

Building Assessment – River Ridge School District – Patch Grove Elementary/High School

Introduction ADG and its Consultant – Ring & DuChateau – conducted and documented site observations on at least two occasions the result of this information gathering effort is outlined below. No destructive tests were performed; therefore, all information gathered was visually and/or verbally gathered.

The existing facility was constructed in the early 1960's with additions in 1979/80 and 2001. The existing roofing system was modified in recent years, and now consists of a sloping metal roof. In general, while the structure of the facility is sound and in good condition, the infrastructure and finishes are showing various signs of wear and much of the 1960's infrastructure has exceeded its life expectancy.

This report provides an overview of all components of the main Building(s) and Grounds; outbuildings are not included in this report. At the **Recommendation(s)** area of each heading, priorities and cost(s) have been assigned to correct the individual deficiencies presented.

Priorities are as follow:

P-1: These are code related concerns, life safety concerns and/or building maintenance issues that **must** be addressed should major renovations occur.

P-2: These are items that consideration **could** be given should major renovations and/or building addition(s) occur.

P-3: These are items that would be **nice** to include should budget allow.

O&M: These are items that should be addressed and/or maintained through normal Operations and Maintenance.

I. Exterior Building and Grounds

A. Parking lot: Consists of asphalt paving and is in good condition. No excessive problems were noted or reported by staff. One area reported to create occasional problems is the court between the 2001 addition and high school gym. Debris and water, at times, build-up in this area; concern would be if the area drain became plugged significant problems would/could occur.

Recommendations: Continue regular maintenance. **O&M**

B. Sidewalks: Most areas of sidewalk are in good condition with limited areas of cracking.

Recommendations: Continue regular maintenance. **O&M**

C. Footings and Foundation: Existing construction consists of cast in place/poured concrete in the two additions and is in good condition. The original 1960's building's foundation consists of concrete masonry units (CMU) – some areas of water leaking into the tunnels was common until recent work to the exterior occurred. This work consisted of the installation of drain tile around most of the perimeter. In the boiler room of the 1960's

building, however, water penetration is still occurring. Most significantly in the Transformer Room adjacent to the Boiler Room. Standing water approximately 2" to 3" was witnessed. This condition is extremely dangerous in that the depth of water is only 2" to 4" below the base of a major transformer and a main electrical distribution panel.

Recommendations: Continue regular maintenance at footing foundations associated with the 1980's and 2001 additions. At the 1960's building the foundation wall should be exposed down to top of footing and a waterproofing system and drain tile should be installed and the foundation backfilled and compacted. **P-1 \$18,200**

D. Brick Veneer: The existing brick veneer is in good condition – with no to very minimal areas requiring tuck pointing.

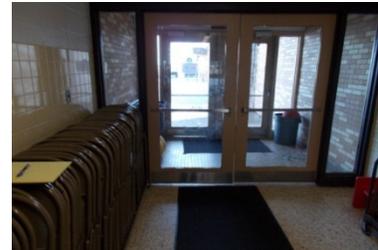
Recommendations: Continue regular maintenance. **O&M**

E. Windows: There are a variety of window types throughout the facility – with vinyl windows located in the cafeteria area, metal clad wood units in the elementary wing and the 2001 addition and aluminum units located – typically – in the original high school building. All units are in reasonably good condition; however, they do not meet today's standards for energy efficiency.



Recommendation: If additions/renovations are pursued, consideration should be given to replacing the window units with energy efficient models which meet today's energy standards. **P-2 \$154,000**

F. Exterior Doors: Like the windows, various types of exterior doors are found throughout the facility – this is mainly a condition of the dates of additions. In general, all units are in good condition, however, many lack adequate weather-stripping, are equipped with single pane glazing and again, like the windows, do not meet today's standards for energy efficiency.



Recommendation: If additions/renovations are pursued, consideration should be given to replacing the door units with energy efficient models which meet today's energy standards. **P-2 \$150,000**

G. Aluminum Fascia and Aluminum Soffit: This system is a recent installation and is in generally good condition. At some areas, mainly, at the elementary school, the rain gutter system has broken away from its support brackets.

Recommendation: Continue to monitor condition and make routine repairs as required. Repair existing damaged areas. **O&M/P-1 \$5,500**

H. Steel Roof: This system is a recent installation and is in generally good condition. There are reports by staff that air/water is entering the building in the corridor area near the shop. Additional areas of concern have been expressed due to recent hail damage – the insurance company has worked out a settlement.

Recommendation: Continue to monitor condition and make routine repairs as/if required. The District should “hold” on spending the insurance settlement until a decision has been reached as to additions and/or other renovations. At that time the entire steel roof system should be appropriately designed and replaced as a component of that work. **P-1 \$850,000**

II. Interior Environment

A. Flooring: Substrate (subfloor) is slab-on-grade/cast in place concrete. There is little to no evidence of cracking or settling and structurally is in generally good condition.

Recommendation: No action required. **O&M**

B. Corridors, Classrooms and Offices: Finish floor varies throughout the facility. At the elementary addition, and the 2001 addition typically, the classroom floor is 12”x12” vinyl composite tile (VCT), and in good condition. The flooring in the IMC is carpet and is in good condition. Offices generally are carpeted and showing signs of wear. Corridors of the original high school and the elementary school are typically, terrazzo or terrazzo tile in good condition. In the classrooms of the high school floor tiles vary, with most being 12”x12” VCT. There does remain a few areas of 8”x8” VCT, either exposed or covered by carpet. Where carpet exists the carpet is generally in poor condition.

Recommendation: If extensive renovations are pursued, the existing areas of 8”x8” VCT should be removed by a qualified asbestos abatement contractor and new finish floor installed. Consideration should be given to replacing worn carpet throughout the facility. **P-1 \$55,000**

B. Toilet Rooms finish floors generally consist of mosaic ceramic tile and/or porcelain tile and is in good condition.

Recommendation: No action required. **O&M**

C. Locker Rooms and Showers finish floor in Locker Rooms consists of mosaic ceramic/porcelain tile in generally good condition.

Recommendation: No action required. **O&M**

D. Gymnasium: At the competition Gym the floor consists of parquet hardwood gymnasium/athletic finish floor over slab-on-grade concrete. The floor is original to the building and is generally good condition – with only minor areas of wear. The Multi-purpose Gym – Elementary Gym – the flooring is VCT and in good condition.

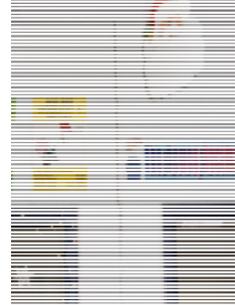
Recommendation: Consideration could be given to repairing and refinishing the wood floor. **P-3 \$75,000**

E. Walls:

1. In most areas of the facility the interior and exterior walls consist of painted (PNT), concrete masonry units (CMU) with many of the corridor walls covered full height or up to 48" with ceramic tile. Some expansion joints in the tile in the elementary building are cracked and should be filled with caulk to prevent damage to surrounding tile.

2. Shower room walls consist of ceramic glazed CMU and/or ceramic tile – the tile in the Ladies Locker Room is in good condition, while areas of wall tile in the Men’s Locker Room is in poor condition. Some areas of painted gypsum board walls exist – this condition is mainly limited to Offices and/or in-fills to create additional classroom space.

3. In the 2001 addition, in the IMC, there are areas of cracked CMU walls – most noted in the southwest corner and by the door common with the MAC Lab.



Recommendation:

1. Expansion joints at tile should be caulked and damaged tile replaced. **O&M \$500**
2. Consideration should be given to repairing/replacing tile in Men’s Locker Room. **P-1 Refer to A.D.A. Below**
3. At the IMC in the 2001 addition – the cracks should be monitored to ensure they are not still “moving”. If stable, the cracks should be cleaned and caulked. If movement is still occurring, additional structural investigation should occur and repairs made accordingly. **P-1 To be Determined (TBD)**

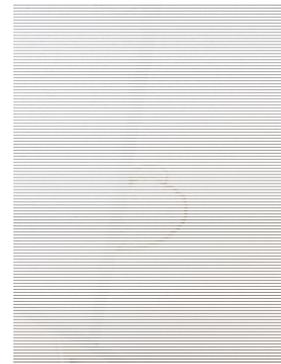
F. Base: The floor to wall transition is covered by a vinyl or rubber base material, and is in generally good condition. There are areas where damaged and/or loose base material is evident this condition is most apparent in the Men’s Locker Room.



Recommendation: Replace and/or repair damaged or loose base material.

P-1 Refer to A.D.A. Below

G. Finished Ceilings: Finished ceilings in the overall facility are original to dates of construction, therefore, vary with construction dates. Typically, suspended acoustical ceiling tile (ACT) locations consist of 2’x2’ lay in tiles and are generally in good condition and rotational maintenance is occurring. There are areas of stained and damaged tiles but this is not the normal condition. The high school, or original construction, the ceilings consist of exposed wood beams with exposed wood fiber panels. These components are in good condition.



Recommendation:

1. Continue routine maintenance replacing damaged/stained tiles. **O&M**
2. In the high school, if significant renovations are undertaken, consideration could be given to the installation of a suspended ACT system with integral lighting. **P-2 \$172,800**

H. Interior Doors: The existing interior doors typically are wood and are provided with the appropriate handicap accessible hardware. Generally, these units are in good condition with some units showing signs of wear. The frame height of doors in the original high school facility is 80", which allows for a door height of 78" – today's code requires door heights – in commercial applications – to be 80".

Recommendation: As a component of any renovation project, consideration should be given to the replacement of heavily worn units and/or the refinishing of damaged doors. **P-3 Allowance \$12,000**

I. Casework: In classrooms containing casework much of this casework is original to the building and much of this casework exceeds current code height of 34". Casework in the most recent addition is in good condition; elementary casework, where it exists, is in fair to good condition; and casework in the high school varies in condition from new, to replaced, to original. All casework is in fair to good condition – with some limited areas in poor condition.



Recommendation: As a component of room by room renovation, consideration should be given to replacing casework with new casework which meets current code requirements. This process is already being completed in the Science Classrooms. **P-2 Allowance \$8,000/Room**

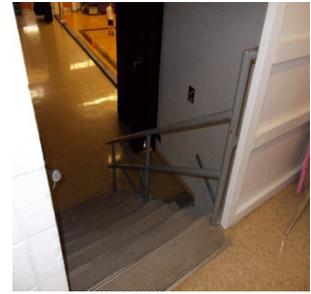
J. American with Disabilities Act – A.D.A.: Currently, the Toilet Rooms in the elementary school do not meet today's size standards for handicap accessibility. The Showers in the men's and women's Locker Rooms are non-compliant due to the 4" curb at entrance. The Stage is not handicap accessible and the classrooms located on the second level – stage area – do not meet accessibility standards.



Recommendation: If extensive renovations are pursued, the design should consist of making all areas of the facility handicap accessible. **P-1 Allowance \$300,000**

K. Code Related:

1. At the stairs leading to the second level classrooms. Current code requires that a sphere not greater than 4" in diameter can pass thru any area of a stair guard rail. **Refer to A.D.A. Allowance**
2. Shelving in the dry food storage area is wood – current code requires open stainless steel shelves.



P-1 \$2,000

3. At multi-purpose gymnasium in the elementary school there is no direct access to the exterior. Current code states that 50% of the required exits egress directly to the outside, or egress to the exterior via fire rated corridor. If major renovations occur this exiting condition will need to be addressed.

TBD

4. The existing facility is not equipped with a fire suppression system. If major renovations and or additions are undertaken a complete fire suppression system will be required. **P-1 Allowance \$285,000**

III. HVAC SYSTEM

Site observations, construction plan review, and interviews with staff were all used in the preparation of this report. The purpose for the visit was to access the facilities HVAC & Plumbing systems current conditions.

A. Patch Grove Elementary/High School (1960) Building): In general, the HVAC equipment serving the facility is original to the building construction and showing signs of age and in need of replacement.

B. EXISTING DATA:

1. **Heating:** The AHU furnace primary fuel source is natural gas. A mechanical room make-up air louver provides combustion ventilation air for the furnace room. A central AHU-1 has a natural gas fired heat exchanger furnace with provide heating for the 1960's building.
2. **Air Handling Units (AHU) and Conditioning Systems:** The Central AHU – 1 - located in the Basement level Mechanical Equipment (Furnace) Room provides heating with a gas fired heat exchanger, Variable Air Volume (VAV), outside air, the unit has dual supply fans served by a Variable Frequency Drive (VFD) for varying the supply air flow in the building. The original heat exchangers have been replaced and maintained. The central AHU distributes air thru the building with three air tunnels including a tempered supply air, warm supply air and return air. AHU air filtration is minimum filtration. Terminal exhaust fans are located on the roof and provide corridor relief air and general exhaust for the lab, toilet rooms, kitchen exhaust and locker rooms. The facility has no energy recovery systems. Two AHU's that provide ventilation, hot water heating and outside air ventilation for the Gym. Supplementary DX split cooling systems were added to support additional cooling requirements in the IT Data Room. Air base board connected to

the tempered and warm supply air tunnels provides heat and ventilation to the existing entrance vestibules and classrooms. A room thermostat is used to control the air base board. Return air from the classrooms is transferred thru the corridor via door or transom grilles to return air grilles in the corridor or provides make-up air for various exhaust systems. The air distribution systems utilize the tunnels without a sheet metal insulated ducted supply and return air.

3. Controls: Honeywell pneumatic control system is installed and original in the building. Two temperature control compressors support the buildings pneumatic controls with manual lead / lag start – stop operation. Exhaust fans have gravity back draft dampers installed on fan inlets. Classrooms are individually controlled with wall mounted pneumatic thermostats serving the air base boards motor operated dampers located in the air tunnel to modulate air flow to maintain space temperature.

C. Observations:

1. The central AHU is in working condition. However based on its age, replacement parts will become an issue and make it difficult to be maintained. The AHU enclosure shows significant signs of age with enclosure leakage and sealing attempted with duct tape, ductwork insulation damaged, humidifier disabled. Based on the age and style of the burner, operating efficiencies are between 50 and 65%.
2. AHU-1 make-up air control is functioning correctly and interfaced with the burner.
3. Thermometers and gauges are present and appear to be working.
4. AHU gas fired heat exchange stack is not insulated.
5. Not all of the entries have heating.
6. A significant number of locations the ductwork insulation in the AHU is in need of repair with damaged insulation or duct tape repairs.
7. Kitchen food service equipment is supported by natural gas. Ventilation hood is provided above the food service equipment. Make-up air is being provided via the corridor.
8. Dish machine and room ventilation is undersized with make-up air is being provided via the corridor. General wall mounted fans are installed to supplement the ventilation in this space.
9. Gymnasium relief air is being transferred thru the corridor.
10. Home economics room dryer and kitchen hood venting is required to meet code.
11. A number of rooms in the facility do not have ventilation (Administration Offices, Staff Offices and support spaces.) All occupied spaces require outside air and general ventilation to meet code.
12. Piping and HVAC systems should be labeled for proper identification of components.

13. Air baseboard air flow is blocked by furniture or damaged which will restrict air flow in the various areas of the building.
14. The air tunnel distribution systems are not ducted or insulated throughout the facility. Also portions of the air tunnel have had moisture issues, which may cause poor Indoor Air Quality.
15. Acoustical lining was not witnessed. However, any lining should be removed and replaced with external duct wrap insulation to provide better indoor air quality.
16. It appears make-up air is not being provided to the welding and dust collection systems.
17. The control systems are in workable condition. However the pneumatic systems do result in comfort complaints and require frequent calibration to maintain accuracy. The newer digital controls are more accurate and more flexible. In addition, the industry has made such a complete changeover to digital controls that it is becoming difficult to find good pneumatic service technicians.
18. In order to bring this area of the facility up to current industry standards and codes the following HVAC recommendations need to be addressed:
- a) **Equipment Age & Code Issues:** Replaced AHU should be considered to meet current ventilation and filtration standards. **P-1 \$265,000**
 - b) **Equipment Age:** install Hot Water Boiler to replace the AHU heat exchanger for heating. Upgrade heating piping & insulation. Replace combustion make-up air ventilation upgrade. **P-1 \$350,000**
 - c) **Code Issue:** Eliminate classrooms and gym relief air transferred thru the corridor with a dedicated corridor ventilation system and dedicated classroom return air ducted system. **P-1 \$225,000**
 - d) **Code Issue:** Eliminate Kitchen and dish machine room make up air transferred thru the corridor with a dedicated ventilation system. **P-1 \$35,000**
 - e) **Code Issue:** Replace exhaust fans back draft dampers with motor operated dampers. **P-1 \$40,000**
 - f) **General Issue:** Provide DDC temperature control system for building. **P-2 \$150,000**
 - g) **Code & IAQ Issue:** Air tunnel cleaning, ducting, sealing and insulation upgrades. **P-1 \$200,000**
 - h) **General Issue:** Air base board replacement. **P-2 \$25,000**
 - i) **General Issue:** Provide duct cleaning. **P-2 \$35,000**
 - j) **Code Issue:** System testing and balancing should be completed on all systems to confirm operations are meeting the code minimum requirements. **P-1 \$25,000**

D. Patch Grove Elementary / High School (1980 Building): In general, the HVAC equipment serving this building is original to the 1980 building construction and is in good operating condition.

1. EXISTING DATA:

a) Heating: The boilers primary fuel source is natural gas. Boilers are located in the Penthouse Mechanical equipment roof of the 1980's building and serves this building. The boilers consist of (2) Kewanee Hot water Boiler, 550 MBH, Installed in 1980. A boiler room make-up air louver provides combustion ventilation air for the boiler room. Piping and pumping capacities for the hot water heating system serving then building are adequate. The hot water distribution system has a stand-by pump for redundancy and lead/lag operation. Cabinet unit heaters are installed for supplementary heating throughout the building and in the entries. Heating systems three-way temperature control valve provides hot water reset for the heating system.

b) Air Handling Units (AHU) and Conditioning Systems: AHU – 1 - located in the Penthouse Mechanical Equipment Room, Constant air volume (CV) with terminal hot water reheat, minimum outside air, supply fan are served by a starter, AHU air filtration is minimum filtration. Relief air from the classrooms is transferred thru the corridor via door or transom grilles to relief hoods or provides make-up air for various exhaust systems. Terminal exhaust fans are located on the roof and provide corridor relief air and general exhaust for the lab, toilet rooms and locker rooms. The facility has no energy recovery systems. AHU's supply ducts are cross connected to provide back-up heating, ventilation and cooling for the first floor. This is controlled with manual isolation dampers in the cross connect duct. Hot water cabinet heaters heat all of the existing entrance vestibules. The cabinet heater utilizes a fan, a heating coil and a return air damper. Hot water piping is run to each cabinet heater. A room thermostat is used to control the cabinet heater. The air distribution systems are fully ducted supply and return air.

c) Controls: Honeywell pneumatic control system is installed and original in the building. Duplex temperature control compressor supports the buildings pneumatic controls with manual lead / lag start – stop operation. Exhaust fans have gravity back draft dampers installed on fan inlets. Classrooms are individually controlled with wall mounted pneumatic thermostats serving the Unit hot water reheat. The heating pumps provide constant flow supporting the building are controlled with manual lead / lag start – stop operation. Constant volume reheat coils provide zone temperature control. Heating loops are automatically reset based on outside air temperature.

2. Observations:

- a) The 3-way temperature control valve in the penthouse mechanical equipment room has visual conditions indicating hot water piping leaks with damaged piping insulation with residue on exposed piping.
- b) Boiler water chemical systems are in place and appear to be functioning as intended.
- c) Boiler room make-up air control is connected and functioning correctly to interface with the boiler.
- d) Thermometers and gauges are present and appear to be working.
- e) Boiler stack is insulated.
- f) Wall piping penetrations are not sealed to meet the current life safety code requirements.
- g) Gymnasium return or relief air is being transferred thru the corridor.
- h) A number of rooms in the IMC office area have been remodeled and do not have ventilation. All occupied spaces require outside air and general ventilation to meet code.
- i) Piping and HVAC systems should be labeled for proper identification of components.
- j) The air distribution systems are fully ducted with a combination of external and acoustically lined duct insulation throughout the facility. Acoustically lining should be removed in replaced with external duct wrap insulation to provide better indoor air quality.
- k) Acoustical lining was not witnessed. However, any lining should be removed and replaced with external duct wrap insulation to provide better indoor air quality.
- l) The control systems are in workable condition. However the pneumatic systems do result in comfort complaints and require frequent calibration to maintain accuracy. The newer digital controls are more accurate and more flexible. In addition, the industry has made such a complete changeover to digital controls that it is becoming difficult to find good pneumatic service technicians.
- m) In order to bring the facility up to current industry standards and codes the following HVAC recommendations need to be addressed:
 - (1) **Code Issue:** Eliminate classrooms return air transferred thru the corridor with a dedicated corridor ducted system and dedicated classroom return air. **P-1 \$125,000**
 - (2) **Code Issue:** Replace exhaust fans back draft dampers with motor operated dampers. **P-1 \$15,000**
 - (3) **General Issue:** Provide DDC temperature control system for building. **P-2 \$75,000**
 - (4) **General Issue:** Provide duct cleaning. **P-2 \$18,000**

- (5) **Code Issue:** System testing and balancing should be completed on all systems to confirm operations are meeting the code minimum requirements. **P-1 \$12,500**
- (6) **General Issue:** Plans should be made for the eventual replacement of the constant volume air-handling units and controls with VAV. **P-2 \$17,500**
- (7) **General Issue:** Filtration for the AHU's supporting facility should be upgraded to a minimum of 30% efficiency. **P-2 \$11,000**

E. Patch Grove Elementary / High School (2000 Building): In general, the HVAC equipment serving this building is original to the 2000 building construction and is in good operating condition.

1. EXISTING DATA:

a) Heating: The boilers primary fuel source is natural gas. High Efficiency Boilers are located in the Penthouse Mechanical Equipment Room of the 2000 building and serves this building. The heating system consists of (2) 500 MBH, Sealed Combustion high efficiency boilers installed in 2000. Boiler room combustion air is provided thru boiler venting. Piping and pumping capacities for the hot water heating system serving then building are adequate. The hot water distribution system does have a stand-by pump for redundancy.

b) Air Handling Units (AHU) and Conditioning Systems: AHU – 1: Located in the Penthouse Mechanical Equipment Room is Variable Air Volume (VAV), with supply and return fans supported by VFD's, air filtration is minimum filtration. Indoor AHU has air conditioning with a refrigerant cooling coil and remote condensing unit. A hot water heating coil in the AHU provides the primary heating source for the building. The air distribution systems are fully ducted supply with air transferred to common return air locations. Relief air from the classrooms is transferred thru the corridor via door or transom grilles to a common return air location. Outside and building relief air is provided thru the system in the penthouse. Terminal exhaust fans are located on the roof and provide corridor relief air and general exhaust for the lab, toilet rooms and locker rooms. The building has no energy recovery systems. Hot water cabinet heaters heat all of the existing entrance vestibules. The cabinet heater utilizes a fan, a heating coil and a return air damper. Hot water piping is run to each cabinet heater. A room thermostat is used to control the cabinet heater.

c) Controls: Electric control system is installed in the building. Exhaust fans have gravity back draft dampers installed on fan inlets. Classrooms are individually controlled with wall mounted electric thermostats serving the terminal hot water VAV boxes. General design indicates the Unit Ventilator's outside air intakes have gravity back draft dampers. The heating

pumps supporting the building are controlled with manual lead / lag start – stop operation. VAV boxes with reheat coils provide zone temperature control. Heating loops are automatically reset based on outside air temperature.

2. Observations:

a) Currently the owner should develop a preventative maintenance plan on the HVAC systems to maintain operations. Obtaining boiler replacement parts has become an issue due to the age of the boiler. The owner should consider boiler replacement to improve operation efficiencies and alleviate their maintenance issues.

b) The hot water boiler is in good condition.

c) Boiler water chemical treatment systems are in place and appear to be functioning as intended – but are nearing their life expectancy.

d) Thermometers and gauges are present and appear to be working.

e) Entries have hot water cabinet unit heaters for heating.

f) Piping and HVAC systems should be labeled for proper identification of components.

g) The air distribution systems are fully ducted with a combination of external and acoustically lined duct insulation throughout the facility. Acoustically lining should be removed in replaced with external duct wrap insulation to provide better indoor air quality.

h) Acoustical lining was not witnessed. However, any lining should be removed and replaced with external duct wrap insulation to provide better indoor air quality.

i) In order to bring the facility up to current industry standards and codes the following HVAC recommendations need to be addressed:

- (1) Code Issue:** Eliminate classrooms relief air transferred thru the corridor with a dedicated corridor ventilation system and dedicated classroom relief air. **P-1 \$35,000**
- (2) Code Issue:** Replace exhaust fans back draft dampers with motor operated dampers. **P-1 \$15,000**
- (3) General Issue:** Upgrade the electric controls with a DDC temperature control system for building. **P-2 \$15,000**
- (4) General Issue:** Provide duct cleaning. **P-2 \$10,000**
- (5) Code Issue:** System testing and balancing should be completed on all systems to confirm operations are meeting the code minimum requirements. **P-1 \$6,000**

IV. Electrical System

A. Patch Grove Elementary / High School (1960 Building): In general, the Electrical equipment serving this building is mixture of equipment original to the 1960 building construction with new renovations and is in good operating condition. In order to bring the facility up to current industry standards and codes the following Electrical recommendations need to be addressed:

B. EXISTING DATA:

- 1. Power:** The entire Elementary / High School complex is served by a 1200A, 480Y/277V, 3 phase, 4 wire secondary utility service. The main distribution panel is 1200A, 208Y/120V, 3 phase, 4 wire, manufactured by Siemens and is wall mounted to the exterior to the building. Branch panelboards are located throughout the facility. The age of the panelboards range from original to the building to new, provided by a recent renovation.
- 2. Emergency system:** There is not an emergency power system in the facility.
- 3. Lighting:** The existing light fixtures consist primarily of lensed fixtures which have been retrofit to utilize T8 fluorescent technology. Controls are line voltage switches only. Most light fixtures and controls are original to the building.
- 4. Fire Alarm:** The existing fire alarm system is a Simplex 4020 addressable horn only system. The main control panel is located on the 2nd floor.
- 5. Clock / Paging system:** The existing central clock / paging system control panel is by Simplex and has been replaced recently. The clocks appear to have been replaced recently; the age of the speakers as the enclosures around the speakers are original.
- 6. Security:** Cameras located on exterior of building.
- 7. Telecommunications:** Data outlets added to classrooms and other areas for computer use. Wireless access points throughout the facility.
- 8. Audio / Visual:** Projectors are located in classrooms and teaching areas.

C. Observations:

- 1. Power:**
 - a) Generally all electrical distribution equipment is in good shape. Some of the panelboards date back to the 1970's, but there has been a recent project to update much of the distribution system.
 - b) There appears to be no arc-flash warning information on any of the equipment.
- 2. Emergency Power:**
 - a) There is no emergency power system in the facility.

3. **Lighting:**
 - a) All fixtures have been retrofit with T8 lamps. It is unknown if electronic ballasts were used.
 - b) Many light fixtures have lenses which are old, cracked and / or yellowed. These conditions contribute to reduced light output.
 - c) There are no energy saving controls, all lighting is switched only.
 - d) Exit sign coverage is inadequate and does not meet current code.
 - e) Except for a few battery units, there is no emergency lighting in the building fed from an alternate power source as required by current code.
 - f) Lighting levels are generally adequate for the task. There are some areas, specifically corridors and the shop classroom, which do not meet the levels recommended by the Illuminating Engineering Society, or IES, the industry standard. Inadequate lighting in corridors and the shop poses a direct hazard to occupants.
4. **Fire Alarm:**
 - a) The fire alarm system is has been replaced recently with an intelligent addressable modern system.
 - b) The exterior exits and egress from upper floors have pull stations of a height allowed by the Americans with Disabilities Act.
 - c) There are horn strobes throughout the facility.
5. **Clock / Paging:**
 - a) There is a central clock / paging system. The head end electronics appears to have been recently replaced. The speakers and clocks appear to be in adequate condition.
6. **Security:**
 - a) Cameras located on exterior of building.
7. **Telecommunications:**
 - a) Surface mounted conduit and backboxes provided for data outlets provided at various locations, typically at desks.
 - b) Wireless access points provided throughout.
8. **Audio / Visual:**
 - a) Projectors located in classrooms

D. Recommendations:

1. **Power:**
 - a) Equipment Age: Replace remainder of distribution system which is original to building. Upgrade as needed to accommodate new HVAC equipment. **P-2 \$25,000**
 - b) Facility Personnel Safety: Perform short circuit and arc flash studies; provide arc-flash warning information on all distribution equipment. **P-2 \$20,000 –This will cover entire facility.**

2. **Emergency Power:**
 - a) Safety / Code Issue: Provide an alternate source of emergency power in the facility for egress lighting and exit sign use. This source may be batteries internal to emergency light fixture and exit signs, a center inverter system or an emergency generator. Run time shall be 90 minutes minimum. **P-1 \$25,000 for Central Invertor or Generator – This will cover entire facility.**

3. **Lighting:**
 - a) Equipment Age / Industry Standards / Safety Issue: Replace or supplement lighting in areas with deficient illumination levels to comply with Illuminating Engineering Society of North America (IESNA) standards. **P-1 \$104,200**
 - b) Code Issue: Provide controls to meet Wisconsin Safety and Professional Services Chapter 363, Energy Conservation. **P-2 \$52,100**
 - c) Code Issue: Provide code required lighting levels for all interior paths of egress, interior common areas and all exterior doors per International Building Code Chapter 10. Emergency fixtures shall provide 90 minutes of illumination per code. **P-1 \$26,000**
 - d) Code Issue: Replace all exit signs and provide quantities as required. Exit signs shall provide 90 minutes of illumination per code. **P-1 \$26,000**

4. **Fire Alarm:**
 - a) Code Issue: Provide additional horns and strobe in corridors to meet code, specifically within 15' of the ends of corridors. **P-1 \$26,000**

5. **Security:**
 - a) Safety Issue: Review system requirements with appropriate authority and provide system to match needs. **P-3 TBD**

6. **Telecommunications:**
 - a) Functionality: Review system installation and standards and review if system meets needs. **P-3 TBD**

E. Patch Grove Elementary / High School (1980 Building): In general, the Electrical equipment serving this building is original to the 1980 building construction and is in good operating condition. In order to bring the facility up to current industry standards and codes the following Electrical recommendations need to be addressed:

F. EXISTING DATA:

1. **Power:** This addition is served by the utility service described above. Branch panelboards are located throughout the facility and are in good condition.
2. **Emergency system:** There is not an emergency power system in the facility.
3. **Lighting:** The existing light fixtures consist primarily of lensed fixtures which have been retrofit to utilize T8 fluorescent technology. Controls are line voltage switches only. Light fixtures and controls are original to the building.

4. **Fire Alarm:** The existing fire alarm system is a Simplex 4020 addressable horn only system. The main control panel is located on the 2nd floor of the 1960 building.
5. **Clock / Paging system:** The existing central clock / paging system control panel is by Simplex and has been replaced recently. The clocks appear to have been replaced recently; the age of the speakers as the enclosures around the speakers are original.
6. **Security:** No security devices observed.
7. **Telecommunications:** Data outlets added to classrooms and other areas for computer use.
8. **Audio / Visual:** Projectors are located in classrooms and teaching areas.

G. Observations:

1. **Lighting:**
 - a) All fixtures have been retrofit with T8 lamps. It is unknown if electronic ballasts were used.
 - b) Light fixtures appear aged but in adequate condition. These conditions contribute to reduced light output.
 - c) There are no energy saving controls, all lighting is switched only.
 - d) Exit sign coverage is inadequate and does not meet current code.
 - e) Except for a few battery units, there is no emergency lighting in the building fed from an alternate power source as required by current code.
 - f) Lighting levels are generally adequate for the task. There are a few areas which do not meet the levels recommended by the Illuminating Engineering Society, or IES, the industry standard.
2. **Power:**
 - a) Generally all electrical distribution equipment is in good shape.
 - b) There appears to be no arc-flash warning information on any of the equipment.
3. **Fire Alarm:**
 - a) The fire alarm system is has been replaced recently with an intelligent addressable modern system.
 - b) The exterior have pull stations of a height allowed by the Americans with Disabilities Act.
 - c) There are horn strobes throughout the facility.
4. **Clock / Paging:**
 - a) There is a central clock / paging system. The head end control panel is located in the 1960 building. The speakers and clocks appear to be in adequate condition.
5. **Security:**

a) No security devices observed.

6. Telecommunications:

- a) Surface mounted conduit and backboxes provided for data outlets provided at various locations, typically at desks.
- b) Wireless access points provided throughout.

7. Audio / Visual:

- a) Projectors located in classrooms

H. Recommendations:

1. Power: Equipment Age: Panelboards are original. Upgrade as needed to accommodate new HVAC equipment. **P-2 \$10,000**

2. Lighting:

- a) Equipment Age / Industry Standards / Safety Issue: Replace or supplement lighting in areas with deficient illumination levels to comply with Illuminating Engineering Society of North America (IESNA) standards. **P-1 \$52,200**
- b) Code Issue: Provide controls to meet Wisconsin Safety and Professional Services Chapter 363, Energy Conservation. **P-1 \$26,100**
- c) Code Issue: Provide code required lighting levels for all interior paths of egress, interior common areas and all exterior doors per International Building Code Chapter 10. Emergency fixtures shall provide 90 minutes of illumination per code. **P-1 \$13,000**
- d) Code Issue: Replace all exit signs and provide quantities as required. Exit signs shall provide 90 minutes of illumination per code. **P-1 \$13,000**

3. Fire Alarm:

- a) Code Issue: Provide additional horns and strobe in corridors to meet code, specifically within 15' of the ends of corridors. **P-1 \$13,000**

4. Security:

- a) Safety Issue: Review system requirements with appropriate authority and provide system to match needs. **P-1 TBD**

5. Telecommunications:

- a) Functionality: Review system installation and standards and review if system meets needs. **P-3 TBD**

I. Patch Grove Elementary / High School (2000 Building): In general, the Electrical equipment serving this building is original to the 2000 building construction and is in very good operating condition. In order to bring the facility up to current industry standards and codes the following Electrical recommendations need to be addressed:

J. EXISTING DATA:

- 1. Power:** This addition is served by the utility service described above. Branch panelboards are located throughout the facility are in good condition.
- 2. Emergency system:** Egress lighting and exit signs contain internal battery backup.
- 3. Lighting:** The existing light fixtures are a combination of direct and indirect fixture which utilizes T8 fluorescent technology. Controls consist of line voltage switches, occupancy sensors and a low voltage relay system. Light fixtures and controls are original to the building.
- 4. Fire Alarm:** The existing fire alarm system is a Simplex 4020 addressable horn only system. The main control panel is located on the 2nd floor of the 1960 building.
- 5. Clock / Paging:** The head end control panel is located in the 1960 building. The speakers and clocks appear to be in good condition.
- 6. Security:** Cameras are located in the computer lab. There appears to be no other devices or electronic access control.
- 7. Telecommunications:** Adequate voice / data outlets and wireless access points are provided throughout the facility.
- 8. Audio / Visual:** Projectors are located in classrooms and teaching areas. One room is equipped with distance learning equipment.

K. Observations:

- 1. General:** All systems are new and appear to meet current code at the time of construction, many of which are still current.
- 2. Power:**
 - a) Existing panelboards are new and in good condition.
 - b) Emergency Power
 - c) Wall mounted EBU's are used throughout and battery backup exit signs.
- 3. Lighting:**
 - a) All fixtures are new to the addition with T8 lamps.
 - b) Light fixtures appear very good condition.
 - c) Controls in spaces are occupancy sensors in conjunction with switches.
 - d) Exit sign coverage appears adequate.

- e) EBU spacing and EM light levels should be reviewed along path of egress.
- f) Lighting levels are adequate for the task.

4. Fire Alarm:

- a) The fire alarm system is new and appears to meet current code.

5. Clock / Paging:

- a) There is a central clock / paging system. The head end control panel is located in the 1960 building. The speakers and clocks appear to be in good condition.

6. Security:

- a) Cameras in computer lab.

7. Telecommunications:

- a) Data outlets provided in every room as required per occupancy.
- b) Unable to enter telecommunications room.
- c) Wireless access points provided throughout.

8. Audio / Visual:

- a) Projectors located in classrooms.
- b) Distance learning room in addition.

L. Recommendations:

1. Lighting:

- a) Code Issue: Review controls to meet Wisconsin Safety and Professional Services Chapter 363, Energy Conservation. **P-1 O&M**

2. Fire Alarm:

- a) Code Issue: Review spacing of fire alarm devices to ensure code compliance. **P-1 O&M**

3. Security:

- a) Safety Issue: Review system requirements with appropriate authority and provide system to match needs. **P-1 O&M**

V. Plumbing System

A. Patch Grove Elementary / High School (1960, 1980 and 2000 Buildings): In general, the Plumbing equipment serving the facility is in good working condition. In order to bring the facility up to current industry standards and codes the following PLUMBING recommendations need to be addressed:

B. EXISTING DATA:

- 1. Water Service:** Municipal city water service provides domestic water to the facility.
- 2. Water Heating:** Each building addition has dedicated domestic water heater to support the building addition. Booster water heater is located near the kitchen to support the dish machine.
- 3. Water Softeners:** Are located in the buildings and in good working condition.
- 4. Fixtures:** Are wall and floor mounted and in good working condition.
- 5. Distribution:** No issues of capacity or pressure are apparent.

C. Observations:

- 1. Water Service:** Insulation on water piping is in need of repair and replacement. **P-1 \$1,000**
- 2. Distribution:**
 - a) The majority of the piping in the boiler room is in need of repair or not insulated. **P-1 \$5,000**
 - b) Piping and HVAC systems should be labeled for proper identification of components. **P-1 O&M**

VI. SUMMARY

As stated in the introduction, the structure of the facility is sound and in good condition, the infrastructure and finishes are showing various signs of wear with some areas and components at or exceeding their general life expectancy. The Priorities assigned throughout the project classify these issues, the overall – individual - cost to correct deficiencies according to Priorities are as follows:

P-1: \$3,194,700 Note approximately \$850,000 of this is related to the insurance claim for the roof system.

P-2: \$940,400

P-3: \$87,000 Note this does not include an \$8,000 allowance per classroom for new casework.

When considering costs for a major renovation, cost savings will be realized if all/most deficiencies are included in the overall project. Typically, we would run budgeting costs on a cost per square foot basis depending on needs, or for your project as follows:

1960's Building: 52,100 sf x \$55/sf = \$2,865,500

Elementary School: 26,100 sf x \$35/sf = \$913,500

IMC Addition: 13,900 sf x \$20/sf = \$278,000

New Addition: Range \$140 to \$160 depending on components and complexity.

This method would “repair” all of P-1 items, much of P-2 items; P-2 items not covered and P-3 items would be bid as alternates. When taking the cost(s) into consideration, note that if a major addition and/or renovation should occur, many of the Priority items would be required to be addressed as a component of that project. Since there are a significant number of variables at this time which makes it difficult to provide a truly accurate construction cost number, the actual cost of a potential project and/or corrective measures will remain unknown until hard bids are actually received.