School Closing Study

Mariam Boyd Elementary, Northside Elementary, and Vaughan Elementary schools

February 13, 2024

Background

Warren County Schools has three elementary schools currently serving a total of 811 students in pre-kindergarten through fifth grades. Mariam Boyd Elementary School (MBES), located at 203 Cousin Lucy's Ln, Warrenton, NC 27589, was built in 1952 and serves 338 students. Northside Elementary School (NES), located at 164 Elementary Ave, Norlina, NC 27563, was built in 1957 and serves 311 students. Vaughan Elementary School (VES), located at 2936 US Hwy 158 E, Macon, NC 27551, was also built in 1957 and serves 162 students.

All three elementary school facilities are in a state of disrepair due to years of deferred maintenance, with significant problems to the facilities' structural integrity, roofing, and critical operating systems. In fall 2023, Warren County Schools hired Axias to formally assess our three elementary schools. Axias is a national leading provider of cost management, project management, and condition assessment services to help agencies achieve the best value in construction projects. The Axias Facility Condition Assessments were conducted in November 2023, focusing on the elementary schools' core infrastructure identifying significant investments required over the next 10 years. The assessments did not address improvement items related to educational adequacy, functionality, etc.

With aging infrastructure in need of expensive repairs and renovations, the Warren County Board of Education developed a long-range goal of consolidating schools into one elementary school, one middle school, and one high school in a centralized location in the county. As part of that plan, Warren County Schools has secured a $30 million grant to use the former Warren New Tech High School (WNTHS) campus for a new, consolidated and centralized elementary school, next to Warren County Middle and Warren County High schools.

This study is exploring the option of closing MBES, NES, and VES and moving all elementary students and staff to an innovative and safer learning environment resulting in a new, consolidated elementary school within Warren County Schools.

GEOGRAPHIC CONDITIONS

The three elementary schools form a triangle towards the center of Warren County, with NES being towards the northwest, VES being towards the northeast, and MBES being in the middle of the county and in the county seat of Warrenton, NC. All three elementary schools are within 13 miles of each other.

The proposed site for the new centralized elementary school (formerly WNTHS) is located at 219 Highway 158 Bypass, Warrenton, NC 27589. Distance from the new elementary school site:

- MBES: 4 miles
- NES: 3 miles
- VES: 11 miles

Welfare of students to be affected by the proposed closing and consolidation

FACILITY CONDITIONS IMPACTING CURRENT STUDENTS

The Axias Facility Condition Assessments of MBES, NES, and VES (included in the Appendix) noted significant issues with each elementary school, many of which directly affect students and staff. Some examples include:

- leaking roofs that drip into classrooms and cause puddles inside the buildings
- inefficient windows and sealants that make it difficult to regulate classroom temperatures
- obsolete fire alarm panels,
- a leaking component on a split system that caused damaged a school stage
- inoperable urinals and plumbing issues
- structural issues making it difficult to close some doors
- water drainage issues that direct rainwater into a building.

ANTICIPATED INCREASE OR DECREASE IN SCHOOL ENROLLMENT

The district does not anticipate any significant increase or decrease in student enrollment as a result of the consolidation. The district hopes that a new, state-of-the-art facility with enhanced safety designs and learning environments will appeal to Warren County families who will choose to enroll, and in some cases re-enroll, their children in the new elementary school.

ADM Year	MBES	NES	VES
2023	297	284	149
2022	277	280	167
2021	274	301	180
2020	276	295	195
2019	248	279*	184
2018	273	282*	211
2017	312	278*	224
2016	316	313*	242
2015	355	302*	232
2014	341	292	251
2013	298	313	255
2012	316	350	247
2011	322	359	249
2010	337	359	244
2009	368	372	229

2008	340	361	236

Source: NC Average Daily Membership (ADM) from Month 1, pulled from NC Public Schools Statistical Profile Part IV. Monthly Student Accounting Reports
*Count does not include students in grades 6-8

POSSIBLE INCONVENIENCES OR HARDSHIPS TO STUDENTS AFFECTED BY SUCH CLOSING AND CONSOLIDATION

Foremost among community concerns is a possible increase in the time and length of bus routes, particularly in the northeast and southwest parts of the county. The district's Transportation Department has looked at some routing options for serving a consolidated elementary school and believes there will be little to no change in the amount of time students are riding a bus to and from school. The district believes that a new, consolidated elementary school will allow us to improve the efficiency of our bus service, combine some routes that were previously serving different elementary schools in the same communities, and possibly create expedited bus routes that will allow us to decrease the ride time for students living in the northeast and southeast parts of the county.

POTENTIAL EFFECT ON SCHOOL PROGRAMS

Currently, elementary school students in Warren County have access to a variety of academic courses, specialty programs, and other resources. Consolidating the schools will offer all elementary students the opportunity to enroll in our Spanish Immersion Program, the Leader in Me program, or the Google School model. A consolidated school would also likely increase the level of interest in after-school programs like clubs, extracurricular activities, and participation in the Boys and Girls Club after school care. We hope students will be able to stay after school to participate in clubs and activities and then attend the Boys and Girls Club once the school-sponsored activities have ended. This allows much more flexibility for families to pick up their children after school so that transportation challenges don't prohibit students from participation.

Lastly, consolidation would allow the district to minimize the need to purchase and provide duplicated resources for multiple schools. As an example, we would only need to provide instruments for one school in order for all elementary students to benefit and have access to a band or music program.

STAFFING AND CLASS SIZE

Warren County Schools expects this consolidation should have minimal impact on staffing. Enrollment projections indicate that student membership will remain relatively flat over the next ten years, and that the district will continue to serve relatively the same number of elementary students. While some attrition and duplication will be unavoidable, district staffing numbers should remain relatively unchanged due to serving the same number of students and families. We expect to maintain current class sizes.

Fiscal Implications

Axias provided an objective evaluation of the conditions of our elementary school facilities, cost estimates to restore them to good condition, and cost estimates to replace each school facility.

REPAIR ESTIMATES

The Axias Facility Condition Assessments and Financial Summary Of Condition Assessment Findings provided the following summary of the capital investment requirements over the next 10-years (2025-2034) for the three elementary schools included in the assessment. All costs are provided in 2023 dollars and do not include adjustments for inflation.

Estimated Expenditures for Needed Repairs				
	District Total	MBES	NES	VES
Deferred Maintenance	**$21.5 million**	$9.2 million	$6.9 million	$5.2 million
Capital Renewal	**$5.7 million**	$1.2 million	$1 million	$3.4 million
Capital Improvement	**$554,050**	$190,450	$207,600	$156,000
Energy and Sustainability	**$452,650**	$161,150	$159,500	$132,000
Scheduled Maintenance	**$71,982**	$36,900	$35,230	$7,500
Total	**$28.3 million**	$10.8 million	$8.5 million	$9 million

Source: Axias Financial Summary of Condition Assessment Findings prepared for Warren County Board of Education

Definitions

- Deferred Maintenance - Maintenance or repair that is past due
- Capital Renewal - Correct unacceptable conditions caused by aged building components which will exceed their useful life cycle within the next 10 years
- Capital Improvement - Installation or upgrades to the facility systems and components improves or enhances the performance or functionality of the facility
- Energy and Sustainability - Repairs or replacement of systems and equipment improve the energy and sustainability of the facility
- Scheduled Maintenance - Major maintenance required to maintain effective operation

REPLACEMENT ESTIMATES

Axias also provided an estimated Current Replacement Value (CRV) for each school. The term Current Replacement Value (CRV) refers to the amount that an entity would have to pay to replace an asset at the present time, according to its current worth. This value typically excludes the cost of the land, design fees, construction management fees, furnishings, fixtures, and equipment. This value is then utilized in calculating the Facility Condition Index. The CRV for each facility is listed below and was compared with the North Carolina Instruction's database for recent projects.

Current Replacement Value			
Building	Square Footage	Current Replacement Value	Unit Rate per Square Foot
Mariam Boyd Elementary	58,600	$17 million	$290
Northside Elementary	56,276	$16.3 million	$290
Vaughan Elementary	48,000	$13.9 million	$290
District Total	**—**	**$47.2 million**	**$290**

Source: Axias Financial Summary of Condition Assessment Findings prepared for Warren County Board of Education

Based on the amount of renovations and repairs that are needed compared to the overall value of the facilities, Axias recommended "complete facility replacement" for MBES and VES. Axias recommended "total renovation" for NES.

The following is how Axias concluded its financial summary report:

> *Given the extent of Deferred Maintenance required, strategic decisions will need to be made on what the next steps are for these schools. These decisions should include analyzing if renovating an older facility that may not meet current educational standards is more cost effective than constructing a newer school that is programmed to meet current educational facility standards. This also should include what are the potential costs to keep the existing elementary schools operational until a new elementary school(s) can be designed and constructed if that is the direction the County decides to go.*
>
> *If constructing new school(s) is not an option, a strategic approach will need to be developed to address the entire Deferred Maintenance backlog at once along with planning for future Capital Renewal requirements. Our experience shows that a Capital Renewal funding level of between 2% and 3% of a portfolio's replacement value is typically required to maintain a facility's condition, this excludes addressing Deferred Maintenance and primarily only addresses timely Capital Renewal. Given the condition of the elementary schools, a significant increase of funding is required in the next five years to address the Deferred Maintenance and future Capital Renewal requirements, before a steady annual level of funding can be recommended should the County continue to utilize the existing elementary schools.*

COST OF PROVIDING ADDITIONAL SCHOOL FACILITIES IN THE EVENT OF SUCH CLOSING AND CONSOLIDATION

Warren County Schools has secured a NC Department of Public Instruction Needs-Based Grant for $30 million to use the former WNTHS campus for a new, consolidated elementary school, next to Warren County Middle and Warren County High schools. The preliminary estimate to design and build the new school is around $46 million. The district is working jointly with the Warren County Board of Commissioners to apply for supplemental funding to the existing $30 million grant to offset any additional costs.

Other important factors

POSSIBLE ALTERNATIVE USES OF THE SCHOOL FACILITY BY THE DISTRICT

The community is also concerned about having as many as four vacant school buildings located in Warren County if the decision is made to close the existing elementary schools (South Warren Elementary School was closed in 2018). As with any "surplus" property owned by the school district, we must be diligent financial stewards of the taxpayers' investments and assets. Potential uses of the vacant campuses include:

- Warren County Schools auxiliary services
    - alternative learning programs
    - staff training and professional development
    - regional facilities like a bus garage, maintenance department, technology services, etc.
- Office space or business complex
- Teacher housing
- Senior living facility
- Community affordable housing
- Manufacturing facility or private industry
- Community spaces like fitness and recreation, community or adult learning, internet access, etc.

Warren County Schools would not be financially responsible for restoring or renovating these facilities for alternate uses.

Conclusion

The proposed consolidation of MBES, NES, and VES would strengthen our entire school district in the following ways:

- Increase equitable access to specialized programs and extracurricular activities for all elementary students
- Reduce operating and renovation costs for the district
- Create state of the art 21st century learning environment based on best practices and student needs
- Improve safety and security of the new school
- Ensure the new facility meets all requirements of the Americans with Disabilities Act

- Unify students, families, and the community behind a new and continuously improving Warren County Schools

Recommendation

Because of these significant benefits for all elementary students in Warren County Schools, staff recommends closing Mariam Boyd Elementary, Northside Elementary, and Vaughan Elementary resulting in a new, consolidated elementary school within Warren County Schools.

Appendix

1. Axias Financial Summary Of Condition Assessment Findings
2. Axias Report Of Facility Condition Assessment - Mariam Boyd Elementary School
3. Axias Report Of Facility Condition Assessment - Northside Elementary School
4. Axias Report Of Facility Condition Assessment - Vaughan Elementary School

FINANCIAL SUMMARY OF CONDITION ASSESSMENT FINDINGS

Prepared For:

Warren County Board of Education

109 Cousin Lucy's Lane

Warrenton, NC 27589

Prepared By:

Axias

Project No. GA23-024

January 5, 202

Axias

BUILDING VALUE

SUMMARY OF FACILITY CONDITION ASSESSMENT FINDINGS

Axias was retained by Warren County Schools to complete a facility condition assessment of the three elementary schools serving the County. Based on our site assessment, our team identified significant investments that are required over the 10-year study period considered by our assessment. This report provides a summary of the financial requirements and key issues identified for the elementary schools included within the assessment. It should be noted that the assessment did not address improvement items related to educational adequacy, functionality, etc. and primarily focused on the core infrastructure supporting each existing school.

To provide a comparison and general overview of the conditions at each elementary school, our team calculated a Facility Condition Index (FCI). The FCI is calculated by dividing the total project/recommended expenditures for the first year by the current replacement value of the facility. The calculation of each facility's FCI and respective rating is detailed further in the Facility Condition Index Comparison section of this report. Of the facilities assessed, Mariam Boyd and Vaughan Elementary have a Facility Condition Index (FCI) which indicates a complete facility renewal is required. Northside Elementary is currently considered to be in Poor condition; however, it will also require a complete facility renewal within the next two to three years if the Deferred Maintenance and future Capital Renewal needs are not met. These FCIs are contributable to the amount of Deferred Maintenance which has accumulated over the years due to the age of the schools and timely completion of required Capital Renewal of the school systems and components. All three elementary schools were found to have similar deficiencies related to the building envelope, which includes the exterior walls, windows, and roofing systems, along with required upgrades to the electrical and mechanical systems. As each of the elementary schools were renovated and expanded in the late 1990's, these noted systems are approaching or have surpassed the typical service life for the respective systems.

A reactionary approach of repairing or replacing the systems and components upon failure is one that will come with inherent risk. To fully comprehend the magnitude of these risks, one must weigh the cost of the system or component renewal versus the costs incurred at the time of a system failure along with potential collateral costs resulting from the failure. Reactionary spending carries a higher premium of sometimes up to75% or more than typical proactive Capital Renewal projects. This type of approach moving forward could result in further deterioration and increased capital costs and will still be considered a "band-aid" approach to schools that were originally designed and constructed in the 1950's and 1960's and then expanded in the late 1990's.

FINANCIAL SUMMARY

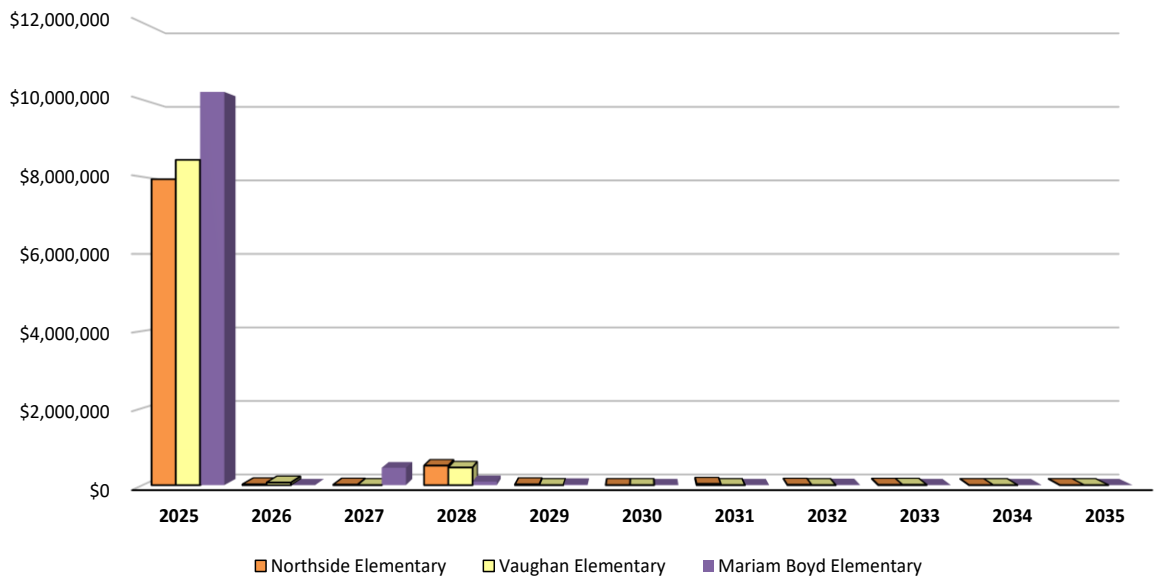
The following section provides a summary of the capital investment requirements over the 10-year study period (2025-2034) for the three elementary schools included in the assessment. All costs are provided in 2023 dollars and do not include inflation.

TOTAL EXPENDITURES BY SCHOOLS

Total Expenditures by Facility

Facility	Expenditures
Northside Elementary	$8,546,336
Vaughan Elementary	$8,974,009
Mariam Boyd Elementary	$10,768,400
TOTAL	**$28,288,745**

EXPENDITURES BY YEAR BY SCHOOL

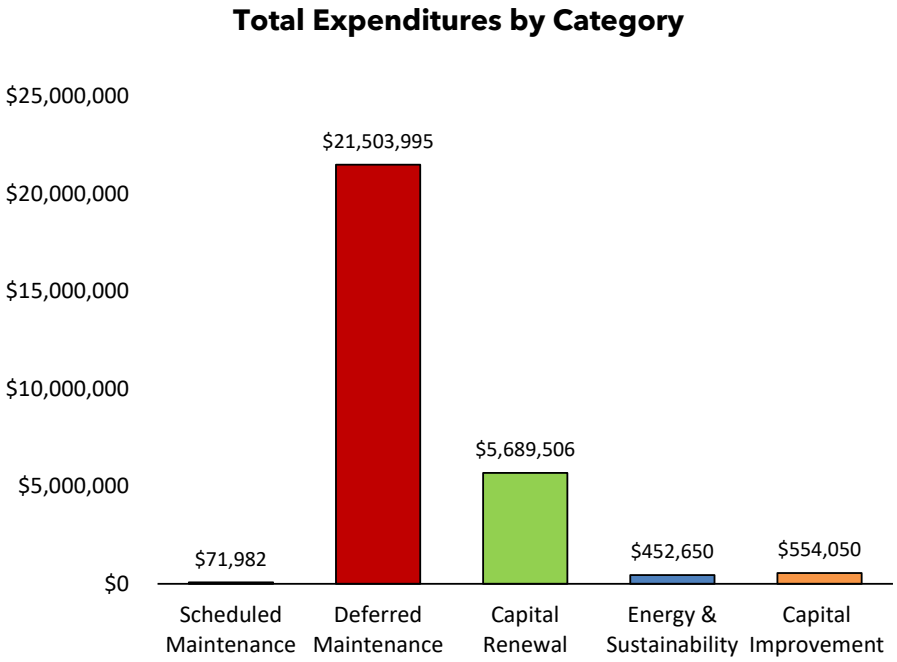


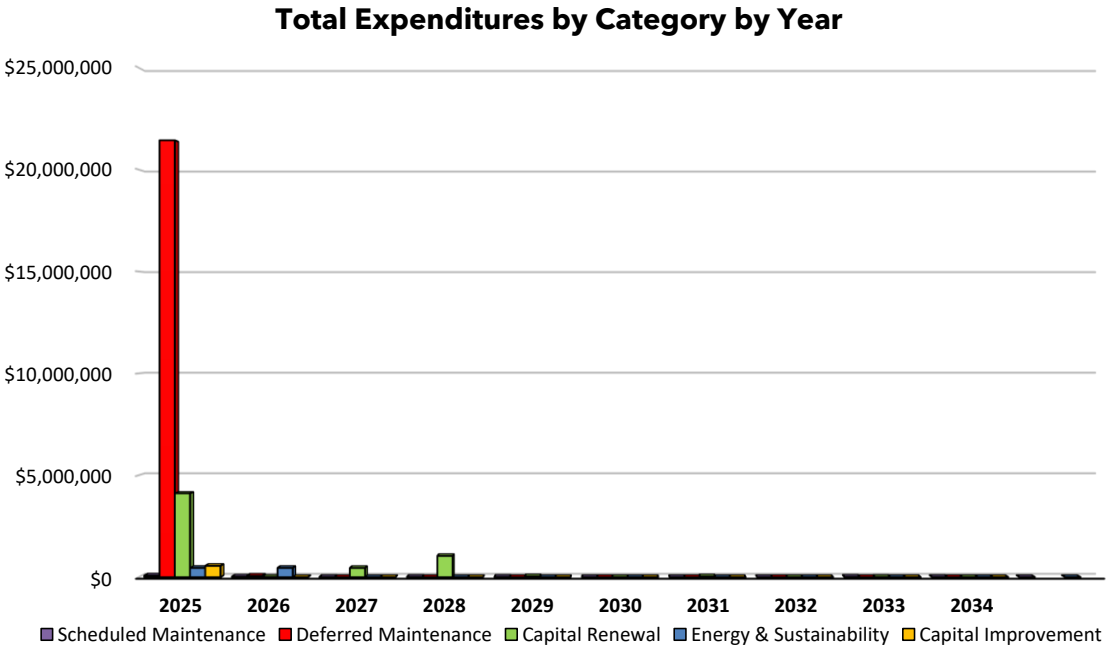
EXPENDITURES BY CATEGORY

A classification category has been assigned for each recommendation which helps group expenditures based on why it should be completed. We have classified each recommendation by one of the five classifications:

Category	Definition	Description
SM	Scheduled Maintenance	**Scheduled maintenance** is major maintenance that is typically required to maintain effective operation of an asset and/or prolong the lifecycle. This does not include items related to preventative maintenance activities and typically have a requirement total of over $2,500.
CR	Capital Renewal	**Capital Renewal** projects correct unacceptable conditions caused by aged building components which will exceed their useful life cycle within the next ten years. These items generally function as originally intended. If execution of Capital Renewal projects is deferred for an inordinate amount of time, conditions may deteriorate, and the projects may be re-categorized as Deferred Maintenance.
DM	Deferred Maintenance	**Deferred Maintenance** is maintenance or repair that is past due. This work will return a component or system to an acceptable condition, prevent physical depreciation or loss in the value of a building, minimize or correct wear, and maintain the maximum reliability and current useful life of the facility or component.
ES	Energy & Sustainability	**Energy & Sustainability** is when repairs or replacement of systems and equipment improve the energy and sustainability of the facility.
CI	Capital Improvement	**Capital Improvement** is when installation or upgrades to the facility systems and components improves or enhances the performance or functionality of the facility.

The graph on the following page shows that approximately $21 million of the identified expenditures are categorized as Deferred Maintenance.



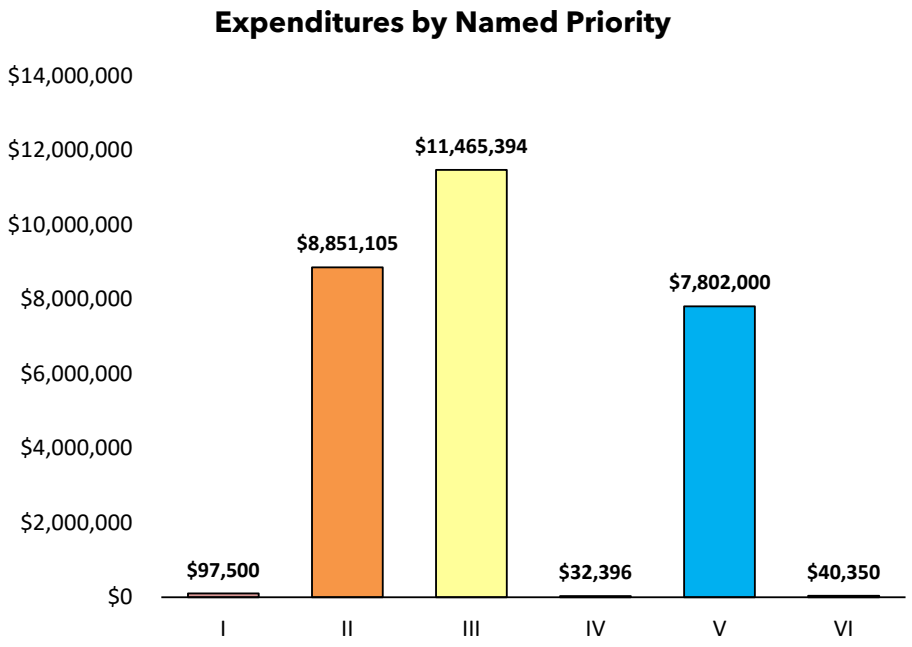


Given the condition of the elementary schools, a significant amount of Deferred Maintenance has accumulated. A strategic approach to addressing the Deferred Maintenance backlog will need to be developed. The backlog will continue to increase annually if not addressed. The most significant Deferred Maintenance expenditures typically are associated with the building envelopes and renewal of the mechanical and electrical systems of each school.

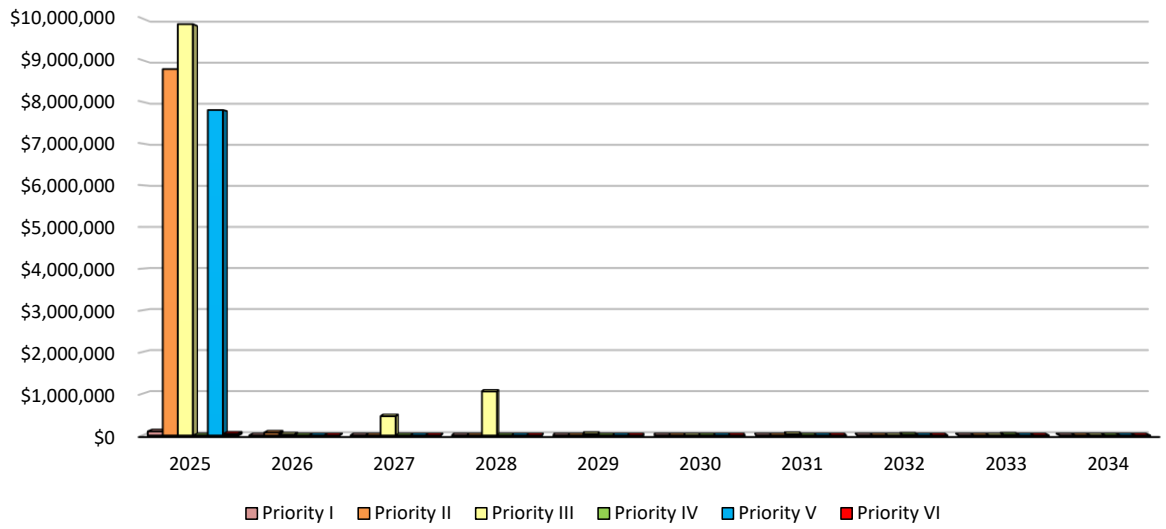
EXPENDITURES BY PRIORITY

To provide ease of project prioritization within the expenditure forecast, we have prioritized each expenditure by criticality. These priorities are listed and described in the table below.

Priority	Definition	Description
I	Currently Critical	Conditions in this category require immediate action to either correct a cited safety hazard, stop accelerated deterioration, or return a facility/system to operation,
II	Potentially Critical	Conditions in this category, if not corrected expeditiously, will become critical within a year.
III	Necessary / Not yet Critical	Conditions in this category require appropriate attention to preclude predictable deterioration or potential downtime and the associated damage or higher costs if deferred further.
IV	Recommended	Conditions in this category include items that represent a sensible improvement to existing conditions. These are not required for the most basic function of the facility.
V	Appearance	Conditions in this category include finishes that have deteriorated and are required to maintain the required aesthetic standards.
VI	Does Not Meet Codes / Standards	Conditions in this category include items that do not conform to existing codes but are "grandfathered" in their condition. No action is required at this time, but should substantial work be undertaken in contiguous areas, certain existing conditions may require correction to comply with current code standards.



Expenditures by Named Priority by Year

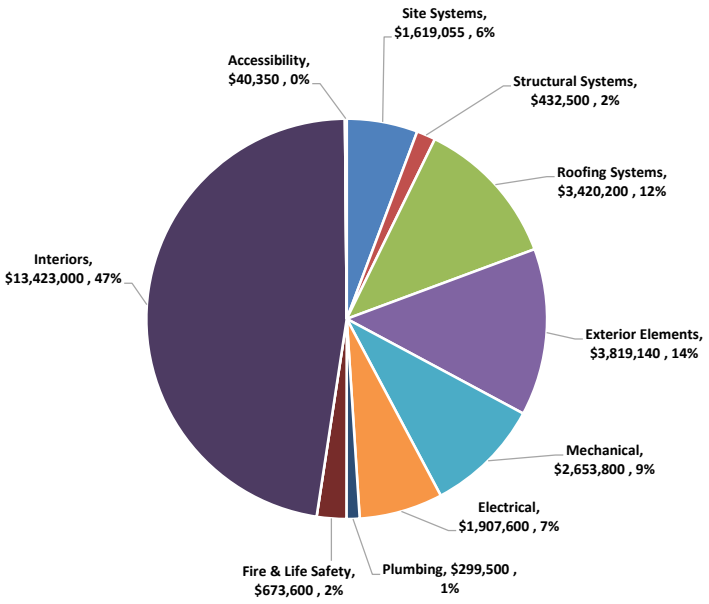


Most of the required expenditures documented have been named as a Priority III and are contributable to the Deferred Maintenance of the building envelope, along with the mechanical and electrical systems. However, there is a significant amount of Priority II (potentially critical) expenditures. These Priority II expenditures are primarily related to the exterior elements required at Mariam Boyd Elementary and Northside Elementary, and interior elements at Northside Elementary.

EXPENDITURES BY SYSTEM

Each expenditure is also grouped by major system. This will allow Warren County to identify projects that could potentially be grouped into one larger project.

Expenditures by System



Most of the expenditures identified are attributable to renewal of interior finishes. In some cases, renewal of interior finishes can be discretionary and subjective; however, given the condition of the interior finishes within many of the schools, the interiors will require renewal within the next two to three years.

Exterior Elements makes up the second greatest group of expenditures. This is primarily due to the condition of the masonry facades and windows at each of the schools, Given the number of recommendations and deficiencies noted with the exterior elements, it is recommended that a more detailed Exterior Element Study be commissioned to develop a scope of work to correct the deficiencies noted and phase the work accordingly as a single project.

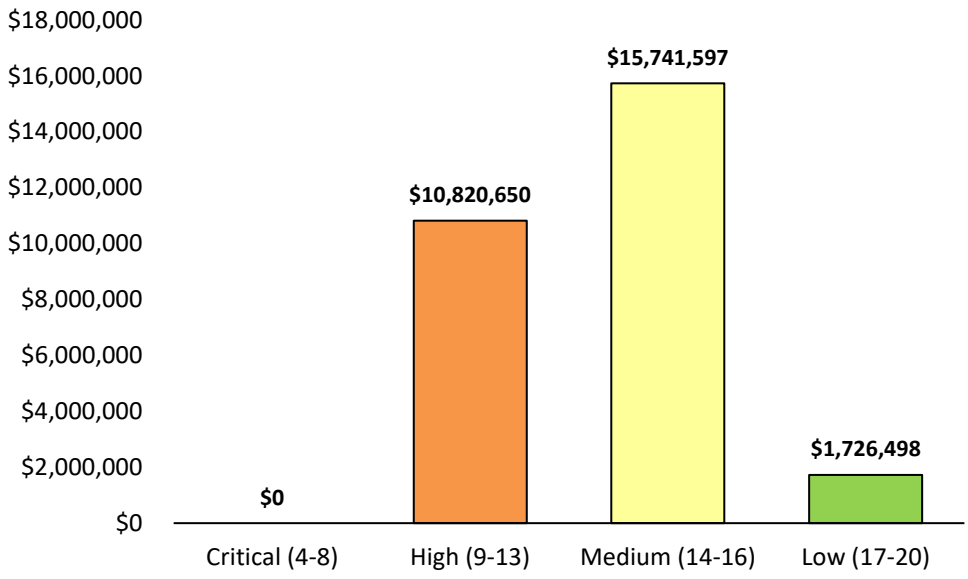
Roofing systems make up the third greatest group of expenditures. The recommended Roofing expenditures are generally replacement of components which are past the recommended useful life or have significant defects resulting in water infiltration.

Mechanical and electric systems represent the third and fourth group of expenditures due to the required renewal of the mechanical systems and upgrades to vintage electrical components in the schools.

EXPENDITURES BY RISK PRIORITIZATION

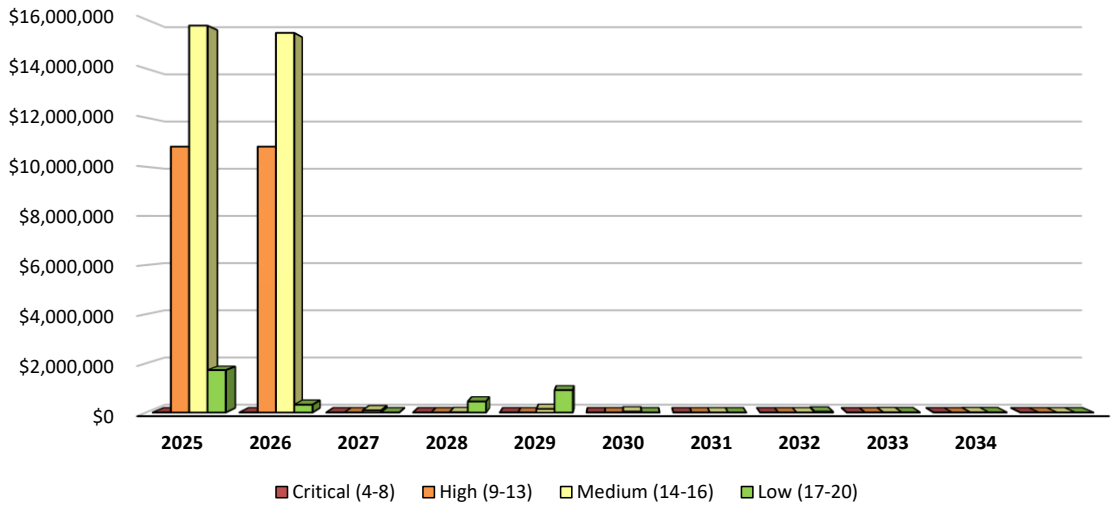
To allow the County to weigh the risks of capital investment versus capital deferment, we have assigned each recommendation a risk number. The risk prioritization methodology is detailed in the Facility Condition Assessment Methodology section of this report. The table below shows the identified expenditures by risk category. A complete risk assignment for each recommended expenditure is included in each facility Capital Expenditure Forecast.

Expenditures by Risk Prioritization



Expenditures by Risk Prioritization by year

There were no Critical items noted as part of the assessment; however, significant High Risk items were identified that if left unaddressed could potentially become Critical. The High Risk items again are generally attributable to the school envelopes and the need for an extensive program to preserve and stabilize the facilities.



CURRENT REPLACEMENT VALUES

The term Current Replacement Value (CRV) refers to the amount that an entity would have to pay to replace an asset at the present time, according to its current worth. This value typically excludes the cost of the land, design fees, construction management fees, furnishings, fixtures, and equipment. This value is then utilized in calculating the Facility Condition Index. The CRV for each facility is listed below and was compared with the North Carolina Instruction's database for recent projects:

Building	Square Footage	CRV	Unit Rate Per SF
Northside Elementary	56,276	$16,320,040	$290
Vaughan Elementary	48,000	$13,920,000	$290
Mariam Boyd Elementary	58,600	$16,994,00	$290

FACILITY CONDITION INDEX COMPARISON

The Facility Condition Index (FCI) provides a relative measure for comparing one facility (or group of facilities) to another. This index is a calculation derived by dividing the total project cost for the first year of the study period by the total CRV of the building.

In addition, the Facility Condition Needs Index (FCNI) is like the FCI but helps assist in comparing the expenditure needs of one facility versus a group of facilities over a period of time. The FCNI also shows the cumulative effects if the Deferred Maintenance and Capital Renewal expenditures are not addressed in a timely manner. This index is a calculation, derived by dividing the total recommended expenditures over the entire 10-year study period by the total CRV of the building. The index is intended to show the current and future conditions of the building if no capital investment is made over the next 10 years.

Facility Condition Index & Facility Condition Needs Index

Building	FCI	FCNI	FCI	FCNI
Northside Elementary	0.47	0.52	**Poor**	**Renew**
Vaughan Elementary	0.61	0.64	**Renew**	**Renew**
Mariam Boyd Elementary	0.62	0.63	**Renew**	**Renew**

FCI / FCNI Condition Ranges

Individual Building FCNI Range	Condition Description
0.00 – 0.02	Excellent condition, typically new construction
0.02 – 0.05	Good condition, renovations occur on schedule
0.05 – 0.10	Fair condition, in need of normal renovation
0.10 – 0.20	Below average condition, major renovation required
0.20 – 0.50	Poor Condition, total renovation indicated
0.50 and above	Renew, Complete facility replacement or renewal indicated

The current FCIs are consistent within the "Poor" and "Renew" categories and for these schools do not significantly change over the 10 years due to the extensive renovations required. Even though the FCIs don't change much over the 10 years, this doesn't mean repair/renovation costs will not increase due to further deterioration of the facility system and components.

CONCLUSIONS

Given the extent of Deferred Maintenance required, strategic decisions will need to be made on what the next steps are for these schools. These decisions should include analyzing if renovating an older facility that may not meet current educational standards is more cost effective than constructing a newer school that is programmed to meet current educational facility standards. This also should include what are the potential costs to keep the existing elementary schools operational until a new elementary school(s) can be designed and constructed if that is the direction the County decides to go.

If constructing new school(s) is not an option, a strategic approach will need to be developed to address the entire Deferred Maintenance backlog at once along with planning for future Capital Renewal requirements. Our experience shows that a Capital Renewal funding level of between 2% and 3% of a portfolio's replacement value is typically required to maintain a facility's condition, this excludes addressing Deferred Maintenance and primarily only addresses timely Capital Renewal. Given the condition of the elementary schools, a significant increase of funding is required in the next five years to address the Deferred Maintenance and future Capital Renewal requirements, before a steady annual level of funding can be recommended should the County continue to utilize the existing elementary schools.

FACILITY CONDITION ASSESSMENT METHODOLOGY

The objective of this report is to produce a holistic facilities assessment and capital planning process that will result in a strong and well-developed plan to support strategic capital investment and to identify and reduce risk. In short, the objective is to assess the condition of all included schools and site systems to develop a prioritized forecast of anticipated capital expenditures over the 10 year study period between 2025 and 2034. This will inform the long-term investment plan for each school by developing an array of projects that can be entered into a planning model from which sound management decisions can be made to best utilize funding resources.

Axias performed a visual non-destructive assessment of the interior, exterior and site components of each elementary school, including the following major components and systems:

Accessibility. We completed a cursory review of the building for general conformance with applicable accessibility requirements and have reported our findings.

Site Systems. We visually observed the site systems for the removal of stormwater and evidence of poor drainage and/or erosion potential. We also reviewed (where applicable) the condition of pavements, site concrete, retaining walls, fencing, landscaping, site grading, and stormwater drainage features.

Structural Systems. We observed the structures for visible signs of distress and have reported our findings.

Roof Systems. We visually evaluated the condition of accessible roof systems, accessories, and details. In addition, where applicable we discussed existing roof warranties.

Building Exterior Elements. We visually observed the exterior wall systems, windows, and door systems for visible evidence of deficiencies, continuity of seals, and other types of distress and have reported our findings. We reviewed available flashing and connection details for drainage design and observed the condition and placement of expansion joints. Our visual observations were based on those conditions that can be observed from ground level.

Interior Finishes. We visually observed the interior areas of each facility and reported on their general condition.

Mechanical/HVAC, Electrical, Plumbing (MEP) Systems. We observed the age and condition of the MEP and related building systems and have commented on their condition and visible deficiencies.

Fire and Life Safety. We observed the age and condition of the fire and life safety elements and have commented on their condition and any visible deficiencies. The elements surveyed included structural fire protection, means of egress, fire suppression systems, and fire detection and alarm systems.

Conveyance Systems. We visually evaluated the condition of the conveyance systems where present.

OPINION OF COST

Opinions of cost presented within this report are based upon experience with past costs for similar projects, consulting with local specialty contractors, city cost indexes, construction costs developed by construction resources such as RS Means, and assumptions regarding future economic conditions. Actual cost estimates are determined by many factors including but not limited to, choice and availability of materials, choice and availability of a qualified contractors, regional climate zone, quality of existing materials, site compatibility, and access to the subject property and facilities.

Costs for work that we consider as normal maintenance for a school, including items which can be completed for less than $2,000, work normally performed by the on-site maintenance staff, or work which is routinely contracted, may not be included in our cost evaluation but may be listed as maintenance/operational items.

There is considerable market volatility now, deriving primarily from significant supply chain interruptions around the world. This is having a direct impact on the cost of some raw materials such as steel, lumber, and copper; downstream impacts on components that contain considerable proportions of those materials. The current impact of this, combined with some labor shortages, is in the range of a premium of 10 – 15% on to the total cost of a project. However, economists expect this will have mostly dissipated once manufacturing capacity is back online at pre-pandemic levels and the pent-up demand generated by the global slowdown has largely been met.

The opinions of cost provided should be utilized for budgetary purposes and may fluctuate based on the final determined scope of work, contract delivery method, project schedule, economy of scale, phasing, etc. In addition, the opinions of cost do not include mark ups for design, engineering, contractor overhead and profit, general conditions, permitting and licensing, insurance, and other typical project mark ups.

USEFUL LIFE DEVELOPMENT

A fundamental part of any capital planning process is the development of the Estimated Useful Life (EUL) and Remaining Useful Life (RUL) for each piece of equipment. EUL considers the life of a system or component of that system while RUL considers the remaining life of that system.

We developed our EUL and RUL based upon the determined condition, our professional experience, and the criticality of the system. Additional factors can also impact the RUL of a system, such as the level of maintenance that is conducted. The EUL is typically derived from industry standard publications, while the RUL is typically derived by location specific factors.

HAZARDOUS MATERIALS

The facility condition assessment considered the presence of potential hazardous materials where visually possible or based on testing reports. Where materials that are commonly known to contain a hazardous material, such as asbestos or lead based paint, an allowance for potential abatement has been included within the opinion of cost. An extensive hazardous materials survey should be completed prior to any renovation.

RISK PRIORITIZATION METHODOLGY

To balance containment of capital investment with probability and consequence of failure, we have assigned each recommendation with a risk priority number. Risk priority numbers have been calculated based upon assignment of risk resulting from criticality, impact of failure, condition, and failure probability. Numerical scores from each element are added to provide an end risk priority number; the lower the number, the greater the risk if the recommendation is not completed. The risk priority numbers are based on a per year basis. By providing each expenditure recommendation with a risk priority number, it helps further prioritize expenditures so that funding can be directed to expenditures that could potentially have the most impact if not addressed in a timely manner. The sum of the numbers assigned to each category creates a total risk number, which equates to a risk category based upon its numerical range. Refer to the table below for details on each of the categories:

Score	Impact of Failure	Condition	Probability of Failure	Frequency of Failure
1	**Catastrophic:** Facility / System / Component cannot be used.	**Very poor:** critical active non-grandfathered code violation	In a state of failure or regulatory enforcement action	**Frequent:** Occurs at least once per week
2	**Major:** interruption of facility's primary use; deterioration of historic fabric, critical operations severely affected	**Poor:** severe active non-grandfathered code violation	Enhanced chance of immediate failure	**Common:** occurs at least once per month
3	**Significant:** scaled back operations; interruption of activities; property damage as result of Facility / System / Component failure	**Fair:** system / component not presently failing	Increased chance of failure	**Seldom:** occurs at least once every 90 - 120 days
4	**Minor:** Intervention required maintain operations. Minor Facility / System / Component impact	**Good**	Slight chance of failure	**Rare:** occurs less than once every 6 months, but more than once a year
5	**Insignificant:** operations not impacted; alternative service readily available	**Very Good**	No chance of failure	**Very Rare:** has not failed within the last 2 years.

The resulting risk priority numbers fall within the following rating classifications.

Risk Rating	Risk Score
Critical	4 - 8
High	9 - 13
Medium	14 - 16
Low	17 – 20

REPORT OF FACILITY CONDITION ASSESSMENT

Mariam Boyd Elementary

Property Address:
203 Cousin Lucy's Lane
Warrenton, NC 27589

Prepared For:

Warren County Board of Education

109 Cousin Lucy's Lane

Warrenton, NC 27589

Prepared By:

Axias

Project No. GA23-024

November 28, 2023

Axias
BUILDING VALUE

Axias
BUILDING VALUE



Building: **Mariam Boyd Elementary**
GSF: 58,600
Age: 1952 (71 years)
Address: 203 Cousin Lucy's Lane
Warrenton, NC 27589

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
Accessibility																										
1	The building was originally constructed in the1950's before the implementation of ADA. Renovations were completed in the late 1990's and early 2000's. The newer additions were generally compliant with ADA guidelines. The older sections of the school are not compliant and would be difficult to make compliant due to door widths, restroom sizes, etc. Due to the extent of reconfiguration, addressing ADA barriers within the older sections has generally been excluded.	Future renovations for the elementary school will require compliance with ADA.																								**$0**
2	Restrooms within the newer school additions were generally compliant with ADA guidelines. We did note that accessories within the single occupant restrooms were typically mounted at improper heights. It is recommended to budget an allowance for minor modifications to the newer school addition restrooms to make them more readily accessible and comply with accessibility guidelines.	Allowance for relocation restroom accessories and minor accessibility modifications in the new school addition restrooms.	VI	DM	4	3	5	5	17	Low	25	1	6	EA	$1,000	$6,000										**$6,000**
3	There is no designated crosswalk with markings in the bus loop area. A designated crosswalk indicating the path of travel should be provided.	Provide crosswalk to comply with ADA guidelines.	VI	DM	4	3	5	5	17	Low		1	1	ALLOW	$2,500	$2,500										**$2,500**
4	Accessible parking space signage was noted to have discolored markings. It is recommended to replace the accessible parking space signage.	Replace accessible parking space signage.	VI	DM	4	3	5	5	17	Low	20	1	1	ALLOW	$2,000	$2,000										**$2,000**
Site Systems																										
1	Asphalt pavement at the bus loop, driving lane, and parking lots is in poor condition with significant alligator cracking. It is recommended to mill and overlay the asphalt pavement at these areas.	Mill and overlay the asphalt pavement.	III	DM	4	3	3	4	14	Medium	15	1	3,450	SY	$15.00	$51,750										**$51,750**
2	It is recommended to crack fill, seal coat, and restripe the asphalt pavement to extend the service life after it is milled and overlaid.	Crack fill, seal coat, and restripe asphalt pavement.	IV	SM	4	4	4	5	17	Low	7	8	3,450	SY	$2.00								$6,900			**$6,900**
3	The school is provided with a playground area at the south and west sides. Playground equipment typically has a 15 to 20 years. It is recommended to replace the playground equipment during the study period , including as needed accessibility improvements and access.	Replace playground equipment, which includes surfacing and ADA compliant ramps with signage.	III	CR	4	4	5	5	18	Low	15	3	2	Allow	$225,000			$450,000								**$450,000**
4	Concrete sidewalks and curbs are provided at various locations around the building. The sidewalks and curbs are in fair condition and will likely require localized replacement.	Allowance for as needed sidewalk replacements	III	SM	5	3	4	5	17	Low	50	4	1	Allow	$5,000				$5,000							**$5,000**
5	Play areas are typically provided with mulch beds throughout. Several areas were noted that may not be provided with the sufficient coverage as recommended by industry standards. It is recommended that mulch bed depths at play areas are maintained per industry standards as part of on going maintenance activities.	The depth of playground surfacing should be maintained as part of routine maintenance to comply with playground safety requirements																								**$0**
Structural Systems																										
1	Structural systems appeared to be in fair condition with no areas of significant structural deterioration of the building noted other as discussed in the Exterior Section. The structural systems should continued to be monitored throughout the study period.	No anticipated expenditures.																								**$0**

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															Year	1	2	3	4	5	6	7	8	9	10	
Roofing Systems																										
1	Gutters: All gutters have organic growth on the exterior and some have debris on the interior	Clean Gutters.	III	DM	4	3	3	4	14	Medium		1	1	Allow	$5,000	$5,000										**$5,000**
2	Sealants: All termination bar sealants and roof penetrations have aged.	Replace sealants at termination bars on the roof.	III	DM	4	2	3	4	13	High		1	1,000	LF	$6	$6,000										**$6,000**
3	Standing Seam Metal Roof: Roof appears to be beyond it's service life. Layers of aged liquid patches over transitions were identified. Fastener gaskets have aged and failed, fastener pull out was observed in many locations. Multiple building additions have been added and metal roof to metal roof transitions are not designed or detailed in a manner to passively prevent water intrusion. It is recommended to replace the metal roof. Roof Designer to investigation roof transition, water intrusion issues for potential rework prior to roof restoration.	Replace metal roof and correct roof transitions.	II	DM	3	2	3	1	9	High	20	1	60,000	SF	$20	$1,200,000										**$1,200,000**
4	Flat Roof (TPO): Roof areas have multiple patches and appear to be closer to 10 years old. It is recommended to replace the roof at 15 years or if water intrusion becomes an active issue.	Replace TPO roof.	III	CR	4	3	3	4	14	Medium	15	5	800	SF	$20					$16,000						**$16,000**
5	Penetrations: Signification roof panel metal corrosion at some HVAC penetrations	Recommend temporary repair, but roof replacement is recommended as a long term solution	III	DM	4	3	3	3	13	High		1	1	Allow	$10,000	$10,000										**$10,000**
Exterior Elements																										
1	Brick and Masonry: Exterior Façade consists of a both single wythe CMU split faced block and brick veneer cavity wall system. The brick is in good condition. Some areas have debonded brick to mortar joints which could cause excessive bulk water to enter the wall cavity. It is unclear if the backup wall has a WRB or water- resistant barrier to keep water from entering the building if water breaches the brick veneer. Some organic growth was found on the brick veneer and CMU split faced block.	Spot repoint mortar joints where mortar joint has debodned from brick.	III	DM	4	3	1	3	11	High	35	1	200	SF	$65	$13,000										**$13,000**
2	Brick and Masonry: Exterior Façade has some organic growth present on the brick veneer and CMU split faced block.	Soft wash the exterior to maintain / reduce organic growth.	III	SM	4	3	3	4	14	Medium		1	100,000	SF	$0.25	$25,000										**$25,000**
3	Window Lintels: Some window lintels are on a timeline of becoming structurally deficient due to steel corrosion and loss of steel cross section.	Replace deficient steel lintels. Coat existing lintels with alkaline corrosion prohibiting coating to extend life of existing lintels	III	DM	4	3	4	5	16	Medium		1	400	LF	$22.00	$8,800										**$8,800**
4	Wall Expansion Sealant Joints: All expansion joints have reached the end of their service life. Evidence of loss of adhesion, cohesion and reversion on the sealant joints.	Replace wall expansion joint sealants.	II	DM	3	3	3	4	13	High		1	2,000	LF	$6	$12,000										**$12,000**
5	Window Perimeter Sealant Joints: All windows perimeter sealant joints have reached the end of their service life. Evidence of loss of adhesion, cohesion and reversion on the sealant joints.	Replace window perimeter sealants.	II	DM	3	3	3	3	12	High		1	20,000	LF	$6	$120,000										**$120,000**
6	Garage Doors: Paint on the doors has failed and is flacking and pealing off of the substrate.	Surface prep and repaint garage door.	III	DM	5	2	1	1	9	High		1	1	Allow	$1,200	$1,200										**$1,200**
7	Steel I-beam: On the east side of the north elevation there a steel I beam that is penetrating the exterior brick façade. With the opening being open to the elements. This should be repaired to be weather resistant.	Enclose steel beam exposed to the elements.	III	DM	4	3	4	4	15	Medium		1	1	Allow	$1,500	$1,500										**$1,500**
8	Through Wall Flashing: Some areas of wall cavity drainage area below finish grade on the exterior. This can cause water intrusion due to flooding or excessive exterior ponding of water.	Exterior grade should be reworked to be below wall drainage points.	III	DM	4	3	3	4	14	Medium		1	1	Allow	$10,000.00	$10,000										**$10,000**
9	Metal Wall Paneling (General): No signed of excessive wear.	General Note.																								**$0**
10	Metal Wall Paneling (Damage): No signs of excessive wear. A damaged area on the east elevation should be repaired to reduce excessive water intrusion.	Repair damaged metal panel on the east elevation.	III	DM	4	3	3	4	14	Medium		1	1	Allow	$5,000	$5,000										**$5,000**

Axias
BUILDING VALUE



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															Year	1	2	3	4	5	6	7	8	9	10	
11	Downspout: Downspouts are currently directed to exit water directly at the base of the exterior wall. Drainage piping should direct water away from exterior walls.	Provide drainage piping to direct water away from the building.	III	DM	4	3	4	4	15	Medium		1	1	Allow	$20,000	$20,000										**$20,000**
12	Storefront Entrance Glazing System: Both fixed lites and side hinged entrance doors are in good condition.	General Note.																								**$0**
13	Newer Windows (South Expansion Wing): Good condition.	General Note.																								**$0**
14	Older Windows (North Wing and Central Structure): The older windows are in poor condition. Windows should be replaced to meet current water intrusion, thermal performance and air infiltration performance and ADA code requirements.	Replace windows at the North Wing and Central Structure.	II	DM	4	3	3	3	13	High		1	1	Allow	$1,000,000	$1,000,000										**$1,000,000**
15	Sealants (wall to slab): All of the exterior wall to walking areas concrete slab sealant cove joints have filed. Sealant joints should be cut out and replaced.	Replace wall to concrete slab sealants.	III	DM	4	3	4	4	15	Medium		1	1,000	LF	$6	$6,000										**$6,000**
16	Brick Wall Failure: (Amphitheater Area) The west elevation brick wall area is structuraly deficient. Incipient brick spall are potential fall hazards. Out of plan brick wall areas are also a concern. In addition the structure has displaced two to three inches in some locations, which is causing damage to the building structure. This area should be closed of to the general public and structurally evaluated. The structure should be evaluated further and repairs/replacements completed.	Complete exterior repairs at the Amphitheater area.	II	DM	2	1	3	3	9	High		1	1	Allow	$500,000	$500,000										**$500,000**
Interiors																										
1	Interior finishes throughout the school appeared to be in poor to fair condition depending on the age of construction. Finishes are typical of an elementary school and primarily consists of terrazzo, VCT and carpet flooring, painted concrete masonry unit walls, and suspended acoustical ceiling tiles. Based on the age and overall condition of the interior finishes within the classrooms, offices, corridors, etc., it is recommended to budget for the renewal of the interior finishes in the near-term. The opinion of cost excludes reconfiguration of space and only includes interior finishes.	Complete interior renovation of finishes.	V	DM	4	3	3	4	14	Medium	25	1	58,600	SF	$65.00	$3,809,000										**$3,809,000**
2	Restrooms throughout the school appeared to be in poor to fair condition based on the age of construction. Given the condition of the restrooms, it is recommended to budget for the renovation of the restrooms in the near-term. This should include replacement of all plumbing fixtures and restroom accessories.	Complete renovation of main restrooms.	V	DM	4	3	3	4	14	Medium	25	1	6	EA	$40,000	$240,000										**$240,000**
3	The kitchen which serves the cafeteria appeared to be in fair condition. The major equipment varied in age. It was reported that the kitchen hoods have not been inspected within the last year or more. It was also noted that several of the drains have backed up due to the clogged grease trap. It is recommended to complete an evaluation of the cafeteria kitchen to determine capacity and configuration based on the meals served and then to renovate the kitchen in the near-term.	Complete utilization evaluation and renovation of the cafeteria kitchen.	V	DM	3	3	3	3	12	High	25	1	1,800	SF	$485	$873,000										**$873,000**
4	Areas of potential lead based paint and asbestos containing materials were noted throughout the school. It is recommended to complete a detailed environmental survey before commencing future work.	Complete detailed environmental survey.	II	DM	3	3	3	3	12	High	25	1	1	LS	$8,500	$8,500										**$8,500**

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															Year	1	2	3	4	5	6	7	8	9	10	
Mechanical																										
1	Heating hot water is provided by two natural gas fired boilers. One of the boilers appeared to be manufactured at the time of the original construction and has since been abandoned in place. The operational boiler was manufactured by Weil McLain in 1996 with a rated capacity of 400,000-BTUH. Based on the age and condition of the boilers, it is recommended to budget for the replacement of the boilers in the near-term. Replacement with a high efficiency condensing boiler should be considered. An allowance for the replacement of the distribution piping has also been included.	Replace heating hot water boilers, piping, valves, etc.	III	CR	3	3	4	4	14	Medium	25	1	2	EA	$275,000	$550,000										**$550,000**
2	Conditioned air for the majority of the school is provided by individual split system air conditioning units. The split systems were manufactured by either Trane or Carrier primarily in 1997 with a rated capacity of 5-tons each. The units appeared to be in poor to fair condition. We noted that the elevated platforms the units are supported by have suffered water damage and could potentially be structurally unsound. In addition, the units utilize R-22 refrigerants, are not readily accessible to complete preventative maintenance tasks, and have exceeded the typical service life. It is recommended to budget for the replacement of the split system units in the near-term. It is also recommended to replace the corresponding duct work.	Replace split system air conditioning units.	III	DM	3	3	4	4	14	Medium	20	1	18	EA	$25,000	$450,000										**$450,000**
3	Ceiling mounted cabinet unit ventilators with heating hot water coils are provided in the original wing of the school. The units are served by the natural gas fire heating hot water boilers. Based on the age of the unit ventilators, it is recommended to budget for the replacement of the units during the term. This should be completed in conjunction with the replacement of the heating hot water boilers.	Replace ceiling mounted unit ventilators	III	DM	4	3	4	4	15	Medium	25	1	12	EA	$8,000	$96,000										**$96,000**
4	Ductless split system units are provide air conditioning in the original wing of the building. The ductless systems were manufactured by Mitsubishi in 2001 with a rated capacity of 3.5-tons. The units were in poor to fair condition with significant debris buildup on the vents. The units have also exceeded the statistical service life and should be budgeted for replacement in conjunction with the unit ventilators. Consideration should be given to a variable refrigerant system in lieu of the unit ventilators and heat pump units. This option should be evaluated by a Mechanical Engineer.	Replace ductless split system units.	III	DM	4	3	4	4	15	Medium	20	1	6	EA	$11,000	$66,000										**$66,000**
5	Conditioned air for the early 2000's addition is provided by split system air conditioning units manufactured by Trane in 2002. The units have a rated capacity of 7.5-tons. These types of units typically have a service life of 20 to 25 years. It is recommended to budget for the replacement of the 2002 Trane units.	Replace 2002 Trane split system units.	III	CR	4	4	4	4	16	Medium	25	4	22.5	TON	$3,800				$85,500							**$85,500**
6	The air conditioning systems are controlled by a digital control system manufactured by Siemens. These types of systems typically have a service life of 15 years before becoming obsolete. Given the extent of mechanical work required at the school, it is recommended to budget for replacing the control system in conjunction with the split system units and the boilers.	Replace Siemens HVAC control system.	III	CR	4	4	5	5	18	Low	15	1	58,600	SF	$1.75	$102,550										**$102,550**

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															Year	1	2	3	4	5	6	7	8	9	10	
Electrical																										
1	The electrical systems varied in age and manufacturer. The majority of main electrical components, including the main switchgear, were manufactured by Federal Pacific. Federal Pacific is no longer supported with replacement components no longer readily accessible. Based on the age of the main electrical components and component obsolescence, it is recommended to upgrade the main electrical switchgear, breaker panels, disconnects, and transformers that were manufactured by Federal Pacific.	Upgrade vintage electrical systems throughout the school.	III	DM	2	2	4	4	12	High	50	1	38,000	SF	$10.00	$380,000										**$380,000**
2	Lighting throughout the school is typically a combination of surface mounted, ceiling suspended, or troffer type fixtures within the suspended ceiling system. High-bay lighting is provided in the gymnasium. The age of the fixtures typically date to the construction or last renovation. It is recommended to upgrade the lighting throughout the school to LED type fixtures. Lighting controls should also be installed to control the lighting systems.	Upgrade lighting throughout the school to LED.	III	EN	4	3	4	4	15	Medium	25	1	58,600	SF	$2.75	$161,150										**$161,150**
3	Security and access control systems were limited at the school. Typically, only security cameras are provided in main corridors and other select locations. It is recommended to replace and expand the access control and security systems throughout the school.	Upgrade and expand access control and security systems.	II	CI	3	3	3	3	12	High	25	1	58,600	SF	$3.25	$190,450										**$190,450**
Plumbing																										
1	The grease trap serving the cafeteria kitchen is full and has started causing drainage issues. It is recommended to replace the grease trap considering its condition and age.	Replace cafeteria kitchen grease trap.	II	DM	3	2	3	3	11	High	30	1	1	EA	$30,000	$30,000										**$30,000**
Fire & Life Safety																										
1	A fire detection and alarm system is provided throughout the building. The system was manufactured by Simplex and utilizes a model 4020 fire alarm control panel. It was noted that the panel indicated several trouble alarms. Given that the fire alarm control panel is obsolete, noted locations of the devices. etc. it is recommended to budget for the complete replacement of the fire detection and alarm system.	Replace fire detection and alarm system.	II	DM	2	3	3	3	11	High	20	1	58,600	SF	$3.50	$205,100										**$205,100**
2	Emergency egress lighting is typically provided by dual lamp fixtures with battery backups. It was noted that some areas were not provided with sufficient emergency egress lighting. It is recommended to install additional egress lighting throughout the school.	Install additional emergency egress lighting.	I	DM	2	3	3	3	11	High	20	1	15	EA	$2,500	$37,500										**$37,500**
Conveyance Systems																										
1	No conveyance systems at the school.																									

Deficiency	Definition
SM	Scheduled Maintenance
DM	Deferred Maintenance
CR	Capital Renewal
EN	Energy & Sustainability
CI	Capital Improvement

Priority	Definition
I	Currently Critical
II	Potentially Critical
III	Necessary / Not yet Critical
IV	Recommended
V	Appearance
VI	Does Not Meet Codes / Standards

Risk	Definition
Critical	Critical (4-8)
High	High (9-13)
Medium	Medium (14-16)
Low	Low (17-20)

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
Required Cost (2023 US-Dollars)	$10,205,000	$0	$450,000	$90,500	$16,000	$0	$0	$6,900	$0	$0	$10,768,400
Required Cost (Inflated @ 8% for 1st 3 years then 3% Per Yr.)	$11,021,400	$0	$566,870	$101,859	$18,548	$0	$0	$8,741	$0	$0	$11,717,418
Total Cost (2023 $/ SF/ Yr.)	$174.15	$0.00	$7.68	$1.54	$0.27	$0.00	$0.00	$0.12	$0.00	$0.00	$183.76

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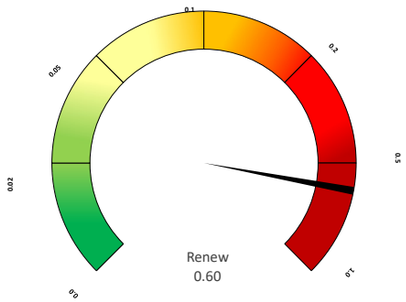
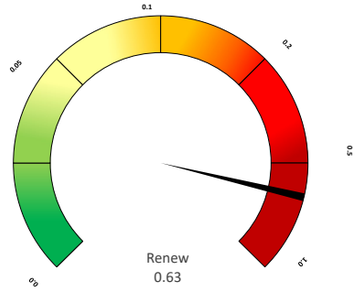
Financial Summary

Facility Condition Index



10 Year Facility Condition Index

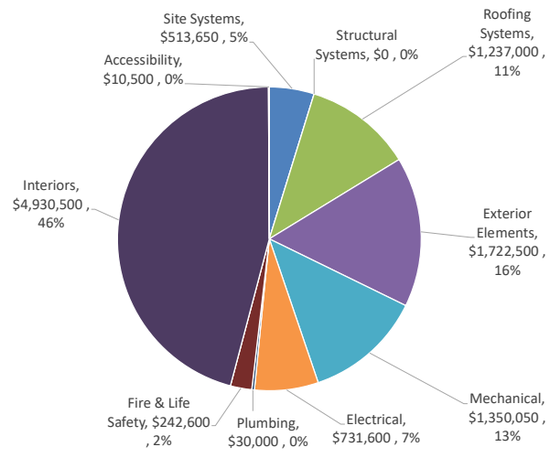


FCI Range	Condition Description
0.00 – 0.02	Excellent condition, typically new construction
0.02 – 0.05	Good Condition, renovations occur on schedule
0.05 – 0.1	Fair Condition, in need of normal renovation
0.1 – 0.2	Below average condition, major renovationrequired
0.2 – 0.5	Poor condition, total renovation needed
0.5 – 1	Complete facility replacement indicated

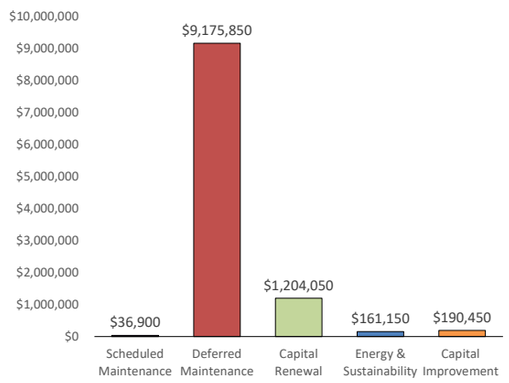
Risk	Definition
Critical	Critical (4-8)
High	High (9-13)
Medium	Medium (14-16)
Low	Low (17-20)

Priority	Definition
I	Currently Critical
II	Potentially Critical
III	Necessary / Not yet Critical
IV	Recommended
V	Appearance
VI	Does Not Meet Codes / Standards

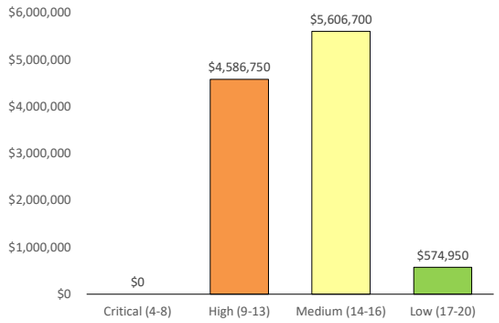
Summary by System



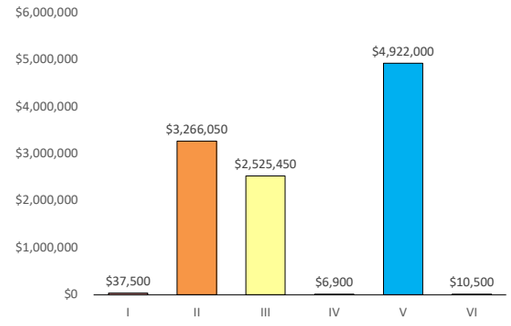
Expenditures by Deficiency Category



Expenditures by Risk



Expenditures by Priority Category



Axias
BUILDING VALUE

Building: **Mariam Boyd Elementary**
GSF: 58,600
Age: 1952 (71 years)
Address: 203 Cousin Lucy's Lane
Warrenton, NC 27589

Representative Photos

Asphalt with alligator cracking.

Playground and exterior façade on west side

Delamination at concrete sidewalks noted.

Typical heating hot water boiler.

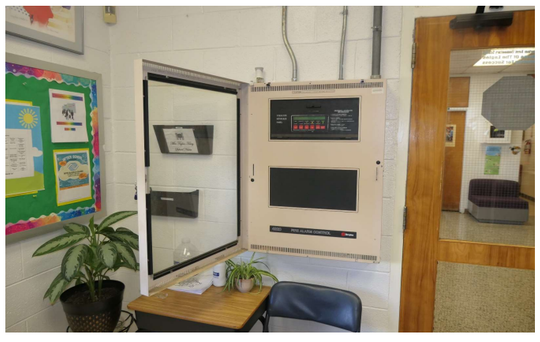
Significant settlement issues were noted at the amphitheater.

Federal Pacific electrical panels are obsolete.

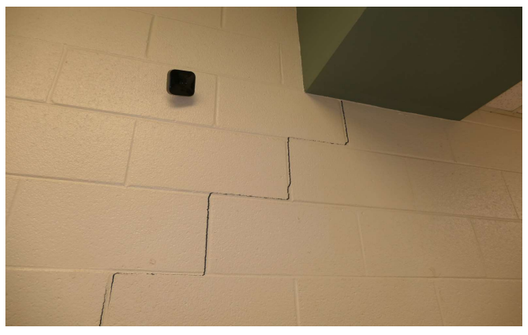
Typical unit ventilator in the original classrooms.

Clogged mop sink drain due to grease trap.

Sagging ceiling tiles often indicate potential humidity issues.



Obsolete fire alarm control panel.



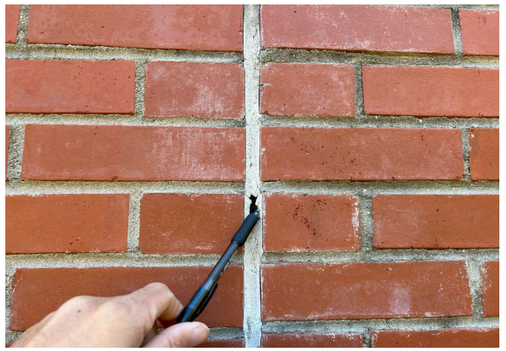
Minor stair-step cracking which should be monitored.

Air handling units are in poor condition.

Axias
BUILDING VALUE

Building: **Mariam Boyd Elementary**
GSF: 58,600
Age: 1952 (71 years)
Address: 203 Cousin Lucy's Lane
Warrenton, NC 27589

Representative Photos



Deteriorated expansion joint sealants

Missing/deteriorated sealants at the base of the walls.

Downspouts not connected to drainage piping.

Overview of TPO roof covering.

Deteriorated sealants at termination bar at roof level.

Single pane windows are in poor condition.

Exposed steel which should be enclosed.

Deteriorated perimeter window sealants.

Water ingress due to poor building joint.

Minor cracking at the amphitheater area.

Organic growth on fascia panels.

Corroded lintels noted at several locations.

REPORT OF FACILITY CONDITION ASSESSMENT

Northside Elementary School

Property Address:
164 Elementary Avenue
Norlina, NC 27653

Prepared For:

Warren County Board of Education

109 Cousin Lucy's Lane

Warrenton, NC 27589

Prepared By:

Axias

Project No. GA23-024

November 28, 2023

Axias
BUILDING VALUE

Axias
BUILDING VALUE

Building: **Northside Elementary**
GSF: 58000
Aqe: 1957 (66 years)
Address: 164 Elementary Avenue
Norlina, NC 27653

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
Accessibility																										
1	The building was constructed in the 1957, before the implementation of the Americans with Disabilities Act of 1991 (ADA). Renovations were completed in the late 1990's and early 2000's. The newer additions were generally compliant with ADA guidelines. The older sections of the school are not compliant and would be difficult to make compliant due to door widths, restroom sizes, etc. Due to the extent of reconfiguration, addressing ADA barriers within the older sections has generally been excluded.	Future renovations for the elementary school will require compliance with ADA.																								**$0**
2	A covered walkway area connecting the south wing is provided with an accessible ramp. The ramp is not provided with handrails as required by accessibility guidelines. It is recommended to install handrails at the interior ramps.	Provide handrails at interior ramps.	VI	CI	4	3	5	5	17	Low		1	140	LF	$90	$12,600										**$12,600**
3	Restrooms within the newer additions were generally compliant with ADA guidelines. We did note that accessories within the single occupant restrooms were typically mounted at improper heights. We also noted that the height of some water closets were below the minimum 17" or above the maximum height of 19". It is recommended to budget an allowance for minor modifications to the newer school addition restrooms to make them more readily accessible and comply with accessibility guidelines.	Allowance for relocation of restroom accessories and minor accessibility modifications in the 2000's addition restrooms.	VI	DM	4	3	5	5	17	Low		1	5	EA	$1,750	$8,750										**$8,750**
4	Only one designated accessible parking space is provided; however, it is located in a gravel paved area which it not considered a stable surface. It is recommended to provide additional designated accessible parking spaces on paved surfaces.	Provide additional accessible parking spaces and accessible route signage.	VI	DM	4	3	5	5	17	Low		1	5	EA	$500	$2,500										**$2,500**
Site Systems																										
1	Asphalt paved parking lots and the bus loop going southwest are in poor to fair condition with alligator cracking in various locations. It is recommended to complete full depth repair at distressed areas and then mil and overlay of the remaianing asphalt pavement.	Full-depth replacement of damaged localized sections of asphalt pavement. Mill and overlay asphalt to parking lot, which is currently gravel, and roadway areas.	III	CR	4	2	4	4	14	Medium	15	1	4,467	SY	$18	$80,406										**$80,406**
2	Asphalt parking lots and the bus loop going southwest will need to be crack filled, seal coated after it has been milled and overlayed.	Crack fill, seal coat after the first phase of mill and overlay	IV	SM	4	4	4	4	16	Medium	7	8	4,467	SY	$2								$8,934			**$8,934**
3	Asphalt paved parking lot on the west side is in fair condition, but would benefit from repair works over the course of the study.	Crack fill, seal coat, and restripe the parking lot and roadway areas.	III	SM	4	3	4	5	16	Medium	7	2	3,824	SY	$2		$7,648									**$7,648**
4	Asphalt paved parking lot on the west side will require repair works over the course of the study.	Crack fill, seal coat, and restripe the parking lot and roadway areas.	IV	SM	5	4	4	5	18	Low	7	9	3,824	SY	$2									$7,648		**$7,648**
5	Exterior wooden steps and ramp at the modular unit are in poor to fair condition as the handrails, steps and ramp will need to be replaced / refurbished in the mid-term.	Refurbish the wooden steps, deck, handrails, and guardrails at the exterior ramp leading to the classroom	III	SM	4	4	4	4	16	Medium		3	220	SF	$50			$11,000								**$11,000**
6	The school is provided with two playground areas. Playground equipment typically has a service life of 15 years depending on maintenance and utilization. It is recommended to budget for the replacement of the playground equipment during the study period. Playground surfacing should also be evaluated before replacement of the equipment.	Replace playground equipment, which includes surfacing and ADA compliant ramps with signage.	III	CR	5	4	4	5	18	Low	15	4	2	EA	$225,000				$450,000							**$450,000**

Axias
BUILDING VALUE



Building: **Northside Elementary**
GSF: 58000
Aqe: 1957 (66 years)
Address: 164 Elementary Avenue
Norlina, NC 27653

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
7	Due to the sloped grade toward the building at the northeast corner of the enclosed walkway, water enters the building under the door. An area drain should be installed to prevent water from entering the building.	Install area drain at exterior door at enclosed walkway.	III	CI	4	4	4	4	16	Medium		1	1	Allow	$6,500	$6,500										**$6,500**
Structural Systems																										
1	Structural systems appeared to be in fair condition with no areas of significant structural deterioration noted. The structural systems should continued to be monitored throughout the study period.	No anticipated expenditures.																								**$0**
Roofing Systems																										
1	Gutters: All gutters have organic grown on the exterior and some have debris on the interior	Clean Gutters	III	DM	4	3	4	3	14	Medium		1	1	Allow	$5,000	$5,000										**$5,000**
2	Sealants: All termination bar sealants and roof penetrations sealants have aged and require replacement.	Replace termination bar sealants at the roof level.	III	DM	4	3	3	3	13	High		1	1,500	LF	$6	$9,000										**$9,000**
3	Standing Seam Metal Roof: Roof appears to be beyond it's service life. Layers of aged liquid patches over transitions were identified. Fastener gaskets have aged and failed, fastener pull out was observed in many locations. Multiple building additions have been added and metal roof to metal roof transitions are not designed or detailed in a manner to passively prevent water intrusion. It is recommended to replace the metal roof. Roof Designer to investigate roof transition, water intrusion issues for potential rework prior to roof restoration.	Replace metal roof and correct roof transitions.	II	DM	3	2	3	1	9	High	20	1	58,000	SF	$20	$1,160,000										**$1,160,000**
4	Flat Roof (TPO): Roof areas have multiple patches and appear to be closer to 10 years old. One section had significant amounts of standing water. It is recommended to replace the roof at 15 years or if water intrusion becomes an active issue.	Replace TPO roof covering.	III	CR	4	3	3	4	14	Medium	15	5	1,000	SF	$20					$20,000						**$20,000**
5	Penetrations: Signification roof panel metal corrosion at some HVAC penetrations which should be repaired. Recommend temporary repair, but roof replacement is recommended as a long term solution.	Complete interim repairs to the metal roof.	III	DM	4	3	3	3	13	High		1	1	Allow	$10,000	$10,000										**$10,000**
Exterior Elements																										
1	Brick and Masonry: Exterior Façade consists of a both single wythe CMU split faced block and brick veneer cavity wall system. The brick is in good condition. Some areas have debonded brick to mortar joints which could cause excessive bulk water to enter the wall cavity. It is unclear if the backup wall has a water- resistant barrier to keep water from entering the building if water breaches the brick veneer. Some organic growth was found on the brick veneer and CMU split faced block.	Spot repoint mortar joints where mortar joint has debodned from brick.	II	DM	4	2	3	3	12	High	35	1	700	SF	$65	$45,500										**$45,500**
2	Brick and Masonry: Exterior Façade has some organic growth present on the brick veneer and CMU split faced block.	Soft wash isolated areas of the exterior to maintain / reduce organic growth.	III	DM	4	3	4	4	15	Medium		1	20,000	SF	$0.25	$5,000										**$5,000**
3	Window Lintels: Some window lintels corrosion prohibited coating is deteriorating.	Wire grind and coat exposed lintels.	III	DM	4	3	4	5	16	Medium		1	300	LF	$8	$2,400										**$2,400**
4	Wall Expansion Sealant Joints: All expansion joints have reached the end of their service life. Evidence of loss of adhesion, cohesion and reversion on the sealant joints.	Replace wall expansion joint sealants.	II	DM	3	2	3	3	11	High		1	1,000	LF	$6	$6,000										**$6,000**
5	Window Perimeter Sealant Joints: All windows perimeter sealant joints have reached the end of their service life. Evidence of loss of adhesion, cohesion and reversion on the sealant joints.	Replace window perimeter sealants.	II	DM	3	2	3	3	11	High		1	25,000	LF	$6	$150,000										**$150,000**

Axias
BUILDING VALUE

Building: **Northside Elementary**
GSF: 58000
Aqe: 1957 (66 years)
Address: 164 Elementary Avenue
Norlina, NC 27653

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
6	Through Wall Flashing: Some areas of wall cavity drainage area below poured concrete walkway areas. This can cause water intrusion due to water being trapped within the wall system.	Relocate through wall flashing where below poured concrete.	II	DM	3	2	2	4	11	High		1	1	Allow	$30,000	$30,000										**$30,000**
7	Metal Wall Paneling (General): No signed of excessive wear.	General Note.																								**$0**
8	Downspout: Downspouts are currently directed to exit water directly at the base of the exterior wall.	Provide drainage piping to direct water away from the building.	III	DM	4	3	3	4	14	Medium		1	1	Allow	$20,000	$20,000										**$20,000**
9	Storefront Entrance Glazing System: Both fixed lites and side hinged entrance doors are in good condition.	General Note.																								**$0**
10	Aluminum Windows: Good condition.	General Note.																								**$0**
11	Glass block Window: There are a few broken glass cells.	Repair/replace broken glass block windows.	III	DM	4	3	4	4	15	Medium		1	1	Allow	$10,000	$10,000										**$10,000**
12	Sealants (wall to slab): All of the exterior wall to walking areas concrete slab sealant cove joints have failed.	Replace wall to walking areas concrete slab sealants.	III	DM	4	3	3	4	14	Medium		1	1,000	LF	$6	$6,000										**$6,000**
Interiors																										
1	Interior finishes throughout the school appeared to be in poor to fair condition depending on the age of construction. Finishes are typical of an elementary school and primarily consists of terrazzo, VCT and carpet flooring, painted concrete masonry unit walls, and suspended acoustical ceiling tiles. Based on the age and overall condition of the interior finishes within the classrooms, offices, corridors, etc., it is recommended to budget for the renewal of the interior finishes in the near-term. The opinion of cost excludes reconfiguration of space and only includes interior finishes.	Complete interior renovation of finishes.	III	DM	4	3	3	4	14	Medium	25	1	58,000	SF	$65	$3,770,000										**$3,770,000**
2	Restrooms throughout the school appeared to be in poor to fair condition based on the age of construction. Given the condition of the restrooms, it is recommended to budget for the renovation of the restrooms in the near-term. This should include replacement of all plumbing fixtures and restroom accessories.	Complete renovation of main restrooms.	III	DM	4	3	3	4	14	Medium	25	1	4	EA	$40,000	$160,000										**$160,000**
3	The kitchen which serves the cafeteria appeared to be in fair condition. The major equipment varied in age. It was reported that the kitchen hoods have not been inspected within the last year or more. It is recommended to complete an evaluation of the cafeteria kitchen to determine capacity and configuration based on the meals served and then to renovate the kitchen in the near-term.	Complete utilization evaluation and renovation of the cafeteria kitchen.	III	DM	3	3	4	4	14	Medium	25	1	1,300	SF	$485	$630,500										**$630,500**
4	Areas of potential lead based paint and asbestos containing materials were noted throughout the school. It is recommended to complete a detailed environmental survey before commencing future work.	Complete detailed environmental survey.	II	DM	3	3	3	3	12	High		1	1	LS	$10,000	$10,000										**$10,000**
5	The stage in the cafeteria area has suffered water damage likely from condensate leaking from the adjacent fan coil unit. The stage has become unstable in some areas and needs to be repaired.	Repair stage area in the cafeteria.	II	DM	2	3	3	3	11	High	25	1	1	ALLOW	$6,000	$6,000										**$6,000**
6	In Room 120 it was reported that an oily substance was potentially coming up through the slab and staining the carpet. At the time of the site visit we were unable to confirm the source of the substance. It is recommended to complete further investigation and testing to determine the cause.	Complete investigation of ongoing carpet staining in Room 120.	II	DM	3	3	3	3	12	High	25	1	1	ALLOW	$10,000	$10,000										**$10,000**

Axias
BUILDING VALUE

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															Year	1	2	3	4	5	6	7	8	9	10	
Mechanical																										
1	Steam is provided by one fuel oil fired boiler. The boiler was manufactured by Weil McLain in the late early 2000's with a rated capacity of 2,700,000-BTUH. Based on the age and condition of the boiler, it is recommended to budget for the replacement of the boilers in the near-term. Replacement with a high efficiency condensing boiler should be considered.	Replace steam boiler, heat exchanger, piping, valves, etc.	III	CR	3	3	4	4	14	Medium	25	1	2,700	MBH	$90	$243,000										**$243,000**
2	Conditioned air for the majority of the school is provided by individual split system air conditioning units. The split systems were typically manufactured by York primarily in 1996 with varying rated capacities of 5 to 10-tons each. The units appeared to be in poor to fair condition. In addition, the units utilize R-22 refrigerants, are not readily accessible to complete preventative maintenance tasks, and have exceeded the typical service life. It is recommended to budget for the replacement of the split system units in the near-term.	Replace split system air conditioning units.	III	DM	3	3	4	4	14	Medium	20	1	55.5	TON	$3,800	$210,900										**$210,900**
3	Ductless split system units provide air conditioning in the original wing of the building. The ductless systems were manufactured by Mitsubishi in the early 2000's with a rated capacity of 3-tons. The units were in poor to fair condition with significant debris buildup on the vents. The units have also exceeded the statistical service life and should be budgeted for replacement. Consideration should be given to a variable refrigerant system in lieu of the perimeter hydronic heating and air conditioning units. This option should be evaluated by a Mechanical Engineer.	Replace ductless split system units.	III	DM	4	3	4	4	15	Medium	20	1	10	EA	$12,000	$120,000										**$120,000**
4	Air conditioning for the modular classrooms is provided by wall mounted heat pump units manufactured by Bard in 2015 with rated capacities of 3-tons. These units typically have a service life of 15 to 20 years. It is recommended to budget for the replacement of the Bard units during the study period.	Replace Bard units serving the modular classrooms.	III	CR	4	4	5	5	18	Low	15	7	4	EA	$8,000							$32,000				**$32,000**
5	Conditioned air for the early 2000's addition is provided by split system air conditioning units manufactured by Trane in 2002. The units have a rated capacity of 7.5-tons. These types of units typically have a service life of 20 to 25 years. It is recommended to budget for the replacement of the 2002 Trane units.	Replace 2002 Trane split system units.	III	CR	4	4	4	4	16	Medium	25	4	15	TON	$3,800				$57,000							**$57,000**
6	The air conditioning systems are controlled by a digital control system manufactured by Siemens. These types of systems typically have a service life of 15 years before becoming obsolete. Given the extent of mechanical work required at the school, it is recommended to budget for replacing the control system in conjunction with the split system units and the boilers.	Replace Siemens HVAC control system.	III	CR	4	4	5	5	18	Low	15	1	58,600	SF	$2	$102,550										**$102,550**

Axias
BUILDING VALUE

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GSF: 58000
Aqe: 1957 (66 years)
Address: 164 Elementary Avenue
Norlina, NC 27653

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
Electrical																										
1	The electrical systems varied in age and manufacturer. The majority of main electrical components were manufactured by General Electric along with SquareD and are anticipated to have been in service for over 50 years. Based on the age of the main electrical components and component obsolescence, it is recommended to upgrade the breaker panels and associated electrical equipment that has been in service for over 40 years.	Upgrade vintage electrical systems throughout the school.	III	DM	2	2	4	4	12	High	50	1	30,000	SF	$10	$300,000										**$300,000**
2	Lighting throughout the school is typically a combination of surface mounted, ceiling suspended, or troffer type fixtures within the suspended ceiling system. High-bay lighting is provided in the gymnasium. The age of the fixtures typically date to the construction or last renovation. It is recommended to upgrade the lighting throughout the school to LED type fixtures. Lighting controls should also be installed to control the lighting systems.	Upgrade lighting throughout the school to LED.	III	EN	4	3	4	4	15	Medium	25	1	58,000	SF	$2.75	$159,500										**$159,500**
3	Security and access control systems were limited at the school. Typically only security cameras are provided in main corridors and other select locations. It is recommended to replace and expand the access control and security systems throughout the school.	Upgrade and expand access control and security systems.	II	CI	3	3	3	3	12	High	25	1	58,000	SF	$3.25	$188,500										**$188,500**
Plumbing																										
1	Domestic hot water for the cafeteria kitchen is provided by a 85-gallon commercial grade electric storage tank type water heater. The water heater was manufactured by Rheem in 2007. Based on a typical service life of 15 to 18 years, it is recommended to budget for the replacement of the cafeteria kitchen water heater.	Replace water heater serving the cafeteria kitchen.	III	CR	3	4	4	4	15	Medium	15	2	1	EA	$12,500		$12,500									**$12,500**
Fire & Life Safety																										
1	A fire detection and alarm system is provided throughout the building. The system was manufactured by Simplex and utilizes a model 4020 fire alarm control panel. It was noted that the panel indicated several trouble alarms. Given that the fire alarm control panel is obsolete, noted locations of the devices. etc. it is recommended to budget for the complete replacement of the fire detection and alarm system.	Replace fire detection and alarm system.	II	DM	2	3	3	3	11	High	20	1	58,000	SF	$4	$203,000										**$203,000**
2	Emergency egress lighting is typically provided by dual lamp fixtures with battery backups. It was noted that some areas were not provided with sufficient emergency egress lighting. It is recommended to install additional egress lighting throughout the school.	Install additional emergency egress lighting.	I	DM	2	3	3	3	11	High	20	1	12	EA	$2,500	$30,000										**$30,000**
Conveyance Systems																										
1	No conveyance systems at the school.																									**$0**
Required Cost (2023 US-Dollars)																**$7,713,606**	**$20,148**	**$11,000**	**$507,000**	**$20,000**	**$0**	**$32,000**	**$8,934**	**$7,648**	**$0**	**$8,320,336**
Required Cost (Inflated @ 8% for 1st 3 years then 3% Per Yr.)																**$8,330,694**	**$23,501**	**$13,857**	**$570,633**	**$23,185**	**$0**	**$39,356**	**$11,317**	**$9,979**	**$0**	**$9,022,523**
Total Cost (2023 $/ SF/ Yr.)																**$67.50**	**$0.18**	**$0.10**	**$4.44**	**$0.18**	**$0.00**	**$0.28**	**$0.08**	**$0.07**	**$0.00**	**$72.81**

Deficiency	Definition
SM	Scheduled Maintenance
DM	Deferred Maintenance
CR	Capital Renewal
EN	Energy & Sustainability
CI	Capital Improvement

Priority	Definition
I	Currently Critical
II	Potentially Critical
III	Necessary / Not yet Critical
IV	Recommended
V	Appearance
VI	Does Not Meet Codes / Standards

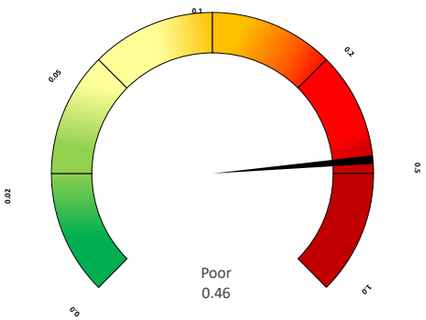
Risk	Definition
Critical	Critical (4-8)
High	High (9-13)
Medium	Medium (14-16)
Low	Low (17-20)

Axias
BUILDING VALUE

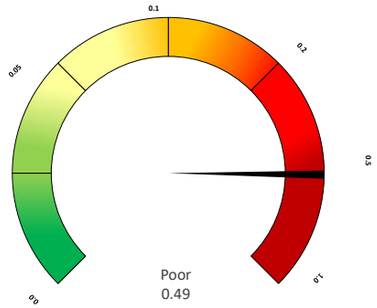
Building: Northside Elementary
GSF: 58000
Age: 1957 (66 years)
Address: 164 Elementary Avenue
Norlina, NC 27653

Financial Summary

Facility Condition Index



10 Year Facility Condition Index

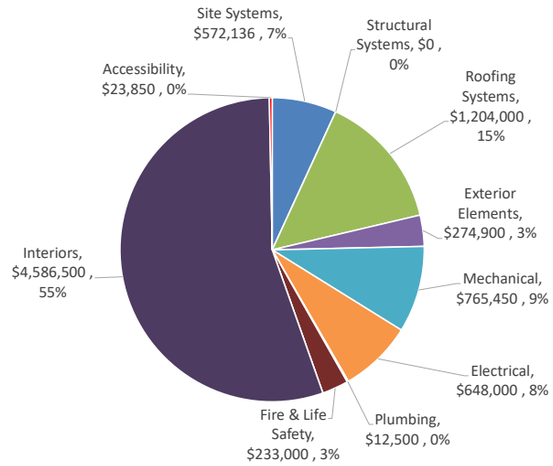


FCI Range	Condition Description
0.00 – 0.02	Excellent condition, typically new construction
0.02 – 0.05	Good Condition, renovations occur on schedule
0.05 – 0.1	Fair Condition, in need of normal renovation
0.1 – 0.2	Below average condition, major renovationrequired
0.2 – 0.5	Poor condition, total renovation needed
0.5 – 1	Complete facility replacement indicated

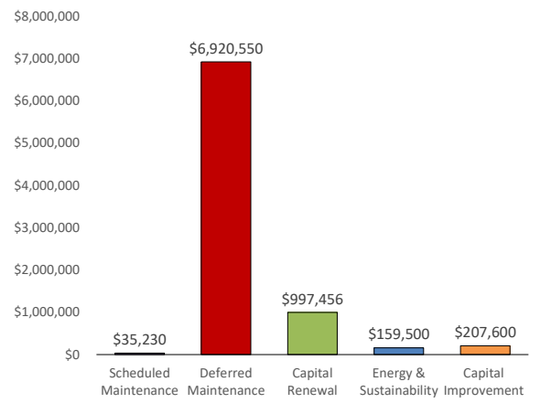
Risk	Definition
Critical	Critical (4-8)
High	High (9-13)
Medium	Medium (14-16)
Low	Low (17-20)

Priority	Definition
I	Currently Critical
II	Potentially Critical
III	Necessary / Not yet Critical
IV	Recommended
V	Appearance
VI	Does Not Meet Codes / Standards

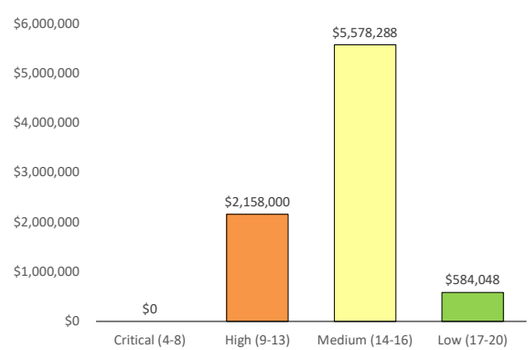
Summary by System



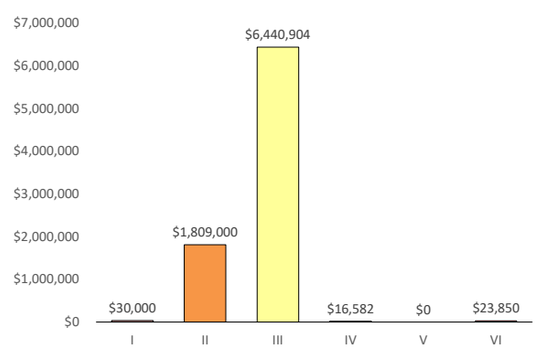
Expenditures by Deficiency Category



Expenditures by Risk



Expenditures by Priority Category



Axias
BUILDING VALUE

Building: **Northside Elementary**
GSF: 58000
Age: 1957 (66 years)
Address: 164 Elementary Avenue
Norlina, NC 27653

Representative Photos

Area if poor drainage which enters into the building.

Typical asphalt pavement deterioration.

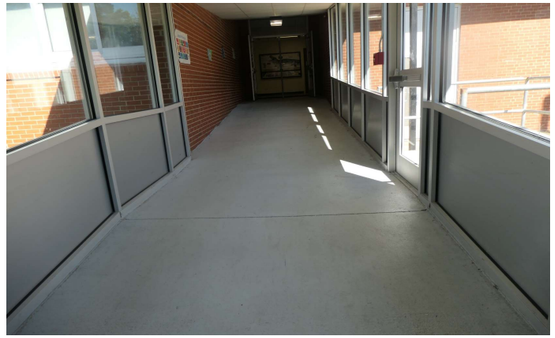
One of two playground areas.

Typical concrete sidewalk sections.

The fire detection and alarm system is obsolete.

Typical obsolete electrical equipment.

Split system unit serving cafeteria with condensate leak which damaged the stage.

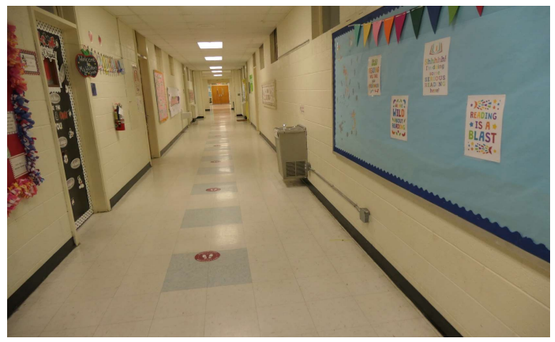


Handrails are not provided at the interior ramp connecting the buildings.

Unknown substance coming up and staining the carpet.

Steam boiler and heat exchanger for hydronic heating.

Several urinals and water closets are not operational.



Additional emergency egress lighting is required throughout the building.

Axias
BUILDING VALUE

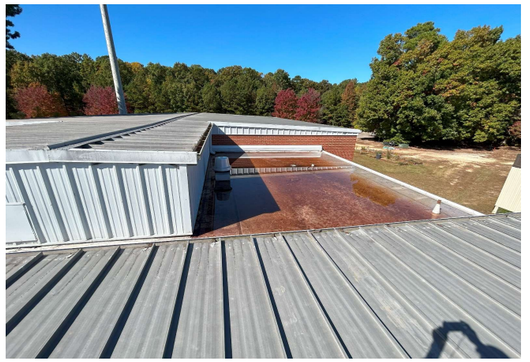
Building: **Northside Elementary**
GSF: 58000
Age: 1957 (66 years)
Address: 164 Elementary Avenue
Norlina, NC 27653

Representative Photos

Cracked glass block.

Building transitions have poor detailing.

Deteriorated expansion join sealant.



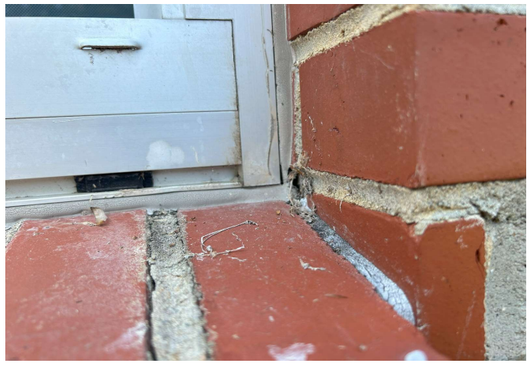
Ponding water at TPO roof.

General overview of the metal roof.

Stained sealing tile likely caused by roof leak.

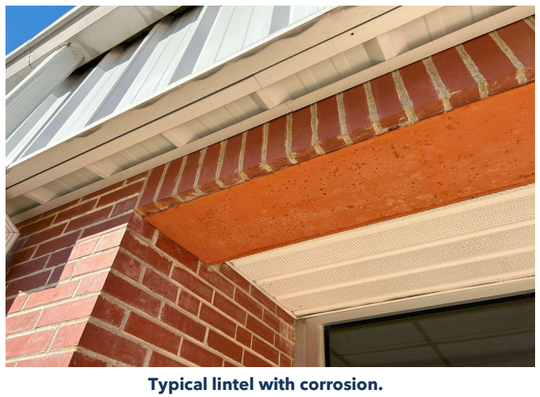
Downspouts don't direct water away from the building.

Area of debonded mortar.

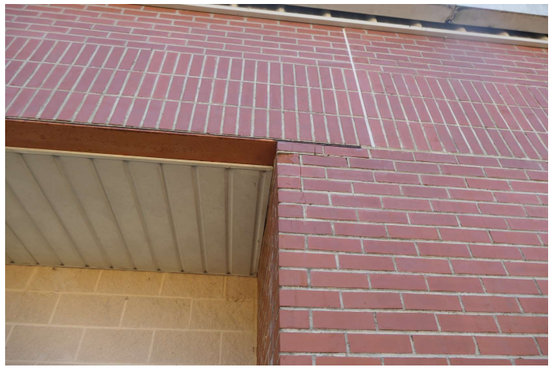


Window sealants are in poor condition.

Storefront entries are in good condition.



Typical lintel with corrosion.



Displaced mortar at one of the lintels.

REPORT OF FACILITY CONDITION ASSESSMENT

Vaughan Elementary School

Property Address:
2936 US Hwy 158 E
Macon, NC 27551

Prepared For:

Warren County Board of Education

109 Cousin Lucy's Lane

Warrenton, NC 27589

Prepared By:

Axias

Project No. GA23-024

November 28, 2023

Axias
BUILDING VALUE

Axias
BUILDING VALUE




Building: **Vaughan Elementary**
GSF: 48000
Age: 1957 (66 years)
Address: 2936 US Hwy 158 E
Macon, NC 27551

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
																										Required
Accessibility																										
1	The building was originally constructed in 1950's before the implementation of ADA. Renovations were completed in the late 1990's. The newer additions were generally compliant with ADA guidelines. The older sections of the school are not compliant and would be difficult to make compliant due to door widths, restroom sizes, etc. Due to the extent of reconfiguration, addressing ADA barriers within the older sections has generally been excluded.	Future renovations for the elementary school will require compliance with ADA.																								**$0**
2	Restrooms within the newer school additions were generally compliant with ADA guidelines. We did note that accessories within the single occupant restrooms were typically mounted at improper heights. It is recommended to budget an allowance for minor modifications to the newer school addition restrooms to make them more readily accessible and comply with accessibility guidelines.	Allowance for relocation restroom accessories and minor accessibility modifications in the new school addition restrooms.	VI	DM	4	3	5	5	17	Low	15	1	4	EA	$1,500	$6,000										**$6,000**
Site Systems																										
1	Asphalt pavement at the parking lot and bus loop has moderate amount of alligator cracking, but not significant for full-depth repair.	Mill and overlay the asphalt parking lot and localized sections due to surface deterioration	II	DM	4	3	4	4	15	Medium	15	2	4,457	SY	$15		$66,855									**$66,855**
2	Asphalt in the parking lot and bus loop will need to be maintained after it has been milled and overalyed; in addition, the asphalt in the basketball court which has longitudinal joint cracking that will benefit from crack fill, seal coat project.	Crack fill, seal coat and re-stripe asphalt paved parking lot areas, including the basketball court	IV	CR	4	3	4	4	15	Medium	7	9	4,457	SY	$2									$8,914		**$8,914**
3	Concrete sidewalks and curbs are provided at various locations around the building. The sidewalks and curbs are in moderate to fair condition and will likely require localized replacement.	Repair and / or replace defective sidewalk panels and curbs where necessary	III	SM	5	4	5	5	19	Low	50	4	1	Allow	$7,500				$7,500							**$7,500**
4	The school is provided with two playground areas neighboring one another. Playground equipment typically has a service life of 15 years depending on maintenance and utilization. It is recommended to budget for the replacement of the playground equipment during the study period. Playground surfacing should also be evaluated before replacement of the equipment.	Replace playground equipment during the study period, which includes surfacing and ADA compliant ramps with signage.	III	CR	5	4	4	5	18	Low	15	4	2	EA	$225,000				$450,000							**$450,000**
Structural Systems																										
1	Structural issues were noted near rooms 101 - 106 with significant stair step and shear cracking of the exterior and interior CMU walls along with indications of floor settlement. It is recommended to have this area evaluated by a licensed Structural Engineer to determine the best corrective actions in this area.	Complete structural evaluation of the structural issues at rooms 101-106.	II	DM	2	3	2	3	10	High		1	1	Allow	$25,000	$25,000										**$25,000**
2	Allowance for potential structural repairs at rooms 101-106. Actual costs may vary based on the recommended scope of work after the structual evaluation.	Allowance for strutural repairs at rooms 101-106.	II	DM	2	3	2	3	10	High		1	1	Allow	$400,000	$400,000										**$400,000**
3	The structural steel members of the covered walkway were noted to have surface corrosion that has been painted over. It is recommended to surface prep and repaint the structural steel frame.	Surface prep and paint steel frame of the covered walkway.	III	DM	4	3	4	4	15	Medium		1	1	Allow	$7,500	$7,500										**$7,500**

Axias
BUILDING VALUE




Building: **Vaughan Elementary**
GSF: 48000
Age: 1957 (66 years)
Address: 2936 US Hwy 158 E
Macon, NC 27551

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
																										Required
Roofing Systems																										
1	Localized sections of the gutters were damaged and some suspect microbial growth on the exterior was noted. We also noted debris with in the gutters. The damaged gutters should be replaced and remaing sections cleaned.	Repair and / or replace localized sections of damaged gutters and clean all of the gutters.	III	DM	4	2	2	1	9	High		1	1	Allow	$7,000	$7,000										**$7,000**
2	Sealants: All termination bar sealants and roof penetrations sealants have aged and require replacement.	Replace termination bar sealants at the roof level.	III	DM	4	3	3	3	13	High		1	1,200	LF	$6	$7,200										**$7,200**
3	Standing Seam Metal Roof: Roof appears to be beyond it's service life. Layers of aged liquid patches over transitions were identified. Fastener gaskets have aged and failed, fastener pull out was observed in many locations. Multiple building additions have been added and metal roof to metal roof transitions are not designed or detailed in a manner to passively prevent water intrusion. It is recommended to replace the metal roof. Roof Designer to investigate roof transition, water intrusion issues for potential rework prior to roof restoration.	Replace metal roof and correct roof transitions.	II	DM	3	2	3	1	9	High	20	1	48,000	SF	$20	$960,000										**$960,000**
4	Penetrations: Signification roof panel metal corrosion at some HVAC penetrations which should be repaired. Recommend temporary repair, but roof replacement is recommended as a long term solution.	Complete interim repairs to the metal roof.	III	DM	4	3	3	3	13	High		1	1	Allow	$5,000	$5,000										**$5,000**
Exterior Elements																										
1	Brick and Masonry: Exterior Façade consists of a both single wythe CMU split faced block and brick veneer cavity wall system. The brick is in good condition. Some areas areas have have debonded brick to mortar joints which could cause excessive bulk water to enter the wall cavity. It is unclear if the backup wall has a WRB or water- resistant barrier to keep water from entering the building if water breaches the brick veneer. Some organic growth was found on the brick veneer and CMU split faced block.	Spot repoint mortar joints where mortar joint has debodned from brick.	III	DM	4	2	3	3	12	High	35	1	700	SF	$65	$45,500										**$45,500**
2	Brick and Masonry: Exterior Façade has some organic growth present on the brick veneer and CMU split faced block.	Soft wash isolated areas of the exterior to maintain / reduce organic growth.	III	DM	4	3	4	4	15	Medium		1	20,000	SF	$0.25	$5,000										**$5,000**
3	Window Lintels: Some window lintels corrosion prohibited coating is derirating. The lintels should be coated to prevent further corrosion.	Wire grind and coat exposed lintels.	III	DM	4	3	4	5	16	Medium		1	300	LF	$8	$2,400										**$2,400**
4	Exterior Doors are in poor condition as the sealant and paint has reached its useful life expectancy. In addition, several exterior doors were noted to require replacement.	Replace weather sealants at all doors and repaint the ones that need fresh paint; some doors need to be replaced as they are outdated entirely.	III	DM	5	2	3	5	15	Medium		1	1	Allow	$20,000	$20,000										**$20,000**
5	Wall Expansion Sealant Joitns: All expansion joints have reached the end of their service life. Evidence of loss of adhesion, cohesion and reversion on the selant joints.	Replace wall expansion joint sealants.	II	DM	3	3	3	4	13	High		1	2,200	LF	$6	$13,200										**$13,200**
6	Window Perimater Sealant Joints: All windows perimeter sealant joints have reached the end of their service life. Evidence of loss of adhesion, cohesion and reversion on the selant joints.	Replace window perimeter sealants.	II	DM	3	3	3	4	13	High		1	20,000	LF	$6	$120,000										**$120,000**
7	Painted CMU Walls: Single wythe painted CMU block exteiror walls have inadequate coverage of paint. Water intrusion can occur with no drainage plan to assist with exterior drainage. It is recommended to coat the walls with a high perfromance siliconize acrylic coating.	Coat exterior CMU walls.	III	DM	3	3	4	4	14	Medium		1	1	Allow	$80,000	$80,000										**$80,000**
8	Garage Doors: Paint on the doors has failed and is flacking and pealing off of the substrated. The garage door should be repainted.	Repaint garage door.	III	DM	5	3	4	4	16	Medium		1	168	SF	$5	$840										**$840**

Axias
BUILDING VALUE




Building: Vaughan Elementary
GSF: 48000
Age: 1957 (66 years)
Address: 2936 US Hwy 158 E
Macon, NC 27551

Item No.	Condition	Recommendation	Priority Category	Deficiency Category	Impact of Failure	Condition	Probability of Failure	Frequency of Failure	Risk Score	Risk Category	Estimated Useful Life	Remaining Useful Life	Quantity	Unit of Measure	Unit Cost	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Required
															Year	1	2	3	4	5	6	7	8	9	10	
																										Required
9	Metal Wall Paneling (General): No signed of excessive wear.	General Note.																								$0
10	Louver: HVAC Louver and attic Louver are aged with organic growth and paint failure.	Clean and paint louver. Replacement may be necessary.	III	DM	5	3	4	4	16	Medium		1	1	Allow	$10,000	$10,000										$10,000
11	Storefront Entrance Glazing System: Both fixed lites and side hinged entrance doors are in good condition.	General Note.																								$0
12	Newer Windows (Aluminum): Good condition.	General Note.																								$0
13	Older Windows: The older windows are in poor condition. Windows should be replaced to meet current water intrusion, thermal performance and air infiltration performance and ADA code requirements.	Replace remaining original windows.	II	DM	4	3	3	3	13	High		1	1	Allow	$1,500,000	$1,500,000										$1,500,000
14	Sealants (wall to slab): All of the exterior wall to walking areas concrete slab sealant cove joints have filed.	Replace wall to concrete slab sealants.	III	DM	4	3	4	4	15	Medium		1	800	LF	$6	$4,800										$4,800
15	Exterior Wall CMU: Step cracking was noted at the exterior CMU walls. The damaged mortar and cracked block should be repaired in conjunction with the structural repairs.	Repair areas of step cracking at exterior CMU walls.	I		2	1	1	1	5	Critical		1	1	Allow	$20,000	$20,000										$20,000
Interiors																										
1	Interior finishes throughout the school appeared to be in fair condition depending on the age of construction. Finishes are typical of an elementary school and primarily consists VCT and carpet flooring, painted concrete masonry unit walls, and suspended acoustical ceiling tiles. Based on the age and overall condition of the interior finishes within the classrooms, offices, corridors, etc, it is recommended to budget for the renewal of the interior finishes in the near-term. The opinion of cost excludes reconfiguration of space and only includes interior finishes.	Complete interior renovation of finishes.	V	CR	4	3	4	4	15	Medium	25	1	48,000	SF	$60	$2,880,000										$2,880,000
2	Restrooms throughout the school appeared to be in poor to fair condition based on the age of construction. Given the condition of the restrooms, it is recommended to budget for the renovation of the restrooms in the near-term. This should include replacement of all plumbing fixtures and restroom accessories.	Complete renovation of main restrooms.	III	DM	4	3	3	4	14	Medium	25	1	6	EA	$40,000	$240,000										$240,000
3	The kitchen which serves the cafeteria appeared to be in fair condition. The major equipment varied in age. It was reported that the kitchen hoods have not been inspected within the last year or more. It is recommended to complete an evaluation of the cafeteria kitchen to determine capacity and configuration based on the meals served and then to renovate the kitchen in the near-term.	Complete utilization evaluation and renovation of the cafeteria kitchen.	III	DM	3	3	4	4	14	Medium	25	1	1,600	SF	$485	$776,000										$776,000
4	Areas of potential lead based paint and asbestos containing materials were noted throughout the school. It is recommended to complete a detailed environmental survey before commencing future work.	Complete detailed environmental survey.	II	DM	3	3	3	3	12	High		1	1	LS	$10,000	$10,000										$10,000

Axias
BUILDING VALUE

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															Year	1	2	3	4	5	6	7	8	9	10	
																										Required
Mechanical																										
1	Conditioned air for the school is primarily provided by individual split system air conditioning units. The split systems were primarily manufactured by Carrier in 1998 with a rated capacities of 3 to 12-tons each. Select units have been replaced within the last five years. The 1998 units appeared to be in poor to fair condition primarily due to the age and use of R-22 refrigerants. We also noted significant dust and debris on the ductwork and in the air handling unit room serving the gymnasium. It is recommended to replace the split system units and complete ductwork cleaning at the time of replacement.	Replace 1998 vintage Carrier split system units.	III	DM	3	3	4	4	14	Medium	20	1	32	TON	$4,200	$132,300										**$132,300**
2	Ductless split system units provide air conditioning for the majority of the classrooms. The ductless systems were manufactured by Carrier in 1998 with a typical rated capacity of 3-tons. The units were in poor to fair condition with significant debris buildup on the vents. The units have also exceeded the statistical service life and should be budgeted for replacement.	Replace ductless split system units.	III	DM	3	3	4	4	14	Medium	20	1	14	EA	$12,000	$168,000										**$168,000**
3	The air conditioning systems are controlled by a digital control system manufactured by Siemens. These types of systems typically have a service life of 15 years before becoming obsolete. Given the extent of mechanical work required at the school, it is recommended to budget for replacing the control system.	Replace Siemens HVAC control system.	III	CR	4	4	5	5	18	Low	15	1	48,000	SF	$1.50	$72,000										**$72,000**
Electrical																										
1	The electrical systems varied in age and manufacturer. Significant portions of the electrical components have been in service for over 50 years and were manufactured by General Electric and SquareD Based on the age of the electrical components and component obsolescence, it is recommended to upgrade the breaker panels and associated electrical equipment that has been in service for over 40 years.	Upgrade vintage electrical systems throughout the school.	III	DM	2	2	4	4	12	High	50	1	24,000	SF	$10.00	$240,000										**$240,000**
2	Lighting throughout the school is typically a combination of surface mounted, ceiling suspended, or troffer type fixtures within the suspended ceiling system. High-bay lighting is provided in the gymnasium. The age of the fixtures typically date to the construction or last renovation. It is recommended to upgrade the lighting throughout the school to LED type fixtures. Lighting controls should also be installed to control the lighting systems.	Upgrade lighting throughout the school to LED.	III	EN	4	3	4	4	15	Medium	25	1	48,000	SF	$2.75	$132,000										**$132,000**
3	Security and access control systems were limited at the school. Typically only security cameras are provided in main corridors and other select locations. It is recommended to replace and expand the access control and security systems throughout the school.	Upgrade and expand access control and security systems.	II	CI	3	3	3	3	12	High	25	1	48,000	SF	$3	$156,000										**$156,000**
Plumbing																										
1	The school is provided with a septic system which includes underground tanks, sand filtration, and pumping system. The system reportedly conveys treated water to the adjacent property and has not been evaluated or maintained for some time. These types of systems often require periodic testing and maintenance. It is recommended to complete an evaluation of the system to determine any required corrective work.	Complete evaluation of the septic and filtration system.	II	DM	2	3	3	3	11	High		1	1	Allow	$15,000	$15,000										**$15,000**
2	An allowance for potential corrective work to the septic and filtration system should be budgeted for. The cost to complete the work will vary based on the required corrective work and/or modifications.	Allowance for corrective work to the septic and filtration system.	II	DM	2	3	3	3	11	High		1	1	Allow	$150,000	$150,000										**$150,000**

Axias
BUILDING VALUE




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															Year	1	2	3	4	5	6	7	8	9	10	
																										Required
3	Domestic hot water for the cafeteria kitchen is provided by two 120-gallon commercial grade electric storage tank type water heaters. The water heaters were manufactured by State Stove & Manufacturing (State) and believed to have been manufactured over 40 years ago. Based on a typical service life of 15 to 18 years, it is recommended to budget for the replacement of the cafeteria kitchen water heaters.	Replace water heaters serving the cafeteria kitchen.	III	CR	3	3	3	3	12	High	15	1	2	EA	$16,000	$32,000										**$32,000**
Fire & Life Safety																										
1	A fire detection and alarm system is provided throughout the building. The system was manufactured by Simplex and utilizes a model 4020 fire alarm control panel. It was noted that the panel indicated several trouble alarms. Given that the fire alarm control panel is obsolete, noted locations of the devices. etc. it is recommended to budget for the complete replacement of the fire detection and alarm system.	Replace fire detection and alarm system.	II	DM	2	3	3	3	11	High	20	1	48,000	SF	$4	$168,000										**$168,000**
2	Emergency egress lighting is typically provided by dual lamp fixtures with battery backups. It was noted that some areas were not provided with sufficient emergency egress lighting. It is recommended to install additional egress lighting throughout the school.	Install additional emergency egress lighting.	I	DM	2	3	3	3	11	High	20	1	12	EA	$2,500	$30,000										**$30,000**
Conveyance Systems																										
1	No conveyance systems.																									**$0**
															Required Cost (2023 US-Dollars)	**$8,440,740**	**$66,855**	**$0**	**$457,500**	**$0**	**$0**	**$0**	**$0**	**$8,914**	**$0**	**$8,974,009**
															Total Cost (2023 $/ SF/ Yr.)	**$175.85**	**$1.39**	**$0.00**	**$9.53**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.19**	**$0.00**	**$186.96**

Deficiency	Definition
SM	Scheduled Maintenance
DM	Deferred Maintenance
CR	Capital Renewal
EN	Energy & Sustainability
CI	Capital Improvement

Priority	Definition
I	Currently Critical
II	Potentially Critical
III	Necessary / Not yet Critical
IV	Recommended
V	Appearance
VI	Does Not Meet Codes / Standards

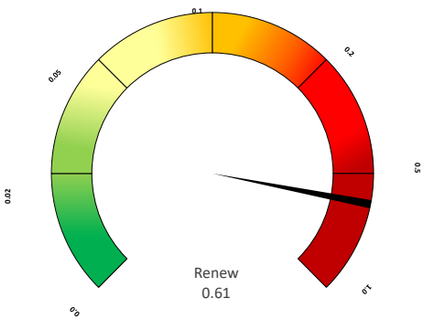
Risk	Definition
Critical	Critical (4-8)
High	High (9-13)
Medium	Medium (14-16)
Low	Low (17-20)

Axias
BUILDING VALUE

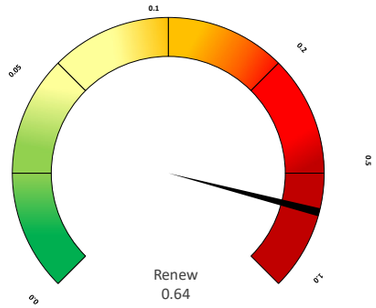
Building: Vaughan Elementary
GSF: 48000
Age: 1957 (66 years)
Address: 2936 US Hwy 158 E
Macon, NC 27551

Financial Summary

Facility Condition Index



10 Year Facility Condition Index

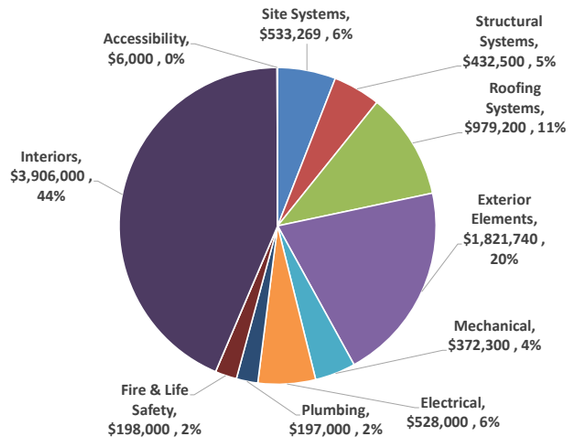


FCI Range	Condition Description
0.00 – 0.02	Excellent condition, typically new construction
0.02 – 0.05	Good Condition, renovations occur on schedule
0.05 – 0.1	Fair Condition, in need of normal renovation
0.1 – 0.2	Below average condition, major renovationrequired
0.2 – 0.5	Poor condition, total renovation needed
0.5 – 1	Complete facility replacement indicated

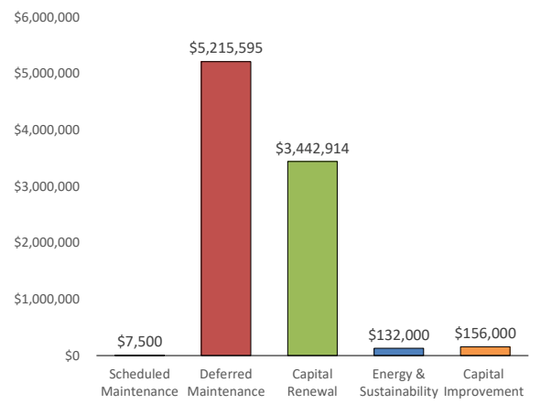
Risk	Definition
Critical	Critical (4-8)
High	High (9-13)
Medium	Medium (14-16)
Low	Low (17-20)

Priority	Definition
I	Currently Critical
II	Potentially Critical
III	Necessary / Not yet Critical
IV	Recommended
V	Appearance
VI	Does Not Meet Codes / Standards

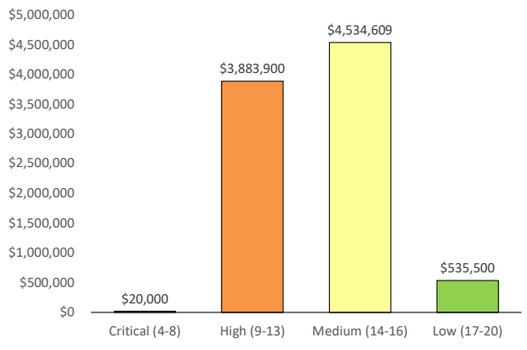
Summary by System



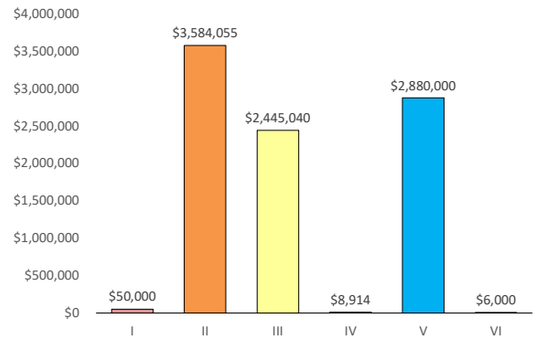
Expenditures by Deficiency Category



Expenditures by Risk



Expenditures by Priority Category



Axias
BUILDING VALUE

Building: **Vaughan Elementary**
GSF: 48000
Age: 1957 (66 years)
Address: 2936 US Hwy 158 E
Macon, NC 27551

Representative Photos

Typical playground area.

Typical sidewall sections.

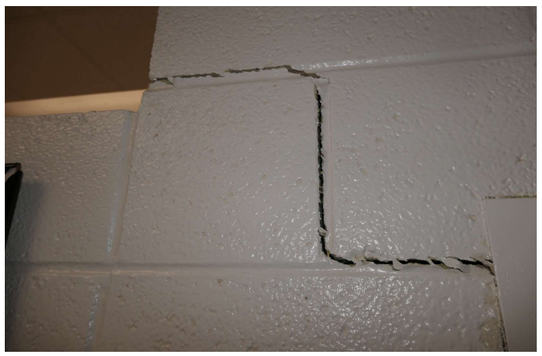
Site feature of basketball court

Typical condition of asphalt pavement with alligator cracking.

Overview of the sand filtration bed for the septic system.

Vintage elctical panel which should be budgeted for replacement.

Dust/debris noted on the ductwork of the gymnasium.



Interior step cracking of a CMU wall.

Settlement noted between the floor slab and door frame.

Typical split system unit installed in 1998.

Newer split system unit serving the cafeteria.

Typical ductless split system serving the classrooms.

Axias
BUILDING VALUE

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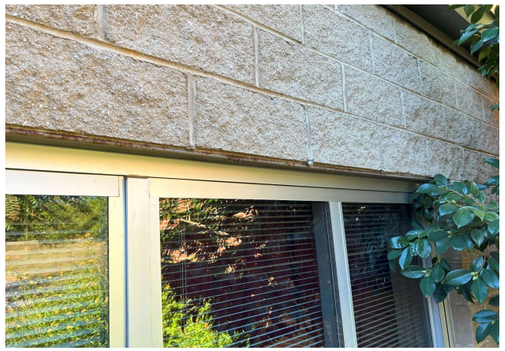
Representative Photos


Typical lintel with noted corrosion.


Failed fastners/gaskets noted at the metal roof.

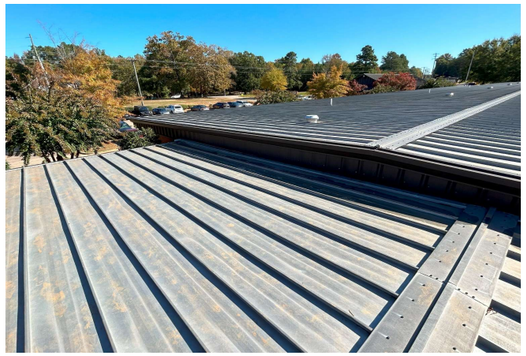

Downspouts are connected to drainage piping.


Typical metal roof at the kitchen/cafeteria building.


Original windows with noted corrosion and sealant failure.


Exterior stair step cracking due to noted structural issues.


Failed sealants at termination bar.


Typical condition of the metal roof and building connection.


Storefront systems are in good condition.


Section of damaged guttering.


The framing for the covered walkway has evidence of historical corrosion which has been painted over.


General condition of exterior sealants.