GARRISON SCHOOL DISTRICT
FACILITIES ASSESSMENT REPORT

BOB CALLIES ELEMENTARY SCHOOL
205 2nd Avenue NE
Garrison, North Dakota 58540

HIGH / MIDDLE SCHOOL
51 5th Avenue NE
Garrison, North Dakota 58540

May 16, 2017

PREPARED BY:

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STATEMENT OF PURPOSE

EngTech is providing this facility assessment of the Garrison Public School District buildings, which includes the Elementary School and Middle School/High School. The assessment will demonstrate the current conditions of the exterior building envelope/systems, interior finishes, code deficiencies, accessibility issues, structural conditions, mechanical and plumbing system conditions, and electrical system conditions. The focus of the effort is as follows:

1. Observe and comment on the condition of the building’s interior and exterior condition, maintenance issues, aesthetics, and functional quality.
2. Review and comment on potential building safety and security improvements.
3. Review and comment on potential building code compliance deficiencies or potential concerns.
4. Review and comment on potential accessibility deficiencies.
5. Observe and comment on the structural integrity of the building.
6. Review the mechanical systems of the building to determine their conditions and potential for continued use. This includes the heating and cooling plants, air handlers, terminal units and ancillary equipment.
7. Review the plumbing systems of the building to determine their conditions and potential for continued use. This includes the domestic water supply, plumbing fixtures, and sanitary piping.
8. Review the electrical systems of the building to determine their conditions and potential for continued use. This includes the electrical service, outlets, circuits, fire alarm, and wiring.
9. Review the lighting systems to determine their conditions and potential for continued use.
10. Review the technology systems of the building to determine their conditions and potential for continued use. This includes data jacks, server location, and security system.

This Facilities Assessment will document, categorize, and prioritize the deficiencies. The priorities are based on our initial observations and will be discussed in more detail with the District. Once the deficiencies are reviewed with the District, EngTech will work to develop the actual scope of work and a budget for the individual items that the District would like to pursue. Our recommendations are provided in a manner to extend the expected useful life of the building for around another 20-25 years.

The Facilities Assessment and subsequent recommendations should be considered during any future building projects. Some of the projects may be completed by the district out the annual operating budget, or several of the projects may be bundled and funded as part of a larger project.
EXECUTIVE SUMMARY

The middle/high school & elementary buildings were observed with several critical items requiring immediate attention along with many other items that are less critical such as materials and systems in use beyond their rated life expectancy. The following is a brief outline of the critical items discovered in the team’s assessment of the facilities.

CURRENT CRITICAL ITEMS

Space needs
- Perform space needs/programming analysis to determine current and future education needs.

Roof Repairs / Replacement
- Replacement of most roof areas at the elementary and the high school should be expected within the next 5-10 years. Due to the amount of roof areas, the replacement expense will be significant and roof repair/maintenance plan should be developed to determine the appropriate way to fund the repairs.
- Provide code compliant roof access ladders to upper roof volumes at the elementary and high school buildings.

Building Envelope / Exterior walls
- Joint sealant at the exterior walls was observed with significant deterioration. All joint sealant at the elementary and high schools should be professionally removed and replaced.
- The older window systems should be replaced in their entirety.
- Correct building drainage issues around the building foundations, specifically around the down spouts.

Interiors:
- Replace finishes throughout both buildings, including floors, ceilings, and paint.
- Preform asbestos abatement throughout both buildings.

Electrical
- HS/MS
  - Replace main distribution panel in basement.
  - Replace worn out receptacles which cannot retain plugs.
  - Install additional emergency light fixtures.

Accessibility
- The school facilities were observed with several items that are not compliant with the ADA Standards (American with Disabilities Act). ADA disabilities include both mental and physical medical conditions. A condition does not need to be severe or permanent to be a disability. Some of the items identified can be corrected and are more readily achievable than others. Improvements to remove these barriers should be completed when possible, until all practical barriers have been removed. Compliance with ADA is not typically enforced by local code authorities as these are federal standards. The primary deficiencies observed requiring attention include:
Accessible route to the building from the parking areas. This includes improvements to the paving surfaces.
- Administration/Classrooms/Gymnasium
- Restrooms improvements (where feasible)

**BEYOND RATED LIFE**

- Exterior drive and walking pavements were observed with deficiencies.
- There are existing roof areas which require replacement as the existing roof systems have exceeded their useful life. (noted above)
- Various exteriors doors and windows.
- Miscellaneous exterior finishes (painting, joint sealant, tuck pointing)
- Some interior finishes in the building are out of date and worn.
- Mechanical issues
  - Galvanized piping
  - Elem: 1992 Addition Hydronic Pumps
- Electrical issues
  - HS Dukane clock/bell system difficult to reprogram.
  - Replace branch circuit breaker panels installed late 1970s.
FACILITY BACKGROUND

MIDDLE / HIGH SCHOOL

The Middle School/High School was built in 1956 and is comprised of approximately 50,946sf. The building consists of both a single story and a two story portion.

There have been several projects completed over the years. The projects involved capital maintenance and ADA accessibility improvements.

ELEMENTARY

The original Elementary school was built in 1951 and is comprised of a two-story building totaling approximately 18,841sf.

An addition was constructed in 1979 which added approximately 15,927sf. The addition included additional classrooms, gym, and kitchen.

This building has also seen renovation projects that included capital maintenance and ADA accessibility improvements.
MAINTENANCE & STAFF FEEDBACK

MIDDLE SCHOOL / HIGH SCHOOL

The assessment began with an interview with Superintendent Dr. Klemish. Facilities Management personnel were not on hand for interview during the site visit but Monty Rubbert was interviewed by phone at a later date. Facilities staff consists of Monty Rubbert, wife Kathy Rubbert, and son David Rubber. David provided some assistance during the site inspection but is very new to the facility. Standard assessment questions were asked in regards to Mechanical and Electrical Systems, as well as Architectural and Site issues. The following is a summary of the feedback received.

MAINTENANCE

- Used to be very reactive, but trying to get ahead of things now.
- Several projects over the last few years to get items handled.

ARCHITECTURAL

- Re-faced east, west & south exposures with EIFS
- Most of roof is newer.
- Overall, building is fair to good condition.
- Size of classrooms and overall space seems adequate.
- No kitchen/cafeteria. Students go over to the elementary school

SITE

- Paved parking lot is large enough and in good condition
- Some drainage issues around the building.

HVAC

- Ag Shop
  - Lack of welding ventilation

PLUMBING

- Science Lab plumbing froze
- Ongoing drainage issues in Science Lab
- Backup issues in locker rooms
- Showers are old

ELECTRICAL

- Receptacles are worn out; the plugs fall out.
• Maintenance impacted by personnel changes.
• Exterior doors not controlled by access control system have keys broken off in the locks.

WISH LIST

• New secure front entrance
• Kitchen/caferetria
• Integrated classroom communications system with audio, cameras, wearable panic button, public address, and bells.
ARCHITECTURAL ASSESSMENT

MIDDLE SCHOOL / HIGH SCHOOL

As the interior and exterior areas of the building were toured, several maintenance and code deficiencies were identified. These fall into the general categories of building condition, building code, and accessibility issues. This section documents several items that may be considered during any future building improvement projects, some of which may be required to be addressed during any large scale remodeling projects.

The elements reviewed in this section include:

- Site
- Roof
- Exterior Masonry
- Exterior Doors
- Exterior Windows
- Exterior Joint Sealant
- Structural Integrity
- Interior Walls
- Interior Ceiling
- Interior Floors
- Interior Doors
- Restrooms
- Building Code Review
- Accessibility Review

SITE CONDITIONS

- There is dedicated parking on the west side of the building. Student drop-off occurs on the street.
- The accessible parking surface, striping, and signage do not comply with ADA requirements. Improvements should be considered.
- There are several concrete sidewalks providing access to the building entrances. In general, the sidewalks are in average overall condition. Several sections observed with deteriorated surfaces, cracks, and uneven surfaces which create trip hazards. At several entrances, the sidewalk and stoop have heaved and/or separated creating a trip hazard and possible accessibility issue.
- Downspouts located around the building do not have adequate drainage or splash blocks.

ROOF

- The roof over most of building consists of a EPDM membrane roof. Some seams were not fully sealed, creating potential points of water penetration.
- The roof over the AgEd shop is a ballasted member system and is older than the rest of the roof. Some seams were not fully sealed, creating potential points of water penetration. Minor leaks were reported in this area.

EXTERIOR ENVELOPE / MASONRY

- The exterior wall construction at the 1962 building is comprised of solid masonry – painted CMU (concrete masonry units) on the interior and brick veneer on the exterior. The original drawings indicate that no cavity insulation exists.
• The exterior brick veneer and mortar joints have weathered well over the years. In general, the life-span of mortar varies due to exposure conditions, and mortar materials, but can typically be expected to last over 25 years to upwards of 50 years.

• Limited tuck-pointing at the exterior walls is needed, primarily where building settlement has occurred. Some mortar joints need repaired as a result of expansion/contraction, lack of control joints, and deterioration from moisture/normal wearing.

• The building also had large areas of glazing. These areas have been infill and finished with stucco or EIFS. Several areas of these finishes have areas of damage. Repair of these area are critical to prevent secondary damage from water/air infiltration.

**EXTERIOR DOORS**

• The exterior doors and frames consist of both hollow metal and aluminum materials with both insulated and un-insulated glazing. A majority of the doors are original to the buildings. The doors and frames were observed to be in fair overall condition. We observed most doors with adequate weather-stripping that appears to have been recently replaced. The weather-stripping should be evaluated and repaired at all doors on an annual basis.

• The exterior doors currently have panic devices which appear to be functioning appropriately. The main entrance doors have ADA operators.

• Access control at the main entrance doors is provided with electronic locking devices and a camera with buzzer that requires visitors to be let-in by administration staff.

• Access control was observed at the two south doors only.

• Limited door/frame replacement for improved energy efficiency should be considered where un-insulated glazing occurs and/or at entrances without interior vestibule doors/frames.

• The exterior door/frame finish was observed to be faded and chalking. They should be routinely repainted, along with all exposed exterior metals.

• The canopy at the southwest entrance is damage. The crack should be filled and sealed.

**EXTERIOR WINDOWS**

• The exterior windows are aluminum frames, many of which were replaced during the glazing infill. Most of the window frames appear to be thermally broken, which provides improved energy efficiency. The window glazing is insulated throughout, except for a few remaining windows at the north VoAg classroom and shop that are part of the original building. Replacement of these window frames should be considered as the existing frames/glazing has exceeded its useful life. Window systems have an expected useful life of around 20-30 years. Window systems older than this should be evaluated for performance.
Replacement to a modern, more efficient window system should be considered.

EXTERIOR SEALANT
- Joint sealants all around the building are showing signs of deterioration. The joint sealant around several windows and louvers were poorly installed. There are several exterior penetrations that should be sealed, such as conduits and wall hydrants; many of which do not have any joint sealant. Exterior walls, window jambs/sills, wall penetrations, and building joints are subject to air and moisture infiltration and damage if they are not properly sealed.
- The expected useful life of joint sealants is 10-20 years depending on the type used and the environmental conditions in which it is exposed. The joint sealants have exceeded their expected useful life and should be replaced entirely to prevent future moisture and air infiltration.

STRUCTURAL INTEGRITY
- A general review of the building structure was performed. The building(s) consists of a concrete foundation, masonry walls, and steel joists with metal deck. There were no major deficiencies or concerns with the structure.

INTERIOR WALLS
- The interior walls consist mostly of painted masonry. There are also areas of framed walls with either wood paneling or gypsum board. The walls typically have a painted finish and are in good overall condition. Some minor cracking in the was observed throughout the building, primarily around door openings where we often expect to find minor cracking.

INTERIOR CEILINGS
- Much of the building has either a plaster ceiling with a textured finish or ATC (acoustical tile ceiling).
- The plaster ceiling is very durable and in good condition, however, lights and other fixtures are surface mounted. Future modification is more difficult, especially as additional precautions need to be considered as the ceiling is believed to contain asbestos.
- The ATC ceilings are typically a 2'x4' tile. The ceiling tile size and pattern does not always match from one area to another and are in average condition, however, this is primarily an aesthetic issue. The ceiling tiles in areas are sagging and have stains or damage; which is normal as ATC tiles typically have an expected useful life of around 25-30 years. Replacement of sagging, stained, or damaged tiles may be considered for future routine maintenance.
- When the tiles are replaced, consideration should be given to convert the ceilings with a 2'x4' metal grid to a 2'x2' metal grid. 2'x2' ceiling tiles tend to perform better over time and exhibit less sagging.
INTERIOR FLOORS

- The flooring types vary throughout the building and are usually dictated by the designated use of the space. The types of flooring documented are carpet, tile, vinyl tile, wood, etc. Hard flooring surfaces throughout the building consist of VAT (vinyl asbestos tile). The VAT floor tiles do not require removal and replacement this time. Although abatement is not required - it should be considered as part of plan to eliminate asbestos from the building. As the flooring begins to deteriorate, or a new floor covering is considered, abatement should be performed.

- Many areas of carpet are showing signs of wear, including some staining.

- Flooring at the gymnasium is wood installed over existing asbestos floor. The floor has a series of waves running across it. The rigids of the waves appear to be in line with the “sleeper” system that it is installed over.

- Bathroom and locker room floors are typically VCT and epoxy.

- The floors are generally in fair to good condition and are being properly cared for. Depending on the flooring types and ages, they should be reviewed on a case by case basis and replaced during routine building maintenance.

INTERIOR DOORS

- The interior doors in all areas of the building typically consist of hollow metal frames with solid-core wood or hollow metal doors. Most frames are in good overall condition. The doors are in fair condition. Most of the door hardware throughout the building has lever style door handles. We recommend retrofitting existing doors with round knobs to lever style handles to meet accessibility requirements. Other potential code deficiencies include corridor doors with louvers, non-rated corridor doors, corridor doors without closers, amount of glass in the door frames and transoms, and doors that open entirely into the corridor. These items are typically not allowed by code and may require improvements with future building remodels/additions.

RESTROOMS

- The restrooms throughout the building generally do not meet ADA accessibility standards as they were constructed before 1992. Common deficiencies include the entrance door width, stall width, fixture height, and the required clear floor space around doors and fixtures. Several improvements to make the restrooms more accessible have been implemented, such as grab bars. The newer 1998 building addition generally complies with current accessibility standards.

- The plumbing fixtures appear to be in good condition. The toilet partitions are in fair overall condition. It was noted the some of the partition hardware is either damaged or missing completely. The plumbing fixtures throughout the building are both manually and automatically operated. The finishes are dated and generally in good condition.
• Full compliance with current accessibility codes may be difficult to achieve with the current construction and plan layout. At the elementary area, it is recommended to build a new restroom or convert an existing restroom into an accessible restroom.

BUILDING CODE REVIEW

• The building code review addresses readily visible items that may be non-compliant within the building. This review does not include specifics due to the extensive amount of time that is required to review the code, measure the building elements to demonstrate compliance or non-compliance, and assess areas that pose life safety concerns. The 2015 IBC (International Building Code) is currently adopted by the State of North Dakota. When undertaking a major building renovation, or addition – full compliance with the most current adopted code is typically required within the modified areas, sometimes including deficiencies in other areas that have been grandfathered during past fire marshal inspections.

• Readily observed non-compliant or potentially non-compliant issues were minimal and include:
  o Existing doors swing into the corridor.
  o Lack of door closers at all corridor/classroom doors.
  o No fire sprinkler observed. (May or may not be required.)

ACCESSIBILITY REVIEW

• A visual review of the facilities was performed to identify non-compliant items related to accessibility standards in accordance with the Americans with Disabilities Act (ADA). This review does not include all non-compliant items due to the extensive amount of time that is required to review the all aspects of the building and site. This review will focus on non-compliance items that were readily visible during the building assessment.

• Non-compliant issues observed include:
  o Accessible parking, striping, and signage
    ▪ Items exist, but they are not in strict accordance with standard.
  o Lack of accessible restrooms/restroom features.
  o Some door opening widths do not comply with ADA.
  o Some door hardware has round knobs instead of lever style handles.
  o In-adequate distance/clear space between doors at exterior vestibules.
  o Exterior paving surfaces, gaps at paving/stoops, ramps too steep.
MECHANICAL / PLUMBING ASSESSMENT

MIDDLE SCHOOL / HIGH SCHOOL

The mechanical assessment includes a review of the existing building HVAC system and plumbing system.

The following components are discussed in this section:

- Controls
- Boilers
- Hydronic System Terminal Units
- Forced Air Systems
- Plumbing Fixtures & Piping
- Domestic Water Service

CONTROLS

- The HVAC systems are controlled by a pneumatic and pneumatic to electric systems.
- The pneumatic system appears to have been maintained and upgraded over the years
- Electronic relays installed
  - Control sequences and strategies are extremely limited with this system and provide no feedback or alarm capability.
  - Pneumatic controls are considered obsolete technology and require continual preventative maintenance. Parts are increasingly hard to purchase and skilled personnel increasingly hard to find.

BOILERS

- 6 modular natural gas-fired boilers
  - Good overall condition, clean, maintained well
  - 2013
- Electronically controlled

HYDRONIC PUMPS & PIPING

- Zone pumps of various sizes
- Some are in good condition
- Some pumps are in average/poor condition, corrosion
- Some piping at pumps missing insulation
- New boiler piping/insulation transitions to old piping/insulation
- Some original piping insulation in poor condition
- Piping is routed in tunnels

HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

- HVAC in the classrooms is provided by cabinet unit ventilators along the exterior walls
  - Electronic temp sensors
  - Units are in good condition, only a few years old
Facilities Assessment

- HW heating / DX cooling
- Some classrooms only have fin tube radiators, no ventilation (AgShop classroom)

- Ag Shop
  - Dedicated unit for heating and ventilation
  - Not enough proper exhaust for welding stations
  - 2 EFs at ceiling, need to be ducted to stations

- Gym
  - 2 units for heating on stage side
  - 2 units for ventilation on opposite side

- Vestibules
  - Modified, not true vestibules, inner doors removed
  - No heating units near doors, allows outside air from doors right into building with no barrier or heat

- Science Lab Room
  - ERV just for that room?

PLUMBING FIXTURES
- Recently installed some water coolers with bottle fillers
- No issues observed or reported on plumbing fixtures
- Sink faucets are manually operated
- Water closets and urinals are operated by automatic sensors
- Plumbing piping freezes reported in Science Lab

SANITARY PIPING
- Ongoing drainage issues reported in Science Lab
- Backups in Locker Rooms reported

DOMESTIC WATER SYSTEM
- Water for the main building is heated by a dedicated natural gas-fired boiler with a series of 4 storage tanks.
  - Appears to be in good condition. No issues reported.
- Some original galvanized piping remains
  - Some replaced with copper
- Some piping in Ag Shop with missing/deteriorated insulation

FIRE PROTECTION
- There is no fire suppression system.

DISCUSSION
The pneumatic controls, while obsolete, have been maintained as well as any previous school visited and are still functioning up to their original, although limited, capabilities

The building is clean and well maintained. The school has taken initiative to perform some upgrades as needed, with renovated restrooms, plumbing fixture replacement.
ELECTRICAL ASSESSMENT

MIDDLE SCHOOL / HIGH SCHOOL

The electrical assessment includes a review of the existing building electric service, power system, and lighting system.

The following components are discussed in this section:
- Electrical Service
- Power Distribution
- Lighting
- Fire Alarm

ELECTRICAL SERVICE AND POWER DISTRIBUTION
- The electrical service is fed from local utility pole mount transformers. The utility transformers feed a main distribution panel located in the boiler room at 208Y/120 volts, 3-phase, 4-wire.
- Main distribution panel is manufactured by I-T-E and is rated 800 amps, 208Y/120 volts, 3-phase, 4-wire.
- The switchboard feeds six branch circuit panels. There is also a 400 amp disconnect attached to the side of the switchboard that probably provides power to the new 400 amp branch circuit panel in the custodian’s office.
- The main distribution panel is about 50-60 years old and is in very poor condition.
- Many of the receptacles are worn out and the contacts do not retain the cord plug prongs.

LIGHTING
- Lighting consists of linear T8 fluorescent lamps in surface mounted acrylic wraparounds in the corridors and either surface mounted or suspended lensed wraparound fixtures in the classrooms.
- The gym is lit by recessed 2x4 fluorescent fixtures.
- Emergency lighting is provided by battery powered wall mount fixtures. The number of emergency fixtures does not appear to satisfy the code requirement for egress illumination.
- The school does not have an emergency generator.

FIRE ALARM
- The fire alarm system is a Simplex 4006 zoned system equipped with horns for notification.
- Current code requires an emergency voice message system and visual strobes.
- No problems were reported by the staff.

ACCESS CONTROL
- The school has an electronic entry access system which protects 4 exterior doors. The doors can be unlocked with a key fob device.
• One door is equipped with a video intercom (Aiphone JF-2MED). The front office staff person can operate a door unlocking circuit using the monitor unit.
• The remainder of the building doors are kept locked but will allow emergency egress.
• There are approximately 15 surveillance cameras installed at the school.

MASTER CLOCK
• A Dukane master clock system provides synchronization to clocks in the school. The clocks are powered by line voltage.
• A Dukane bell system sounds the passing period bells according to a preprogrammed schedule. However, the system is difficult to reprogram.

INTERCOM / PUBLIC ADDRESS
• A Dukane intercom system controls the one-way and two-way communications between the main office and the other school rooms. Teachers have a call button with which they can initiate a call to the office.
• A speaker system is deployed in the classrooms. The office can broadcast to the entire school or call a specific classroom. The called teacher can talk back to the office.
• Each classroom is also equipped with a telephone which can be called using an extension number.

DATA NETWORK
• The fiber demarcation point from the network provider is in the high school boiler room. A secondary fiber runs to the elementary school from the high school. This sometimes creates bandwidth problems when a large number of users are active.
• The computer labs appear to be well equipped.
RECOMMENDATIONS

MIDDLE SCHOOL / HIGH SCHOOL

The following list of recommendations is based upon the conditions observed and documented. In many cases, the items identified may be corrected through routine maintenance. In other instances, the items may be more significant in cost, complexity, or require coordination with other building systems.

The next step will be to identify and prioritize the recommendations. The list should be evaluated for items the District may wish to perform on their own, through the annual operating budget, or by bundling several projects to become part of a larger renovation project.

SITE / ARCHITECTURAL / BUILDING ENVELOPE RECOMMENDATIONS

- Consider performing exterior accessibility improvements from street parking to the sidewalk.
- Repair/replace deteriorated concrete accessibility walks around the building. Repair gaps/voids between sidewalk and entrance stoops.
- Repair area of damaged EIFS around entire building.
- Address downspouts/drain water away from building.
- Repair limited areas of soil erosion around building.
- Replace exterior doors around entire building.
- Replace any original window remaining.
- Repair damaged soffit at southwest entrance.
- Replace entire roof.
- Provide code compliant roof access and ladders.
- Tuckpoint deteriorated mortar joints and cracks in brick masonry.
- Remove/replace joint sealants around entire building.
- Fur our north wall at Vo. Ag. Classroom and replace windows similar to other area of building.
- Asbestos abatement throughout the building.
- Replace flooring in the entire building.
- Replace ATC ceilings throughout the building.
- Consider replacing gym floor.
- Paint walls throughout the building. Fill block prior to painting as necessary.
- Replace countertops and replace/refinish casework throughout the building.
- Replace doors and door hardware. Repaint frames to remain. Door hardware to be ADA lever style.
- Remodel restrooms and make them ADA accessible.
- Address building code deficiencies (when required by a triggering event)

MECHANICAL RECOMMENDATIONS

- Add individual downdraft tables for welding
  - Eliminates need for large central exhaust system
    - Saves energy
  - Flexible within the space, can be moved around
  - Add tables as needed
- Replace all pneumatic and pneumatic to electric controls with true DDC system in all areas
  - Web-based, access from any computer or mobile
  - Control all equipment for entire building
  - Ensure proper code-required air balance
  - Real time monitoring of environmental conditions with alarms
Facilities Assessment

- Contributes to vast improvement of all comfort, temperature and humidity issues
  - Include CO₂ sensors for energy efficiency
- Assists with comprehensive maintenance planning
- Removal of all exposed pneumatic tubing & components

- Reinsulate all original piping in Boiler Room
- Replace hydronic circulation pumps & add VFDs
- Replace all remaining galvanized plumbing supply piping (need to determine extent)

**ELECTRICAL RECOMMENDATIONS**

- Replace the main distribution panel.
- Replace circuit breaker panels which are more than 40 years old.
- Install additional emergency light fixtures to satisfy code requirements.
- Replace worn out receptacles throughout the building.
- Upgrade fire alarm system to include visual strobes and emergency voice messaging to satisfy current code and ADA requirements
- Upgrade class bell scheduler to a user-friendly PC based system.
- Install integrated classroom communications system with audio, cameras, wearable panic button, public address, and bells.
MAINTENANCE & STAFF FEEDBACK

ELEMENTARY

The assessment began with an interview with the Elementary Principal Shelly Fuller. Facilities Management personnel were not on hand for interview during the site visit but Monte Rubbert was interviewed by phone at a later date. Facilities staff consists of Monte Rubbert, wife Kathy Rubbert, and son David Rubbert. David provided some assistance during the site inspection but is very new to the facility. Standard assessment questions were asked in regards to Mechanical and Electrical Systems, as well as Architectural and Site issues. The following is a summary of the feedback received.

MAINTENANCE

- Old Facility Manager removed Summer 2016
- New staff been working to catch up
- HVAC – HA Thompson on service contract
- Boiler – Monte does the work
- Maintenance is reactive, not preventative

ARCHITECTURAL

- Roof approx. 15 years old. Several leak were reported.
- Overall, building is fair condition.
- Recent fire in the building. Asbestos abatement and new finishes in the affect areas.
- Using a portable as a classroom.

SITE

- Drainage at the playground is poor.

HVAC

- HVAC Renovation 2 years ago
  - HA Thompson performed work
    - “Cut corners” due to instruction from former Supt.
  - Resulted in controls issues - thermostats don’t match measured temperature
    - Rooms still warm
    - One whole wing has 1 thermostat
  - School not happy with results
- Ductwork in new portion, none in old
- Feel cold air coming through the system when supposed to be heating
- Old windows in building
- Some asbestos in old building – floor & ceiling tile
• Want to get rid of the portable
• Playground drainage issues, have wood chips right now
• Multi-purpose room used for cafeteria, HS travels to eat
• During indoor recess, can’t use gym because of HS lunch

PLUMBING

• No real plumbing leaks to report
• Several original drain pipes have been replaced with PVC
• Some galvanized piping has been replaced above ceiling
  o Requires removing asbestos ceiling
  o Rest of piping needs to be replaced
  o Worried future leaks will collapse ceiling

ELECTRICAL

• Electrical service to older part of the building renovated in 2014
• Would like to have every door, including classrooms, with controlled access.
• Fire alarm and public address systems do not extend to the portable classroom.

WISH LIST

• Get rid of portable
• Real cafeteria
ARCHITECTURAL ASSESSMENT

ELEMENTARY

As the interior and exterior areas of the building were toured, several maintenance and code deficiencies were identified. These fall into the general categories of building condition, building code, and accessibility issues. This section documents several items that may be considered during any future building improvement projects, some of which may be required to be addressed during any large scale remodeling projects.

The elements reviewed in this section include:

- Site
- Roof
- Exterior Masonry
- Exterior Doors
- Exterior Windows
- Exterior Joint Sealant
- Structural Integrity
- Interior Walls
- Interior Ceiling
- Interior Floors
- Interior Doors
- Restrooms
- Building Code Review
- Accessibility Review

SITE CONDITIONS

- There is limited on-site parking on the north side of the building.
- The accessible parking surface and striping do not comply with ADA requirements. Improvements should be considered.
- There are several concrete sidewalks providing access to the building entrances. In general, the sidewalks are in average overall condition. Several sections observed with deteriorated surfaces, cracks, and uneven surfaces which create trip hazards. At several entrances, the sidewalk and stoop have heaved and/or separated creating a trip hazard and possible accessibility issue.
- Standing water was observed at the playground. Improvements to drainage is required to encourage water to flow off site.

ROOF

- The roof over the elementary building consists of a EPDM membrane roof.Leaks were reported to be occurring in the facility. Repairs to stop the leaks should be done immediately. Plans to replace the entire roof should be planned for within the next few years.

EXTERIOR ENVELOPE / MASONRY

- The exterior wall construction throughout the building is comprised of solid masonry – painted CMU (concrete masonry units) on the interior and brick veneer on the exterior. The original drawings for the 1951 building indicate that no cavity insulation exists. Drawings with wall section were not available for the 1979 building, therefore the amount of insulation in the walls is unknown.
- The exterior brick veneer and mortar joints have weathered well over the years. In general, the life-span of mortar varies due to exposure
conditions, and mortar materials, but can typically be expected to last over 25 years to upwards of 50 years.

- Limited tuck-pointing at the exterior walls is needed, primarily where building settlement has occurred. Some mortar joints need repaired as a result of expansion/contraction, lack of control joints, and deterioration from moisture/normal wearing.

- Additionally, the upper gym wall of the 1979 building may have water infiltration occurring as evidenced by the milky white appearance on the interior CMU. We were unable to determine if this active, or if it was from a previous occurrence that was repaired.

**EXTERIOR DOORS**

- The exterior doors and frames consist of both hollow metal and aluminum materials with both insulated and un-insulated glazing. A majority of the doors are original to the building(s). The doors and frames were observed to be in good overall condition. We observed most doors with adequate weather-stripping. The weather-stripping should be evaluated and repaired at all doors on an annual basis.

- The exterior doors currently have panic devices which appear to be functioning appropriately.

- The north entrance doors only have ADA operators.

- Access control at the main entrance doors is provided with electronic locking devices and a camera with buzzer that requires visitors to be let-in by administration staff.

- Access control was not observed at any doors, except the north entrance.

- Limited door/frame replacement for improved energy efficiency should be considered where un-insulated glazing occurs and/or at entrances without interior vestibule doors/frames.

- The exterior door/frame finish was observed to be faded and chalking. They should be routinely repainted, along with all exposed exterior metals.

**EXTERIOR WINDOWS**

- The exterior windows are aluminum frames, many of which have been updated from the original windows. Most of the window frames appear to be thermally broken, which provides improved energy efficiency. The window glazing is insulated throughout. Replacement of these window frames should be considered as the existing frames/glazing has exceeded its useful life. Window systems have an expected useful life of around 20-30 years. Window systems older than this should be evaluated for performance. Replacement to a modern, more efficient window system should be considered.

**EXTERIOR SEALANT**

- Joint sealants all around the building are showing signs of deterioration. The joint sealant between the masonry and the windows is starting to
deteriorate and crack. There are several exterior penetrations that should be sealed, such as mechanical louvers and wall hydrants; many of which do not have any joint sealant. Exterior walls, window jambs/sills, wall penetrations, and building joints are subject to air and moisture infiltration and damage if they are not properly sealed.

- The expected useful life of joint sealants is 10-20 years depending on the type used and the environmental conditions in which it is exposed. The joint sealants have exceeded their expected useful life and should be replaced entirely to prevent future moisture and air infiltration.

**STRUCTURAL INTEGRITY**

- A general review of the building structure was performed. The building(s) consists of a concrete foundation, masonry walls, and steel joists with metal deck. There were no major deficiencies or concerns with the structure.

**INTERIOR WALLS**

- The interior walls consist mostly of painted CMU throughout the building. A few walls are framed with wood paneling. The walls typically have a painted finish and are in good overall condition. Some minor cracking was observed throughout the building, primarily around door openings where we often expect to find minor cracking.

**INTERIOR CEILINGS**

- Ceilings through the building were either plaster or ATC (acoustical tile ceiling) with metal grid.

- In areas with ATC, ceiling tile size and pattern does not always match from one area to another and are in average condition, however, this is primarily an aesthetic issue. The ceiling tiles in areas are sagging and have stains or damage; which is normal as ATC tiles typically have an expected useful life of around 25-30 years. Replacement of sagging, stained, or damaged tiles may be considered for future routine maintenance. Areas with newer ATC are in good condition.

- When the tiles are replaced, consideration should be given to convert the ceilings with a 2’x4’ metal grid to a 2’x2’ metal grid. 2’x2’ ceiling tiles tend to perform better over time and exhibit less sagging.

**INTERIOR FLOORS**

- The flooring types vary throughout the building and are usually dictated by the designated use of the space. Most of the areas were either carpet or vinyl tile. There are also areas a few area of tile and epoxy.. Hard flooring surfaces throughout the 1951 building consist of VAT (vinyl asbestos tile). The VAT floor tiles do not require removal and replacement this time. Although abatement is not required - it should be considered as part of plan to eliminate asbestos from the building. As the flooring begins to deteriorate, or a new floor covering is considered, abatement should be performed.
• The carpet in several rooms is starting to fray or has stains. Replacement should be planned as part of the regular maintenance plan.

• Flooring at the gymnasium is vinyl and is in good condition. Bathroom and locker room floors are typically VCT and ceramic tiles respectively.

• The floors are generally in fair to good condition and are being properly cared for. Depending on the flooring types they should be reviewed on a case by case basis and replaced during routine building maintenance.

**INTERIOR DOORS**

• The interior doors in the 1951 building typically consist of wood frames with solid-core wood doors. Doors in the 1979 addition are typically hollow metal frames and doors. The doors and frames are in fair overall condition. Most, but not all, of the door hardware throughout the building has lever style door handles. We recommend retrofitting existing doors with round knobs to lever style handles to meet accessibility requirements. Other potential code deficiencies include corridor doors with louvered, non-rated corridor doors, corridor doors without closers, amount of glass in the door frames and transoms, and doors that open entirely into the corridor. These items are typically not allowed by code and may require improvements with future building remodels/additions.

**RESTROOMS**

• The restrooms throughout the building areas generally do not meet ADA accessibility standards as they were constructed before 1992. Common deficiencies include the entrance door width, stall width, fixture height, and the required clear floor space around doors and fixtures. Several improvements to make the restrooms more accessible have been implemented, such as grab bars.

• The plumbing fixtures appear to be in good condition. The toilet partitions are in good overall condition. The plumbing fixtures throughout the building are both manually and automatically operated. The finishes are dated and generally in good condition.

• Full compliance with current accessibility codes may be difficult to achieve with the current construction and plan layout. It is recommended to build a new restroom or convert an existing restroom into an accessible restroom.

**BUILDING CODE REVIEW**

• The building code review addresses readily visible items that may be non-compliant within the building. This review does not include specifics due to the extensive amount of time that is required to review the code, measure the building elements to demonstrate compliance or non-compliance, and assess areas that pose life safety concerns. The 2015 IBC (International Building Code) is currently adopted by the State of North Dakota. When undertaking a major building renovation, or addition – full compliance with the most current adopted code is typically required within the modified
areas, sometimes including deficiencies in other areas that have been grandfathered in during past fire marshal inspections.

- Readily observed non-compliant or potentially non-compliant issues were minimal and include:
  - Existing doors swing into the corridor.
  - No fire sprinkler observed. (May or may not be required.)

ACCESSIBILITY REVIEW

- A visual review of the facilities was performed to identify non-compliant items related to accessibility standards in accordance with the Americans with Disabilities Act (ADA). This review does not include all non-compliant items due to the extensive amount of time that is required to review all aspects of the building and site. This review will focus on non-compliance items that were readily visible during the building assessment.

- Non-compliant issues observed include:
  - Accessible parking, striping, and signage
    - Items exist, but they are not in strict accordance with standard.
  - Lack of accessible restrooms/restroom features.
  - Some door opening widths do not comply with ADA.
  - Some door hardware has round knobs instead of lever style handles.
  - Inadequate distance/clear space between doors at exterior vestibules.
  - Exterior paving surfaces, gaps at paving/stoops, ramps too steep.
MECHANICAL / PLUMBING ASSESSMENT

ELEMENTARY

The mechanical assessment includes a review of the existing building HVAC system and plumbing system.

The following components are discussed in this section:

- Controls
- Boilers
- Hydronic System Terminal Units
- Forced Air Systems
- Plumbing Fixtures & Piping
- Domestic Water Service

CONTROLS

- The majority of the HVAC systems are controlled by a pneumatic system.
- The pneumatic system was upgraded to pneumatic to electric
  - Utilize pneumatic thermostats to control the reheat valves by electronic relay.
  - Control sequences and strategies are extremely limited with this system and provide no feedback or alarm capability.
  - Pneumatic controls are considered obsolete technology and require continual preventative maintenance. Parts are increasingly hard to purchase and skilled personnel increasingly hard to find.

BOILERS

- Lower Boiler Room – Older Bldg
  - Very clean, good condition
  - 2 natural gas-fired steam boilers
  - Inspected in 2016
- Upper Boiler Room – New Bldg
  - Very clean, good condition
  - Natural gas-fired modular hot water boiler system (4)
  - Inspected in 2016
  - Gas meter looks new
  - Kitchen hood in good condition, very clean

HEATING PIPING

- Steam piping insulation in good condition
- Piping is routed in tunnels in old bldg
- Hydronic pumps in upper boiler room severely corroded, poor condition
- No issues reported
- Exposed piping in boiler room in average condition, good labeling
**HVAC UNITS**

- 1955 - HVAC in the classrooms is provided by cabinet unit ventilators (CUVs) along the exterior walls
- Additional heat by original fin tube radiators
  - Steam heat in FT & CUV
  - CUV provide fresh air (ventilation)
  - CUVs are two years old
  - CUVs have DX cooling coils
  - Fin tube heating but all CUVs were cooling, just had FA open, fighting each other
  - Some FT wasn’t running, no heating at all
  - Electronic controls don’t seem to work well
    - Room temps varied, up to 80 in some classrooms, photo
    - Note hazards on ductwork, upward turned flanges, sharp edges not protected
- 1992 - HVAC in the new building is provided by air handlers in the upper mechanical room.
  - HW heating & DX cooling
- One unit for the classrooms
  - Single Zone - one thermostat for all classrooms
  - Ductwork above ceiling
- One unit for the gym

**PLUMBING FIXTURES**

- All fixtures are in average to good condition
- No issues observed or reported on plumbing fixtures
- Sink faucets are manually operated
- Water closets and urinals are operated by automatic sensors
- Fixtures in the classrooms are manual.

**SANITARY PIPING**

- No current issues with sanitary piping or backups
- Staff reports any past drainage issues have been remedied

**DOMESTIC WATER SYSTEM**

- Water for the 1955 building is heated by a natural gas water heater in the lower boiler room. No issues reported.
- Water for the 1992 building is heated by 2 natural gas water heaters in the upper boiler room. No issues reported.
- Some newer drinking fountains and bottler fillers installed
- Some original galvanized piping still exists
  - Some has been replaced

**FIRE PROTECTION**

- There is no fire suppression system.
DISCUSSION

The mechanical systems of the school are in overall good condition, despite their age. Maintenance of the systems has been exceptional. No equipment is really beyond useful life. The issues are more with controls and comfort.

Primary issue in the 1955 building is controls. The CUVs are new and they have cooling capability, so already ahead of the game. The controls system needs to be upgraded to fully digital DDC. All pneumatics must be removed. This will allow control of FT and CUVs so they don’t fight each other and waste energy.

Primary issue in the 1992 building is comfort control, namely the entire classroom wing is served by one single zone air handler. This will never be comfortable.
ELECTRICAL ASSESSMENT

ELEMENTARY

The electrical assessment includes a review of the existing building electric service, power system, and lighting system.

The following components are discussed in this section:

- Electrical Service
- Power Distribution
- Lighting
- Fire Alarm

ELECTRICAL SERVICE AND POWER DISTRIBUTION

- The electrical service is fed from local utility pad mount transformer. The utility transformer feeds a main fusible distribution switchboard located in the gym storage room at 208Y/120 volts, 3-phase, 4-wire.
- Main switchboard is manufactured by Electro-Mechanical Industries (EMI) and is rated 600 amps, 208Y/120 volts, 3-phase, 4-wire. The switchboard feeds five branch circuit panels. The fusible switches in the main switchboard and the branch panels were all made by Federal Pacific around 1978. Federal Pacific is no longer in business and replacement parts may be difficult to find. The switchboard appears to be in good condition and the branch panels are in fair condition.
- There also appears to be a second main distribution panel, which is labeled as a 240/120 volt, 600 amp, 1-phase, 3-wire distribution panel. The panel is located in the boiler room and appears to be fed from the transformer through a 600 amp disconnect switch in the gym storage room. The panel was manufactured by Siemens in 2014 and it powers at least two branch circuit panels. The equipment is in excellent condition.
- With the advent of 1:1 computing devices, there are insufficient receptacles for all of the required device chargers. There is 1 device for every student in the K-3 grades and 1:2 in the 4-6 grades.
- The electrical code requires installation of tamper-resistant receptacles in educational areas serving children 7 years old or less. The school does not have these yet.

LIGHTING

- Lighting consists of linear T8 fluorescent lamps in surface mounted acrylic wraparounds in some of the corridors and recessed lensed troffers in those corridors with lay-in ceilings. The classroom lighting is linear pendant fixtures with prismatic lenses.
- The gym is lit by recessed round HID fixtures.
- Emergency lighting is provided by battery powered wall mount fixtures which are present in the corridors.
- The school does not have an emergency generator.
The classroom lighting controls are mostly toggle switches.

FIRE ALARM
- The fire alarm system is a Simplex 4010 zoned system equipped with horns and strobes for notification. The system is approximately 10 years old and is in good condition.
- Current code requires an emergency voice message system.
- No problems were reported by the staff.

ACCESS CONTROL
- The school has an electronic entry access system which protects 4 exterior doors. The doors can be unlocked with a key fob device.
- One door is equipped with a video intercom (Aiphone JF-2MED). The front office staff person can operate a door unlocking circuit using the monitor unit.
- The remainder of the building doors are kept locked but will allow emergency egress.
- There are several surveillance cameras installed at the school.

MASTER CLOCK
- The school has a master clock system from Dukane that maintains synchronization of the digital clocks in the classrooms. The system also schedules the passing bells.

INTERCOM / PUBLIC ADDRESS
- A Dukane intercom system controls the one-way and two-way communications between the main office and the other school rooms.
- A speaker system is deployed in the classrooms. The office can broadcast to the entire school or call a specific classroom. The called teacher can talk back to the office. The classrooms also have telephones.

DATA NETWORK
- The data network equipment is housed in a storage room on the lower level. The space is small but adequate and the equipment is well organized.
- The data cables are run in nonmetallic wireways in the corridors, however, the wireways are filled to capacity and some cables are run exposed on the corridor walls.
- The fiber demarcation from the network provider is in the high school building which is a couple blocks away. Fiber runs from the high school to the elementary school.
RECOMMENDATIONS

ELEMENTARY

The following list of recommendations is based upon the conditions observed and documented. In many cases, the items identified may be corrected through routine maintenance. In other instances, the items may be more significant in cost, complexity, or require coordination with other building systems.

The next step will be to identify and prioritize the recommendations. The list should be evaluated for items the District may wish to perform on their own, through the annual operating budget, or by bundling several projects to become part of a larger renovation project.

SITE / ARCHITECTURAL / BUILDING ENVELOPE RECOMMENDATIONS

- Consider performing exterior accessibility improvements from street parking to the sidewalk.
- Repair/replace deteriorated concrete walks around the building. Repair gaps/voids between sidewalk and entrance stoops.
- Repair/replace asphalt paving around the building.
- Address the accessibility to the playground.
- Address drainage issues at the playground.
- Address downspouts/drain water away from building.
- Repair limited areas of soil erosion around building.
- Replace hollow metal exterior doors around building.
- Replace any original windows remaining.
- Provide code compliant roof access and ladders.
- Tuckpoint deteriorated mortar joints and cracks in brick masonry.
- Remove/replace joint sealants around entire building.
- Replace entire roof.
- Asbestos abatement throughout the building.
- Replace flooring in the entire building.
- Replace ATC ceilings throughout the building.
- Repair gypsum board ceiling throughout the building.
- Paint walls throughout the building.
- Replace countertops and replace/refinish casework throughout the building.
- Provide locker in hallways.
- Replace doors and door hardware. Repaint frames to remain. Door hardware to be ADA lever style.
- Remodel restrooms and make them ADA accessible.
- Consider relocating chairlift to improve stair access.
- Allowance for kitchen equipment.
- Address building code deficiencies (when required by a triggering event)

MECHANICAL RECOMMENDATIONS

- 1992 Addition - Replace classroom AHU with new VAV system with HW reheat coils
- 1992 Addition - Replace hydronic pumps
- 1955 – Clean up outside air ductwork to CUVs (safer)
- 1992 – Replace modular boilers within 5 years
- Add destratification fans in gym
- Replace all pneumatic and pneumatic to electric controls with true DDC system in all areas
  - Web-based, access from any computer or mobile
Facilities Assessment

- Control all equipment for entire building
- Ensure proper code-required air balance
- Real time monitoring of environmental conditions with alarms
- Contributes to vast improvement of all comfort, temperature and humidity issues
  - Include CO₂ sensors for energy efficiency
- Assists with comprehensive maintenance planning
- Removal of all exposed pneumatic tubing & components
- 1955 – Replace galvanized plumbing supply piping above ceiling (need to determine extent)
- Will require removal of asbestos ceiling

**ELECTRICAL RECOMMENDATIONS**

- Replace the main distribution panel.
- Replace circuit breaker panels which are more than 40 years old.
- To meet current National Electrical Code requirements, replace standard 120-volt receptacles with listed tamper-resistant receptacles in areas accessible to children aged seven years or less.
- To meet current building codes, upgrade the fire alarm system with a system equipped with emergency voice messaging (vs. horns).
- Install occupancy sensor controls in classrooms and offices to increase energy efficiency.
- Expand access control to every door in the building.