NICOLET HIGH SCHOOL

FACILITIES ASSESSMENT

MAY 2020

EUA PROJECT NO.: 319481

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

The Facilities Assessment is a critical first step in the planning process to help school districts and their stakeholders better understand the current state of its facilities and how well these facilities support educational goals. The Facilities Assessment provides an objective analysis of present building and site conditions and capabilities, and is a critical step needed to understand how today's facilities and sites support the District's long-term goals and is a foundational resource for strategic long-term planning for facilities.

The information presented in this report compiles data collected through on-site visits, meeting discussions, interviews and source documents to identify known deficiencies. Included in this report is analysis of:

- Building Conditions Assessment: Visual assessment of current conditions, documentation of observations of site, ADA, and builing components or systems where necessary
- Capacity: Comparison of site size and student enrollment to industry standards
- Utilization: Analysis of the usage of learning spaces throughout the day
- Educational Adequacy: Visual assessment of how effectively the spaces support student learning and program delivery

The Facility Assessment does **NOT** include:

- Detailed validation of as-built conditions
- Hazardous material assessments
- Destructive testing or observation of concealed systems, below grade conditions, or components buried within walls, ceilings, or roofing systems
- Specific details about electrical panels, mechanical equipment, or plumbing components that are not readily visible
- Measurement of electrical loads or temperatures of any electrical equipment
- Actual efficiencies or performance testing of HVAC equipment (pumps, fans, boilers, etc.)
- Adequacy of fire or life safety components associated with building systems including code requirements, dampers, fire rating of systems, etc.
- Functionality and performance of the Plumbing equipment (pumps, water heaters, etc.)

The Executive Summary highlights the key findings of each of the major components of the overall facilities assessment.

This report is based upon industry standards and practices in architecture and engineering in the areas of mechanical, electrical, plumbing, and fire protection. Observations and recommendations included in this report are based on a cursory visual assessment and interviews on site.

It is important to note that the building is generally well maintained and maintenance needs have been prioritized based on safety concerns and severity of need. While there are some findings within this report that demonstrate a more urgent need, many of the items could be addressed through ongoing scheduled maintenance.

This study also includes observations related to compliance with applicable building codes and regulations. With areas of the building designed as early as 1955, under building codes that were less stringent, Nicolet High School now faces significant code compliance issues, such as with the Americans with Disabilities Act (ADA) guidelines. Although older buildings are legally 'grandfathered' by the previous codes, some items will require corrections in the event that renovations or additions be completed in the future.

DATA GATHERING PROCESS

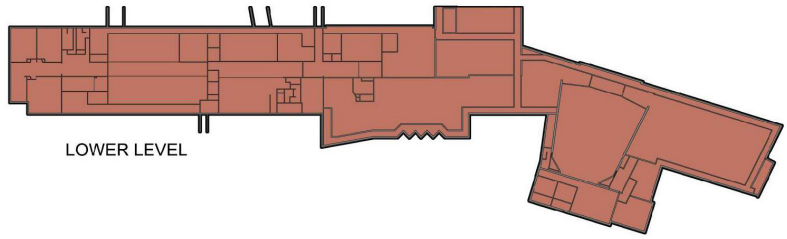
Site visits took place in March and April 2020 and included EUA and Thunderbird Engineering. During these site visits, the team met with administrators, teachers, facilities and other staff to review concerns and gather information about the building. The team walked through the building during and outside of school hours in order to observe the function, condition and overall use of the facility.

DISTRICT OVERVIEW

Mission Statement - Transforming knowledge into wisdom, the Nicolet Union School District accelerates the achievement of every student, in every classroom, every day by promoting intellectual discovery, inspiring creativity, embracing diversity and encouraging students to become enlightened, humane, responsible citizens.

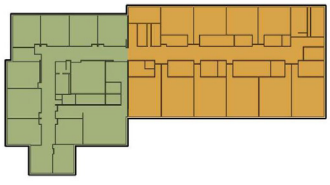
Nicolet High School serves approximately 1100 students in grades 9 through 12. The unified high school serves students from three K-8 neighboring school districts, including Glendale-River Hills, Maple Dale-Indian Hill, and Fox Point-Bayside.

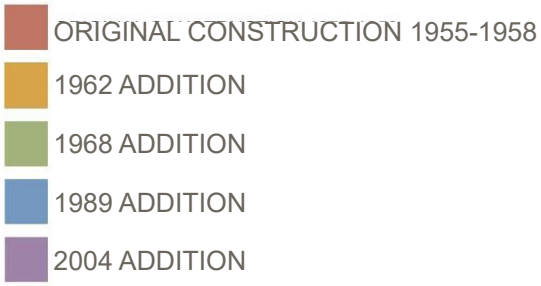
Originally constructed in 1955-1958, the oldest parts of the building, systems and components are more than 60 years old, with various additions since that time. The buildings are generally well maintained, and the district has an ongoing maintenance program in place to prioritize and address building condition issues. Consistent maintenance practices have extended the service of the building; however, many of the essential building systems are part of the original construction and are well past their expected life cycles.



Historical Lower Level Floor Plan

Historical 1st Floor Plan





KEY FINDINGS

Please reference the complete Districtwide Facilities Assessment Report and Appendix for comprehensive details, supporting data and additional research.

Key findings from the Facilities Assessment are:

BUILDING CONDITIONS ASSESSMENTS

- Major components and infrastructure have been well maintained however are at the end of their life cycles

CAPACITY

- The size of the site is smaller than what is recommended for the current student enrollment
- The building has a higher capacity than what it is currently handling

BUILDING UTILIZATION

- The average class size is below the optimal class size established by Nicolet Union School District
- Utilization of classrooms is below the recommended utilization rate of 80%

EDUCATIONAL ADEQUACY ASSESSMENT

- The building is aging and facilities do not provide the opportunities necessary for modern learning

BUILDING CONDITIONS ASSESSMENT

The **Building Conditions Assessmen**t includes a comprehensive review of the building's Americans with Disabilities Act (ADA) compliance, electrical systems, exterior shell (roof, wall systems, windows/ doors, etc.); interior finishes and materials (flooring, casework, etc.); mechanical and plumbing systems; relative to accepted industry standards.

See pages 19-30 for detailed information.

CONDITIONS SCORE		
NEW	5	NEW OR LIKE NEW CONDITION; NO ISSUES.
GOOD	4	GOOD CONDITION, NO REPORTED ISSUES OR CONCERNS
FAIR	3	AVERAGE WEAR FOR BUILDING AGE, NOT NEW BUT NO ISSUES TO REPORT
POOR	2	WORN FROM USE, END OF EXPECTED LIFECYCLE
CRITICAL	1	EXTREMELY WORN OR DAMAGED

Category	Nicolet HS
ADA	3.2
Electrical	3.5
Exterior Enclosure	3.3
Foundation	3.0
Interior	3.1
Mechanical	2.3
Miscellaneous	2.9
Plumbing	2.3
Roofing	2.7
Average Deficiency Score	2.9

Average Deficiency Score

Category	Topic	Nicolet HS
ADA	Accessible Entry(s)	4
	Accessible Parking	4
	Accessible Restrooms	1
	Accessible Route	3
	Exterior Stairs, Ramps & Rails	3
	Passenger Loading Zone	4
Foundation	Dampproofing & Waterproofing	3
	Foundation & Frost Walls	3
	Slab on Grade	3
Roofing	Drains, Gutters & Downspouts	3
	Ponding Water	3
	Roofing Membrane	2
Exterior Enclosure	Expansion Joints	3
	Exterior Cladding	3
	Exterior Doors	3
	Exterior Sealants	3
	Louvers & Vents	3
	Windows, Storefronts & Curtainwalls	5
Interior	Casework & Millwork	3
	Ceiling Finish	2
	Coiling Shutters & Grilles	2
	Fire Doors & Shutters	3
	Floor Finish	4
	Flooring Other	3
	Gym/Sports Flooring	4
	Interior Doors, Frames & Hardware	3
	Stairs & Handrails	2
	Wall Finish Condition	3
	Window Treatments	5
Miscellaneous	Auditorium Seating	4
	Bleachers	3
	Classroom Equipment (Hoods, Kilns, etc.)	3
	Elevator	2
	Food Service Equipment	3
	Lockers	3
	Stage Curtains	3
	Theater & Stage Equipment	3

Category	Topic	Nicolet HS
Miscellaneous	Toilet Accessories	3
	Toilet Partitions	2
	Toilet Room Other	3
Electrical	CCTV	5
	Communications Systems	4
	Data	4
	Distribution Panelboards	3
	Fire Alarm System	4
	Generator System	1
	Keyless Entry	3
	Lighting	3
	Lighting Control	3
	Low Voltage Switchgear & Distribution	4
	Power Devices	3
	Site lighting	4
	Site utilities (transformers, etc.)	4
Mechanical	Air Handlers	2
	Air Terminals (VAV, FPVAV)	3
	Boilers	3
	Chillers & Cooling	2
	Controls	3
	Ducts & Distribution	3
	Dust Collection	2
	Exhaust Fans	2
	Fan Coils, Unit Ventilators	2
	General Ventilation Comments	2
	Piping/Insulation	2
	Pumps	2
	Unit Heaters	2
	Wall Fin Radiation	2
Plumbing	Fixtures (sinks, toilets, urinals, etc.)	2
	Grease Interceptor	2
	Piping & Distribution	2
	Pumps & Valves	3
	Utilities	2
	Water Heaters	3

CAPACITY

This Assessment provides an objective analysis of present site and building capabilities, and is a critical step needed to understand how today's facilities support the goals of the District. The information presented was gathered by EUA's team of professionals through on-site tours, as well as interviews with building administrators. It serves as a foundational resource document to support the development of immediate solutions as well as long-range planning.

SITE CAPACITY

The Site is generally referred to the size of the land associated to an educational facility and the improvements made on that land which include buildings, parking lots, athletic fields, etc. The size of the total land often allows or limits the amount of improvements or amenities that can be offered to a specific student population. The information below analyzes the existing site area against the recommended site area for programs of that type.

See pages 34-36 for detailed information.

SITE CAPACITY				
BUILDING	EXISTING SITE SIZE (ACRES)	STUDENT ENROLLMENT (SEPTEMBER 2019)	RECOMMENDED SITE SIZE BASED ON STUDENT ENROLLMENT	EXISTING BUILDING SIZE (SQUARE FEET)
Nicolet High School	40.185	1098	40.98	358,000

- Based on 30 acres plus one additional acre for each 100 students at High School.

For Nicolet High School: 30 acres + (1098 students / 100) = 40.98 acres

- Site area is based on GIS mapping data and includes building, parking and outdoor activity areas.
- Recommended site size is buildable property.This does not include wetlands or areas not suitable for construction.
- Existence of unbuildable property on site is not known at this time. A wetland/storm-water analysis would have to be conducted to calculate the total area that is not considered buildable.

The site also includes areas that are:

- Adjacent to expressway (slated for lane expansion)
- Heavily wooded (State Forest, five acres)
- Adjacent to river (may include setback restrictions)
- Steep topography (3.235 acre parcel North of track/football, currently residential)
- Difficult geometry

BUILDING CAPACITY

As enrollment fluctuations affect school districts nationwide, the physical capability of the building will determine whether or not capacity should increase beyond its present level, or if it will be necessary to move students to other buildings more capable of accommodating such enrollment shifts. This analysis should provide a guide to measure each building's capability to handle a student population and provide a measuring stick to keep up with the changing needs.

See pages 37-42 for detailed information.

BUILDING CAPACITY				
BUILDING	CURRENT ENROLLMENT	FUNCTIONAL CAPACITY[b] BASED ON DISTRICT DESIRED CLASS SIZE	FUNCTIONAL CAPACITY BASED ON SQUARE FEET PER STUDENT BY LEARNING AREA[c]	CAPACITY BASED ON GROSS SQUARE FOOTAGE OF SCHOOL[d]
Nicolet High School	1098	1752	1990	1432

a. Functional Design Capacity of 80% of the maximum capacity at high schools.

b. Based on recommended students per classroom as provided by Nicolet Union School District.

c. Based on 30 SF per student for general classrooms. Science Rooms, FCS Labs, and Art Rooms use 50 SF per student. Career Tech Ed Lab spaces use 50-100 sq. ft. per student depending on the academic focus.

d. Based on 250 SF per student at High School.

UTILIZATION

Understanding current building utilization is useful in the facility development process because it allows a true view of what spaces are being used, how often, and to what extent.

The utilization of a school is evaluated based on “Best Practices” or recommendations found in CEFPI (The Council of Educational Facilities Planners International, now Association for Learning Environments, A4LE) and other national publications that primarily focus on the design and evaluation of educational facilities.

See pages 43-45 for detailed information.

BUILDING UTILIZATION			
BUILDING	AVERAGE CLASS SIZE	# OF PERIODS USED (X)	% OF USE (X/8)
Nicolet High School	20.3	5.2	64

EDUCATIONAL ADEQUACY ASSESSMENT

The Educational Adequacy Assessment (EAA) is a comprehensive review of the educational program activities, use of the building, and physical spaces required for each activity and provides analysis of how effectively the spaces support student learning and program delivery.

The following table summarizes information of district facilities and current enrollment as of September 2019.

See pages 47-55 for detailed information.

CRITERIA	OBSERVATION HIGHLIGHTS	EVALUATION
SAFETY & SECURITY	The facilities have a metal detector and supervision at the main entrance but does not require entry to the building through a secure office to provide controlled visitor access Lack of visual transparency inside the building limits supervision of some learning and common spaces Basement level in particular is underutilized and thus difficult to supervise Recreation Department does not have designated exterior entrance making it difficult to limit after hours access	POOR
SIZE & PROPORTION	Many classrooms are adequately sized to handle the optimum and maximum class sizes established by the district. Many science classrooms/labs are undersized.	FAIR
SPACE TYPE & ADJACENCY	Building typically does not provide flexible learning spaces, or access to different types of learning spaces to support different forms of learning. A lack of visual connectivity between spaces, and from learning spaces to common areas, further restricts learning options. Lacking small group, breakout and collaboration spaces. Need for flexibility in space and furniture to create modern / future ready learning environments. Interdepartment collaboration could be improved by assessing location, adjacencies and functionality.	POOR
EQUIPMENT & INFRASTRUCTURE	All classrooms have access to smart boards and A/V tech	GOOD
FURNITURE	Building typically does not provide flexible furniture. This includes classrooms, labs, Commons and Library. Some furniture is heavy, bulky and difficult to move/reconfigure and does not support a modern + future ready learning environment. Furniture is inconsistent in style and appearance from room to room.	FAIR
ENVIRONMENT	Most learning spaces have large windows to allow exposure to natural daylight and exterior views. Building is aging and interiors show signs of wear.	FAIR

EVALUATION COLOR CODE

GOOD	Most of criteria assessed was found to be acceptable and satisfied its purposes
FAIR	Some of the criteria assessed was found to be acceptable, while other criteria assessed was unacceptable and did not satisfy its purpose
POOR	Most of the criteria assessed was found to be unacceptable and did not satisfy its purpose

BUILDING CONDITIONS ASSESSMENT SUMMARY

- Significant ADA restroom issues
- Exterior building envelope is well-maintained and in good condition
- Finishes are showing age (of 60+ years)
- Majority of major mechanical equipment at end of useful life
- Original cast iron sanitary piping is failing
- Electrical and communication systems are generally in good condition

CAPACITY AND UTILIZATION SUMMARY

SITE CAPACITY

- The size of the site is smaller than what is recommended for the current student enrollment

BUILDING CAPACITY

- The current enrollment is 1098
- The building has a higher capacity than what it is currently handling

BUILDING UTILIZATION

- Average class size is 20.3 students per class, which is below the district established optimum class size of 22
- Classrooms are used an average of 5.2 periods out of a possible 8 per day
- Percentage of use is 64%, below the recommended 80%

EDUCATIONAL ADEQUACY ASSESSMENT SUMMARY

SAFETY AND SECURITY

- The facilities have a metal detector and supervision at the main entrance but does not require entry to the building through a secure office to provide controlled visitor access
- Exterior doors lack electronic monitoring and alarms
- The facilities lack visibility for proper supervision of students in some areas

MODERN LEARNING

- The facilities do not provide adequate flexibility, transparency and collaboration spaces needed for today's teaching and learning styles

ENVIRONMENTS

- The facilities are aging and interiors show signs of wear

RECOMMENDED NEXT STEPS

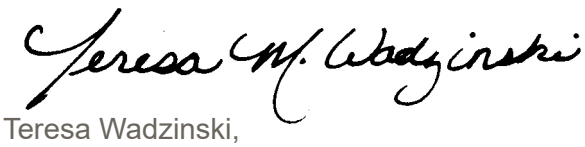
At the conclusion of a Facilities Assessment, many school districts ask how to best proceed. It is our recommendation that the administration closely review the document for content and understand the observations and recommendations.

For the Nicolet Union High School District, the next step will involve sharing the key findings with the broader community. It will be important to gather initial feedback from a variety of stakeholders to assist district leaders in establishing priorities for long-term facilities master planning.

When ready to move forward, EUA will help you explore potential solutions to address the district's highest priorities for your facilities. Throughout the master planning phase, we'll work with the district and your construction manager to evaluate the potential solutions and preliminary cost estimates. We recommend additional community engagement and information sharing to inform each step in your process.

Thank you for the opportunity to support Nicolet Union High School with this facilities assessment. If you have any questions regarding this summary, please feel free to contact the EUA team.

Sincerely,



Teresa Wadzinski,
Studio Director | Senior Project Manager

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BUILDING CONDITIONS ASSESSMENT

BUILDING CONDITION ASSESSMENT

UNDERSTANDING THE BUILDING CONDITION ASSESSMENT

The **Building Condition Assessmen**t includes a comprehensive review of the building's exterior shell (roof, wall systems, windows/doors, etc.); interior finishes and materials (flooring, casework, etc.); mechanical, electrical, and plumbing systems; and compliance with the Americans with Disabilities Act (ADA) relative to accepted industry standards.

The assessment involves observation and documentation of current conditions and general recommendations for repair and/or replacement of building components or systems where necessary. On-site observations include the review of system and component age, construction methods, material adequacy, and longevity.

- Actual efficiencies or performance testing of HVAC equipment (pumps, fans, boilers, etc.)
- Adequacy of fire or life safety components associated with building systems including code requirements, dampers, fire rating of systems, etc.
- Functionality and performance of the Plumbing equipment (pumps, water heaters, etc.)

Americans with Disabilities Act Assessment: The Americans with Disabilities Act (ADA) Assessment considers the compliance relative to accepted industry standards. A building's adherence with ADA is based on the review of the accessible routes to and through the building and site, as well as accessible features and accommodations inside the building as defined by ADA design guidelines and the International Building Code.

NICOLET HIGH SCHOOL

Year Built: 1955-58 (additions/renovations in 1962, 1968, 1989, and 2004)
Site Size: 40.185 acres
Building Size: 358,000 sq. ft.
Current Enrollment (Sept. 2019): 1098
Grade Levels: 9-12

Building Condition Assessment

Category	Topic	Comment	Nicolet HS
ADA	Accessible Entry(s)		4
	Accessible Parking		4
	Accessible Restrooms	The majority of the current toilet rooms are non ADA compliant.	1
	Accessible Route	Building is a split level, but includes (2) elevators (although non ADA compliant). Wheelchair lifts at some stairways were observed.	3
	Exterior Stairs, Ramps & Rails	The only exterior stair is part of the original building, the railing is rusted with chipping paint	3
	Passenger Loading Zone		4
Foundation	Dampproofing & Waterproofing		3
	Foundation & Frost Walls		3
	Slab on Grade		3
Roofing	Drains, Gutters & Downspouts		3
	Ponding Water	Areas of recaulk;	3
	Roofing Membrane	D-wing, cafeteria roof, auditorium corridor and entrance canopy; Strass-Maguire & Associates Report dated November 25, 2019	2
Exterior Enclosure	Expansion Joints	Areas of repointing	3
	Exterior Cladding	Significant tuckpointing in 2005	3
	Exterior Doors	Mostly Alum doors in Alum frames, but there are some HM doors with mostly cosmetic issues	3
	Exterior Sealants	Areas of recaulk	3
	Louvers & Vents	Mainly cosmetic issues, some and dented and damaged	3
	Windows, Storefronts & Curtainwalls	Replaced in 2016	5

Category	Topic	Comment	Nicolet HS
Interior	Casework & Millwork	Original to 1950s and 1960s	3
	Ceiling Finish		2
	Coiling Shutters & Grilles	Locations of security shutters should be reviewed for code compliance	2
	Fire Doors & Shutters		3
	Floor Finish	All VCT flooring was replaced as a result of a flood in 2010	4
	Flooring Other		3
	Gym/Sports Flooring		4
	Interior Doors, Frames & Hardware	Original to 1950s and 1960s; Worn paint on frames	3
	Stairs & Handrails	Handrails are non-compliant; treads need replacing	2
	Wall Finish Condition	Acoustical paneling is original to 1950s	3
	Window Treatments	All replaced 5 years ago	5
Miscellaneous	Auditorium Seating		4
	Bleachers		3
	Classroom Equipment (Hoods, Kilns, etc.)		3
	Elevator		2
	Food Service Equipment		3
	Lockers	Original to 1950s and 1960s; More lockers than student population	3
	Stage Curtains		3
	Theater & Stage Equipment		3
	Toilet Accessories		3
	Toilet Partitions		2
	Toilet Room Other		3

Building Condition Assessment - continued

Category	Topic	Comment	Nicolet HS
Electrical	CCTV	The system was upgrades in 2018 when the data IT server was upgraded.	5
	Communications Systems	Telcor is the provider of the clocks, intercom and phone system (Panasonic) there has been some upgrades to these systems from 2005. The systems are around 15 years old but they appear to be in good working order and do not need to be replaced for 6-8 years.	4
	Data	There appears to be some upgrades to the infrastructure of the IT. The headend portion that is. The data outlets in the classrooms and offices appear to date to around the 1989 era. Also there were some surface mounted wire mold that was used for the data and power in the same raceway which should of been separated. The headend would score a 4 but the devices I would place at 3 and should be upgraded in 4-6 years however most internet connectivity is moving towards wireless so thought should go into if the school should upgrade the wireless connectivity in lieu of wiring data outlets. The headend was upgraded in 2018.	4
	Distribution Panelboards	There has been multiple additions to the school so some panels are at the end of the lifecycle - 1958, 1962 & 1968 would be 2, 1989 would be 3 & 2004 is 4; There are multiple distribution panels in the boiler room which flooded so those panels were all replaced in 2010 so they would be 4.	3
	Fire Alarm System	The system is by Johnson Controls and it the system has been upgraded in 2005 and 2010 after the flood. The system appears to be general order and doesn't require replacement for at least 6-8 years.	4

Category	Topic	Comment	Nicolet HS
Electrical	Generator System	The school has one Kohler natural gas 75kW that was installed in 1968.	1
	Keyless Entry	The system is monitored by Sonitrol in which they monitor all card access and door monitoring. They however do not monitor all motion sensors. This system should be replaced in the next 4-6 years.	3
	Lighting	The school has been upgrading over the past few years but mainly the school is using T-8 fluorescent fixtures. Focus on Energy program could help provide some funding to upgrade the fixtures to LED throughout the school which would save on electrical utility costs.	3
	Lighting Control	The switches and sensors are aged appropriately and have been upgraded in the older portion of the building however if the lighting was to be replaced the controls should be included in that upgrade.	3
	Low Voltage Switchgear & Distribution	Replaced after floor in 2010	4
	Power Devices	The power devices appear to be level 2-3 in the 1958, 1962 & 1968 which some were upgraded due to the age. The rest of the area of the 1989 and 2004 are a score of 4.	3
	Site lighting	Site lighting was replaced recently after the school flooded in 2010	4
	Site utilities (transformers, etc.)	Replace after flood in 2010 however having issues with water building up around area of transformer so WE Energies has to come by and pump	4

Category	Topic	Comment	Nicolet HS
Mechanical	Air Handlers	The hvac units are all mostly original to each respective addition. The facility maintenance staff have done a fantastic job of keeping these units operating even after some units have been long past there useful life. Air handling units typically have a life expectancy of 20-25 years and there are units that are over 60. The staff have replaced motors, pulleys, blowers to keep the units operating but they should have been replaced quite some time ago. There are roof top units that were added to areas of the school which typically have a life expectancy of 15 years. Those units range from a unit installed 2-3 years ago to serve the offices. B-wing had three (3) which two were installed 5-10 years ago which they would have a score of 3 and another unit was installed to serve the computer lab. There were other units that are past the useful life that serve the area in the C-wing, D-wing. It was observed that there were cooling only units typically called split systems that were added and those have a life expectancy of 5-7 years and are most past the useful life.	2
	Air Terminals (VAV, FPVAV)	There are vav boxes serving some areas that are original to the air handling/roof top unit age and needs to be replaced if the unit is past its useful life.	3
	Boilers	There are steam boilers that provide heating to most units in the school. These units were replaced when the school flooded in 2010. However steam boilers have a life expectancy of 20-25 years which these boilers are close to that age. However due to the maintenance on these units the score should be closer to 4. There are some steam to hot water converters in the school that serve cabinet unit heaters at the entry/exit doors. In particular the one serving A-wing appears to have it control valve inoperable and was noted with the maintenance staff during our walk thru. This converter is past its useful life and should be replaced. F-wing has hot water boilers serving the air handling units and cabinet unit heaters and appeared to be installed in 1996 and should be placed on the list to be replaced in 4-6 years.	3

Category	Topic	Comment	Nicolet HS
Mechanical	Chillers & Cooling	The chillers and cooling towers have an average life expectancy of 20-25 years which these units are past the useful life. The units have been maintained similar to the comments for the air handling units so the equipment is operating but the integrity of the unit is deteriorating and should be planned for replacement. Most of the school is not conditioned (cooled) and if there is a plan to condition the entire school that would be the time to replace the chillers and cooling tower.	2
	Controls	Johnson Controls is the control vendor. Again most of the equipment is around 1989 when possibly there was an upgrade going from pneumatic to DDC. Due to no documentation due to the floor we would have to estimate that is what happened. Pneumatic system life expectancy is 20-25 years. The valves typically have a 20 years life expectancy as well. The system is operating as normal and isn't causing any major issues so this could be as well staged.	3
	Ducts & Distribution	Ductwork typically has a life expectancy of 30 years. After a thorough cleaning the system should be adequate and doesn't need to be replaced for another 4-6 years or more if the cleaning is completed.	3
	Exhaust Fans	These units are most all original and should be replaced. There were a few that had been replaced due to malfunction.	2
	Fan Coils, Unit Ventilators	The units ventilators in the classroom are by a few different manufacturers and are served by steam. These units are original to the respective years and have been properly maintained however they are past there useful life.	2

Category	Topic	Comment	Nicolet HS
Mechanical	General Ventilation Comments	In general the maintenance staff have done a great job of keeping these units and system operating where the units should have been upgraded at the end of each respective piece of equipment life. To replace each piece of equipment would cost the school district a lot of money we would recommend replacing units from the 1958 and move up.	2
	Piping/Insulation	Typically piping has a life expectancy of 20-25 years in hydronic systems and 40 years for steam. Which most piping is past its useful life but isn't critical and could be staged for replacement.	2
	Pumps	The hot/cold water pumps appear to all be original to the respective building additions and is past the life expectancy and should be replaced.	2
	Unit Heaters	There are a few units installed in the mech rooms as well as the loading dock near the kitchen that should be replaced as they are past there useful life.	2
	Wall Fin Radiation	These units are all original and should be replaced.	2

Category	Topic	Comment	Nicolet HS
Plumbing	Fixtures (sinks, toilets, urinals, etc.)	The fixtures all to be original to each respective building addition. The fixtures have a life expectancy of 70+ years however we recommend replacing these fixtures. If the fixture were to be retrofitted with a low flow flush valve there has been issues with reusing the existing fixtures due to the older fixtures required more water and would cause issues including odor. The recommendation would be to replace the fixture and flush valve with low flow. The score is a 2 but this could be pushed to a 3.	2
	Grease Interceptor	There is one grease interceptor that may not be properly installed and maybe causing some issues with the sanitary. It was noted by the facility maintenance staff that during a pipe inspection downstream they noticed grease build up which should have been caught by the grease interceptor. Recommendation would be to have a plumbing contractor video the sanitary to see where it is connected to the system. What the recommendation is to replace the cast iron as that has a useful life of only 35 years in a kitchen setting. The piping should be replaced with CPVC and then the existing grease interceptor should be removed and relocated to an exterior grease interceptor due to the grease from the dishwasher needs to have time to cool down so it will be caught in the interceptor and not left in the pipe. This should be a higher priority due to the kitchen could be shut down from a sanitary backup.	2
	Piping & Distribution	There is some galvanized piping in the school which has a life expectancy of 40-50 which the original and 1962-68 would be almost past the useful life and should be identified and replaced. The rest of the school is copper piping with life expectancy of 50-70 years in which that would include the 1989 and 2004 additions so that piping has many years until it needs to be replaced. The sanitary has issues and should be on the list to be replaced with new in B-wing. This area has some known issues and should be one of the higher priority items to be on the list. Typical cast iron piping has a life expectancy of 50-60 but due to the flooding and hydraulic pressure this system should be video and possibly have the system inside piping cleaned out. Grease piping in kitchen please see PL11.6.	2

Building Condition Assessment - continued

Category	Topic	Comment	Nicolet HS
Plumbing	Pumps & Valves	Pumps and valves appear to be in working order and should be on the list to be replaced in 4-6 years.	3
	Utilities	The main heaters have a softener and it does appear to be past its useful life and should be replaced. This item isn't critical and could be put down as a 3.	2
	Water Heaters	There are water heaters serving the school in separate areas. The main heaters located in the boiler room which were replaced in 2010 have one unit that was recently replaced. That unit is new condition and doesn't require replacement for over 10 years. The other unit is 20 years and is at its end of its useful life but being maintained it doesn't need to be replaced as soon as some more older equipment is.	3

three:

CAPACITY + UTILIZATION

SITE AND BUILDING CAPACITY

This Assessment provides an objective analysis of present site and building capabilities, and is a critical step needed to understand how today's facilities support the goals of the District. The information presented was gathered by EUA's team of professionals through on-site tours, as well as interviews with building administrators. It serves as a foundational resource document to support the development of immediate solutions as well as long-range planning.

SITE CAPACITY METHODOLOGY

The Site is generally referred to the size of the land associated to an educational facility and the improvements made on that land which include buildings, parking lots, athletic fields, etc. The size of the total land often allows or limits the amount of improvements or amenities that can be offered to a specific student population. The information below analyzes the existing site area against the recommended site area for programs of that type.

The following school site information comes from the Council of Educational Facility Planners International (CEFPI) Planning Guide (now referred to as Association for Learning Environments (A4LE):

- High School sites should be a minimum of 30 acres plus an additional acre for each 100 students.

There are other publications with slight variation on these general rules of thumb, but in our experience, these recommendations have provided a fairly reliable benchmark for assessing general site conditions. Of course specific conditions (e.g. need for stadium parking, on-site septic, well, etc.) may require additional area, and in tight urban sites the benchmark numbers may be unattainable.

It should also be noted that the recommended site size assumes the entire property is buildable. If the site has easements, wetlands, open water, unsuitable soils, or drastic topography that would not lend to the construction of buildings, parking, drives, or play areas the site size would have to increase based on the size of the unbuildable area.

The Nicolet High School campus occupies approximately 40.185 acres of land bordered by Green Tree Road and Elm Tree Road to the north, Daphne Road to the South, the Milwaukee River and a residential neighborhood to the West and Jean Nicolet Road to the East.

Based on the total existing enrollment, a similar campus should have approximately 41 acres of buildable area as recommended by the Council of Educational Facility Planners International (CEFPI). However, the unique nature of this site has a number of challenges. The north end of the site is limited in dimension and has a significant grade elevation change. The campus borders the Milwaukee River, and may have certain restrictions regarding floodplain, setbacks, etc. which may limit its buildable area. There are five wooded acres on the west edge of the site that are the Nicolet High School State Forest.

When a school lacks land that can be developed it is most often apparent with complicated traffic patterns, limited parking, lack of athletic fields and/or lack of storm water management. Nicolet High School has been challenged by many of these issues and will continue to be challenged by forces outside of its control. If the existing land cannot be better utilized, the district should consider a future land purchase to help alleviate the future challenges.

SITE CAPACITY				
BUILDING	EXISTING SITE SIZE (ACRES)	STUDENT ENROLLMENT (SEPTEMBER 2019)	RECOMMENDED SITE SIZE BASED ON STUDENT ENROLLMENT	EXISTING BUILDING SIZE (SQUARE FEET)
Nicolet High School	40.185	1098	40.98	358,000

- Based on 30 acres plus one additional acre for each 100 students at High School.

For Nicolet High School: 30 acres + (1098 students / 100) = 40.98 acres

- Site area is based on GIS mapping data and includes building, parking and outdoor activity areas.
- Recommended site size is buildable property.This does not include wetlands or areas not suitable for construction.
- Existence of unbuildable property on site is not known at this time. A wetland/storm-water analysis would have to be conducted to calculate the total area that is not considered buildable.

The site also includes areas that are:
- Adjacent to expressway (slated for lane expansion)
- Heavily wooded (State Forest, five acres)
- Adjacent to river (may include setback restrictions)
- Steep topography (3.235 acre parcel North of track/football, currently residential)
- Difficult geometry

Site Area: 40.185 Acres

Building Area: 358,000 Square Feet

1. Nicolet High School State Forest
2. Planned revisions to athletic facilities
3. Potential need for fire lane
4. Courtyards
5. Issues with bus circulation
6. Parking limited

BUILDING CAPACITY METHODOLOGY

As enrollment fluctuations affect school districts nationwide, the physical capability of the building will determine whether or not capacity should increase beyond its present level, or if it will be necessary to move students to other buildings more capable of accommodating such enrollment shifts. This analysis should provide a guide to measure a building's capability to handle a student population and provide a measuring stick to keep up with the changing needs.

HISTORICAL PERSPECTIVE ON SCHOOL CAPACITY

It is worthwhile to briefly cover why schools may not be able to contain the same number of students as when they were originally constructed. America's public schools can be traced back to 1640 when founders assumed families bore the responsibility of raising and educating a child. Gradually, programs were added by Federal and State mandates that have dramatically affected the educational environment. The trend of increasing responsibilities for public schools has accelerated ever since.

1900-1910
- Health Instruction Added

1910-1930
- Physical Education
- Vocational Education

1940's
- Business Education
- Art & Music
- Speech & Drama
- Half-Day Kindergarten
- Lunch Provided

1950's
- Expanded Science & Math
- Expanded Art & Music
- Foreign Language

1960's
- Advanced Placement
- Head Start
- Title I (Reading)
- Consumer & Career Education

1970's
- Special Education

1980's
- Computer Education
- English As A Second Language

1980's Cont.
- Early Childhood
- Full-Day Kindergarten
- At-Risk Programs
- After School Programs

1990's
- Expanded Computer / Internet
- Inclusion Of Special Education Learners In General Classrooms
- School-To-Work Programs

2000's
- Standardized Testing
- Personalized Learning
- Foreign Language For Elementary
- Common Core Standards
- Transgender Student Amenities
- One To One Initiatives
- Career Readiness
- Maker Spaces
- Breakfast Provided
- Title Ix (Equality For Girl's Athletics)

2010's
- 1:1 Devices
- Flexible Classrooms
- Small Group Rooms, Collaboration Spaces

In many districts, spaces that were originally designed as standard classrooms have been repurposed for use as offices, small group teaching spaces for 4-6 students or program specific abs. One of the most dramatic program requirements of the past 30 years is quickly becomming obsolete. The computer labs that were created in the 90's and early 2000's are now underutilized as technology transitions to laptops and hand-held devices. The bottom line is the programmatic demand on educational space is always changing, and it should be expected that buildings need to evolve along with those programs.

TYPES OF CAPACITY CALCULATIONS

For this assessment, EUA is using three (3) methods to calculate capacity:

1. Functional Capacity Based on District Desired Class Size

Historically, building capacity has been determined by counting the number of available teaching stations and multiplying by the district's desired number of students per class. The number of students per class is set by the district based on a practical understanding of how many students a teacher can effectively manage while maintaining district expectations for quality and control. The following guidance has been provided by the school district:

NICOLET UNION SCHOOL DISTRICT - NICOLET HIGH SCHOOL - DISTRICT DESIRED CLASS SIZE	
Optimum Class Size	22
Maximum Class Size	28

At the high school level, all regularly scheduled instructional spaces are used in the calculation because students are not expected to return to a homeroom after instruction in other spaces.

Several areas are not included in this calculation:

- Special education rooms are not typically included because it is unlikely that other students would fill the seats of these students while they are receiving additional instruction elsewhere in the building.
- Most resource areas and labs are not factored into this calculation because these areas are intended to supplement instruction for their learning areas located somewhere else in the school. For example, a computer lab dedicated to an English Department is not included because the students are physically leaving one space to use the other as a resource.

The number generated by this calculation is sometimes referred to as the “Maximum Capacity” for the building. This number can be misleading because it is unlikely that every room will be used at 100% capacity all the time. At the high school level, the capacity calculation needs to account for teacher prep time, bell schedules, and tutoring needs which would drop the total utilization of any one space. Taking school schedules, programmatic issues, and fluctuations in student populations into consideration, the Maximum Capacity is multiplied by a utilization rate to create the final “Functional Capacity.”

Utilizations rates can vary district-to-district depending on school size, scheduling procedure, and availability of resource space. Target utilization rates, however, generally fall within the following ranges:

- High schools: 70-80% utilization

When the maximum capacity is modified to reflect the appropriate utilization rate, the resulting **Functional Capacity based on District Desired Class Size** provides a reasonably accurate representation of how many students a school can accommodate with little or no change to room configuration or staffing policies.

2. Functional Capacity Based on Learning Environment Area

While class size calculations provide a reasonable estimation of capacity based on current room usage, they do not account for spaces whose physical areas are either too small or too large for their intended uses. They also do not readily account for the potential of non-traditional learning spaces outside of classroom environments. To better understand what a building’s potential capacity could be, a space by space analysis of available learning area is often required.

Based on the best practice data currently available, it is possible to define the square footage (SF) per student needed for optimum performance in each learning space:

- High School Level Learning Areas (6-12): 25 – 35 SF per student

Specialty instruction areas like shops, art rooms, and lab spaces have their own “Best Practice” square foot allowances per student. To calculate the total capacity of a building, then, each academic space is analyzed to determine its area in square feet (SF). This area is then divided by the recommended SF/ student to determine the maximum number of occupants for each learning space.

The Maximum Capacity can then be calculated by totaling the number of occupants in each individual learning space. In the calculation, all available instructional spaces are included at the high school levels. This resulting Maximum Capacity is multiplied by the target utilization rate to determine the final Functional Capacity. The **Functional Capacity based on Learning Area** provides a clearer picture of what a building’s capacity could be if all learning areas were utilized at optimal efficiencies. It is important to note that achieving this level of efficiency may have direct impacts on staffing procedures, or even require the reconfiguration of space. For example, two extra large classrooms may contain enough area within them to support three classes worth of students. To utilize that potential, additional staff may be required to support the unusually large class sizes, or the spaces may need to be reconfigured to create three individual rooms.

3. Capacity Based on Gross Building Area

Gross Building Area refers to the total size of the building including instructional space, support space, mechanical space, circulation and walls. Capacity based on Gross Building Area, then, is a more general calculation which evaluates the capacity based not only on learning space, but on guidelines for total building area per student.

Total building area standards are derived from historic data compilation, optimal planning models for space utilization, and from regional and national educational research and planning organizations. There is no recognized national standard for school size, and only a few states publish area guidelines. The Minnesota Department of Children, Families & Learning - Guide for Planning Construction Projects (published 2002) is one such guideline. It provides a range of acceptable areas based on school size. Smaller schools generally require more area per student than larger schools.

- High School: 200 – 320 sq. ft. per student

We have found these ranges to be reasonably consistent with gross square footage of school building projects built in Wisconsin over the past fifteen years.

- High School: 200 – 260 sq.ft. per student

These two sources of information can be averaged to create a recommended area per student for each building type. The **Capacity based on Gross Building Area** can then be calculated by dividing the existing building SF by the average recommended SF per student. The resulting data can then be used as an indicator for how the school compares with regional norms.

Gross building area per student recommendations are often used as a baseline guide for planning and analysis. For existing schools capacity calculations based on Gross Building Area can serve as indicators for overall building efficiencies. Lower SF to student ratios would typically indicate that there is less auxiliary or support space present within the building. High SF per student numbers may reflect the presence of amenities that may not always be typical for schools of comparable size (i.e. more specialist or intervention space, more gym or cafeteria space, auditorium space, etc.). Smaller schools are typically less efficient than larger schools.

BUILDING CAPACITY SUMMARY

The following table summarizes information of district facilities and current enrollment as of September 2019.

BUILDING CAPACITY				
BUILDING	CURRENT ENROLLMENT	FUNCTIONAL CAPACITY[b] BASED ON DISTRICT DESIRED CLASS SIZE	FUNCTIONAL CAPACITY BASED ON SQUARE FEET PER STUDENT BY LEARNING AREA[c]	CAPACITY BASED ON GROSS SQUARE FOOTAGE OF SCHOOL[d]
Nicolet High School	1098	1752	1990	1432

a. Functional Design Capacity of 80% of the maximum capacity at high schools.
b. Based on recommended students per classroom as provided by Nicolet Union School District.
c. Based on 30 SF per student for general classrooms. Science Rooms, FCS Labs, and Art Rooms use 50 SF per student. Career Tech Ed Lab spaces use 50-100 sq. ft. per student depending on the academic focus.
d. Based on 250 SF per student at High School.

BUILDING CAPACITY SUMMARY

Nicolet High School is the only school in the Nicolet Union School District. As of September 2019, enrollment was **1098 students**. For the purposes of this assessment, capacity was calculated in three different ways:

- **Functional Capacity based on District Desired Class Size** is the method that most realistically captures capacity numbers for the building in its existing configuration. This calculation yields a functional capacity of **1752 students**, which would mean that the building is below functional, but could theoretically serve up to an additional 654 students if the classroom populations matched the desired class size.

- **Functional Capacity based on Learning Area** yields a much greater capacity of **1990 students.** Based on available learning area, the building could theoretically support up to an additional 892 students. The district desired class sizes are a lower number than what could comfortably fit in these classrooms which explains the difference in the calculated capacities. It is also noted that there is very little space in the building dedicated to student breakout and collaboration space outside of the primary classroom environment.

- **Capacity based on Gross Building Area** suggests a slightly smaller capacity of **1432 students**, which would mean that the building could theoretically accommodate an additional 334 students. The relative discrepancy between these calculations tends to indicate that the overall size of the building is somewhat smaller than what would be expected based on other capacity calculations. Because there is ample space for primary classroom instruction, this indicates that the building does not have planned spaces dedicated to student breakout and collaboration. In this calculation, some additional pressures may be created on space typically required for support, including circulation, specialists, PE and other amenities.

The different capacity totals provide a clear picture of capacity at Nicolet High School. Overall, the building is operating well under its ideal functional capacity. Sufficient space is noted for primary large group instruction (classroom) in the building's current configuration, but there may be a lack of student support and circulation spaces within the building. The appendix contains worksheets that show the current building utilization, and the calculations used to generate each total.

BUILDING UTILIZATION

BUILDING UTILIZATION METHODOLOGY

This section of the report is prepared to provide an objective analysis of the building utilization.

Understanding current building utilization is useful in the facility development process because it allows a true view of what spaces are being used, how often, and to what extent.

The utilization of a school is evaluated based on “Best Practices” or recommendations found in CEFPI (The Council of Educational Facilities Planners International, now Association for Learning Environments, A4LE) and other national publications that primarily focus on the design and evaluation of educational facilities.

There are two important aspects to study when determining the utilization of any school:

1. The first is the **Utilization Factor** which is expressed as a percentage. This percentage provides a facility a certain degree of flexibility in scheduling of teaching stations. Middle and High Schools are typically considered “at maximum recommended utilization” when the average reaches 80 percent based on the teaching stations in the facility.
2. The second aspect of utilization is the **Occupant Capacity** of each educational space per period the space is being used. The school district provided EUA with an occupant count for every space, every period of the day. Although a space may be “occupied” which is reflected in the utilization, it may not be occupied to the space’s full potential or full instructor ratio potential.

Finally, a note about the eventual findings from this analysis. Many school districts are surprised by how low their buildings are utilized and they question the data. Exploratory areas (technical education, agriculture, band, art, etc.) can be particularly challenging for many districts. The physical design of these spaces tends to be highly specialized so that the spaces become limited in their use to one specific function. If staffing or students for those specialized areas are limited, these areas will often calculate out as being underutilized.

SUMMARY OF BUILDING UTILIZATION FINDINGS:

When studying High Schools, a schedule is provided by the district that represents as a “typical day.” However, due to variations in scheduling (such as “A days” and “B days”) it should be noted that there may be more than one “typical” day.

The Average Class Size at Nicolet High School is 20.3 students per instructional space. Based on the classroom sizes, the average number of students in a given space is most likely less than what the physical space can accommodate. This leads to several conclusions:

- The average class size could be increased to the District Desired Class Size of 22, without needing to alter the physical size of the learning spaces.
- Adding more students to each classroom could allow reconfiguration of spaces and/or a reduced staff count.

The Overall Average Building Utilization Factor at Nicolet High School ***64.0%***. On average, academic spaces are used for scheduled instruction ***5.2*** periods out of 8 available periods per day.

High Schools are considered at ‘optimum’ use when academic space utilization averages 70-80%. For this 9-12 school, we are targeting 80% utilization as ‘optimum’ due to the district scheduling which includes one prep periods and one lunch period at the high school level. This confirms that the school is below its optimal capacity.

The following table summarizes information of district facilities and current enrollment as of September 2019.

BUILDING UTILIZATION			
BUILDING	AVERAGE CLASS SIZE	# OF PERIODS USED (X)	% OF USE (X/8)
Nicolet High School	20.3	5.2	64

CURRENT BUILDING UTILIZATION FLOOR PLAN

71-100 % UTILIZATION

51-70% UTILIZATION

0-50% UTILIZATION

NO CORE CLASSES

four:

EDUCATIONAL ADEQUACY ASSESSMENT

EDUCATIONAL ADEQUACY ASSESSMENT

The **Educational Adequacy Assessment (EAA)** is a comprehensive review of the educational program activities, use of the building, and physical spaces required for each activity and provides analysis of how effectively the spaces support student learning and program delivery.

The EAA matrix on the following page indicates the six (6) criteria (Safety & Security, Size & Proportion, Space Type & Adjacency, Equipment & Infrastructure, Furniture, Environment) that are analyzed during this assessment. The general description for each criteria defines the focus for that specific criteria. The evaluation results in a rating of Good, Fair or Poor for each criteria. See the Evaluation Color Key for clarification of each designation.

- Safety and Security: Assesses site access and supervision. Assesses monitoring and control of building perimeter entry points, including entrance and admittance sequence for visitors. Assess passive supervision capabilities throughout school interior.
- Size and Proportion: Assesses the physical size (square footage) and proportion (functional/usable dimension) of learning environments in relation to use.
- Space Type and Adjacency: Assesses appropriateness and availability of spaces to support multiple forms of learning. Assesses space adjacencies and connectivity (physical, visual, auditory) between multiple learning environments.
- Equipment and Infrastructure: Assesses education equipment and infrastructure used for learning. This includes equipment used by students and staff.
- Furniture: Assesses furniture in relation to its flexibility, adaptability, and functionality for multiple users.
- Environment:Assesses environmental factors such as quality of natural light, acoustics, appropriateness of finishes and aesthetics.

DATA GATHERING PROCESS

Observations were made during building walk-throughs along with input from building principals, administrators, and key team members contributed to these findings. Data gathering took place in March and April 2020. During these site visits, the team met with administrators, teachers, facilities and other staff to review concerns and gather information about the building. The team walked through the building during and outside of school hours in order to observe the function, condition and overall use of the facility.

EDUCATIONAL ADEQUACY ASSESSMENT MATRIX

CRITERIA	OBSERVATION HIGHLIGHTS	EVALUATION
SAFETY & SECURITY	The facilities have a metal detector and supervision at the main entrance but does not require entry to the building through a secure office to provide controlled visitor access Lack of visual transparency inside the building limits supervision of some learning and common spaces Basement level in particular is underutilized and thus difficult to supervise Recreation Department does not have designated exterior entrance making it difficult to limit after hours access	POOR
SIZE & PROPORTION	Many classrooms are adequately sized to handle the optimum and maximum class sizes established by the district. Many science classrooms/labs are undersized.	FAIR
SPACE TYPE & ADJACENCY	Building typically does not provide flexible learning spaces, or access to different types of learning spaces to support different forms of learning. A lack of visual connectivity between spaces, and from learning spaces to common areas, further restricts learning options. Lacking small group, breakout and collaboration spaces. Need for flexibility in space and furniture to create modern / future ready learning environments. Interdepartment collaboration could be improved by assessing location, adjacencies and functionality.	POOR
EQUIPMENT & INFRASTRUCTURE	All classrooms have access to smart boards and A/V tech	GOOD
FURNITURE	Building typically does not provide flexible furniture. This includes classrooms, labs, Commons and Library. Some furniture is heavy, bulky and difficult to move/reconfigure and does not support a modern + future ready learning environment. Furniture is inconsistent in style and appearance from room to room.	FAIR
ENVIRONMENT	Most learning spaces have large windows to allow exposure to natural daylight and exterior views. Building is aging and interiors show signs of wear.	FAIR

EVALUATION COLOR CODE

GOOD	Most of criteria assessed was found to be acceptable and satisfied its purposes
FAIR	Some of the criteria assessed was found to be acceptable, while other criteria assessed was unacceptable and did not satisfy its purpose
POOR	Most of the criteria assessed was found to be unacceptable and did not satisfy its purpose

NICOLET HIGH SCHOOL OBSERVATIONS - SAFETY AND SECURITY

- Main entrance does not require entry to the building through a secure office to provide controlled visitor access
- Main office does not have a direct line of sight to the main entrance and exterior
- Exterior doors lack electronic monitoring and alarms
- Lack of visual transparency between classroom and corridors limits supervision
- Underutilized areas are not easily supervised
- Recreation Department does not have designated exterior entrance
- Difficult to control/limit community access after hours


NICOLET HIGH SCHOOL


WELCOME &
INFORMATION
CENTER
NOTICE

NICOLET HIGH SCHOOL OBSERVATIONS - MODERN LEARNING ENVIRONMENTS

- Current learning environments were not designed for today's student-centered, collaborative teaching methodologies
- Lack of visual transparency limits collaborative learning opportunities
- Department locations make some cross-departmental collaboration difficult
- Science Labs are undersized and out-dated
- Furniture varies between classrooms, majority is out-dated and inflexible
- Spaces in lower D-Wing lack natural light and designated learning spaces
- F128, a large lecture hall, is underutilized, inflexible, inaccessible and has outdated technology


BUSINESS DEPARTMENT

NICOLET HIGH SCHOOL OBSERVATIONS - ENVIRONMENT

- Building is aging and showing signs of wear
- Aesthetics of school are dated
- Minimal or lack of school identity and branding in areas of the school
- Minimal wayfinding


Social Studies
Office
F118


Service
F114


D-WING
Library
Learning Center
Humanities Office
D1-D28, D87-D135
TO F-WING
C-WING
Principal's Offices
Pupil Service Office
District Office
C101-C113
TO-A, B, F-WINGS
WOMEN'S RESTROOM

five:

BEST PRACTICES IN EDUCATIONAL DESIGN

BEST PRACTICES IN EDUCATIONAL DESIGN FOR MODERN LEARNING ENVIRONMENTS

The past several decades have seen incredible changes in the ways we learn and the ways we relate to the broader world. The information revolution and its impacts have also changed the skills necessary to compete in this new world. Educators of today are tasked with developing new 21st century skills in our students in order to allow them to successfully compete in this global environment. Some of these new skills include the ability to be:

- A Critical Thinker
- A Problem solver
- An Innovator
- An Effective Communicator
- An Effective Collaborator
- A Self-Directed Learner
- Information and Media Literate
- Globally Aware
- Civically Engaged
- Financially and Economically Literate

Unfortunately, while our world has changed, our educational institutions are often some of the last places to reflect this change. We believe the learning facility and its infrastructure can play a significant role in helping educators to develop these necessary skills. The built environment can provide the context for these important functions with spaces that support integrated technology, dynamic collaboration, hands-on learning, flexibility, transparency, and private/public partnerships.

This document is a compilation of knowledge learned over many years of experience designing educational facilities at all levels, and from ongoing research into educational trends. The application of these principles can vary greatly but we believe the themes and objectives will remain fairly consistent. These best practices cover general recommendations and considerations for design in the areas of:

- General Site Design
- Security and Safety
- Building Configuration and Adjacencies
- Main Office/Administration
- Student Services
- General Learning Environments
- Specialty Learning Areas
- Students with Disabilities
- Common Spaces
- Physical Education and Athletics
- Performance Spaces

It is our hope that these best practices will serve to inform both private and public school districts as they seek to create dynamic and authentic learning environments that will impact our students and our future for years to come.

GENERAL SITE DESIGN

One of the most important aspects of school design is the layout and configuration of the site. How the site is used can have significant impacts on opportunities for physical activity, environmental studies, safety, and traffic flow. In rural or suburban environments where more space may be available, solutions can look very different than they might look in tight, urban sites:

Physical Site Attributes: The simplest sites are relatively flat with adequate area for playfields, greenspace, parking, traffic circulations, and building additions. Wetlands or steep topography can become site assets, but can also create barriers for supervision, use, and site accessibility if not adequately accommodated.

Athletic Areas: Develop age-appropriate fields based on the athletic programs offered, physical education needs, and opportunities for community use. The site is often viewed as a community amenity, and opportunities to share the use of playfields with club sports, or park and recreational departments can help to strengthen community relationships and build good-will. Consider multi-use synthetic surfaces or other strategies to ensure that fields do not become one-dimensional.

Structured Outdoor Areas (9-12): For older students, this often takes the form of an outdoor “quad” or “green.” This space should provide an opportunity for student interaction in a natural setting, but should also include hard-surfaced areas that can be used in inclement weather. Inclusion of large trees, landscaped areas, and walls or boulders that encourage student to interact with each other and with their surroundings are encouraged. Best practice would also include a presentation area that can be used as an outdoor classroom.

Natural Areas: As awareness of global and environmental sustainability grows, there is an increased need for students to experience nature first hand. Care should be taken to place these natural areas where they can be easily observed and access can be adequately controlled. Natural prairie, woodlands, and wetland areas are significant assets if these areas can be incorporated into the curriculum and regularly utilized. Garden areas can also be a tremendous opportunity to encourage children to interact with nature and are often much easier to supervise. More and more studies are showing the positive benefits of environmental exposure for the health and well-being of both youth and adults.

SECURITY + SAFETY

As awareness of potential dangers continues to grow, design for security and safety has become paramount. It involves controlling traffic and pedestrian routes to minimize hazards, creating spaces that are deterrents to bullying and other unsafe student interactions, designing for direct and passive supervision, creating safe places for staff and guardian interactions, and creating barriers for potential intruders. It is important to note that no building is perfectly safe or perfectly secure from all threats. The level of safety and security must be carefully balanced with the other desired environmental attributes to develop a solution that best responds to overall priorities and goals. Some general best practices, however include:

Traffic Management: Pick-up and drop-off procedures are often one of the greatest causes of safety concerns on a school site. Guardian or student traffic should be separated completely from bus traffic. This generally requires separate drive lanes for buses and cars. In schools where a large percentage of students arrive by car, care must be taken to ensure adequate queueing distance is provided. Ideally pick-up and drop-off lanes will be one-way, oriented with sidewalks immediately to the passenger side of the vehicle, so students can enter or exit directly without crossing traffic. Most schools choose to directly facilitate the entire student pick-up procedure to ensure that students can be safely released to waiting vehicles without requiring guardians to leave the vehicle. This minimizes congestion, and expedites the process considerably.

Site Security: Consider enclosing areas of the site where students congregate. This is especially appropriate for lower grade levels, and in areas with close proximity to pedestrian or vehicular traffic. Enclosing the perimeter can help keep children in supervised areas, while deterring potential intruders.

Secure Entrance Procedures: All exterior doors should be locked and monitored by electronic door contacts and video surveillance. It is important, however, for visitors to feel welcome. This begins by creating a single, identifiable point of entry. Access is controlled seamlessly at this point so that potential disruptions or dangers can be addressed before contact is made with students or teachers. Consider use of safety-laminated glass to prevent breakins or other security breaches. A receptionist should be able to observe visitors arriving before allowing the visitor to enter. Once inside the building, visitors should only have access to the reception area. When the reason for the visit is ascertained, if appropriate, the visitor can be released to other portions of the building.

Layers of Security: In the event of an intruder or safety concern, multiple barriers, or layers of security should be utilized to allow emergency personnel the time they need to respond. Typically, locked exterior doors provide the first layer of security. Locked doors from the reception area to the interior of the building form a second layer. Additional security doors between public areas of the facility (cafeteria/commons/gymnasium) and student learning environments should be able to lock electronically in an intruder situation for a third layer of security. In many cases, learning environments can be grouped to form learning neighborhoods which can by automatically locked down for a fourth layer of security. Finally, individual room doors can be locked to form the final barrier.

Transparency and Supervision: One of the most important aspects of safety and security is creating an open environment where nothing can be hidden from view. This leads to an expectation of observation from both staff and students. This level of direct and passive supervision is a major deterrent to bullying and other unsafe student interactions, as well as forming a deterrent for adult to child abuse. Finally, in the event of an intruder situation, the elimination of hiding places is key to a quick response from emergency personnel

BUILDING CONFIGURATION + ADJACENCIES

There are virtually endless options for how a school can be configured, but most current strategies share themes of flexibility, transparency, and spaces that support differentiated learning. This section focuses on a few of the current trends in school organization, but ultimately all concepts must be evaluated based on their support of district goals and priorities:

Learning Neighborhood: This strategy attempts to group students together within the school to create smaller communities. This typically occurs by grade or age, but could also occur based on a subject area. The basic concept is to create a more intimate environment within the school where students and teachers with similar concerns can share common resources and spaces. Consider creating spaces appropriate to the types of instruction that will be provided. This may include large group areas for groups of 60 or more, areas for groups of 20-30, small group areas for 5-10 students, and spaces that can be used for one-on-one instruction or individual work. Access to these different types of spaces should allow students to work in environments most conducive to the work that they are doing or the type of instruction they are receiving. For teaching staff, consider creating shared office/work areas, and common storage areas to further encourage sharing of resources and day-to-day interaction. This can also greatly reduce clutter and maximize flexibility of learning spaces.

School within a School: The school within a school concept draws inspiration from the traditional one-room schoolhouse. Similar to the learning neighborhood strategy, this approach creates smaller, more intimate settings for students and teachers within a larger facility. These smaller communities, however, are organized to create a cross-section of the student body. The range of the cross section could vary from narrower groups of just a few grades, all the way to communities that include kindergarten through 12th grade. The goal of the crosssectional approach is to encourage upward mobility. By bringing multiple levels together, students can naturally flex to ability groups that match their full potential, rather than being bound by their grade structure. This also opens opportunities for peer-to-peer mentoring as students of different ages and ability levels interact more closely with each other. As in the Learning Neighborhood concept, consider creating a variety of shared learning and resource areas, conducive to the types of activities that will occur in those spaces.

Learning Street: This concept expands on the idea of the circulation corridor, and turns it into a resource for learning. As a great urban street becomes a hub of activity in a community, the learning street becomes an extended common resource for the entire school. The corridor is widened and outfitted with comfortable furniture groupings that students are encouraged to use for socialization and interaction when appropriate. Interactive display boards and teaching walls are incorporated into the corridor so that teachers can utilize the space as break-out learning environments, or places for group work to occur. Transparency between principle learning environments and the learning street is necessary to ensure that the students can move freely between spaces while still being observed.

MAIN OFFICE + ADMINISTRATION

The Main office and administration area often serves as the front door of the building. This is where visitors are welcomed, where meeting are conducted, and where issues are resolved. It must be easy to locate, controlled, and functional. A few specific recommendations include:

Reception: The reception area should be secured as described in the safety and security section. It should have open views both to outside approaching visitors, and to inside approaching students or staff. There should be adequate space for visitors and students to wait and for reception staff to do their work. Ideally, work areas should be obscured from view to minimize clutter, but open enough to allow supervision of the reception area. Consider opportunities for branding and celebration of student work through digital displays.

Offices: Transparency and privacy should be carefully balanced in office areas. Staff should never be isolated with students or visitors, but casual supervision from other students or visitors should be blocked. Provisions should be made for private administration/guardian meetings either with small conference areas within each office, larger shared office areas, or a combination of both. Consider the possibility of creating open office areas to facilitate staff collaboration, with shared conference and meeting rooms.

Health: Health rooms require active supervision. This is simple if a full time nurse or attendant will always be in the health area, but in other circumstances requires supervision from the reception area. Again, privacy and transparency must be balanced.

Attendance: For larger schools, the attendance function often requires separate staff and separate office areas. If this is the case, the attendance area should be readily accessed by students and staff from within the building, and should maintain proximity with other office areas to allow for shared staff resources.

STUDENT SERVICES

Especially for older grade levels, student service areas provide space for students to meet with advisors, counselors, or mental health professionals, access career and college resources, or receive other needed supports.

Location: Student services should be centrally located, easily identifiable, and welcoming. It is important that the space should be designed as a resource for students, and should not carry any stigma associated with entering.

Career Center: The front door to student services may enter directly into a career center. This is often a location for students to access resources, conduct research, or work on career and college applications. It often doubles as a waiting area for students who may be meeting with staff as well. It should be comfortable, welcoming, open, and supervised. Consider creating a presentation area that can be used by college or job recruiters as well.

Offices: Offices should be designed to accommodate private staff work, as well as meeting with students. Again, privacy and transparency must be carefully balanced to avoid isolating staff with students, but still allow for students to receive services discretely when necessary. Consider creating shared conference rooms for larger meetings, IEP's or student/guardian meetings. Access to discretely located toilet facilities is recommended for students who may need to compose themselves or deal with embarrassing personal situations.

GENERAL LEARNING ENVIRONMENTS

As awareness of potential dangers continues to grow, design for security and safety has become As the goals and objectives for 21st century learning have changed, the design of the physical environment needs to change as well. While variations on design concepts are almost limitless, some general design themes have begun to emerge. Modern learning environments need to be flexible, adaptable, collaborative, and transparent, with seamless technology. Student need to learn in places that are bright, filled with natural light, comfortable, and stimulating. Some best practices include designing learning spaces for:

Flexibility and Adaptability: The one constant of modern learning environments seems to be that everything changes. Building flexibility into the space allows for multiple forms of teaching and multiple types of activities. Lightweight furniture that can roll or move easily allows students to constantly reconfigure their environments. Consider movable glass walls or sound-resistive dividers that can allow spaces to be used for small group exercises, or opened up for large group instruction. Consider foregoing the heavy, load-bearing concrete block partitions of the past for lightweight stud walls that can be easily deconstructed and relocated or reconfigured as space needs change.

Collaboration: Modern learning environments have moved away from individual teachers who own their own individual classrooms. Instead, the environment is generally composed of a variety of interwoven spaces, which vary in size and amenities depending on their use. Students move freely from small group rooms to large group instruction areas, or learning commons. The variety of spaces can help facilitate a move towards a more collaborative, project-based learning environment Teachers are also encouraged to collaborate, and shared amenities like office spaces, work areas, and storage space can help to create the desired communal atmosphere.

Creativity: 21st Century learning has moved from a teacher-based model to a student-based learning model. Curriculum is differentiated based on student need, and students are expected to take more control of their own learning. The environment can serve as a tool to empower students and facilitate this shift. Creating an atmosphere that is inspiring, creative, colorful, and comfortable encourages ownership and self-determination. Access to resources like water, physical manipulatives, building supplies, and tools can also help to infuse a hands-on, maker culture within a school.

Transparency and Light: There is a growing body of evidence linking natural light to improved student performance. But transparency is about more than just bringing natural light in. It is about creating connectivity between spaces. Visual connections help to facilitate the collaborative community needed for today's learners. Visual connections also allow for the necessary supervision required for students to work more independently and as groups. The open environment that transparency creates ensures that students and staff alike are less isolated and more aware of the needs of others.

Seamless Technology: Technology should no longer be limited to specific rooms or areas of a building. Learning happens everywhere, and technology is an integral part of that learning. Create information systems that support and encourage the use of personal devices. Interactive technology solutions allow students to move content seamlessly from their individual devices to shared displays, or presentation areas. Consider creative solutions for device charging and electrical access.

SPECIALTY LEARNING AREAS

The basic themes described in general learning environments apply to almost every space where learning happens. But some spaces have more specific needs as well. Some of these needs are outlined by space type below:

Science: As in other learning environments, the themes are flexibility and transparency. Traditionally, science equipment needs (gas, water, casework, hoods) led to spaces that were inefficient and could be used for only one purpose. Today's labs can be much more flexible. Consider placing gas and water services at the perimeter of the room or minimizing the equipment to small islands only. Flexible work surfaces, then, can be reconfigured for either lab or lecture formats, making the space much more usable for a wide range of functions. Consider the use of movable walls between rooms to allow for smaller or larger group formats. This can also allow lab areas to be shared more directly by multiple users. As STEM or STEAM and other multi-disciplinary approaches continue to grow in popularity, consider common resource areas, and breakout spaces that encourage cross-disciplinary work.

Art: Great art spaces need the traditional amenities of wide, deep sinks for cleanup, ample natural light (ideally north facing) and access to equipment for the various art media (kilns, paint hoods, pottery wheels, soldering booths, grinding wheels, etc). Modern art programs need to take advantage of computer based software, and electronic resources as well. Consider opportunities to share amenities with technical education spaces, including metal working and welding capabilities, wood-working tools, 3D printers, and software applications. The amenities of the art room can also be utilized by other programs to assist in project-based, or maker opportunities. Transparency between art rooms and adjacent spaces can aid in creating a more collaborative environment. Mobile furniture and technology can create more flexibility within the space.

Music: Music spaces must be customized to some extent for their specific uses in terms of space, storage, and acoustical needs. Some flexibility, however can be maintained by the use of portable risers, movable band shells, and modern audio capabilities. Proximity to performance spaces is often important and music spaces can often double as green rooms. In some cases, band rooms can also serve as remote orchestra pits for performances. Consider the use of the music spaces themselves as small performance venues when appropriate.

Family and Consumer Education (FaCE): While traditional home economics focused on atomic age home-making skills, modern programs are designed to create career pathways. Physical environments should be designed to reflect real world professional environments. Culinary arts spaces should replicate restaurant kitchens. Fashion Design should happen in a design studio. Consider other career paths like food science, and interior design. Again, collaboration and sharing of resources between departments should be encouraged.

Technical and Agricultural Education: As career possibilities in technical and agricultural fields shift, these environments need to shift as well. The range of possibilities that exist can make it challenging for school districts to determine where they should focus their attention. In order to maintain meaningful opportunities for career preparedness however, developing a vision is often critical to the success of the program. Industry partnerships may also play a critical role. As in other areas, the physical design of these spaces should focus on creating maximum flexibility. A large, multi-disciplinary “Fab Lab” may allow for many more student opportunities than isolated, single function rooms. Create environments that are open, collaborative, and project-based. The equipment in this area, can serve to enhance not only the tech ed curriculum, but can assist in project-based and maker experiences in other curriculums as well.

STUDENTS WITH DISABILITIES

Education for students with disabilities was largely non-existent in public schools before 1975 and the passage of the Education for All Handicapped Children Act (EHA) and the Individuals with Disabilities Education Act (IDEA). Since then, strategies and programs have seen substantial improvements. Amendments to the IDEA in 2004 mandated Individualized Education Plans (IEP's) and ensured that students with disabilities are placed in the least restrictive environments possible. The goal is generally inclusion, or to provide specialized education alongside a student's peers. The physical design of both general learning environments, and specialized learning environments can serve an important role in allowing for the effective implementation of these ideas. The learning environment should empower individuals with disabilities to reach their fullest potential and should reinforce the value of each unique individual regardless of their specific abilities. Some best practices for this include:

Variety of Spaces: The first learning environment for a student with disabilities should be the principle learning environment of the student's peers. If these principle learning spaces are designed to allow for differentiated, studentcentered learning, this becomes especially enabling for those with the greatest needs. Learning environments that include breakout work areas, small group rooms, and meeting spaces allow for students to work within the environment that best support their needs without the potential stigma of withdrawing from their peers. These types of spaces also enable teachers and specialists to provide specific intervention or assistance within the primary learning environment. In many cases the specialist is able to come to the student, instead of requiring the student to come to them.

Surroundings that Calm: All students need quiet and space for introspection, and all learning environments should be designed to allow for this to some extent. For some students, however, it may become necessary to withdraw more completely. Often, this setting is a separate learning space designed for fewer children and less distractions. These spaces can provide more intimate settings with alcoves or personal pods that can be used to create personal space. Full spectrum, color changing LED lights can be used to create calming effects. Avoid the use of fluorescent lighting which can be prone to flickering or buzzing. These distractions can be very severe for those with autism spectrum disorders. The use of sensory spaces where students can calm themselves with tactile sensory stimulation is also encouraged. Sensory spaces are often separate and distinct rooms, but sensory features can also be incorporated into other learning environments. It should be noted that sensory rooms are not "time-out" rooms and should not be used as such.

Life Skills Training: Part of the IEP for each student involves transition goals for post-secondary training, education, employment, and independent living. While detailed plans are usually not developed until age fourteen, transitional skills training may be appropriate beginning with much younger children. Students should have access to real world work and living amenities appropriate to their age and abilities. Kitchen, laundry, bedroom, and other apartment type settings can be incorporated into the design of spaces to assist in the development of these skills.

Discrete Personal Assistance: For some students, specific goals and training may be needed in the areas of toiletry and personal hygiene. These students may find themselves particularly subject to embarrassment in peer situations. Provisions for bathing and toileting should be easily accessed and discretely located. Provide toilet and shower facilities with ample room for changing tables and personal assistance.

COMMON SPACES

Some of the most underutilized spaces in traditional schools have been the common spaces. Corridors were pathways to get from point A to point B, cafeterias were places in which food was consumed, and libraries were places where books were viewed and stored. With careful design, these areas can become active learning environments, places where students can congregate and socialize, places where knowledge is disseminated, and where student achievements are celebrated. The effective use of these spaces, again, involves the themes of flexibility, creativity, and transparency.

Corridors (Learning Streets): As the need for differentiated learning has increased, corridors have often had to serve the role of de facto breakout space. Students use the corridor for makeup tests, for reading groups, or for socialization. It has been said that in many schools the corridor is the only space that students feel belongs to them (teachers own the classrooms). It is time for the design of the corridor to reflect this reality. By widening the corridors and providing appropriate flexible furniture groupings, the corridor can become a learning street. Windows between the principle learning environment and the corridor allow for supervision, enabling the corridor to function as a regular breakout space. Digital displays can be used to share information, celebrate student achievements, and highlight student work. Socialization and informal learning opportunities should be encouraged.

Cafeteria (Student Commons): With the correct design, a cafeteria can be so much more than a lunch room. In fact, some schools are now eliminating the lunchroom altogether and serving food in classrooms, or learning neighborhoods. If a central cafeteria is maintained, however, best practice is to open the space up to the rest of the school, allowing it to serve as a hub for student activity throughout the day. Breakout groups, club activities, presentations, and class exercises can all happen in this space. For older students especially, the commons can be a place for studying and independent work as well. Consider snack and beverage options which could be facilitated by culinary arts, business, or students with disabilities programs.

Library (Media Center / Information Commons): The information revolution has had one of the most profound impacts on the library. While the library used to be the place where information was received, much of this information is now available digitally anywhere and at any time. As a response to this, the library can be thought of now as an information commons. Rather than a place to GET information, it is a place to USE and process that information. As a result, the physical environment of the library needs to be much more open and collaborative. Consider creating comfortable furniture grouping for individual study or small group work. Glass conference rooms can be used for larger groups, noisier activities, or for quiet study. Consider opportunities for presentation areas within the space. The information commons is usually the place to go for technology related questions, and may house student-staffed help centers. The environment should be comfortable and student-centered. Conceptually, the information commons may be viewed as an extension of the student commons. Provide opportunities for interactive displays, access to electricity for charging personal devices, and video and sound production equipment. Coffee, juice, or healthy snacking may be encouraged.


CAFE


Milwaukee
Intermediate

PHYSICAL EDUCATION + ATHLETICS

Growing emphasis on healthy living and lifestyle choices have brought renewed attention in recent years to spaces for physical activity. Indoor physical education and athletic programs often utilize the same spaces, but serve very different purposes. While athletics may only impact a narrow portion of the student body, physical education should affect all students. Look for opportunities to infuse activity and healthy living into all aspects of school design. Depending on the needs of the school, the types of spaces provided may vary greatly, but a few recommendations for specific spaces include:

Gymnasiums: The size, number, and features of a gymnasium depend largely on the activities that will happen in a space. If the gym will also serve as a performance space, this can further complicate the design. A large percentage of a school's design budget will often be spend on gymnasiums, so consider making these spaces as multi-functional as possible. Consider both P.E. and athletic needs. Create spaces that are filled with light for physical activity during the day. Adequate clearances are needed around the perimeter and to the ceiling for the activities that will occur in the space. Look for opportunities to allow for community use, and partnerships with outside groups. Consider positioning the gym so that it can be separated from academic areas to allow for maximum afterhours use. For competition gymnasiums proximity to common areas is often needed during events. Rather than a separate area dedicated to the gymnasium, consider combining this space with other common areas, so that it can be utilized throughout the day.

Fitness Areas: Fitness centers should be designed for the entire student body, and not just for athletic programs. With this broader focus, more emphasis is often placed on aerobic and cardiovascular training rather than weight training alone. The fitness center should be designed to serve as a station for physical education during the day. Before and afterhours use by the entire student body, and potentially the broader community, should also be considered.

Locker Facilities: Locker facilities should be designed for privacy and flexibility. At younger age levels, showers are much less necessary than in years past. At all levels, when showers are provided, individual showers rather than group shower areas should be used. Consider providing options for private changing areas as well, to help create a more inclusive environment. For team locker rooms, consider flexible designs that allow usages to change from season to season. Consider the possibility that locker rooms may need to be able to switch from one gender to the other, depending on seasonal needs for male and female athletics.


HOME OF TH LDOGS


Life Fitness
HAMMER STRENGTH

PERFORMANCE SPACES

Performance venues can vary greatly based on the needs of the specific school. While small performance areas for class events can often be incorporated into the learning environment, larger venues for holiday programs, dramatic performances or community events may often be needed. A few things to consider:

Type of Performance: The attributes of the space needed for a school assembly are drastically different than those needed for dramatic production. For elementary schools and general assemblies, portable stages and rented equipment can sometimes be the most flexible and cost-effective solutions. For frequent dramatic productions, however, the needs are more substantial. Consider the number of audience members that should be accommodated carefully, as this will have a major impact on the size of the space. If a fly space is to be provided, the height necessary for the fly space must also be considered. For full dramatic performances, stage construction areas, green rooms, and orchestra pits should all be considered. Recent advances in technology may allow for a remote orchestra pit if space is constrained, rather than a full orchestra pit. Full acoustic modeling and design should be considered.

Frequency of Use: A full dramatic performance venue is a significant resource investment for a school district. To justify this expenditure, performance spaces need to be well-utilized. Design spaces for maximum flexibility. Consider using the venue for student assemblies, video productions, and community events. Stage construction areas can be shared with construction technology spaces. Pursue community partnerships. Shared resources and shared uses benefit both the district and the community, and can help build good will. Community support of the arts is critical to the success of the program.

CONCLUSION

As school districts seek to create environments appropriate for the education of today's students, it is our hope that this document will provide some context for that process. While there are certainly many design possibilities and circumstances that are not covered here, we believe the themes presented will prove useful. Strive to create schools that make learning relevant. Create spaces that are safe, flexible, transparent, and collaborative. Provide environments that are comfortable, bright, filled with natural light, and inspiring. Put students first. Our future depends on it.