Washington County Schools' Facilities Assessment and Future Capital Planning Analysis

Washington County Board of Education

PRESENTATION

August 2, 2022

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Knoxville, Tennessee 37919
www.lewisgroup.net

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If we can imagine the way we want to live, work, or learn, then we can chart a path towards its creation.

Jerry W. Lewis, AIA

PART 1: OVERVIEW

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PROGRAM PARTICIPANTS

Washington County Schools

Dr. Jarrod Adams, Chief Operations Officer

Jerry S. Boyd, Superintendent

Phillip Patrick, Maintenance Supervisor

Tony Roberts, Transportation Supervisor

Bob Cantler, CEO of Johnson City/Jonesborough/
Washington County Chamber of Commerce

Angie Charles, Washington County Planning Director

Matt Combs, Principal of Jonesborough Elementary

Mr. Brandon McKee, Principal of Jonesborough Middle

Mrs. Jordan Hughes, Principal of Boones Creek Elementary

Dr. Jim Wernke, Principal of Fall Branch Elementary

Dr. Tara Churchwell, Principal of Grandview Elementary

Amy Lawson, Principal of Gray Elementary

Mark Merriman, Principal of Lamar Elementary

Leslie Lyons, Principal of Ridgeview Elementary

J.W. McKinney, Principal of South Central Elementary

Dr. David Little, Principal of Sulphur Springs Elementary

Dr. Robin Street, Principal of West View Elementary

Tim Campbell, Principal of Daniel Boone High

Peggy Wright, Principal of David Crockett High

Jamie Gray, Principal of Asbury Optional High

Facilities Assessments Team

Paul McCall, Lewis Group Architects

Todd Brang, Lewis Group Architects

Jake Thomas, Lewis Group Architects

Dr. Brian Bell, Lewis Group Architects,
Associate Professor of Education,
Lincoln Memorial University

Peter Giddings, Lewis Group Architects

Courtney Wills, Lewis Group Architects

Brooklyn Samples, Lewis Group Architects

Purpose

In December 2021, Washington County Board of Education commissioned Lewis Group Architects (LGA) to undertake a facilities assessment and future capital planning analysis intended to assist them in understanding the overall condition of their school system. The assessment includes school-specific observations, as well as county and system-wide research and comparisons. Together, all the information allows us to present a comprehensive look at the system that will allow Washington County Schools to prioritize and strategize long-term management of the facilities in the system and future capital planning.

Scope

The sixteen facilities include one elementary school, one middle school, nine Pre-K/K-8 schools, two high schools, the resource center, the alternative school, and the central office. In addition to making observations about the physical condition of the facilities through site visits, LGA also gathered information about the context of these facilities. This context includes geography, population trends, enrollment trends, current zoning boundaries, and utilities costs. LGA collected data from the school system and other resources like the US Census Bureau, Washington County Chamber of Commerce, and the State of Tennessee, among others.

Process

Over the course of March, April, and May of 2022, LGA visited each of the sixteen facilities. During our visit visual observations were made, photographs taken,and data and research collected.Each facility visit was conducted in the company of an employee of the school system (principal or maintenance/custodial staff) to provide site-specific information. The focus of the visits was to develop an overall assessment of the school buildings in several categories - Age of existing facilities,building envelope and structure,health and safety, accessibility, general conditions,mechanical systems,and utility costs. The information was then organized and represented through a variety of charts and illustrations; the information and findings are presented in this document in six (6) parts.

Part 1: Overview
Part 2: Facility Observations
Part 3: Washington County Demographics
Part 4: Washington County Schools Research and Data
Part 5: Summary of Findings
Part 6: Recommendations

GUIDE TO READING THE ASSESSMENT

The assessment has been presented for review and use in a manner consistent with the way in which the assessment was performed. In this document, you will find the record of the individual facility assessment visits first, followed by research, data, and illustrations that aim at a broader, comparative look at the system as a whole. This assessment does not include detailed analysis of transportation studies, personnel, curriculum,or instructional resources.

Part 2: Facility Observations

This section contains the visual observations made at each facility being assessed as well as a rating of several categories.

Each facility is documented with the following:

Aerial Photograph: Image of facility and immediate surroundings taken from Google Earth with north oriented towards the top of the page. Images not to scale.

"At a Glance" Sheet: A collection of basic information, illustrations, and ratings. Basic information includes:

-Location

-Front elevation

-Latest enrollment and functional capacity

-Utilization rate of facility (comparison of current enrollment and capacity)

-Number of grades

-Size of floor area

-Number of classrooms

-Number of floors

-Construction history

-Ratings for the facility

-Utilities cost

Ratings for each category (see category descriptions on following page) of each facility are based on an assessment of that facility in comparison with other facilities in the system. Assessments for each facility were based on information gathered through research, observations made in the field, and dialogue with school system staff.

Part 2: Facility Observations Continued

Visual Documentation: Comprehensive photographic documentation of each facility was done and has been archived by LGA. This assessment includes a sample of the more typical or important conditions found during the visit.

Key Plan: The location of each photograph included in the assessment, unless noted, has been referenced in the Key Plan of every facility.

Part 3: Washington County Demographics

Contains information about the population trends and patterns found in the county. This information, in conjunction with the enrollment data for the school system, can be valuable in the strategic management of facilities.

Part 4: Washington County Schools Research and Data

Compares information on each school in the system, including explanations of methods and illustrations.

Part 5: Summary of Findings

While the school system leadership should review this assessment and draw its own conclusions, LGA has identified some key findings and potential high priorities for Washington County Schools to increase the efficiency of the school system and better serve its teachers, students, and other staff members.

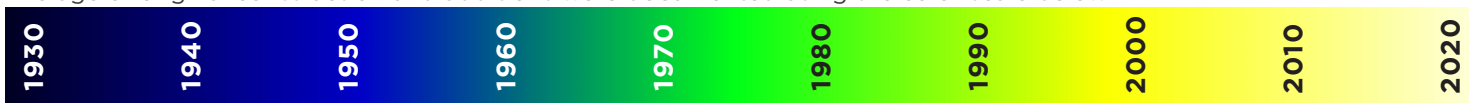
Part 6: Recommendations

Based on what were identified as key challenges, LGA has provided Washington County Schools several strategic planning options that address the challenges listed in “Part 5: Summary of Findings”. While we specify five (5) recommendations, it is not required that these be addressed or completed in the order presented.

GUIDE TO READING THE ASSESSMENT

AGE OF EXISTING FACILITIES

The age of original construction and additions were documented using the color scale below.



BUILDING ENVELOPE & STRUCTURE

Each building's exterior and interior were reviewed to identify any potential structural or building envelope concerns including problems at building openings, cracked masonry, unusual movement, and deterioration of structural components.

HEALTH & SAFETY

Facilities were evaluated for any issues that could affect the health, life safety, and building security of students, staff, and visitors. Health concerns included air quality, the presence of harmful building materials, and the possible presence of mold or mildew. Security concerns reviewed included site perimeter control, visual monitoring capabilities, building perimeter control, and potential security concerns.

ACCESSIBILITY

Although not an exhaustive assessment of accessibility,each site and building was reviewed to determine the extent of accessible parking,entries,and exits,accessible route within building,availability of accessible toilets, and other potential barriers to universal accessibility for students, staff, and visitors.

GENERAL CONDITIONS

Each building was reviewed for issues that require extensive or continuous expenditures for maintenance or upkeep. These include materials that require regular painting, sealing, repairing, or are not energy efficient. The interior of each building was reviewed for issues that show excessive wear, require frequent maintenance, or are not functioning properly.

UTILITIES COST

Utilities costs for each facility were evaluated in terms of average dollars spent per student enrolled as well as dollars spent per facility square foot. The average is taken over a six (6) year period from the 2016-2017 school year through the 2021-2022 school year. Utilities costs includes water, sewage, electric, and gas if applicable.

MECHANICAL/ ELECTRICAL SYSTEMS

Mechanical systems assessments were completed by Engineering Services Group, and electrical assessments were completed by Vreeland Engineers, INC..A descriptive narrative is included in place of a star rating.

★★★★★ **5-STAR RATING** Compared to other facilities in the county.

PART 2:
FACILITY OBSERVATIONS

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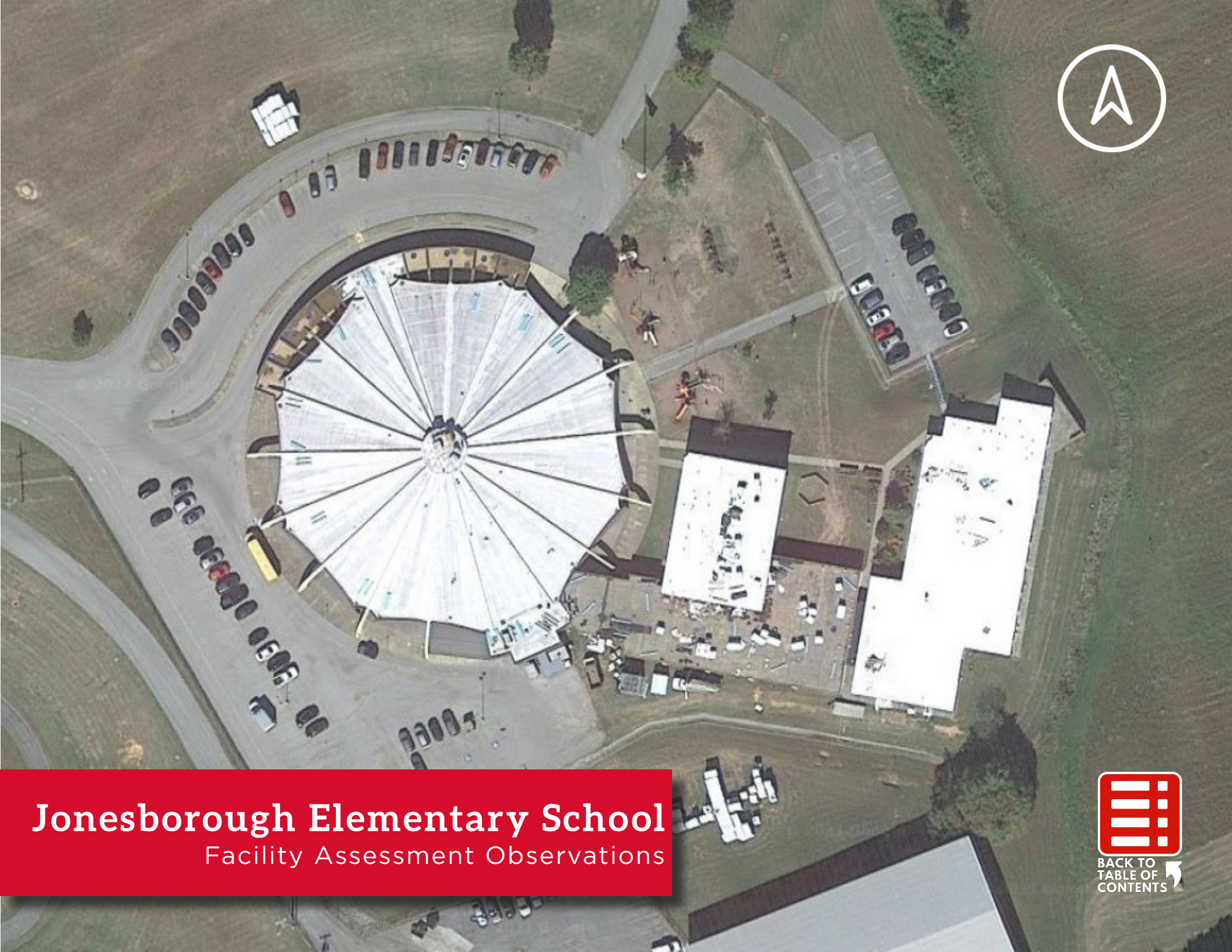

Jonesborough Elementary School

Facility Assessment Observations

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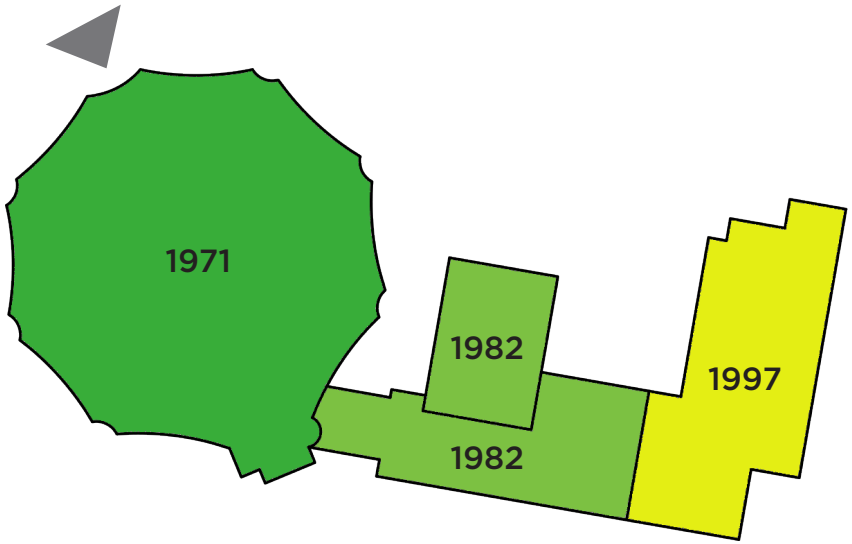
Jonesborough Elementary School

306 Forest Drive, Jonesborough, TN 37659



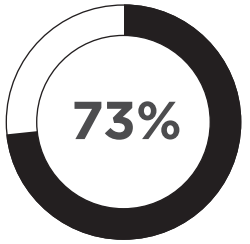
Overview

Opened in 1971, the original building contained the classic open-concept classroom spaces. The 1982 and 1997 additions are accessed through the cafeteria.

Grades:	**K - 4**
No. Classrooms:	**30**
No. of Stories:	**2**
Total Area:	**97,948 SF**

Current Enrollment:
462 Students

Functional Capacity:
630 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★	★	★★★	★★	★	N / A	$82.0K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Evidence of possible roof leaks at several locations above circular corridor
B Sidewalk exhibits cracks in several locations
C Wood stairs to staff parking area show signs of weathering
D Weeps and expansion joints occur on the additions, but not the original building

Interior

E Ceiling is damaged in several locations - risk of further damage and falling debris

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing
B No secure vestibule
C Short sight lines create lack of visual control
D Public access to dumpster area
E Public access to transformer and other equipment
F Unknown white substance on front entry canopy and concrete below

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Some classrooms do not have an acessible route to building exterior
B Sidewalk along east side of building drops off sharply to road
C Amphitheater space in media center is not ADA accessible
D Music Room is only partially accessible (top deck only)
E Only two ADA parking spots are located near main entrance
F Work room is not ADA compliant

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Ceiling damaged in several locations throughout circular corridor
B Efflorescence and other stains along entry canopy
C Exterior doors' paint is faded
D Exterior soffit has discoloration consistently throughout
E Concrete is damaged in some locations

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

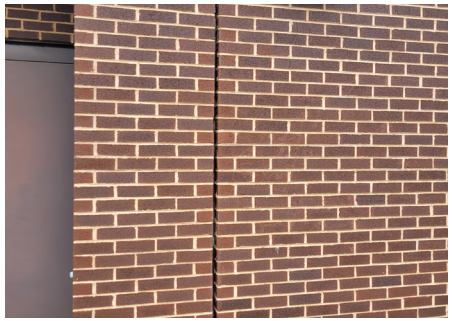
01 Headroom is not ADA compliant

02 In several locations there are indices of severe moisture-intrusion issues

03 Discoloration of floor finish

04 Music Room has limited ADA access

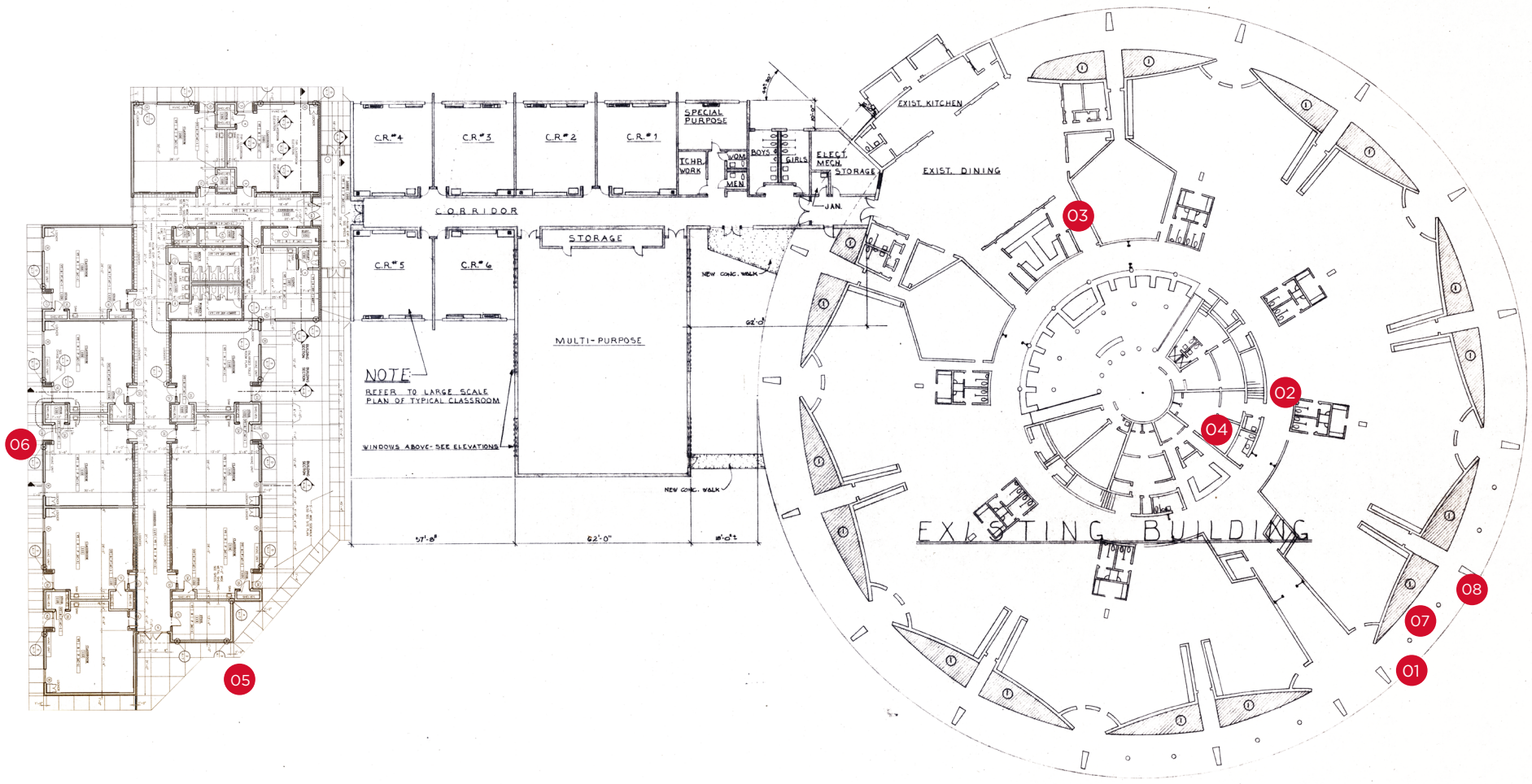
05 No ADA access from staff parking area



06 Non-sealed expansion joints present on newer addition

07 Paint peeling on underside of the entry canopy

08 Unknown substance dripping from canopy and staining concrete walks below


C.R. #4
C.R. #3
C.R. #2
C.R. #1
SPECIAL PURPOSE
TCHR. WORK
WOM.
MEN
BOYS
GIRLS
ELECT. MECH. STORAGE
EXIST. KITCHEN
EXIST. DINING
JAN.
CORRIDOR
C.R. #5
C.R. #6
STORAGE
MULTI-PURPOSE
NEW CONC. WALK
NOTE:
REFER TO LARGE SCALE PLAN OF TYPICAL CLASSROOM
WINDOWS ABOVE - SEE ELEVATIONS
EXISTING BUILDING
01
02
03
04
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06
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Jonesborough Middle School

Facility Assessment Observations

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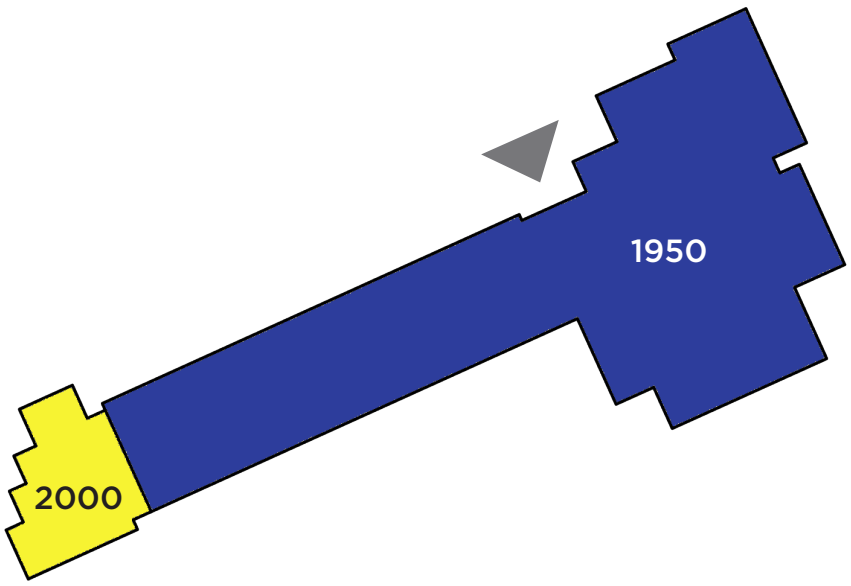
Jonesborough Middle School

308 Forest Drive, Jonesborough, TN 37659



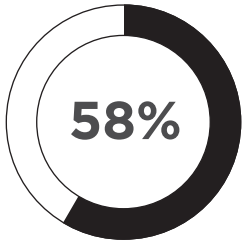
Overview

Built in 1950, the original 5-8 school is located immediately off Jackson Boulevard. The middle school is immediately adjacent to Jonesborough Elementary School. In 2000, the school received an addition on the west side of the school.

Grades:	**5 - 8**
No. Classrooms:	**25**
No. of Stories:	**2**
Total Area:	**97,948 SF**

Current Enrollment:
402 Students

Functional Capacity:
688 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★	★★	★★	★★	★	N / A	$52.5K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Sealant has degraded in some locations - exposes elements to freeze-thaw cycle
B Planter wall near front entry has failed
C Drainage issue near downspouts
D Several windows appear to have failed seals, causing condensation between panes
E Not all weeps are present or have access to drainage outside (under grade)
F Moderate rust damage to exterior door on west side of building
G Track sitting area is severely damaged - caution tape is present

Interior

H n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing
B No secure vestibule
C Short sight lines create lack of visual control
D Public access to dumpster area
E Public access to transformer and other equipment
F West sidewalk very close to Forest Drive lacks fall protection
G Damaged asbestos containing material (ACM) tile in office's former vault - further investigation would be needed by appropriate testing agency
H Some Electric Water Coolers do not have bottle fillers
I Floor maintenance equipment is not in a secure location
J Exposed electrical wire on south side of building

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Main entry only has one hand rail on one side of the ramp
B ADA stalls missing grab bars
C Elevator access between floors has key-based access control
D ADA parking is not sufficient nor located with easy access to main entry
E Some egress access is not ADA compliant
F West egress ramp has multiple slopes without landings between them

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

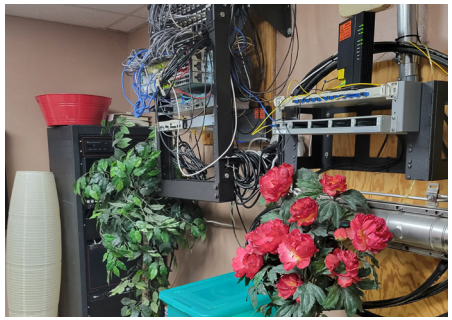
A Mild discoloration in several locations
B Concrete overhang and interior stairway in rear entry has minor damage
C Excessive heat gain in office caused by data equipment
D Some VCT in office was stained
E Urinal screens missing (possibly removed by students)
F Minor damage to ACT in some locations - may be caused by roof leaks and would require further investigation
G Paint has been scraped away on guardrails in some locations
H Original windows on 1950's portion of building are stained and have damaged finishes

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Damage and stains are present in some locations



02 Excessive heat gain near data equipment

03 Possible hazardous material is damaged - further investigation would be needed by testing agency

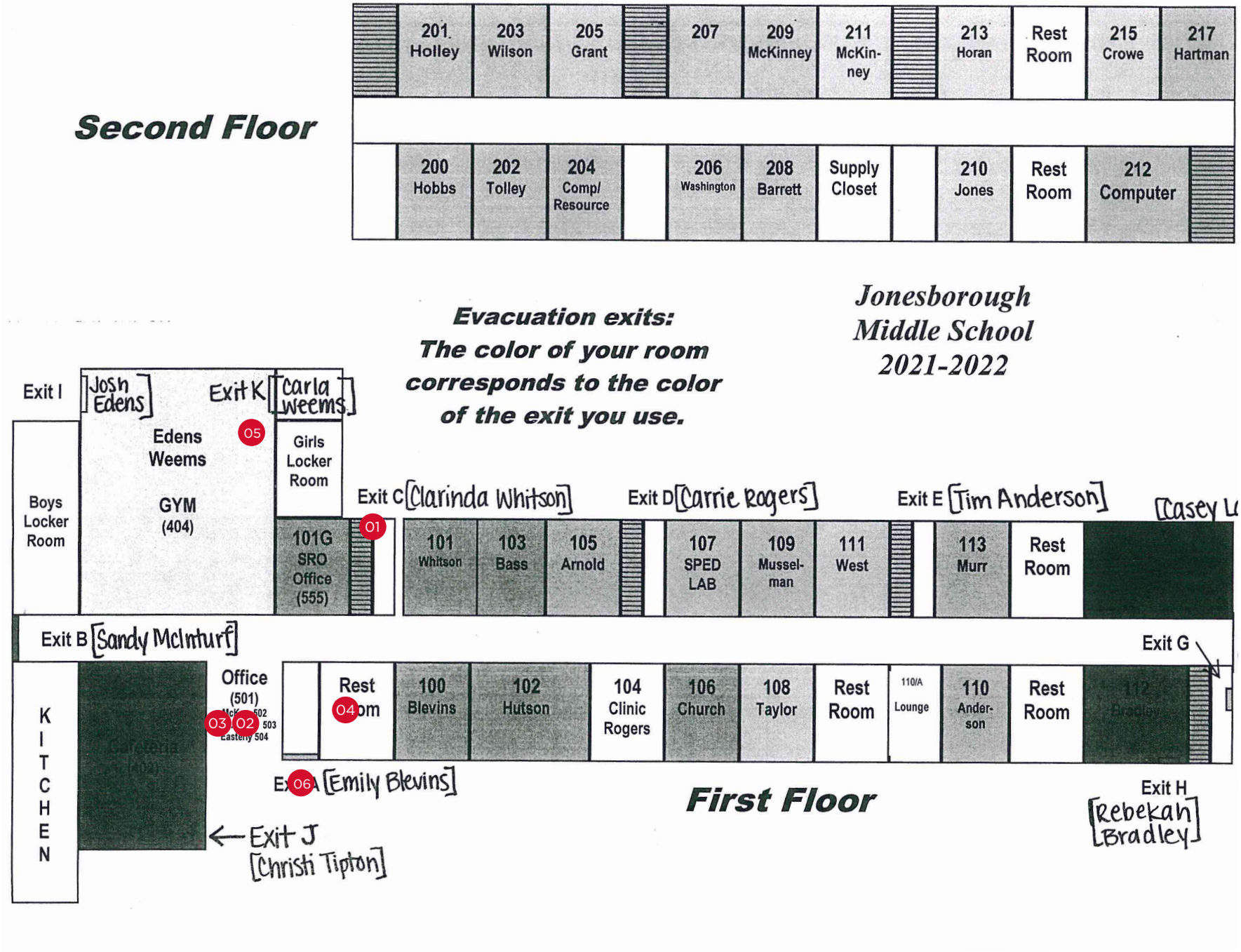
04 Urinal divider missing

05 Temporary indoor batting cage

06 Planter wall has failed

07 Severely limited stand-off distance on western side

08 Sealant failure exposes joint to freeze-thaw damage


Second Floor
201 Holley
203 Wilson
205 Grant
207
209 McKinney
211 McKinney
213 Horan
Rest Room
215 Crowe
217 Hartman
200 Hobbs
202 Tolley
204 Comp/ Resource
206 Washington
208 Barrett
Supply Closet
210 Jones
Rest Room
212 Computer
Evacuation exits:
The color of your room corresponds to the color of the exit you use.
Jonesborough Middle School 2021-2022
Exit I
Josh Edens
Exit K
Carla Weems
Edens Weems
GYM (404)
05
Girls Locker Room
Boys Locker Room
Exit C [Clarinda Whitson]
Exit D [Carrie Rogers]
Exit E [Tim Anderson]
[Casey L
101G SRO Office (555)
01
101 Whitson
103 Bass
105 Arnold
107 SPED LAB
109 Mussel-man
111 West
113 Murr
Rest Room
Exit B [Sandy McInturf]
Exit G
08
07
KITCHEN
Office (501)
03
02
Rest Room
04
100 Blevins
102 Hutson
104 Clinic Rogers
106 Church
108 Taylor
Rest Room
110/A Lounge
110 Ander-son
Rest Room
Ex 06A [Emily Blevins]
First Floor
Exit H
[Rebekah Bradley]
← Exit J
[Christi Tipton]

Boones Creek Elementary School

Facility Assessment Observations

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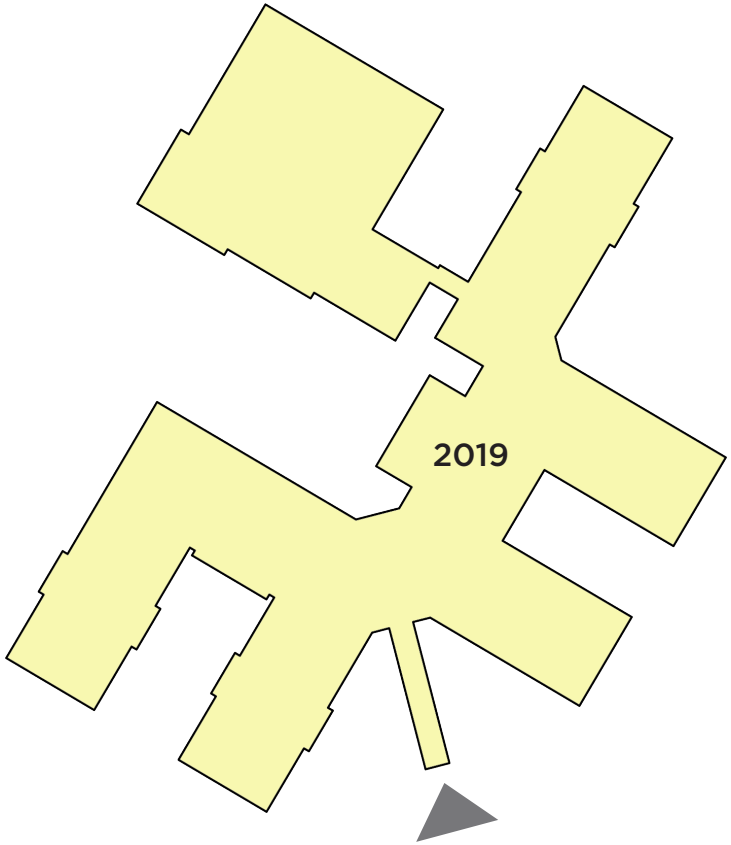
Boones Creek Elementary School

132 Highland Church Road, Johnson City, TN 37615



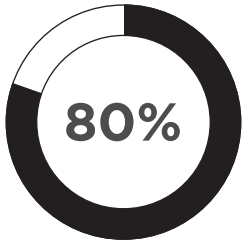
Overview

Constructed in 2019, Boones Creek Elementary School is the newest facility in the system. As in most new buildings, Boones Creek Elementary School's facility is in excellent condition.

Grades:	**K - 8**
No. Classrooms:	**45**
No. of Stories:	**1**
Total Area:	**132,791 SF**

Current Enrollment:
806 Students

Functional Capacity:
1008 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	3 6-YEAR AVERAGE UTILITIES COSTS
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	N / A	$91.3K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Weeps are either not present or sub-grade throughout

Interior

B n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A SRO Window into lobby is obscured

B Fire department connection signage is faded

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A As it is under construction, the play area should include ADA accessible play equipment available alongside the already-in-place ramp

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Tile is damaged at building expansion joint

B Outdoor food storage and other equipment is detached from cafeteria

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 SRO Window into lobby is obscured

02 Classroom space is open and well-lit with access to secure outdoor play area

03 Tile is damaged at building expansion joint

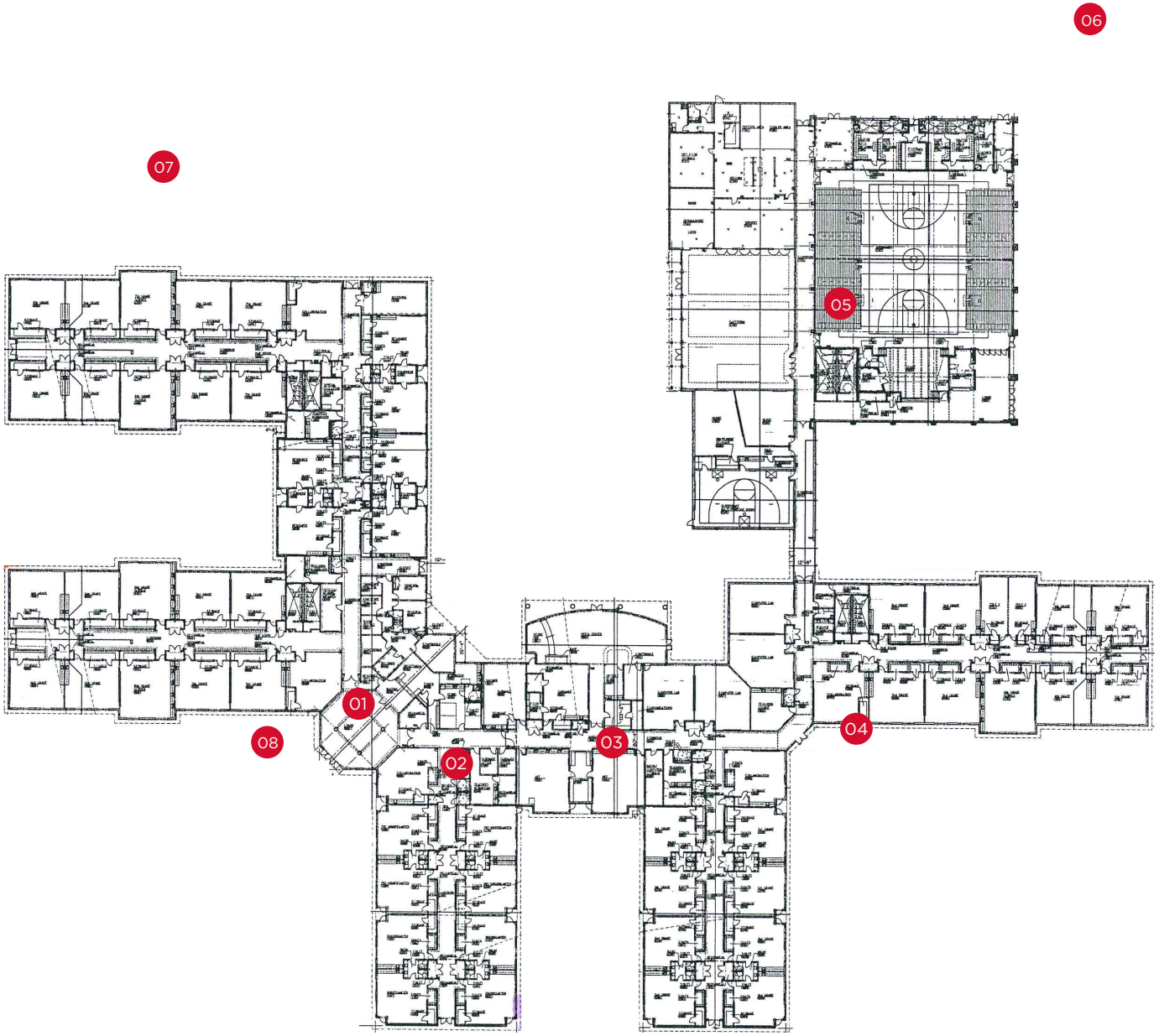
04 New playground already has a ramp installed for accessibility

05 Cafeteria is large, open, and well-lit

06 Outdoor food storage and other equipment is detached from cafeteria

07 Video camera

08 Fire department connection signage is faded


06
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Fall Branch Elementary School

Facility Assessment Observations

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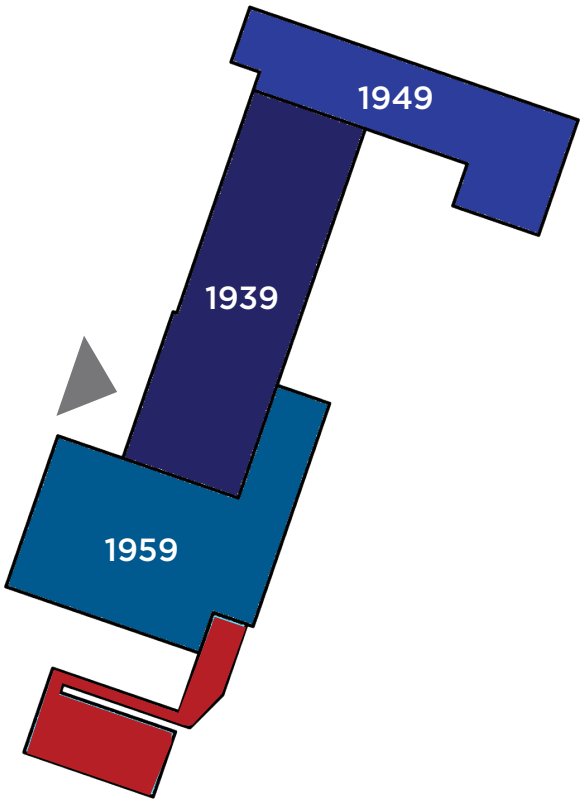
Fall Branch Elementary School

1061 Highway 93, Fall Branch, TN 37656



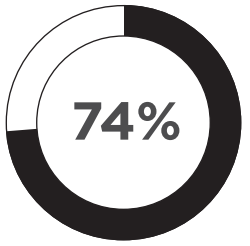
Overview

While the original 1842 brick building was destroyed by fire, it reopened as a four-room building in 1889. In 1939, the school added steam heat and electric lights. In 1949 and 1959, the school had several additions constructed, adding a cafeteria, gymnasium, and an entire second floor. 1994 brought ADA improvements to the school.

Grades:	**K - 8**
No. Classrooms:	**14**
No. of Stories:	**2 + B**
Total Area:	**29,968 SF**

Current Enrollment:
247 Students

Functional Capacity:
335 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★	★★★	★★	★★	★★★	SEE ATTACHED	$35.9K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Lack of brick expansion joints has caused minor and moderate cracking in brick veneer in some locations

B Some windows are single pane units

Interior

C n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Drive-Thru- exit door empties into vehicular drive

B Unsecured existing perimeter fencing

C Little to no security at apparent building entry

D Long sight lines in the corridors

E Public access to dumpster area, transformer, and other equipment

F Urinal screens are not present in some locations

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A ADA toilets are not compliant - ambulatory access but no wheelchair-bound access
B Thresholds are not ADA compliant in some locations
C Electric Water Cooler and other objects are protruding into egress width
D Outdoor pavilion and play area are not ADA accessible

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Space heater adjacent to front entrance
B Toilet partitions have signs of damage
C Discoloration of interior and exterior finishes in several locations

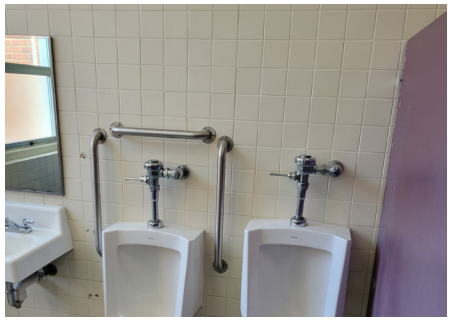
Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Drive-Thru presents a significant security risk

02 Original building entrance entry is no longer used - wayfinding is misleading



03 No urinal screens

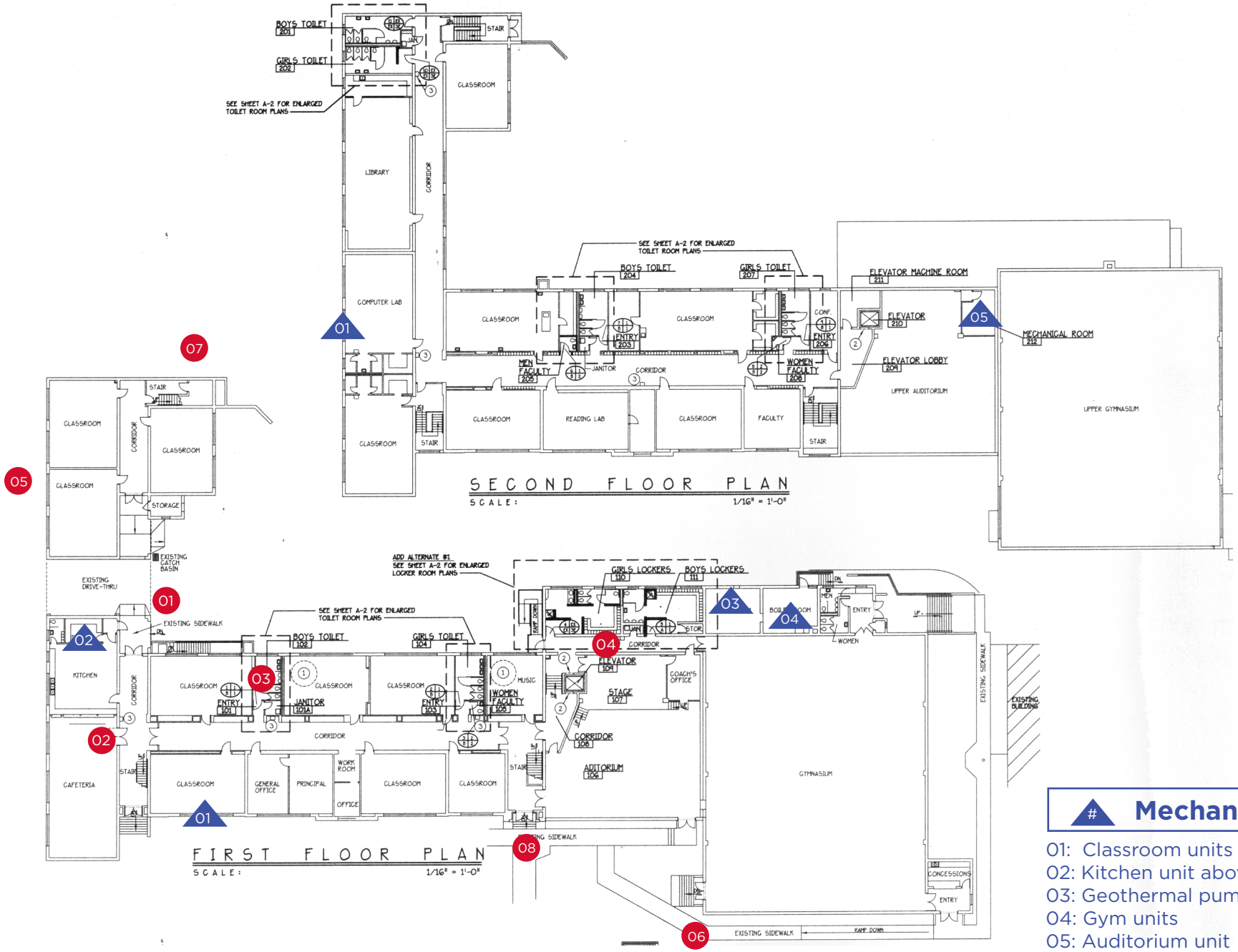
04 Electric Water Cooler and other objects are protruding into egress width

05 Dumpsters have public access

06 Lack of expansion joints has caused minor and moderate cracking

07 Rear gate is unlocked and open

08 Historic entry is discolored



Mechanical Key

01: Classroom units (typical)
02: Kitchen unit above ceiling
03: Geothermal pumps
04: Gym units
05: Auditorium unit

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled primarily with a geothermal water source heat pump system consisting of underground well fields, circulating pumps with loop piping and water source heat pumps. The geothermal system is 1996 vintage.

Most classrooms have (2) console water source heat pump units giving individual classroom zone control. None of the units have humidity control.

Areas such as the Kitchen, Admin, Gym, Cafeteria, Locker Rooms, Library, Corridors, etc. are served by ducted water source heat pump systems.

Outside air for the classrooms and common spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air. Outside air for classroom units is not conditioned prior to being introduced to units.

Kitchen has non-code compliant stainless steel back shelf type kitchen hood with make-up air and fire suppression system (See Photo to Right).

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- No zoning or comfort issues were reported.
- Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- Locker rooms and janitor's closets do not have exhaust.
- The existing equipment is coming to the end of its expected life and unit replacements due to age should be expected.
- The amount of outside air introduced into the classroom is not up to current codes.
- Overall, the system is very well maintained.
- The existing hood is not large enough to cover the equipment that they have. The hood also doesn't have makeup air.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 2" and the piping material is copper. At the water entrance, there is a pressure reducing valve and a reduced pressure backflow preventer. Piping is partially insulated with a mix of fiberglass and tubular elastomeric insulation. Water distribution throughout the school is routed overhead above ceilings and thru the crawl space.

Hot water supply is provided by (2) electric water heaters. One water heater is located in the basement mechanical room and serves the kitchen and main building. The other water heater is in a mechanical room near the gymnasium and serves the gymnasium.

Water heater for Kitchen area and main building is an electric water heater with 36 KW and 120 gallon storage. Hot water recirculation pump is utilized on the main building system to provide continuous hot water supply.

Sanitary sewer is connected to septic tanks and drainfield systems. There are (3) separate tanks and drainfields each serving a separate area of the building. The existing kitchen does NOT have a grease interceptor or grease trap. Sanitary sewer and vent piping is a mix of Schedule 40 PVC and cast iron.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, and electric water coolers. Flush valves on water closets and urinals are manual type. Lavatory faucets in public restrooms are manual type.

Noted deficiencies or operational issues:

- Galvanized water piping still serves the kitchen but is scheduled to be replaced. Once completed, only a small portion of the galvanized piping will remain which serves two stacked toilet areas. The main piping is routed in the crawl space.
- The water heater serving the kitchen and main building is a 2001 model and has reached its service life for replacement. A mixing valve should also be installed on this system to limit the hot water temperature in public use areas.
- The kitchen waste needs to be separated between grease laden waste and sanitary sewer and a grease interceptor installed on the grease laden waste line.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: Building is served at 1200/208-volt, three-phase, four-wire, wye with an overhead power service from a utility company pole-mounted transformer bank. There are currently two (2) 800-ampere services entering weatherheads located on the north end of the building. Electrical distribution equipment located in original building construction areas which have not been renovated is antiquated and needs replacement. Electrical distribution equipment located in addition and renovation areas subsequent to original construction appears to be in satisfactory condition.

Communications Systems: Main intercom system console was recently replaced but much of the school still has original intercom system wiring. While intercom system is currently operational, wiring for the system is in poor condition and needs to be upgraded. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system but fire alarm system is not a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

- Recommended Improvements:
- Replacement of antiquated electrical distribution equipment in original portion of building.
- Replacement of intercom system wiring with new wiring.
- Upgrade of existing fire alarm system to be a voice evacuation type fire alarm system in accordance with current IBC requirements for educational occupancies.

Prepared and approved by Harold E. Damron, PE

Grandview Elementary School

Facility Assessment Observations

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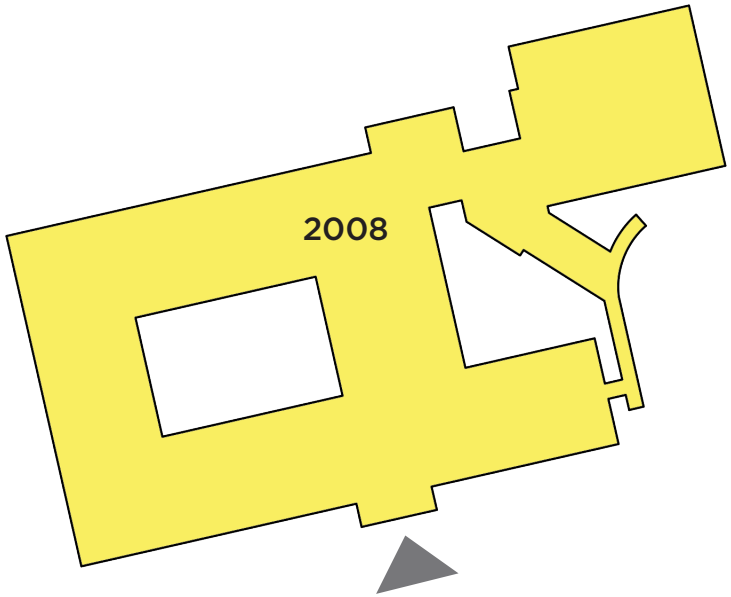
Grandview Elementary School

2891 Highway 11E, Telford, TN 37690



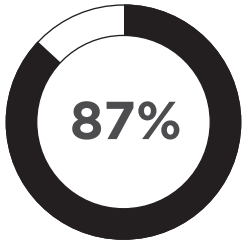
Overview

Constructed in 2008, Grandview Elementary is one of the newer buildings in the system. Grandview Elementary School facility is in excellent condition.

Grades:	**K - 8**
No. Classrooms:	**33**
No. of Stories:	**1**
Total Area:	**98,164 SF**

Current Enrollment:
642 Students

Functional capacity:
739 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★★★	★★★★★	★★★	★★★★★	★★★★	SEE ATTACHED	$99.1K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Skylights have leaked in the past per maintenance (Architect did not observe)

B Sidewalks have minor cracking in multiple locations

Interior

C n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing

B No secure entry vestibule

C Long sight lines in the corridors

D Public access to dumpster area

E Public access to transformer and other equipment

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Playground area is not ADA compliant

B Classroom storage area is not ADA compliant

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Some exterior finishes, including sidewalks, show discoloration and effloresence (most non-cavity landscape walls)

B Exterior receptacle covers are missing in multiple locations

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Efflorescence has developed on several non-cavity masonry walls

02 Minor cracking in the concrete sidewalks

03 Large, open lobby with no secure vestibule

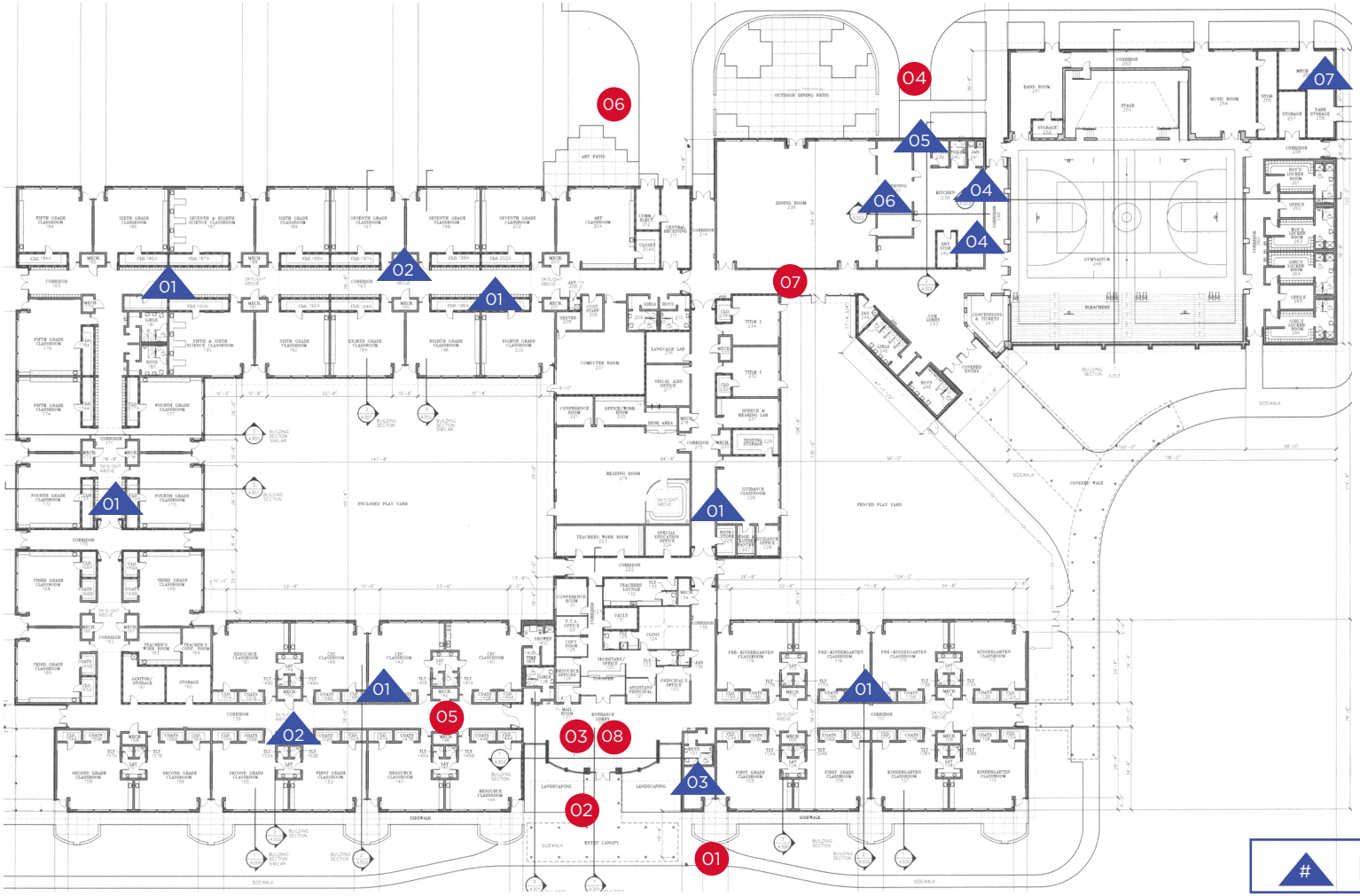
04 Skylights throughout building create open spaces with daylight

05 No dumpster enclosure

06 Exposed transformer

07 Secure play area

08 Security cameras are well-placed throughout the school



Mechanical Key

01: FAU units
02: Classroom unit (typical)
03: Geothermal pumps
04: Gym units
05: Kitchen unit
06: Cafeteria unit
07: Locker room unit

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled with a geothermal water source heat pump system consisting of underground well fields, circulating pumps with loop piping and water source heat pumps. The geothermal system is 2008 vintage.

Most classrooms have (1) water source heat pump unit for (2) classrooms NOT giving individual classroom zone control. None of the units have humidity control.

Areas such as the Kitchen, Admin, Gym, Cafeteria, Locker Rooms, Library, Corridors, etc. are served by ducted water source heat pump systems.

Outside air for the classrooms and common spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air. Outside air for classroom units is conditioned prior to being introduced to units with Water Source Heat Pump Outside Air units.

Kitchen has code compliant stainless steel kitchen hood with make-up air and fire suppression system.

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- 1. Zoning or comfort issues are a problem due to (1) unit serving (2) classrooms in most areas of the building.
- 2. Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- 3. The Fresh air system is not operational and needs repair.
- 4. Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 4" and the piping material is copper. At the water entrance, there is a pressure reducing station and reduced pressure backflow preventer. Piping is insulated with fiberglass insulation. Water distribution throughout the school is routed overhead above ceilings.

Hot water supply is provided by (2) large electric water heaters. One water heater serves the kitchen and gymnasium and the other serves the rest of the building. The main building water heater is 300 gallon, 108 KW.

Water heater for Kitchen area is 162 KW with 500 gallons of storage. Hot water circulating pumps are utilized on both water heater systems to provide continuous hot water supply.

Sanitary sewer is connected to a public main. The existing kitchen is believed to have a 2,500 gallon grease interceptor located outside the kitchen. Sanitary sewer and vent piping is Schedule 40 PVC.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, electric water coolers, and classroom sinks. Flush valves on water closets and urinals are manual type. Lavatory faucets in public restrooms are manual single lever type.

Noted deficiencies or operational issues:

- Since the school was constructed in 2008, there were no noted deficiencies at this time. When the service life of either electric water heater expires, we recommend evaluating the capacity and KW of the unit to replace it. The KW and capacity of each unit could be greatly decreased based on the current load.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: Building is served at 480/277-volt, three-phase, four-wire, wye with an underground power service from a utility company padmounted transformer. Service capacity is 2500 amperes. Electrical distribution equipment in the building appears to be in satisfactory condition with expansion capability.

Communications Systems: Building has a Rauland intercom system in place that appears to be in satisfactory condition. While intercom system is currently operational, replacement parts are not available for this Dukane system. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a voice evaculation type fire alarm system as currently required by IBC for educational occupancies.

No specific electrical/communications system upgrades are recommended at this time.

Prepared and approved by Harold E. Damron, PE

Gray Elementary School

Facility Assessment Observations

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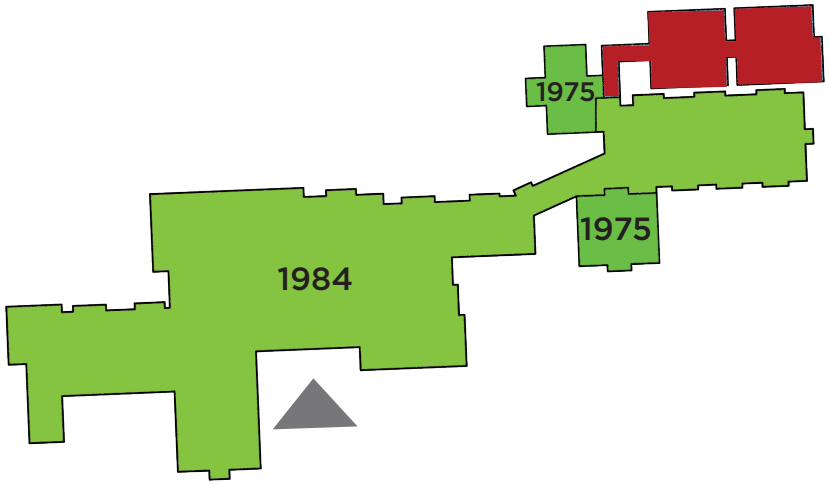
Gray Elementary School

755 Gray Station Road, Gray, TN 37615



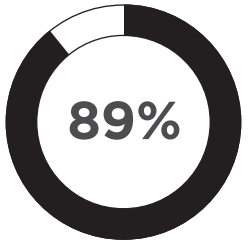
Overview

Gray Elementary School was built as an addition to connect the original Kindergarten and First Grade buildings.

Grades:	**K - 8**
No. Classrooms:	**26**
No. of Stories:	**1**
Total Area:	**87,254.58 SF**

Current Enrollment:
519 Students

Functional Capacity:
582 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★★	★★★★	★★★	★★★	★★	SEE ATTACHED	$71.0K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A n/a

Interior

B n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Perimeter fencing gates open or unlocked at time of visit
B No secure vestibule
C Long sight lines in the corridors
D Public access to dumpster area, transformer, and other equipment

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A ADA toilets are not compliant - ambulatory access but no wheelchair-bound access
B Electric Water Cooler and other objects are protruding into egress width
C Cafeteria egress route is not ADA compliant

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

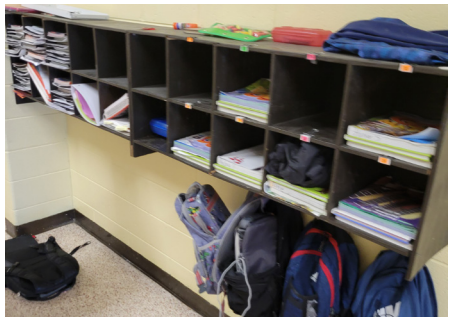
A Copy machines in corridor
B Discoloration of interior and exterior finishes in several locations
C Textbook storage in corridors
D Excessive heat gain from data equipment sitting in main reception
E No teachers' lounge area
F Hallways get cold - requires further investigation into the geothermal system

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Playground under construction



02 Insufficient storage

03 Not ADA compliant

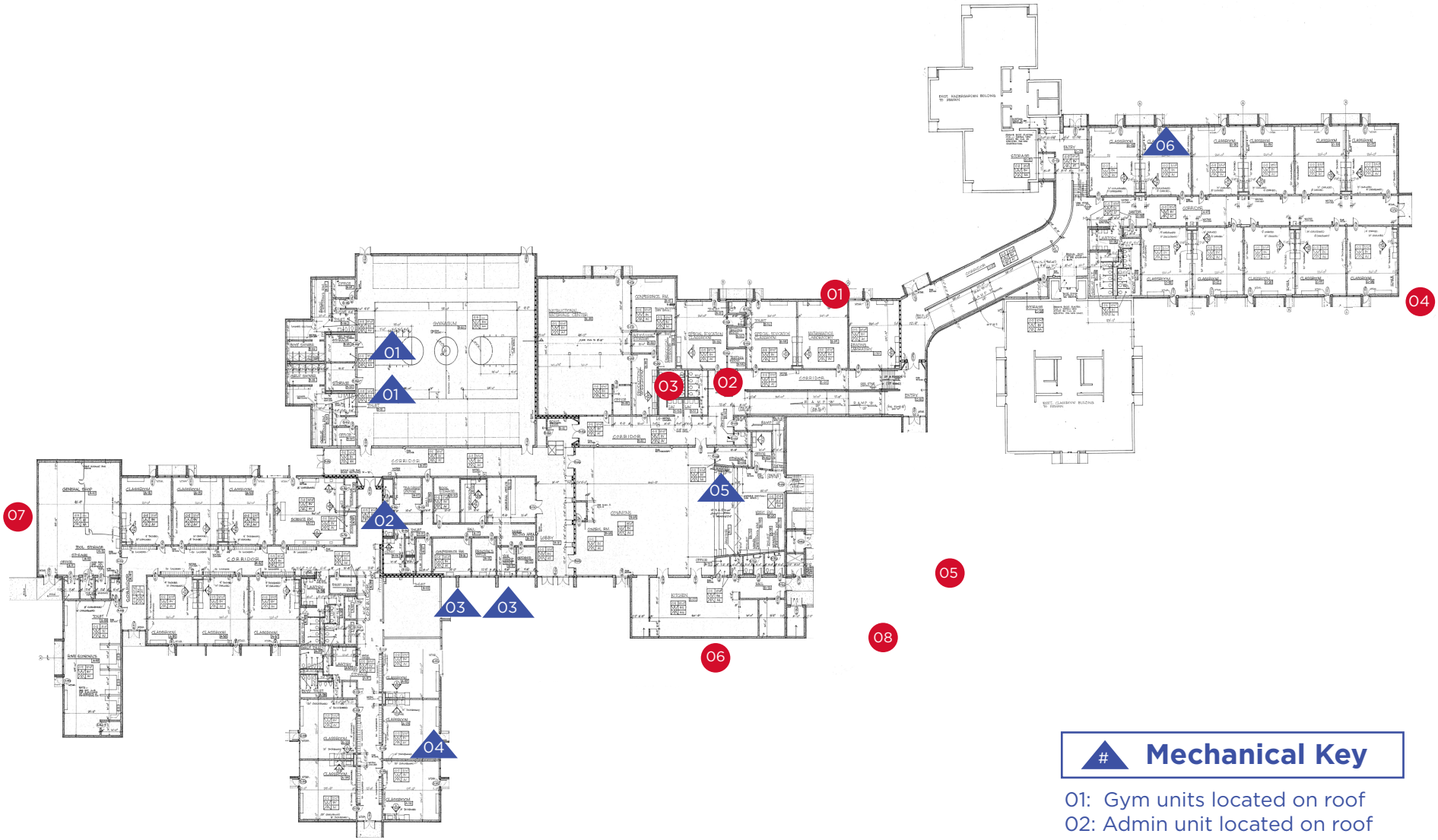
04 Perimeter fencing is unlocked at time of visit

05 Dumpster enclosure unsecure

06 Garden bed

07 Perimeter fencing is locked and barbed wire deters climbing

08 Transformer is exposed to public access



Mechanical Key

01: Gym units located on roof
02: Admin unit located on roof
03: Units for office (typical)
04: Classroom unit (typical)
05: Cafeteria unit located on roof
06: Classroom unit (typical)

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled with a geothermal water source heat pump system consisting of underground well fields, circulating pumps with loop piping and water source heat pumps. The geothermal system is 2002 vintage.

Classrooms have their own unit ventilator water source heat pump unit giving individual classroom zone control. None of the units have humidity control.

Areas such as the Kitchen, Admin, Gym, Cafeteria, Library, Corridors, etc. are served by ducted water source heat pump systems.

Outside air for the classrooms and common spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air. Outside air for classroom units is not conditioned prior to being introduced to units.

Kitchen has code compliant stainless steel compensating type kitchen hood with make-up air and fire suppression system.

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- 1. No zoning or comfort issues were reported.
- 2. Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- 3. Locker rooms do not have air conditioning.
- 4. Humidity can be an issue in the classrooms due to the uncontrollable amounts of unconditioned outside air coming in thru the unit ventilators.
- 5. Several geothermal piping leaks have occurred inside the building in the existing HDPE piping.
- 6. The existing equipment is coming to the end of its expected life and unit replacements due to age should be expected.
- 7. Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 4" and the piping material is copper. At water the entrance, there is a pressure reducing valve and (2) 3" backflow preventers installed in parallel. Piping is insulated with fiberglass insulation. Water distribution throughout the school is routed overhead above ceilings.

Hot water supply is provided by multiple large electric water heaters placed throughout the building.

Water heater for Kitchen area is an electric water heater with 105 KW and 400 gallon storage. Hot water recirculation pumps are utilized to provide continuous hot water supply.

Sanitary sewer is connected to a public main. The existing kitchen has a 1,500 gallon grease interceptor located outside the kitchen. Sanitary sewer and vent piping is cast iron.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, electric water coolers, and classroom sinks. Flush valves on water closets and urinals are manual type. The majority of lavatory faucets in public restrooms are push button metering type but have been replaced in some locations with manual type when they became inoperable.

Noted deficiencies or operational issues:

- This school has been plagued with problems from pin hole leaks in the copper water lines. They have been repaired in numerous locations, but the school needs to have a new interior water distribution system.
- Kitchen waste lines have had numerous stoppages and auguring the line has revealed mud in the line indicating there are broken or rotted away segments of piping. This line needs to be investigated by camera and the line repaired, replaced, or lined with an epoxy lining.
- Galvanized nipples were utilized at the sink rough-ins during construction. This has resulted in numerous angle stops snapping off and breaking during repairs. The galvanized nipples should be replaced with copper.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: Building is served at 480/277-volt, three-phase, four-wire, wye with an underground power service from a utility company padmounted transformer. Service capacity is 2500 amperes. Electrical distribution equipment in the building appears to be in satisfactory condition with expansion capability.

Communications Systems: Building has a Rauland intercom system in place that appears to be in satisfactory condition. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system but fire alarm system is not a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

Recommended Improvements:

- Upgrade of existing fire alarm system to be a voice evacuation type fire alarm system in accordance with current IBC requirements for educational occupancies.

Prepared and approved by Harold E. Damron, PE

Lamar Elementary School

Facility Assessment Observations

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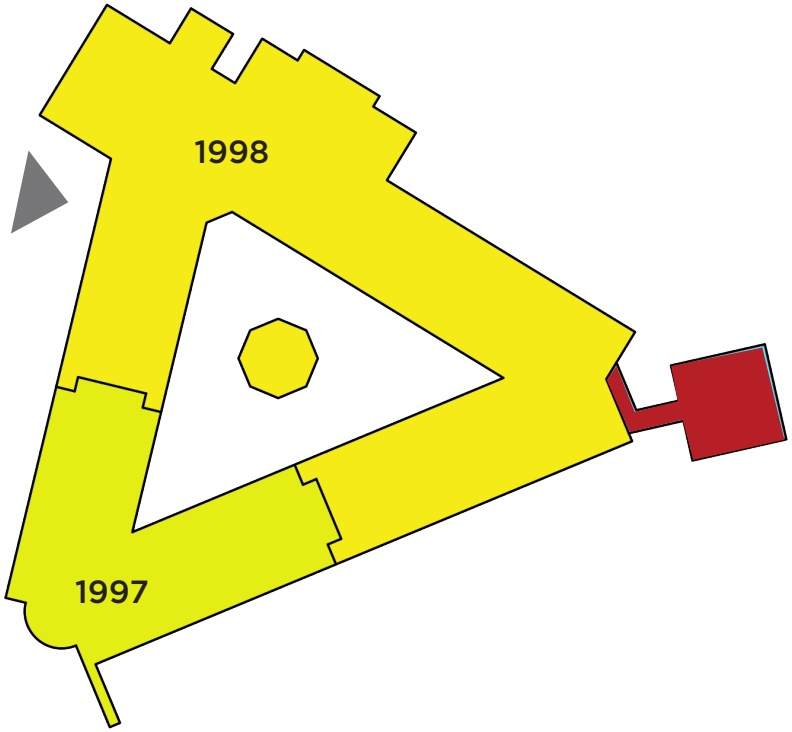
Lamar Elementary School

3261 Highway 81 South, Jonesborough, TN 37659



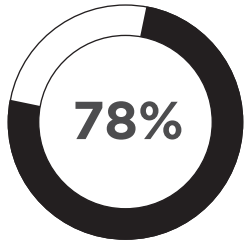
Overview

Lamar Elementary School was built as a phase 1 and phase 2 construction. The first corner of the triangle was built in 1997, while the other two corners were built in 1998. The triangle wraps around a central courtyard with a large covered amphitheater.

Grades:	**K - 8**
No. Classrooms:	**23**
No. of Stories:	**1**
Total Area:	**59,790 SF**

Current Enrollment:
403 Students

Functional Capacity:
515 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★★	★★★	★★	★★★	★★	SEE ATTACHED	$95.4K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Windows have broken seals in multiple locations

B Several grade level masonry walls have numerous cracks in central courtyard

C Sidewalk to south of ramp has cracking

D Standing seam not in correct position at east courtyard corner

E Missing brick on southeast side at one of the classroom egress alcoves - cavity vulnerable to moisture intrusion

Interior

F Substantial crack in corner near concessions (other minor cracks in multiple locations)

G Potential roof leak in media center - ceiling tiles have been replaced before and exhibit new damage

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing

B No secure entry vestibule

C Long sight lines in the corridors

D West retaining wall has no guardrail and is taller than 30 inches

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Amphitheater space is not ADA accessible
B ADA parking not located adjacent to main entry
C Urinal screens are not present (either removed or not installed)

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Some exterior finishes show discoloration and efflorescence (most non-cavity landscape walls)
B Middle school boys' bathroom shows signs of abuse by students (toilet paper dispensers and urinal screens removed from wall; ceiling shows evidence of puncture by writing utensils)
C Paint drippings on finishes and rubber base overrun in multiple locations
D Paint chipped in multiple locations, both interior and exterior
E Ceiling stained in multiple locations
F Eastern corner bathroom lobby has several cracks in floor finish
G Gutter damage and leakage in multiple locations

Visual Documentation

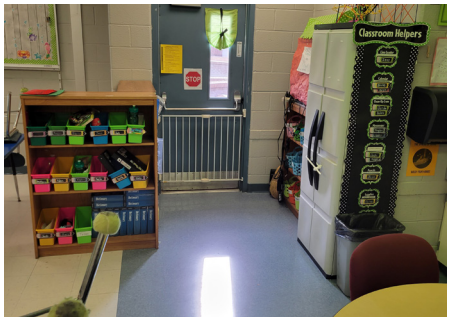
This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Efflorescence has developed on several non-cavity masonry walls

02 Some cracking has occurred in the sidewalk

03 No secure vestibule



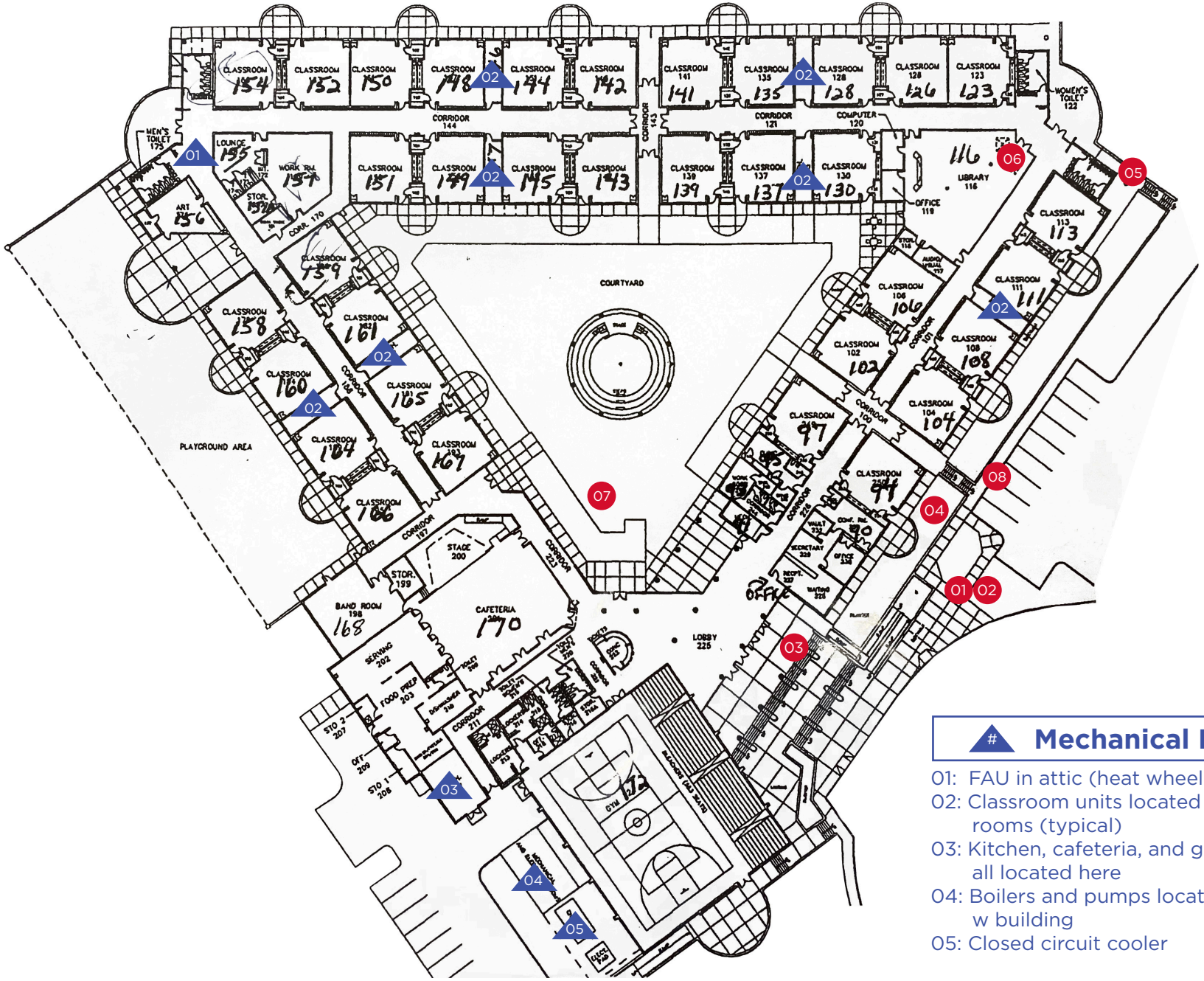
04 Baby gate blocks egress route

05 No urinal screen (possible student removal)

06 Possible roof leak in media center

07 Large cracking in landscape walls

08 ADA egress requires wheelchair-bound students to go all the way to main entry ramp



Mechanical Key

01: FAU in attic (heat wheel only)
02: Classroom units located in mech. rooms (typical)
03: Kitchen, cafeteria, and gym units all located here
04: Boilers and pumps located in this w building
05: Closed circuit cooler

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled with a Boiler/Tower water source heat pump system consisting of Propane fired boilers, closed circuit cooling tower, circulating pumps with loop piping and water source heat pumps. The original system was installed in 1997. The tower was changed out 8 years ago and the boilers were converted from electric to propane 6 years ago.

Classrooms have their own water source heat pump unit giving individual classroom zone control. None of the units have humidity control.

Areas such as the Commons, Kitchen, Cafeteria, Gymnasium, Library, Corridors, etc. are served by ducted water source heat pump systems.

Outside air for the classrooms and common spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air. Outside air for classroom units is conditioned by ERV units with heat wheels prior to being introduced to units.

Kitchen has code compliant stainless steel kitchen hood with make-up air and fire suppression system.

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- No zoning or comfort issues were reported.
- Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- The Fresh air system is not operational and needs repair.
- The existing heat pump units are coming to the end of its expected life and unit replacements due to age should be expected.
- Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: Building is served at 480/277 volt three-phase four-wire, wye with an underground power service from a utility company padmounted transformer. Service capacity is 1600 amperes. Electrical distribution equipment in the building appears to be in satisfactory condition with expansion capability.

Communications Systems: Building has a Dukane intercom system in place. While intercom system is currently operational, replacement parts are not available for this Dukane system. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system but fire alarm system is not a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

Recommended Improvements: A. Replacement of Dukane intercom system with new intercom system.

- B. Upgrade of existing fire alarm system to be a voice evacuation type fire alarm system in accordance with current IBC requirements for educational occupancies.

Prepared and approved by Harold E. Damron, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water service entrance into the building is 3" and the piping material is copper. At water entrance, there is a pressure reducing valve and (2) 3" backflow preventers installed in parallel. Piping at water entrance is not insulated. Water distribution throughout the school is routed overhead above ceilings and is insulated with a mix of fiberglass insulation and tubular elastomeric insulation.

Hot water supply is provided by multiple electric water heaters placed throughout the building. The Kitchen water heaters are (2) 120 gallon, 24 KW units manifolded together. These units have been replaced within the last 5 years. A 30 gallon, 6.0 KW unit serves the original building, and a 120 gallon 12.0 KW unit serves the classroom addition. Hot water recirculators are utilized to provide continuous hot water supply.

This facility is served with LP gas that serves the Hot Water Boilers for the heating system. There are 3 liquid propane tanks located outside the kitchen area each with 1,000 gallon capacity.

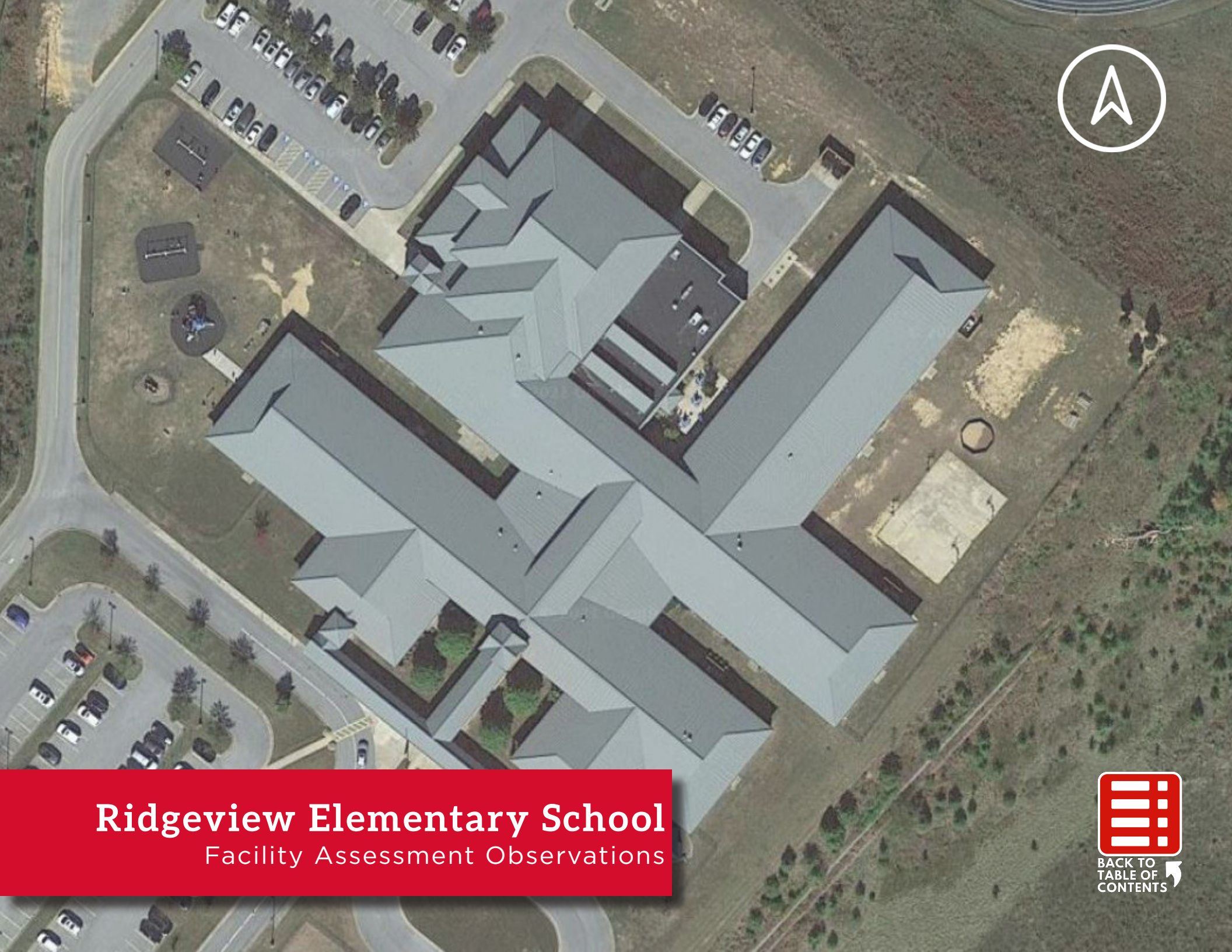
Sanitary sewer is connected to multiple septic tank/drainfield systems. One system serves the original building, and the other system serves a later addition. The existing kitchen has a 1,000 gallon grease interceptor located outside the kitchen. Sanitary sewer and vent piping is Schedule 40 PVC.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, electric water coolers, and classroom sinks with bubblers. Flush valves on water closets are manual type. Flush valves on urinals are manual type. Lavatory faucets in public restrooms are push button metering type, but some have been replaced with two handle manual type faucets when metering faucets needed repair or replacement.

Noted deficiencies or operational issues:

- The 30 gallon, 6.0 KW water heater is original and in need of replacement. The 120 gallon, 12.0 KW water heater in the later classroom addition is also in need of replacement.
- The kitchen has an issue with water pressure since it is located on the far end of thebuilding from the water entrance. A small pressure booster pump may need to be installed to increase the water pressure.
- The drainfield system for the newer portion of the building has been reported to have drain lines that coat up and clog. An evaluation of the field should be performed, and possibly new field beds installed.
- The existing grease interceptor is noted to be 10' deep in the ground and does not have baffles. Confined space law prohibits entrance into this tank to perform maintenance. A new grease interceptor should be installed and in a more accessible location and shallower depth.
- Floor drain in the water entrance room discharges into gravel. This should be hard connected into the sanitary sewer system.
- A mixing valve should be installed on all hot water systems serving public areas to minimize the possibility of scalding students and staff members.

Prepared and approved by Jeffery R. Whillock, PE



Ridgeview Elementary School

Facility Assessment Observations

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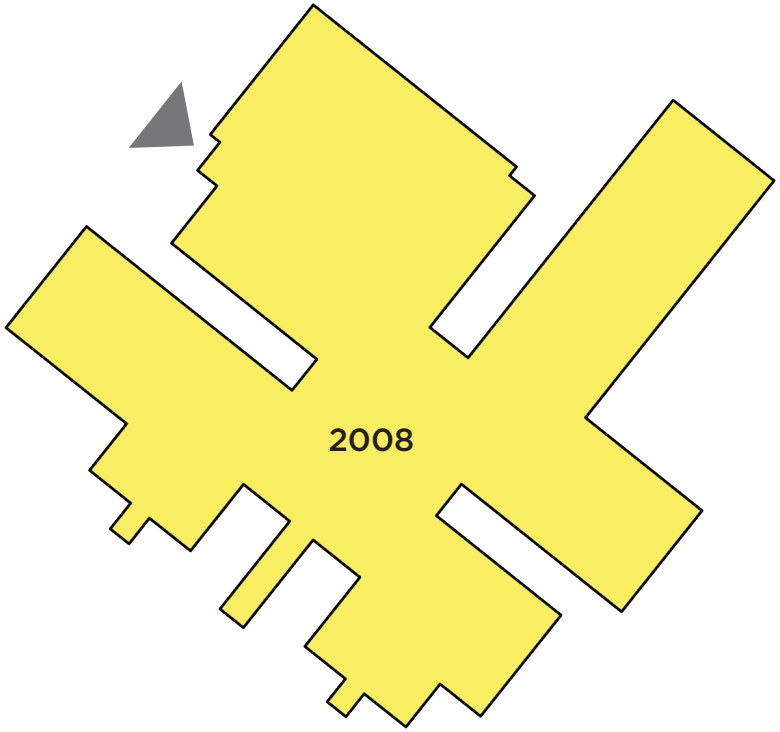
Ridgeview Elementary School

252 Sam Jenkins Road, Gray, TN 37615



Overview

Ridgeview is one of the county's newer schools, built in 2008. While the school is already nearing capacity, the problem will be exacerbated by completion of a large subdivision, projected to add about 160 more students. The facility is in excellent condition.

Grades:	**K - 8**
No. Classrooms:	**34**
No. of Stories:	**1**
Total Area:	**98,300 SF**

Current Enrollment:
756 Students

Functional Capacity:
762 Students

AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★★★	★★★★★	★★★★	★★★★★	★★★★	SEE ATTACHED	$101.4K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A N/A

Interior

B Minor cracking in some locations

C Visible evidence of clerestory leaks - Per maintenance staff leak has been patched

D Floor delamination was observed near cafeteria. Maintenance staff reports it is a recurring issue.

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Perimeter fencing - gate open and unlocked at time of visit

B No secure vestibule

C 5th-8th corridor has one shared bathroom

D Long sight lines in the corridors

E Public access to dumpster area, transformer, and other equipment

F Trash equipment in outdoor eating area

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Electric Water Cooler and other objects protruding into egress width
B Playground is not ADA accessible; No ADA-compliant play equipment
C Swing set with ADA accessible ramp does not have ADA accessible swing

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Birds roosting in exterior canopies and exterior locations
B Past clerestory leak was repaired; paint peeling
C Light switch placement is inconvenient in some locations (ex: Computer Lab from Library)
D Visible evidence of student damage to expansion joints
E Large insect nest in exterior metal finish
F Discoloration of interior and exterior finishes in several locations

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Light switch placement is inconvenient in some locations

02 Playground is not ADA accessible; No ADA-compliant play equipment

03 Large, well-lit media center with appealing wall art

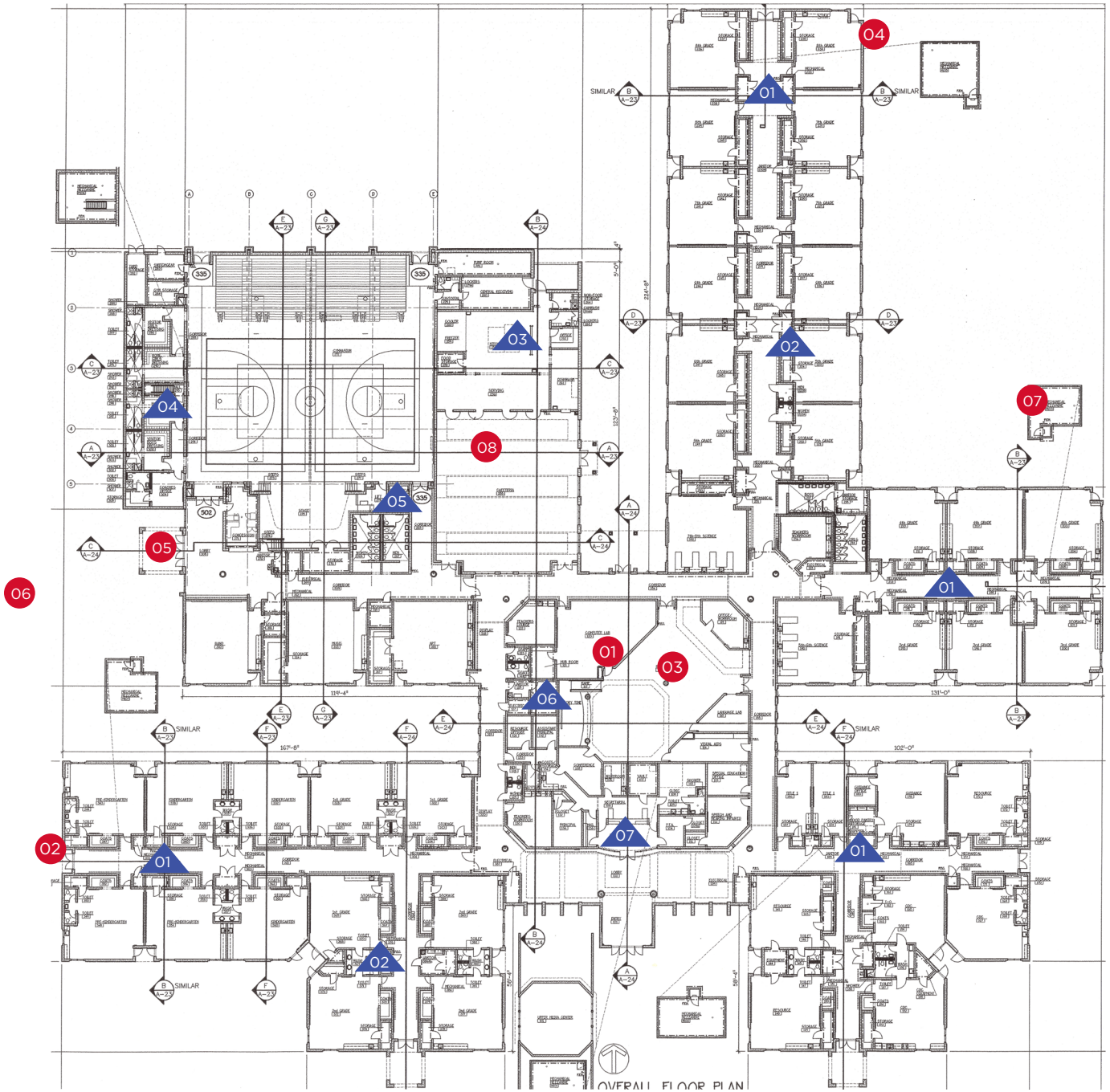
04 HVAC screen

05 Birds roosting in exterior canopies and exterior locations

06 Perimeter fencing with open and unlocked gate at time of visit

07 Exterior basketball area in good condition

08 Evidence of past leaks from clerestory



Mechanical Key

01: FAU unit above ceiling
02:Classroom unit (typical)
03:Kitchen unit located on roof
04:Gym units with locker room units above
05:Cafeteria unit
06:Art room unit
07:Media center, admin, and lobby units located above

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled primarily with a geothermal water source heat pump system consisting of underground well fields, circulating pumps with loop piping and water source heat pumps. The Kitchen and Dishroom are heated and cooled by Rooftop Air to Air Heat pump units. The geothermal system is 2006 vintage.

Classrooms have their own water source heat pump unit giving individual classroom zone control. The Art, Band and Music classrooms have humidity control utilizing electric duct heaters and humidistats.

Areas such as the Gym, Admin, Cafeteria, Library, Corridors, etc. are served by ducted water source heat pump systems.

Outside air for the classrooms is ducted into each classroom and distributed thru ceiling diffusers. Outside air for classrooms is conditioned by dedicated Split System type FAU units with heat wheels prior to being introduced to the space. FAU units are air cooled DX type units. Art, Music and Band classrooms do not have conditioned outside air. Outside for other areas of the building is introduced thru each unit and is not conditioned.

Kitchen has code compliant stainless steel kitchen hood with make-up air and fire suppression system.

The building has a Johnson Controls control system.

Noted deficiencies or operational issues:

- No zoning or comfort issues were reported.
- The Fresh air system is not operational and needs repair.
- The existing geothermal field currently has (1) set of wells valved off due to a leak below grade.
- Several geothermal leaks have occurred inside the building in the existing HDPE piping.
- Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 4" and the piping material is copper. At the water entrance, there is a pressure reducing station, 3 valve bypass, and (2) 2-1/2" reduced pressure backflow preventers. Piping is insulated with fiberglass insulation. Water distribution throughout the school is routed overhead above ceilings.

Hot water supply for the building is provided by multiple electric water heaters placed throughout the building. Water heater for Kitchen area is an electric water heater with 30 KW and 250 gallon storage. Hot water recirculating pumps are utilized on the water heater systems to provide continuous hot water supply. Mixing valves were utilized to control the hot water temperature serving public use lavatories and sinks.

Sanitary sewer is connected to a public main. The existing kitchen has (2) 1,000 gallon grease interceptors located outside the kitchen. Sanitary sewer and vent piping is schedule 40 PVC.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, counter mounted lavatories, electric water coolers, and classroom sinks. Flush valves on water closets and urinals are manual type. Lavatory faucets in public restrooms are manual type.

Noted deficiencies or operational issues:

- This is a newer school constructed in 2006 and there are no apparent issues. Some water heaters have been replaced over time. There are (3) that remain to be replaced but all are currently operational.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

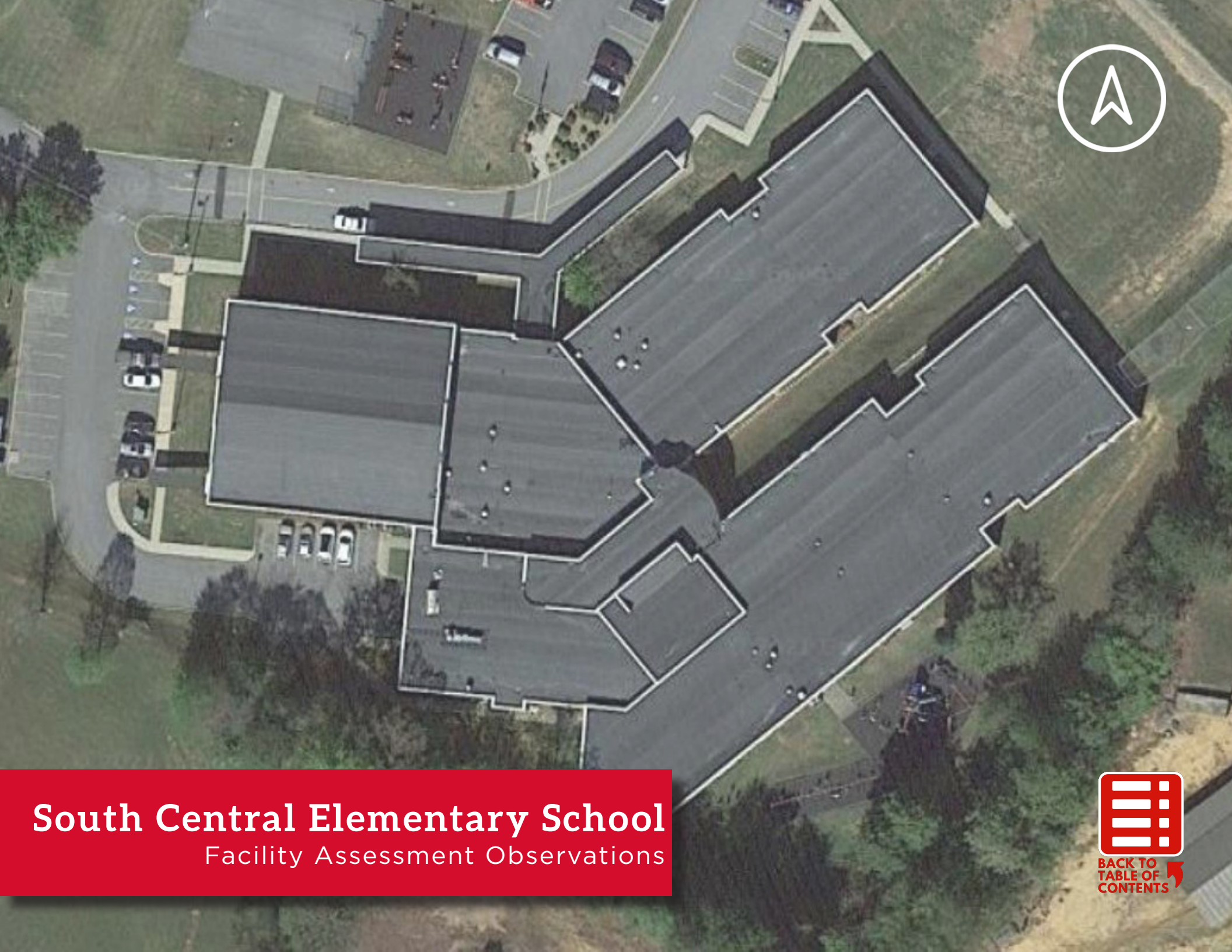
Power Distribution System: Building is served at 480/277-volt, three-phase, four-wire, wye with an underground power service from a utility company padmounted transformer. Service capacity is 2000 amperes. Electrical distribution equipment in the building appears to be in satisfactory condition with expansion capability.

Communications Systems: Building has a Rauland intercom system in place that appears to be in satisfactory condition. While intercom system is currently operational, replacement parts are not available for this Dukane system. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

No specific electrical/communications system upgrades are recommended at this time.

Prepared and approved by Harold E. Damron, PE



South Central Elementary School

Facility Assessment Observations

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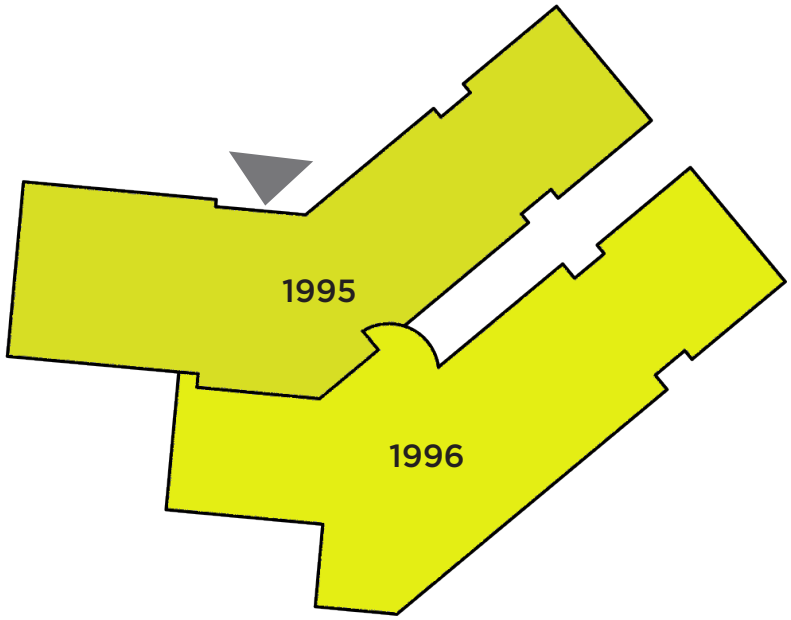
South Central Elementary School

2955 Highway 107, Chuckey, TN 37641



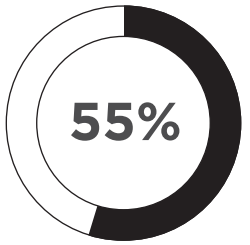
Overview

South Central Elementary was built as a phase 1 and phase 2 construction. The lower floor was built in 1995, while the upper floor was built in 1996, where it was terraced into the hill side. The roof was recently replaced four to five years ago.

Grades:	**K - 8**
No. Classrooms:	**16**
No. of Stories:	**1**
Total Area:	**57,342 SF**

Current Enrollment:
209 Students

Functional Capacity:
382 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★★	★★★	★★	★★★	★★★	SEE ATTACHED	$44.2K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Large crack in synthetic stucco veneer (EIFS) near kitchen service entry (other mild damage in multiple locations was observed as well)

B Sandbags outside of cafeteria alert to flooding issue (Architect did not directly observe)

C Brick expansion joints deteriorated in multiple locations

D Brick weep holes clogged in multiple locations

Interior

E n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing

B No secure entry vestibule

C Public access to dumpster area

D Public access to transformer and other equipment

E Gymnasium floods per maintenance (Architect did not directly observe)

F Unsecured playground area fencing at time of visit

G Rubbish around building at time of visit

H No dedicated server closet/HVAC

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Playground and border to playground are not ADA compliant
B Only ADA parking is adjacent to gymnasium
C No ADA parking in designated visitors' area or staff parking area
D No ADA curb cuts from staff parking area

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Some exterior finishes show discoloration and efflorescence
B Drop-off area shows signs of drainage issues
C Stains present in ceiling tile in multiple locations
D Exterior receptacle covers are missing in multiple locations

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 EIFS exhibits mild staining

02 Some exterior receptacle covers are missing

03 No dumpster enclosure

04 Rubbish around building at time of visit

05 Sandbags at cafeteria egress show drainage issue and fire evacuation hazard

06 Classroom egress landing

07 Gravel/ paver paths

08 ADA parking is not near main entry. Some curb cuts missing from parking lot

Mechanical Key

01: Classroom unit (typical)
02: FAU
03: Pumps and units
04: Outdoor units for the gym
05:Ceiling hung gym units

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled primarily with a geothermal water source heat pump system consisting of underground well fields, circulating pumps with loop piping and water source heat pumps. The Administration area and Gym are heated and cooled by Split System Heat pump units. The geothermal system is 1996 vintage, and the Gym AC was installed in 2003.

Classrooms have their own water source heat pump unit giving individual classroom zone control. None of the units have humidity control.

Areas such as the Commons, Kitchen, Cafeteria, Library, Corridors, etc. are served by ducted water source heat pump systems.

Outside air for the classrooms and common spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air. Outside air for classroom units is conditioned by ERV units with heat wheels prior to being introduced to units.

Kitchen has code compliant stainless steel kitchen hood with make-up air and fire suppression system.

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- No zoning or comfort issues were reported.
- Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- The two separate geothermal loops are currently tied together with hoses. Consideration should be given to re-piping the two fields together as one system with one set of new pumps.
- The existing equipment is coming to the end of its expected life and unit replacements due to age should be expected.
- Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

2. Power Distribution System: Building is served at 480/277 volt three-phase four-wire, wye with an underground power service from a utility company padmounted transformer. Service capacity is 1600 amperes. Electrical distribution equipment in the building appears to be in satisfactory condition with expansion capability.

3. Communications Systems: Building has a Dukane intercom system in place. While intercom system is currently operational, replacement parts are not available for this Dukane system. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

4. Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system but fire alarm system is not a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

5. Recommended Improvements: A. Replacement of Dukane intercom system with new intercom system.

B. Upgrade of existing fire alarm system to be a voice evacuation type fire alarm system in accordance with current IBC requirements for educational occupancies.

Prepared and approved by Harold E. Damron, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 3" and the piping material is copper. At the water entrance, there is a pressure reducing station, 3 valve bypass, and reduced pressure backflow preventer. Piping is insulated with fiberglass insulation. Water distribution throughout the school is routed overhead above ceilings.

Hot water supply is provided by multiple electric water heaters placed throughout the building. Water heater. The Kitchen is provided with (2) 100 gallon, 24 KW water heaters manifolded together. Hot water recirculation is utilized on the large hot water system that also provides hot water to the kitchen to provide a continuous hot water supply. Water heaters have been replaced with new over time as their service life expired.

There is no natural gas or propane at this site.

Sanitary sewer is connected to multiple septic tanks and drainfield systems. One tank/field is utilized for the Upper Level / Kitchen area and the other tank/field is utilized for Lower Level. The existing kitchen has a 1,000 gallon grease interceptor located outside the kitchen. Sanitary sewer and vent piping is Schedule 40 PVC.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, electric water coolers, and classroom sinks with bubblers. Flush valves on water closets are manual type. Flush valves on urinals are manual type. Lavatory faucets in public restrooms are two lever manual type that had replaced single lever faucets.

Noted deficiencies or operational issues:

- The septic tank/drainfield system connected to the Kitchen and Upper Level has had problems in the past. The system is believed to be undersized. This system needs to be re-evaluated for tank size and drainfield area requirements.
- Condensate drain lines from mechanical equipment have been directly connected into the sanitary sewer system. These lines have backed up several times and overflowed into the HVAC unit closets. Condensate lines need to be disconnected from the sanitary sewer and routed into a dry well or catch basin on site.
- It has been discovered that the floor drains in the geothermal pump rooms do not connect to an exterior drainage system. These lines just go out underground and stop. They were never picked up and connected. These lines need to be located and connected into the sanitary sewer system.
- Disposer in kitchen discharges waste into the septic tank / drainfield system. Disposer should be removed, or a solids interceptor placed in-line between the disposer and the septic tank. It is possible that this is adding to the drainfield issues on this system.
- A mixing valve should be installed on all hot water systems serving public areas to minimize the possibility of scalding students and staff members.

Prepared and approved by Jeffery R. Whillock, PE

Sulphur Springs Elementary School

Facility Assessment Observations

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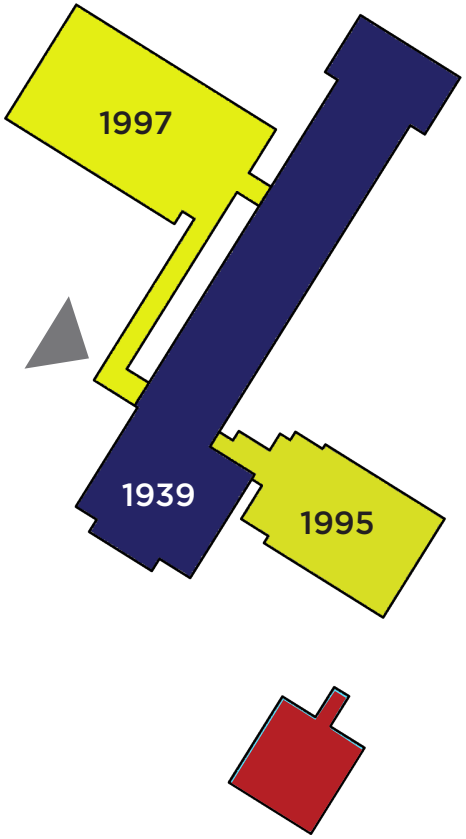
Sulphur Springs Elementary School

1518 Gray Station - Sulphur Springs Road, Jonesborough, TN 37659



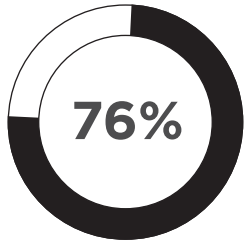
Overview

The original portion of Sulphur Springs Elementary was built in 1939. The school received its first addition in 1995 and its second addition in 1997.

Grades:	**K - 8**
No. Classrooms:	**19**
No. of Stories:	**1**
Total Area:	**71,060 SF**

Current Enrollment:
344 Students

Functional Capacty:
454 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★	★★	★★	★★★	★★	SEE ATTCHED	$62.7K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Possible roof leak in auditorium
B Tree growing behind HVAC equipment adjacent to gymnasium - roots can cause damage
C Improper drainage of storm water in some locations
D Some windows single pane with degraded seals
E Major cracking in brick on gymnasium likely caused by differential settlement

Interior

F Substantial cracking in some block walls likely caused by differential settlement

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Evidence of possible aesbestos containing material (ACM) in classroom - would require further investigation by testing agency
B Lack of perimeter fencing
C No secure vestibule
D Fire extinguisher on bracket is mounted at a non-compliant height
E Public access to dumpster area and exterior mechanical equipment
F Unsecured stairwell to coal room - insufficient guardrail height - no handrails are present - steps present a slip hazard

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Playground and playground access are not ADA compliant
B Electric Water Cooler and other objects protrude into egress width
C Urinal screens not present (visible evidence of removal)
D Pavilion adjacent to cemetery not ADA accessible
E ADA slope change at base of ramp is not code compliant
F Not all egresses are ADA compliant

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Some lockers are damaged and do not close properly
B Finishes, equipment, and partitions are damaged or missing in bathrooms
C Discoloration of interior and exterior finishes in several locations
D Efflorescence is visible in brick
E Mild damage to interior finishes including damaged vinyl tile, stair nosing, and missing brick
F Mismatched paint colors
G Some significant stair step cracking observed on interior block/ exterior brick of 1997 gymnasium addition- may require additional structural engineering

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Playground and playground access not ADA compliant.

02 Urinal screens are not present (visible evidence of removal).

03 Evidence of possible hazardous material in classroom - would require further investigation by appropriate testing agency

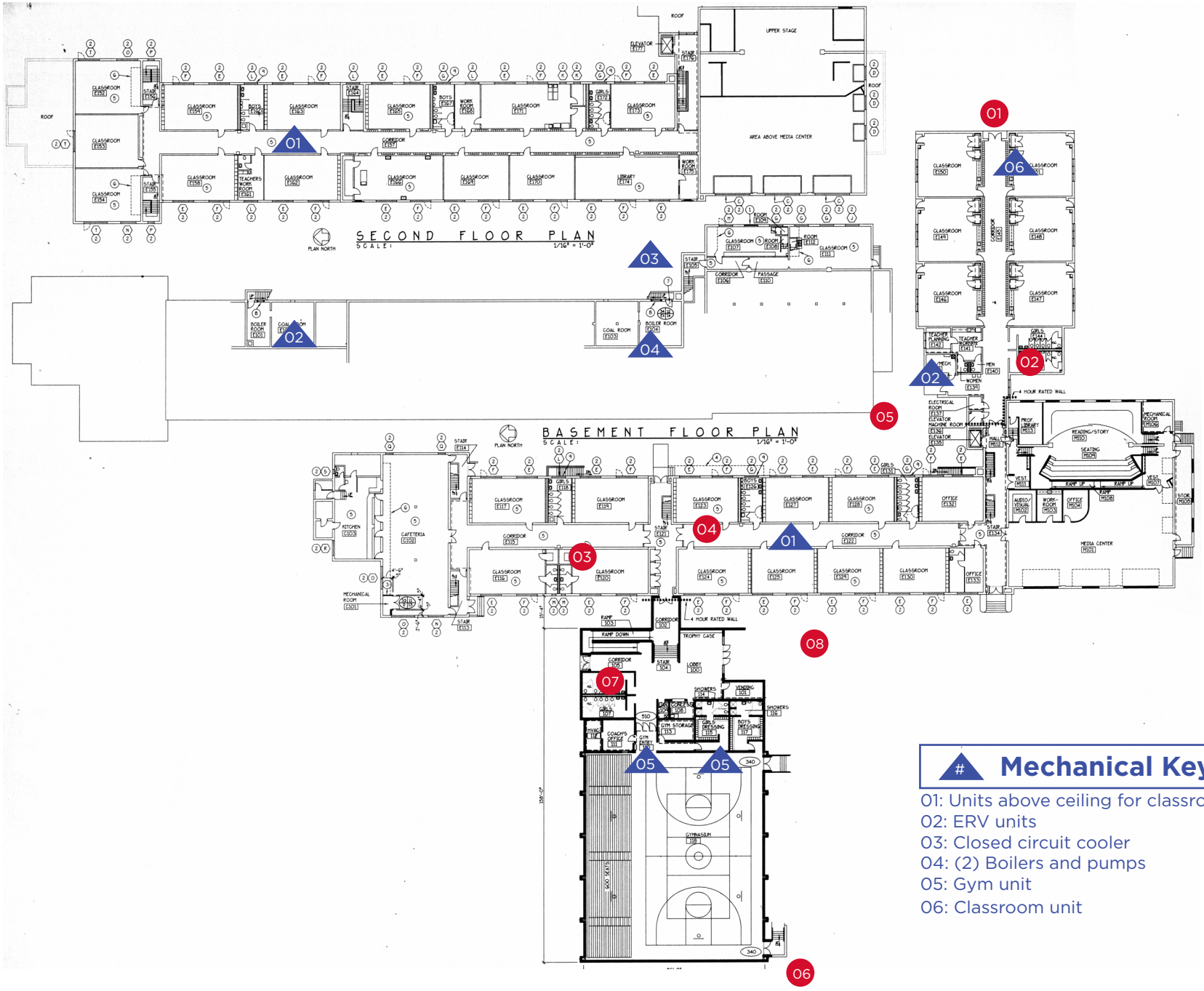
04 Fire extinguisher on bracket is mounted at a non-compliant height.

05 Tree growing behind the HVAC equipment

06 Major settlement crack on gymnasium addition

07 Major settlement cracking inside gymnasium addition

08 Efflorescence on canopy columns



Mechanical Key

01: Units above ceiling for classrooms
02: ERV units
03: Closed circuit cooler
04: (2) Boilers and pumps
05: Gym unit
06: Classroom unit

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled primarily with (2) water source heat pump loops. The newer wing has a geothermal system consisting of an underground well field and pump for each individual unit. The geothermal system is 1995 vintage. The remaining building is served from a conventional water source heat pump system with (2) boilers, (1) cooling tower, circulating pumps with loop piping and heat pumps. The conventional water source system is 1996 vintage.

The Admin Area, Gym, Library, Auditorium and Gym Lobby are served from ducted Split System Heat Pumps. The Kitchen is served from Ductless Split units.

Classrooms have water source heat pump units giving individual classroom zone control. None of the units have humidity control.

Areas such as the Kitchen, Admin, Gym, Cafeteria, Locker Rooms, Library, Corridors, etc. are served by ducted water source heat pump systems.

Outside air for the classrooms and common spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air. Outside air for classroom units is not conditioned prior to being introduced to units.

Kitchen has non-code compliant kitchen hood (See photo to right).

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- 1. No zoning or comfort issues were reported.
- 2. Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- 3. The Fresh air system is not operational and needs repair.
- 4. The existing equipment is coming to the end of its expected life and unit replacements due to age should be expected.
- 5. Existing Kitchen hood exhaust system is not code compliant. The construction of the hood and the size of the hood isn't large enough to serve the kitchen equipment.
- 6. Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 4" This facility is served from a public water main. The water entrance into the building is a 3" and the piping material is copper. At the water entrance, there is a pressure reducing station, 3 valve bypass, and reduced pressure backflow preventer. Piping is insulated with fiberglass insulation. Water distribution throughout the school is routed thru the crawl space, rising up into the walls to the fixtures. Water piping in kitchen is routed exposed overhead.

Hot water supply is provided by multiple electric water heaters placed throughout the building. Water heater for Kitchen area is 30 KW and 120 gallon storage. It was replaced in 2018. Hot water circulating pumps are utilized on the water heating systems where piping is routed a long distance from its source to provide continuous hot water supply.

This facility is served with LP gas. LP gas is supplied to boiler, roof top units, and gas unit heaters. There are (2) liquid propane tanks located at the rear of the building, each with 1,000 gallon capacity.

Sanitary sewer is connected to septic tanks and drainfield systems. There are (3) separate tanks and drainfields each serving a separate area of the building. The existing kitchen has a 1,000 gallon grease interceptor located outside the kitchen. Sanitary sewer and vent piping originally was cast iron, but Schedule 40 PVC has been utilized where repairs or renovations have occurred.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, electric water coolers, and classroom sinks. Flush valves on water closets and urinals are manual type. Lavatory faucets in public restrooms are push button metering type but have been replaced in some locations with manual faucets when push button metering faucet became inoperable.

Noted deficiencies or operational issues:

- Maintenance personnel noted no current plumbing issues at this school. As faucets, water
- heaters, etc. needed replacing due to age, they have been replaced by maintenance
- personnel.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: Building is served at 120/208-volt, three-phase, four-wire, wye with an underground power service from a utility company padmounted transformer. Service capacity is 2500 amperes. Electrical distribution equipment located in original building construction areas which have not been renovated is antiquated and needs replacement. Electrical distribution equipment located in addition and renovation areas subsequent to original construction appears to be in satisfactory condition.

Communications Systems: Building has a Rauland intercom system in place that appears to be in satisfactory condition. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system but fire alarm system is not a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

Recommended Improvements:

- Replacement of antiquated electrical distribution equipment in original portion of building.
- Upgrade of existing fire alarm system to be a voice evacuation type fire alarm system in accordance with current IBC requirements for educational occupancies.

Prepared and approved by Harold E. Damron, PE

West View Elementary School

Facility Assessment Observations

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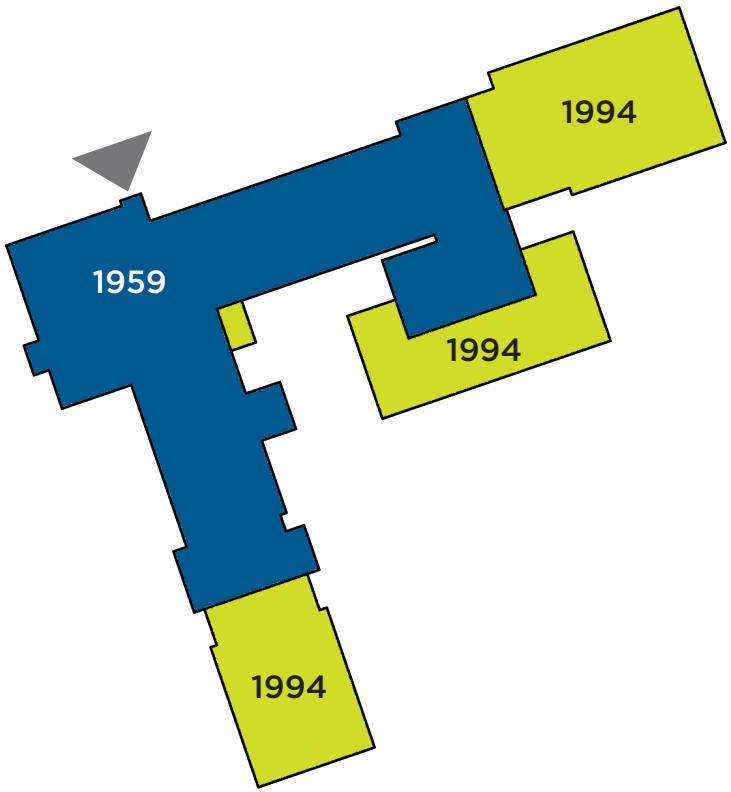
West View Elementary School

2847 Old State Route 34, Limestone, TN 37681



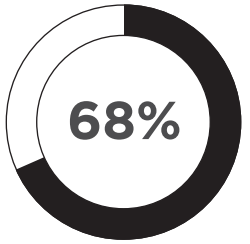
Overview

West View Elementary School was originally built in 1959. It remained unchanged until 1994, when several additions were made.

Grades:	**K - 8**
No. Classrooms:	**20**
No. of Stories:	**1**
Total Area:	**67,976 SF**

Current Enrollment:
327 Students

Functional Capacity:
478 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★	★★	★★	★★★	★★★	SEE ATTACHED	$54.2K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Exterior slab at main entry has several cracks

Interior

B Per maintenance staff, bar joists in crawl space are in varying levels of decay. (Architect did not directly observe). LGA has recommended analysis of existing web steeljoists by structural engineer.

C Concrete slab floor is cracked in multiple locations

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing
B No secure vestibule
C Long sight lines in the corridors
D Egress doors have to be pulled shut - potential issue with closer causing security risk
E Public access to dumpster area
F Public access to transformer and other equipment
G Damage to West fence around play area

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Not all ADA stalls wheelchair accessible
B Bathroom near entry lacks urinal privacy screens
C Cubby alcoves not ADA compliant
D Playground at the bottom of a slope with no access - not ADA compliant
E Western egress not ADA compliant

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Staining on cafeteria ceiling
B Some exterior finishes show discoloration and efflorescence
C Gutter adjacent to western most exit damaged
D Masonry corner guard at kitchen service entrance impacted - unknown if damaged underneath

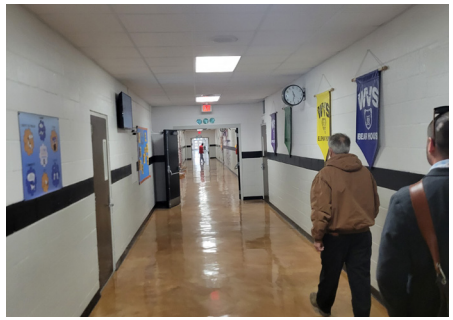
Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Cubby area not ADA compliant

02 No urinal screens



03 Long sight lines with few cameras - potential security risk

04 Egress door closures need to be adjusted so they close on their own

05 Open lobby provides access to entire school

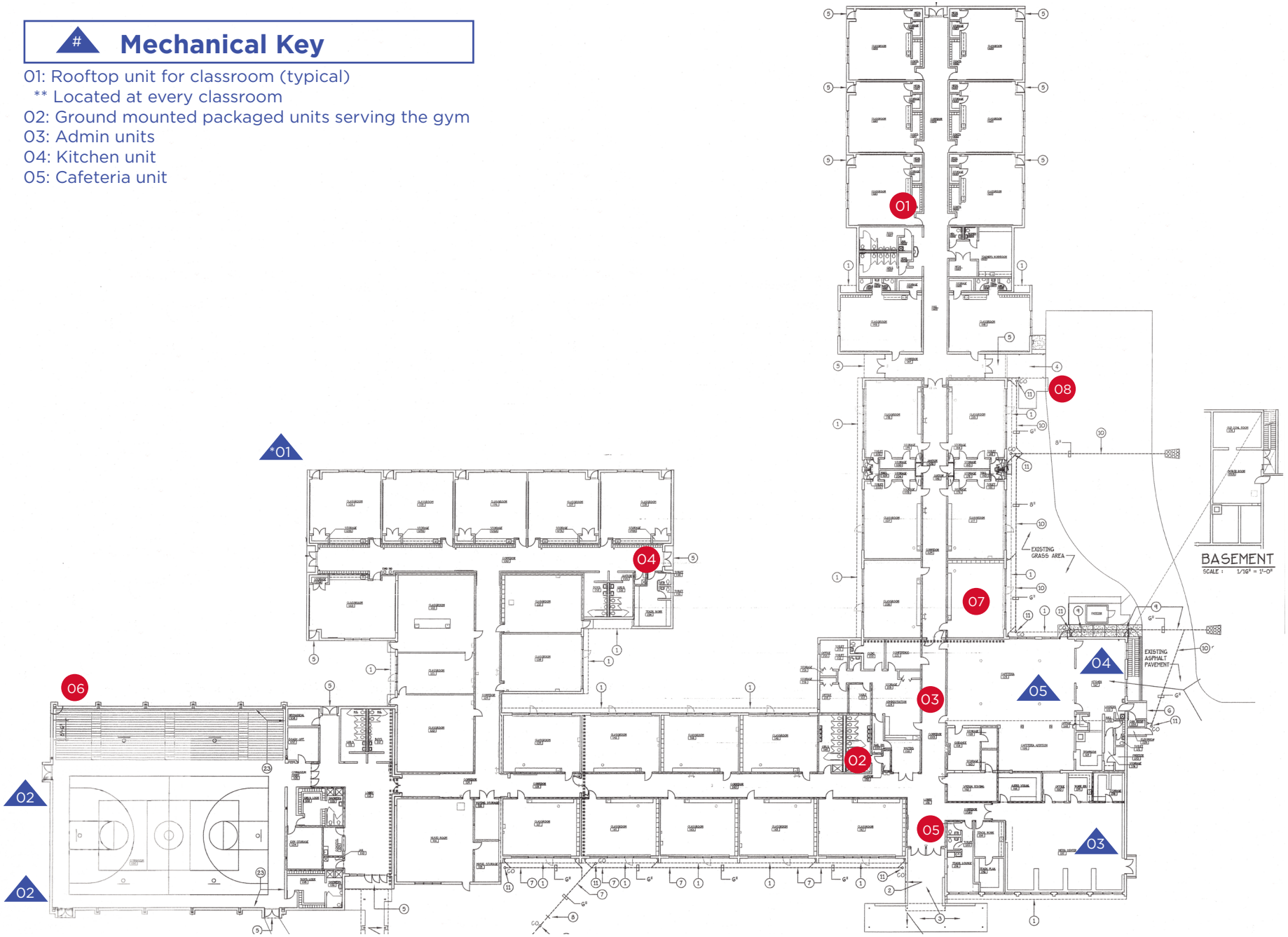
06 Some discoloration on brick

07 Roof shows signs of ponding

08 Some egress is not ADA compliant

Mechanical Key

01: Rooftop unit for classroom (typical)
** Located at every classroom
02: Ground mounted packaged units serving the gym
03: Admin units
04: Kitchen unit
05: Cafeteria unit



Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled by Packaged Rooftop Heat Pumps. All the units were replaced less than five years ago.

Classrooms have their own rooftop heat pump unit giving individual classroom zone control. None of the units have humidity control.

Areas such as the Commons, Kitchen, Cafeteria, Library, etc. are served by rooftop heat pump systems.

Outside air for the classrooms and common spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air.

Kitchen has code compliant stainless steel kitchen hood with make-up air and fire suppression system.

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- No zoning or comfort issues were reported.
- Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: Building is served at 480/277 volt three-phase four-wire, wye with an underground power service from a utility company padmounted transformer. Service capacity is 2000 amperes. Electrical distribution equipment located in original building areas which haven't been renovated is antiquated and needs replacement. Electrical distribution equipment located in addition and renovation areas subsequent to original construction appears to be in satisfactory condition.

Communications Systems: Building has a Dukane intercom system in place. While intercom system is currently operational, replacement parts are not available for this Dukane system. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system but fire alarm system is not a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

Recommended Improvements:

- Replacement of antiquated electrical distribution equipment in original portion of building.
- Replacement of Dukane intercom system with new intercom system.
- Upgrade of existing fire alarm system to be a voice evacuation type fire alarm system in accordance with current IBC requirements for educational occupancies.

Prepared and approved by Harold E. Damron, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 3" and the piping material is copper. The water entrance is located in a basement mechanical room below the kitchen. At the water service entrance, there is a pressure reducing valve and a reduced pressure backflow preventer. Outlet Piping is insulated with fiberglass insulation. Water distribution throughout the school is routed overhead above ceilings after leaving the basement mechanical room.

Hot water supply is provided by multiple electric water heaters placed throughout the building. Water heaters for Kitchen area and the majority of the school are located in the basement mechanical room. There are (3) 120 gallon water heaters, (2) with 36 KW and (1) with 4.5 KW manifolded together. An additional 65 gallon 9.0 KW water heater is utilized to serve a later classroom addition. Hot water recirculators are utilized on both water heater systems to provide continuous hot water supply.

There is no natural gas or liquid propane gas at this site.

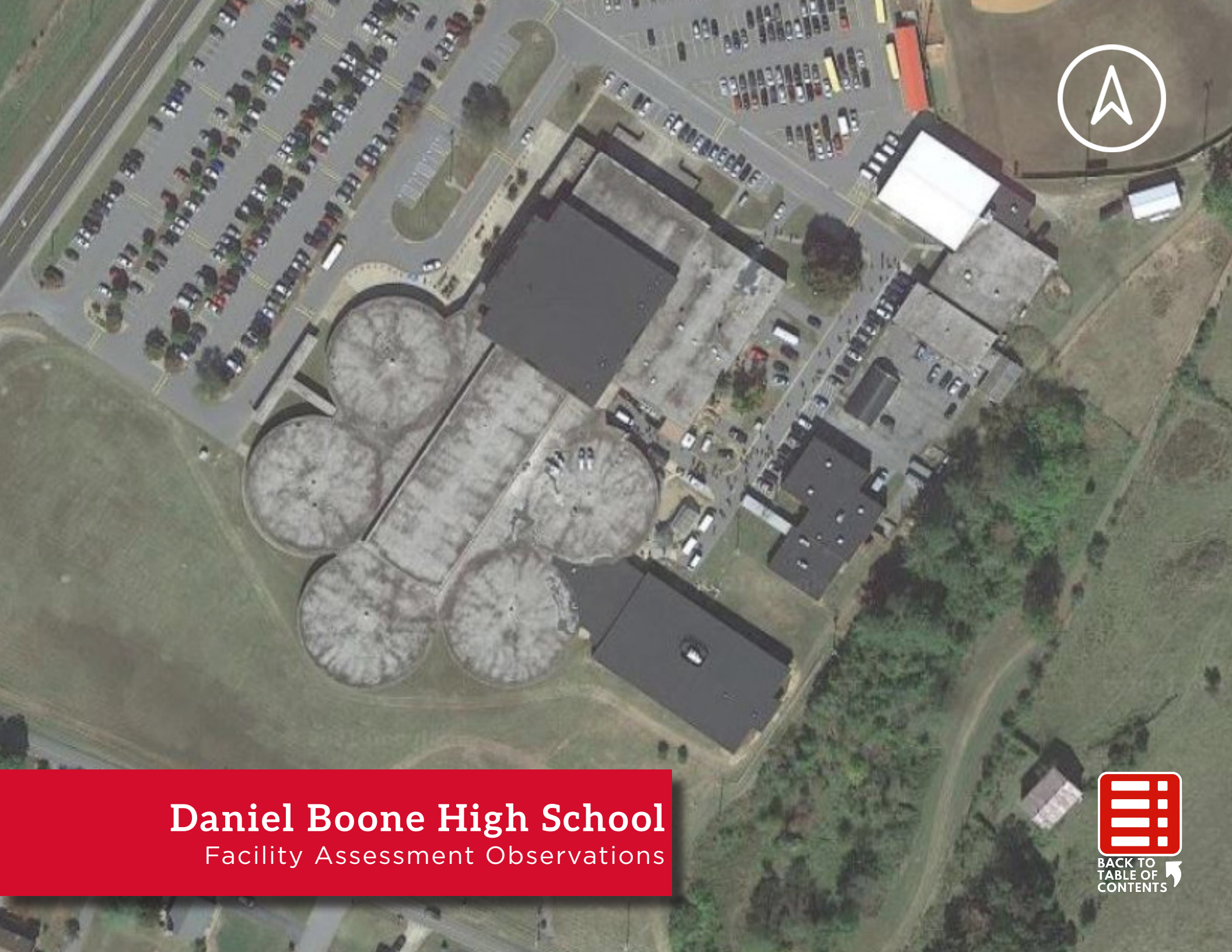
Sanitary sewer is connected to multiple septic tank and drainfield systems. There are (3) separate tanks and (3) drainfields, each serving a separate area of the building. The existing kitchen has a grease interceptor located outside the kitchen and is believed to be minimum 1,000 gallon capacity. Sanitary sewer and vent piping is Schedule 40 PVC with a mix of cast iron in the original building.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, (1) semi-circular wash fountains, electric water coolers, classroom sinks, and classroom sinks with bubblers. Flush valves on water closets are manual type. Flush valves on urinals are manual type. Lavatory faucets in public restrooms are push button metering type, but manual two lever handle faucets have replaced metering faucets when metering faucets needed repair or replacement.

Noted deficiencies or operational issues:

- All electric water heaters are approaching their expected service life and should be replaced with new. Kitchen water heater system should be replaced with like units of same KW and tank capacity. A mixing valve should be installed on all hot water heater systems serving public areas to minimize the possibility of scalding students and staff members.
- One of the septic/drainfield systems was noted having issues due to an inadequate tank size and the tank being installed too low. Tank elevations need to be surveyed to ensure proper drainage into the field lines and septic tank size should be increased proportionately based on the amount of influent.
- Dishwasher waste in the kitchen should be re-piped to spill indirectly into a floor sink to eliminate a direct connection to the sanitary sewer.
- Faucets in public restrooms, as well as faucets on classroom sinks, could use some updating. Similar faucets should be utilized on lavatories in adjacent locations.

Prepared and approved by Jeffery R. Whillock, PE



Daniel Boone High School

Facility Assessment Observations

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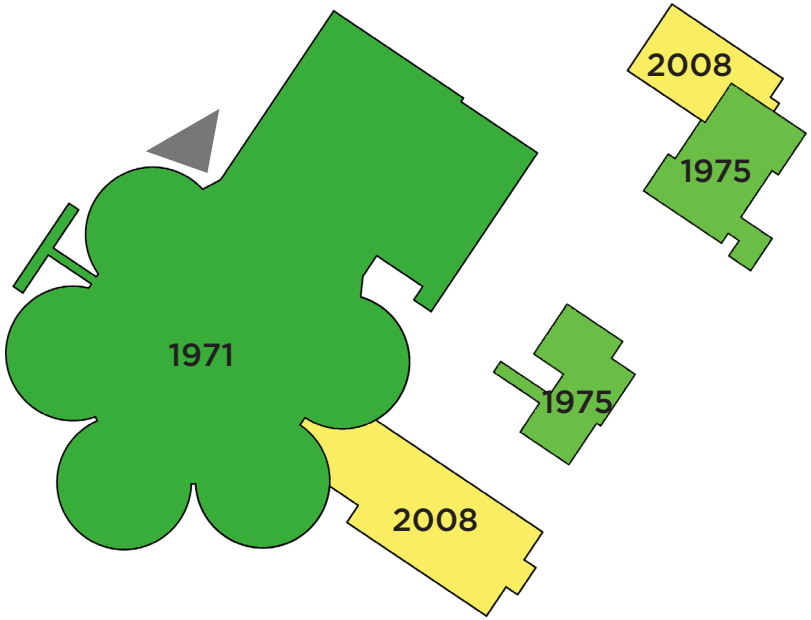
Daniel Boone High School

1440 Suncrest Drive, Gray, TN 37615



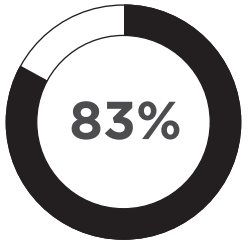
Overview

Daniel Boone High School, and its associated career technical education facility, were originally built in 1971. The school received an addition in 2008 to both the main school and one of the two career buildings.

Grades:	**9-12**
No. Classrooms:	**63**
No. of Stories:	**1**
Total Area:	**197,923 SF**

Current Enrollment:
1092 Students

Functional Capacity:
1316 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★	★★★★	★★	★★	★★★	SEE ATTACHED	$200.5K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Soffit is damaged in several locations around perimeter

B Minor cracking at very few locations

Interior

C n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing

B No secure vestibule

C Sight lines in pod areas are short and create lack of visual control

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Electric Water Cooler and other objects are protruding into egress width
B Toilet room in life skills classroom area is not ADA complient
C Terraced steps in special needs education area is not ADA compliant
D Gym mezzanine is not ADA compliant; however, floor seating is ADA compliant
E Upper classrooms in the 900 Building are not ADA accessible

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Some exterior finishes show discoloration and efflorescence
B Minor damage and discoloration to interior finishes at several locations
C Men's restroom is missing some wall-mounted accessories

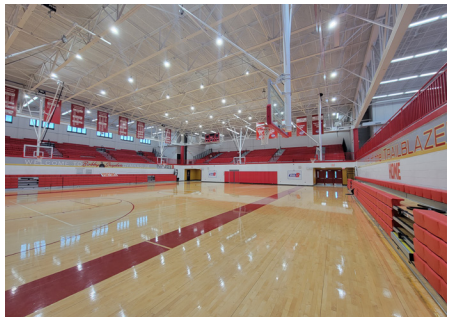
Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Soffit is damaged in several locations around perimeter

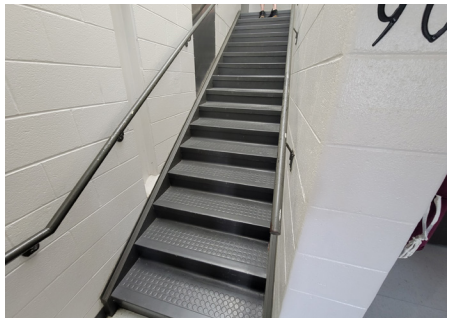
02 Sight lines in pod areas are short



03 Gymnasium is well lit and brightly colored - ADA seating on main floor

04 No secure vestibule

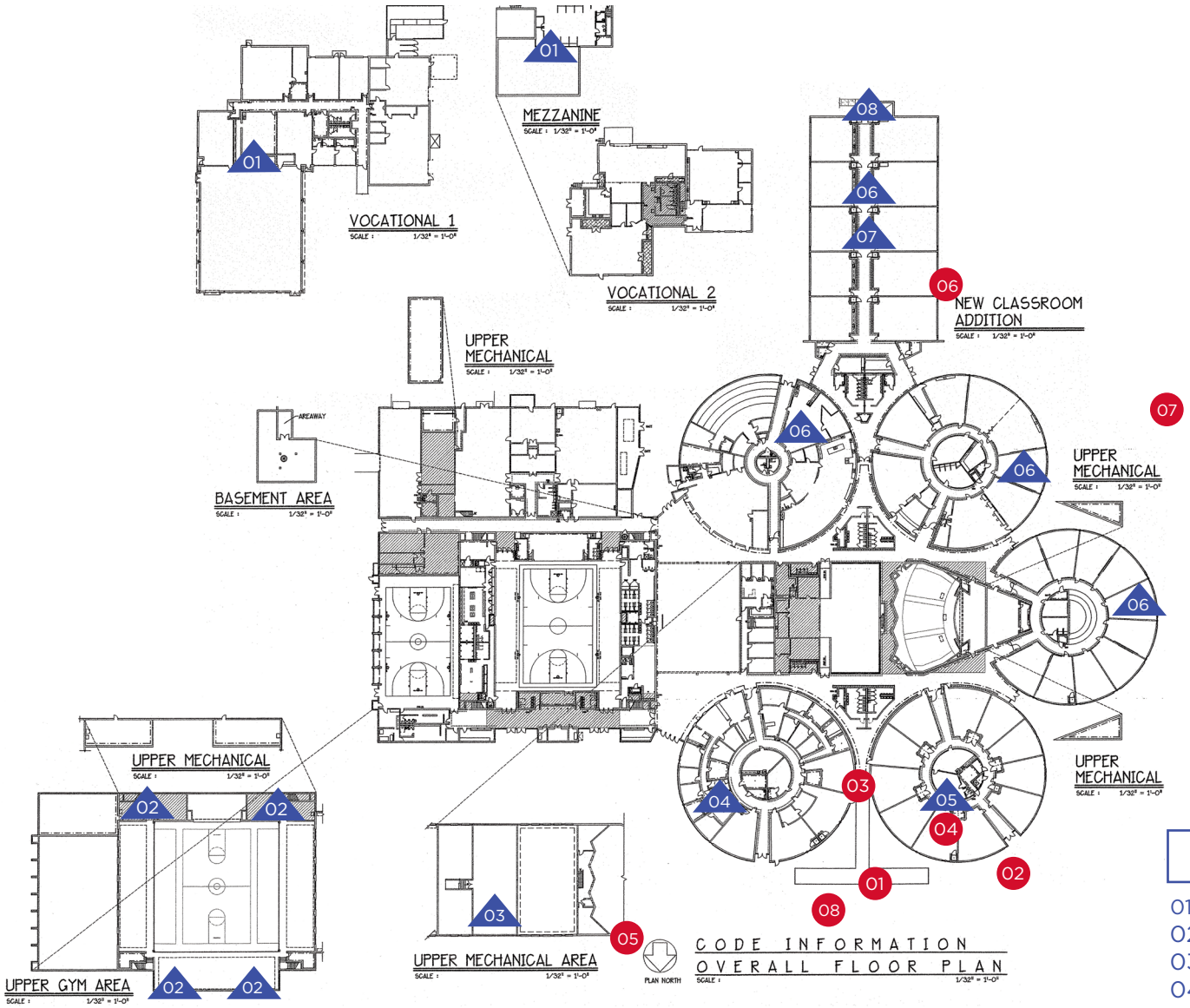
05 ADA parking near main entry



06 Second floor of 900 building is not ADA accessible

07 Science labs are large and open

08 Precast concrete "Double T" bench doubles as planter and security device



Mechanical Key

01: Unit on roof
02: Gym unit
03: Guidance office/ common area units
04: Admin units in closet
05: Classroom units (typical)
06: Classroom units above ceiling (typical)
07: FAU unit on roof
08: Geothermal pumps

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled primarily with a geothermal water source heat pump system consisting of underground well fields, circulating pumps with loop piping and water source heat pumps. Buildings 900 and 1000 are heated and cooled by Air to Air Heat Pump Rooftop Units. The geothermal system is 2006 vintage or older.

Classrooms have their own ducted water source heat pump units giving individual classroom zone control. None of the units have humidity control.

Areas such as the Commons, Admin, Gyms, Kitchen, Cafeteria, Library, Corridors, etc. are served by ducted water source heat pump systems.

Typically, outside air for the classrooms and other spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air. Outside air for classroom in POD 800 is conditioned by a FAU unit with heat wheel prior to being introduced to classrooms.

Kitchen has code compliant stainless steel compensating kitchen hood with make-up air and fire suppression system.

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- 1. No zoning or comfort issues were reported.
- 2. Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- 3. The Fresh air system for POD 800 is not operational and needs repair.
- 4. Geothermal system has leaked underground and inside the building. Loop temp runs around 100 F when system is fully loaded.
- 5. Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: The existing high school power service has Brightridge primary power meter which serves multiple electrical services that are delivered to various school buildings and structures. Consideration should be given to an upgrade of the primary power service arrangement at the school. There are numerous unsightly poles and overhead lines which could be replaced with an underground wiring arrangement.

Main building is served at 480/277-volt, three-phase, four-wire, wye with an underground power service from a ground-mounted Brightridge open wiring transformer arrangement. Consideration should be given to replacement of the current transformer arrangement with Brightridge. Service capacity is 4000 amperes. Building electrical distribution system was originally designed to serve an electric heating system for the school, which has subsequently been replaced. Therefore, there is ample capacity available in existing electrical distribution system. Interior electrical distribution system equipment appears to be in satisfactory condition.

Communications Systems: Building has a Rauland intercom system in place that appears to be in satisfactory condition. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

4. Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

Recommended Improvements:

- Arrange with Brightridge for replacement of current “open” transformer arrangement with a new padmounted transformer or padmounted transclosure arrangement at main school facility. Arrange with Brightridge for replacement of existing overhead primary power distribution system with a new underground power distribution system.

Prepared and approved by Harold E. Damron, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 3" This facility is served from a public water main. The water entrance into the main building is a 4" and the piping material is welded carbon steel. The hot water piping throughout the main building has been replaced with copper pipe, but the majority of the domestic cold water piping remains galvanized steel. The main building has a backflow preventer located outside in an environmental enclosure that serves both domestic water and fire protection. The Annex buildings are served with their own water supply and backflow preventers, each being 2". At the water entrance at the main building, a 4" gate valve serves as the main shut-off valve and the 4" domestic water line and a 2-1/2" fire hose cabinet supply line are interconnected. A swing check valve is installed in the water line serving the fire hose cabinets where it is connected to the domestic water. Piping is insulated with fiberglass insulation. Water distribution throughout the school is routed overhead above ceilings.

Hot water supply is provided to the entire main building from a 1,000 gallon, 144 KW electric water heater located in the basement mechanical room. The annex buildings have their own small electric water heaters. Hot water circulating pump is utilized in the main building to provide continuous hot water supply.

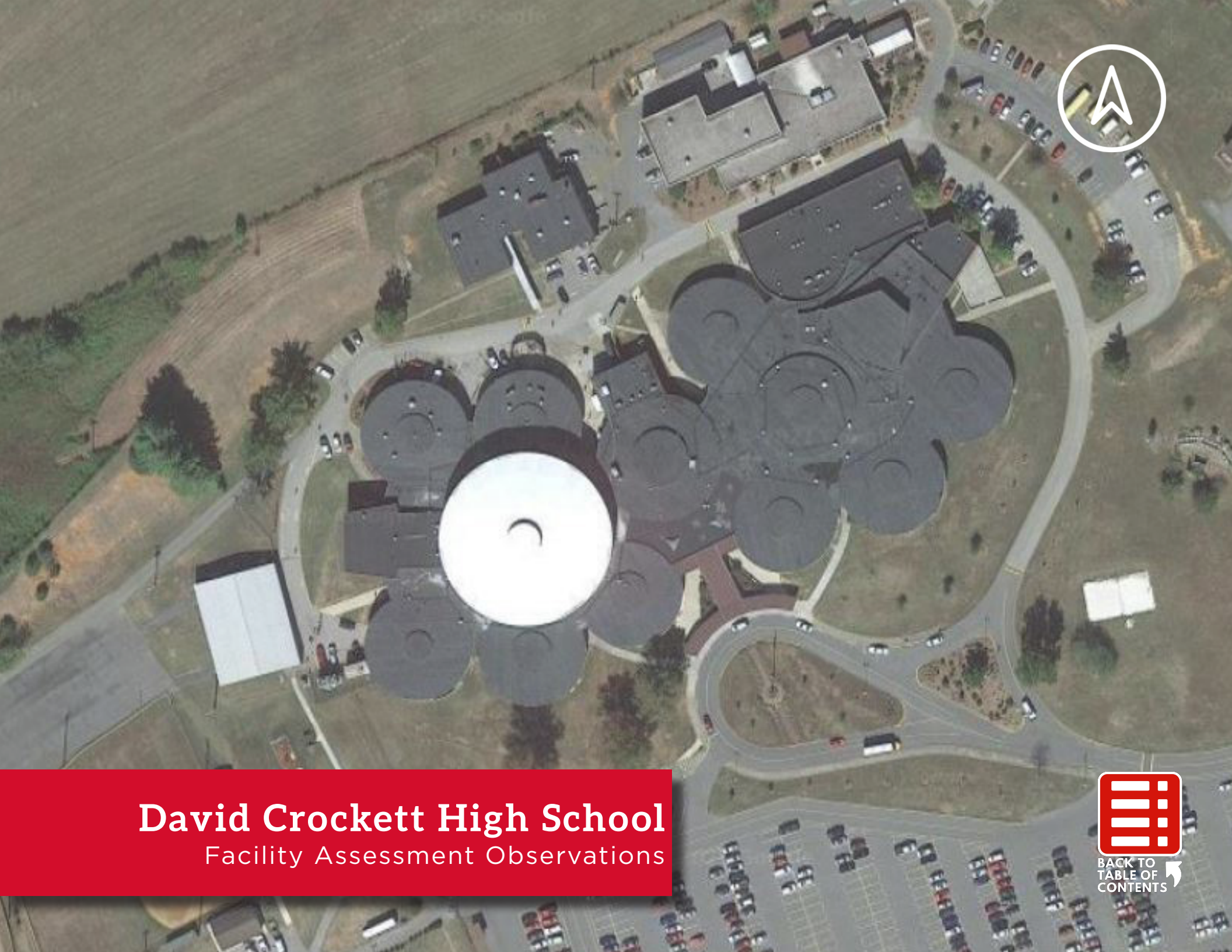
Sanitary sewer is connected to a public main. The existing kitchen has a 1,500 gallon grease interceptor located outside the kitchen. Sanitary sewer and vent piping is cast iron in the main building and Schedule 40 PVC was utilized in the building additions and where repairs or renovations have been made.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, electric water coolers, and classroom sinks. Flush valves on water closets and urinals are a mix of manual and sensor type. Lavatory faucets in public restrooms are a mix of manual type, push button metering type, and battery operated sensor type.

Noted deficiencies or operational issues:

- Galvanized cold water piping throughout the building needs to be replaced with copper.
- The interconnection of the domestic water and fire hose cabinet piping causes concern for cross contamination. These systems should be separated with a backflow preventer on the dedicated fire hose cabinet piping to prevent stagnant water from entering the domestic water system in the event of the current swing check valve failing.
- Sanitary sewer drainage piping is collapsing in the main building and Annex #2 and there have been numerous issues with stoppages. The existing cast iron sanitary sewer piping below slab needs to be replaced or relined with an epoxy liner.
- The existing water heater serving the main building is 27 years old and needs to be replaced. We recommend evaluating the capacity and KW of the unit to replace it. We feel the capacity and KW could be decreased based on the current load. Lavatory faucets and flush valves should be replaced with like units throughout the school. Dressing Rooms are in disrepair and all needs to be replaced.
- Lavatory faucets and flush valves should be replaced with like units throughout the school. Dressing Rooms are in disrepair and all needs to be replaced.

Prepared and approved by Jeffery R. Whillock, PE



David Crockett High School

Facility Assessment Observations

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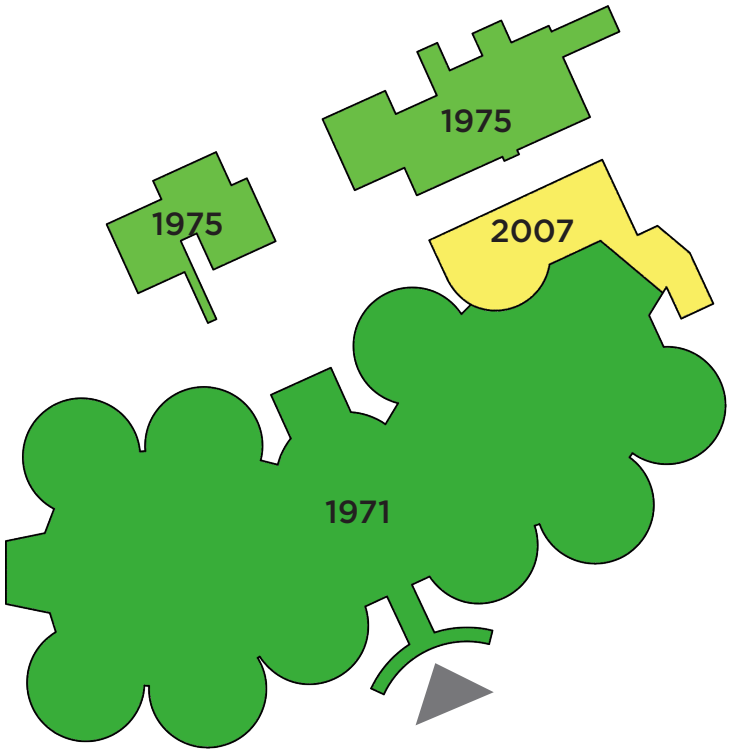
David Crockett High School

684 Old State Route 34, Jonesborough, TN 37659



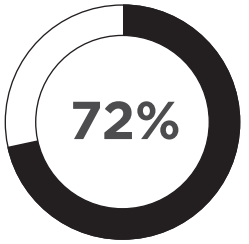
Overview

David Crockett High School was originally built in 1971. Following its opening, Washington County added a full career technical education facility in 1975. The school received a full interior renovation and addition in 2007.

Grades:	**9-12**
No. Classrooms:	**67**
No. of Stories:	**1**
Total Area:	**221,671 SF**

Current Enrollment:
1083 Students

Functional Capacity:
1512 Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★★★	★★★★	★★	★★	★★★	SEE ATTACHED	$197.8K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Minor cracking on 2008 addition at very few locations

B Some exterior soffit panels were misaligned, creating openings for birds, bugs

Interior

C n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Lack of perimeter fencing

B No secure vestibule

C Sight lines in pod areas are short and create lack of visual control

D Alley between main building and CTE buildings is a safety risk due to speeding automobiles. Large shrubs obscure view - stop signs are small and easily missed

E Public access to transformer and other equipment

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A Several exits are not ADA compliant
B Guidence department accessible via rear entrance off G-Pod corridor
C Gym mezzanine is not ADA complient; however, floor seating is ADA compliant

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Some exterior finishes show discoloration and efflorescence
B Minor damage and discoloration to interior finishes at several locations

Visual Documentation

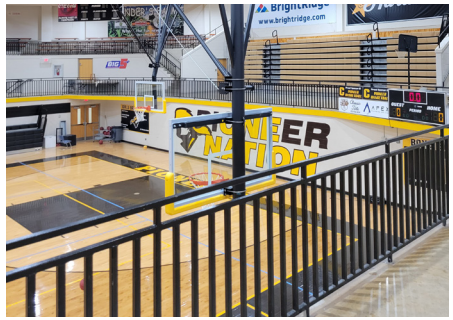
This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Several egress routes are not ADA compliant

02 Guidence department accessible via rear entrance off G-Pod corridor.

03 Life skills classroom area has a wide range of stations and equipment.



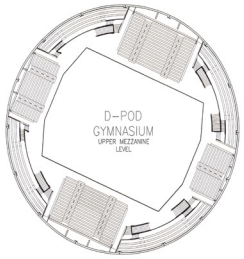
04 Gymnasium is well lit and brightly colored. ADA seating on main floor

05 Library is large and spacious with several classrooms attached.

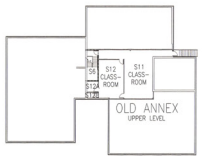
06 All main entrances are video monitored.

07 See Note 4 on Page 110.

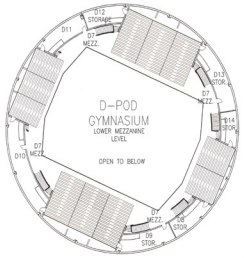
08 Soffit panels misaligned at several locations.



OVERALL FLOOR PLAN
UPPER GYMNASIUM MEZZANINE
SCALE: 1/32" = 1'-0"



OVERALL FLOOR PLAN
OLD ANNEX UPPER LEVEL
SCALE: 1/32" = 1'-0"



OVERALL FLOOR PLAN
LOWER GYMNASIUM MEZZANINE
SCALE: 1/32" = 1'-0"

Mechanical Key

01: Cooling tower
02: Chiller Building
03: Gym units above floor (typical of (4)
04: Wall unit (typical)
05: Classroom units (typical)
06: Fan coil unit (typical)

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled primarily with a 4-pipe system consisting of a 300 ton water cooled chiller, cooling tower and condensing boilers. The system is 1991 vintage however, the chiller was replaced in 2011 and the boilers in 2021. The tower is approximately 15 years old.

Classrooms have their own 4-pipe horizontal unit ventilator suspended from the ceiling giving individual classroom zone control.

The Art and Science rooms are served from split system heat pumps with an outside air unit providing outside air to the rooms.

The Auxiliary Gym and CDC areas are served by split systems with gas heat.

The Band Room and Auditorium are served by 4-pipe AHU units.

The Cafeteria is served by vertical floor mounted 4-pipe unit ventilators and rooftop mounted Heat Pump units.

The Library is served from 4-pipe horizontal unit ventilators suspended from the ceiling.

Areas such as the POD Cores are served from ceiling mounted 4-pipe fan coil units.

The Gym is served from horizontal AHU units hanging above the gym floor. These units appear to be 2-pipe units.

The Admin area, New Annex and Old Annex are served from rooftop mounted heat pumps. Heat in the shops of the Annex buildings is electric.

Shops in the A-POD and B-POD have gas heat only.

The ROTC building is served by gas fired RTU units.

The Field House is served from wall mounted mini-splits.

The Kitchen is served by a rooftop mounted DX unit with electric heat.

Kitchen has code compliant stainless steel compensating kitchen hood with make-up air and fire suppression system.

Typically, outside air for the classrooms and other spaces is introduced into each mechanical unit for mixing with the return air and then being distributed to the space in the supply air.

The building has an Automated Logic control system.

Noted deficiencies or operational issues:

- No zoning or comfort issues were reported.
- 2. No of the HVAC units have humidity control.
- 3. Building control system is older version of Automated Logic system and should be considered for upgrade as funds become available.
- 4. Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: The existing high school power service has Brightridge primary power meter which serves multiple electrical services that are delivered to various school buildings and structures. Consideration should be given to an upgrade of the primary power service arrangement at the school. There are numerous unsightly poles and overhead lines which could be replaced with an underground wiring arrangement.

Main building is served at 480/277-volt, three-phase, four-wire, wye with an underground power service from a ground-mounted Brightridge transformer. Service capacity is 4000 amperes. Building electrical distribution system was originally designed to serve an electric heating system for the school, which has subsequently been replaced. Therefore, there is ample capacity available in existing electrical distribution system. Interior electrical distribution system equipment appears to be in satisfactory condition.

Communications Systems: Building has a Rauland intercom system in place that appears to be in satisfactory condition. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

Recommended Improvements:

- Arrange with Brightridge for replacement of existing overhead primary power distribution system with a new underground power distribution system.

Prepared and approved by Harold E. Damron, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a main building is 4" and the piping material is black iron. Cold water piping throughout the building is galvanized steel. The majority of the hot water piping has been replaced with copper. At water entrance, there is a pressure reducing station, 3 valve bypass, and a reduced pressure backflow preventer that serves all buildings on campus is located in an environmental enclosure outside. Piping is insulated with a mix of fiberglass and Rubatex insulation. Water distribution throughout the school is routed overhead above ceiling.

The out buildings on site include Annex #1, Old Annex, ROTC, and Fieldhouse. Services to these buildings as follows:

- Annex #1 – 2-1/2" copper with main shut off valve, pressure reducing valve and backflow preventer.
- Old Annex – 2" copper with main shut-off valve.
- ROTC – 1-1/2" copper with main shut off valve, pressure reducing valve, and backflow preventer.
- Fieldhouse – 3" copper with main shut-off valve.

Hot water supply in the main building is provided by multiple water heaters. The majority of the building, including the kitchen, is served from a 199,900 BTUH gas fired water heater connected to a 1,600 gallon storage tank and is located in the main boiler room. In the same room, is an 80 gallon 5.5 KW electric water heater that serves the Cosmetology area. The Science wing has its own 80 gallon, 4.5 KW water heater and each pod has a small electric water heater that serves a single kitchenette sink in each pod. Hot water recirculation pumps are utilized on long runs to maintain water temperature in the lines at point of use. Mixing valves were installed in the locker room areas to control the hot water temperature but the showers are no longer utilized.

Hot water at out buildings as follows:

- Annex #1 – Electric 119 gallon, 18 KW - no recirculation pump. Heater was recentlyreplaced.
- Old Annex – Electric 40 gallon, 4.5 KW – no recirculation pump. Heater was recentlyreplaced.
- ROTC –Electric 50 gallon, 5.5 KW, no recirculation pump.
- Fieldhouse – Gas 75 gallon, 75,100 BTUH – no recirculation pump.

This facility is served with Natural gas. Natural gas is supplied to boilers, ground package units, gas furnaces and water heaters.

Sanitary sewer is connected to a public main. The entire facility used to be connected to a sewage treatment plant but has been changed over to a public sewer system. The existing kitchen has a 1,500 gallon grease interceptor located outside the kitchen. Sanitary sewer and vent piping is cast iron with a mix of Schedule 40 PVC in later additions or where repairs have been made. Science labs have chemical resistant waste and vent piping that connects into an acid neutralization basin.

Plumbing fixtures within all the buildings consist of water closets, urinals, wall hung lavatories, counter mounted lavatories, electric water coolers, and work room sinks. Locker rooms have showers but are no longer utilized. Flush valves on water closets and urinals are manual type. Lavatory faucets in public restrooms are manual type.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System (Cont.)

Noted deficiencies or operational issues:

- The main gas water heater serving the building is more than 15 years old and should be replaced. The connected storage tank is original and should be removed from service, and the hot water heater system should be reevaluated to determine an adequate size for the installation of new gas fired water heaters without heating 1,600 gallons of water.
- Galvanized water piping throughout the main building needs to be replaced. There have been instances where the galvanized piping has become so restricted from interior corrosion that the water flow was greatly reduced or ceased.
- Numerous issues with the underslab cast iron sewer lines. Due to the age, the bottom of the piping has deteriorated causing numerous stoppages. This piping needs to be replaced with PVC or lined with an epoxy lining.
- Science lab neutralization basin has been dug up numerous times due to piping stoppages. The neutralization basin has never been refilled with limestone chips so the basin is serving no purpose. The chemical resistant drain lines are draining very slowly. When running water in a sink, the sink holds the water for a few minutes because the line is very slow to drain. Piping needs to be replaced and the neutralization basin replaced or removed from the system. Schools rarely allow students access to chemicals that would be that harmful to the drainage system.
- Science wing water heater has reached its service life and should be replaced.
- Field House water heater appears to have been in a fire. It needs to be replaced with new.
- Concession stand does not have a gravity drain. The drains from the concession stand have to pump and connect to the sewer lines overhead. This should be reworked and the drains connect to a gravity sewer in the vicinity of the concession stand.
- Showers have basically been abandoned. If they want to utilize the showers, numerous shower heads will need to be replaced as well as valve handles and new mixing valves.
- Since the showers are not being utilized, the condition and operability of the shower drains is unknown.

Prepared and approved by Jeffery R. Whillock, PE

Asbury Optional High School

Facility Assessment Observations

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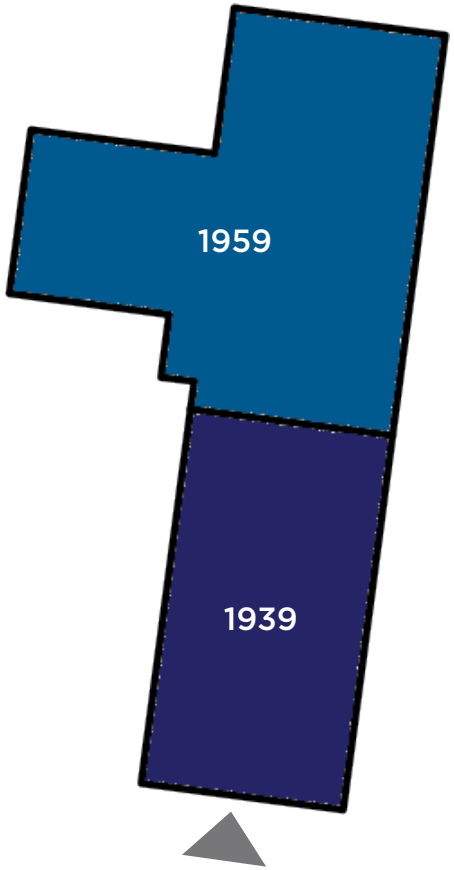
Asbury Optional High School

2002 Indian Ridge Road, Johnson City, TN 37604



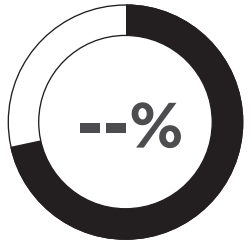
Overview

Even though the original building was built in 1939 and the addition was added in 1959, the program at Asbury Optional High School was established in 1989. This facility functions as an alternative school, an alternative secondary program, and GED educational program.

Grades:	**9-12**
No. Classrooms:	**9**
No. of Stories:	**1**
Total Area:	**9,115 SF**

Current Enrollment:
156 Students

Functional Capacity:
--- Students



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★	★★★	★★	★★	★★	SEE ATTACHED	$21.1K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Major damage to concrete slab over basement access - rebar exposed to weathering
B Significant crack near main entry
C No expansion joints - moderate cracking in multiple locations
D Brick damaged at hose bibb
E Exterior storage shed has significant damage to wood structure and roof - provides easy access to roof
F Damage to wood near gutter in some locations

Interior

G n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A One classroom had evidence of aesbestos containing material (ACM)- would require further investigation by appropriate testing agency
B Public access to dumpster area and other equipment
C Stairwell to basement significantly covered in leaves - steps are not visible
D Broken steel sleeve protruding from ground near parking area
E Parking asphalt area has significant damage in some locations

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A ADA parking is in rear parking lot - rear entry is only ADA compliant building access
B Main and side entries are not ADA accessible - handrails are mounted too low
C Former library space is not ADA accessible - low head height at stairs down to door
D Security Office is not ADA accessible
E Fixtures in toilet room appear to be mounted at a non-compliant height
F ADA toilet is not compliant
G Electric Water Cooler and other objects are protruding into egress width

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Windows in several location have degraded finishes
B Carpet is loose in some locations
C Urinal Screen is missing in men's restroom
D Exterior finishes are discolored
E Minor damage to vinyl tile and ceiling tile in some locations

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 "Library" is not ADA accessible from either direction

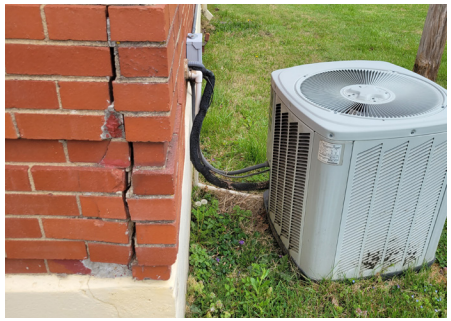
02 Former gym has evidence of possible hazardous material - would require further investigation by appropriate testing agency

03 Elementary bathroom re-purposed into a janitor's closet

04 No urinal screens

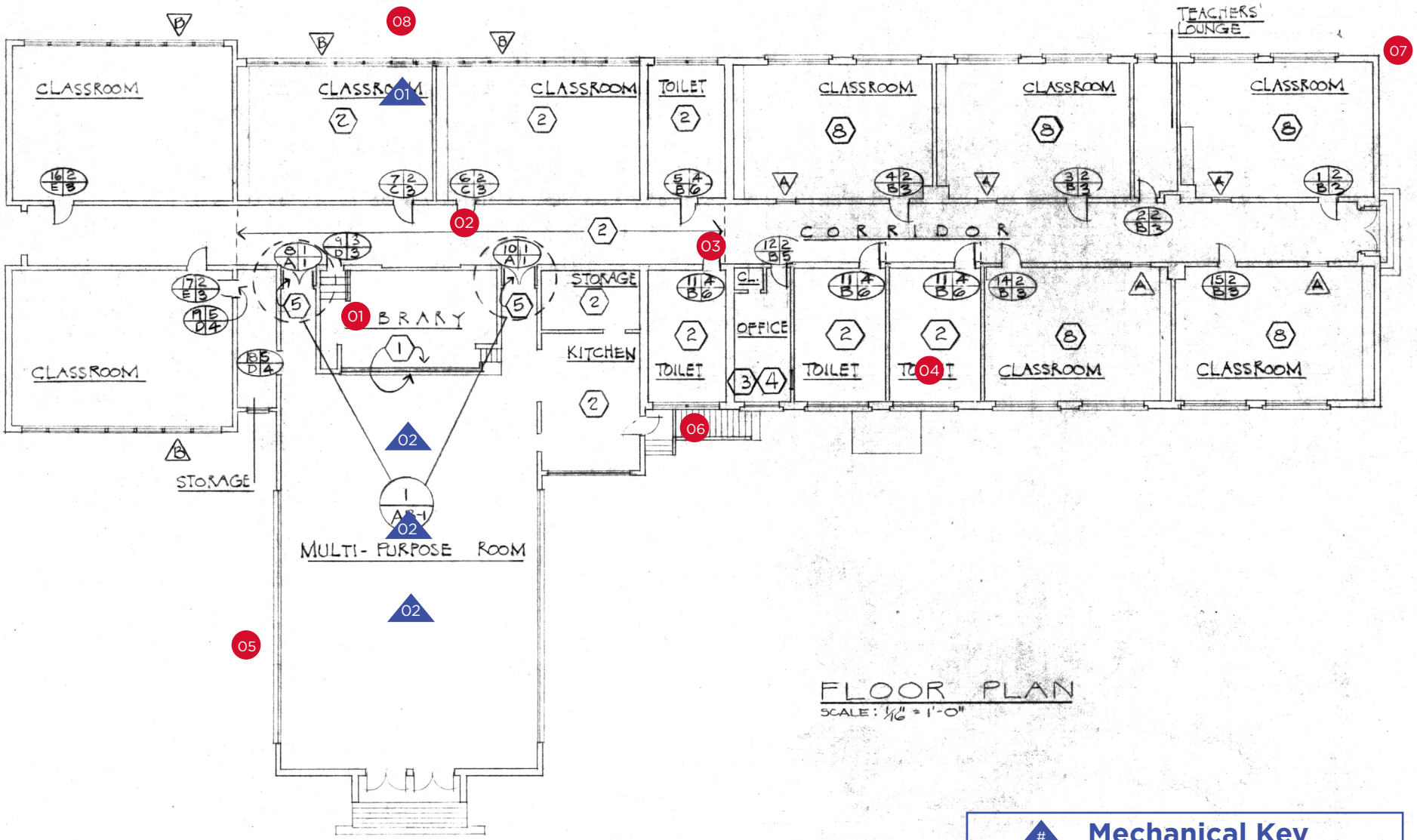
05 Brick is discolored

06 Concrete slab is severely damaged; rebar is exposed



07 No brick expansion joints has caused cracking

08 Steel windows are discolored/ rusting



FLOOR PLAN
SCALE: 1/16" = 1'-0"

Mechanical Key

01: Classroom unit (typical)
02: Units located above ceiling

Mechanical System

Observations documented by Engineering Services Group.

The school is heated and cooled primarily with air source heat pump systems. Most units were installed in 2003 or 2004.

Most Classrooms have (1) vertical heat pump in the corner of the room with ductwork above the ceiling.

Areas such as the Cafeteria, Kitchen, Corridors, etc. are served by horizontal ducted heat pump systems located above the ceiling.

Toilets have electric heaters.

The existing window a\c units installed are no longer used.

None of the units have humidity control or appear to have outside air connected to them.

The kitchen does not have a hood, no food is prepared at this school.

The building does not have an HVAC control system. Each unit is controlled from a stand-alone thermostat.

Noted deficiencies or operational issues:

- Toilets and janitor's closets do not have exhaust.
- The existing equipment is coming to the end of its expected life and unit replacements due to age should be expected.
- The amount of outside air introduced into the classroom is not up to current codes.
- Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 2" and the piping material is galvanized steel. The water entrance is located in a small shed attached to the building. At water entrance there is a pressure reducing valve and shut-off valve. Piping is not insulated. Water distribution throughout the school is routed thru a crawl space.

Hot water supply is provided by a 50 gallon electric water heater located in the basement boiler room. There is no recirculation pump or mixing valve. The existing Kitchen has essentially been abandoned and is no longer used as a commercial kitchen to prepare meals.

This facility is not equipped with natural or liquid propane gas.

Sanitary sewer is connected to a public main. Sanitary sewer and vent piping is cast iron.

Plumbing fixtures within the building consist of water closets, urinals, wall hung lavatories, counter mounted lavatories, electric water coolers and classroom sinks. Flush valves on water closets and urinals are manual type. Lavatory faucets in public restrooms are manual type.

Noted deficiencies or operational issues:

- Due to the age of the school, the cast iron sewer lines and galvanized water piping has deteriorated in several locations and needs to be replaced with new.
- A backflow preventer needs to be added to the water entrance.
- Mixing valve and recirculation system with pump should be added to the domestic hot water system.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded and a good portion of the school to include motion sensors.

Power Distribution System: Building is served at 120/208-volt, three-phase, four-wire, wye with an underground power service from a utility company pole-mounted transformer bank. Service capacity is 400 amperes. Sub-panels in building have been replaced with new sub-panels over the years. Main distribution equipment in lower level boiler room needs to be upgraded. Branch wiring in school also needs to be upgraded to current Washington County Schools Standards.

Communications Systems: Building currently has no intercom system in place. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system but fire alarm system is not a voice evacuation type fire alarm system as currently required by IBC for educational occupancies.

Recommended Improvements:

- Upgrade of interior electrical distribution equipment and branch wiring in building.
- New intercom system for building in accordance with current Washington County Schools Standards.
- New voice evacuation type fire alarm system in accordance with current IBC requirements for educational occupancies.

Prepared and approved by Harold E. Damron, PE

Central Office

Facility Assessment Observations

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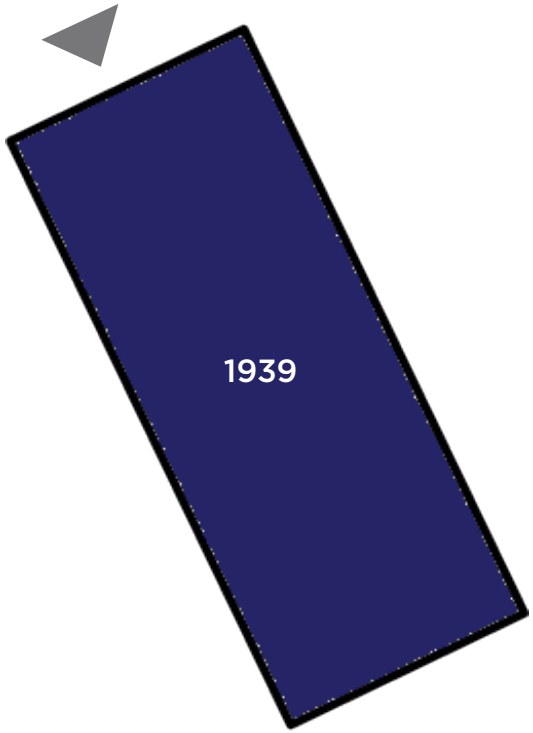
Central Office

405 West College Street, Jonesborough, TN 37659



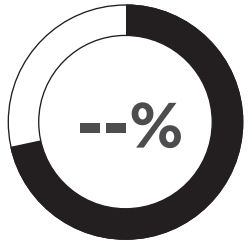
Overview

The Central Office functions as the core administration building for Washington County Schools. Recently, WCS performed interior renovations to improve three spaces for more efficient office functions.

Grades:	**0**
No. Classrooms:	**0**
No. of Stories:	**2**
Total Area:	**6,007 SF**

Current Enrollment:
33 Employees

Functional Capacity:
-- Employees



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★	★★★	★★★	★★	★★★	SEE ATTACHED	$21.5K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Discoloration in multiple locations
B Brick is cracked in several locations - some have been patched
C Concrete steps at main entry have severe to moderate damage
D Rear shed has moderate cracking in block wall

Interior

E n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A The make shift break room has a water supply and electrical equipment within close proximity
B Steps in several locations do not have a code-compliant riser height
C Stairwell to basement has low head height with no caution indicator
D Asphalt near dumpster is severely damaged

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A ADA toilet is not fully compliant - lacking clearances
B Board room platform is not ADA accessible
C Rear egress route is not ADA accessible - Concrete step at grade is severely damaged

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Historic hard wood flooring produces a substantial amount of noise
B Some locations have minor cracks or stains in the finish materials

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Main entry steps have moderate to severe damage and cracking

02 Shelf storage above normal reaching ability

03 Break room is small, non-ADA compliant - electrical equipment creates potential hazard

04 Subdivided classrooms with transform/ clerestory windows allow for daylight to reach deep into offices

05 Low head height in basement

06 Steps in several locations are not code compliant

07 Exterior brick concrete are discolored in multiple locations

08 Exterior finish is cracked in several locations - some have been patched

Mechanical Key

01: Condensing units

Mechanical System

Observations documented by Engineering Services Group.

The building is heated and cooled primarily with ducted air source heat pump systems and gas furnaces. Some units are horizontal and some are vertical. The units range in age from 10 to 25 years old.

None of the units have humidity control or appear to have outside air connected to them.

The building does not have an HVAC control system. Each unit is controlled from a standalone thermostat.

This building does not have a Kitchen.

Noted deficiencies or operational issues:

- The building does not appear to have outside air connected to the units.
- The some of the existing equipment is coming to the end of its expected life and unit replacements due to age should be expected.
- Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 2" and the piping material is copper. At water entrance, there is a pressure reducing valve and reduced pressure backflow preventer. Piping is insulated with a mix of fiberglass and Rubatex insulation. Water distribution throughout the building is routed overhead above ceilings.

Hot water supply to the entire building is provided by a 40 gallon, 5.5 KW electric water heater located in the lower level utility room. This water heater was installed only two years ago. There is no recirculation pump or mixing valve.

This facility is served with Natural Gas. Natural gas is supplied to gas furnaces.

Sanitary sewer is connected to a public main. Sanitary sewer and vent piping is Schedule 40 PVC.

Plumbing fixtures within the building consist of water closets, urinals, counter mounted lavatories, electric water coolers, and sinks. Flush valves on water closets and urinals are manual type. Lavatory faucets in public restrooms are manual type.

Noted deficiencies or operational issues:

- There are currently no known plumbing issues.
- A mixing valve and recirculation system with pump should be installed to control hot water within the facility.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory.

Power Distribution System: Building is served at 120/208-volt, three-phase, four-wire, wye with an underground power service from a utility company pole-mounted transformer bank. Service capacity is 400 amperes. Inside the building, power is distributed from three (3) 200-ampere, main breaker panelboards located on lower level. Electrical distribution system inside the building appears to be in satisfactory condition.

Communications Systems: Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building does not have a fire alarm system. Since building is classified as a business occupancy, a fire alarm system is not required but consideration should be given to adding a fire alarm system.

Recommended Improvements:

- Installation of new fire alarm system for building.

Prepared and approved by Harold E. Damron, PE

Midway Resource Center

Facility Assessment Observations

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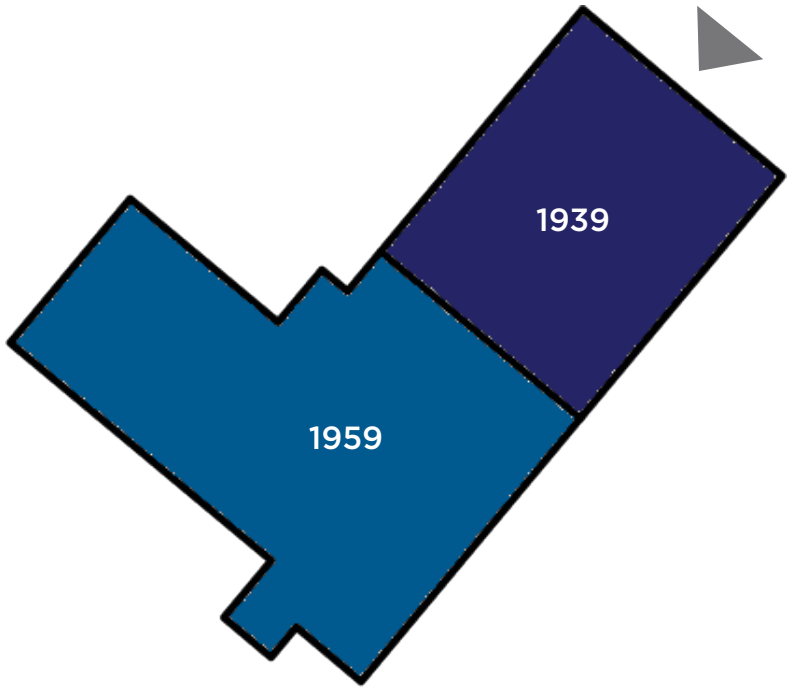
Midway Resource Center

3519 West Walnut Street, Johnson City, TN 37602



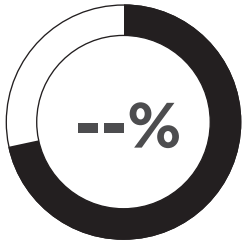
Overview

The Midway Resource Center opened in 1939 in Johnson City as the original alternative school for the entire county. In 1959, the gymnasium addition was built. Now, the building houses the Nutrition Department, Coordinated School Health, and Teacher Center.

Grades:	**0**
No. Classrooms:	**0**
No. of Stories:	**1**
Total Area:	**9,263 SF**

Current Enrollment:
--- Employees

Functional Capacity:
--- Employees



AGE OF EXISTING FACILITIES	BUILDING ENVELOPE & STRUCTURE	HEALTH & SAFETY	ACCESSIBILITY	GENERAL CONDITIONS	MECHANICAL SYSTEMS	6-YEAR AVERAGE UTILITIES COSTS
★	★★	★	★	★	SEE ATTACHED	$--K

Building Envelope & Structure

*Observations related to the condition of a **building's exterior/interior** and their effects on its occupants*

Exterior

A Rear canopy appears weathered
B Significant veneer cracking near main entry
C No expansion joints - minor cracking in multiple locations
D Original windows on former gym have several panes replaced by plywood

Interior

E n/a

Health and Safety

*Developed with attention towards **life safety** and **building security***

A Evidence of possible moisture intrusion in Room 9
B Evidence of possible aesbestos containing material (ACM) in former gym - would require further investigation by appropriate testing agency
C Electric Water Cooler protrudes into egress width
D Entry into work room from corridor is a trip hazard
E Handrails/guardrails are either too short or non-existent at side entry

Accessibility

*Providing **equal opportunity** for all students, staff, and visitors*

A ADA parking is in rear parking lot - rear entry is only ADA compliant building access
B Main and side entries are not ADA accessible

General Conditions

*Recurring general **building maintenance** issues and possible **upgrades***

A Windows in several location have degraded finishes
B Door knobs in some locations are not at a code compliant height
C Carpet is loose in some locations
D Urinal Screen is missing and toilet partition is damaged in men's restroom
E Exterior finishes have discoloration at some locations

Visual Documentation

This selection from the complete archive of field photography offers a sampling of the conditions observed during LGA's visits.

**Images are located on facility floor plan- SEE FOLLOWING PAGE*

01 Main entry is not ADA compliant

02 Door knobs in some locations are not at a code-compliant height

03 Evidence of possible moisture intrusion in Room 9 - would require further investigation by appropriate testing agency

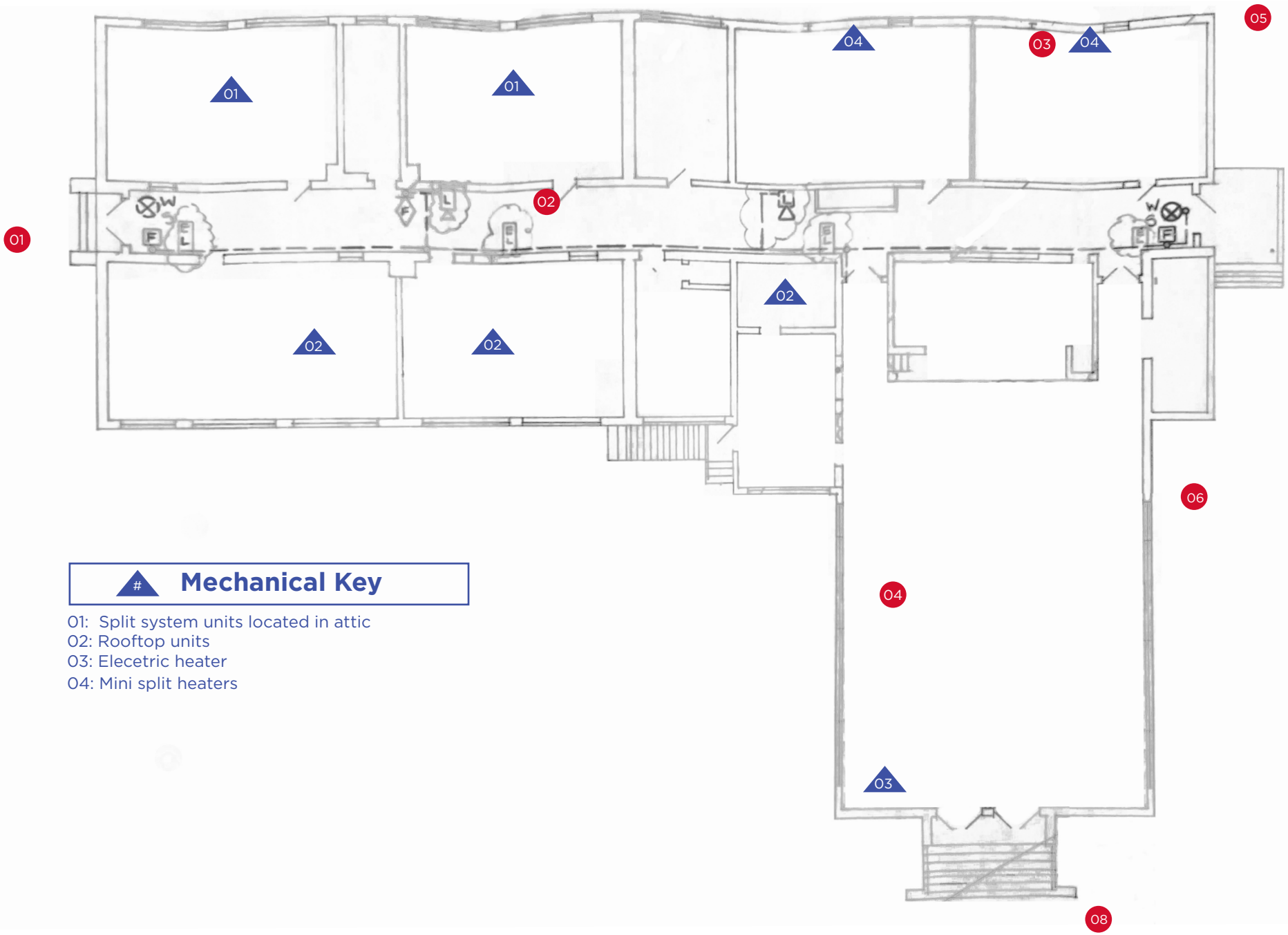
04 Evidence of possible hazardous material in former gym - would require further investigation by appropriate testing agency

05 Rear canopy appears weathered

06 Windows in several location have degraded finishes

07 Lack of masonry expansion joints has caused significant cracking near main entry

08 Egress route is not ADA accessible



Mechanical Key

01: Split system units located in attic
02: Rooftop units
03: Elecetric heater
04: Mini split heaters

Mechanical System

Observations documented by Engineering Services Group.

The building is heated and cooled primarily with air source heat pump systems. Units are either split systems, mini splits or rooftop mounted. The units range in age from 15 to 20 years old.

The split system units are installed in the attic.

The large storage area doesn't have air conditioning, only electric heaters.

Toilets have electric heaters.

None of the units have humidity control or appear to have outside air connected to them.

The building does not have an HVAC control system. Each unit is controlled from a stand-alone thermostat.

This building does not have a Kitchen.

Noted deficiencies or operational issues:

- Toilets and janitor's closets do not have exhaust.
- The existing equipment is coming to the end of its expected life and unit replacements due to age should be expected.
- Overall, the system is very well maintained.

Prepared and approved by Jeffery R. Whillock, PE

Plumbing System

Observations documented by Engineering Services Group .

This facility is served from a public water main. The water entrance into the building is a 1-1/2" and the piping material entering the building is copper. This line connects to a galvanized water line that serves the building. The hot water piping throughout the building has been replaced with PEX piping and it is insulated with Rubatex insulation. At water entrance there is a pressure reducing valve and main shut-off valve. Cold water piping is not insulated. Water distribution throughout the school is routed below slab and thru crawl spaces.

Hot water supply for the entire building is provided by a 30 gallon electric water heater located in the corner of the Women's restroom.

This facility is not served with LP gas or natural gas.

Sanitary sewer is connected to a 1,500 gallon septic tank and drain field system. Sanitary sewer and vent piping is cast iron.

Plumbing fixtures within the building consist of water closets, urinals, and wall-hung lavatories. Flush valves on water closets are manual type. Urinals have a twist valve handle to flush. Lavatory faucets in public restrooms are manual type. Several lavatories have been removed and their rough-ins remain visible.

Noted deficiencies or operational issues:

- Galvanized water piping throughout the building has had numerous leaks and needs to be replaced.
- There was no accommodation for handicap in regard to a drinking fountain or electric water cooler.
- Wall lavs and urinals were not handicap accessible.
- Backflow preventer needs to be added to the water entrance.
- There was no dielectric union where the copper piping connected to the galvanized piping and electrolysis has already occurred.
- Due to the age of the building, the cast iron sewer piping has started to deteriorate.

Prepared and approved by Jeffery R. Whillock, PE

Electrical System

Observations documented by Vreeland Engineers, Inc.

Lighting: Majority of interior and exterior lighting fixtures in the building have been retrofitted with LED lamps. Lighting levels appear satisfactory. Lighting controls have been upgraded in a good portion of the facility to include motion sensors.

Power Distribution System: Building is served at 120/208-volt, three-phase, four-wire, wye with an overhead power service from a utility company pole-mounted transformer bank. Service capacity is 1200 amperes. While 1200-ampere service capacity seems very adequate, most sub-panels in the facility are “load center” type residential equipment with limited space available for addition of future circuits. In our opinion, branch circuit distribution throughout the building needs to be upgraded. Upgrades need to include new sub-panels and updated panelboard labeling and circuit directories.

Communications Systems: Since building no longer functions as an educational facility, building no longer has a need for an intercom system. Technology wiring per Washington County Schools IT standards appears to be in place throughout the school, including network wall drops, Wi-Fi drops, security cameras, access controls, etc.

Electrical Life Safety Systems: Exit signs with built-in battery packs and battery powered emergency egress lighting is in place throughout the school. Building also has a fire alarm system equipped with full smoke detection throughout the building, as well as notification appliances throughout building. Voice evacuation type system is not required in this facility since it no longer functions as an educational occupancy.

Recommended Improvements:

- Upgrade of interior electrical distribution equipment and branch wiring in building. All panels need labels and updated circuit directories.

Prepared and approved by Harold E. Damron, PE

PART 3:
WASHINGTON COUNTY DEMOGRAPHICS

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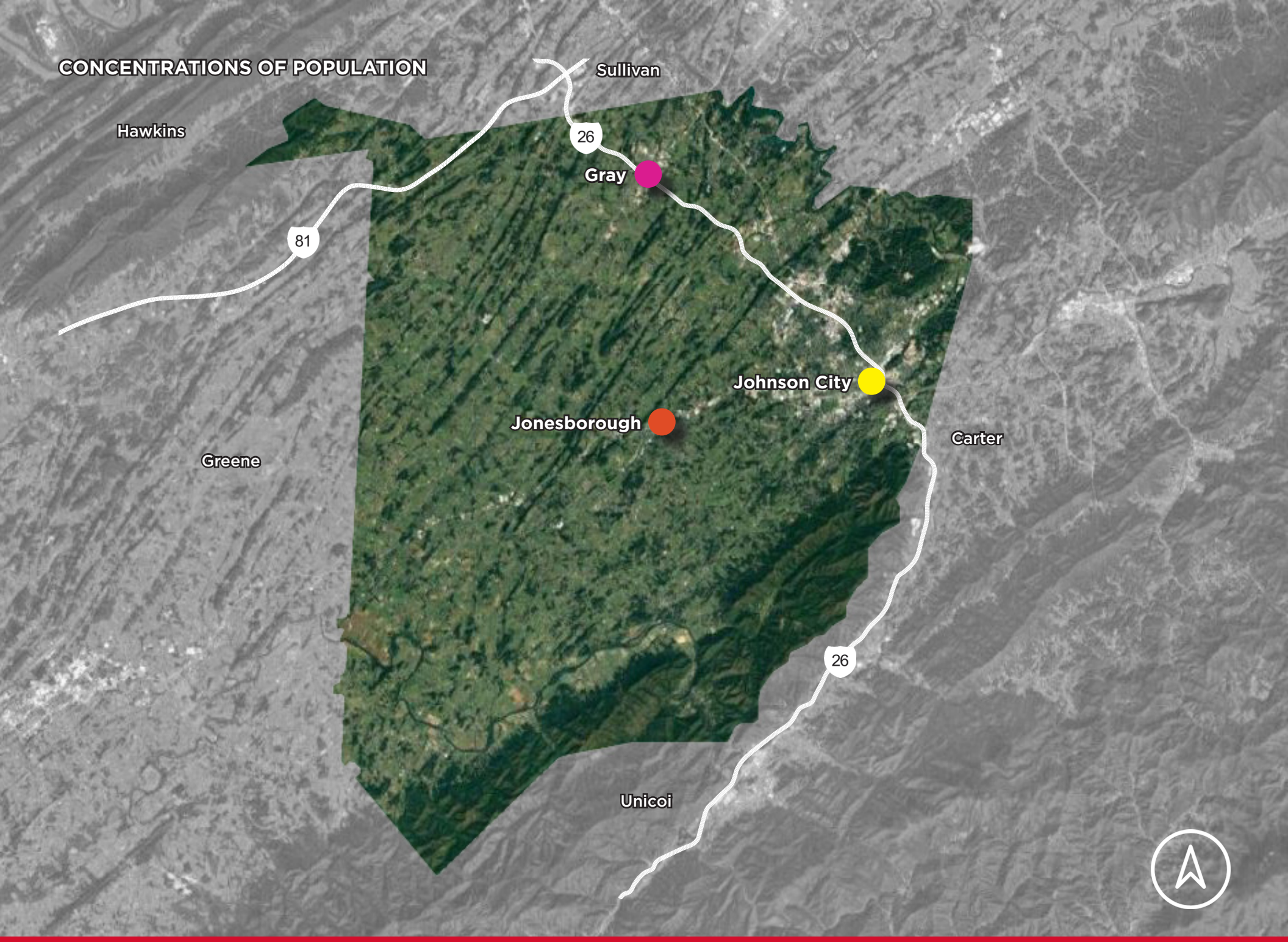
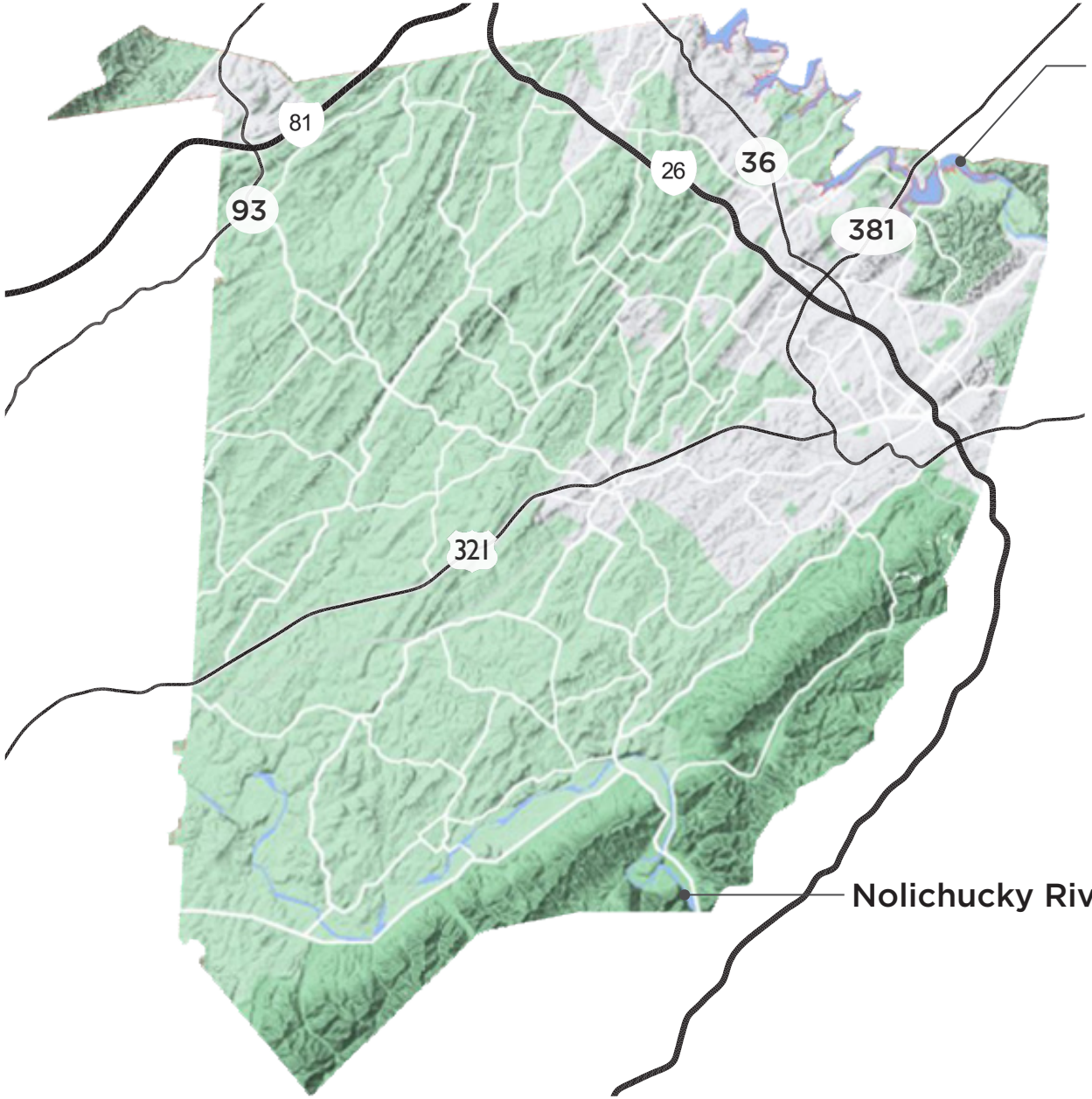

CONCENTRATIONS OF POPULATION
Sullivan
Hawkins
26
Gray
81
Johnson City
Jonesborough
Carter
Greene
26
Unicoi



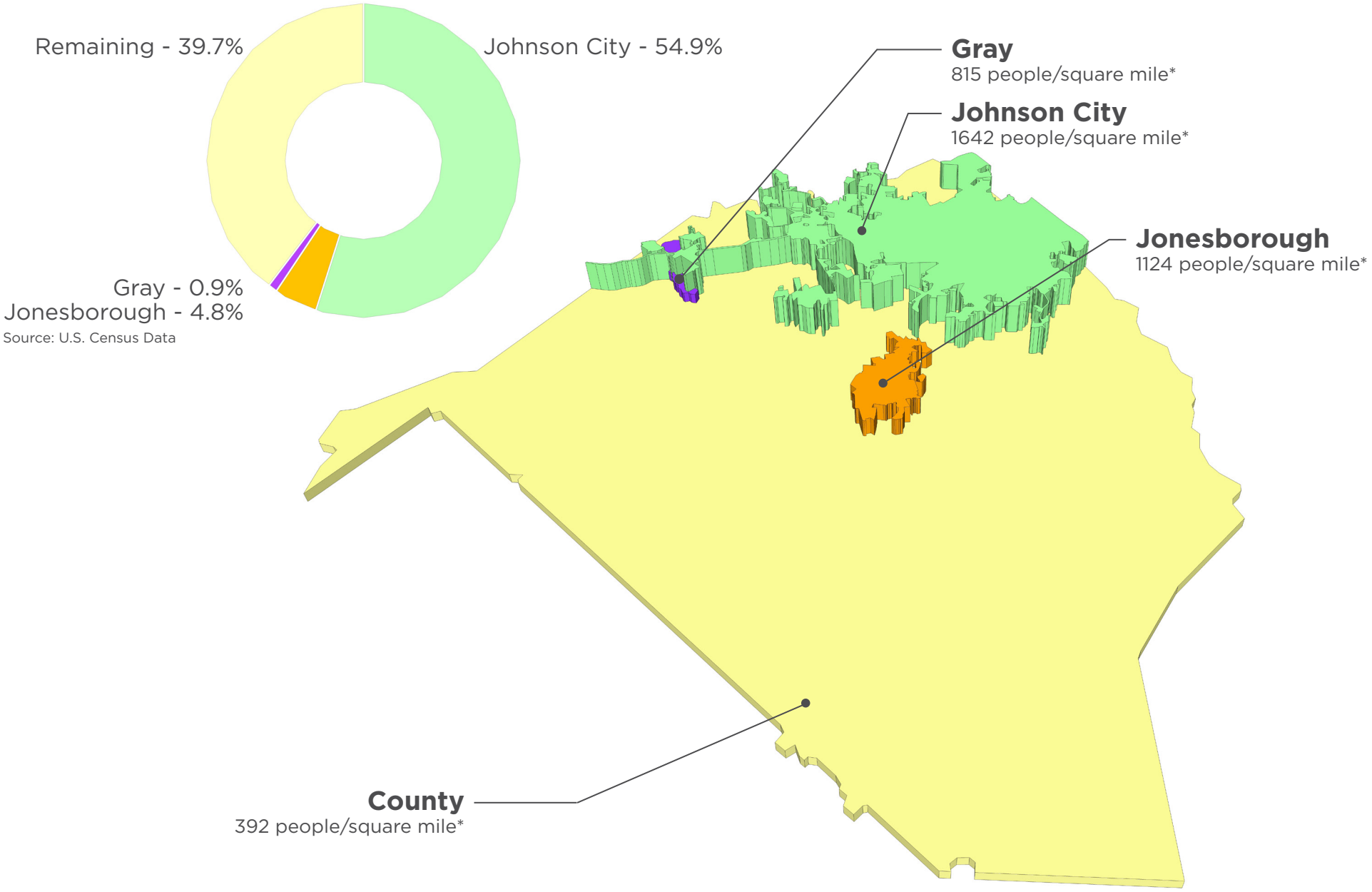
Road

Water Feature

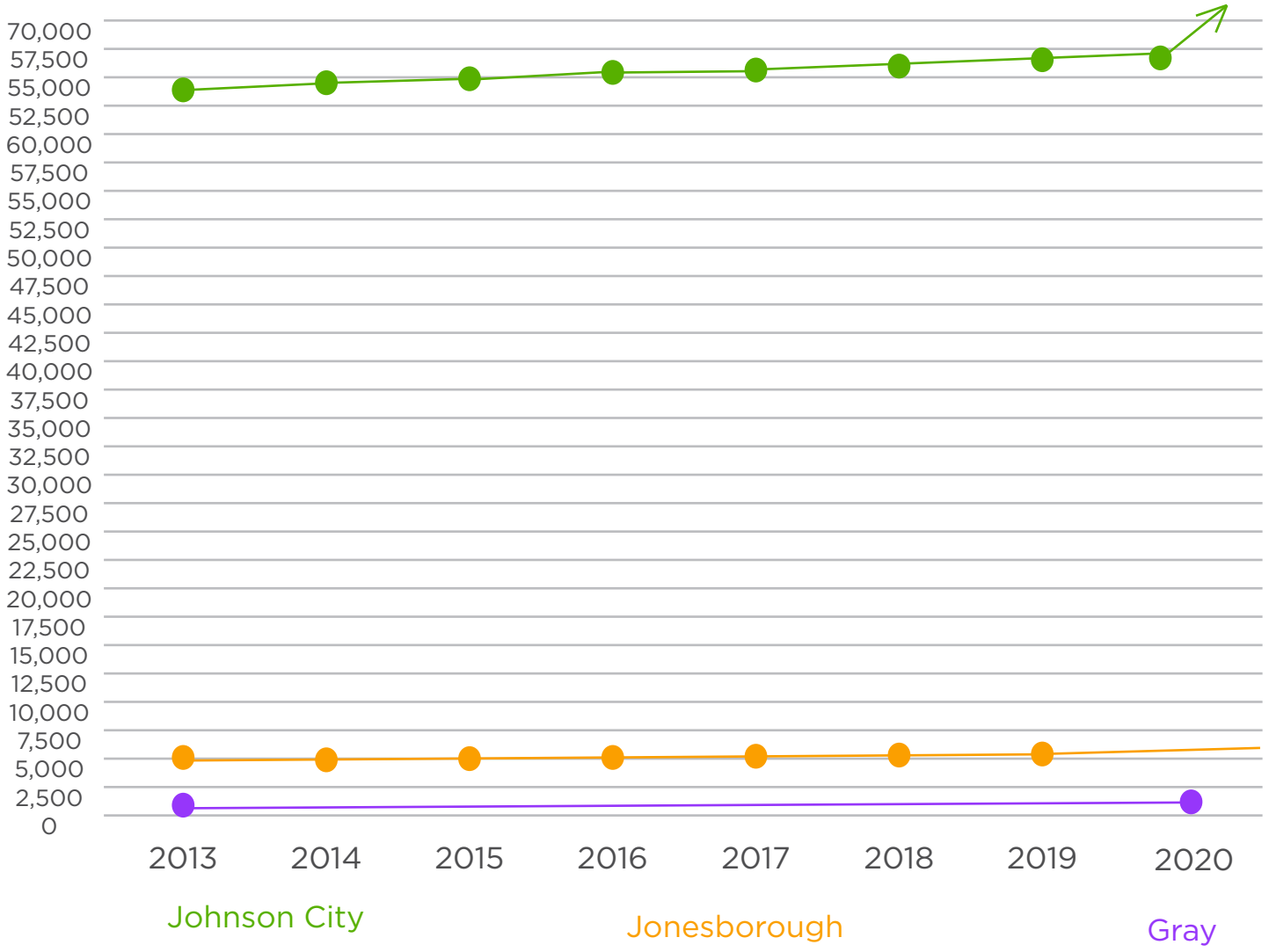
Terrain

MAIN IMPACT OF GEOGRAPHY:
A majority of the county is covered in rolling hills, farmland, and forest. The population is concentrated to the Northeastern side and widespread on the Southwestern side of the county.

POPULATION DENSITY AND DISTRIBUTION



POPULATION CHANGES



+6.7% 2020-2021

+4% 2013-2019

+7% 2013-2019

No Data Available

+5% OVERALL COUNTY GROWTH BETWEEN **2020-2021**

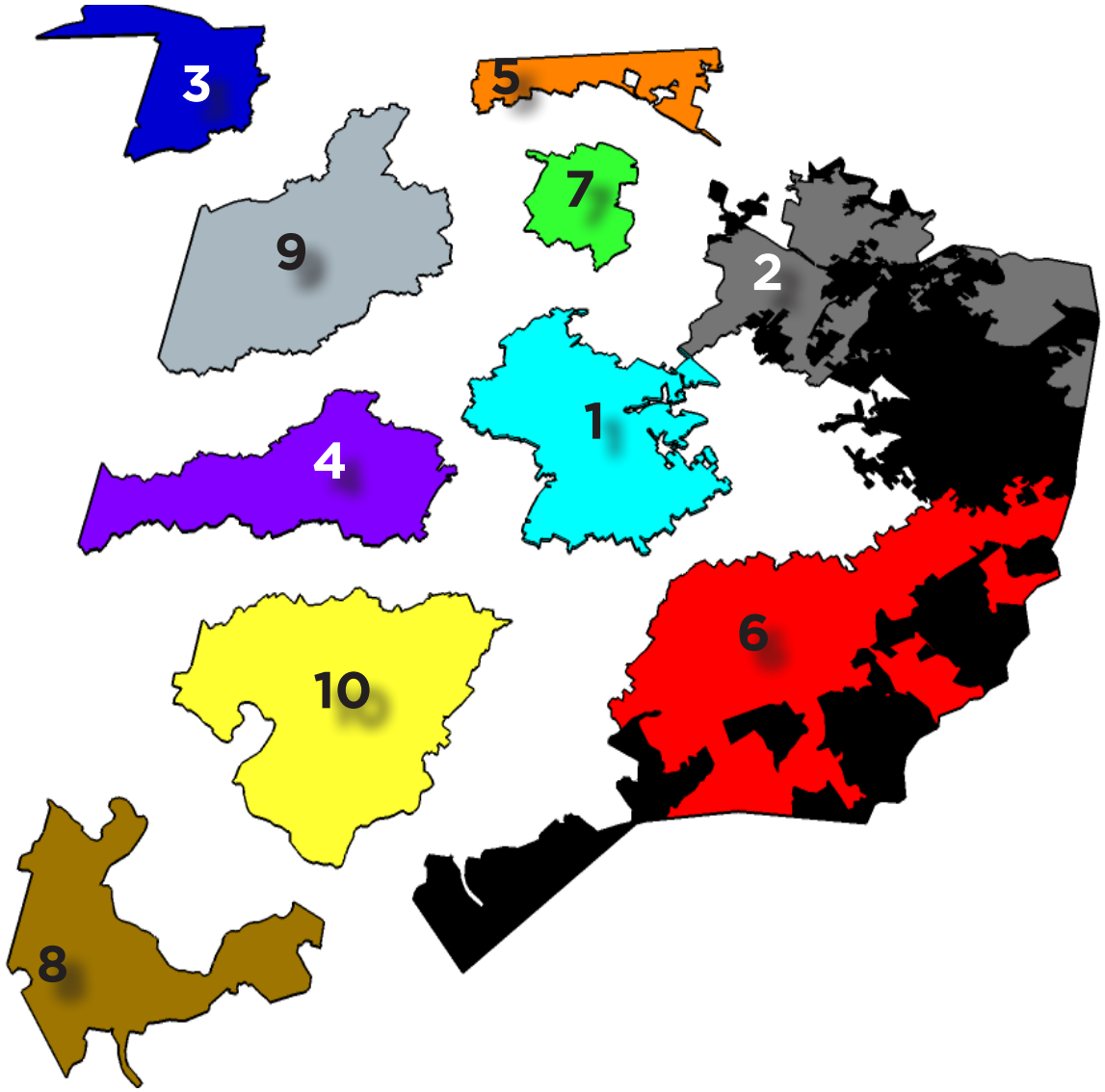
123,891 PEOPLE (APPROX.) TOTAL COUNTY POPULATION IN **2013**

127,805 PEOPLE (APPROX.) TOTAL COUNTY POPULATION IN **2019**

+3% OVERALL COUNTY GROWTH BETWEEN **2013 - 2019**

Source: U.S. Census Data

EXISTING ENROLLMENT ZONES AND FEEDER SYSTEM - ELEMENTARY SCHOOLS

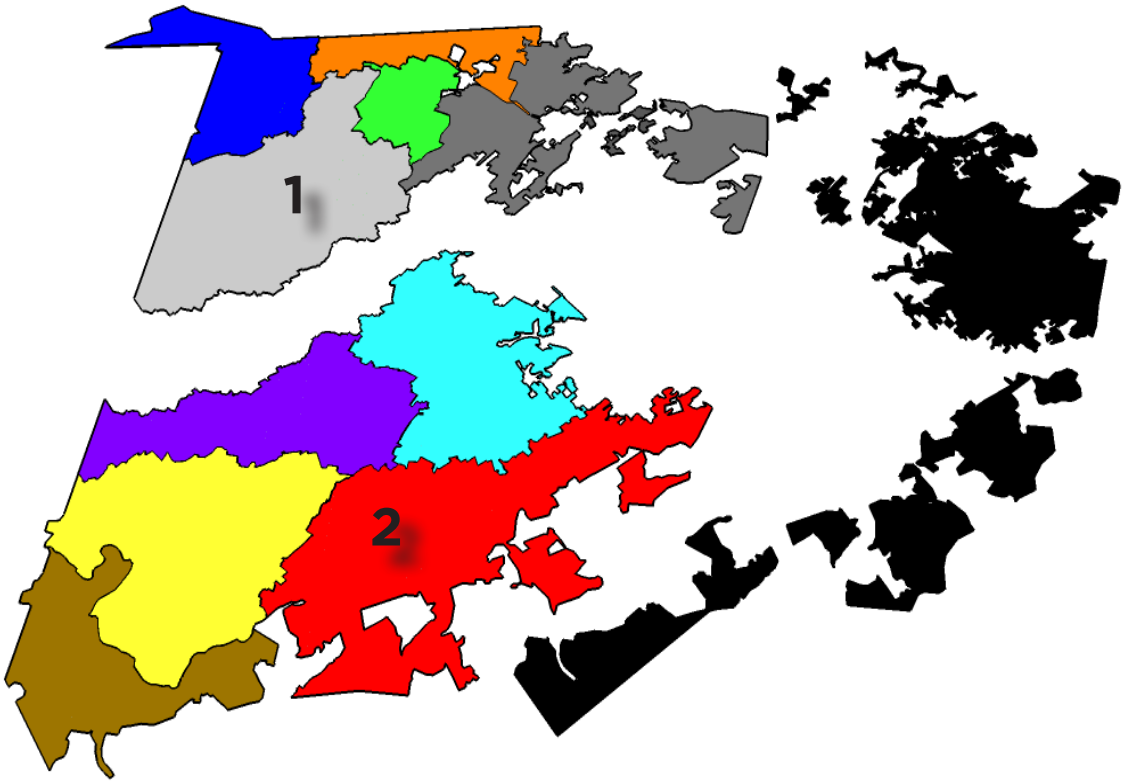


Elementary/ Middle School

District	Facility
1	Jonesborough Elementary School
2	Boones Creek Elementary School
3	Fall Branch Elementary School
4	Grandview Elementary School
5	Gray Elementary School
6	Lamar Elementary School
7	Ridgeview Elementary School
8	South Central Elementary School
9	Sulphur Springs Elementary School
10	West View Elementary School
FACILITIES SERVING ENTIRE COUNTY	Asbury Optional High Central Office Midway Resource Center

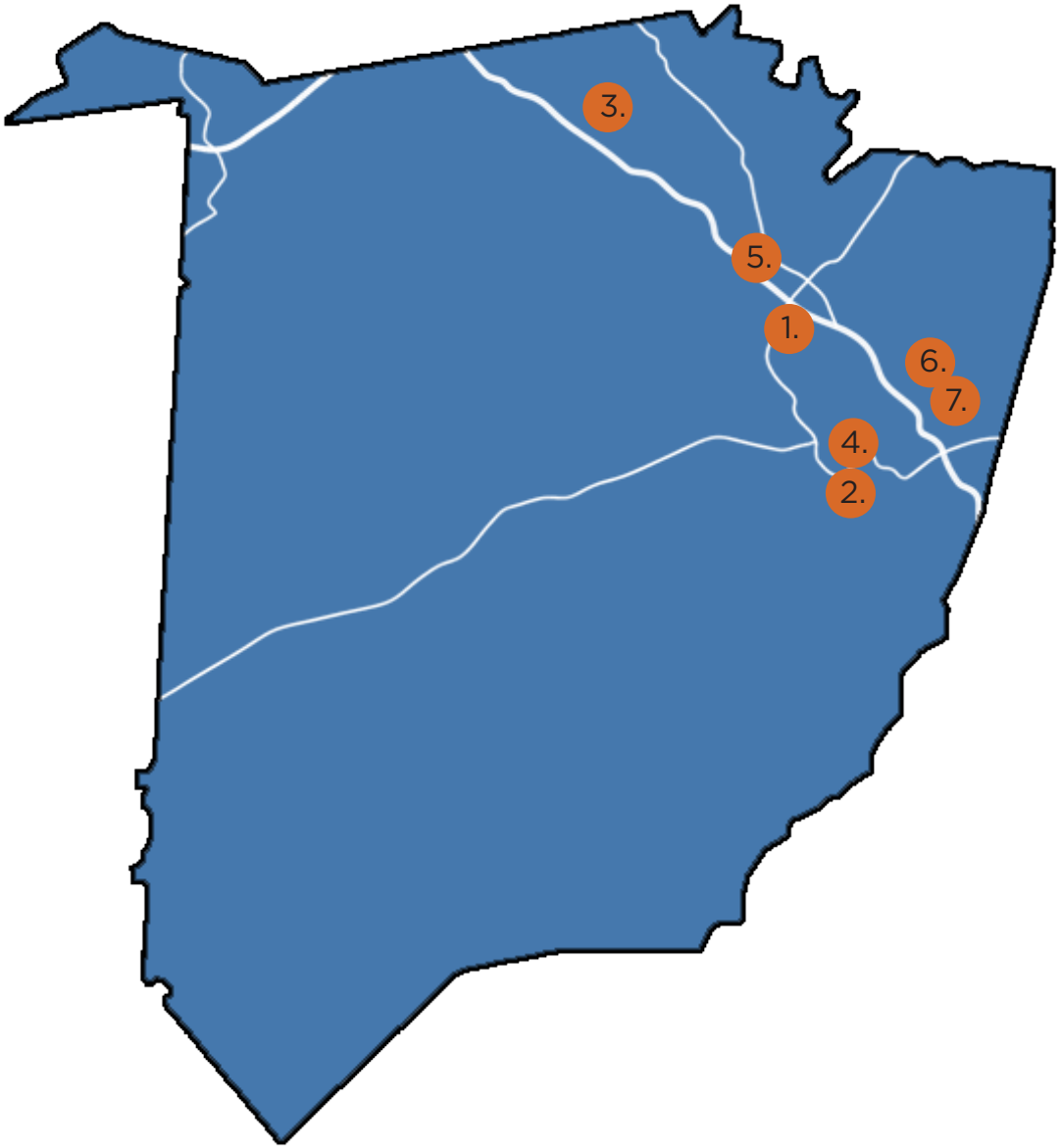
Note: The black area represents either Johnson City Schools or State Park Areas

EXISTING ENROLLMENT ZONES AND FEEDER SYSTEM - HIGH SCHOOLS



High School

District	Facility
	Daniel Boone High School
1	Fed by Fall Branch Elementary, Sulphur Springs Elementary, Gray Elementary, Ridgeview Elementary, and Boones Creek Elementary
	David Crockett High School
2	Fed by Grandview Elementary, Jonesborough Elementary/Middle, Lamar Elementary, West View Elementary, and South Central Elementary
FACILITIES SERVING ENTIRE COUNTY	Asbury Optional High Central Office Midway Resource Center



Source: Washington County, TN .org

Approx. # of Employees	Employer Name
3,500+	1. Mountain States Health Alliances
2,300+	2. East Tennessee State University
1,950+	3. Citi Commerce Solutions
1,590+	4. James H. Quillien VA Medical Center
1,400+	5. Advanced Call Center Technologies
1,170+	6. American Water Heater Company
850+	7. City of Johnson City
650+	8. AT&T Mobility - With Stores all over the county
not shown for clarity	9. Washington County Schools is a major employer with about 1,200 employees who are distributed throughout the county in the various facilities operated by the county.
	10. Johnson City Schools is a major employer with about 832 employees who are distributed throughout the city in the various facilities operated by the city.

PART 4:
WASHINGTON COUNTY SCHOOLS RESEARCH AND DATA

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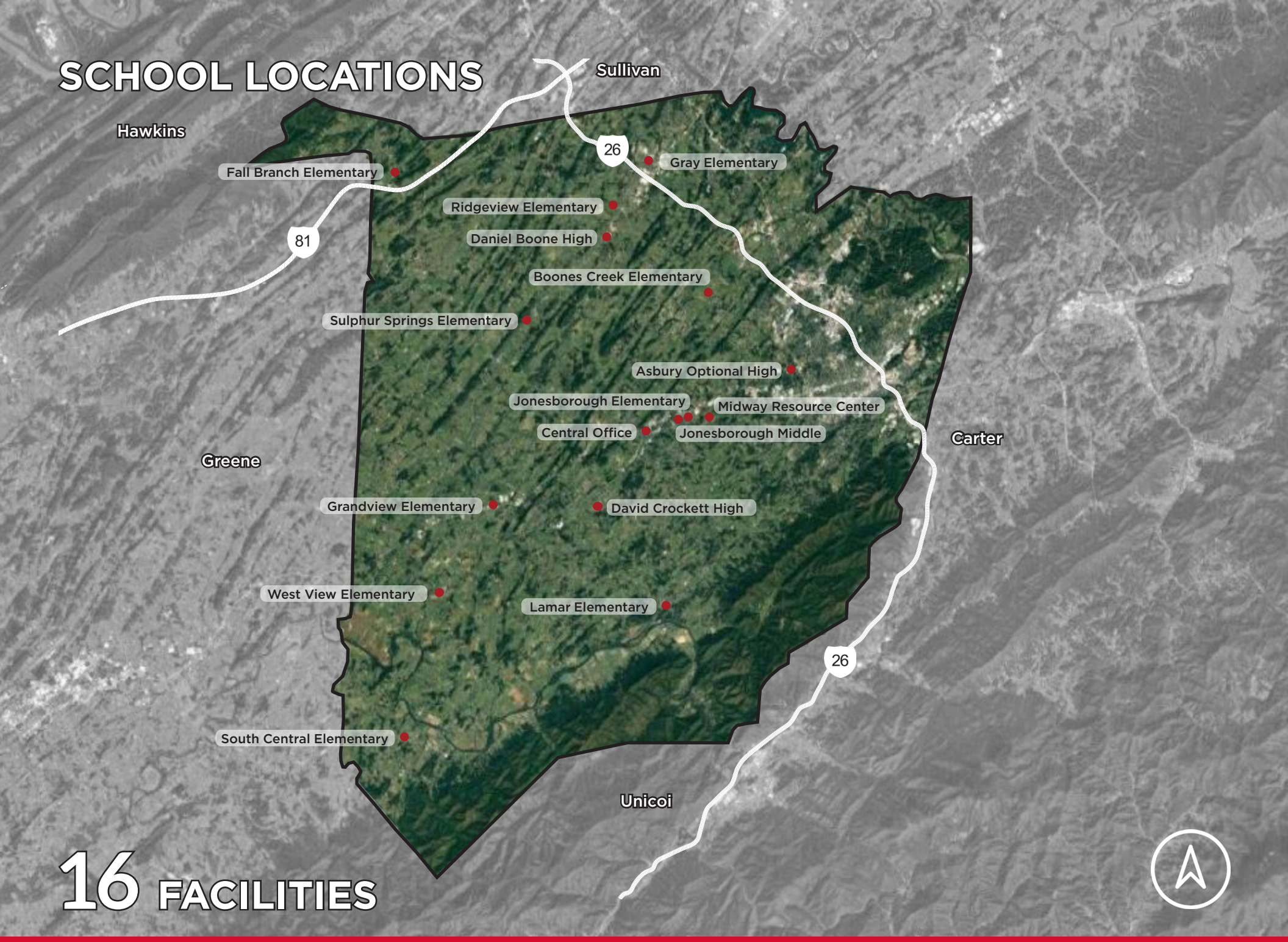
SCHOOL LOCATIONS



16 FACILITIES

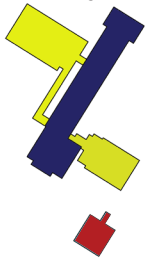
AGE OF EXISTING FACILITIES

Central Office

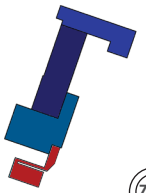
Midway Resource Center

Asbury Optional High School

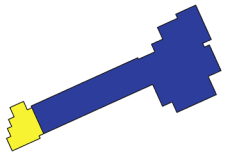
Sulphur Springs Elementary School



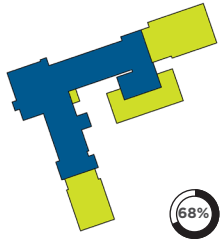
Fall Branch School



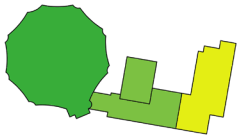
Jonesborough Middle School



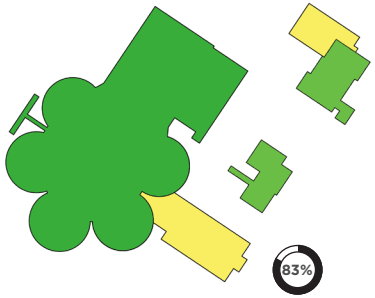
West View Elementary School



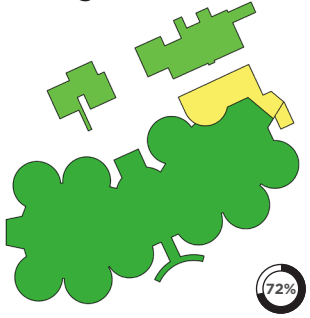
Jonesborough Elementary School



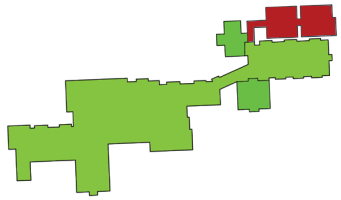
Daniel Boone High School



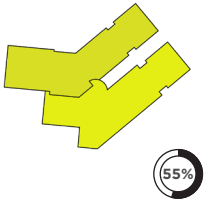
David Crockett High School



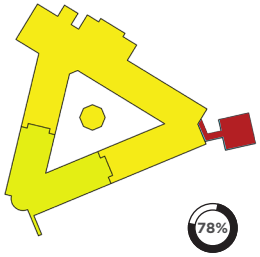
Gray Elementary School



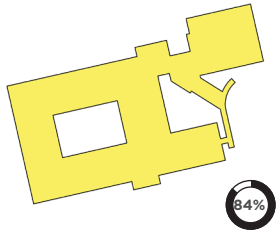
South Central Elementary School



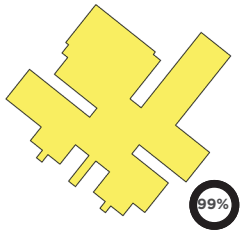
Lamar Elementary School



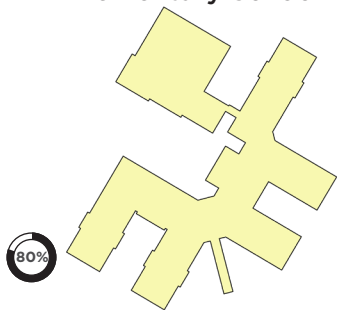
Grandview Elementary School

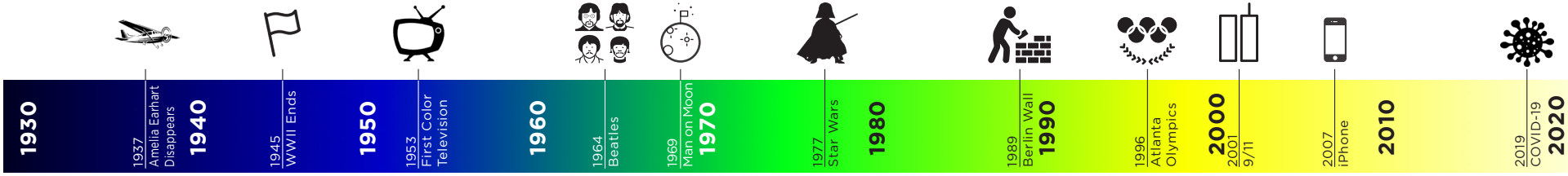


Ridgeview Elementary School



Boones Creek Elementary School





GROWTH BY AGE

% Change in Washington County 2013-2019:

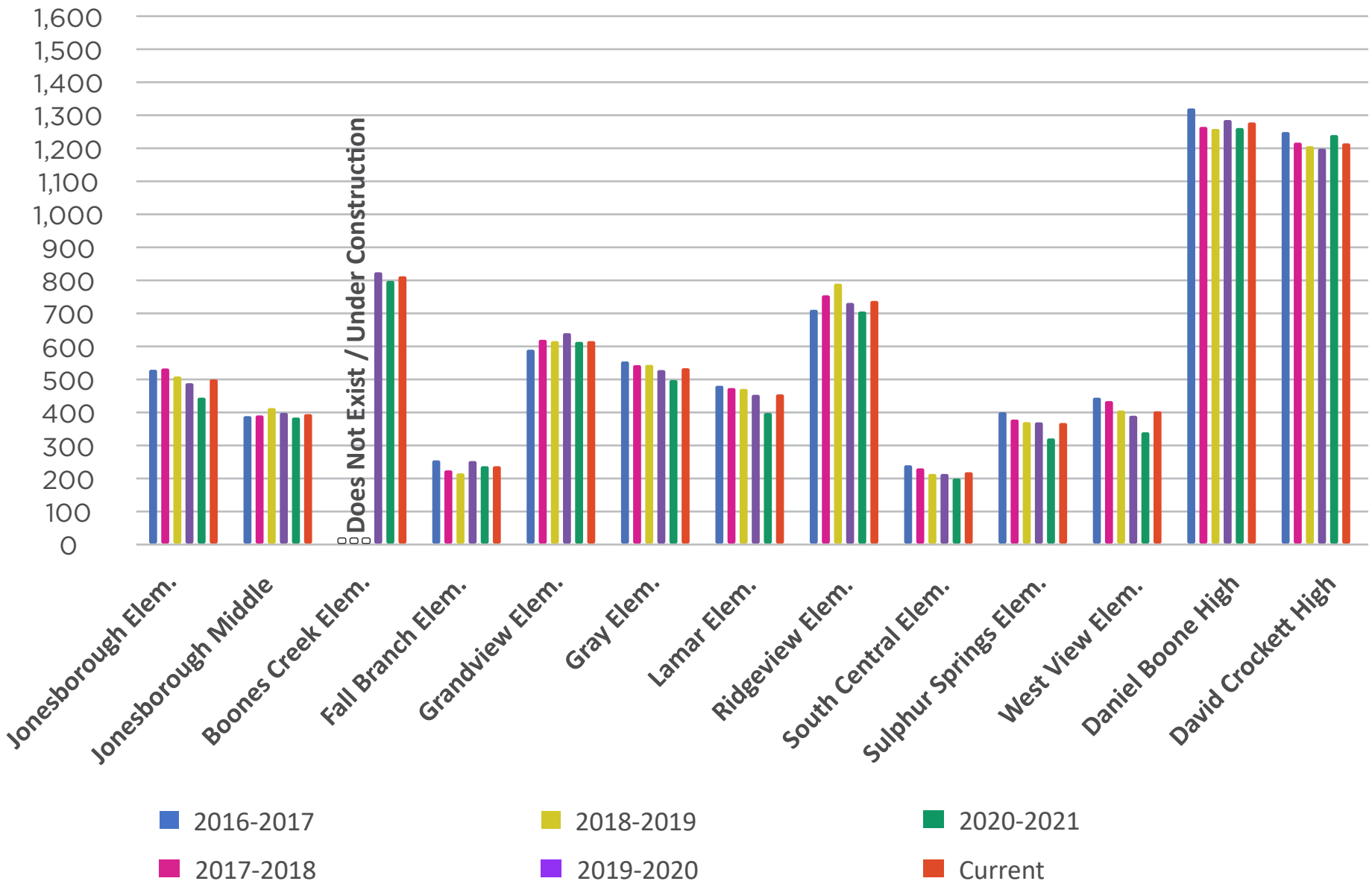
-2.7% change in <5

+.5% change in 5-24

-3% change in 25-54

+11% change in over 55

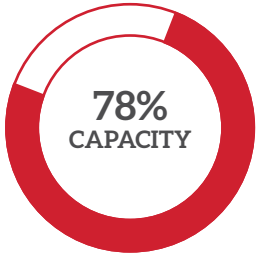
GROWTH BY SCHOOL



-5.8% OVERALL COUNTY SCHOOLS ENROLLMENT GROWTH BETWEEN 2016 AND TODAY

UTILIZATION RATE

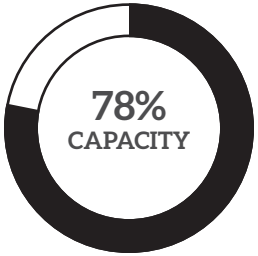
WASHINGTON COUNTY SCHOOL SYSTEM



ENROLLMENT: 7,292
CAPACITY: 9,401

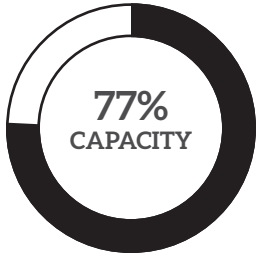
UTILIZATION RATES BY GRADE LEVEL

Pre-K - 8 SCHOOL



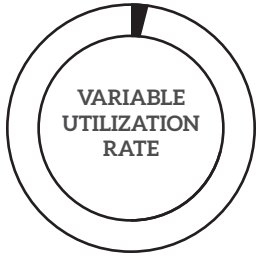
ENROLLMENT: 5,117
CAPACITY: 6,573

HIGH SCHOOL



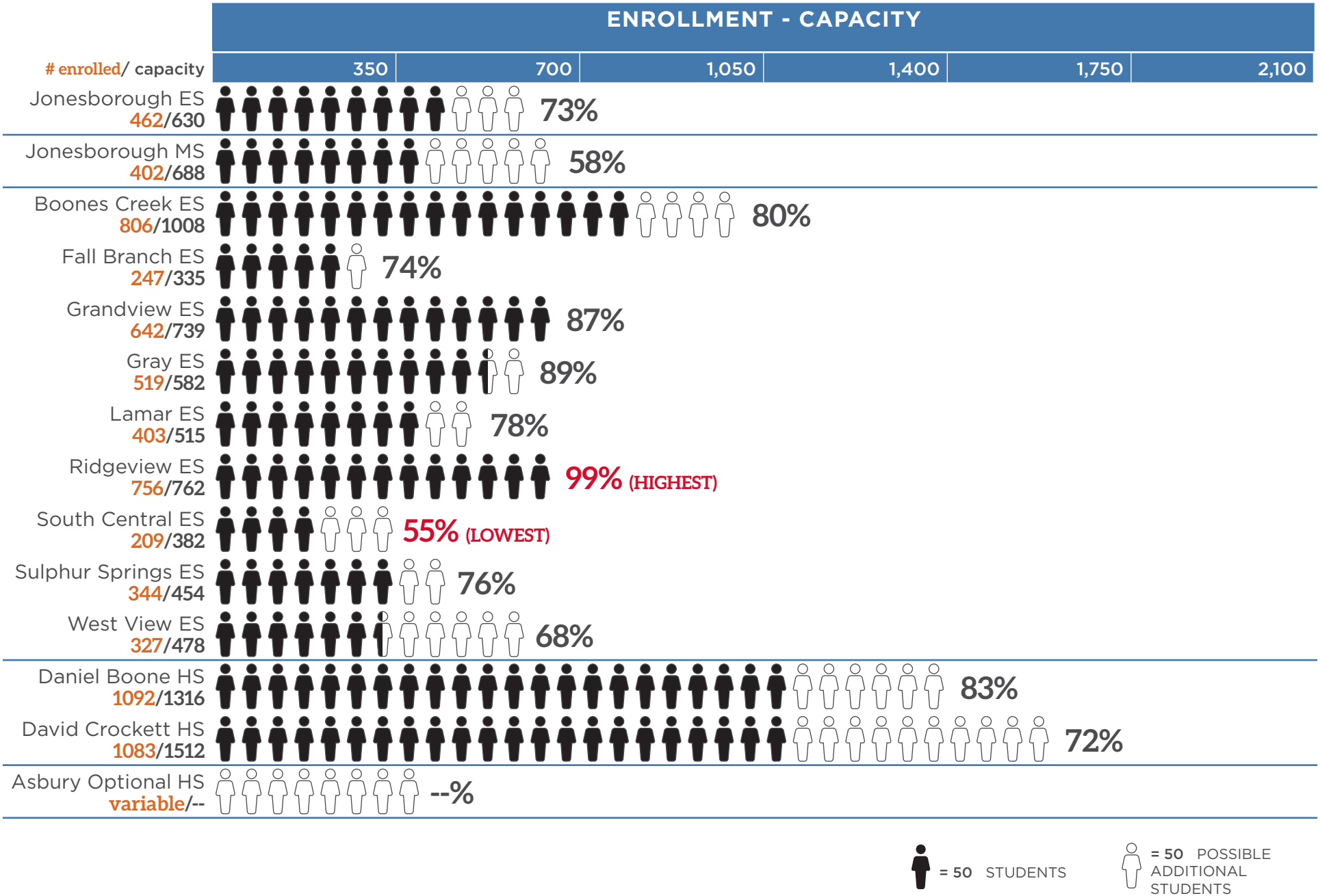
ENROLLMENT: 2,175
CAPACITY: 2,828

ALTERNATIVE SCHOOL

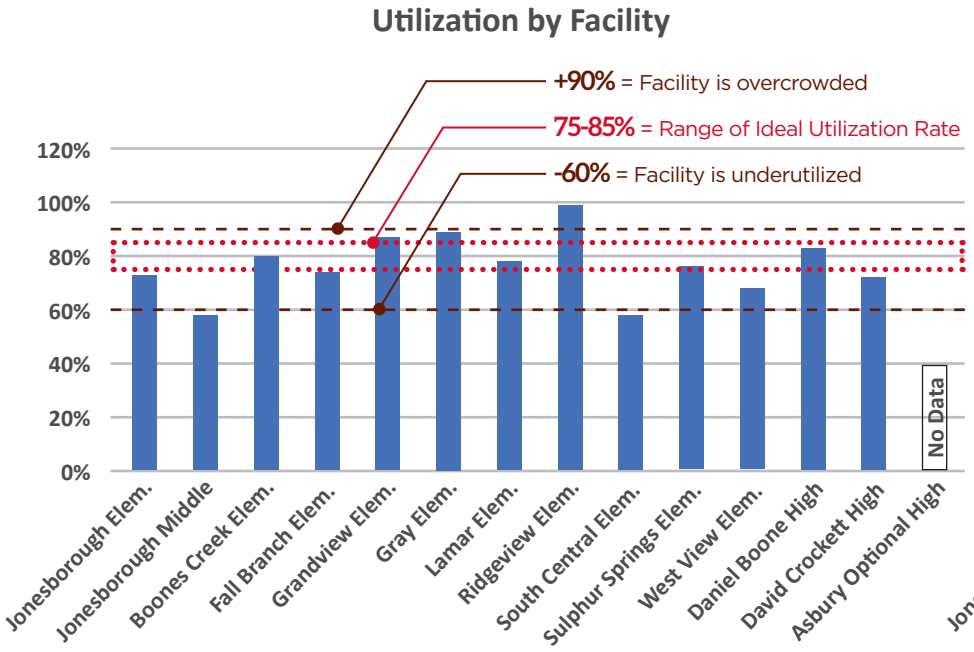


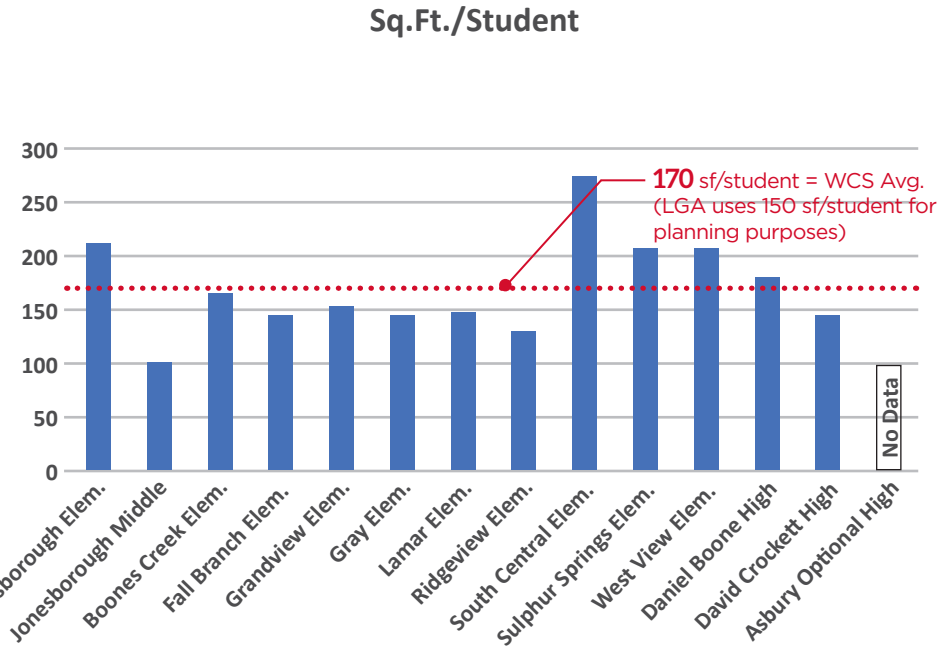
ENROLLMENT: VARIES
CAPACITY: -

*** All enrollments provided by Washington County Schools**


ENROLLMENT - CAPACITY
enrolled/ capacity
350
700
1,050
1,400
1,750
2,100
Jonesborough ES
462/630
73%
Jonesborough MS
402/688
58%
Boones Creek ES
806/1008
80%
Fall Branch ES
247/335
74%
Grandview ES
642/739
87%
Gray ES
519/582
89%
Lamar ES
403/515
78%
Ridgeview ES
756/762
99% (HIGHEST)
South Central ES
209/382
55% (LOWEST)
Sulphur Springs ES
344/454
76%
West View ES
327/478
68%
Daniel Boone HS
1092/1316
83%
David Crockett HS
1083/1512
72%
Asbury Optional HS
variable/--
--%
= 50 STUDENTS
= 50 POSSIBLE ADDITIONAL STUDENTS

UTILIZATION RATE ANALYSIS





* All enrollments provided by Washington County Schools

FACILITY CONDITIONS COMPARISON

SCHOOL	Age of Existing Facility	Building Envelope/ Structure	Health & Safety	Accessibility	General Conditions	OVERALL RATING
Jonesborough ES	★★★	★	★★★	★★	★	2.0
Jonesborough MS	★★	★★	★★	★★	★	1.8
Boones Creek ES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	5.0
Fall Branch ES	★★	★★★	★★	★★	★★★	2.4
Grandview ES	★★★★★	★★★★★	★★★	★★★★★	★★★★	4.4
Gray ES	★★★★	★★★★	★★★	★★★	★★	3.2
Lamar ES	★★★★	★★★	★★	★★★	★★	2.8
Ridgeview ES	★★★★★	★★★★★	★★★★	★★★★★	★★★★	4.6
South Central ES	★★★★	★★★	★★	★★★	★★★	3.0
Sulphur Springs ES	★	★★	★★	★★★	★★	2.4
West View ES	★★★	★★	★★	★★★	★★★	2.6
Daniel Boone HS	★★★	★★★★	★★	★★	★★★	2.8
David Crockett HS	★★★	★★★★	★★	★★	★★★	2.8
Asbury Optional HS	★	★★★	★★	★★	★★	2.0
Central Office	★	★★★	★★★	★★	★★★	2.4
Midway Resource	★	★★	★	★	★	1.2

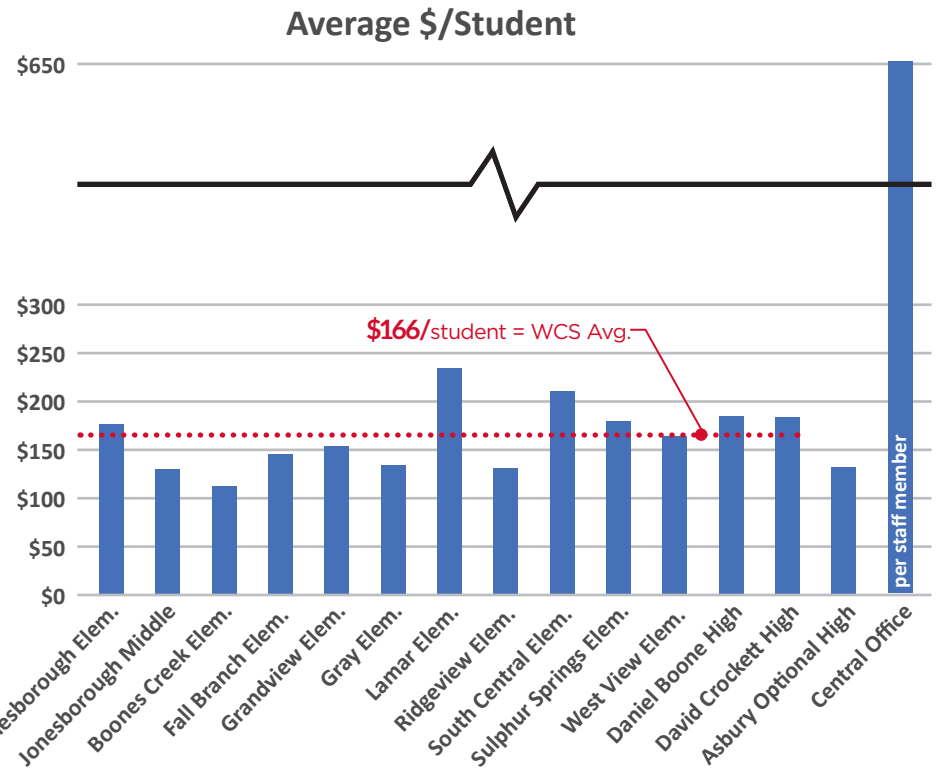
★★★★★ 5 STAR RATING IN WHICH 1 STAR IS POOREST CONDITION. 5 STAR IS BEST CONDITION.
OVERALL RATING IS THE AVERAGE OF THE RATINGS IN EACH OF THE 5 CATEGORIES SHOWN ABOVE.

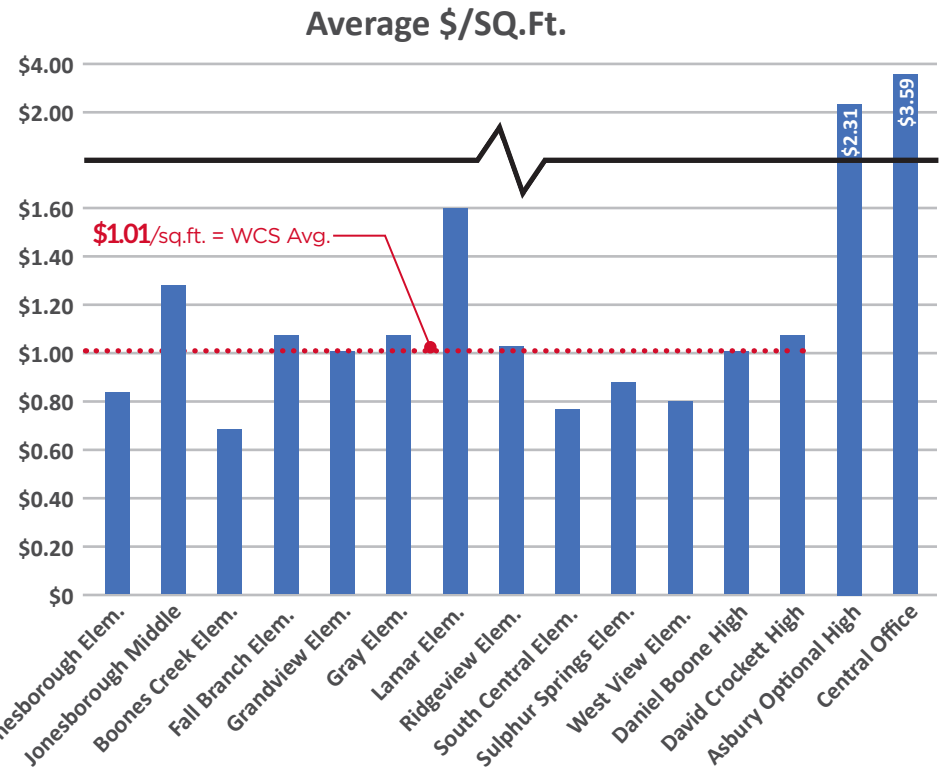
UTILITIES COST FACTORS

UTILITIES

Electricity
Fossil Fuels
Water
Sewer

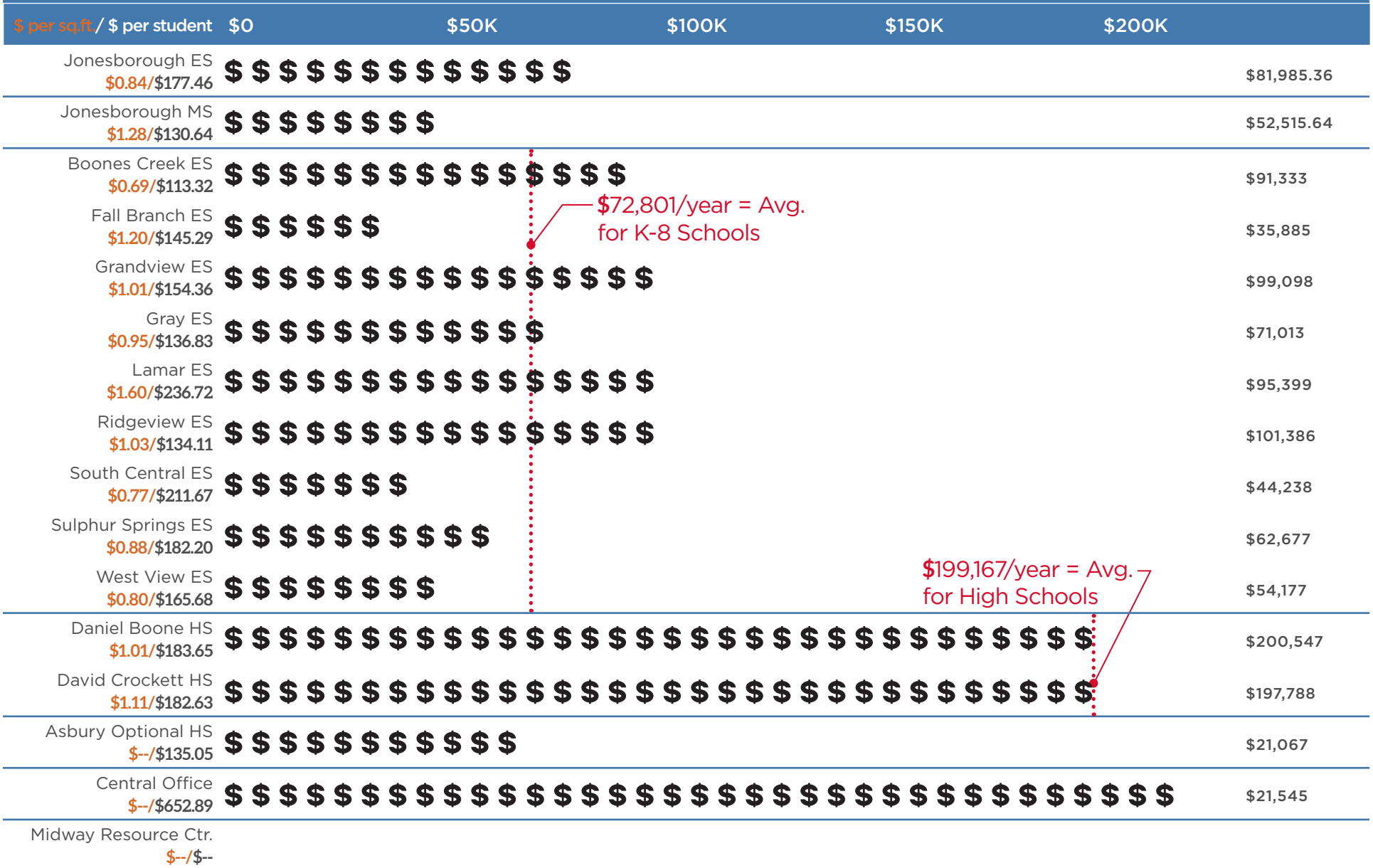
The utility costs were calculated using information provided by Washington County Schools. LGA looked at a 6 year history of utility costs to arrive at an average yearly utility cost per school. We arrived at two ratios in order to provide a comparable measure by which to study the 16 facilities -- an average yearly utility cost per student and an average yearly utility cost per square foot of building area. The Utility Cost Comparison chart shows the overall 6 year average utility cost in the main body of the chart. The two ratios are shown under each facility name.





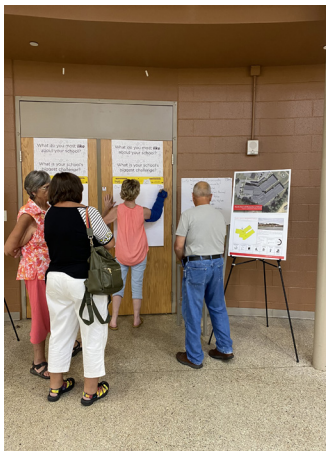
Observation: LGA found a strong correlation between schools with full or partial geothermal systems and lower utility costs, even in the case of older buildings. This helped to offset the expected conclusion that older buildings are more expensive to operate due to their less efficient envelope (i.e. less thermal insulation in walls, old non-thermally insulated windows).

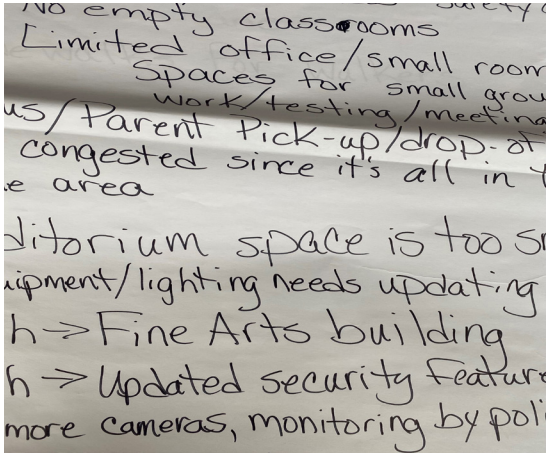
AVERAGE UTILITIES COST
(6 year average)

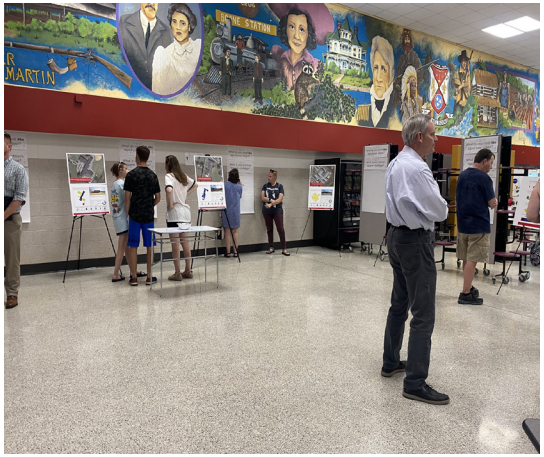


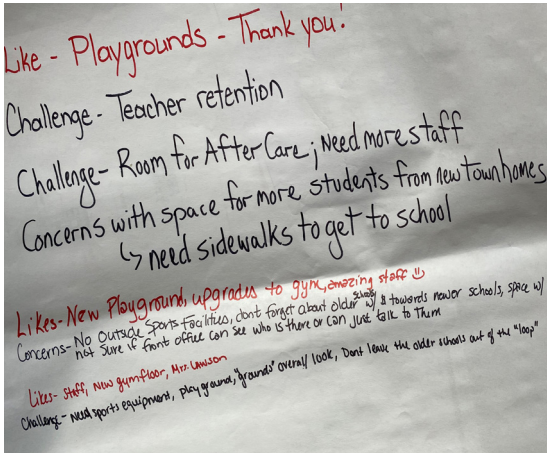
COMMUNITY FEEDBACK

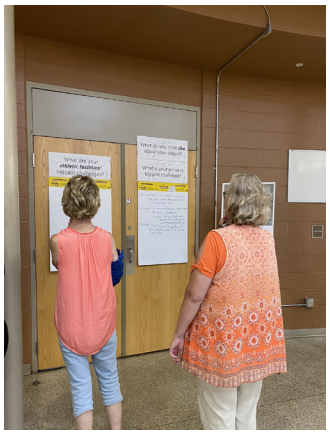
At LGA, it has always been vital to do work that is important and beneficial to the community. Our firm strongly believes that great design helps contribute to our communities in a positive way. The Washington County Board of Education should be commended for their desire to involve the community in this assessment. As part of this process, LGA conducted two community input sessions on June 13th and 15th at David Crockett and Daniel Boone High Schools. During each session the community was given the opportunity to express their ideas and concerns about the school their child attended as well as the system as a whole. Below you will find some of the feedback we gathered.

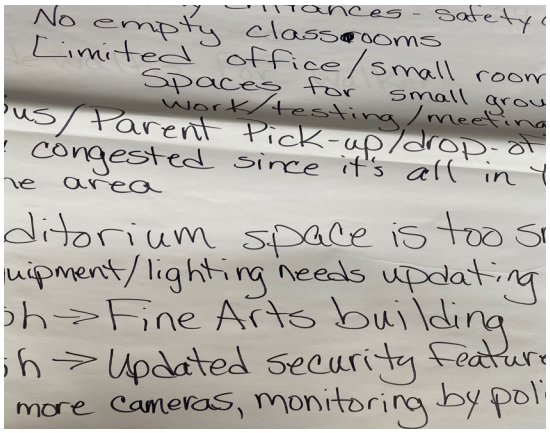


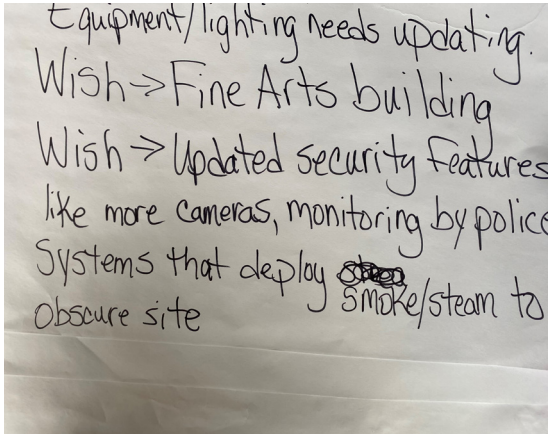












*Pictures from input sessions

PART 5:
SUMMARY OF FINDINGS

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The Big Picture: Growth

According to the Census Bureau, Washington County realized 3% growth from 2013-2019. In the school system during those years, most schools experienced a flat to negative growth rate. However, all the leading growth indicators point to an accelerated growth period for both the county and the school system post pandemic. According to the research and data, a majority of the growth is focused in the northern and northeastern portion of the county along I-26. This growth cannot be accommodated long term through the shifting of zones due to the implication on travel times. The schools in this area are currently nearing or at capacity. The system has capacity for future growth, however it faces a unique situation of addressing the distribution of growth where capacity does not align.

The Big Picture: Age of Facilities

Like most school systems in Tennessee, Washington County has a diversity in the age of their school facilities. Some schools have sections of their buildings that are over 80 years old. Many are in the 40-year old range, and some were constructed in the last two decades. However, one thing all Washington County Schools have in common is they are all well maintained, clean, functional, and all have years of service left. In the next decade, Washington County will have decisions to be made regarding the decommissioning of their oldest facilities while at the same time deciding if new facilities are necessary to accommodate projected growth in the northern section of the county.

Number of Facilities More than 40 Years Old:
11

Oldest Five Facilities (overall):
Central Office (1939)
Midway Resource Center (1939)
Asbury Optional High School (1939)
Sulphur Springs Elementary School (1939)
Fall Branch Elementary School (1939)

Smallest Facility (by enrollment):
South Central Elementary School (209)

Lowest Enrollment Growth (2016-2021):
West View Elementary School (-23%)

Utilization Rate Farthest from Ideal Range (75-85% capacity):
Ridgeview Elementary School (99%)
Gray Elementary School (89%)
Jonesborough Middle School (58%)
South Central Elementary School (55%)

Facility with Lowest Overall Rating:
Midway Resource (1.2 stars)

Facilities with Temporary Classrooms:
Fall Branch Elementary School
Gray Elementary School
Lamar Elementary School
Sulphur Springs Elementary School

Facilities with Highest $/student and $/SF:
Central Office at $652.89/employee and $3.59/SF

Number of Facilities less than 20 years Old:
3

Newest Three Facilities (overall):
Grandview Elementary School (2008)
Ridgeview Elementary School (2008)
Boones Creek Elementary School (2019)

Largest Facility (by enrollment):
Daniel Boone High School (1,248)

Highest Enrollment Growth (2016-2021):
Grandview Elementary School (+4%)

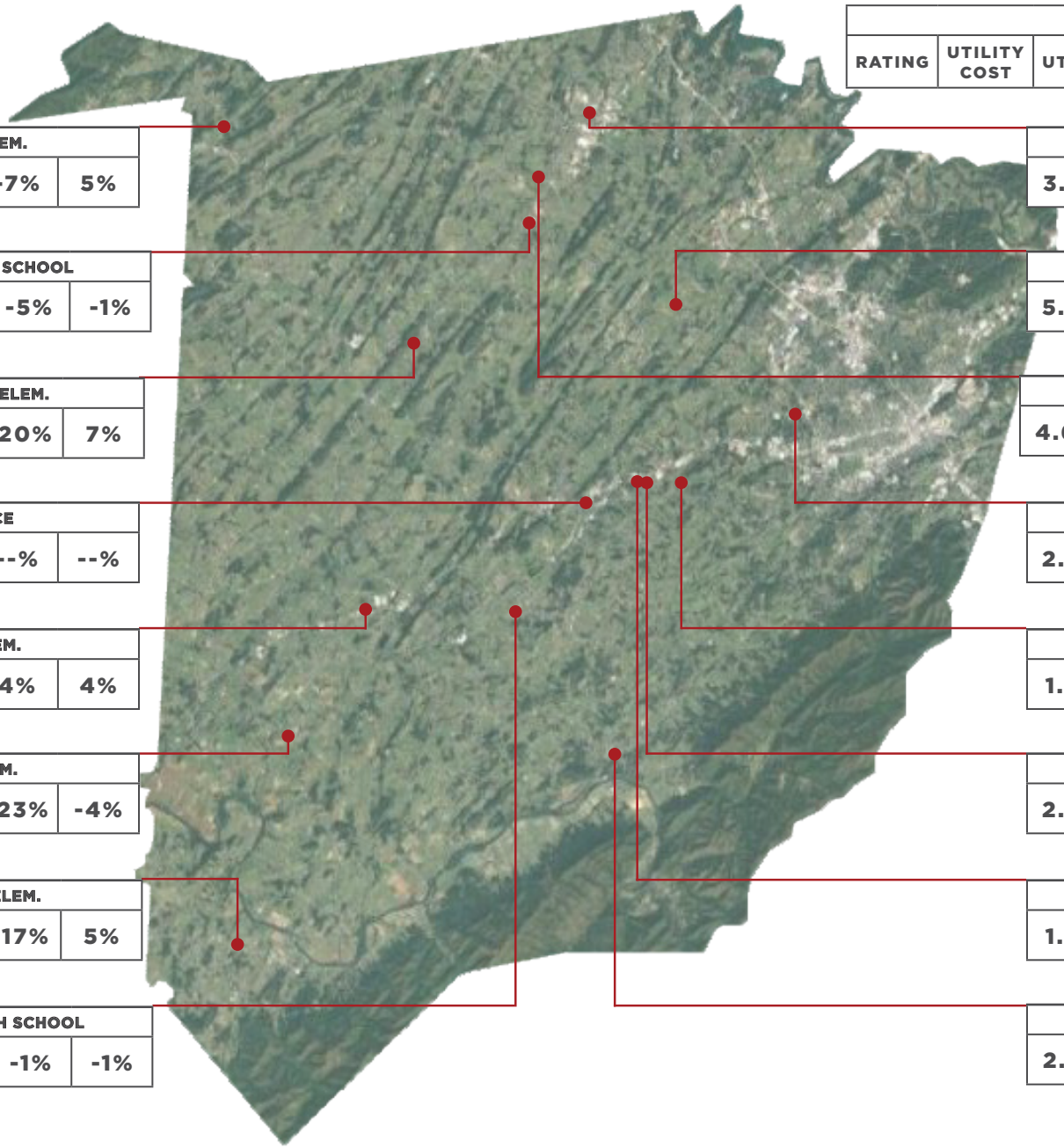
Utilization Rate Closest to Ideal Range (75-85% capacity):
Boones Creek Elementary School (80%)
Sulphur Springs Elementary School (76%)
Lamar Elementary School (78%)
Daniel Boone High School (83%)

Facilities with Highest Overall Rating:
Boones Creek Elementary School (5.0 stars)

Median Age in Washington County:
40.2

Facilities with Lowest $/student and $/SF:
Boones Creek Elem. $113.32/student and $0.69/SF

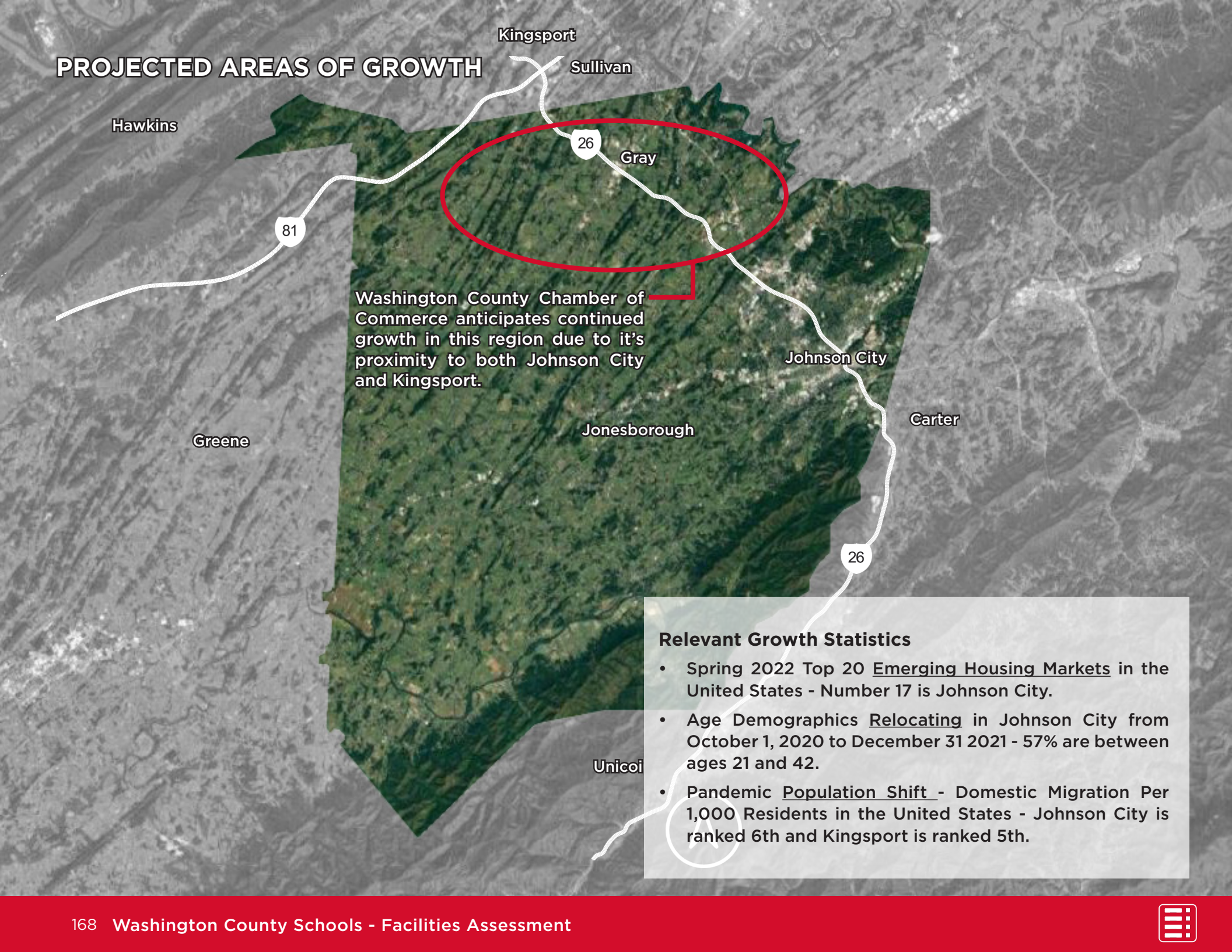
FACILITIES "AT A GLANCE" OVER THE LAST SIX (6) YEARS



SCHOOL NAME	RATING	UTILITY COST	UTILIZ.	ENROLLMENT 2016-2020	ENROLLMENT 2021-2022
FALL BRANCH ELEM.	2.4	$36K	74%	-7%	5%
DANIEL BOONE HIGH SCHOOL	2.8	$201K	83%	-5%	-1%
SULPHUR SPRINGS ELEM.	2.4	$63K	76%	-20%	7%
CENTRAL OFFICE	2.4	$22K	--%	--%	--%
GRANDVIEW ELEM.	4.4	$99K	87%	4%	4%
WEST VIEW ELEM.	2.6	$54K	68%	-23%	-4%
SOUTH CENTRAL ELEM.	3.0	$44K	55%	-17%	5%
DAVID CROCKETT HIGH SCHOOL	2.8	$198K	72%	-1%	-1%
GRAY ELEM.	3.2	$71K	89%	-10%	4%
BOONES CREEK ELEM.	5.0	$91K	80%	-3%	3%
RIDGEVIEW ELEM.	4.6	$101K	99%	1%	9%
ASBURY OPTIONAL HIGH SCHOOL	2.0	$21K	--%	--%	--%
MIDWAY RESOURCE CENTER	1.2	$--K	--%	--%	--%
JONESBOROUGH ELEM.	2.0	$82K	73%	-16%	5%
JONESBOROUGH MIDDLE	1.8	$53K	58%	-1%	5%
LAMAR ELEM.	2.8	$95K	78%	-17%	2%

KEY INDICATOR COMPARISON					
School	OVERALL RATING	UTILITIES COST	UTILIZATION RATE	GROWTH RATE 2016 - 2020	GROWTH RATE 2021 - 2022
Jonesborough Elem.	2.0	$82K	73%	-16%	5%
Jonesborough Middle	1.8	$53K	58%	-1%	5%
Boones Creek Elem.	5.0	$91K	80%	-3%	3%
Fall Branch Elem.	2.4	$36K	74%	-7%	5%
Grandview Elem.	4.4	$99K	87%	4%	4%
Gray Elem.	3.2	$71K	89%	-10%	4%
Lamar Elem.	2.8	$95K	78%	-17%	2%
Ridgeview Elem.	4.6	$101K	99%	1%	9%
South Central Elem.	3.0	$44K	55%	-17%	5%
Sulphur Springs Elem.	2.4	$63K	76%	-20%	7%
West View Elem.	2.6	$54K	68%	-23%	-4%
Daniel Boone High School	2.8	$201K	83%	-5%	-1%
David Crockett High School	2.8	$198K	72%	-1%	-1%
Asbury Optional High School	2.0	$21K	--	--	--
Central Office	2.4	$22K	--	--	--
Midway Resource Center	1.2	--	--	--	--

PROJECTED AREAS OF GROWTH



Relevant Growth Statistics

- Spring 2022 Top 20 Emerging Housing Markets in the United States - Number 17 is Johnson City.
- Age Demographics Relocating in Johnson City from October 1, 2020 to December 31 2021 - 57% are between ages 21 and 42.
- Pandemic Population Shift - Domestic Migration Per 1,000 Residents in the United States - Johnson City is ranked 6th and Kingsport is ranked 5th.

CONCLUSION

The results of this assessment indicate that the elementary schools in the northern section of the county are reaching their functional capacity, and soon, potentially in the next five years, overcrowded conditions could occur at Ridgeview, Gray and Boone's Creek. A new PreK-8 school in the northeast section of the county may be necessary to alleviate overcrowding and add additional capacity for future growth. Daniel Boone High School is projected to reach capacity in the next 10 years due to northern county growth. Adding additional academic and core capacity to that campus may be necessary. Schools in the southern section of the county are projected to have significantly slower growth rates, and even potentially lose enrollment. Boundary changes to equalize enrollment/capacity percentages may be necessary at Grandview, South Central, and West View.

PART 6: RECOMMENDATIONS

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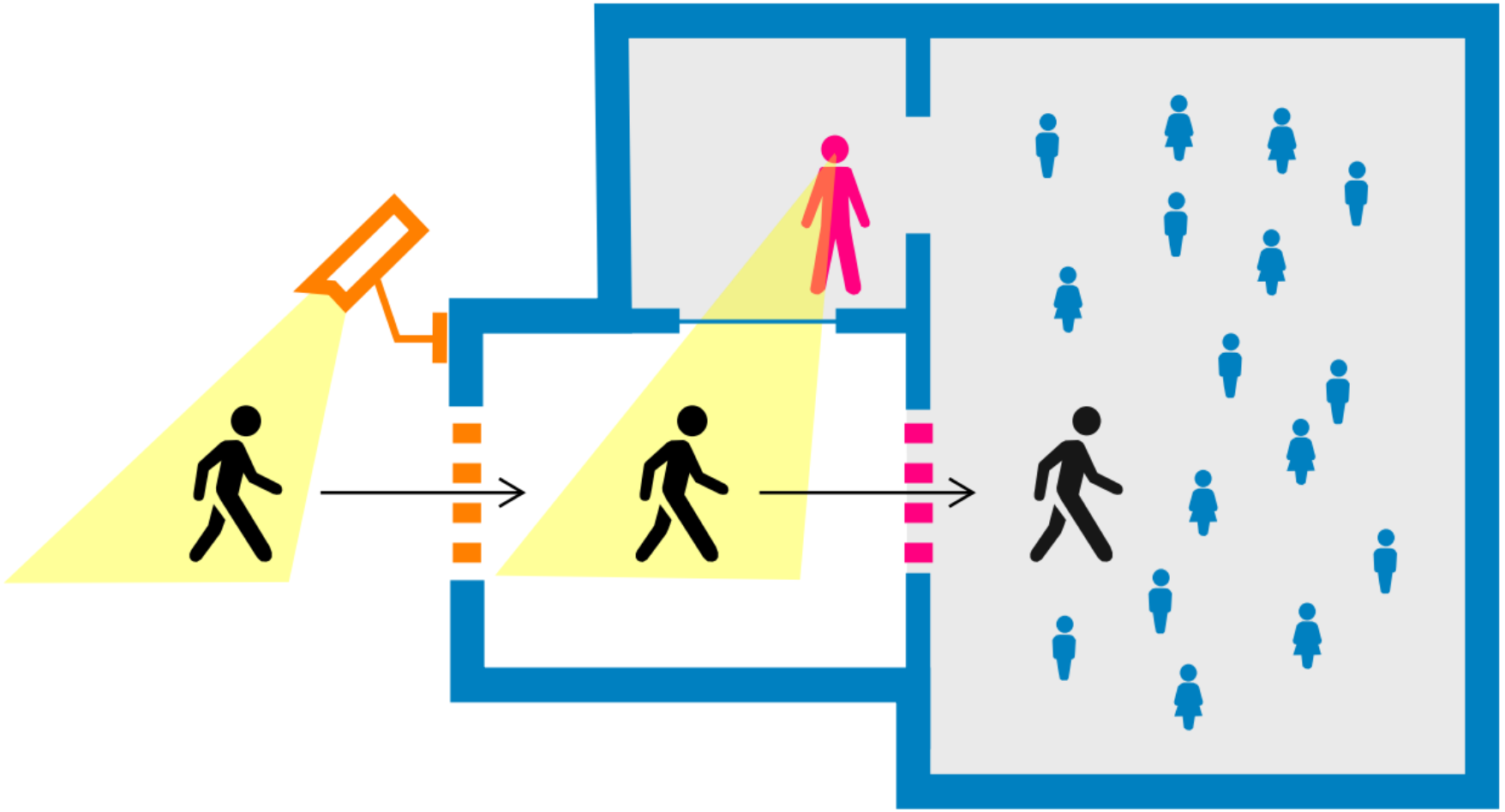
Recommendation 1: Campus Security Upgrades

LGA recognizes that a core mission of Pre-K through 12th grades schools is to create a safe and secure environment to help promote the achievement of schools' educational objectives. WCDE is to be commended for their efforts to promote safety and security demonstrated by their investments and priorities in installing video surveillance systems, door access control devices, and the utilization of School Resource Officers in all system schools.

LGA recommends upgrading security to the following standards in all schools.

Security Standards:

- Perimeter Security.
- Improve wayfinding so visitors can locate main entry.
- Secure vestibule with monitoring from main and SRO offices to control access to student portions of the building.
- Secure control of all other means of egress.



RECOMMENDATION 2

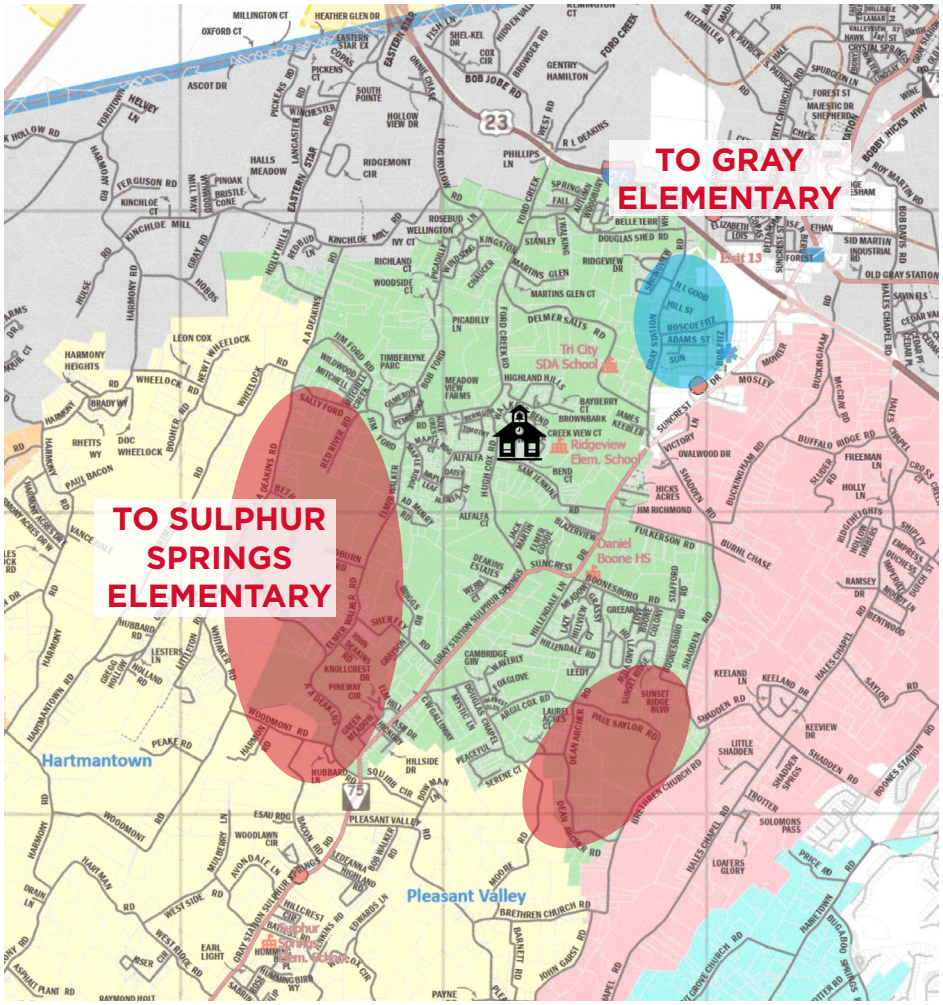
Recommendation 2: Zone Boundary Adjustments

A -LGA recommends adjusting zone boundaries for Ridgeview Elementary, Sulphur Springs Elementary, and Gray Elementary.

Recommended timeline for implementation: Beginning 2023-2024 school year.

Projected benefits:

- Provides available capacity.
- Fills capacity at underutilized schools.



To Gray Elementary:
-Approximately 30 students

To Sulphur Springs Elementary:
-Approximately 60 students

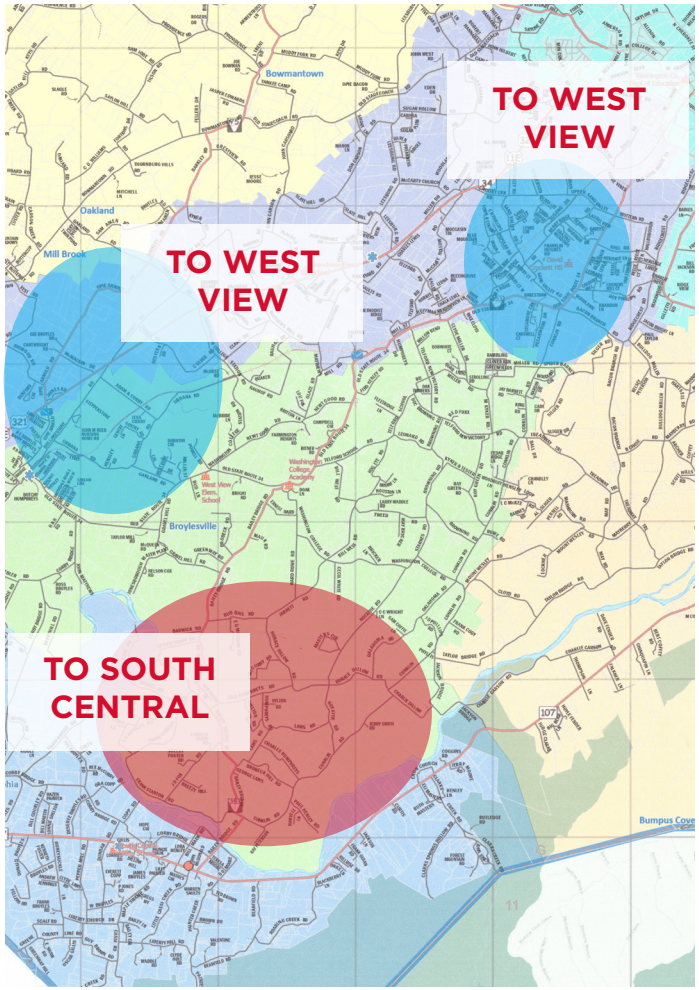
Recommendation 2:

B- LGA recommends adjusting zone boundary for South Central Elementary School and West View Elementary School.

Recommended potential timeline: Beginning 2023-2024 school year.

Projected benefits:

- Provides additional capacity for future growth at Grandview Elementary
- Fills capacity at underutilized schools
- Creates equalization in capacity at Grandview, South Central and Westview



To West View from Grandview:
- Approximately 90 Students

To South Central from West View:
- Approximately 75 Students

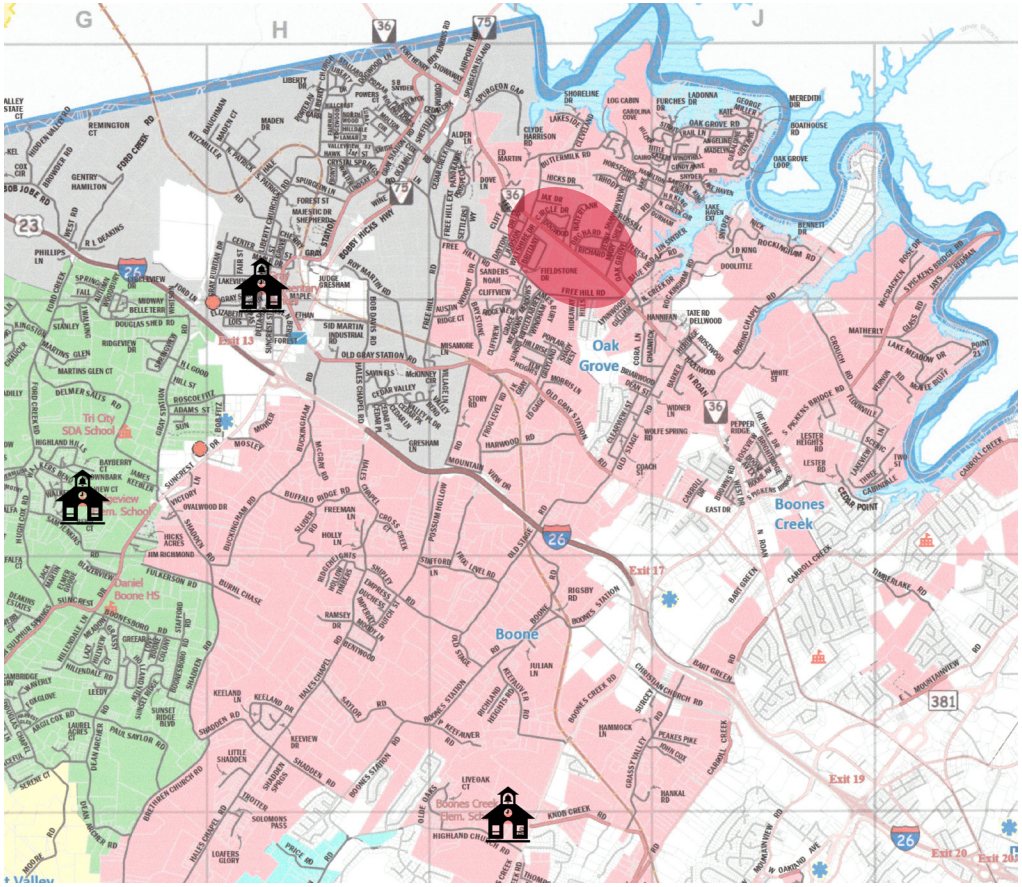
Recommendation 3: Land Purchase for New School in North Sector

Based on census data, showing residential growth rates in Johnson City/Gray, discussions with the Johnson City Chamber of Commerce, and the Washington County Planning Department, LGA recommends the purchase of property in the northern sector of Washington County for the construction of a future elementary school.

LGA recommends purchasing land for construction of a new school.

Recommended timeline for implementation: Within five (5) years.

LGA's objective in making this recommendation to secure property is so the WCDE is positioned for future success. There is not an immediate and urgent need for a new school at this point; However, projected enrollment trends, residential growth rates, and growth in Johnson City and Gray indicate that at some point in the future a new school in this area will be necessary.



Recommended Area:

- Off State Route 36
- East of Judson
- North of Free Hill Road

Recommendation 4: Addition to Daniel Boone High School

Based on projected growth rates of feeder schools: Ridgeview Elementary, Boone's Creek Elementary, Gray Elementary, and Sulphur Springs Elementary, LGA recommends the design and construction of an academic and core addition to Daniel Boone High School.

Recommended potential timeline for implementation: Within ten (10) years.

LGA's objective in making this recommendation to add additional academic space at DBHS is so the WCDE is positioned for future success. There is not an immediate and urgent need for additional capacity at this time. However, projected enrollment trends, growth in Johnson City and Gray indicate that at some point in the future additional capacity at DBHS school will be necessary.

Projected benefits:

- Increases capacity of the High School to account for growth in North Sector
- Adds academic and core functions

Recommendation 5: Land Purchase for New School in Northwest Sector

Core areas of Fall Branch Elementary School and Sulphur Springs Elementary School are currently 83 years old. Although both facilities are extremely well maintained, eventually both schools will begin to show their age and manifest symptoms of their many years of service including increased repair, maintenance, and operating costs, as well as potential capacity issues. School inefficiencies and inequities as compared to WCDE newer facilities can also play a significant role in the difficult decision to decommision an educational facility.

LGA recommends that property be secured in the next ten years for the construction of a new elementary school to serve the combined enrollments of Fall Branch Elementary School and Sulphur Springs Elementary School.

Recommended potential timeline for implementation: Within ten (10) years.

Projected benefits:

- New school facility for current areas served by Fall Branch and Sulphur Springs Elementary Schools.

Recommended Area:

- Off State Route 81
- North of Gray Station Road