

Appendix D

Independent Building Evaluations

Construction:

The building structure consists of masonry bearing walls, steel columns and beams, concrete floor slabs and pitched wood roof trusses. The building envelope is comprised of brick veneer with CMU backup exterior walls, cast stone accents, and aluminum windows. The roof is a combination of EPDM and simulated slate. Windows are fixed and double hung aluminum windows with insulated glazing. There is one hydraulic passenger elevator, one open stair and one enclosed stairway in the building.

Deficiencies

The following required maintenance items were observed: The membrane roof and gutter systems require replacement, deteriorated wood at gutters and soffits needs to be replaced, roof drains are not installed properly, metal drains, vents, etc. on the roof are all completely rusted, new sealant is required at storefront system, structural failure of the masonry screen wall is evident.

ADA Compliance:

The building is handicap accessible.

Heating System:

The building is heated through variable air volume terminal control units equipped with electric resistance heating coils. The heating system is not energy-efficient and is in fair condition. It is recommended a hot water heating system be provided to replace the electric heating system.

Cooling System:

The Main Building is cooled by an air-cooled condensing unit, which serves a direct expansion cooling coil in a central station air handling unit. The condensing unit is 20 years old and is beyond its useful life. It is recommended the cooling system be replaced in its entirety.

The Snack Bar is served by a small split direct expansion unit with remote air-cooled condensing unit.

Air Distribution System:

A single indoor central station air handling unit as manufactured by Trane serves the building. The unit is 20-years old and consists of a filter section, 2 circuit direct expansion cooling coil and supply fan with inlet guide vanes. The AHU is located in a mechanical equipment room, but is not serviceable or replaceable. Fan-powered variable air volume terminal control units with electric heat coils are located throughout the building and are thermostatically controlled. The 20-year old system is not energy-efficient. It is recommended that the air handling unit and all terminal control units as a minimum be replaced in their entirety.

Automatic Temperature Controls:

The Automatic Temperature Control System is served from the AD Building and uses obsolete KMC controls. It is recommended the automatic temperature control system be replaced in its entirety with DDC Controls tied into the Campus EMS.

Plumbing:

Domestic hot water heater is manufactured by State, has a 40-gallon capacity, and has a 5500-watt electric heating element.

A sump pump is located in the mechanical equipment room.

Fire Protection:

The building is protected by a wet pipe sprinkler system.

Electrical:

The electrical service is 1200A, 208/120 3 phase, 4 wire. The Siemens main switchboard, installed in 1990, is original to the building as is the rest of the electrical distribution system. The electrical equipment appears to be in good condition.

Emergency:

A central battery inverter system, located in the main electrical room, supplies code required egress lighting. Emergency lights are provided in the corridors as a separate system from the normal lighting, and are normally off.

Lighting:

The lighting systems are original to the building. In general, lighting systems utilize 34 watt, T12 lamps and magnetic ballasts. Downlights contain compact fluorescent lamps with magnetic ballasts.

It is recommended to retrofit or replace the building T12 fluorescent lighting with energy efficient T8 lamps and electronic ballasts per the current college standards. Replacement of relatively inefficient lighting systems and the installation of automatic lighting controls is currently an incentive for a SMECO rebate program.

Fire Alarm:

The Fire Alarm Control Panel is a Simplex System located in the main electrical room. Audio/visual notification devices are located throughout the building per ADA requirements.

Voice/ Data/Video:

The incoming voice, data and video services consist of 50pr copper, 12mm/4sm traditional and 12 strand sm air blown fiber optic cabling. The MPOP is located on the ground floor next to the main electric room. The services are adequate for the building.

Construction:

The building structure consists of concrete footings, steel columns and floor joists, concrete floor slabs and pitched wood roof trusses. The building envelop is comprised of brick veneer with block backup exterior walls, cast stone accents, and aluminum windows. The roof system is a combination of simulated slate and EDPM membrane. Windows are fixed and double hung aluminum windows with insulated glazing. There is one hydraulic passenger elevator, one service elevator and three enclosed stairways in the building. The building has a commercial kitchen that serves the main dining facility on campus. The building was last renovated in 1996.

Deficiencies

The following required maintenance items were observed: The roof membrane will need to be replaced in the next 5 years, roof drains appear to be inadequate, roof slope appears to be inadequate at membrane roof, the automatic sliding entrance doors appear to be a constant maintenance issue, the lack of slope to drains in the kitchen is causing water leakage to the floor below, code compliant guard rails are not provided at egress stairs, handrail diameter is not code compliant, there is water infiltration into the underground connection between the BI and BK buildings, deteriorating wood siding at cupola needs to be replaced and is causing water infiltration into the dining room below, there are moisture problems in the dining room causing wet floors and ceiling damage, exterior brick pier is settling, which is causing significant horizontal void in mortar joint, water damage at exterior brick sills, and deterioration of wood at soffit. We recommend repairing leaks and damaged drywall, prior to commencing with the planned replacement of interior finishes in the conference center. There is no room for expansion of this building.

ADA Compliance:

The building is mostly handicap accessible. There is a kitchenette on the 2nd floor that is not accessible.

Heating System:

The Heating System is served by the BU Building Central Heating Plant. Two (2) constant volume base-mounted end-suction pumps as manufactured by Taco circulate hot water throughout the building.

Cooling System:

The cooling system is served by the cc building central cooling plant. The piping configuration and flow rates mix supply and return water; therefore, the supply water temperature is not as cold as it should be for the equipment it serves. It is recommended that the piping/pumping and control for the chilled water system be replaced in its entirety.

The computer room is served by an independent down flow computer room unit as manufactured by compu-air. The unit has a remote air-cooled condenser located in the areaway. The unit serves the main computer room for the campus and is unreliable. The unit should be replaced and also be provided with a back-up unit.

Air Distribution System:

Offices and meeting rooms are served by 4-pipe fan coil unit system in conjunction with a dedicated outdoor air unit for ventilation. The fan coil units and air handling units are not accessible for service and most areas suffer from high humidity levels. The outside air has a run-around heat recovery coil, which is the least efficient type of heat recovery that can be used. The unit was manufactured by racan and was installed in 1995. The unit utilizes the heat recovery coil, chilled water coil with face and bypass damper control, and hot water coil. Four mcquay rooftop units serve 1) meeting room bi 113; 2) make-up air for kitchen hood, 100% o/a; 3) lobby; and 4) serving line/dining area. A separate indoor air handling unit serves meeting room bi 113e. This unit is not accessible for service or replacement. All areas suffer from high humidity levels. It is recommended the HVAC System be replaced in its entirety.

Automatic Temperature Controls:

All automatic temperature controls are local electric type. A combination of paragon and Honeywell control devices exist throughout the building. It is recommended the automatic temperature control system be replaced in its entirety with a DDC System tied into the Campus EMS.

Plumbing:

A combined service 4-inch incoming water line enters the building and a 3-inch cold water line provides domestic cold water to the building. A rudd/rheem 119-gallon, 35 kw electric hot water heater used in conjunction with an a.o. smith 1000-gallon hot water storage tank with hot water heat exchanger provides domestic hot water to the building. The hot water heater was installed in 2007 and is in good condition.

Fire Protection:

The building is fully protected by a 4-inch water service serving one wet pipe zone and one dry pipe zone. Both zones are 4-inch in pipe size.

Electrical:

The electrical service is 1200a, 480/277v, 3 phase, 4 wire. The square d fused main switchboard , installed in 1995, is original to the building as is the rest of the electrical distribution system. Electrical closets are located throughout the building. The electrical equipment appears to be in good condition.

Emergency:

Emergency egress lighting and other life safety loads in the bi and cc buildings are served by a 30kw diesel generator and automatic transfer switch located in the adjacent cc building.

Lighting:

The lighting is original to the building, consisting of a combination of fluorescent 2x4 fixtures, recessed compact fluorescent downlights and wall washers, and decorative type fixtures. The 2x4 fixtures utilize a combination of either t12 and/or t8 lamps.

The exterior lights and parking lot lights are contactor controlled via time clock, located in the main electric room.

It is recommended to retrofit or replace the building t12 fluorescent lighting with energy efficient t8 lamps and electronic ballasts per the current college standards, and to replace the incandescent lighting fixtures. Replacement of relatively inefficient lighting systems and the installation of automatic lighting controls is currently an incentive for a smeco rebate program.

Fire Alarm :

The fire alarm control panel is a fci system (honeywell), located in the main electrical room. The system is compliant with current codes and ada requirements, with audio/visual notification devices located throughout the building.

Voice/ Data/Video:

The mpop for the campus copper voice service from Verizon is located within the bi building, with copper voice service to the remaining campus buildings distributed from the ground floor mdf. Traditional fiber optic cabling is also distributed from the bi to the campus. Two 18 strands of single mode airblown fiber optic cable serves the building. The services are adequate for the building. There is currently no spare capacity in the campus communications underground duct bank system entering the building.

Construction:

The building structure consists of masonry bearing walls, steel floor joists, concrete floor slabs and pitched wood roof trusses. The building envelop is comprised of brick veneer with CMU backup exterior walls, cast stone accents, and aluminum windows. The roof is simulated slate. Windows are fixed and double hung aluminum windows with insulated glazing. There is one hydraulic passenger elevator and two enclosed stairways in the building.

Deficiencies

The following required maintenance items were observed: The skylight system leaks, a gutter system is recommended at the at the skylight system to prevent further water damage to exterior wall below, an air lock entrance vestibule is recommended at the Multi-Purpose Room to avoid cold drafts penetrating the building. There is no room for expansion of this building.

ADA Compliance:

The building is mostly handicap accessible. There lavatory faucets and urinals are not accessible.

Heating System:

The heating system is tied into the BU Building Central Heating Plant. In-line circulating pumps (Taco 1900 Series) distribute hot water throughout the building. The circulating pumps are in good condition, but are constant volume and less efficient than variable flow pumps.

Cooling System:

Two (2) air-cooled McQuay chillers installed in 1993 and 1995 swerve both the CC and BI Buildings. Two (2) constant volume base-mounted end suction pumps as manufactured by Taco circulate chilled water to the chillers, CC Building, and BI Building.

Air Distribution System:

A single central station variable air volume interior air handling unit as manufactured by Racan serves the building. The mechanical equipment room in which it is located is used as a return air plenum. The unit has a filter section, chilled water cooling coil and supply fan served by a variable speed drive. The unit does not contain a preheat coil and the building is always too cold. The interior VAV boxes are cooling – only, and the VAV boxes with heat coils are not piped correctly (i.e., not counterflow) and several VAV boxes are installed upside down. It is recommended that the VAV box heat coils be correctly piped and heat coils be provided for VAV boxes not currently equipped with heat coils.

Automatic Temperature Controls:

The building has local electric controls only. It is recommended the automatic temperature controls be replaced with direct digital controls tied into the Campus EMS.

Plumbing:

The incoming water service is a 6-inch combined domestic water and fire protection. A 40-gallon electric hot water heater as manufactured by State provides domestic hot water to the building.

Fire Protection:

The building is protected by a sprinkler system. A 6-inch water line serves two zones; one wet pipe and one dry pipe.

Electrical:

The electrical service is 2500A, 480/277V, 3 phase, 4 wire. The Siemens ITE fused main switchboard installed in 1995, is original to the building as is the rest of the electrical distribution system. The electrical equipment appears to be in good condition.

Emergency:

A 30kW diesel generator serves emergency egress lighting and other life safety loads in the building and adjacent BI building. The generator and automatic transfer switch is located within the CC building.

Lighting:

The lighting is original to the building, consisting of a combination of fluorescent 2x4 fixtures, recessed compact fluorescent downlights and wallwashers. The 2x4 fixtures utilize a combination of either T12 and/or T8 lamps. The exterior lights and parking lot lights are contactor controlled via time clock, located in the Main Electric Room.

It is recommended to retrofit or replace the building T12 fluorescent lighting with energy efficient T8 lamps and electronic ballasts per the current college standards. Replacement of relatively inefficient lighting systems and the installation of automatic lighting controls is currently an incentive for a SMECO rebate program.

Fire Alarm :

The Fire Alarm Control Panel is a FCI System (Honeywell), located in the main electrical room. The system is compliant with current codes and ADA requirements, with audio/visual notification devices located throughout the building.

Voice/ Data/Video:

The incoming voice, data and video services consist of 50pr copper, 12sm/4mm traditional fiber and 12 strand sm airblown fiber optic cabling. The MPOP is located on the ground floor, which is also serving as the building MDF. The services are adequate for the building.

Construction:

The building is a one-story brick and block bearing wall structure with steel bar-joists at the low-slope roof and pre-engineered wood trusses at the pitched roof. The windows are aluminum frame with insulating glass. There is a new membrane roof system at the low-slope roof areas, and simulated slate roof at the pitched roofs. The building interiors in the common areas have been recently refinished.

Deficiencies

The following required maintenance items were observed: exterior slab settlement resulting in gaps at storefront sills, inoperable hose bibs, leaking gutter at south side of building, ineffective window seals, missing window mullion covers, damaged roof vent pipes. Code violations observed include a missing guard rail at the exterior stair to the areaway / lower level mechanical room.

ADA Compliance:

The building is not handicap accessible. The following building components are not handicap accessible: door hardware, drinking fountains, transaction counters, door clearances, lavatory knee clearance, lavatory faucets, and toilet stalls.

Mechanical /Plumbing / Electrical Systems:

Heating System:

The heating system consists of a hot water circulating system. Heating water is generated by two (2) cast iron boilers as manufactured by Peerless. Each boiler has a heating capacity of 501,000 BTUH or 15 boiler horsepower at an oil-firing rate of 5.1 GPH. The boilers are original to the building constructed in 1989, are 21 years old, and in fair condition. Higher efficiency units are available. The underground fuel oil tank is 6000 gallon capacity and was installed in 2004 along with the underground fuel oil piping and Pneumercator leak detection and monitoring system.

Hot water is distributed by a constant volume base-mounted end suction pump and standby to perimeter finned tube radiation through a 3-inch black steel piping system. The pumps were manufactured by Bell and Gossett and are original to the building (21 years old). The pumps are in fair condition.

Heating plant controls are antiquated, comprised of a combination of local electric/electronic and pneumatic actuation.

It is recommended to replace the heating plant with energy-efficient boilers, pumps, controls, and variable flow distribution system.

Cooling System:

The building is cooled by two (2) packaged rooftop units which utilize hermetic compressors. The units are original to the building (21 years old) and are beyond their useful lives. The units use R-22 refrigerant. The units were provided with electric resistance heaters for warm-up purposes only. These heaters are locked out during normal occupied mode of operation. The units have self-contained electric controls that have/are in failing condition, requiring manual adjustment.

The units are loud and inefficient. Internal drain pans and troughs to convey condensate are in failing condition. Condenser coils are also starting to fail. Compressors are failing, most have been replaced.

Occupied spaces below the rooftop units are noisy when the units are operating.

It is recommended to replace the rooftop units with energy-efficient units utilizing variable speed drives and heat recovery.

Air Distribution:

The air distribution system is variable air volume (VAV). Supply air is ducted from the roof-mounted AHU's to VAV boxes. The VAV boxes were not provided with heat and modulate the amount of cold air to the space by inflating/deflating an internal bladder (i.e., not dampered control). These units are inefficient and are in a failing condition. Tempering of the supply air is needed to prevent drafts and to offset the roof heat loss. Terminal air devices consist of perimeter linear slot diffusers and interior louvered ceiling diffusers.

The return air system is via a ceiling plenum.

Automatic Temperature Controls:

The control system is local-only (not tied into the Campus Energy Management System), utilizes a combination of pneumatic and electric/electronic controls. The control system is antiquated and does not function properly. It is recommended that the control system be replaced in its entirety and be tied into the campus EMS.

Plumbing:

A three-inch cold water service provides the building with domestic water. A pressure reducing valve and backflow preventer are installed on the incoming line.

The domestic hot water heater is electric storage type as manufactured by RUDD/RHEEM. The heater is 3-4 years old, has a heating capacity of 18 kW and storage capacity of 119 gallons.

Fire Protection:

The building does not currently have a Fire Protection System.

Electrical:

The electrical service is 1200A, 208/120V, 3 phase, 4 wire. The Siemens ITE fused switch main switchboard, as well as the remaining electrical distribution equipment, is original to the building. The equipment is nearing the expected useful life is 25-30 years, although it appears in good physical condition.

The main switchboard does not have sufficient code required clearance in front due to the installation of a data equipment rack in the room after the original construction.

Emergency:

A central battery inverter system, located in the main electrical room, supplies code required egress lighting. Emergency lights are provided in the corridors as a separate system from the normal lighting, and are normally off.

Lighting:

The lighting systems are original to the building. In general, lighting systems utilize 34 watt, T12 lamps and magnetic ballasts. Metal halide uplights and compact fluorescent downlights illuminate the corridor areas. Incandescent bulbs are in use in the Boiler Room, as well as on exterior building mounted fixtures and in wall sconces in instructional spaces. Wall mounted occupancy sensors have been installed in classrooms.

It is recommended to retrofit or replace the building T12 fluorescent lighting with energy efficient T8 lamps and electronic ballasts per the current college standards, and to replace the incandescent lighting fixtures. Replacement of relatively inefficient lighting systems and the installation of automatic lighting controls is currently an incentive for a SMECO rebate program.

Voice/Data/Video:

The incoming voice, data and video services consist of 50pr copper, traditional fiber and airblown fiber optic cabling. The MPOP is located in the main electrical room, which is also serving as the building MDF. The services are adequate for the building.

The location of the data equipment rack is infringing on the required clearance in front of the switchboard, and as such is recommended to be relocated.

Construction:

The building structure consists of steel columns and beams, concrete floor slabs and pitched steel roof joists. The building envelope is comprised of brick veneer with CMU backup exterior walls, cast stone accents, and aluminum windows. The roof is a combination of EPDM and simulated slate. Windows are aluminum storefront system with insulated glazing. There are two hydraulic passenger elevators, and two enclosed stairways in the building.

Deficiencies

The following required maintenance items were observed: The membrane roof systems will require replacement in the next 5 years, there is inadequate roof slope and evidence of ponding at portions of the membrane roof, coping system at top of mansard roof is leaking in multiple locations, water damage is evident at plaster column wraps on the upper level, ceramic tile is coming off toilet room walls, there is no hood at the range in the kitchenette, water infiltration has been an issue at lower level (foundation drainage issue), ceiling tiles throughout the building are sagging most likely due to high humidity levels, odors in toilet rooms are exacerbated by incorrect installation of exhaust system.

ADA Compliance:

The building is mostly handicap accessible. The urinal stalls and the staff kitchenette are not accessible.

Heating System:

The heating system consists of two (2) cast iron oil-fired hot water boilers. The boilers are 6-section, 88 Series (Model 688) as manufactured by Weil McLain. The burners are manufactured by Becket. Two (2) constant volume heating water pumps serve two zones of heating, a perimeter baseboard radiation and VAV box heat coil loop and an air handling unit loop. Three-way valves mix supply water with return water such that each loop can have independent supply water temperature setpoints and reset schedule.

Cooling System:

A 125-ton air-cooled chiller as manufactured by Trane and installed in 2009 generates chilled water for the building. Two (2) Bell and Gossett chilled water pumps circulate chilled water through the chiller to the air handling units. The chilled water pumps are low on flow.

Air Distribution System:

The building is served by two (2) indoor central station variable air volume air handling units consisting of a preheat coil, cooling coil, and supply air fan. There is no reheat capability and return fans are remote in-line type. Supply and return fans are equipped with variable speed drives. The units were installed in 1997 and are in good condition. Most VAV boxes do not have reheat coils. Corridor diffusers are connected directly to the high pressure supply main duct (i.e., no VAV box). The building houses the Security Office and a special Collections Area which requires 24/7 conditioning. **Separate units are recommended so the entire building does not need to be heated, cooled, and ventilated 24/7, since these area are both very small in comparison to the building.**

Automatic Temperature Controls:

The system is Automated Logic, using local pneumatic controls throughout the building.

Plumbing:

The building is served by an 8-inch combined service. A 3-inch cold water service provides the domestic cold water for the building. A 52-gallon, 27kW hot water heater as manufactured by Lochinvar provides domestic hot water for the building.

Fire Protection:

The building is fully sprinklered and is served a 6-inch main. The building has two sprinkler zones.

Electrical:

The electrical service is 1600A, 480/277, 3 phase, 4 wire. The Square-D main switchboard, as well as the remaining electrical distribution equipment in the building, is original to the building (1975.) The equipment is nearing its useful life expectancy of 30-40 years, but appears to be to be in good condition. **We recommend that infrared scanning of the equipment be performed to ensure the integrity of the system.**

Emergency:

Emergency egress lighting and other life safety loads in the building are served by a diesel generator via an automatic transfer switch.

Lighting:

The lighting systems are original to the building. In general, lighting systems utilize a combination of either T12 and T8 lamps. The exterior lights and parking lot lights are contactor controlled via time clock, located in the Main Electric Room.

It is recommended to retrofit or replace the building T12 fluorescent lighting with energy efficient T8 lamps and electronic ballasts per the current college standards. Replacement of relatively inefficient lighting systems and the installation of automatic lighting controls is currently an incentive for a SMECO rebate program. The installation of full building automatic lighting controls is recommended for energy savings. This is currently an incentive for a SMECO rebate program.

Fire Alarm :

The Fire Alarm Control Panel is a Simplex System located in the main electrical room. The system is compliant with current codes and ADA requirements, with audio/visual notification devices located throughout the building.

Voice/ Data/Video:

The campus internet and LAN links are served from the LR building, via incoming 24 strand single mode fiber optic cabling. Airblown fiber optic cabling (and CATV) is then distributed from the LR building to the rest of the campus via the underground communications ductbank system. The MPOP is located on the ground floor, which is also serving as the building MDF. The incoming voice/data/CATV services for the LR building consist of 100pr copper cabling, 12 strand sm/4 strand mm traditional fiber and 12 strand sm airblown fiber optic cabling. The services are adequate for the building.

Construction:

The building is non-load bearing brick with clay tile backup. The structural system consists of concrete footings, steel columns, steel joist floor framing and concrete slabs. The roof system is an EDPM membrane on insulation board, metal deck and steel joists. Windows are fixed and double hung aluminum windows with insulated glazing. There is one hydraulic elevator and two enclosed stairways in the building. The building was last renovated in 1995.

Deficiencies

The following required maintenance items were observed: The roof membrane will need to be replaced in the next 5 years, the floor drain in the lower level Women's Toilet Room appear to have a break in the sanitary pipe, storm drainage does not adequately drain away from the building and is causing water infiltration in the basement, the elevator shaft requires waterproofing and a oil/water separator, light fixtures are located over the main stairs are recommended to be relocated to allow for lamp and ballast replacement. The previous library space is under-utilized. It is recommended that this space be re-purposed.

ADA Compliance:

The building is handicap accessible.

Heating System:

The Heating System consists of a single oil-fired cast iron hot water boiler. The boiler was manufactured by Weil McLain, Model 1188 (88 Series, 11 Sections) with a Powerflame burner with a capacity of 2724 MBH gross output, 2115 MBH net hot water output. A 10,000 gallon underground fuel oil storage tank has a Pneumacator fuel level gauge and an Emco/Wheaton Leak Detection System. A duplex set of fuel oil pumps transfers fuel oil from the tank to the boiler. Two (2) base-mounted end suction constant volume heating water pumps (lead and standby) circulate hot water to fan coil units and air handling units' heating coils and to cabinet unit heaters located throughout the building.

The heating plant operates during the cooling season to provide the necessary reheat for the dehumidification cycle. A small summer boiler and variable speed pump are recommended for this minimal load. The pumps were manufactured by Taco. The heating plant was installed in 1996 and is in fair to good condition.

Cooling System:

The Cooling System consists of a single air-cooled rotary screw chiller. The chiller has two (2) compressors and was manufactured by the Trane Company. Underground chilled water pipes extend from the chiller to the Basement Mechanical Equipment Room. Two (2) constant volume base-mounted end suction pumps (lead and standby) circulate chilled water to fan coil and air handling unit cooling coils. The pumps were manufactured by Taco. All equipment and systems were installed in 1996 and are in fair to good condition.

Air Distribution System:

The building is served by a four-pipe fan coil unit system used in conjunction with a dedicated outdoor air system. Typically, floor-mounted console type fan coil units serve each space. The fan coil units contain individual heating and cooling coils equipped with 3-way modulating valves controlled by a space thermostat. The fan coil units are recirculating air type (i.e., no outside air/100% return air). The fan coil units were manufactured by the Trane Company. A 100% outdoor air, air handling unit is located on the Upper Level and provides conditioned ventilation air to all spaces. The unit consists of a filter section, hot water pre-heat coil, chilled water cooling coil and supply air fan. About five (5) years ago, a duct-mounted hot water heating coil was installed for dehumidification and reheat purposes to resolve previous humidity issues within the building. A separate exhaust system with a fan on the roof provides building exhaust.

There is no heat recovery from the exhaust air stream to the outside air stream (pre-condition) or the supply air stream (i.e., free reheat). A summer boiler or heat recovery device is recommended to reduce energy consumption to provide the necessary dehumidification and reheat capacity. The system and equipment (manufactured by The Trane Company) was installed in 1996 and is in fair to good condition.

Automatic Temperature Controls:

The Building Control System was manufactured by Landis and Gyr (currently Siemens) and is tied into the Leonardtown Campus Energy Management System. The building is partially direct digitally controlled and utilizes pneumatic actuation for all valves and control dampers. The system is basic, was installed in 1996, and is in fair condition.

Plumbing:

The building is served by a 4-inch combined fire protection and domestic water system from the public water municipality. The domestic water is a 3-inch service and is protected by a backflow preventer. Domestic hot water is generated by a RUUD/Rheem, 116 gallon, 18 kW electric hot water heater. The domestic water system, hot water heater, and plumbing fixtures appear to be in fair to good condition.

Fire Protection:

The building is fully protected by a wet pipe sprinkler system. A 4-inch line with backflow preventer and alarm check valve are located in the Lower Level Mechanical Room and serve the entire building. The Fire Protection System appears to be in fair to good condition.

Electrical:

The electrical service is 800A, 480/277V, 3 phase, 4 wire. The Main Switch Board consists of a Square-D I-Line Style Switch Panel. Electrical Closets are located throughout the building. The service was updated when the building was completely renovated in 1996 and appears in good condition.

Emergency:

There is a small propane- fired generator on- site used to power sump pumps at both ends of the building in case of power failure to prevent ground floor flooding. The associated transfer switch is located in the Main Electric Room.

A larger emergency generator is recommended for this building to serve the life safety loads and sump pumps, in order to reduce monthly battery inspections/replacements.

Lighting:

The lighting system was retrofit during the 1998 remodel. Fixtures with electronic ballasts were installed throughout the building: 2x4 fixtures with T8 lamps in classrooms and offices, recessed downlights with compact fluorescent lamps (CFL). Ceiling-mounted occupancy sensors have been installed in several classrooms. The exterior lights and parking lot lights are controlled via time clock. The time clock and contactor are located in the Main Electric Room.

The installation of full building automatic lighting controls is recommended for energy savings. This is currently an incentive for a SMECO rebate program.

Fire Alarm :

The Fire Alarm Control Panel is an FCI System (Honeywell), located in the main electrical room. Audio/visual speaker strobe devices are located throughout the building per ADA requirements, with voice evacuation. Pull stations are located at all means of egress.

Voice/ Data/ Video:

The incoming voice, data, and video service consists of 300 pair copper and traditional fiber. The services enter an MDF room located on the Ground floor with one additional IDF closet located on the other floors. The MDF services in Building A are supplied from Building B. Several 110 blocks had been damaged due to water damage and connections have been rerouted through Building A.

It is recommended that the 110 blocks be replaced to achieve full capacity in Building A.

Construction:

The building structure consists of concrete footings, steel columns and beams, concrete floor slabs and steel roof trusses. The building envelope is comprised of brick veneer exterior walls, cast stone accents, and aluminum windows. The roof system is an EDPM membrane on insulation board, metal deck and steel joists. Windows are fixed and double hung aluminum windows with insulated glazing. There is one hydraulic elevator in the building. The building has one elevator and two enclosed stairways. Deficiencies in the Mechanical system were repaired and select finishes replaced in 2006.

Deficiencies

The following required maintenance items were observed: The roof membrane will need to be replaced in the next 5 years, roof drains do not appear to have been installed properly, exterior sealants need to be replaced, windows are near end of life and are not energy efficient, cavity wall weeps do not appear to be installed properly. The spaces previously occupied by Wellness functions should be re-purposed. The campus bookstore is one option to relocate to the vacant space on the first floor. There is no room for expansion of this building without encroaching on main campus pedestrian path and lawn.

ADA Compliance:

The building is handicap accessible.

Heating System:

The Heating System consists of a single oil-fired cast iron hot water boiler. The boiler was manufactured by Weil McLain, Model 1288 (88 Series, 12 Sections) with a Powerflame burner with a capacity of 2724 MBH gross output, 2115 MBH net hot water output. A 10,000 gallon underground fuel oil storage tank has a Pneumacator fuel level gauge and an Emco/Wheaton Leak Detection System. A duplex set of fuel oil pumps transfers fuel oil from the tank to the boiler. Two (2) base-mounted end suction constant volume heating water pumps (lead and standby) circulate hot water to fan coil units and air handling units' heating coils and to cabinet unit heaters located throughout the building.

The heating plant operates during the cooling season to provide the necessary reheat for the dehumidification cycle. A small summer boiler and variable speed pump are recommended for this minimal load. The pumps were manufactured by Taco. The heating plant was installed in 1996 and is in fair to good condition.

Cooling System:

The Cooling System consists of a single air-cooled rotary screw chiller. The chiller has two (2) compressors and was manufactured by the Trane Company.

Underground chilled water pipes extend from the chiller to the Basement Mechanical Equipment Room. Two (2) constant volume base-mounted end suction pumps (lead and standby) circulate chilled water to fan coil and air handling unit cooling coils. The pumps were manufactured by Taco. All equipment and systems were installed in 1996 and are in fair to good condition.

Air Distribution System:

The building is served by a four-pipe fan coil unit system used in conjunction with a dedicated outdoor air system. A combination of horizontal above-ceiling and floor-mounted console type fan coil units serve each space. The fan coil units contain individual heating and cooling coils equipped with 3-way modulating valves controlled by a space thermostat. The fan coil units are recirculating air type (i.e., no outside air/100% return air). The fan coil units were manufactured by the Trane Company. A 100% outdoor air, air handling unit is located on the Upper Level and provides conditioned ventilation air to all spaces. The unit consists of a filter section, hot water pre-heat coil, chilled water cooling coil and supply air fan. About five (5) years ago, a duct-mounted hot water heating coil was installed for dehumidification and reheat purposes to resolve previous humidity issues within the building. A separate exhaust system with a fan on the roof provides building exhaust. There is no heat recovery from the exhaust air stream to the outside air stream (pre-condition) or the supply air stream (i.e., free reheat). A summer boiler or heat recovery device is recommended to reduce energy consumption to provide the necessary dehumidification and reheat capacity.

The system and equipment (manufactured by The Trane Company) was installed in 1996 and is in fair to good condition.

A variable air volume system serves portions of the building. An independent single zone variable flow air handling unit serves variable volume terminal control units (TCU). These TCU's were manufactured by the Trane Company and use an internal modulating plunger style valve within a venturi. These TCU's are in a failing condition, cannot be worked on, and are recommended to be replaced with a conventional modulating damper type TCU.

Automatic Temperature Controls:

The Building Control System was manufactured by Landis and Gyr (currently Siemens) and is tied into the Leonardtown Campus Energy Management System. The building is partially direct digitally controlled and utilizes pneumatic actuation for all valves and control dampers.

The system is basic, was installed in 1996, and is in fair condition.

Some rooms on the South exterior have supplemental hot water radiant heat.

Plumbing:

The building is served by a 4-inch combined fire protection and domestic water system from the public water municipality. The domestic water is a 3-inch service and is protected by a backflow preventer. Domestic hot water is generated by a RUUD/Rheem, 119-gallon, 18 kW electric hot water heater.

The domestic water system, hot water heater, and plumbing fixtures appear to be in fair to good condition.

Fire Protection:

The building is fully protected by a wet pipe sprinkler system. A 4-inch line with backflow preventer and alarm check valve are located in the Lower Level Mechanical Room and serve the entire building.

The Fire Protection System appears to be in fair to good condition.

Electrical:

The electrical service is 800A, 480/277V, 3 phase, 4 wire. The Main Switch Board consists of a Square-D I-Line Style Switch Panel. Electrical Closets are located throughout the building. The service was installed when the building was built-in 1996 and appears to be in good condition.

Emergency:

Emergency egress lighting consists of battery pack wall-mounted lights and individual battery-powered back-up fluorescent fixtures. A UPS system serves the MDF Voice/Data/Video equipment, located adjacent to Main Electric Room.

An emergency generator is recommended for this building to serve the life safety loads in order to reduce monthly battery inspections/replacements.

Lighting:

Fluorescent fixtures with electronic ballasts are installed throughout the building. Classrooms and offices contain 2x4 fixtures utilizing T8 lamps. Recessed down- lights are lamped with compact fluorescent lamps (CFL). Ceiling-mounted occupancy sensors have been installed in several classrooms. The exterior lights and parking lot lights are contactor-controlled via time clock, located in the Main Electric Room.

The installation of full building automatic lighting controls is recommended for energy savings. This is currently an incentive for a SMECO Rebate Program.

Fire Alarm :

The Fire Alarm Control Panel is an FCI System (Honeywell), located in the main electrical room. Audio/visual speaker strobe devices are located throughout the building per ADA requirements, with voice evacuation. Pull stations are located at all means of egress.

Voice/ Data/Video:

The incoming voice , data, and video service consists of 300 pair copper and traditional fiber optic cabling. The MPOP/MDF room is located on the first floor, with one additional closet located on each floor the building. The MDF is a hub location and provides services to Building A and its system has UPS system power back up. The services are adequate for the building.

Cooling System:

The Cooling System consists of a single air-cooled rotary screw chiller. The chiller has two (2) compressors and was manufactured by the Trane Company. Underground chilled water pipes extend from the chiller to the Basement Mechanical Equipment Room. Two (2) constant volume base-mounted end suction pumps (lead and standby) circulate chilled water to fan coil and air handling unit cooling coils.

The pumps were manufactured by Taco. All equipment and systems were installed in 1996 and are in fair to good condition.

Air Distribution System:

The building is served by a four-pipe fan coil unit system used in conjunction with a dedicated outdoor air system. A combination of horizontal above-ceiling and floor-mounted console type fan coil units serve each space. The fan coil units contain individual heating and cooling coils equipped with 3-way modulating valves controlled by a space thermostat. The fan coil units are recirculating air type (i.e., no outside air/100% return air). The fan coil units were manufactured by the Trane Company. A 100% outdoor air, air handling unit is located on the Upper Level and provides conditioned ventilation air to all spaces. The unit consists of a filter section, hot water pre-heat coil, chilled water cooling coil and supply air fan. About five (5) years ago, a duct-mounted hot water heating coil was installed for dehumidification and reheat purposes to resolve previous humidity issues within the building. A separate exhaust system with a fan on the roof provides building exhaust. There is no heat recovery from the exhaust air stream to the outside air stream (pre-condition) or the supply air stream (i.e., free reheat). A summer boiler or heat recovery device is recommended to reduce energy consumption to provide the necessary dehumidification and reheat capacity.

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Automatic Temperature Controls:

The Building Control System was manufactured by Landis and Gyr (currently Siemens) and is tied into the Leonardtown Campus Energy Management System. The building is partially direct digitally controlled and utilizes pneumatic actuation for all valves and control dampers.

The system is basic, was installed in 1996, and is in fair condition.

Some rooms on the South exterior have supplemental hot water radiant heat.

Plumbing:

The building is served by a 4-inch combined fire protection and domestic water system from the public water municipality. The domestic water is a 3-inch service and is protected by a backflow preventer. Domestic hot water is generated by a RUUD/Rheem, 119-gallon, 18 kW electric hot water heater.

The domestic water system, hot water heater, and plumbing fixtures appear to be in fair to good condition.

Fire Protection:

The building is fully protected by a wet pipe sprinkler system. A 4-inch line with backflow preventer and alarm check valve are located in the Lower Level Mechanical Room and serve the entire building.

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Lighting:

Fluorescent fixtures with electronic ballasts are installed throughout the building. Classrooms and offices contain 2x4 fixtures utilizing T8 lamps. Recessed down- lights are lamped with compact fluorescent lamps (CFL). Ceiling-mounted occupancy sensors have been installed in several classrooms. The exterior lights and parking lot lights are contactor-controlled via time clock, located in the Main Electric Room.

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