

CAVE SPRING ELEMENTARY SCHOOL

ARCHITECTURAL

Cave Spring Elementary School (CSES) was originally built in 1961. The library wing was added around 1994 and another renovation and addition took place in 2010, bringing total square footage to 63,375 SF. There are no mobile units serving as classrooms at the school, but there are four storage structures on site.

Exterior Finishes

Exterior Cladding:

Exterior wall material is, generally, brick with decorative block accents, and exterior insulating finish system (EIFS) at window heads and other infill locations. Brick has cracked adjacent to the glue-lam structure of the art/music room spaces. This can be seen near the sills of the clerestory windows. Refer to structural reports for more information relating to the cracking.

Windows have brick rowlock sills and aluminum sills. Joints in these sills should be monitored and resealed as sealant failure occurs.

Roof:

The roof hatch handle is missing, and a screwdriver has been stored, at the top of the ladder, for use in opening the hatch.

Most of the roof was replaced during the 2010 renovations and additions. A white membrane system covers the major portions of the roof, skylights, and area above the former cafeteria (current art and music rooms). There is evidence of minor ponding near roof drains and near mechanical units. Heavy ponding has occurred at the low roof near the bus loading at the front of the building. Scuppers to conductor heads on the exterior are blocked by leaves and debris. Debris has accumulated in several corners, at drains, and near mechanical units. Strainer baskets were missing from several drains and should be reinstalled to avoid clogging of drain pipes. Laps, splices, and sealant, were in generally good condition, with minor issues at isolated locations. Several walk pads have separated from the membrane, one at a roof expansion joint, and another at a skylight downspout. At the skylights, guttering has been damaged and is pulling off the roof due to snow slides. One downspout from the gutter is missing. Snow guards may be required to avoid future damage after replacement. The issue should be addressed, as the wall material below is EIFS. A chair has been placed on the roof to provide access to the lower portion, near the bus drop off. This chair should be removed to avoid point loading of the membrane that could damage the system.

The roof over the library was not replaced during the renovation activities. An existing ballasted system is in place. Strainer baskets were missing from drains, and a ball was found lodged in one of the drain pipes. The ball was removed at the time of the inspection. Leaves, dirt, sticks, and other debris have accumulated on the surface to depths sufficient to totally cover the ballast and portions of the drain. A tree overhanging the roof has knocked ballast off the roof or pushed it to the center of the roof, leaving an exposed membrane.

Drip edge was observed to be in good condition. Sealants, at fascia panels on the roof and at roof edges, should be regularly monitored and replaced as needed. Several joints have experience sealant degradation and cracking, and should be resealed.

Windows:

Windows at the exterior of the building are generally aluminum storefront systems with insulated glazing. Operable windows occur at locations around older portions of the building. Condition of sealants and glazing should be monitored. Sealant that is cracked or failing in any other way should be replaced. All glazing units were observed to be in good condition with no signs of seal failure. At the interior of older storefront units in the 1987 wing, there were signs of mildew and/or mold. This is likely due to condensation on the faces of the unit. This occurred, especially, near the library area. The increased humidity due to roof leaks may be contributing to this condensation. Roofing and humidity issues should be rectified, and condensation monitored. If the problem persists, windows can be replaced with thermally broken units.

Exterior Doors:

Exterior doors are a mix of storefront and hollow metal systems. At main entry points and some egress doors, aluminum storefront systems are installed. These are anodized systems with finish in good condition. Hollow metal doors are present at most hallway egress doors, service, and mechanical locations. Glazing condition and door condition at all hollow metal doors should be monitored. Rusting doors and frames should be repaired or replaced as required.

Interior Finishes, Fixtures & Equipment

(See assessment tabulations for interior finish conditions).

Flexible Terrazzo Tile, Vinyl Composition Tile, and Ceramic Tile are the predominant floor finishes at CSES. Other floor finishes include limited applications of textured quarry tile in the kitchen and associated offices, sheet vinyl in single occupant restrooms in classrooms, and parquet wood at the Gymnasium. Carpet tile is located in a limited number of classrooms, the library, and administrative spaces. The carpet tile in the library has seen moisture issues during the summer. Staining of the carpet is present in some locations. Staff indicated that a powdery white mold had formed on

some of the carpet during times when the roof leaked. Carpet, in the remainder of the facility, was in good condition.

Interior wall finishes varied across the facility. Older portions of the building have structural glazed wall tile in the corridors. Wall tile extends full height at one wing, and extends to 6'-8" AFF, with painted block above, in another wing. Painted block was present in most classrooms. Office areas and built out areas have gypsum wall board partitions. Additionally, gypsum wall board enclosures and bulkheads have been installed in classrooms where Bard mechanical units have been placed. Ceramic tile wainscot is installed in renovated areas, with a sculpted, gypsum wall board mountain scene above. Wall finishes were, generally in good condition. Window treatments are typically vinyl roller shades.

Ceilings are generally suspended acoustical tile (lay-in) with gypsum wall board at bulkheads and accenting locations. The suspended acoustical tile ceilings have experienced some water staining, at isolated locations throughout the facility. Given the condition of the roof at most of the facility, this damage is likely due to condensation on piping. Replacement suspended acoustical tile ceilings are recommended as part of any renovations, but water issues should be rectified before any ceiling work takes place. Ceiling tiles at the stairs to the gymnasium are more heavily damaged and track system and tiles should be replaced as part of any renovation work.

Most interior doors are wood in hollow metal frames. Most doors are in good condition with minimal damage to veneers. Frames should be repainted as required.

Marker boards and tack boards are present in classrooms. Most are in fair to good condition, with some exhibiting staining. Stained units would be replaced during renovations. Smart boards have been placed in rooms.

Casework sizes and types vary based on age of the area of the facility. Aged Plastic laminate and wood casework were the most common forms. Bubblers were present at sinks mounted in plastic laminate casework. Wooden casework was observed with sliding doors, with non-accessible handles. No accessible station was provided at the casework in the teacher's lounge.

Bathrooms have 2" ceramic floor tile, suspended acoustical tile ceilings, and painted block walls. Some restrooms in classrooms have sheet vinyl flooring, where the sheet goods have been turned up the wall to form a coved base. Sealants should be monitored, especially those at fixtures and their connections to adjacent surfaces. Vertical grab bars have not been installed in all accessible toilet rooms and compartments. These are required by ANSI A117.1, but not the ADA. Any renovation would require installation of the missing grab bar. Gang bathrooms have high density polyethylene (HDPE) toilet partitions. Drinking fountains varied throughout the facility, and appear to be original to their respective construction periods. Recessed porcelain units have had controls removed, or, in the cases of those still in-tact, do not produce enough water pressure for drinking. The wall behind one unit has been broken to

facilitate working on the fixture. More modern, Hi-Lo drinking fountains have been installed at various locations throughout the facility. These are provided with cane aprons, or are installed in alcoves for accessibility compliance.

Loose furnishings are a mixture of tables and desks of varying ages. The flexibility required of 21st Century classrooms is enabled by flexible, movable furnishings. All furniture and equipment should be replaced during a substantial renovation to provide a uniform appearance, enhance student comfort, and to provide flexibility. Furnishings, fixtures, and equipment design should occur in tandem with building design to achieve proper coordination between building utilities and furniture types and locations. This includes library shelving and furnishings.

Most classrooms are provided with casework for storage purposes. Additional storage for general school use is provided at several locations throughout the facility, and in portable units outside. A conference room in the administration area has been converted to a storage space. As needs change, additional storage may be incorporated into any renovations or additions.

Accessibility

As renovations and additions were performed before 2010, many features of the facility, such as signage, comply with the appropriate accessibility standards for the time, but do not comply with the 2010 ADA and current ANSI standards. As part of any renovation, alteration of existing, non-compliant elements will be required.

Safety and Security

This section addresses passive security measures, such as how entrances function, visibility within the building, etc.

The vestibule at CSES provides visibility from the office and control over the main entry. Door position sensors and locks are provided at all other exterior doors. Exterior doors providing access to corridors and other spaces, not accessed via the vestibule, are equipped with card readers. Sight lines and distance are reasonably long in most areas of the building, with a central hub providing visibility for most classroom wings. The gymnasium and cafeteria area are less visible from the main administration area.

End of Cave Spring Elementary School Architectural Narrative

STRUCTURAL

During the Architectural investigation of the Cave Spring Elementary School, an issue was discovered warranting additional investigation from a structural standpoint.

Cracks through Brick and Block in Art and Music Rooms

The Art and Music areas at Cave Spring Elementary School have a slightly higher roof, framed by a glued-laminated (glu-lam) system of wood beams and columns, similar to



to the ornate wood framing seen in many church sanctuaries. When the central portion of the roof receives gravity loading from the weight of the building or snow, the beams begin to deflect downward. Due to their slope, the downward deflection translates into a horizontal, outward force near the connections to the tops of the columns at the exterior of the frame. This horizontal force, and its related horizontal movement, are believed to be the source of the cracking observed at the upper levels of the brick and block, near the glu-lam columns. Cracking



observed on the interior of the building in the vicinity of the columns is consistent with this type of movement. Though somewhat unsightly, this cracking does not appear to pose a threat to the structural integrity of the building. Movement of this nature is anticipated with a frame with this type of geometry. However, the amount of movement may be more than was anticipated during design. It is suggested that the exterior cracks be repointed, the interior cracks be caulked and painted, and all cracks observed for any additional movement – particularly after a heavy snow.

End of Cave Spring Elementary School Structural Narrative

PLUMBING/FIRE PROTECTION

Plumbing Fixtures:

Water Closets: Water closets observed were floor mounted vitreous china with manual type flush valves. The water closets are from 2010 and seemed to be in good working condition. The flush valves are expected to have a useful life of 12 years and the water closets are expected to have a useful life of 30 years.

Urinals: Urinals observed were wall mounted vitreous china with manual type flush valves. The urinals are from 2010 and seemed to be in good working condition. The flush valves are expected to have a useful life of 12 years and the urinals are expected to have a useful life of 30 years.

Lavatories: Lavatories observed were wall mounted vitreous china with manual type faucets. The lavatories are from 2010 and seemed to be in good working condition. The lavatories are expected to have a useful life of 30 years.

Sinks: Classroom sinks observed were stainless steel with polished chrome gooseneck faucets and wrist blade handles. The sinks are from 2010 and are expected to have a useful life of 30 years.

Electric Water Coolers: The water coolers are wall mounted, ADA compliant high/low models. The water coolers are from 2010 and seemed to be in good working condition. The water coolers are expected to have a useful life of 15 years.

Water Heaters:

Domestic water heating is done by two gas fired units. Water heater #1 (WH-1) is a 100 gallon capacity heater installed in 2010 and serves the kitchen area. Water heater #2 (WH-2), which is located in the main mechanical room, provides hot water to the remainder of the buildings plumbing fixtures. WH-2 is a 76 gallon capacity unit with 200 MBH input capacity and was installed in 2000. The domestic water heaters are expected to have a useful life of 15 years. A tempering valve manifold is installed at WH-2, which lowers hot water temperature to 120°F. Each hot water loop has a circulation pump.

Piping:

Water: Copper with fiberglass insulation

Sanitary Piping: Cast iron and PVC

Storm Piping: Cast iron

Gas Piping: Black steel

Domestic Water Entrance:

The building is primarily served by a 2" cold water line that is assumed to be from a municipal system. There is a backflow preventer which was installed in 2010.

At the kitchen addition, there is an additional 2" cold water line that is assumed to be from a municipal system. There is a backflow preventer which was installed in 2010. The backflow preventers are expected to have a useful life of 30 years.

Fire Protection:

The building is not sprinkled.

Recommendations:

Add a sprinkler system to the entire building.

End of Cave Spring Elementary School Plumbing/Fire Protection Narrative

MECHANICAL (HVAC)

Heating:

The building is primarily heated by Geothermal water source heat pump units. Classrooms typically have a Bard type unit exposed on the exterior wall. The larger spaces like the cafeteria typically have rooftop unit heat pump units. The heat pumps are 6 years old and are expected to have a useful life of 18 years.

The older portion of the school is heated by gas fired rooftop air handling units (RTU's). These RTU's are from 2007 and are expected to have a useful life of 18 years.

Ventilation: Ventilation is provided to the building by rooftop units.

Air Conditioning:

The building is primarily cooled by water source heat pumps units, the same units that heat the building. There is a closed circuit cooler or cooling tower which is used to reject heat during cooling season. The cooling tower is 6 years old and has a useful life expectancy of 18 years. There are two distribution pumps that circulate condenser water to all of the heat pumps in the building. The pumps are 6 years old and are expected to have a useful life of 25 years. One of these pumps was leaking and very rusted.

Piping:

There is condenser water piping, black steel, insulated. The piping is 6 years old and should have a useful life expectancy of 30 years.

Controls:

The building automation controls are digital type (DDC) are the Metasys Brand, by Johnson Controls.

Recommendations:

The damaged condenser water distribution pump should be repaired or replaced.

End of Cave Spring Elementary School Mechanical Narrative

ELECTRICAL

Main Switch Gear:

Main Switchboard: The main switchboard consists of 2 service disconnects, 2 -1200 Cutler Hammer exterior disconnects. The service is a 3 phase, 4 wire, 208Y/120 volt gear. The existing switchboard is new to the building with the 2010 major addition/renovation and has space and spares available.

Recommendation: In the event of a substantial renovation or addition, existing switchboard can be reused and expanded as necessary.

Transformers:

Transformers: None Installed.

Panelboards:

Distribution and Branch Circuit Panelboards: There are a mixture of newer Cutler Hammer panels installed in 2010 which have plenty of spares and older Siemens panelboards that were installed in 1994. All panels seem to be operating correctly.

Recommendation: If renovations and additions occur, reuse the existing panelboards and space available. Expand as necessary to accommodate new or modified spaces and locate any new panels in areas to minimize student access and to meet National Electrical Code working clearances.

Cabling:

Cabling: Most of the building wiring is newer with the 2010 renovation others from a 1994 renovation. All visible wiring appears to be in conduit. Classrooms in older sections of the building have had original outlets capped off and are now provided power through all new cabling in surface raceway.

Recommendation: If renovations and additions occur, inspect and reuse existing wiring as appropriate. Remove and replace any wiring identifiable as having exceeded its useful lifespan.

Conduit/Raceway:

Conduit/Raceway: The conduit and raceway above ceiling is still in good condition. Classrooms in older sections of the building have had original outlets capped off and are now provided power and data through surface raceway.

Recommendation: All surface raceway should be evaluated regularly and securely reattached to the wall if it becomes loose. All raceway would be reused if the building were renovated. Conduit would be salvaged where practical.

Light Fixtures:

Light Fixtures: The light fixtures consist of primarily 2x4 parabolic fixtures with T8 lamps, 1x4 fixtures with T8 lamps, fluorescent can lighting, and some decorative fluorescent indirect pendants. The T8 lamps are current technology, and meet the current needs of the school. Various emergency wall pack light fixtures are also utilized. The majority of the fixtures are new to the 2004 renovation.

Recommendation: To accommodate a new addition or renovation, provide a new lighting design and reuse existing fixtures. Consider LED fixtures where practical.

Lighting Controls:

Lighting Controls: Lighting controls throughout the building consist of push button switches controlling fixtures within an area, most classrooms have zoned switching. Corridor lighting is controlled through switch bank in the front office. Many of the classrooms have occupancy sensors.

Recommendation: In the event of a renovation or addition, add automatic lighting controls to each room to comply with building energy codes.

Public Address System:

Public Address System: The public address system is currently a Valcom headend system with speakers located throughout the school. Each classroom has a PA speaker and an unused push-to-talk button. Teachers and staff use the newer Cisco phone system tied into the PA for communications with the office, but the PA system is used for announcements.

Recommendation: The PA system is current technology and in good working condition. In the event of a renovation or addition, the system could be reused and expanded as necessary.

Security System:

Security System: Security system consists of electronic locks and motion sensors at exterior doors, keypads, and AI phone/Lobbyguard system at entrance. The current system meets the needs of the school and utilizes current technology.

Recommendation: Upgrade, expand, and reconfigure zones of the system as necessary if renovations and additions are pursued.

Camera System:

Camera System: A building wide IP based camera system is installed. It is current technology that meets the current needs of the school.

Recommendation: In renovations and additions, provide additional cameras and Digital video recorders as required for additional areas with desired coverage.

Data System:

Data System: The Data system consists of newer Category 6 and 5e cable. The building is equipped with wireless internet through Cisco access points throughout. Teacher and student computers are provided with access to a local area network.

Recommendation: The current system meets the needs of the building and switches and patch panels could be reused in any renovation or new construction

Fire Alarm System:

Fire Alarm System: The fire alarm control panel is a Siemens fire alarm system that was added during the 2010 renovations. The current system consists of limited area manual pull stations, smoke detectors, and horn/strobe alarms. There are alarm devices located in classrooms and bathrooms.

Recommendation: If renovations and additions are pursued, expand existing fire alarm system with audible and visual notification devices throughout the school and in classrooms. Reconfigure the existing system as necessary for renovations.

Generator:

Generator: There is a 50 KW Natural Gas Kohler generator with 2 Cutler Hammer transfer switches.

Recommendation: Maintain the generator in optimal operating condition.

Site Lighting:

Site Lighting: The site lighting consists of pole mounted lights for parking areas, wall packs around the building, and wall sconce lighting at exterior doors. The fixtures appear to be new to the 2010 renovation and the front of the building and parking area is well covered. Staff recommendation would be to add additional fixtures towards the back of the building around the ball fields.

Recommendation: To accommodate a new addition or renovations, maintain existing lighting fixtures around exit doors or lighting areas of egress. Connect these lights to an

emergency circuit. Provide new general site lighting to maximize energy efficiency and minimize light contamination on neighboring properties and to the sky.

Classroom Media (TV, Projector, ETC):

Classroom Media: Classroom media typically consists of an Activeboard with attached projector, a teacher computer, printer, and a wall mounted phone. Laptop and iPad carts are also in use. Most classrooms also contain an older CRT TV that appears to be unused; the Activeboard can be used for most media requirements.

Recommendation: Periodic upgrade of equipment will maintain a strong inventory of new equipment and keep students aware of current technology.

Phone System:

Phone System: The phone system consists of a new Cisco IP phone system. Each classroom has a phone connected through the PA system. The system is operational.

Recommendation: It is possible to retain and expand the existing phone system through additions and renovations.

End of Cave Spring Elementary School Electrical Narrative

CIVIL

Traffic Circulation

Buses: School is served by 9 regular buses, 2 special needs bus, and 3 daycare vans. There is a dedicated bus loop on the north side of the building.

Morning: Buses enter the bus loop at the first entrance and drop students off at the sidewalk along the rear of the school. Drop off moves very smoothly with no issues or backups.

Afternoon: Buses park diagonally in the bus loop to load students. Buses are held until all students are loaded and then released.

Cars: Parents utilize the loop at the front of the school for drop off and pick up. Good circulation through main parking area.

Morning: Cars line up at the sidewalk along the south side of the school and drop off at the front door. Drop off moves smoothly, but cars can back up beyond the bus loop entrance occasionally.

Afternoon: Cars line up at the sidewalk along the south side of the school and pick up at the front door. Pick up also moves smoothly, but backups are not as long as in the morning.

Parking: 115 striped parking spaces are provided with 4 designated ADA spaces. Day to day parking is adequate for faculty / staff / visitors. Parking quantities meet Roanoke County requirements and State recommendations. Event parking is an issue with parents parking wherever possible. The bus loop is occasionally used as overflow parking.

Service: Service area is shared with the bus loop and has adequate maneuvering area.

Fire Access: Fire apparatus have adequate access around the building.

Separation: Separation is good with a dedicated bus loop that is shared with the service area. The only potential issue is when parent drop off or pick up backs up and could block the bus loop entrance.

Adjacent Roadways: The adjacent roadways are good with adequate sight distance in both directions.

Pedestrian: Generally there are not many pedestrians who access the school. There are no sidewalks adjacent to the school.

ADA Accessibility

Parking: Four spaces are designated as ADA parking. None are designated as van accessible, but the aisle is large enough to provide van accessibility. Five spaces are required.

Recommendation: Restripe parking and add signage to increase the quantity of ADA spaces to 5.

Signage: Signs are beginning to fade and bolts are rusting. There is no van accessible signage.

Recommendation: Replace the signage and provide a van accessible sign.

Ramps: Curb ramps only are provided at the front entrance and adjacent to the ADA parking spaces.

Access to all areas: There is no ADA accessibility to the K-2 playground on the west side of the building. While there is a crosswalk, there are curbs on both sides of the parking area and no "accessible route" to the playground.

Recommendation: Provide curb cuts and an asphalt or concrete walk to the playground.

Parking Areas, Driveways, and Sidewalks

Asphalt Pavement: Main entrance road has several large areas of alligator cracking. Section of pavement on the west side of the building is in poor condition.

Recommendation: Replace asphalt in poor sections.

Concrete Pavement: Concrete pavement at service area is in good condition.

Concrete Walks: Newer sections are in good condition. Some areas have minor cracking. Older sections are deteriorated with cracking and spalling.

Recommendation: Replace sections as necessary when cracking and deterioration become hazardous.

Concrete Curb and Gutter: Concrete curbs are in good condition.

Concrete / Brick Pavers: Brick paver commemorative walk is deteriorated.

Recommendation: Remove and reset brick pavers on new base.

Fire Lane: Paint on curbs and asphalt is faded. Some fire lane signs are faded and illegible. Fire lane signs are not turned toward oncoming traffic.

Recommendation: Re-paint curbs and asphalt at fire lanes. Replace fire lane signs and posts. Ensure that fire lane signs are turned toward oncoming traffic.

Utilities

Fire Lines and Hydrants: Sufficient fire hydrant coverage and spacing with three fire hydrants located around entire site. Paved fire truck access is present around entire school building.

Domestic Water System: Water system is in fair condition, but functional. Staff indicated no pressure or water discoloration issues. Meter is located in a vault at the beginning of the school entrance road.

Sewer System: The sanitary sewer system consists of manholes and pipes in fair condition. System is functional with proper invert shaping. Staff indicated no issues with stoppages, but observations show stagnant waste.

Recommendation: Sewer system should be flushed to clear and prevent blockages.

Natural Gas System: Gas meter is located at the side of the school near the gym and protected from vehicular traffic. The meter is in good condition and shows no signs of rust and deterioration.

Electric: Electric service provided via overhead poles to school property near Cave Spring Middle School. Service is taken underground to a transformer in the playground area and then into the building. The meter is mounted on the building and the transformer is safe from vehicular traffic, but kids were playing on the transformer during field investigation.

Recommendation: Protect transformer from kids and kids from transformer.

Site Lighting: Large site lights illuminate school parking lots and bus loop and building mounted lights illuminate sidewalks and entrances. Site lighting is sufficient to ensure safety and security.

Grading and Drainage

Storm Water System: Roof drains and down spouts are piped underground into the school storm water network. Runoff from the site is routed to bioretention areas or collected and conveyed through the channel alongside the entrance road and continues to the north. All storm water inlets, manholes and pipes are in good condition, but filled with sediment.

Recommendation: Underground piping system should be flushed and pipe outlets should be cleaned out and inspected for sediment.

Detention / Retention Ponds: Bioretention areas are in good condition and are not overgrown or filled with trash and debris.

Stormwater Management BMPs: Small bioretention areas are in good condition.

Slopes, Ponding, and other Drainage Issues: Minor accumulation of sediment in front parking lot and around drop inlets. There is also minor erosion and a small eroded channel due to front parking lot concentrated runoff.

Site Features

Vegetative Landscaping: Vegetation, including trees and shrubs, are healthy.

Recommendation: Continue general maintenance of pruning and mulching.

Lawns: Generally good condition. Minor areas in need of repair in heavily trafficked areas.

Recommendation: Repair and reseed bare areas. Provide fencing and erosion control mat to protect seed in high traffic areas.

Fencing and Gates: Limited site fencing. New vinyl coated CLF at playgrounds. Pole gates to bus loop aging but serviceable.

Recommendation: Recommend fencing off electric transformer and manhole in grade 2-5 playground with CLF.

Signage: Fire lane signs are faded. Some signs do not have foundations and are leaning. Minimal directional signage on site.

Recommendation: Repair or replace damaged or leaning signs. Future signs should utilize 2"x2" square posts in sleeves with concrete foundations. Provide directional signage.

Flagpoles: Poles are in good condition.

Site Furnishings: Metal benches in good condition.

Accessory Structures: Limited auxiliary structures. CMU storage building appears to be in good condition. Waste enclosure is in good condition.

Play Areas and Physical Education

Play / PE Areas (General):

Playgrounds / Stationary Play Equipment: One area of grade PreK-1 is provided with equipment in good condition. Two areas of grade 2-5 equipment are provided. The first area is away from the school with the equipment in fair condition. The second grade 2-5 area contains numerous pieces of equipment in good condition. However, there is an exposed electrical transformer within the play area. Mulch in fair condition.

Recommendation: As provided in Fencing and Gates section, it is recommended to fence off the transformer and a manhole. Refresh playground mulch at all play areas.

Paved Play Areas: Paved play area is located in bus loop. Asphalt is in good condition. Basketball hoops and play markings are in fair condition. No paved walking path, but CSMS track is nearby.

Recommendation: None. Though a paved play area in a vehicular trafficked area is not ideal, the site use is already maximized.

Play / PE Fields: PE field available for use in conjunction with CSMS. Condition of turf is good.

End of Cave Spring Elementary School Civil Narrative

Project Name: RCPS Facilities Assessment		Comm. #: 1637
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Subject: Cave Spring Elementary School	Total Pages:
Date: 9/21/2016	Location: Salem, VA
Copies To:	Report Prepared By: AHW

General:

School constructed in 1961. Library addition in 1994. Renovation and addition in 2010. Roof was replaced over entire school, with the exception of the library. No clue why they didn't. But they should have.

Hollow metal door frames with wood doors, generally.

Aluminum windows with operable hoppers.

Mix of drinking fountain types throughout the school. There are Hi-Lo fountains installed in the corridor alcoves, with cane aprons. Older, recessed ceramic units are installed in the older portions of the building. Most did not work. Attempts to repair one unit resulted in a large hole in the wall behind the unit.

Some casework in the older portions of the building is aged PLAM covered casework. In decent condition. Sinks have bubblers.

Other rooms have wood casework with sliders w/recessed handles. PLAM countertops and sinks with bubblers.

Mechanical Room in basement:

Water is pooling at the outdoor pit area. Leaves and other organic debris have accumulated in the space.

The back room has asbestos ceiling panels in place. The panels have been stickered. They are crumbling in places.

Some evidence of seepage through concrete floor.

Roof:

White membrane roof system over most of building, installed during 2010 renovations and additions. Library wing is covered with an older ballasted system.

The ballasted system should be replaced immediately. There is evidence of leaking water into the space below. Complaints of mold and excessive humidity causing curling of book pages came from several staff members.

Maintenance of roof was found to be severely lacking. Multiple roof drains were clogged with debris. Leaf and other debris has accumulated in multiple spots on the roof.

Ballasted roof, on areas of the library wing, was barely visible through leaves and sticks on roof.



ARCHITECTS AND ENGINEERS

Notes

At the library wing, one strainer basket was missing and a ball was found lodged in the drain pipe. The ball was removed and strainer basket was replaced.

Loose screws and nails were present on the roof.

The roof hatch handle is missing.

Some limited areas of ponding were present.

Sealant at counterflashing below clerestory was failing in several locations.

Flashing at an expansion joint has totally peeled away from the membrane.

Gutter straps at skylight structure have been pulled away from wall. No snow guards are present. Damage likely due to snow.

Missing downspout from the aforementioned gutter. Was it ever there?

Missing strainer baskets on low roof. Nowhere to be found on roof.

A chair has been placed on the roof to provide access to the low roof. This is applying point loads to the membrane.

Clerestory at former cafeteria:

Brick below windows has cracked at the upper corners, below the bond beam and beside the glue-lam columns. This same cracking occurs at nearly every corner, both sides of the glue-lam, and telegraphs through the block on the interior.

Music Room:

Acoustic wall panels in good condition. Painted CMU and GWB in good condition.

Corridors:

Fritztile floors in, generally, good condition.

Glazed structural wall tile in good condition. Some areas have painted CMU walls in good condition. Infilled portions have ceramic wall tile.

SATC ceilings throughout.

Spotting on SATC ceiling outside of mechanical room on main level.

202, 204, 206, 208, 210:

FCT in good condition. SATC in good condition. GWB in ok condition. Smart boards installed over maker boards. Casework in good condition. Storefront windows with hoppers and insulated lites.

211, 205, 207:

Terrazzo floor and GWB ceiling.

Library:

Staff claims there have been major water problems in the space. White mold has appeared on carpet and books. Book pages have curled. Carpet has been wet.

Carpet tile in the space showed some staining. Not sure if due to seepage or dripping.

SATC is aged but in ok condition.

Some ceiling tiles have been removed due to water issues.

Entire space is slightly musty.

There are no signs of paint bubbling at the CMU walls.

113:

VCT good. Painted CMU good. GWB?? Panel ceilings have some joints separating. GWB dividing wall in ok shape. Acoustic panels in good shape. See notes regarding clerestory, above.



ARCHITECTS AND ENGINEERS

Notes

Boys room at main building hub:

Glazed structural wall tile. 2" mosaic floor tile. No accessible stall. No mirrors.

Main Hub:

Ceramic wall tile wainscot. Fritztile floor. Layered GWB design on wall above wainscot. SATC at ceiling.

Library Vestibule:

3' carpet tile on floor. SATC is aged but in ok condition. Stains on SATC over library door (both sides).

303:

VCT, SATC, Painted Block and GWB all in good condition.

A/V Room:

VCT in ok condition. SATC in ok condition.

Library Workroom:

VCT in ok condition. SATC in ok condition. Painted CMU good condition.

Library Conference Room:

Carpet tiles in ok condition. SATC in ok condition.

Connector hallway:

Mold and staining on sealant at all windows. Assume there has been condensation on the window.

Water spot on SATC above Janitor closet door and in janitor closet.

Boys Room:

Flush valve handle does not point to wide side of spice. Lavatory is in the clear floor area for the toilet.

4" glazed ceramic wall tile wainscot with painted block above. 1" mosaic floor tile. SATC in good condition.

400 wing:

All windows on this wing have mold/mildew staining on the sealant and some other surfaces.

401:

Typical classroom materials: SATC, VCT, CMU. Has shared toilet rooms with adjacent classroom. No lavatory in the bathroom. Students must pass through two doors to reach a sink. VUSBC's modification of the IPC only allows for passage through one door. Cannot pass through two doors.

402:

Teacher says room stays very warm. HVAC cools well, but temperatures in the room fluctuate wildly.

SATC is very yellowed in the room. No spots, but definite discoloration.

Corridor:

Wood doors in middle of corridor have top and bottom surface mounted rods. There is no floor strike for the bottom rod to connect to. Fritztile is continuous under door.

404:

Accessible restroom in the room:

SATC is in good condition

Painted CMU in good condition.



ARCHITECTS AND ENGINEERS

Sheet goods on floor in good condition.
Sealant around base of toilet in fair condition.

301, 303:

Typical classroom materials. Marker board is slightly stained.

304, 309:

Textured GWB ceiling. VCT, Painted CMU.

300 Wing Boys Room:

Glazed structural wall tile. 2" mosaic tile floor. SATC in good condition. No mirrors.

314:

GWB bulkhead has been patched. No sanding or painting done.

Gym Lobby:

Spots on SATC.
Exposed brick walls. Fritztile floors.

Gym:

SATC over the stairs is damaged.
Vinyl stair treads.
Handrail on only one side of fairly wide stair.
Parquet floor, Maple, in good condition.
Pine board flooring on stage in decent shape.
Tectum ceilings. Painted CMU walls.
Stage is accessible from corridor via vestibule. No access to stage from inside gym.
Gym is accessible via ramp outside of cafeteria.

Cafeteria:

Some staining on SATC. Many tiles are properly seated.
Fritztile floors. Painted CMU walls. Acoustic Panels. Good.
Some cracking of Fritztile outside of kitchen/serving door.

Kitchen:

Glazed ceramic tile wainscot to 6'-6". Texture floor tile. SATC.

610 Office:

VCT, CMU, SATC.

Locker and Restroom:

Same materials as kitchen, in good condition.

Kitchen Dry storage:

VCT, SATC, CMU.

Boys room at gym:

Glazed Ceramic tile wainscot. 2" mosaic floor tile. No accessible stall.

Teachers lounge:

Carpet tile. Stained SATC from leaks. VCT in good condition. Casework in good condition, but has no accessible counter.

105:

VCT, SATC, Painted CMU, GWB, and Casework in good condition. Marker board in good condition.

Office Area:

Carpet tile in good condition. SATC and GWB in good condition.



ARCHITECTS AND ENGINEERS

Notes

107 Records:

VCT, GWB, SATC all in good condition.

Nurse:

Spots on SATC.

Sheet good on floor in toilet room.

Intercom (and possibly alert system) does not work in the space. If the doors are closed, the nurse doesn't hear anything.

Has accessible shower.

Casework in good condition.

Exterior:

Some brick staining extending from entry cover above door 2.

Aluminized tape has been installed on the louver below this entry cover. No clear reason why.

Heavy water staining from a brick weep on exterior wall of office area. No clear indication of cause.

Cave Spring Elementary School Architectural Condition Assessment
Reference Building Owners and Managers Association International (BOMA)
Preventative Maintenance Guidebook

System/Components	Condition Category	Expected Useful Life	Current Age	Expected Life Remaining	Notes
Architectural					
Brick at Original Building	4	Life	54	Life	
Brick at 1994 Addition	4	Life	54	Life	
Brick at 2009 Addition	5	Life	54	Life	
CMU walls at original Building	4	Life	54	Life	
CMU walls at 1994 Addition	4	Life	22	Life	
CMU walls at 2009 Addition	4	Life	7	Life	
Interior doors	4	20	7	13	
Exterior doors	5	50	7	43	
Door hardware	2	7	7	0	
Electronic door hardware	2	5	7	0	
Flexible Terrazzo Tile	5	50	7	43	
Vinyl sheet flooring	4	12	7	5	
Vinyl floor tile	5	12	7	5	
Ceramic/Porcelain floor tile	5	50	7	43	
Ceramic/Porcelain floor tile (at 1994 Additions)	5	50	22	28	
Quarry floor tile	5	50	22	28	
Wood gym floor	4	10	7	3	
Other wood floors	5	10	7	3	
Exposed concrete floors	5	50	54	0	
Carpet	2	5	7	0	
Exterior windows	5	30	7	23	
Exterior windows (at 1994 Additions)	3	30	22	8	
Interior windows	5	30	7	23	
Roof (Including flashings, coping, etc.)	4	20	7	13	Remove debris from roof, regularly.
Roof (Including flashings, coping, etc.) at 1994 Addition	1	20	22	0	
Suspended acoustical tile ceilings (lay-in)	4	25	7	18	
Acoustical Ceiling Panels	5	25	7	18	
Sound control panels (wall and ceiling)	5	N/A	7		
Ceiling/exposed structure finish (paint)	2	5	7	0	
Interior wall finishes (paint)	2	5	7	0	
Marker boards or chalk boards	2	N/A			
Tack boards	5	N/A			
Projection screens	5	N/A			
Casework	5	N/A			
Window treatments	5	N/A			
Toilet partitions	5	20	7	13	
Toilet accessories	5	N/A	7		
Interior railings	5	30	54	0	
Condition Categories					
1 Immediate replacement required, life safety concern					
2 System has reached it's useful life					
3 Major repair or modifications required, useful life remaining					
4 Minor repair required					
5 General maintenance required					

Cave Spring Elementary School Mechanical Plumbing Condition Assessment
Reference Building Owners and Managers Association International (BOMA)
Preventative Maintenance Guidebook

System/Components	Condition Category	Expected Useful Life	Current Age	Expected Life Remaining	Notes
Mechanical					
Boiler	N/A				
Cooling tower	5	18 years	6 years	12 years	
Mechanical piping	5	30 years	6 years	24 years	
Refrigerant piping	5	30 years	9 years	21 years	
Duct	5	30 years	6 years	24 years	
Outdoor air units	N/A				
Terminal units	N/A				
Package units (Water Source Heat Pumps)	5	18 years	6 years	12 years	
Package units (Gas fired RTU's)	5	18 years	9 years	9 years	
Controls	5	20 years	9 years	11 years	
Exhaust fans	5	25 years	9 years	16 years	
Plumbing					
Plumbing fixtures and controls	5	30 years	6 years	24 years	
Floor drains	5	30 years	6 years	24 years	
Water heaters (WH-1)	5	15 years	6 years	9 years	
Water heaters (WH-2)	5	15 years	16 years	0 years	
Pumps	5	15 years	6 years	9 years	
Potable water piping & valves	5	30 years	6 years	24 years	
Sprinkler system	N/A				
Back-flow preventer	5	30 years	6 years	24 years	
Service line & meter (size appropriate)	5	30 years	6 years	24 years	
Wall and yard hydrants	N/A				
Eye wash stations	N/A				
Emergency showers	N/A				
Condition Categories					
1 Immediate replacement required, life safety concern					
2 System has reached it's useful life					
3 Major repair or modifications required, useful life remaining					
4 Minor repair required					
5 General maintenance required					

Cave Spring Elementary School Electrical Condition Assessment
Reference Building Owners and Managers Association International (BOMA)
Preventative Maintenance Guidebook

System/Components	Average Useful Life	Current Age	Expected Life Remaining	Condition Category	Notes
Electrical					
Main switch gear	40	7	33	5	
Panelboards	30	23	7	5	Some newer panels installed 7 years ago
Cabling	40	7	33	5	Some newer installed 7 years ago
Conduit/raceway	40	7	33	5	
Light fixtures	20	7	13	5	
Lighting controls	30	7	23	5	
Public address system - Headend	30	7	23	5	
Public address system - Devices	30	7	23	5	
Security system	10	5	5	5	
Camera system	10	5	5	5	
Data system	15	5	10	5	
Fire alarm system - Headend	30	7	23	5	
Fire alarm system - Devices	30	7	23	5	
Site lighting	20	7	13	2	
Classroom media systems (TV, projector, etc.)	10	5	5	5	
Phone system	10	5	5	5	
Condition Categories					
1 Immediate replacement required, life safety concern					
2 System has reached it's useful life					
3 Major repair or modifications required, useful life remaining					
4 Minor repair required					
5 General maintenance required					

Cave Spring Elementary School Civil Condition Assessment
Reference Building Owners and Managers Association International (BOMA)
Preventative Maintenance Guidebook

System/Components	Condition Category	Expected Useful Life	Current Age	Expected Life Remaining	Notes
Civil					
Asphalt pavement	2/3/5	15 years	6+ years	0-9 years	
Asphalt walks	N/A	N/A	N/A	N/A	
Concrete pavement	5	30 years	6 years	24 years	
Concrete walks	2/4/5	30 years	6-55 years	0-24 years	
Stairs	N/A	N/A	N/A	N/A	
Ramps	5	30 years	6 years	24 years	
Railings	N/A	N/A	N/A	N/A	
Concrete curb and gutter	5	30 years	6 years	24 years	
Concrete / Brick Pavers	3	30 years	Unknown	0-5 years	
Guardrail, Parking Bumpers, Misc.	5	Varies	6 years	Varies	
Fire lane	4	Varies by Material	6+ years	0-5 years	
Fire lines and hydrants	5	40 years	6 years	34 years	
Domestic Water system	4	40 years	55 years	0 years	
Sewer system	4	40 years	55 years	0 years	
Natural Gas system	5	40 years	6 years	34 years	
Electrical System	4	25 years	6 years	34 years	
Exterior Lighting	4	25 years	6-55 years	0-34 years	
Storm water system	4	40 years	6-55 years	0-34 years	
Detention / Retention ponds	5	Life	6 years	34 years	
Stormwater Management BMP's	5	Varies by BMP	6 years	34 years	
Surface drainage and grading	4	N/A	N/A	N/A	
Vegetative landscaping	5	Life	4-35 years	Varies	
Lawns	4	Life	4-35 years	Life	
Fencing and gates	3/5	20 years	4 years	16 years	
Signage	4	10 years	35 years	0-10 years	
Flagpoles	5	50 years	4 years	46 years	
Site furnishings	5	15 years	4+ years	11+ years	
Awnings / Canopies	N/A	N/A	N/A	N/A	
Site retaining walls	N/A	N/A	N/A	N/A	
Accessory structures	5	50 years	35 years	15+ years	
Playgrounds	4	10 years	Unknown	8 years	
Paved play areas	4	20 years	Unknown	9 years	
Play / PE fields	5	Life	Unknown	Life	
Condition Categories					
1 Immediate replacement required, life safety concern					
2 System has reached it's useful life					
3 Major repair or modifications required, useful life remaining					
4 Minor repair required					
5 General maintenance required					

Budgetary Cost Estimate

Estimate Date 12/7/2016

Facility Name Cave Spring Elementary School

Client Name Roanoke County Schools



Quantity	Description	Unit	Cost / unit	Total w/ OH&P
ARCHITECTURAL				
4,107	Remove Existing Roof	SF	\$2.25	\$11,088.90
4,107	Single-ply EPDM Roof membrane	SF	\$7.00	\$34,498.80
350	Pre-finish aluminum coping and fascia	LF	\$26.00	\$10,920.00
48	Flashing against existing building	LF	\$24.00	\$1,382.40
402	Replace 1986 wing windows with IECC compliant product. Includes removal of existing windows.	SF	\$45.00	\$21,708.00
145	Accessible Signage	EA	\$42.00	\$7,308.00
14,573	Replace Carpet, broadloom 32 oz, glue down	SF	\$4.00	\$69,950.40
CIVIL				
50	Pavement restriping	LF	\$0.20	\$12.00
5	ADA signage	EA	\$500.00	\$3,000.00
6	Directional signage	EA	\$1,500.00	\$10,800.00
2	Concrete curb ramps	EA	\$1,000.00	\$2,400.00
33,000	Mill and overlay asphalt pavement	SF	\$1.00	\$39,600.00
300	Asphalt pavement	SF	\$3.00	\$1,080.00
13	Fire lane signage	EA	\$500.00	\$7,800.00
1,300	Repaint curbs and fire lanes	LF	\$0.10	\$156.00
100	4' Chain link fencing	LF	\$25.00	\$3,000.00
1	6" Sprinkler System	EA	\$20,000.00	\$24,000.00
MECHANICAL / PLUMBING				
1	Replace damaged condenser water pump	EA	\$10,000.00	\$10,000.00
58,711	Add Sprinkler System - includes ceiling modifications	SF	\$6.00	\$352,266.00
ELECTRICAL				
1	Replace damaged condenser water pump	EA	\$1,000.00	\$1,000.00
58,711	Ceiling modifications	SF	\$1.00	\$58,711.00
TOTAL Budgetary Cost				\$670,682