



2016

FACILITY REPORT UPDATES

Educational Programming
Architectural & Building Conditions
Site Conditions

March 3, 2016



epstein uhen : architects

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SECTION 1

Executive Summary

Executive Summary

ARROWHEAD UNION HIGH SCHOOL DISTRICT

March 3, 2016: Findings from EUA'S Updated Facilities Report

- The Arrowhead School Board is renewing its focus on key components of the district's **long range facilities master plan** as it considers campus-wide facilities' needs for a potential November 2016 referendum. Arrowhead has not pursued additional revenue through a referendum since 1999.
- As part of the due diligence process, the Board recently authorized Eppstein Uhen Architects (EUA) to update key sections of the comprehensive **Facilities Report**, originally completed in 2010. This planning document provides a valuable foundation of information to support the prioritization of needs and long-range facilities planning. The two major areas of the report that were the focus of the update include:
 - **Educational Programming:** Assessment of how effectively our buildings function programmatically and/or provide appropriate learning spaces to support existing and future instructional programming for students
 - **Architectural & Building Conditions/Site:** Review of all major buildings systems (mechanical, electrical, plumbing, and exterior) and their anticipated remaining life expectancy, as well as major site features such as storm water management, parking lots and access drives.
- To conduct the assessment, EUA toured both North and South buildings and met with 34 members of the staff including department chairpersons, program leaders and all administrators. EUA prefaced the meetings with one primary question to gather feedback —what is hindering the way you wish to work/teach in your current work space?
- EUA shared a preliminary presentation to the School Board on the initial findings Wednesday, February 24 at 6PM in the Board Room at the District Office, South Campus. When complete, the updated report will be posted to the district website at www.arrowheadschoools.org.
- High level findings include:
 - Many classroom areas at North and South campuses are undersized, outdated, and fail to provide the flexibility desired for today's teaching & learning strategies.
 - Small, irregularly shaped classrooms also create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage.
 - The buildings generally lack updated, easily adaptable common areas that can be used for individual instruction, collaboration activities with small groups, and large student body programs or assemblies.
 - Many areas lack natural light, appropriate storage and are using outdated, inflexible furniture.
 - Technology infrastructure is outdated and cannot meet current demand (electronic devices).
 - The Fine Arts program space (theater and music) is undersized, outdated and lacks practice rooms, storage, large performance space, and student display areas.
 - The gyms, locker rooms and fitness center areas are generally outdated.
 - Building access could be improved at both campuses with the creation of secure, controlled main entrances that bring visitors directly into the main office prior to accessing the school.
 - The facilities are well maintained; however, some major building systems such as sections of the roofs and HVAC controls are close to reaching their useful life expectancy with other sections needing updates within the next 1-5 years
 - The exterior building envelope is generally in good condition; however, some walls are in poor condition (pool and green house).

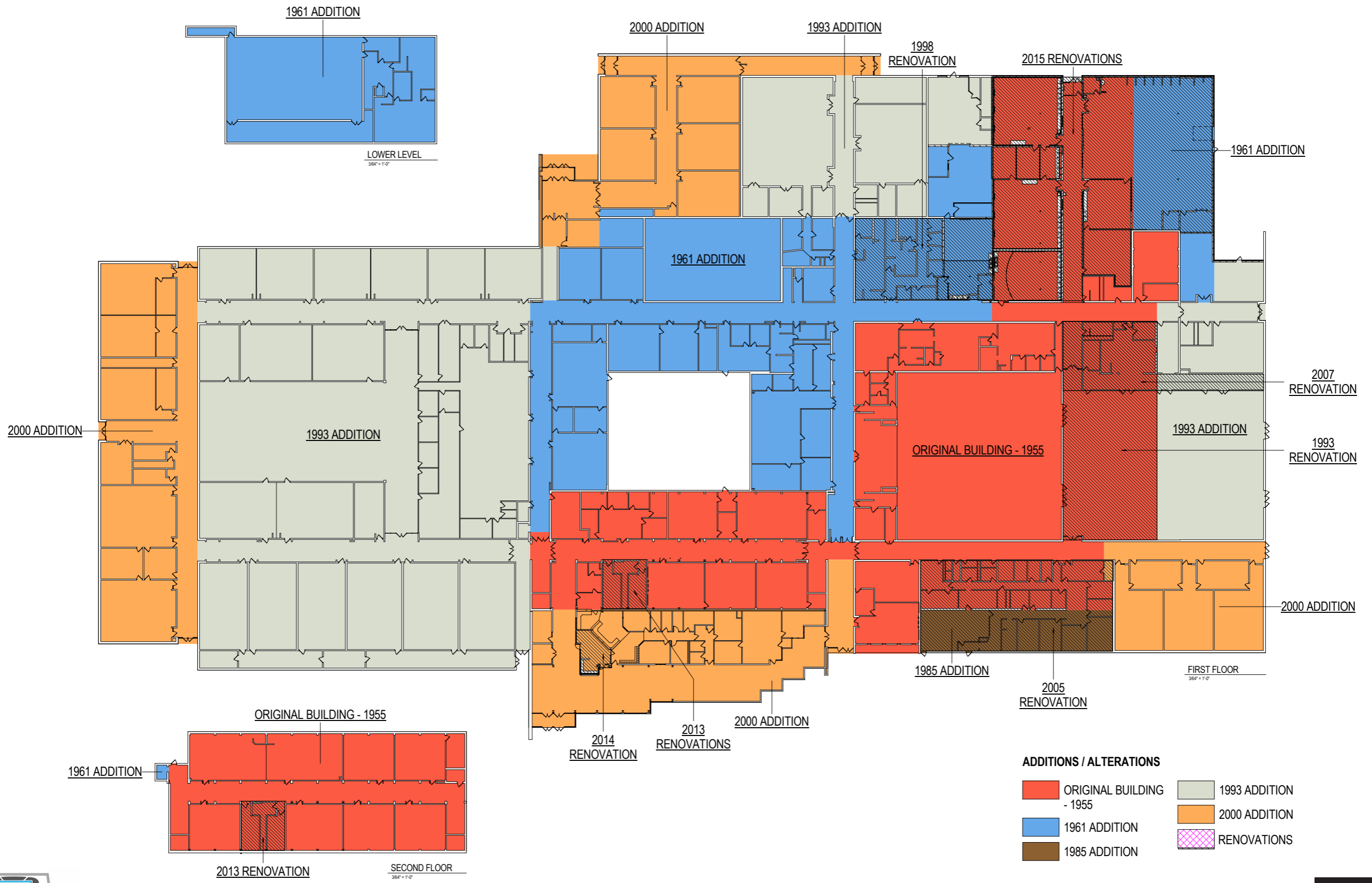
Executive Summary

- Electrical systems are generally in good condition; however, key components such as generators, lighting, power and fire alarm systems need updating and should be brought up to current code. Surge protection for the main services should also be considered.
- Plumbing systems are generally in good condition; however, the sanitary waste system at North Campus is in poor condition.
- The buildings do not currently have automatic fire protection systems, which may be required for future expansion.
- Site needs fall into three major categories: storm water management, site safety and capital maintenance.
 - Improvements to North Campus storm water management may also likely alleviate South Campus concerns.
 - Investigating relocation of Arrowhead Campus Drive further east may improve student pedestrian safety by moving the tennis courts and southeast student parking lot to closer to the building.
 - Most of the parking lots and drive areas were built in the early 2000's, naturally approaching their life expectancies.
- Once the School Board has considered the updated Facilities Report data and prioritized facility needs, preliminary options will be developed with estimated costs. The Board intends to share these options with all school district residents and request feedback via another community-wide survey in May/June to inform their final decision about a fall referendum. If the School Board decides to propose a facilities project on the November 8, 2016 General Election ballot, formal action must be taken by the School Board by late August 2016.



SECTION 2

Education Programming and Assessment



ARROWHEAD HIGH SCHOOL - SOUTH CAMPUS

BUILDING HISTORY



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LOWER LEVEL PLAN
3/8" = 1'-0"

FIRST FLOOR PLAN
3/8" = 1'-0"

SECOND FLOOR PLAN
3/8" = 1'-0"

	UNDERSIZED AND IN NEED OF RENOVATION
	IN NEED OF RENOVATION OR RECONFIGURING
	IN NEED OF UPDATES



ARROWHEAD HIGH SCHOOL - SOUTH CAMPUS

EDUCATIONAL PROGRAMMING





GENERAL BUILDING

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- No large group instruction/common space for collaboration and large student body programs and assemblies
- Many spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated
- Many spaces lack natural light
- Student lockers are outdated and in poor condition
- Building signage is outdated and inconsistent

LIBRARY MEDIA CENTER

- Lacks flexibility, transparency, and collaboration areas for small and large group activities
- Support spaces are undersized
- Additional study hall space is needed

SCIENCE

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- Furniture and equipment are outdated
- Spaces lack natural light
- Lacks storage
- Greenhouse requires significant exterior improvements

	UNDERSIZED AND IN NEED OF RENOVATION
	IN NEED OF RENOVATION OR RECONFIGURING
	IN NEED OF UPDATES



ARROWHEAD HIGH SCHOOL - SOUTH CAMPUS

EDUCATIONAL PROGRAMMING - SCIENCE / LMC





GENERAL BUILDING

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- No large group instruction/common space for collaboration and large student body programs and assemblies
- Many spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated
- Many spaces lack natural light
- Student lockers are outdated and in poor condition
- Building signage is outdated and inconsistent

STUDENT SERVICES

- Undersized for current student population
- Lacks acoustic privacy
- Lacks flexibility, transparency, and collaboration areas for small and large group activities
- Lacks individual space for students to decompress
- Lacks storage

HEALTH

- Space is outdated and in disrepair
- Lacks storage

SPECIAL EDUCATION

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- Lacks small group rooms with adequate visibility for supervision
- OT/PT needs additional equipment
- Spaces are dispersed throughout the building
- Lacks storage

BUSINESS EDUCATION

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- Classrooms are outdated and furniture is in poor condition
- Proximity to Wellness Center is inadequate for current programming
- Lacks storage

	UNDERSIZED AND IN NEED OF RENOVATION
	IN NEED OF RENOVATION OR RECONFIGURING
	IN NEED OF UPDATES



ARROWHEAD HIGH SCHOOL - SOUTH CAMPUS

EDUCATIONAL PROGRAMMING - STUDENT SERVICES / HEALTH / SPECIAL EDUCATION / BUSINESS EDUCATION





GENERAL BUILDING

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- No large group instruction/common space for collaboration and large student body programs and assemblies
- Many spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated
- Many spaces lack natural light
- Student lockers are outdated and in poor condition
- Building signage is outdated and inconsistent

ART

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- Lacks access to corridor
- Lacks presentation areas for student display
- Lacks storage

GYM AND FITNESS

- Fitness center is undersized and outdated

FOOD SERVICE

- Freezer space is inadequate
- Lacks dry storage

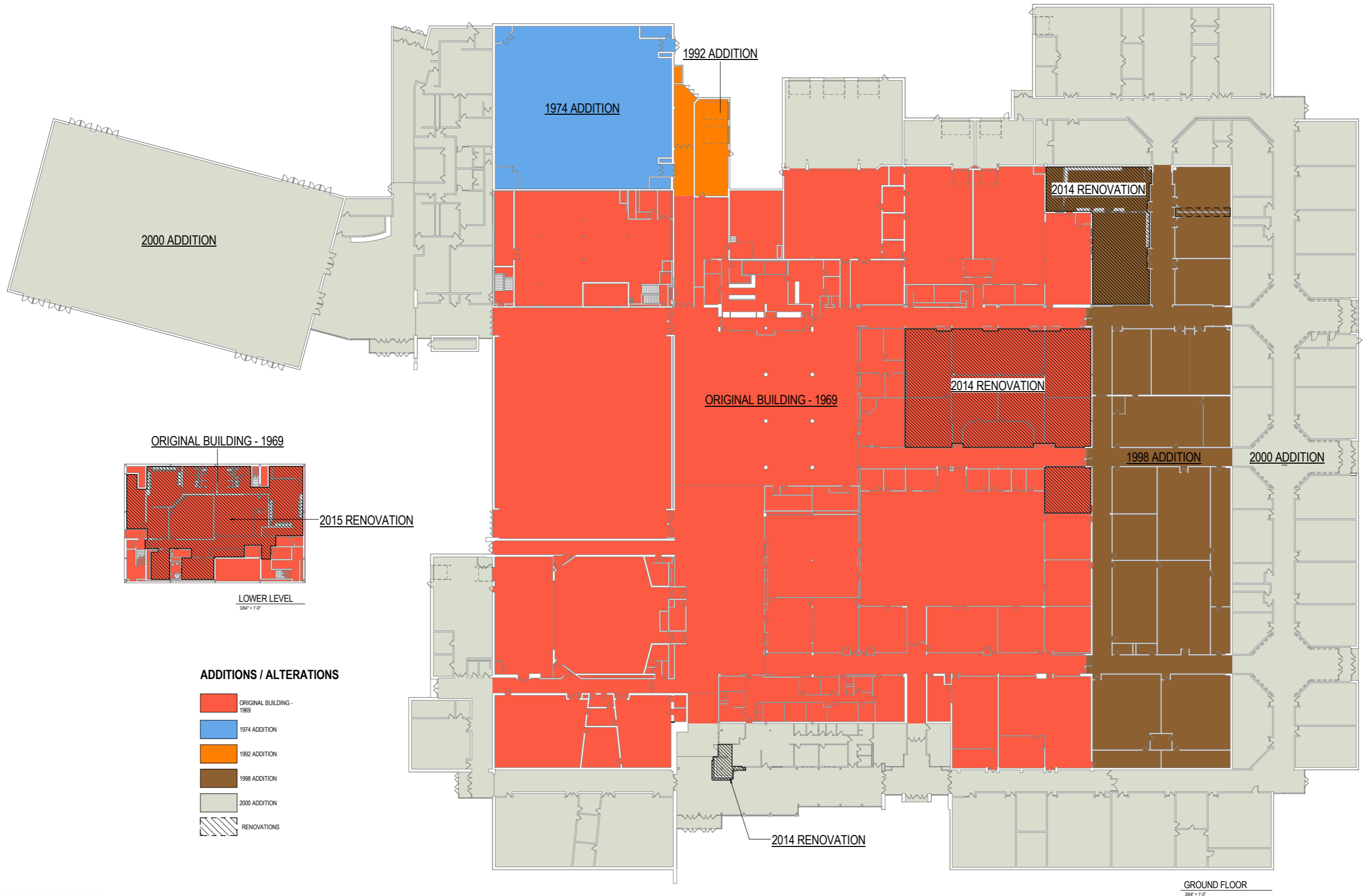
	UNDERSIZED AND IN NEED OF RENOVATION
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	IN NEED OF UPDATES



ARROWHEAD HIGH SCHOOL - SOUTH CAMPUS

EDUCATIONAL PROGRAMMING - ART / GYM AND FITNESS / FOOD SERVICE





ARROWHEAD HIGH SCHOOL - NORTH CAMPUS

NORTH CAMPUS - BUILDING HISTORY





- UNDERSIZED AND IN NEED OF RENOVATION**
- IN NEED OF RENOVATION OR RECONFIGURING**
- IN NEED OF UPDATES**

GROUND FLOOR
3/64" = 1'-0"



ARROWHEAD HIGH SCHOOL - NORTH CAMPUS

EDUCATIONAL PROGRAMMING



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GENERAL BUILDING

- Undersized*, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- No large group instruction/common space for collaboration and large student body programs and assemblies
- Many spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated
- Many spaces lack natural light
- Building signage is outdated and inconsistent

*General education classrooms identified as undersized average 23-25 square feet per student at North Campus. Current national education standards suggest 30-35 square feet per student in general education classrooms.

THEATER / MUSIC

- Lacks large performance space
- Lacks practice rooms
- Lacks storage
- Poor acoustics
- Lacks an orchestra pit
- Sound booth is in poor condition

	UNDERSIZED AND IN NEED OF RENOVATION
	IN NEED OF RENOVATION OR RECONFIGURING
	IN NEED OF UPDATES



ARROWHEAD HIGH SCHOOL - NORTH CAMPUS

EDUCATIONAL PROGRAMMING - MUSIC / DRAMA





GENERAL BUILDING

- Undersized*, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- No large group instruction/common space for collaboration and large student body programs and assemblies
- Many spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated
- Many spaces lack natural light
- Building signage is outdated and inconsistent

*General education classrooms identified as undersized average 23-25 square feet per student at North Campus. Current national education standards suggest 30-35 square feet per student in general education classrooms.

F.A.C.E.

- Undersized, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- Spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated

ART

- Lacks presentation areas for student display
- Computer lab is undersized and lacks visibility
- Clay mixing facilities are poor
- Lacks storage

TECH ED

- Spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Lacks equipment to support curriculum
- Lacks storage
- Lacks air conditioning

	UNDERSIZED AND IN NEED OF RENOVATION
	IN NEED OF RENOVATION OR RECONFIGURING
	IN NEED OF UPDATES



ARROWHEAD HIGH SCHOOL - NORTH CAMPUS

EDUCATIONAL PROGRAMMING - TECH ED / ART / F.A.C.E.





GENERAL BUILDING

- Undersized*, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- No large group instruction/common space for collaboration and large student body programs and assemblies
- Many spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated
- Many spaces lack natural light
- Building signage is outdated and inconsistent

*General education classrooms identified as undersized average 23-25 square feet per student at North Campus. Current national education standards suggest 30-35 square feet per student in general education classrooms.

LIBRARY MEDIA CENTER

- Lacks flexibility, transparency, and collaboration areas for small and large group activities
- Support spaces are undersized
- Additional study hall space is needed
- Lacks a maker space
- Lacks a quiet space
- Significant distance to print room

STUDENT SERVICES

- Lacks a career center
- Lacks acoustic privacy
- Lacks flexibility, transparency, and collaboration areas for small and large group activities
- Lacks storage
- Proximity to the health room is poor

HEALTH

- Restroom is in disrepair and is not ADA accessible
- Lacks storage

	UNDERSIZED AND IN NEED OF RENOVATION
	IN NEED OF RENOVATION OR RECONFIGURING
	IN NEED OF UPDATES



ARROWHEAD HIGH SCHOOL - NORTH CAMPUS

EDUCATIONAL PROGRAMMING - LMC - STUDENT SERVICES





GENERAL BUILDING

- Undersized*, irregularly shaped classrooms create congestion, safe exiting concerns, visibility issues, and limit access to in-room storage
- No large group instruction/common space for collaboration and large student body programs and assemblies
- Many spaces lack flexibility and transparency and are inadequate for today's teaching and learning strategies
- Technology infrastructure is inadequate and outdated
- Many spaces lack natural light
- Building signage is outdated and inconsistent

*General education classrooms identified as undersized average 23-25 square feet per student at North Campus. Current national education standards suggest 30-35 square feet per student in general education classrooms.

POOL

- Undersized for competition events
- Outdated

FITNESS CENTER

- Undersized for current student population

WEST GYM

- Space is overbooked
- Floor needs to be replaced
- Lacks storage

EAST GYM

- Space is overbooked
- Traffic congestion between Commons and West Gym
- Lacks storage

ARROWHEAD HIGH SCHOOL - NORTH CAMPUS

EDUCATIONAL PROGRAMMING - ATHLETICS





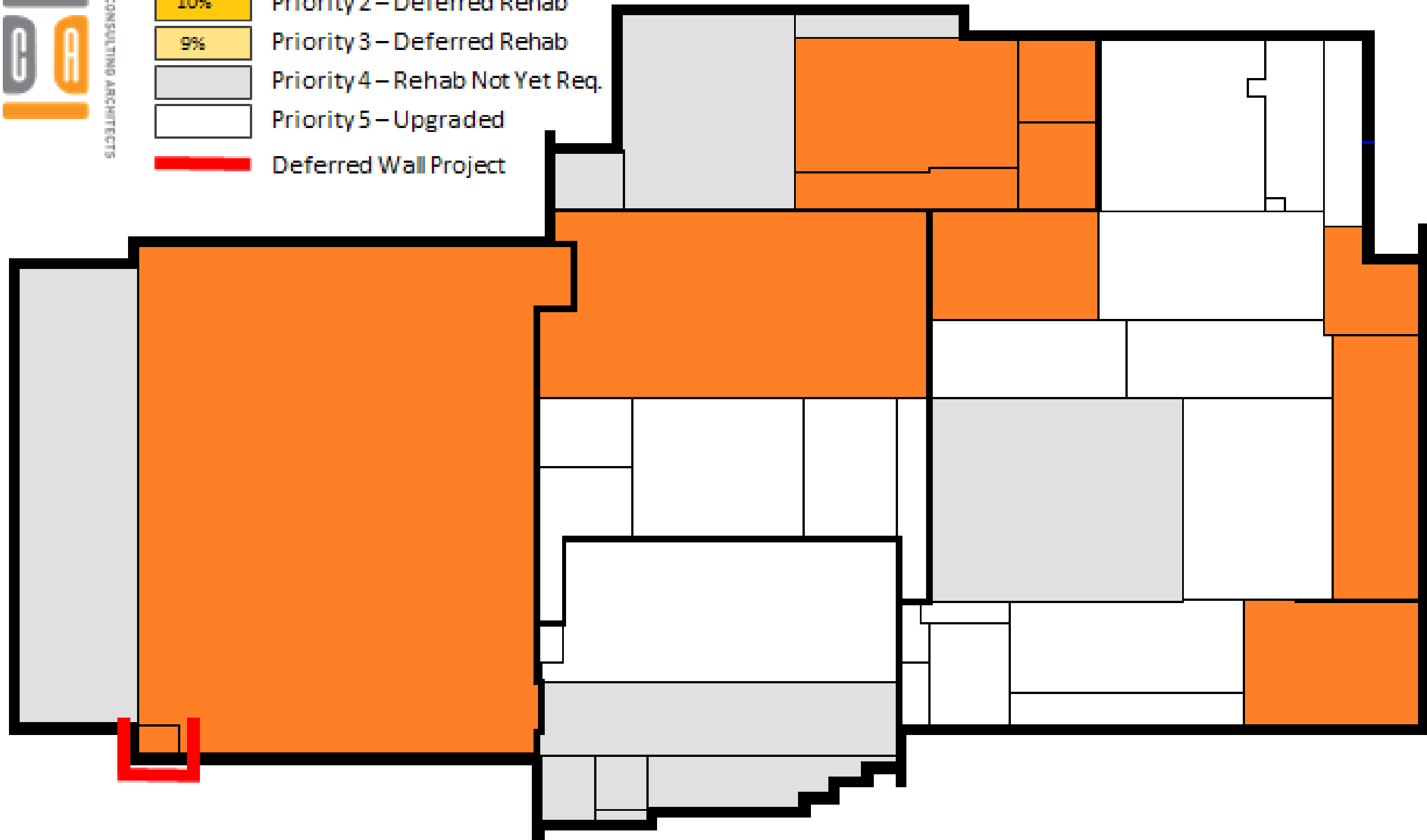
SECTION 3

Architectural & Building Conditions

Roof/Wall Rehabilitation Recommendations

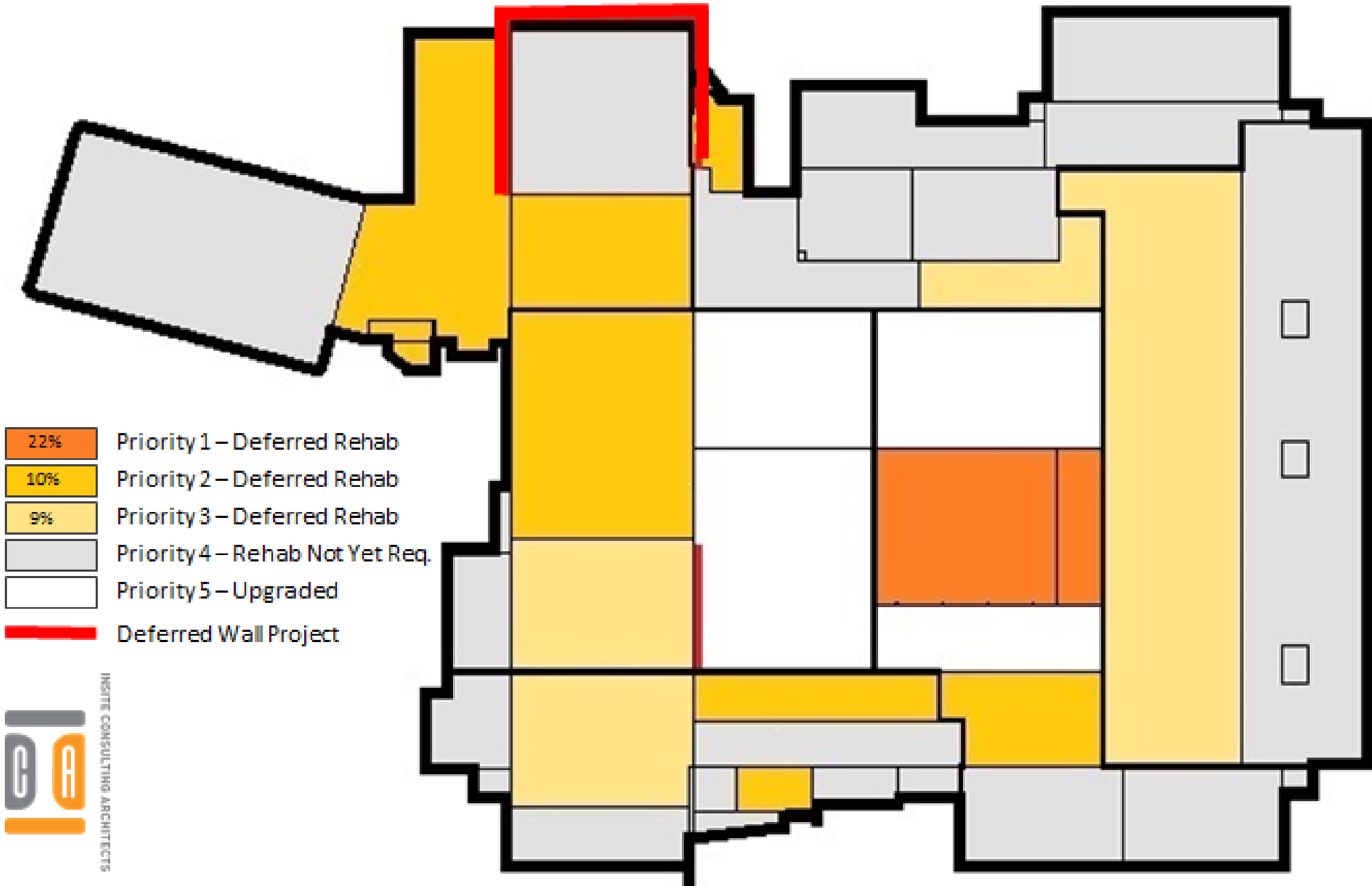


- 22% Priority 1 – Deferred Rehab
- 10% Priority 2 – Deferred Rehab
- 9% Priority 3 – Deferred Rehab
- Priority 4 – Rehab Not Yet Req.
- Priority 5 – Upgraded
- Deferred Wall Project



SOUTH CAMPUS ROOFING

Roof/Wall Rehabilitation Recommendations



NORTH CAMPUS ROOFING

E: PLUMBING INSPECTION

INSPECTION ITEM	CONDITION			LOCATION/DESCRIPTION of DEFECTS
	GOOD	FAIR	POOR	
1E. Restroom Facilities	X			Throughout building
2E. Circulating Pumps		X		Water heater room by boiler room
3E. Water Heaters	X			Water heater room by boiler room
4E. Backflow Protection	X			Boiler room
5E. Sprinkler System				N/A
6E. Gas Piping	X			Boiler room
7E. Roof Drainage		X		Throughout building above and below floor slab
8E. Sanitary Waste System		X		Throughout building below floor slab
9E. Water Service	X			Receiving room
10E. Water Softeners	X			Boiler room
11E. Sump Pumps		X		Three locations
12E. Water Distribution System		X		Throughout the building

DISTRIBUTION

The water heating/softening/distribution system is in good condition. Additional investigation/surveys would need to be done to ensure all equipment is code compliant. In order to conceptually create a campus wide water main loop, AHS is currently cost sharing with the Four Winds developer on providing easement/connection to the water main on the north Vilter property line for redundancy

SANITARY/ STORM DRAINAGE

Most sanitary and storm lines are original to their respective portions of the building and are in fair condition.

FIRE PROTECTION

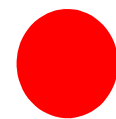
The building currently has no automatic fire protection systems. The addition of these systems may be necessary for future expansion and or renovation.

RESTROOM FACILITIES

Overall restrooms are in good condition with the exception of the 1993 building, which are dated and showing signs of wear.

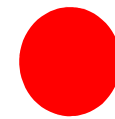
E: PLUMBING INSPECTION

INSPECTION ITEM	CONDITION			LOCATION/DESCRIPTION of DEFECTS
	GOOD	FAIR	POOR	
1E. Restroom Facilities	X			Throughout building
2E. Circulating Pumps		X		Water heater room by boiler room
3E. Water Heaters	X			Water heater system no. 1 is located in the boiler room. Water heater system no. 2 is located in the storage room by the fieldhouse. Two individual heaters are also located in two custodial rooms.
4E. Backflow Protection	X			Boiler room
5E. Sprinkler System				N/A
6E. Gas Piping	X			Boiler room
7E. Roof Drainage		X		Throughout building above and below floor slab
8E. Sanitary Waste System			X	Throughout building below floor slab
9E. Water Service	X			Boiler room
10E. Water Softeners	X			Boiler room, west gym storage room.
11E. Sump Pumps	X			Two locations
12E. Water Distribution System		X		Throughout the building
13E. Pool		X		Pool equipment room heat exchanger



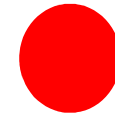
DISTRIBUTION

The water heating/softening/distribution system is in good condition. Additional investigation/surveys would need to be done to ensure all equipment is code compliant. In order to conceptually create a campus wide water main loop, AHS is currently cost sharing with the Four Winds developer on providing easement/connection to the water main on the north Vilter property line for redundancy



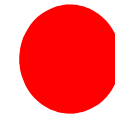
SANITARY/ STORM DRAINAGE

Sanitary and storm lines below the floor slab are a concern throughout the building. Sections of sanitary line occasionally fail and are at capacity.



FIRE PROTECTION

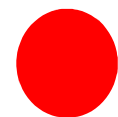
The building currently has no automatic fire protection systems. The addition of these systems may be necessary for future expansion and or renovation.



RESTROOM FACILITIES

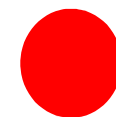
Overall restrooms are in good condition.

D: HVAC INSPECTION REPORT				
INSPECTION ITEM	CONDITION			LOCATION/DESCRIPTION of DEFECTS
	GOOD	FAIR	POOR	
1D. Boilers	X			Boilers are less than 15 years old, have been well maintained and are in very good condition.
2D. Circulating pumps	X			Pumps are variable flow using VFD's.
3D. Piping systems & insulation	X			Piping and associated insulation is in good condition.
4D. Rooftop Units		X		Some of the rooftop units are nearing their expected service life.
5D. Air handling units		X		While relatively old, the indoor air handling units have been well maintained and are in good condition. However, only one of the two gym units contains cooling and both units are in need of replacement.
6D. Filters	X			Filters are routinely maintained.
7D. Temperature controls			X	The majority of the existing DDC system is no longer supported by the manufacturer and can no longer be expanded.
Comments:				
1D. The boilers are sized to accommodate this building only and therefore are not capable of accommodating a large addition or expansion of the building.				
4D. The rooftop units that were installed in 1994 are now over 20 years old and are at or near the end of their expected service life. Plans should be made for their replacement over the next 5 years. Units installed in 2000 are now over 15 years old and are nearing the end of their expected service life.				
7D. While the temperature controls have had some upgrades whenever remodeling projects have required it, the majority of the temperature controls date back to 1994 and are a system that is no longer supported by the manufacturer. Without manufacturer support future parts availability is not guaranteed making repairs difficult and expensive. Additionally, the District maintenance staff has been very proactive in implementing innovative control strategies to minimize energy use. The control system is now out of memory and can no longer be expanded to accommodate even greater innovation. The best short and long term solution is to obtain competitive bids for the replacement of the existing control system with a new system offering all of the latest advancements in digital control technology.				



HEATING AND DISTRIBUTION

The current heating and distribution system is in good condition, however the boilers are at capacity and are not capable of accommodating any large expansion.

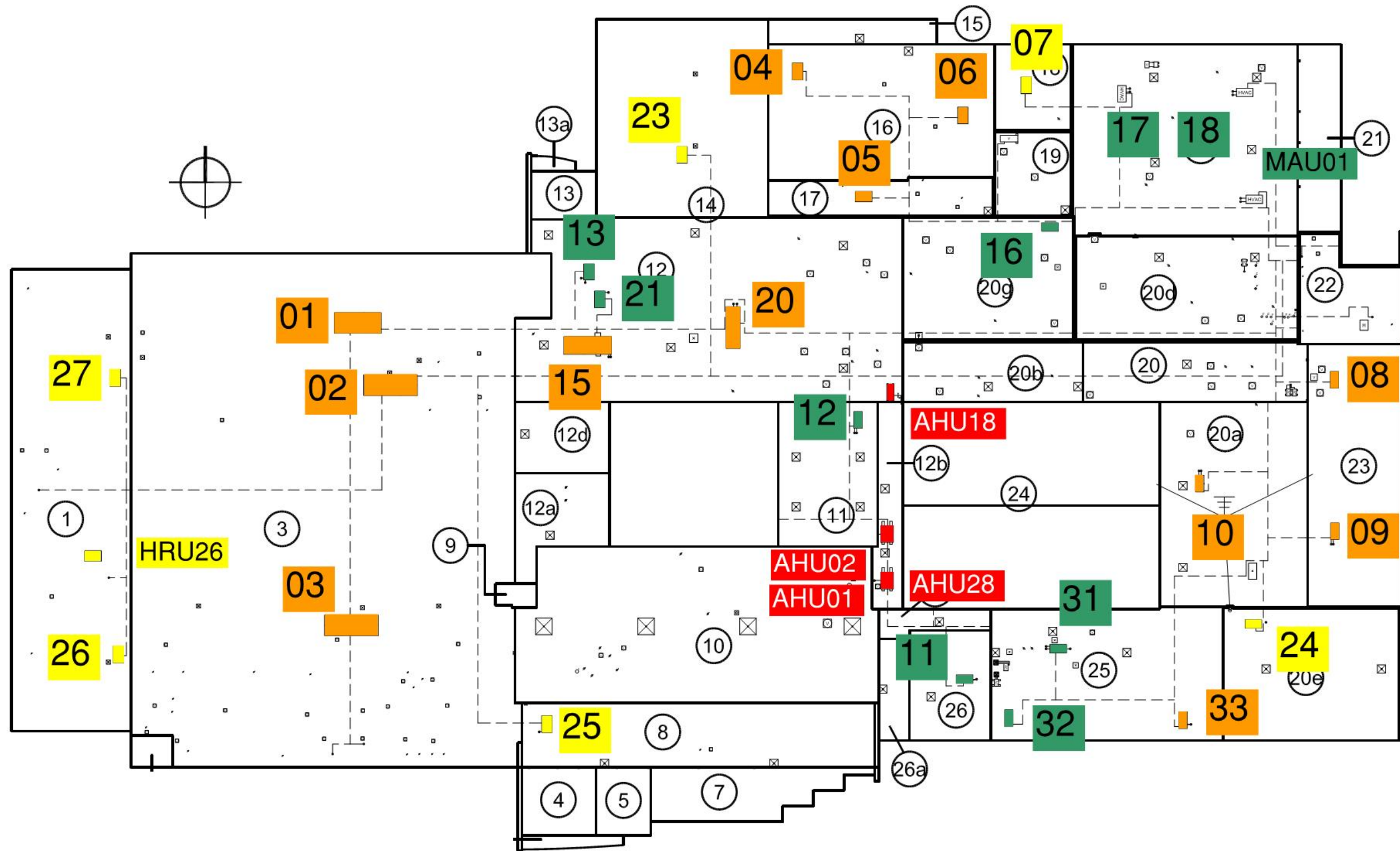


INDOOR / OUTDOOR AIR HANDLING UNITS

Indoor units are old but are in fair condition. Outdoor units that were installed in 1993 are at the end of their expected service life.



SOUTH CAMPUS HVAC EQUIPMENT

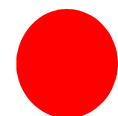


REPLACE	5-12 YEARS
1-5 YEARS	GOOD



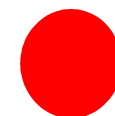
SOUTH CAMPUS HVAC EQUIPMENT

D: HVAC INSPECTION REPORT				
INSPECTION ITEM	CONDITION			LOCATION/DESCRIPTION of DEFECTS
	GOOD	FAIR	POOR	
1D. Boilers	X			Boilers are less than 15 years old, have been well maintained and are in very good condition.
2D. Circulating pumps	X			Pumps are variable flow using VFD's.
3D. Piping systems & insulation	X			Piping and associated insulation is in good condition.
4D. Rooftop Units		X		Some of the rooftop units are nearing their expected service life.
5D. Air handling units		X		While relatively old, the indoor air handling units have been well maintained and are in satisfactory condition. However, the tech ed and fitness units are heating-only type units that are in need of replacement.
6D. Filters	X			Filters are routinely maintained.
7D. Temperature controls			X	The majority of the existing DDC system is no longer supported by the manufacturer and can no longer be expanded.
8D. Pool ventilation	X			The pool ventilation and dehumidification system was upgraded in 2009 and is in good condition.
<p>Comments:</p> <p>1D. The boilers are sized to accommodate this building only and therefore are not capable of accommodating a large addition or expansion of the building. These boilers also serve to heat domestic hot water.</p> <p>4D. The rooftop units that were installed in 1994 are now over 20 years old and are at or near the end of their expected service life. Plans should be made for their replacement over the next 5 years. Units installed in 2000 are now over 15 years old and are nearing the end of their expected service life.</p> <p>5D. Many areas of the building are served by rigid fiberglass board ductwork that is leaking and failing. There are also exceptionally long runs of flexible ductwork in these areas. Whenever these areas are scheduled to be remodeled, the fiberglass ductwork should be replaced with sheet metal ductwork and the flexible duct runs should be replaced with newer and shorter sections of flexible ductwork. It was also noted that many classrooms are lacking proper cooling capacity since these rooms now typically contain 30-34 students each with laptop computers.</p> <p>7D. While the temperature controls have had some upgrades whenever remodeling projects have required it, the majority of the temperature controls date back to 1994 and are a system that is no longer supported by the manufacturer. Without manufacturer support future parts availability is not guaranteed making repairs difficult and expensive. Additionally, the District maintenance staff has been very proactive in implementing innovative control strategies to minimize energy use. The control system is now out of memory and can no longer be expanded to accommodate even greater innovation. The best short and long term solution is to obtain competitive bids for the replacement of the existing control system with a new system offering all of the latest advancements in digital control technology.</p> <p>8D. The pool ventilation and dehumidification system was upgraded in 2009. The system utilizes mechanical refrigeration and recovered heat to provide dehumidification for the space. This system is exceptionally efficient and effective.</p>				



HEATING AND DISTRIBUTION

The current heating and distribution system is in good condition, however the boilers are at capacity and are not capable of accommodating any large expansion. Cooling loads tend to be inadequate due to the number of students in classrooms.

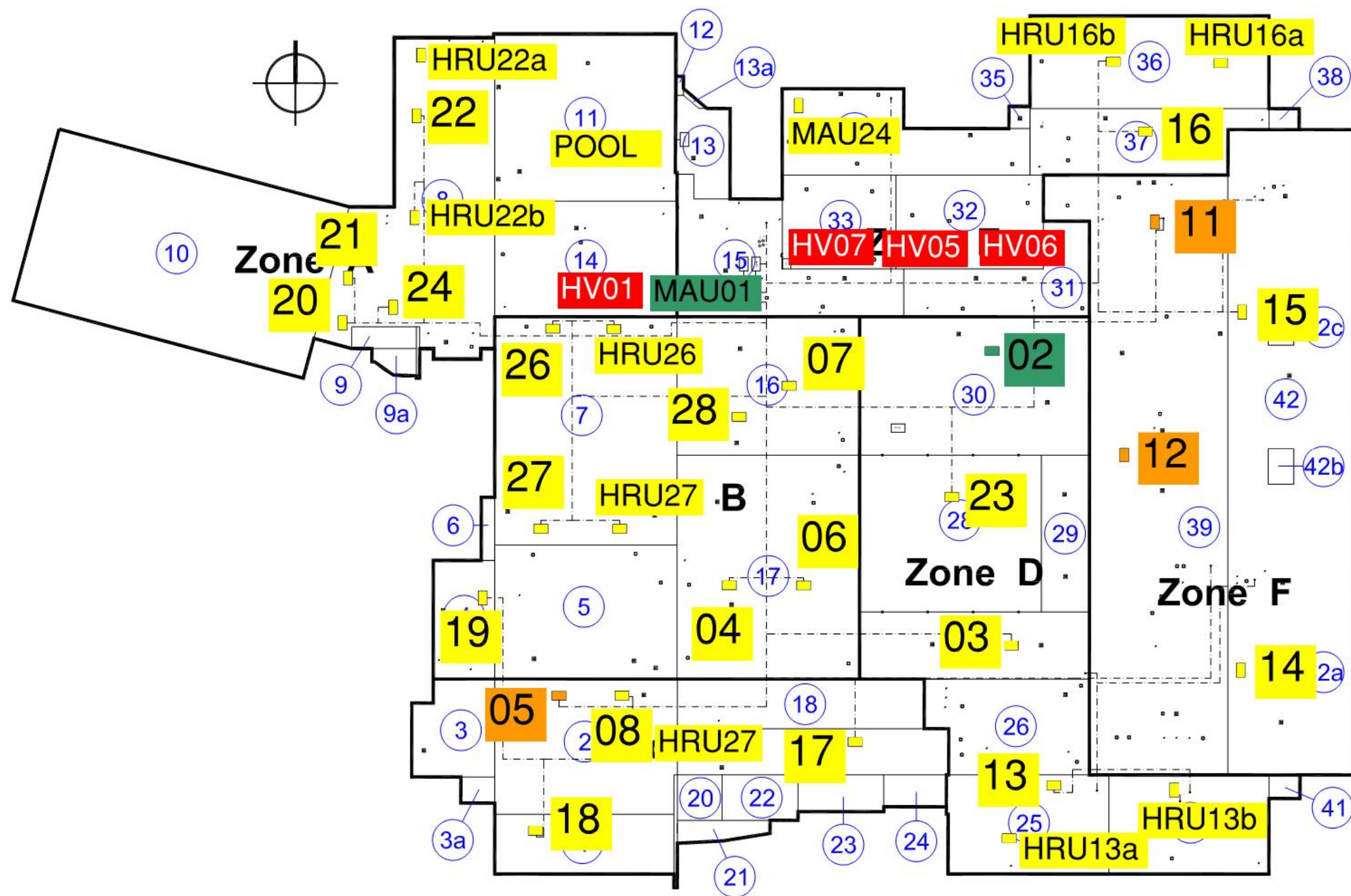


INDOOR / OUTDOOR AIR HANDLING UNITS

Both the indoor and outdoor units are in fair condition. The oldest of the units are at or near their expected service life.



NORTH CAMPUS HVAC EQUIPMENT



REPLACE 5-12 YEARS
 1-5 YEARS GOOD



NORTH CAMPUS HVAC EQUIPMENT



Mr. Kevin Lipscomb

02/22/2016

Arrowhead Union High School District
700 North Avenue
Hartland, WI. 53029

Dear Mr. Lipscomb,

In January of 2002, Staefa Control System released its new open communications protocol product line designed to replace its legacy Staefa Smart II control system. Factory support for the obsolete Smart II system continued until the end of 2008. Since the end of 2008, factory support and replacement direct digital controllers have not been available. Arrowhead Union High School District began the replacement of the obsolete system around 2009 by replacing the Staefa Control System NCRS area controllers with open communications protocol web browser based area controllers. In 2011 the replacement of the rooftop unit field level direct digital controllers began by replacing 3 rooftop units and providing new open communications protocol LonWorks controllers. Between 2011 and 2015, areas of the school have been remodeled. When the remodels have dictated updated mechanical designs and equipment, the legacy Staefa Smart II controllers have been replaced and a small replacement stock of rooftop unit controllers and variable air volume controllers have been saved by facilities for emergency replacement of an older failed controller.

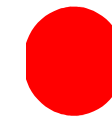
By completing an assessment of the current Facility Management System (FMS) it is estimated that 90 percent of the FMS system is still operating off of the legacy Staefa Control System. Although a conscious effort has been on-going to upgrade the system to current technology, it has been slow going due to budget constraints. A more aggressive migration plan is recommended that will reduce risk, increased operational efficiencies and add additional energy savings.

Sincerely,

Roland Gutknecht

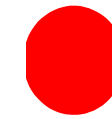
SYSTEM SOLUTIONS | MANAGED SERVICES | BUILDING EFFICIENCY | SUSTAINABILITY | PLANNING and DESIGN

800.522.0372 | Fax: 888.280.8837 | 3410 Gateway Road | Brookfield, WI 53045-5115 | www.thinkESI.com



FACILITY MANAGEMENT SYSTEM

By completing an assessment of the current Facility Management System (FMS) **it is estimated that 90 percent of the FMS system is still operating off of the legacy Staefa Control System.** Although a conscious effort has been on-going to upgrade the system to current technology, it has been slow going due to budget constraints. A more aggressive migration plan is recommended that will reduce risk, increased operational efficiencies and add additional energy savings.



REPLACEMENT PARTS FOR EXISTING SYSTEM

Since the end of 2008, factory support and replacement direct digital controllers have not been available.-----
When the remodels have dictated updated mechanical designs and equipment, the legacy Staefa Smart II controllers have been replaced and a small replacement stock of rooftop unit controllers and variable air volume controllers have been saved by facilities for emergency replacement of an older failed controller.



AHS CAMPUS HVAC CONTROLS

F: ELECTRICAL INSPECTION

INSPECTION ITEM	CONDITION			LOCATION/DESCRIPTION of DEFECTS
	GOOD	FAIR	POOR	
1F. Main electric service & equipment (1993, science wing addition, 480Y/277V, 1200A, Siemens)	x			New service installed as part of addition. Good condition. There is only one (1) spare 200A fuse/switch unit available. Service max. demand is 642A.
2F. Main electric service & equipment (1993, receiving area addition, 208Y/120V, 1600A, Siemens)	x			New service installed as part of addition; but is designed as a "six disconnect rule" switchboard. Service max. demand is 680A.
3F. Secondary distribution equipment (1950 thru 1961 vintage)			x	Equipment located in these areas has obsolete equipment, few if any spare circuit capacity as well as damaged covers/locks. Additional panel(s) are needed in 1961 addition due to added classroom loads.
4F. Secondary distribution equipment (1993 and newer additions/renovations)	x			Equipment overall is in good condition and has spare circuit capacity.
5F. Building Emergency generator (1993, 45KW, 480Y/277V, Kohler)		x		Installed as part of the 1993 building project and serves entire building. One distribution branch feeds both EM and non-EM loads. The generator enclosure and silencer are in fair to poor condition.
6F. IT Network generator (2010, 45KVA, 208V, Generac)	x			This generator solely serves equipment for the district headend network equipment.
7F. Lighting		x		Most light fixtures are T8 lamped. Corridor fixtures are over-lamped. LED fixtures have been used in the 2013/2014/2015 interior renovations. Hard to maintain metal halide fixtures in main lobby. Exterior wall mounted fixtures have been updated to LED. Site lighting fixtures are HPS.
8F. Lighting Controls		x		Existing lighting is controlled with various systems including a PCI low voltage system for later additions and the site. Older portions don't have dual-level switching capability. There are some occupancy sensors.
9F. Emergency Egress Lighting		x		Lights on emergency power exist in corridors and larger spaces like the gym. No exterior egress lighting was observed.
10F. Fire alarm system (2010, Simplex 4020)	x			Addressable system. AV devices of various vintages have been tied into system - most don't meet appropriate installation heights, are not synchronized, as well as numerous areas without appropriate coverage.
13F. Telecommunications		x		Telephone system is VoIP. Existing data cabling is Cat. 5e, with new cabling be installed as Cat. 6.
14F. Security	x			Cameras being installed are IP based. Keyless access at select doors. Not all exterior doors monitored.
Comments: 1F. This equipment utilizes fused switches for main and distribution sections. There is only one spare switch (no spaces) in existing equipment. It might be possible to add an additional section depending on wall spacing and bus configuration. There is no surge protective device (SPD) at this service.				

ELECTRICAL POWER / DISTRIBUTION

Overall the electrical system throughout the building is in good condition but lacks surge protection on the main services. The current configuration of portions of the system however, may hinder future flexibility.

GENERATOR/ EMERGENCY POWER

The emergency power system is in fair condition, but is not to code per today's standards.

LIGHTING / LIGHTING CONTROLS

The lighting outside of recently renovated areas is in fair condition. Corridors tend to be over-lamped and the lobby has out dated, inefficient fixtures. Lighting controls, outside of recently renovated areas, are also out of date.

FIRE ALARM SYSTEM

Outside of recent renovations, no duct detectors are installed. The main panel is not a current product, but is upgradable. There have been issues receiving maintenance on the system and the system is not addressable, nor fully monitored.

SAFETY / SECURITY SYSTEMS

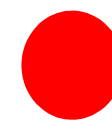
Approximately 30% of exterior doors are not electronically monitored. There is currently no building lock-down function integrated into the fire alarm.



SOUTH CAMPUS ELECTRICAL

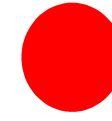
F: ELECTRICAL INSPECTION

INSPECTION ITEM	CONDITION			LOCATION/DESCRIPTION of DEFECTS
	GOOD	FAIR	POOR	
1F. Main electric service & equipment (1969, original building, 480Y/277V, 1600A, Westinghouse)			x	Original equipment. Service max. demand is 788A.
2F. Main electric service & equipment (1999, east area addition, 480Y/277V, 2000A, Siemens)	x			New service installed as part of addition. Plenty of spaces and spares in switchboard. Service max. demand is 330A.
3F. Main electric service & equipment (1999, west area addition, 480Y/277V, 800A, Siemens)	x			New service installed as part of addition. Plenty of spaces in switchboard. Service max. demand is 243A.
4F. Secondary distribution equipment (original building)			x	Equipment located in this area has obsolete equipment, few if any spare circuit capacity as well as damaged covers/locks.
5F. Secondary distribution equipment (1999 additions)	x			Equipment overall is in good condition and has spare circuit capacity. Pool distribution equipment (panels, contactors, starters) are severely deteriorated.
6F. Building Emergency generator (2001, 60KW, 480Y/277V, Spectrum)		x		Installed to replace original boiler room located generator and serves entire building. One distribution branch feeds both EM and non-EM loads. The generator silencer is in fair to poor condition.
7F. Lighting		x		Most light fixtures are T8 lamped. Corridor fixtures are over-lamped. LED fixtures have been used in the 2013/2014/2015 interior renovations. Hard to maintain metal halide fixtures in main lobby. Exterior wall mounted fixtures are original. Site lighting fixtures are HPS, but there are some near road that are LED.
8F. Lighting Controls		x		Existing lighting is controlled with various systems including a PCI low voltage system for later additions and the site. Older portions don't have dual-level switching capability. There are some occupancy sensors.
9F. Emergency Egress Lighting		x		Lights on emergency power exist in corridors and larger spaces like the gym. No exterior egress lighting was observed.
10F. Fire alarm system (2010, Simplex 4020)	x			Addressable system. AV devices of various vintages have been tied into system - most don't meet appropriate installation heights, are not synchronized, as well as numerous areas without appropriate coverage.
13F. Telecommunications		x		Telephone system is VoIP. Existing data cabling is Cat. 5e, with new cabling be installed as Cat. 6.
14F. Security	x			Cameras being installed are IP based. Keyless access at select doors. Not all exterior doors monitored.
Comments: 1F. This equipment is obsolete and should be replaced. There is no surge protective device (SPD) at this service. 2F. There is no surge protective device (SPD) at this service.				



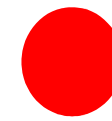
ELECTRICAL POWER / DISTRIBUTION

Electrical equipment in the original portion of the building is in poor condition and at capacity. There is also no surge protection at any of the main services throughout the building.



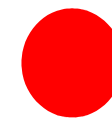
GENERATOR/ EMERGENCY POWER

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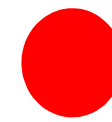
LIGHTING / LIGHTING CONTROLS

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SAFETY / SECURITY SYSTEMS

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NORTH CAMPUS ELECTRICAL

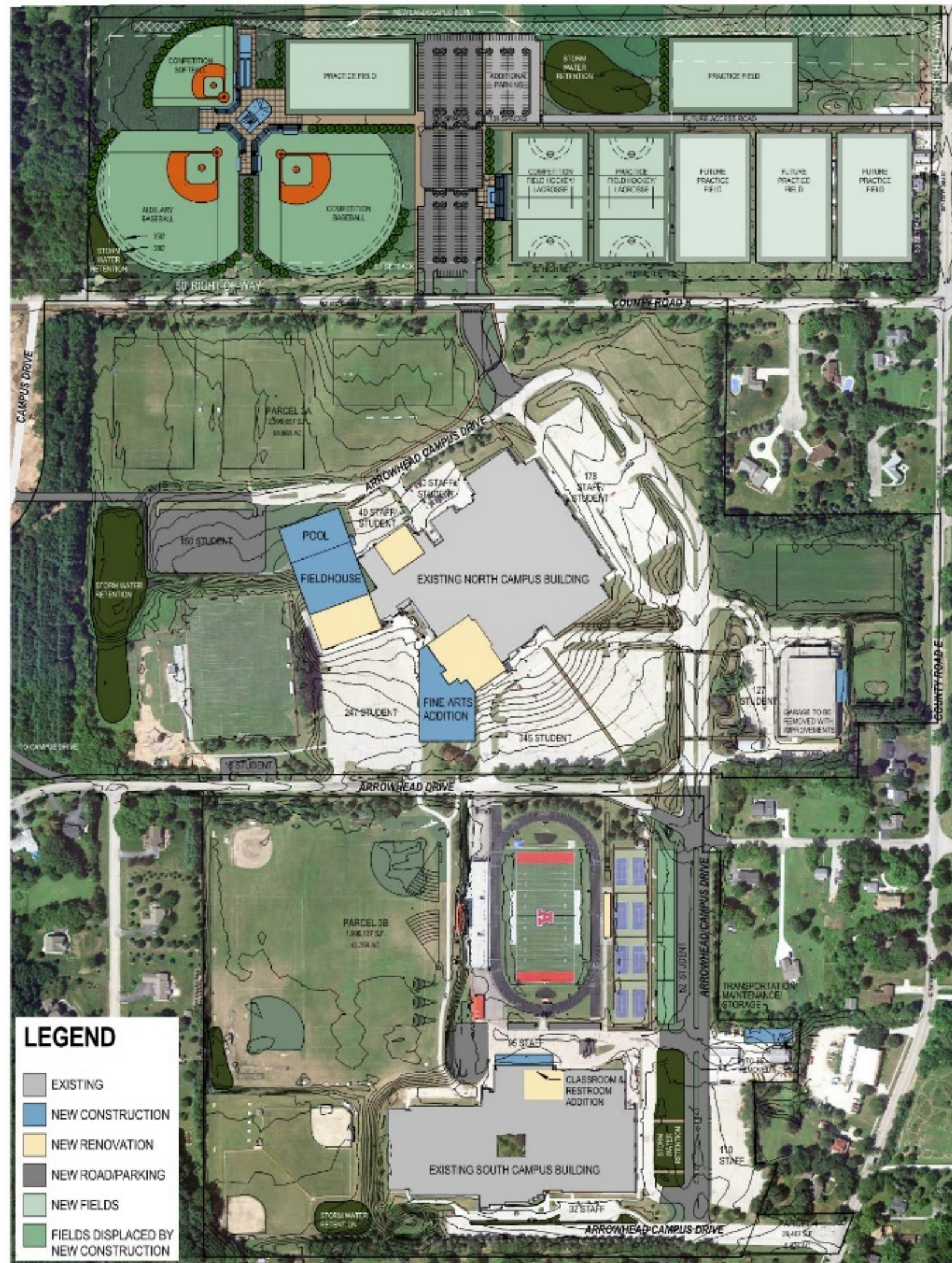


SECTION 4

Site Conditions

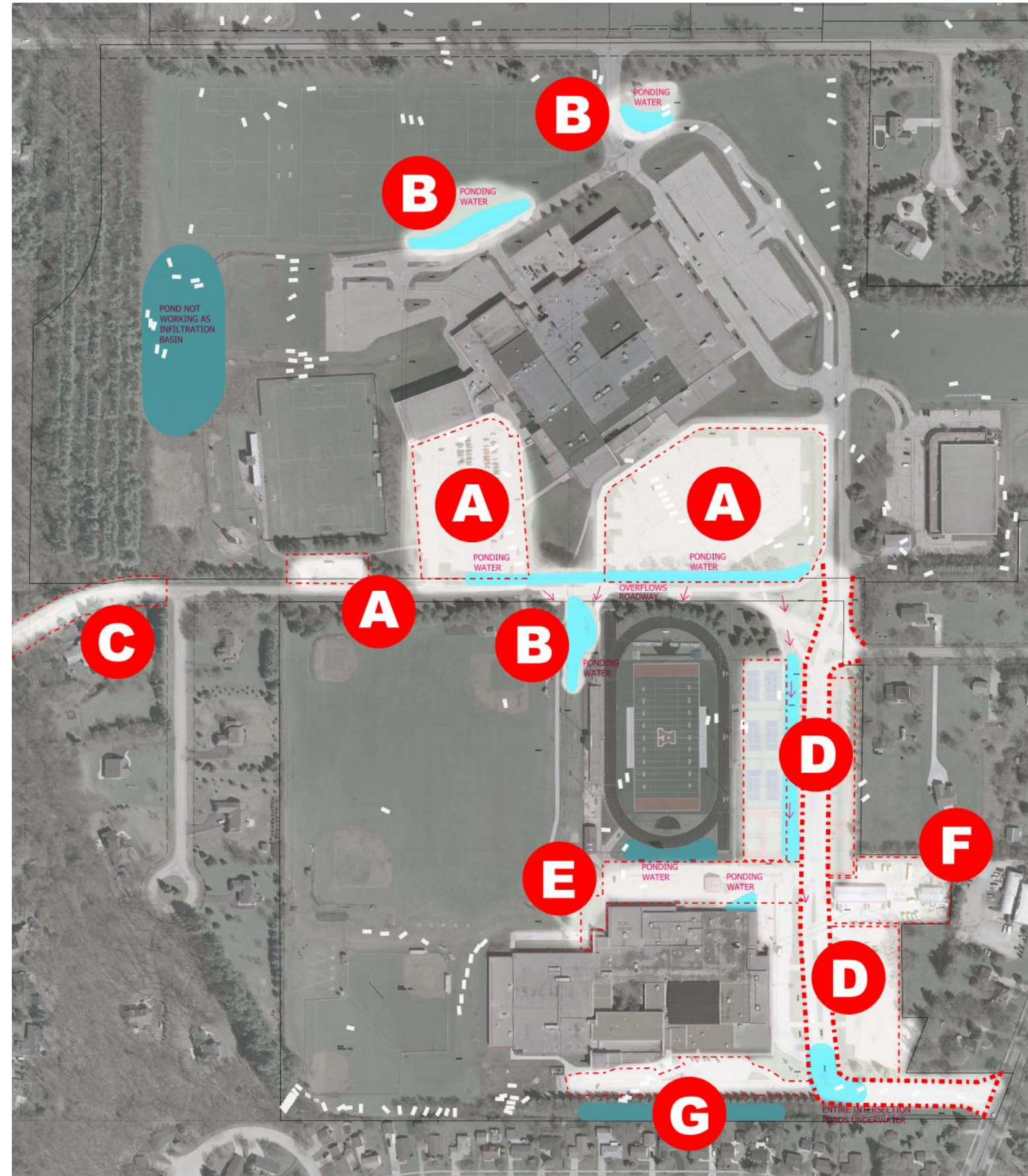
ARROWHEAD UNION HIGH SCHOOL MASTER PLAN

*September 2013
(with updates)*



SITE SAFETY AND MAINT.

- A** Parking lot improvements incorporating catch basins and permeable pavers with underground storage with infiltration for enhanced storm water management
- B** Re-grading to help alleviate drainage issues
- C** Extension of Arrowhead Drive for enhanced site access
- D** Re-routing of Arrowhead Campus Drive for enhanced traffic flow. This relocates parking lots and tennis courts to the west of the street for safer pedestrian movement
- E** Increase parking near softball fields of south campus
- F** Re-working of maintenance facility buildings and associated drives
- G** Parking lot improvements





SECTION 5

Appendices

**(This section only included in full
size PDF version of report)**