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3 May 1996

Lewin Dover, Principal
Gallatin Gateway School
District No. 35
P.O. Box 265
Gallatin Gateway, MT 59730

Re: Long Range Planning Study
Gallatin Gateway School

Dear Lewin:

Enclosed are two copies of the Mechanical and electrical Engineers' reviews.

The reviews are based on observations made during a walk through of the existing school facilities conducted in March 1996. These reviews form a portion of the Long Range Planning Study being prepared by our office to guide the expansion and renovation of your school buildings to serve an expanding student population for the next 10 to 20 years.

The purpose of the reviews is twofold; first, to assess the general condition of existing equipment and systems and note deficiencies; secondly, to provide preliminary information on the feasibility of expanding or replacing systems to serve new additions and renovations to the existing school.

The information provided at this time is sufficient to make general decisions regarding the mechanical and electrical feasibility of master plan schemes for school expansion. After completion of the master plan and prior to any proposed construction, a more detailed proposal to utilize existing systems, upgrade them and/or provide new systems will have to be provided.

The reports will be included in our final long range planning study. In the meantime, these copies are provided for your interim use. Please let me know if you have any questions.

Sincerely,



James Lenon

JL/cs

Encls.

MECHANICAL SYSTEM EVALUATION
GALLATIN GATEWAY SCHOOL
APRIL 30, 1996

GENERAL

This report is an overview of existing conditions and recommendations for the building mechanical systems based upon a walk-through of the building and cursory review of the systems. It does not provide a detailed analysis of the systems, code items, or safety conditions.

HEATING AND VENTILATION SYSTEM - 1914 TWO STORY BUILDING

The building originally had two steam boilers in the basement and had cast iron steam radiators in the classrooms. The original heating system was removed and replaced in 1991 with a hydronic hot water heating system.

Currently there are two Raypak natural gas fired, hot water boilers located in the basement rated at 399,000 BTU/Hour input capacity. The boilers and circulating pumps serve all of the classrooms in the building including the 1961 addition and 1979 addition. The heating system appears to be in good condition without any major operating problems.

Each of the classrooms has a wall mounted fan coil unit which consists of a fan, hot water heating coil, and filters. The fan coil units recirculate the air from the room and do not provide any outside air ventilation. The Uniform Building Code requires mechanical ventilation of all occupied rooms in the building unless there is operable exterior openings with an area not less than 1/20 of the floor area of the room. Also, the UBC requires exhaust ventilation in all toilet rooms and janitors closets. The second floor toilet rooms and janitors closet do not have an exhaust fan.

HEATING AND VENTILATION SYSTEM - 1961 ADDITION

The multipurpose room, kitchen, and library is heated with gas fired unit heaters mounted about 8' above the floor. These units are adequate to provide heat, but do not provide the ventilation required by the UBC. There is a kitchen range hood with an exhaust fan which discharges the exhaust air above the roof.

HEATING AND VENTILATION - 1966 CLASSROOMS

The four classrooms at the west end of the building were originally heated and ventilated with wall mounted, steam unit ventilators. The original unit ventilators provided both heating and outside air ventilation of the classrooms. In 1991 the unit ventilators were replaced with wall mounted hot water fan coil units. These units do not provide outside air ventilation. The main boys and girls toilet rooms and the two toilet rooms in the classrooms are ventilated by an exhaust fan located on the roof.

HEATING AND VENTILATION - 1979 CLASSROOMS

The four classroom on the south side of the building toward the east end were originally heated with unit ventilators with electric heating coils. They are currently heated with hot water fan coil units similar to the other classrooms.

HEATING AND VENTILATION - 1979 GYMNASIUM

The gymnasium is heated with two natural gas fired heating and ventilating units. They are mounted below the roof above the basketball backboards. These units provide both heating and ventilation for the space. The units appear to be in fair condition without any major operating problems. The units were originally propane fired, but have been converted to natural gas.

RECOMMENDATIONS - HEATING AND VENTILATION

Overall, the heating and ventilation system is in good operable condition. However, the boilers, piping, and heating pumps do not have adequate capacity to serve a new addition to the building. It is recommended that the planning for a new addition include a new boiler room with new boilers, pumps, and piping sized to serve both the new addition and the existing building.

DOMESTIC PLUMBING SYSTEMS

The building is served by a water well and septic system. Domestic hot water for the building is heated with a 75 gallon, 75,000 BTU/Hr natural gas fired water heater located in the kitchen. The water heater is relatively new and appears to be in good condition. In the kitchen there is also an electric booster heater for the dishwasher. Plumbing piping in the building is typically copper for the domestic water and cast iron for the drainage, waste, and vent.

The plumbing fixtures in the main toilet rooms and west classrooms were installed in 1966. The fixtures are operable, but do not meet current ADA requirements for handicap access.

RECOMMENDATIONS - DOMESTIC PLUMBING SYSTEMS

The existing water piping serving the building is too small to accommodate a new addition if it includes new toilet rooms. It is recommended that planning for a new addition include a new water service from the well into a new boiler room. New water piping would be connected to the existing building. The existing water heater is large enough to serve additional toilet rooms, but would not be large enough if showers were installed. Planning for a new addition should also address ADA access requirements for the plumbing fixtures.

The existing 4" building sewer exits the southwest side of the building. If a new septic system is installed, the sewer would need to be extended to the new location and connected to the sewer serving the new addition.

FIRE PROTECTION

The building currently has portable fire extinguisher. An automatic sprinkler system is not required by code and is not feasible with a water well system.

GALLATIN GATEWAY SCHOOL ELECTRICAL EVALUATION

LIGHTING

The existing lighting in Gallatin Gateway School is mostly fluorescent with some incandescent fixtures found in small toilet rooms, store rooms, or auxiliary spaces. The fluorescent fixtures appear to have been recently retrofitted with new energy efficient T-8 lamps and electronic ballasts. The 1966 addition has the older polystyrene lens, which turn yellow with age and become very brittle. The 1914 original building has the older eggcrate style lenses. The gym has the new 400 Watt metal halide high intensity discharge lamps, which are still being used today. The lighting seems adequate except for some areas in the 1914 building, and new lens should be installed in the 1966 addition before yellowing of the lens cuts the light output down below recommended levels.

POWER

The existing electrical service to the building is a 600 amp, 120/240V single phase three wire service. The main distribution panel is a General Electric Type CDP with a 600A-2P main breaker. It has some space left for additional distribution breakers, but the limiting factor would be the service and main breaker amperage. If a major addition or remodeling took place, it would be advantageous to have a three phase service for balance and larger HVAC equipment and for any future kitchen equipment. Also, the 600 amp single phase service would not have enough capacity for a major addition or remodel if a significant amount of electrical was added. Some of the branch circuit panels in the building are very old load center type with no spare capacity. It also appears there is still some old knob and tube wiring in the 1914 building, which is old Campbric insulated wire run through short tubes at support points and is not in conduit. As the insulation becomes old and brittle, it can become a hazard if bumped or disturbed. Also, the present system uses the conduit system for its ground, which does meet present codes; however, it does not always provide adequate grounding for electronic type equipment and computer systems. Some code violations encountered were: non-ground fault interrupter (GFI) outlet by kitchen sink, fixture lamps in west janitor room hanging by electrical wires, no fire alarm breakglass station at west entry or at south multi-purpose room exit as required by code, some Romex wiring in boiler room not in conduit, a non-grounding type outlet on Romex in basement shop, non-GFI outlets by sinks in west classrooms, not enough clearance to meet code for panel located in east classroom opposite gym door, also open spaces in panel to a live bus bar. It should also be noted that some rooms, especially in the older parts, seem to be short on

electrical outlets. Lack of outlets is not a code violation in commercial buildings, but does promote use of extension cords and spider plugs, which can become serious fire hazards.

In summary, the present power system appears adequate for the present building needs, but should be enlarged and upgraded to three phase for any major additions and remodels. The original building has some outdated wiring methods, which should be eventually updated if it is retained and code violations should be corrected.

EMERGENCY LIGHTING (EXIT AND EGRESS)

The Life Safety Code NFPA 101 requires emergency lighting for all exit lights, and battery pack lighting for all paths of egress. The only portion of the building which presently meets this code is the 1979 addition. It has battery backup exit and egress lights. The rest of the school does not have emergency lighting for exit and egress and does not meet code. If and when battery backup exits are installed, we would recommend using LED type, which only use about 7 watts.

FIRE ALARM SYSTEM

The existing fire alarm system has one zone for the whole school and is an Edwards #1520A type panel. There are two exits which should have breakglass stations installed to meet code. (See code violations under power section.) If the school became much larger than its present size, it would become desirable to install a new fire alarm system with the building broken up into zones for quicker response by knowing which zone was initiated.

CLOCK-SPEAKER INTERCOM SYSTEMS, PROGRAM SYSTEM, MEDIA RETRIEVAL

Presently there are clocks in the classrooms, but they are either battery clocks or plug into a clock outlet. There is no centrally controlled clock system. There also is no separate intercom, program, or media retrieval system.

ADA COMPLIANCE

Electrically, ADA compliance items are height requirements for outlets (15" minimum above floor) and requirements on fire alarm systems to have visual strobes as well as audible horns. Also, there are requirements for heights on all fire alarm devices. Presently in Gallatin Gateway School, none of the devices typically meet ADA compliance on outlets or fire alarm.