated area to these two areas eliminates some ADA issues that are present throughout the school. Because these areas are on one level, the vertical circulation paths do not have to be utilized, eliminating the need to add an elevator or chair lift. New toilets within the rear wing of the school are within an accessible path to the facility. Accessibility upgrades in the way of door hardware and walkways or ramps would be required for the accessible route to the Cannery / Community Kitchen.

9. CONCLUSIONS AND RECOMMENDATIONS

HVAC

The area of the main school being considered for future storage does not require any mechanical changes, as the space is already considered a storage area. It is noted that the space is heated with steam unit heaters but has no cooling or mechanical ventilation air. However, the use of the roll up door satisfies the code requirement for natural ventilation. The space also has no humidity control. Without cooling or dehumidification, the space would not be appropriate for the storage of dry foods or vegetables.

Note that providing air conditioning to the building may trigger necessary changes to the walls, windows and roofs so as to meet energy code requirements. Should air conditioning and/or dehumidification be added to the space, it is important to control airflow from the storage area to/from the main building and to/from the outdoors. Air conditioning could be provided by a ceiling-mounted indoor unit and an outdoor condensing unit.

Plumbing

Plumbing upgrades are required within the space as necessary to provide adequate toilet groups and to meet the requirements of the commercial kitchen. Below is a list of plumbing upgrades that can be expected.

- New underground sanitary piping to all sinks and toilets would be required.
- Hand sinks for cleanliness, connected to new sanitary piping.
- Prep sinks for food preparation, connected to new grease piping. Pot washing sinks, connected to new grease piping. Grease piping is required to be routed to new grease interceptor, and then from interceptor to existing sanitary system (likely to transfer pump located near the Boiler House).

New grease interceptors are generally required by the local authority to be underground and outside the building. However, in small kitchens, the authority may grant the use of above floor interceptors located beneath the sink being served. From a cost perspective, above grade interceptors are less first cost, although require more maintenance. Additionally, since the local sanitary systems on the site drain to a septic system, the local authority likely has no cause of concern.

- Fuel source for cooking equipment, either electric or propane. If propane is utilized, then propane tanks would be required to be added to the site.
- New electric commercial domestic water heater, sized for a minimum operating temperature of 140 deg F. Provide with mixing valves to control hot water temperature at plumbing fixtures. A propane water heater is a less attractive, but viable option. An instantaneous propane heater is also an option.

Electrical

The electrical distribution in these areas is original or of older vintage. All panels are obsolete and past their useful service lives. Repurposing these spaces would require replacement of the main distribution systems in the spaces.

9. CONCLUSIONS AND RECOMMENDATIONS

Lighting

Both areas are lit with 8' linear 2-tube fluorescent T12 fixtures in good condition. These fixtures could be reused so long as the spaces are not subdivided with new walls, however, better lighting and energy efficiency could be achieved through a lighting replacement.

Wiring and Wiring Devices

Wiring and devices in these spaces are mostly original, are past their useful service lives, and would have to be replaced to reconfigure the space.

Communications Systems

There was no working communications infrastructure observed in either space.

Fire Alarm and Security Systems

These spaces are part of the main school building, and as such are part of the existing fire alarm system. IT was noted that pull stations are not located in all of the code required places within these spaces. The overall fire alarm system is in need of upgrade and or replacement, and additional devices would have to be added in these areas.

Life Safety Systems

These spaces are equipped with modern battery-powered combination exit sign / emergency light fixtures.

RENOVATION - CLASSROOM AREAS

The front classroom wing of the building is in acceptable condition and can be used as office, classroom, or multi-purpose space. Classrooms on the first level vary between approximately 400 and 675 square feet. The Auditorium currently provides 4,600 square feet of multi-purpose space.

Phased Renovations

The classroom wing of the building can be renovated in phases as need for space grows and to support the budget. The following recommendations are made for the renovation of the classroom wing of the building

- It is recommended that a Hazardous Materials report be obtained for the building and all required abatement be performed prior to renovation of any portion of the building. The cost of abatement is not provided in the Cost Summary of this report.
- Renovate the toilet groups with the first phase of renovation. This will provide ADA compliant bathrooms for the facility. If the first phase of renovation is limited to the first level, toilets on the second floor can be delayed until that space is occupied. If and when the building is occupied on each floor, ADA accessible toilet groups should be provided on each level.
- Renovate interior spaces as required for programing. New ceilings, floors, electrical wiring, HVAC and windows should be considered. Walls should be furred out with insulation to meet the International Energy Conservation Code. ADA compliant drinking fountains should be provided in the corridors on each level. During the programming phase of the design process, the best finishes and systems can be determined. Costs of renovations of these spaces will vary based on the level of finishes and systems chosen. Estimates provided in the Cost Summary are based on an average of \$170 per square foot, inclusive of all of the

9. CONCLUSIONS AND RECOMMENDATIONS

items mentioned above.

- When the second floor is occupied, remove and replace handrails and guardrails on stairs to meet the current building code.
- Provide an elevator to the second level. If a single tenant is utilizing this area of the building and facilities on the second floor duplicate those provided on the first level, the elevator may not be required. This should be determined during the programming phase of the renovation project.

B. Building A

The large open space in Building A would be suitable for a commercial kitchen however other factors make utilizing this space less attractive.

STRUCTURAL CONCERNS

The building has experienced damage from an earthquake event which will require structural repairs to the masonry walls and supported floor slabs. As outlined in the conditions assessment of the Main School Building, damage to the east wing of the building is extensive. It is not recommended that this area be repaired. Instead, the concrete and brick masonry walls should be removed to the top of the concrete foundation wall and rebuilt. The new concrete masonry should be reinforced as required to resist the current code-required loadings for snow, wind, and earthquake. The framed floor in the office area should be examined in more detail to determine whether it can be salvaged. If feasible, it should be removed and re-built with a floor level to match that of the shop area, eliminating the step-up into the room and making this space accessible to persons with disabilities.

The center section of the building, where the auto mechanics shop was located, also requires structural repairs. One of two repair approaches can be considered. The wall can be reinforced with surface-applied carbon fiber strips of reinforcing as required to provide the flexural strength necessary to support the building. A second option is to install reinforcing steel and grout in the cells of the existing wall.

Estimated costs are presented in the Cost Summary section of this report, however the actual cost depends on engineering requirements and programming decisions that are outside the scope of this report.

SPACE RENOVATION

If Structural concerns are addressed, the space can be renovated into the Carver-Piedmont Agricultural Institute. Similar to the Main School Building, renovations to the area that will serve as a kitchen area are required.

The exposed concrete floor should be covered in a suitable for a commercial kitchen such as an epoxy resin applied over the concrete. The CMU walls may remain, but should have any voids filled and be painted with a scrub-able paint. Because of structural repairs to the walls, it may be necessary to provide a new all surface on furring strips to create a smooth cleanable surface.

The exposed structural joists and cementitious deck are not suitable for a commercial kitchen, so a non-porous ceiling should be installed, such as a 2-foot ceiling tile and grid system. Although overhead doors are ideal for loading and unloading, their presence in a kitchen space

9. CONCLUSIONS AND RECOMMENDATIONS

is undesirable. Overhead doors located in spaces designated as a commercial kitchen should be removed and the openings filled.

TOILETS

New toilets are required within the building. These toilets must meet all ADA requirements and be provided to match the new occupancy load of the space.

A janitor's closet with a mop sink would be required to be built with the kitchen space.

ADA

New door hardware and ADA compliant walkways or ramps would be required for the building.

HVAC

If the building is repurposed as the Carver-Piedmont Agricultural Institute, the following heating, cooling, and ventilation upgrades are required.

- Building lacks code compliant mechanical ventilation. However, the use of windows and roll-up doors should allow the building to meet the minimum code requirements. Toilet exhaust would be required.
- Provide code compliant combustion air intakes for boiler. For heating, re-use existing ceiling unit heaters. Provide new steam convectors for individual rooms.
- Boiler needs to be re-furbished, steam piping repaired and insulation repaired. Pressure test steam and condensate system to identify if there is a leak.
- Clean and re-condition boiler, steam piping and condensate piping.
- Note that providing air conditioning to the building would trigger necessary changes to the walls, windows and roofs so as to meet energy code requirements.

PLUMBING

The following plumbing upgrades are required for the building to be renovated to a commercial kitchen space.

- Demolition of remaining plumbing systems above grade.
- Domestic water piping system needs to be repaired.
- Provide new electric hot water tank and piping distribution.
- New interior plumbing fixtures and domestic water distribution system.
- New sanitary piping below concrete slab if plumbing fixtures are located in new locations. Scope and clean sanitary piping for plumbing fixtures

USE AS AGRICULTURAL STORAGE

If the high bay space is repaired as suggested above, this area could be used as "Utility" Use Group U, as described in IBC. This allows the storage of equipment and machinery used exclusively in agriculture. The users must verify that their intended storage meets this definition. If the space is used as general storage or automotive storage, the space may be required to be sprinkled depending on the actual items being stored.

9. CONCLUSIONS AND RECOMMENDATIONS

C. Building B

Building B is in poor condition. It is recommended that Building B be demolished.

D. Building C

Building C could be renovated to a commercial kitchen facility. The overall condition of the structure is good. The following repairs and replacements would be required.

RENOVATION AREA

The entire 6,120 square foot facility would be renovated as useable space for the facility. Existing interior partitions could be removed and new partitions constructed to divide the space as necessary to meet the program.

TOILETS

New toilets are required within the building. These toilets must meet all ADA requirements and be provided to match the new occupancy load of the space.

A janitor's closet with a mop sink would be required to be built with the kitchen space.

ADA

New door hardware and ADA compliant walkways or ramps would be required for the building.

HVAC

Upgrades are required to the mechanical systems if the building is renovated. Ventilation is required in classroom spaces. This could be achieved through an increase in the number of operable windows, such that the window area is equal to 4 percent of the floor area. Mechanical ventilation can also be provided depending on the extent of mechanical renovations and the type of systems chosen.

The boiler, heating water piping, convectors, and unit heaters are at the end of their useful lives and require replacement. If air conditioning is desired, upgrades may be required to the windows, wall system, and roof to meet the current energy code requirements.

PLUMBING

Similar to the other buildings, new plumbing is required if the building is renovated. The electric hot water tank needs replacement and new distribution piping will be required. A backflow preventer will be required on the domestic water service. New plumbing fixtures, domestic supply piping, and revised below-slab sanitary lines will be required as dictated by the space usage. For a commercial kitchen, a new grease interceptor will be required.

ELECTRICAL

The existing electrical systems are likely in working order, however, they are inadequate for the intended purpose and are all past their useful service lives. A complete replacement of the systems is recommended.

9. CONCLUSIONS AND RECOMMENDATIONS

E. Building D

Building D is in poor condition and is not recommended for renovation as the Carver-Piedmont Agricultural Institute. Repairs to walls and roof panels and complete replacement of the HVAC, plumbing and electrical systems would be required to change use of the building to a commercial kitchen. It is recommended Building D be demolished.

10. COST SUMMARY OF RECOMMENDED REPAIRS

INTRODUCTION

This Cost Summary of Recommended Repairs is based on the conditions presented for each building and the recommendations made in the Conclusions and Recommendations Section of this report. The recommended repairs focus on the items necessary to stabilize the building systems and provide a code-compliant location to house the Carver-Piedmont Agricultural Institute.

Where recommendations are made to utilize only a portion of a larger structure, costs are given to upgrade only the areas of the building in the recommendation. Utilizing the International Existing Building Code (IEBC), portions of an existing building can be made code compliant without a full upgrade to the facility. Although a complete replacement of systems and upgrade of finishes may be desired in the entire structure, this report focuses on the minimum areas required by the IEBC.

The International Energy Conservation Code (IECC) requires upgrades to building envelope and mechanical, and electrical systems when an existing building changes use. Implementation of the IECC is subject to the Authority Having Jurisdiction. It is recommended that RRRC discuss options for compliance with the IEBC and IECC to finalize budget and scope for the Carver-Piedmont Agricultural Institute.

The costs presented are organized by Priority Level. **Priority 1** items require immediate corrective measures. Items to provide compliance with the Americans with Disabilities Act are included in Priority 1, as are building systems failures, such as leaks, that lead to more dramatic and costly damage if not corrected.

Priority 2 items do not require immediate attention but are identified as at the end of their useful life and will need improvement. **Renovation** items are cost estimates for items that would be required in a full renovation of the space. These are based on assumptions of the program requirements and level of finishes required and can vary based on the programming.

Although costs are provided for renovation of the facility to the Carver Piedmont Agricultural Institute, the cost of that renovation is heavily dependent on the size and function of the storage areas and the commercial kitchens. Note that costs do not include commercial kitchen equipment or fire suppression—they are “white box” costs for a kitchen facility. The estimates are based on assumptions of the sizes and finishes in kitchen and support areas and will require refinement as the program develops.

Costs are provided for the demolition of Building B and Building D. These estimates are to raze the structure to the slab on grade level. Removal of the slab and foundations will be an additional cost.

10. COST SUMMARY OF RECOMMENDED REPAIRS

DESCRIPTION	TOTAL	PRIORITY 1	PRIORITY 2	RENOVATION
1. SITE				
IMPROVE EXISTING PARKING LOT				
Pot Hole and Edge Repair	\$4,500	\$4,500		
Striping and H/C Signage	\$800	\$800		
Resurface Parking Lots and Travel Lanes	\$165,000		\$165,000	
Lighting at Existing Parking Lot	\$25,000			\$25,000
SIDEWALKS & ADA ACCESS				
Handicapped Ramp Repairs	\$2,300	\$2,300		
SITE GRADING				
Improve Drainage from Building	\$2,000	\$2,000		
UTILITIES				
Pump Station Pump and Guiderails	\$3,500	\$3,500		
Grease Interceptor	TBD			
New Well	\$15,000	\$15,000		
SITE SUBTOTAL	\$218,100	\$28,100	\$165,000	\$25,000
2. ADDITIONAL PARKING OPTIONS				
(9) Space Lot at Front Lawn	\$22,500			\$22,500
(18) Space Lot at Front Lawn	\$45,000			\$45,000

10. COST SUMMARY OF RECOMMENDED REPAIRS

DESCRIPTION	TOTAL	PRIORITY 1	PRIORITY 2	RENOVATION
3. MAIN BUILDING AND BOILER BUILDING				
REPAIR EXISTING FACILITY IN RENOVATION AREAS				
Exterior Walks, ramps and ADA	\$16,200	\$16,200		
Repoint Brick Masonry- 750 SF	\$4000		\$4000	
Roof Replacement, Rear Wing	\$180,000		\$180,000	
Roof Replacement, Classroom and Auditorium	\$305,000		\$305,000	
REPAIR SUBTOTAL	\$518,700	\$29,700	\$489,000	
RENOVATIONS FOR FUTURE USE – KITCHEN SPACE				
Demolition	\$14,400			\$14,400
Resinous Flooring	\$44,000			\$44,000
Seal Flooring in Storage	\$4,100			\$4,100
Interior Painting	\$45,400			\$45,400
Ceilings	\$37,750			\$37,750
Entrance Vestibule	\$9,600			\$9,600
Door & Hardware Modifications	\$13,500			\$13,500
Remove OH Door	\$7,200			\$7,200
New Restrooms	\$24,000			\$24,000
New Janitor's Closet	\$6,000			\$6,000
Mechanical Upgrades	\$40,000			\$40,000
Plumbing Upgrades	\$40,000			\$40,000
Electrical Upgrades	\$115,000			\$115,000
KITCHEN SUBTOTAL	\$387,450			\$387,450
RENOVATIONS FOR FUTURE USE – CLASSROOM WING				
Toilet Group Renovations - First Floor	\$160,000			\$160,000
Toilet Group Renovations – Second Floor	\$160,000			\$160,000
Classroom Area Renovations – First Floor (\$170/SF)	\$1,955,000			\$1,955,000
Classroom Area Renovations – Second Floor (\$170/SF)	\$1,955,000			\$1,955,000
Elevator Addition	\$110,000			\$110,000
Replace Stair Hand and Guard Rails	\$15,000			\$15,000
CLASSROOM SUBTOTAL	\$4,355,000			\$4,355,000

10. COST SUMMARY OF RECOMMENDED REPAIRS

DESCRIPTION	TOTAL	PRIORITY 1	PRIORITY 2	RENOVATION
4. BUILDING A				
REPAIR EXISTING FACILITY				
Reinforce Existing CMU in Shop	\$80,000	\$80,000		
Rebuild East Wing	\$91,000	\$91,000		
Exterior Walks, ramps and ADA	\$10,000	\$10,000		
Door & Hardware Modifications	\$13,500	\$13,500		
REPAIR SUBTOTAL	\$194,500	\$194,500		
RENOVATIONS FOR FUTURE USE				
Demolition	\$10,000			\$10,000
Resinous Flooring	\$50,000			\$50,000
Seal Flooring in Unloading	\$2,300			\$2,300
Interior Painting	\$54,000			\$54,000
Ceilings	\$37,750			\$37,750
Entrance Vestibule	\$9,600			\$9,600
Remove OH Doors	\$20,000			\$20,000
New Restrooms	\$24,000			\$24,000
New Janitor's Closet	\$6,000			\$6,000
Mechanical Upgrades-Heating	\$30,000			\$30,000
Mechanical Upgrades- Cooling	\$50,000			\$50,000
Plumbing Upgrades	\$35,000			\$35,000
Electrical Upgrades	\$140,000			\$140,000
RENOVATION SUBTOTAL	\$468,650			\$468,650
5. BUILDING B				
DEMOLITION AND REMOVAL	\$45,000	\$45,000		

10. COST SUMMARY OF RECOMMENDED REPAIRS

DESCRIPTION	TOTAL	PRIORITY 1	PRIORITY 2	RENOVATION
6. BUILDING C				
REPAIR EXISTING FACILITY IN RENOVATION AREAS				
Exterior Walks, ramps and ADA	\$8,000	\$8,000		
Door & Hardware Modifications	\$3,000	\$3,000		
REPAIR SUBTOTAL	\$11,000	\$11,000		
RENOVATIONS FOR FUTURE USE				
Demolition	\$10,000			\$10,000
Resinous Flooring	\$35,000			\$35,000
Seal Flooring in Storage	\$4,100			\$4,100
Interior Painting	\$25,000			\$25,000
Ceilings	\$30,000			\$30,000
Entrance Vestibule	\$9,600			\$9,600
New Restrooms	\$24,000			\$24,000
New Janitor's Closet	\$6,000			\$6,000
Mechanical Upgrades-Heat Only	\$30,000			\$30,000
Plumbing Upgrades	\$15,000			\$15,000
Electrical Upgrades	\$94,000			\$94,000
RENOVATION SUBTOTAL	\$282,700			\$282,700
7. BUILDING D				
DEMOLITION AND REMOVAL	\$55,000	\$55,000		