

APPENDIX B:

BUILDING CONDITION ASSESSMENT – ENGINEERING

1. MATC Downtown (Main) Campus

- **A Building**
- **Blue Hole / Transmitter Site**
- **Continuing Education Building (C)**
- **F Building**
- **Foundation Hall**
- **Health Sciences Building (H) and connector to T Building**
- **Main Building (M) and connectors to S and T Buildings**
- **Milwaukee Enterprise Center South (MEC-South)**
- **Student Services Building (S)**
- **Storage Building**
- **Student Annex Bookstore (8th and State Parking Facility)**
- **Technology Building (T)**
- **Union 212 Building**
- **HVAC, Plumbing, and Electrical Reports**

2. MATC Mequon Campus

- **Main Building A and B / Barn / Shed**
- **HVAC, Plumbing, and Electrical Reports**

3. MATC Oak Creek Campus

- **A Building including C Rooms, B Building, E-CAM, and Aviation Center**
- **HVAC, Plumbing, and Electrical Reports**

4. MATC West Allis Campus

- **Main Building, A Building, Children's Center, and Funeral Services Program Space**
- **HVAC, Plumbing, and Electrical Reports**

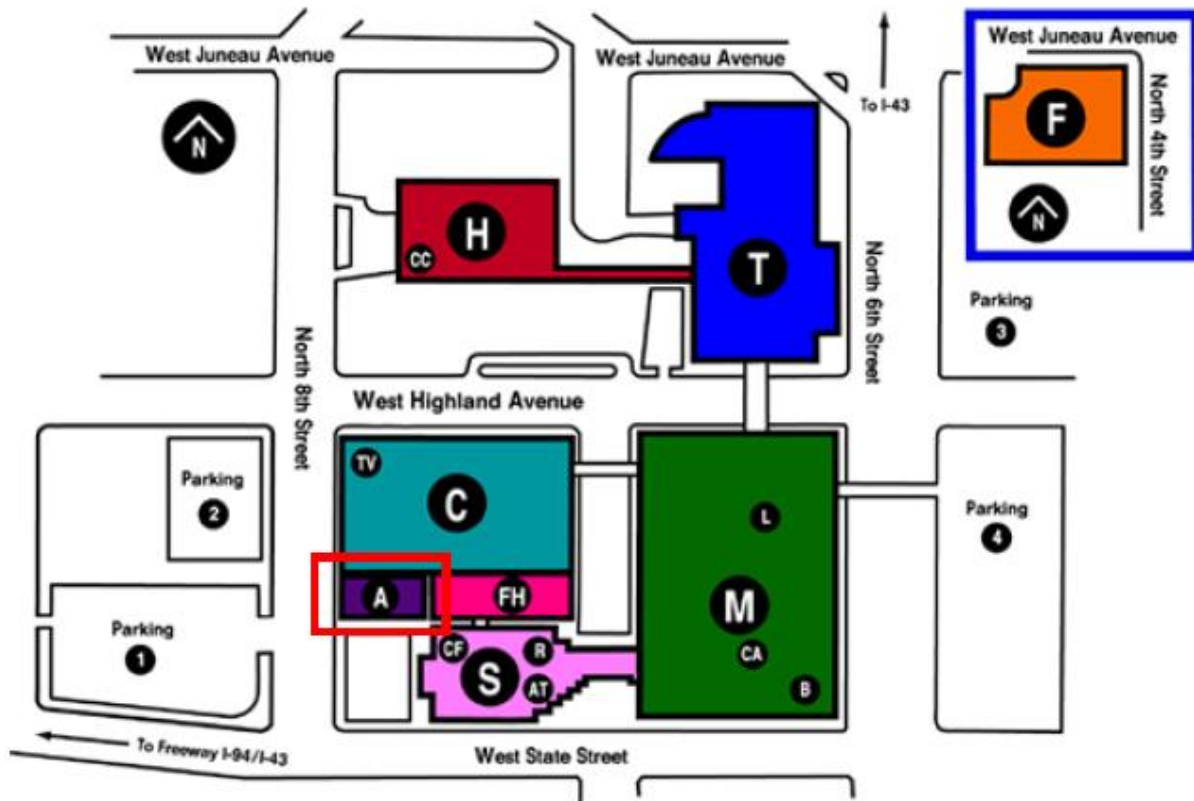
A. General Comments

1. This portion of the assessment evaluates the mechanical, plumbing, and electrical systems in each campus facility.
2. The information included in the field notes are supplemental to any notes taken on existing plans supplied by MATC.
3. Spreadsheets providing the assessed condition of the engineering systems for each facility on campus are included within the context of this document.
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 - 1 = End of Useful Life
 - 2 = In Need of Repair / Replacement
 - 3 = Condition is Satisfactory
 - 4 = New / Recently Repaired

B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	A Building
Building Address:	700 West State Street Milwaukee, WI 53233-1443
Number or Stories:	2
Approximate Area (SF):	7,819

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The A Building has multiple air handling units throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

2. Ductwork Systems

The majority of the existing ductwork in the A Building is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

Similar to the ductwork for the air distribution system in the A Building, most of the VAV (Variable Air Volume) Terminal Units are the original equipment. The original VAV Terminal Units consist of a damper only and no reheat coil. As some of the areas of the building have been renovated, the VAV Terminal Units have been replaced with a unit consisting of a damper and reheat coil. Replacement of all VAV Terminal Units containing a reheat coil would allow for improved occupant comfort.

4. Room Systems

In the A Building, the air distribution system in occupied spaces consists of a combination of ceiling linear slot diffusers and square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork and VAV Terminal Unit replacement. Existing perimeter heat along the exterior wall currently exists in spaces where the VAV Terminal Units do not have a reheat coil. The perimeter heat could be eliminated if a reheat coil was added to the VAV Terminal Unit when replaced with a new unit.

5. Exhaust Systems

The majority of the existing exhaust air systems in the A Building are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Heating Plant

The existing heating water system for the A Building comes from the adjacent C Building. Most of the equipment and piping throughout the A Building is the

original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded its useful life due to the age of this equipment. Replacement of this equipment and piping would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building.

7. Chiller/Cooling Plant

The existing chilled water system for the A Building comes from the cooling plant in the Main Building. Most of the equipment and piping throughout the A Building is the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded its useful life due to the age of this equipment. Replacement of this equipment and piping would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building.

8. Building Control Systems

The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous

a. No comment.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

Most of the existing domestic water system in the A Building is the original equipment when the building was originally constructed and has exceeded its useful life due to the age of this system and may be considered for replacement.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in the A Building.

3. Water Heaters

The existing domestic hot water system comes from the C Building. Most of this equipment, circulating pumps, and piping is the original equipment and has exceeded its useful life due to the age of this equipment and needs to be replaced.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

Most of the plumbing fixtures have been replaced and are in satisfactory condition except for the service sinks which need to be replaced due to the age of this equipment. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection
The A Building does not have a fire protection sprinkler system.
6. Miscellaneous
No comments.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The electric service is underground from the Foundation Hall “FH” building. Service is in satisfactory condition.

A single circuit breaker type panelboard in satisfactory condition serves as main panel for the building.

Feeders in the building may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated.
2. Branch Distribution Systems
Branch distribution consists of other circuit breaker type panelboards. Panelboards are not equipped with surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.
3. Emergency Power Systems
The building is equipped with battery type emergency lights and exit signs in satisfactory condition. It is recommended that a new natural gas generator be installed that serves new emergency lights and exit signs.
4. Master Clock Systems
The building is not equipped with a master clock system but it is recommended that a wireless (Primex) system be installed.
5. Lighting Systems and Controls
Rooms in the building are equipped with recessed prismatic type fluorescent fixtures with T12 lamps. It is recommended that fixtures be replaced with fixtures equipped with T8 lamps and electronic ballast.

Rooms are equipped with single level only lighting control. Only the large open office space is equipped with occupancy sensors. All other rooms in the building should be equipped with occupancy sensors.

Exterior lighting consists of wall mounted fixtures at building entrances. It is recommended that new, energy efficient and maintenance free, LED type light fixtures be installed at building entrances and perimeter of building.

6. Fire Alarm Systems
The building is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station located in the main Downtown building. Not all occupied spaces are equipped with strobes for ADA compliance. It is recommended that these spaces be equipped with strobes per ADA requirements.
7. Sound Systems
No specialty sound systems are installed in the building. The main building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.
8. Voice/Video/Data Systems
The building is provided with a standalone voice system. Voice drops are located in individual offices and open office space. Data drops, via the wide area network data system from main Downtown Building data center, are located in offices and open office space. No video system via projectors is located in the conference room. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)
9. Security Systems
The building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Building is not equipped with interior or exterior video cameras. No electronic access control system is present at this building. System is monitored by the building safety office located in this building. Consideration should be given to installations of an access control system and cameras for surveillance
10. Miscellaneous
Provide GFI receptacles as required by the National Electrical Code.

A. General Comments

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B. Building Description

Campus Name: Downtown Campus (Main)
Building Name(s): Blue Hole / Transmitter Site
Building Address: 4200 North Humboldt Blvd
Milwaukee, WI 53212
Number of Stories: 2 + basement
Approximate Area (SF): 21,983

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems
The Transmitter Building has multiple air handling units throughout the building and due to the more recent construction of this building, these air handling units are in satisfactory condition and can remain in place. A detailed review and minor modifications of these air handling units could allow for more energy efficiency, improved indoor air quality, and improved occupant comfort.
2. Ductwork Systems
The existing ductwork in the Transmitter Building is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.
3. Terminal Units
The existing air systems are constant volume systems and terminal units are not a part of these air systems.
4. Room Systems
In the Transmitter Building, the supply and return air diffusers are in satisfactory condition and can remain in place.
5. Exhaust Systems
The existing exhaust air systems in the Transmitter Building are in satisfactory condition and can remain in place.
6. Heating Plant
The existing heating system for the Transmitter Building consists of electric heating coils located in the air handling units and miscellaneous electric wall heaters throughout this building. Due to the more recent construction of this building, these air handling units are in satisfactory condition and can remain in place.
7. Chiller/Cooling Plants
The existing cooling system for this building consists of DX cooling coils located in all the air handling units and associated outdoor air cooled condensing units which are in satisfactory condition and can remain in place.
8. Building Control Systems
The existing temperature control system in this building is a DDC (Direct Digital Controls) control system and is in satisfactory condition.
9. Miscellaneous
 - a. The FM Rooms are set up to have their own individual heating/cooling systems installed in each room independently of the building heating/cooling systems.
 - b. DDC controls are tied to a front end computer solely for this building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems
The existing domestic water system in the Transmitter Building is the original equipment when the building was originally constructed and due to the more recent construction of this building, the domestic water system is in satisfactory condition and can remain in place.
2. Waste and Vent Systems
No issues were noted concerning the waste and vent systems in the Transmitter Building.
3. Water Heaters
The existing electric domestic hot water heater in the Transmitter Building is the original equipment and is in satisfactory condition and can remain in place.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)
Due to the more recent construction of this building, the plumbing fixtures are in satisfactory condition and can remain in place. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.
5. Fire Protection
The Transmitter Building does not have a fire protection sprinkler system.
6. Miscellaneous
No comments.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The building has multiple (3) underground electric services from two exterior pad mounted transformers. One transformer serves the building proper and the Milwaukee Public TV (MPTV) transmitter area. The other pad mount transformer server the tenant (leasing) area of the building.

Each area (MPTV, leasing and building proper) is served by a circuit breaker type switchboard with main disconnects in satisfactory condition.

It is anticipated that feeders from this distribution equipment and panelboards are of copper conductors in conduit.

Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.
2. Branch Distribution Systems

The building is equipped with circuit breaker type distribution panels in satisfactory condition.

3. Emergency Power Systems

Two (2) natural gas generators serve different purposes for the building. A generator serves the emergency lights and exit signs throughout the building, another strictly serves the Milwaukee Public TV (MPTV) area and combiner equipment. The generator serving the MPTV area is in satisfactory condition. The generator serving the emergency lights and exit signs is in violation of serving both life safety and non-life safety loads from the same distribution system. It is recommended that a new dedicated distribution system be installed to serve all the non-life safety loads.

Building is equipped with emergency lights and exit signs connected to the generator.

4. Master Clock Systems

No master clock system is present in the building.

5. Lighting Systems and Controls

The building is equipped with two types of light fixtures. Suspended industrial strip fixtures with T8 lamps in areas of the building without ceilings and recessed prismatic type in corridors. All fixtures are in satisfactory condition.

Spaces are equipped with single level only lighting controls and occupancy sensors.

Exterior lighting consists of wall mounted lights above doors and pole mounted lights in parking areas. All are in satisfactory condition.

6. Fire Alarm Systems

The building is equipped with an addressable type system conforming to ADA regulations. System is monitored by ADT. System is in satisfactory condition.

7. Sound Systems

No specialty sound or MASS notification systems are in the building.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located in office spaces. Data drops are located in office spaces. No video system is present in the building.

9. Security Systems

The building security system consists of exterior door contact switches for intrusion protection. Building is equipped exterior video cameras providing surveillance of photovoltaic farm. Electronic access control system devices are present at the building entrances.

10. Miscellaneous
No comments.

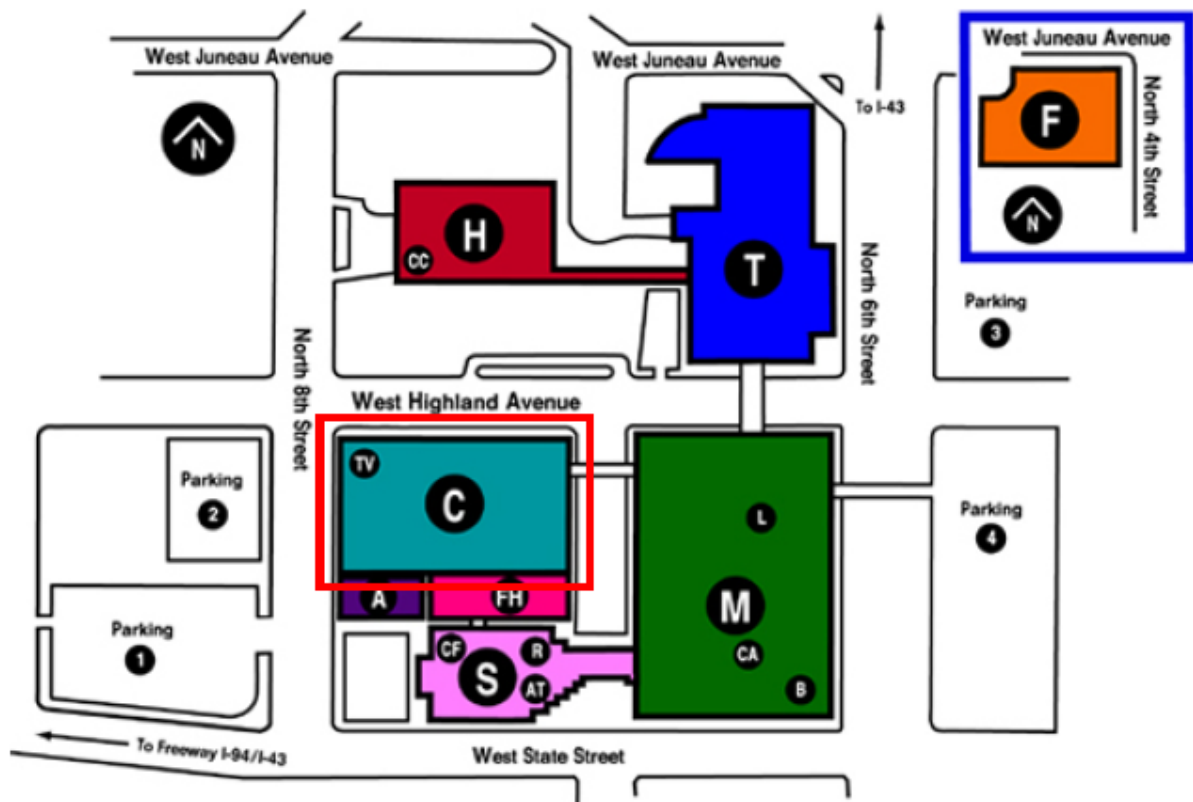
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B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	Continuing Education Building (C)
Building Address:	700 West State Street Milwaukee, WI 53233
Number of Stories:	4 + basement and penthouses
Approximate Area (SF):	312,513

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The Continuing Education Building has multiple air handling units and classroom unit ventilators throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

2. Ductwork Systems

The majority of the existing ductwork in the Continuing Education Building is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

In the Continuing Education Building, the existing air systems are constant volume systems with duct mounted reheat coils in the TV Studio area. As previously stated under Air Handling Unit Systems and Ductwork Systems this equipment and ductwork has exceeded its useful life due to its age and needs to be replaced.

4. Room Systems

The air distribution system in occupied spaces consists of a combination of ceiling linear slot diffusers and square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork replacement.

5. Exhaust Systems

The majority of the existing exhaust air systems in the Continuing Education Building are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Heating Plant

The existing heating water system for the Continuing Education Building comes from a steam to heating water heat exchanger. Steam comes from the City Steam System. This heat exchanger, heating water circulating pumps, and piping throughout this building are the original equipment and although well maintained, this equipment and piping has exceeded its useful life due to the age of this equipment. Replacement of this equipment and piping would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building.

7. Chiller/Cooling Plants

The existing chilled water system for the Continuing Education Building comes from the cooling plant in the Main Building. This equipment and piping throughout this building is in satisfactory condition and can remain in place. In addition to the chilled water system coming from the Main Building, an existing air cooled chiller with a remote indoor evaporator barrel provides off-peak and partial building cooling. There are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.

8. Building Control Systems

The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort. It was noted that some of the mechanical equipment in this building is currently being manually controlled.

9. Miscellaneous

- a. The Main Technology Room is served by multiple self-contained cooling units.
- b. Some of the existing mechanical equipment no longer being used in this building has been abandoned in place.
- c. It was noted that the occupant comfort was very poor in this building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

Most of the existing domestic water system in the Continuing Education Building is the original equipment when the building was originally constructed and has exceeded its useful life due to the age of this system and may be considered for replacement. The existing domestic water system is a combination of copper and galvanized piping.

2. Waste and Vent Systems

It was noted that in the lower level parking area of the Continuing Education Building, the floor drains occasionally become plugged. This issue needs to be further investigated as to what may be causing this problem.

The science classrooms are equipped with an acid waste tank and piping system.

3. Water Heaters

The existing domestic hot water system comes from a steam to hot water heat exchanger. Most of this equipment, circulating pumps, and piping is the original equipment and has exceeded its useful life due to the age of this equipment and needs to be replaced.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

Most of the plumbing fixtures have been replaced and are in satisfactory condition except for the service sinks which need to be replaced due to the age of this equipment. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection
The Continuing Education Building does not have a fire protection sprinkler system.
6. Miscellaneous
No comments.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The electric service consists of 13.2Kv (13,200-volt) primary feed from the Main Building “M” building. Primary feed is in satisfactory condition.

The electric service terminates in multi-section fusible metal clad 13.2Kv switchgear located in the Electrical Vault Room located in the basement. This room is equipped with one egress door when two means of egress are required by the National Electrical Code. The current location of this switchgear and other equipment located in this room does not provide the required working space clearances between equipment as required by the National Electrical Code.

It is anticipated that feeders from this substation to distribution equipment and panelboards are of copper conductors in conduit. Feeders in the building may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated.

A mixture of original and newer type panelboards exist. As areas of the building are remodeled, these remodeled areas are served by new panelboards. Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves. Water damaged panelboards located in the basement need to be replaced along with panelboards throughout the building that are more than 30 years old.

2. Branch Distribution Systems
A mixture of fusible and circuit breaker type distribution equipment in satisfactory condition serves branch panelboards. It is recommended that original branch circuit wiring and branch circuits more the 30 years old be replaced.
3. Emergency Power Systems
Multiple (3) natural gas generators serve different purposes in the building. A generator serves the emergency lights and exits throughout the building,

another strictly serves has back-up power to MATC campus main data center and the other serves the Milwaukee Public TV (MPTV) area and equipment. The generator serving the emergency lights and exit signs need replaced due to leaking oil and the generator that serves the MPTV area was reported has undersized.

The emergency lighting and exit signs in the Lower Auditorium, Mechanical room needs to be replaced along with new emergency lights being installed on interior classroom spaces without natural light.

4. Master Clock Systems

It is recommended that the hardwired clock system in the building be replaced with the (Primex) wireless clock system.

5. Lighting Systems and Controls

Various types of fluorescent lighting is used the building. These types include recessed parabolic, linear direct/indirect, recessed prismatic and industrial strip equipped with T12 or T8 lamps. Fixtures with yellowing lenses were observed. It is recommended that fixtures with yellowing lenses and fixtures located on the third and fourth floors be replaced with fixtures equipped with T8 lamps and electronic ballast. Light fixtures should be replaced in West Mechanical Penthouse and first floor Mechanical Room.

Classrooms in the building are equipped with dual level switching that reduces light output for video presentations. Classrooms are equipped with occupancy sensors that are not working or are in excess of 20 years old. New occupancy sensors should be installed in classrooms and in other spaces throughout the building.

The auditorium is equipped with recessed incandescent fixtures over the seating area along with theatrical front of stage and over stage lighting. All this lighting is controlled through a dimmer controller on the stage. The dimmer control unit is need of replacement to its deteriorated condition.

The parking garage area is equipped with LED type light fixtures.

Exterior lighting consists of wall mounted LED type fixtures at building entrances.

6. Fire Alarm Systems

The building is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the main Downtown Campus building. Not all habitual spaces are equipped with strobes for ADA compliance. Pull stations are present that do not comply with ADA mounting height requirements. It is recommended that these spaces be equipped with strobes and pull stations that comply with ADA requirements.

7. Sound Systems

Classrooms in the building are equipped with sound enhancement systems. The main building is equipped with a MASS notification system, consisting of

speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.

The auditorium space is equipped with a dedicated sound system incorporating suspended house speakers, amplifiers, microphones and microphone jacks. All is satisfactory condition.

The building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located, in individual office, conference room and administrative spaces. Data drops, via the wide area network data system from main data center in the building, are located in office, conference rooms, administrative spaces, and classrooms. Video system is via projectors in classrooms with video drops in conference rooms. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Exterior cameras are located only at a portion of building perimeter. No electronic access control system is present at this building. System is monitored by the building safety office located in this building. Consideration should be given to installations of an access control

10. Miscellaneous

Metal flammable storage cabinets are present without electrical grounding. Provide GFI receptacles adjacent to sinks as required by the National Electrical Code.

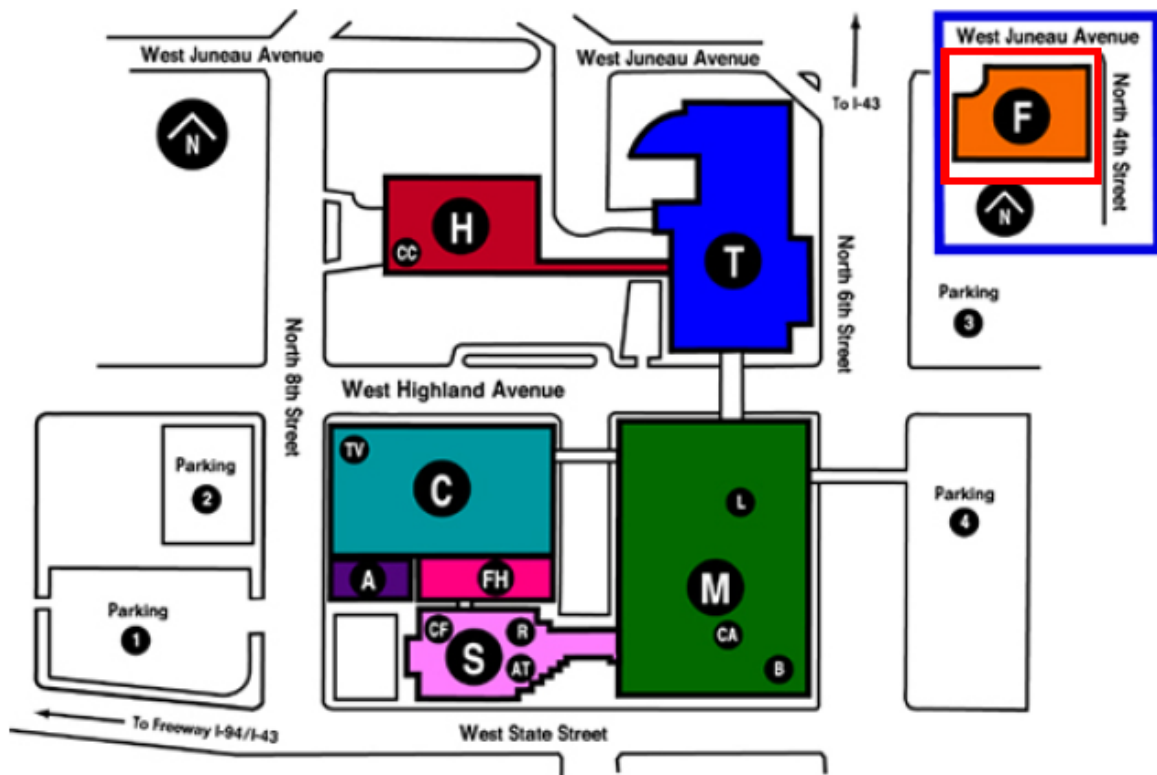
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B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	F Building
Building Address:	1137 North 4 th Street Milwaukee, WI 53233
Number of Stories:	3
Approximate Area (SF):	27,125

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The F Building has multiple air handling units and classroom unit ventilators throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

2. Ductwork Systems

The majority of the existing ductwork in the F Building is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

In the F Building, the existing air systems are constant volume systems and as previously stated under Air Handling Unit Systems and Ductwork Systems this equipment and ductwork has exceeded its useful life due to its age and needs to be replaced.

4. Room Systems

The air distribution system in occupied spaces consists of square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork replacement.

5. Exhaust Systems

The majority of the existing exhaust air systems in the F Building are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Heating Plant

The existing steam heating system for this building comes from the City Steam System. Most of the equipment and piping throughout the F Building is the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded its useful life due to the age of this equipment. Replacement of this equipment would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building.

7. Chiller/Cooling Plants

There is no cooling systems in the F Building.

8. Building Control Systems

The existing temperature control system in this building currently is pneumatic controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort. It was noted that some of the mechanical equipment in this building is currently being manually controlled.

9. Miscellaneous

- a. The existing steam boiler in the basement is no longer being used.
- b. There is currently no exhaust or ventilation in the Basement Shop Area.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

Most of the existing domestic water system in the F Building is the original equipment when the building was originally constructed and has exceeded its useful life due to the age of this system and may be considered for replacement.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in the F Building.

3. Water Heaters

In the F Building, the domestic water heater and circulating pumps are not the original equipment and have been replaced. Although this equipment has been replaced, they still have some age on them and may be considered for replacement with new more energy efficient equipment to extend the overall life of the building.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

Most of the plumbing fixtures are the original fixtures to the building and need to be replaced due to the age of these fixtures. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection

The F Building does not have a fire protection sprinkler system.

6. Miscellaneous

No comments.

F. Engineering Assessments – Electrical Systems

1. **Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)**
The underground electric service consists of a 13.2Kv (13,200-volt) primary feed from the service pole. Primary feed is in satisfactory condition.

The electric service terminates in a 13.2Kv (13,200 volt) switchgear/substation located in the Electrical Equipment Room located in the basement. This room is equipped with one egress door when two means of egress are required by the National Electrical Code. The current location of this switchgear does not provide the required working space clearances in front of the equipment as required by the National Electrical Code.

It is anticipated that feeders from this substation to distribution equipment and panelboards are of copper conductors in conduit. Feeders in the building may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated.

Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

2. **Branch Distribution Systems**
The building consists of fusible type distribution equipment serving panelboards. It is recommended that this equipment be replaced due to age and that branch circuits from panelboards be replaced.
3. **Emergency Power Systems**
The building is equipped with deteriorated and inadequate quantity of battery type emergency lights and exit signs. Non-working emergency equipment was observed. It is recommended that a new natural gas generator be installed that serves new emergency lights, new exit signs, and fire alarm system.
4. **Master Clock Systems**
The building is not equipped with a master clock system but it is recommended that a wireless (Primex) system be installed.
5. **Lighting Systems and Controls**
Various types of fluorescent lighting is used the building. These types include recessed prismatic and industrial strip equipped with T12 lamps. High intensity discharge (HID) metal halide type fixtures are used in lab areas. It is recommended that the fluorescent fixtures be replaced with fixtures equipped with T8 lamps and electronic ballast. The lighting in the lab should be changed to more energy efficient fluorescent highbay fixtures.

Rooms are equipped with single level only lighting control. Various spaces are equipped with occupancy sensors. It is recommended that all spaces in

the building be equipped with occupancy sensors and new switches with associated wiring be installed.

Exterior lighting consists of wall mounted fixtures located around building perimeter in satisfactory condition.

6. Fire Alarm Systems

The building is provided with a fire alarm system incorporating horns, pull stations and smoke detectors. System is monitored by the central station at the main Downtown Campus building. Since the system does not include strobes a complete system replacement complying with ADA requirements is recommended.

7. Sound Systems

The building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located in some spaces. Data drops, via the wide area network data system from main data center in the building, are located in some spaces. It is recommended that the standalone voice system be replaced with a voice system over IP (VOIP) and that video projectors with instructors control station be installed in classrooms.

9. Security Systems

The building security system consists of motion detectors at first floor entrance and one exterior video camera. No electronic access control system is present at this building. Consideration should be given to installation of door contacts, interior surveillance cameras and access control system.

10. Miscellaneous

No comments

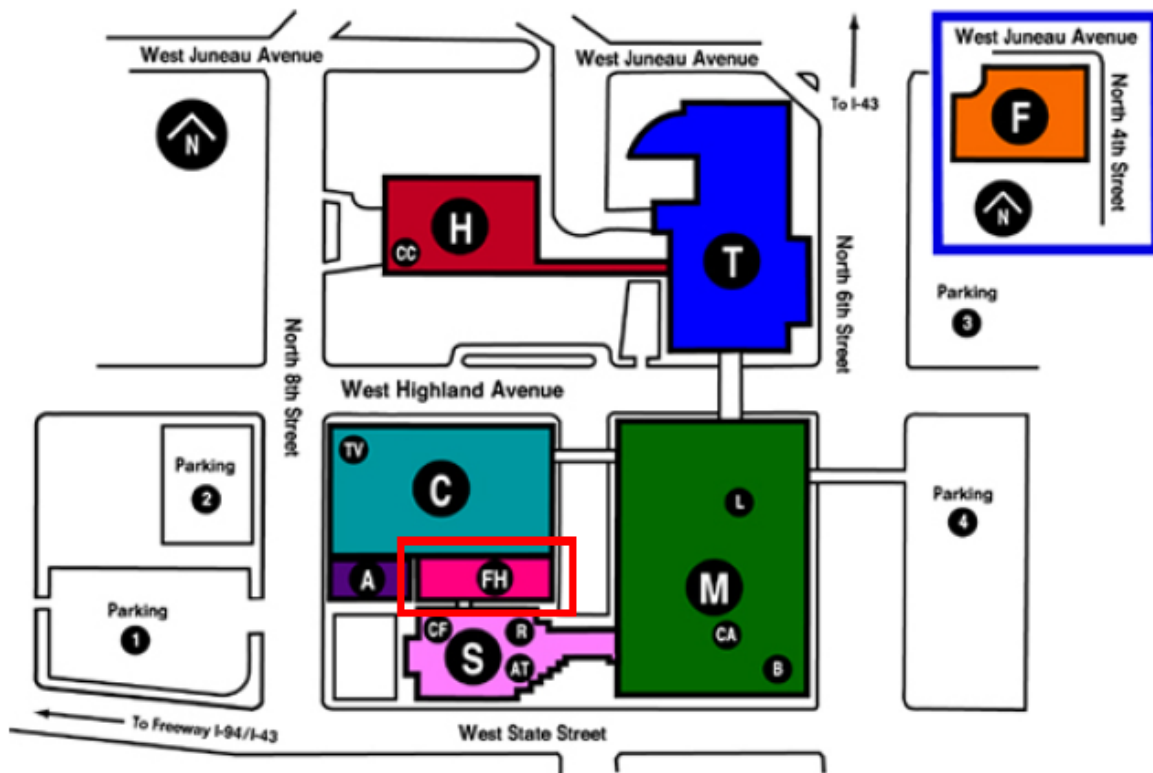
A. General Comments

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 - 3 = Condition is Satisfactory
 - 4 = New / Recently Repaired

B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	Foundation Hall
Building Address:	700 West State Street Milwaukee, WI 53233-1443
Number of Stories:	8
Approximate Area (SF):	49,366

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The Foundation Hall Building has multiple multi-zone air handling units throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

2. Ductwork Systems

The majority of the existing ductwork in the Foundation Hall Building is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

In the Foundation Hall Building, the existing air systems are constant volume multi-zone systems and as previously stated under Air Handling Unit Systems and Ductwork Systems, this equipment and ductwork has exceeded its useful life due to its age and needs to be replaced.

4. Room Systems

In the Foundation Hall Building, the air distribution system in the occupied spaces consists of square ceiling supply air diffusers. Replacement of all ceiling supply and return air diffusers would need to occur as part of the ductwork replacement.

5. Exhaust Systems

The majority of the existing exhaust air systems in the Foundation Hall Building are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Heating Plant

The existing steam heating system for this building comes from the City Steam System. Most of the equipment and piping throughout the Foundation Hall Building is the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded its useful life due to the age of this equipment. Replacement of this equipment would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building.

7. Chiller/Cooling Plants

The existing air cooled chiller, chilled water circulating pumps, and chilled water piping throughout the Foundation Hall Building has exceeded its useful life due to its age and needs to be replaced.

8. Building Control Systems

The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous

- a. The third and fourth floors of this building are currently being used for storage with no air system and no ventilation.
- b. It was noted that the occupant comfort was very poor in this building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

Most of the existing domestic water system in the Foundation Hall Building is the original equipment when the building was originally constructed and has exceeded its useful life due to the age of this system and may be considered for replacement.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in the Foundation Hall Building.

3. Water Heaters

In the Foundation Hall Building, the domestic water heater and circulating pumps are not the original equipment and have been replaced. Although this equipment has been replaced, they still have some age on them and may be considered for replacement with new more energy efficient equipment to extend the overall life of the building.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

Most of the plumbing fixtures are the original fixtures to the building and need to be replaced due to the age of these fixtures. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection

The Foundation Hall Building does not have a fire protection sprinkler system.

6. Miscellaneous

No comments.

F. Engineering Assessments – Electrical Systems

1. **Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)**
The electric service consists of a 13.2Kv (13,200-volt) primary underground feed from the Main “M” building. Primary feed is in satisfactory condition.

The electric service terminates in a 13.2Kv substation in satisfactory condition.

It is anticipated that feeders from this substation to distribution equipment and panelboards are of copper conductors in conduit. Feeders in the building may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated.

Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.
2. **Branch Distribution Systems**
Branch distribution consists of circuit breaker or fusible type distribution panels and circuit breaker type panelboards. Due to age, branch circuit wiring from panelboards should be replaced with new.
3. **Emergency Power Systems**
The building is equipped with deteriorated and inadequate quantity of battery type emergency lights and exit signs. Non-working emergency equipment was observed. It is recommended that a new natural gas generator be installed that serves new emergency lights, new exit signs, and fire alarm system.
4. **Master Clock Systems**
The building is not equipped with a master clock system but it is recommended that a wireless (Primex) system be installed.
5. **Lighting Systems and Controls**
Recessed prismatic and industrial strip type fluorescent fixtures equipped with T12 lamps are used in the building. It is recommended that fixtures be replaced with new equipped with T8 lamps and electronic ballast.

Rooms are equipped with single level only lighting control. Some spaces are equipped with occupancy sensors. It is recommended that all rooms in the building be equipped with occupancy sensors and new switches with associated wiring be installed.
6. **Fire Alarm Systems**
The building is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the main Downtown Campus building. Not all habitual spaces are equipped with strobes for ADA compliance. Mechanical equipment units are

present without duct detector protection and pull stations are present that do not comply with ADA mounting height requirements. It is recommended that these spaces be equipped with strobes and pull stations that comply with ADA requirements, and that duct detectors are installed.

7. Sound Systems

No specialty sound systems are present in the building.

The main building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located in individual offices. Data drops, via the wide area network data system from main Downtown Building data center, are located in offices. No video system via projectors is located in the conference room. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The building has a limited security system incorporating motion detectors and cameras. Consideration should be given to installation of additional motion detectors, interior cameras, exterior cameras, and access control system.

10. Miscellaneous

Abandoned electrical distribution equipment and associated feeders should be removed. Provide GFI protection for vending machines per the National Electrical Code.

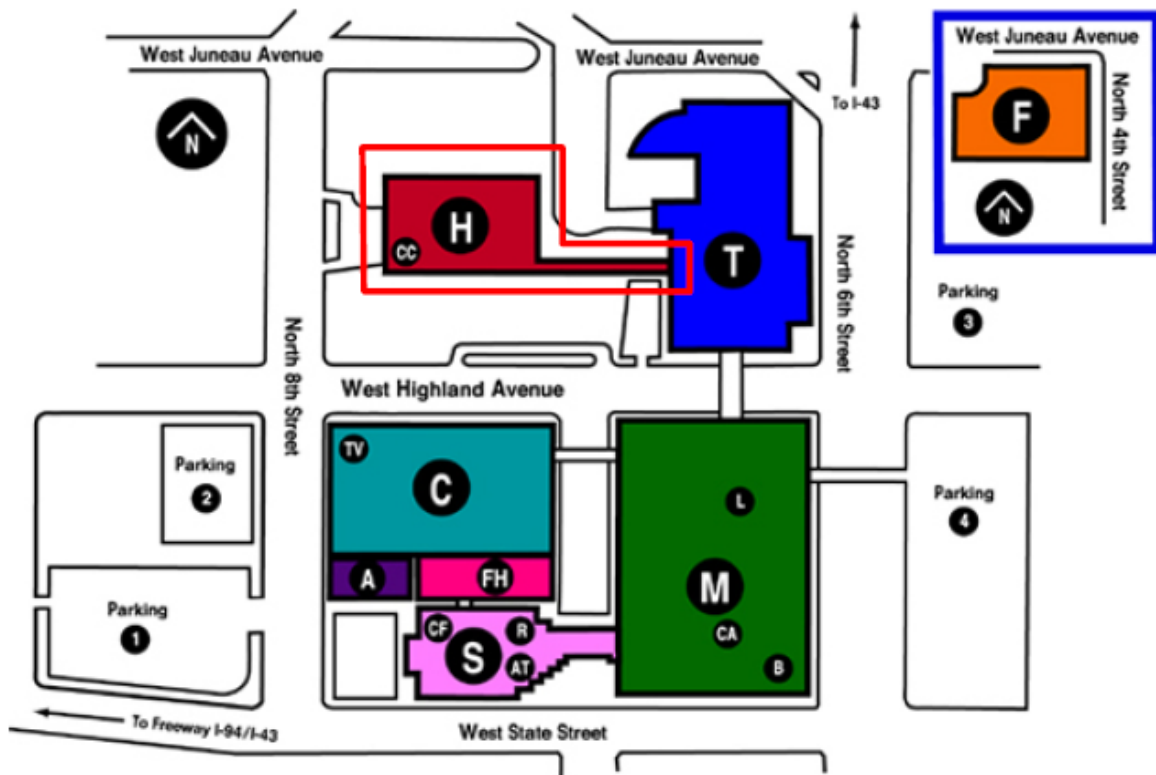
A. General Comments

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B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	Health Sciences Building (H Building) and connector to Technology Building (T Building)
Building Address:	700 West Highland Ave Milwaukee, WI 53233
Number of Stories:	3
Approximate Area (SF):	105,168

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. **Air Handling Unit Systems**
The Health Sciences Building has multiple air handling units throughout the building and due to the more recent construction of this building, these air handling units are in satisfactory condition and can remain in place. A detailed review and minor modifications of these air handling units could allow for more energy efficiency, improved indoor air quality, and improved occupant comfort.
2. **Ductwork Systems**
The existing ductwork in the Health Sciences Building is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.
3. **Terminal Units**
Similar to the ductwork for the air distribution system in the Health Sciences Building, the VAV (Variable Air Volume) Terminals Units are in satisfactory condition and can remain in place.
4. **Room Systems**
In the Health Sciences Building, the supply and return air diffusers are in satisfactory condition and can remain in place. Existing perimeter heat along the exterior wall currently exists in some spaces and is in satisfactory condition and can remain in place.
5. **Exhaust Systems**
The existing exhaust air systems in the Health Sciences Building are in satisfactory condition and can remain in place.
6. **Heating Plant**
The existing heating water system for the Health Sciences Building comes from a steam to heating water heat exchanger. Steam comes from the City Steam System. The existing heat exchanger, heating water circulating pumps, and heating water piping are in satisfactory condition and can remain in place.
7. **Chiller/Cooling Plants**
The existing chilled water system for the Health Sciences Building comes from the cooling plant in the Main Building. This equipment and piping throughout the Health Sciences Building is in satisfactory condition and can remain in place.
8. **Building Control Systems**
The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous
 - a. It was noted that there are some occupant comfort issues in this building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems
The existing domestic water system in the Health Sciences Building is the original equipment when the building was originally constructed and due to the more recent construction of this building, the domestic water system is in satisfactory condition and can remain in place.
2. Waste and Vent Systems
No issues were noted concerning the waste and vent systems in the Health Sciences Building.
3. Water Heaters
The existing domestic hot water system comes from a steam to hot water heat exchanger. This equipment and piping is the original equipment and is in satisfactory condition and can remain in place.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)
Due to the more recent construction of this building, the plumbing fixtures are in satisfactory condition and can remain in place. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.
5. Fire Protection
The Health Sciences Building has a fire protection sprinkler system.
6. Miscellaneous
The main stairways in the building have a smoke control system.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The electric service consists of 13.2Kv (13,200-volt) primary feed from the Technical “T” building. Primary feed is in satisfactory condition.

The electric service terminates in a 13.2Kv substation in satisfactory condition.

It is anticipated that feeders from this substation to distribution equipment and panelboards are of copper conductors in conduit.

Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

2. **Branch Distribution Systems**
Branch distribution consists of circuit breaker type distribution panels and circuit breaker type panelboards in satisfactory condition.
3. **Emergency Power Systems**
The building is equipped with a natural gas fired generator that serves the fire alarm system, emergency lighting, exit signs and elevator. It was reported that the generator may be undersized to handle the elevator. Further investigation is required.
4. **Master Clock Systems**
The building is not equipped with a master clock system but it is recommended that a wireless (Primex) system be installed.
5. **Lighting Systems and Controls**
The building is equipped with recessed parabolic and industrial strip fixtures in satisfactory condition.

Classrooms in the building are equipped with dual level switching that reduces light output for video presentations. Some spaces are equipped with occupancy sensors. New occupancy sensors should be installed in spaces without them.

Exterior lighting consists of recessed lights in entrance soffit and parking area lights in satisfactory condition.
6. **Fire Alarm Systems**
The building is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the Downtown Campus. Not all student occupied spaces are equipped with strobes for ADA compliance. It is recommended that these spaces be equipped with strobes per ADA requirements. It is also recommend that smoke detectors be installed in spaces without them for complete smoke detection protection.
7. **Sound Systems**
Classrooms in the building are equipped with sound enhancement systems.

The building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.
8. **Voice/Video/Data Systems**
The building is provided with a standalone voice system. Voice drops are located in individual office, conference room and administrative spaces. Data drops, via the wide area network data system from main data center in the building, are located in office, conference rooms, administrative spaces, and classrooms. Video system is via projectors in classrooms with video drops in conference rooms. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Exterior cameras are located only at a portion of building perimeter. No electronic access control system is present at this building. System is monitored by the building safety office located in this building. Consideration should be given to installations of an access control.

10. Miscellaneous

Metal flammable storage cabinets are present without electrical grounding.

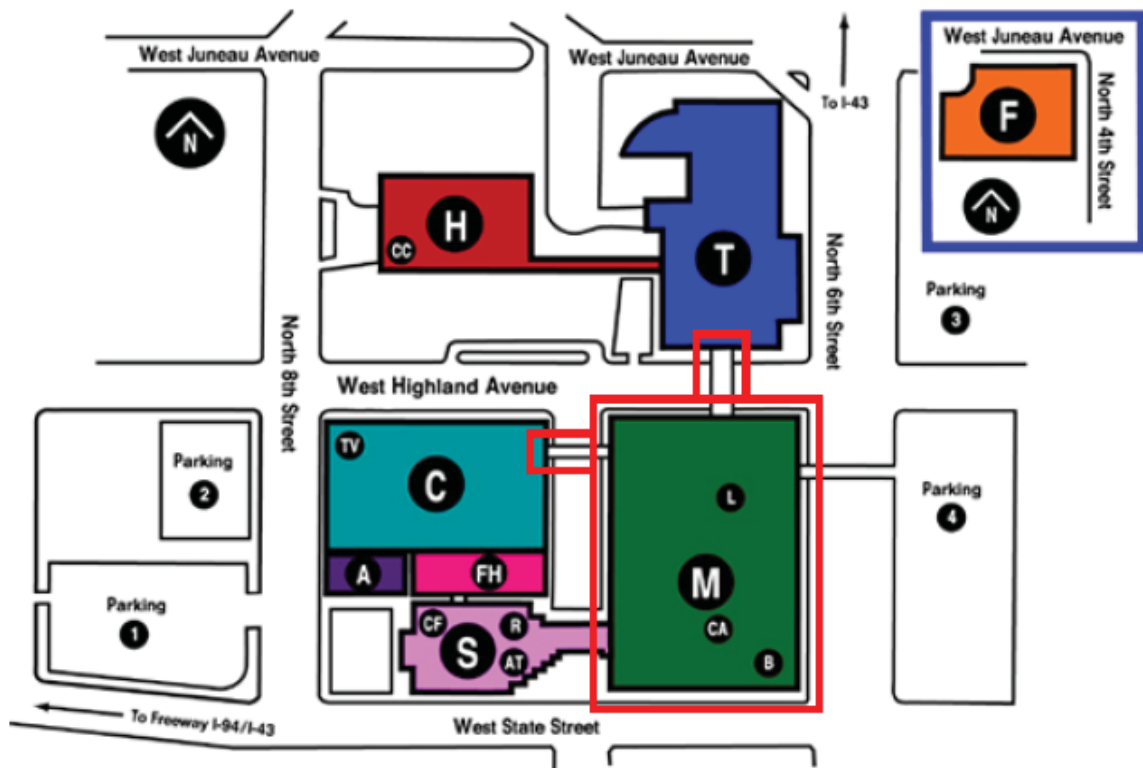
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B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	Main Building (M Building) and connectors to the Student Services (S) and Technology (T) Buildings
Building Address:	1015 North 6 th Street Milwaukee, WI 53233
Number of Stories:	6 + sub-basement, basement, attic, and penthouses
Approximate Area (SF):	470,500

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The Main Building has multiple air handling units throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

2. Ductwork Systems

The majority of the existing ductwork in the Main Building is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

Similar to the ductwork for the air distribution system in the Main Building, most of the VAV (Variable Air Volume) Terminal Units are the original equipment. The original VAV Terminal Units consist of a damper only and no reheat coil. As some of the areas of the building have been renovated, the VAV Terminal Units have been replaced with a unit consisting of a damper and reheat coil. Replacement of all VAV Terminal Units containing a reheat coil would allow for improved occupant comfort.

4. Room Systems

The air distribution system in occupied spaces consists of a combination of ceiling linear slot diffusers and square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork and VAV Terminal Unit replacement. Existing perimeter heat along the exterior wall currently exists in spaces where the VAV Terminal Units do not have a reheat coil. The perimeter heat could be eliminated if a reheat coil was added to the VAV Terminal Unit when replaced with a new unit.

5. Exhaust Systems

The majority of the existing exhaust air systems in the Main Building are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Heating Plant

The existing steam heating system for this building comes from the City Steam System. Most of the equipment and piping throughout the Main Building is the original equipment when the building was originally

constructed. Although well maintained, this equipment has exceeded its useful life due to the age of this equipment. Replacement of this equipment would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building.

7. Chiller/Cooling Plants
The existing chiller and associated cooling tower, circulating pumps, and chilled water piping have recently been replaced and are in satisfactory condition and can remain in place. There are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.
8. Building Control Systems
The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.
9. Miscellaneous
 - a. The air handling unit serving Cooley Auditorium has recently been replaced and is in satisfactory condition.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems
Most of the existing domestic water system in the Main Building is the original equipment when the building was originally constructed and has exceeded its useful life due to the age of this system and may be considered for replacement. The existing domestic water system is a combination of copper and galvanized piping.
2. Waste and Vent Systems
It was noted that in the basement area of the Main Building, the sanitary and storm system backs up into the building during periods of heavy rainfall. This issue needs to be further investigated as to what may be causing this problem.

The science classrooms are equipped with an acid waste tank and piping system.
3. Water Heaters
The existing domestic hot water system comes from a steam to hot water heat exchanger. Most of this equipment, circulating pumps, and piping is the original equipment and has exceeded its useful life due to the age of this equipment and needs to be replaced.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

Most of the plumbing fixtures have been replaced and are in satisfactory condition except for the service sinks which need to be replaced due to the age of this equipment. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection
A small portion of the Main Building has a fire protection sprinkler system.
6. Miscellaneous
No comments.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The electric service consists of parallel 13.2Kv (13,200-volt) primary feeders underground from the service pole to a 13.2Kv multi-sectional, fusible, metal clad switchgear located in the main Electrical Sub-station Room in the basement. From this metal clad type switchgear, 13.2kv electrical energy is distributed to other switchgear/sub-stations in this building, Continuous Education Building “C”, Technical Building “T” and Student Services Building “S”. The multi-sectional switchgear located in main Electrical Sub-station Room is in satisfactory condition.

Various unit sub-stations are located throughout the building producing electrical voltages of 277/480-volt three phase, 120/208-volt three phase, and 240-volt three phase ground ‘B’ systems. Unit substations No. 1, 2, 3, 6 and 7 are in need of replacement due to being in violation of primary and secondary overcurrent protection of transformers per the National Electrical Code. The associated switchboards are not equipped with ground fault protection or surge protection. The remaining sub-stations are in satisfactory condition.

A mixture of original feeders, new feeders, and extension of original feeders via new conductors being added are in currently in use. Feeders are comprised of 60 degree and 75 degree rated copper conductors. The feeders utilizing original conductors may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was reported.

A mixture of original and newer type panelboards exist. As areas of the building are remodeled, these remodeled areas served by new panelboards. It is recommended that originally installed panelboards should be replaced along with their associated feeders. Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

2. Branch Distribution Systems

A mixture of fusible and circuit breaker type distribution equipment in satisfactory condition serves branch panelboards. It is recommended that original branch circuit wiring and branch circuit more the 30 years old be replaced.

3. Emergency Power Systems

The building is equipped with inadequate quantity of battery type emergency lights and exit signs. Non-working emergency equipment was observed. It is recommended that a new natural gas generator be installed that serves new emergency lights and exit signs.

It was reported that a generator is planned to be installed as back-up for the main data center.

4. Master Clock Systems

It is recommended that the hardwired clock system in the building be replaced with the (Primex) wireless clock system.

5. Lighting Systems and Controls

Various types of fluorescent lighting is used the building. These types include recessed parabolic, recessed direct/indirect, recessed prismatic and industrial strip equipped with T12 or T8 lamps. Fixtures with yellowing lenses were observed. It is recommended that fixtures with yellowing lenses and T12 lamps be replaced with fixtures equipped with T8 lamps and electronic ballast.

Classrooms in the building are equipped with dual level switching that reduces light output for video presentations. Classrooms are equipped with occupancy sensors that are not working or are in excess of 20 years old. New occupancy sensors should be installed in classrooms and in other spaces throughout both facilities.

The auditorium is equipped with recessed incandescent fixtures over the seating area along with theatrical front of stage and over stage lighting. All this lighting is controlled through a dimmer controller on the stage.

Exterior lighting consists of wall mounted fixtures at building entrances. It is recommended that new, energy efficient and maintenance free, LED type light fixtures at building entrances and perimeter of building.

6. Fire Alarm Systems

The building is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the Downtown Campus. Not all student occupied spaces are equipped with strobes for ADA compliance. It is recommended that these spaces be equipped with strobes per ADA requirements.

7. Sound Systems

Classrooms in the building are equipped with sound enhancement systems. The main building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.

The auditorium space is equipped with a dedicated sound system incorporating suspended house speakers, amplifiers, microphones and microphone jacks. All is satisfactory condition.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located in individual office, conference room and administrative spaces. Data drops, via the wide area network data system from main data center in the building, are located in office, conference rooms, administrative spaces, and classrooms. Video system is via projectors in classrooms with video drops in conference rooms. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. Exterior cameras are located at building entrances. No electronic access control system is present at this building. System is monitored by the building safety office located in this building. Consideration should be given to installations of an access control system.

10. Miscellaneous

Metal flammable storage cabinets are present without electrical grounding. Provide GFI receptacles adjacent to sinks as required by the National Electrical Code.

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B. Building Description

Campus Name: Downtown Campus (Main)
Building Name(s): Milwaukee Enterprise Center – South (MEC – South)
Building Address: 816 West National Avenue
Milwaukee, WI 53204
Number of Stories: 3 + basement made of several levels in conjoined buildings
Approximate Area (SF): 140,674

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The MEC Building has multiple steam propeller unit heaters throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building. In the renovated area of this building, a multi-zone air handling unit is serving the renovated second floor office area. Due to the more recent renovation of this space, this air handling unit is in satisfactory condition and can remain in place.

2. Ductwork Systems

The existing ductwork in the original MEC Building has exceeded its useful life due to the age of this ductwork and needs to be replaced. The existing ductwork in the renovated second floor office area portion of the MEC Building is in satisfactory condition and can remain in place.

3. Terminal Units

In the renovated second floor office area, the existing air handling system is a constant volume multi-zone system and is in satisfactory condition and can remain in place. All other areas of this industrial building do not have any terminal units.

4. Room Systems

In the renovated second floor office area, the air distribution system in the occupied spaces consists of square ceiling supply air diffusers and is in satisfactory condition and can remain in place. All other areas of this industrial building do not have an air distribution system.

5. Exhaust Systems

The majority of the existing exhaust air systems in the MEC Building are the original systems except for the renovated second floor office area. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Heating Plant

The existing steam heating system for this building comes from existing multiple steam boilers. This equipment and piping throughout the MEC Building is the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded its useful life due to the age of this equipment. Replacement of this equipment would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building.

7. Chiller/Cooling Plants

The cooling for the existing multi-zone air handling unit is provided from an existing outdoor air cooled condensing unit which is in satisfactory condition and can remain in place.

8. Building Control Systems

The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous

- a. The majority of this building is currently an old industrial building (except for the renovated second floor office area) with the original steam heating only system which has exceeded its useful life due to the age of the equipment. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall life of the building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

Most of the existing domestic water system in the MEC Building is the original equipment when the building was originally constructed and has exceeded its useful life due to the age of this system and may be considered for replacement.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in the MEC Building.

3. Water Heaters

In the MEC Building, the domestic water heaters and circulating pumps are not the original equipment and have been replaced. Although this equipment has been replaced, they still have some age on them and may be considered for replacement with new more energy efficient equipment to extend the overall life of the building.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

Most of the plumbing fixtures are the original fixtures to the building and need to be replaced due to the age of these fixtures. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection

The MEC Building has a fire protection sprinkler system.

6. Miscellaneous

No comments.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The underground electric service consists of a 13.2Kv (13,200-volt) primary feed from the service pole. Primary feed is in satisfactory condition.

The electric service terminates in a 13.2Kv (13,200 volt) switchgear/substation located in the Electrical Equipment Room located on the first floor. The current location of this switchgear does not provide the required working space clearances in front of the equipment as required by the National Electrical Code.

Various unit sub-stations are located throughout the building producing electrical voltages of 277/480-volt three phase, 120/208-volt three phase, and 240-volt three phase ground ‘B’ systems. Unit substations No. 1 and 2 are in need of replacement due to being in violation of primary and secondary overcurrent protection of transformers per the National Electrical Code. The associated switchboards are not equipped with ground fault protection or surge protection.

It is anticipated that feeders from this substation to distribution equipment and panelboards are of copper conductors in conduit. Feeders in the building may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated.

Circuit breaker type panelboards are present in the building. Due to age, all panelboards should be replaced including their associated branch circuits. Panelboards that are currently being installed for the third floor sewing Lab are exempt from replacement. New panelboards should be provided with surge protection devices.

2. Branch Distribution Systems
Circuit breaker type distribution panels are present in the building. Due to age all panels should be replaced including their associated feeders.
3. Emergency Power Systems
The building is equipped with deteriorated and inadequate quantity of battery type emergency lights and exit signs. Non-working emergency equipment was observed. It is recommended that a new natural gas generator be installed that serves new emergency lights, new exit signs, and fire alarm system.
4. Master Clock Systems
The building is not equipped with a master clock system but it is recommended that a wireless (Primex) system be installed.
5. Lighting Systems and Controls
Various types of fluorescent lighting is used the building. These types include recessed prismatic and industrial strip equipped with T12 lamps. High

intensity discharge (HID) metal halide type fixtures are used in highbay lab areas. Newly installed compact fluorescent highbay fixtures are installed in the new third floor Sewing Lab. It is recommended that the fluorescent fixtures equipped with T12 lamps be replaced with fixtures equipped with T8 lamps and electronic ballast. The lighting in the highbay lab areas should be changed to more energy efficient fluorescent highbay fixtures. The compact fluorescent used in the sewing lab are in satisfactory condition.

Rooms are equipped with single level only lighting control. No spaces are equipped with occupancy sensors. It is recommended that all spaces in the building be equipped with occupancy sensors and new switches with associated wiring be installed.

A limited number of exterior wall mounted fixtures are present around the perimeter of the building. The park & ride parking area, owned by WiDOT, are equipped with LED light fixtures in satisfactory condition. Additional LED type building perimeter lights should be installed.

6. Fire Alarm Systems
The building is equipped with a non-working fire alarm panel that at one time only supervised a fire suppression system. A complete system replacement complying with ADA requirements is recommended.
7. Sound Systems
No specialty sound or MASS notification systems are in the building.
8. Voice/Video/Data Systems
The building is provided with a standalone voice system. Voice drops are located in some spaces. Data drops, via the wide area network data system from main data center in the building, are located in some spaces. It is recommended that the standalone voice system be replaced with a voice system over IP (VOIP) and that video projectors with instructors control station be installed in classrooms.
9. Security Systems
It is unknown if the building is equipped with a security system.
10. Miscellaneous
No comments

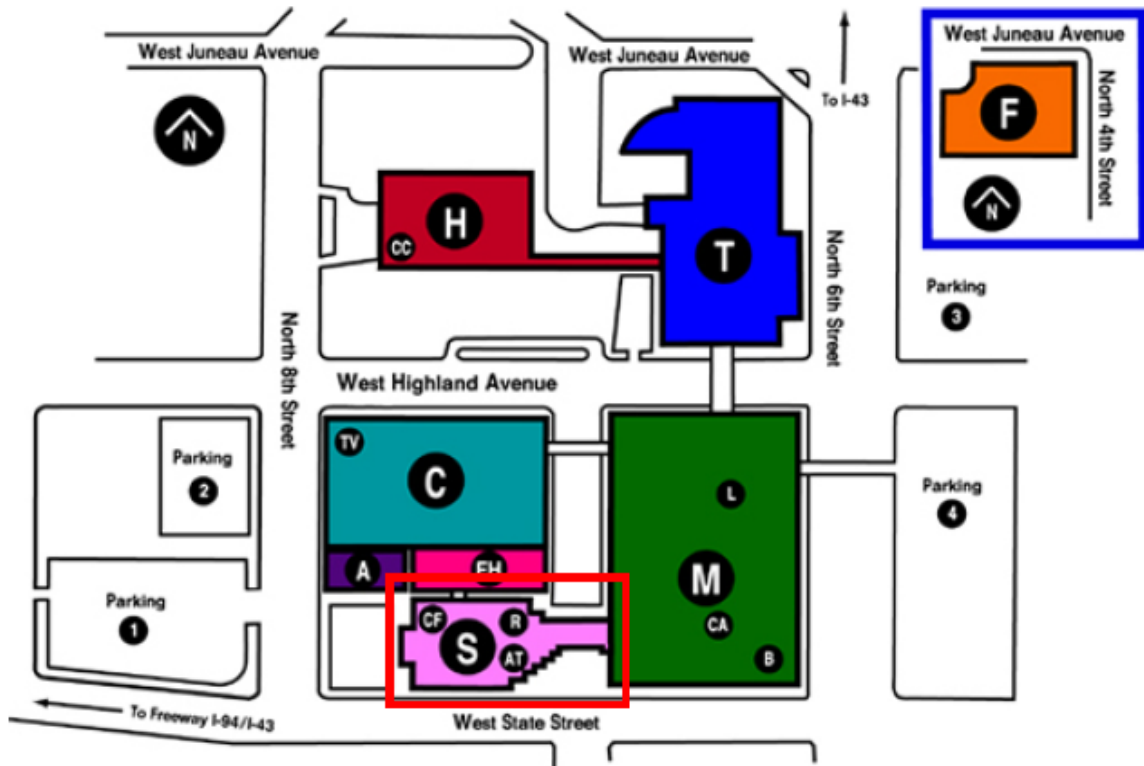
A. General Comments

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 - 4 = New / Recently Repaired

B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	Student Services Building (S)
Building Address:	700 West State Street Milwaukee, WI 53233-1443
Number of Stories:	4 + basement, sky bridge to Main Building, and penthouse
Approximate Area (SF):	71,578

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. **Air Handling Unit Systems**
The Student Services Building has multiple air handling units throughout the building and due to the more recent construction of this building, these air handling units are in satisfactory condition and can remain in place. A detailed review and minor modifications of these air handling units could allow for more energy efficiency, improved indoor air quality, and improved occupant comfort.
2. **Ductwork Systems**
The existing ductwork in the Student Services Building is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.
3. **Terminal Units**
Similar to the ductwork for the air distribution system in the Student Services Building, the VAV (Variable Air Volume) Terminals Units are in satisfactory condition and can remain in place.
4. **Room Systems**
In the Student Services Building, the supply and return air diffusers are in satisfactory condition and can remain in place. Existing perimeter heat along the exterior wall currently exists in some spaces and is in satisfactory condition and can remain in place.
5. **Exhaust Systems**
The existing exhaust air systems in the Student Services Building are in satisfactory condition and can remain in place.
6. **Heating Plant**
The existing heating water system for the Student Services Building comes from a steam to heating water heat exchanger. Steam comes from the City Steam System. This heat exchanger and heating water circulating pumps are the original equipment and although well maintained, this equipment still has some age on it and may want to consider replacement with new more energy efficient equipment and to extend the overall life of the building. The existing heating water piping is in satisfactory condition and can remain in place.
7. **Chiller/Cooling Plants**
The existing chilled water system for the Student Services Building comes from the cooling plant in the Main Building. This equipment and piping throughout the Student Services Building is in satisfactory condition and can remain in place.
8. **Building Control Systems**
The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous
 - a. No comments.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems
The existing domestic water system in the Student Services Building is the original equipment when the building was originally constructed and due to leaks in the domestic water piping may be considered for replacement.
2. Waste and Vent Systems
No issues were noted concerning the waste and vent systems in the Student Services Building.
3. Water Heaters
The existing domestic hot water system comes from the Main Building.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)
Due to the more recent construction of this building, the plumbing fixtures are in satisfactory condition and can remain in place. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.
5. Fire Protection
The Student Services Building has a fire protection sprinkler system.
6. Miscellaneous
 - a. The Atrium area has a smoke control system.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The electric service consists of 13.2Kv (13,200-volt) primary feed from the Foundation Hall “FH” building. Primary feed is in satisfactory condition.

The electric service terminates in a 13.2Kv substation in satisfactory condition.

It is anticipated that feeders from this substation to distribution equipment and panelboards are of copper conductors in conduit.

Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

2. **Branch Distribution Systems**
Branch distribution consists of circuit breaker type distribution panels and circuit breaker type panelboards in satisfactory condition.
3. **Emergency Power Systems**
The building is equipped with a natural gas fired generator that only serves the fire alarm system and atrium smoke exhaust system.

The building is equipped with inadequate quantity of battery type emergency lights and exit signs. Non-working emergency equipment was observed. It is recommended that a new natural gas generator be installed that serves new emergency lights, exit signs, fire alarm system and atrium smoke exhaust system.
4. **Master Clock Systems**
The building is not equipped with a master clock system but it is recommended that a wireless (Primex) system be installed.
5. **Lighting Systems and Controls**
Various types of fluorescent lighting is used the building. These types include recessed prismatic, decorative pendant fluorescent and industrial strip equipped T8 lamps. High intensity discharge (HID) metal halide fixtures are used in the multi-purpose room. All fixtures are in satisfactory condition.

Rooms are equipped with single level only lighting control. Some spaces are equipped with occupancy sensors. It is recommended that rooms in the building be equipped with occupancy sensors.

Incandescent recessed type dimmable downlights, in satisfactory condition, are installed in multi-purpose room for presentations.

Exterior lighting consists of, wall mounted fixtures at building perimeter, recessed soffit lights at main building entrances, and pole mounted serving then plaza area. This lighting is satisfactory condition.
6. **Fire Alarm Systems**
The building is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the main Downtown Campus building. Not all student occupied spaces are equipped with strobes for ADA compliance and spaces exist without heat/smoke detector protection. It is recommended that these spaces be equipped with strobes per ADA requirements and heat/smoke detector.
7. **Sound Systems**
Dedicated sound systems are located in the teleconference room and student multi-purpose rooms consisting on recessed ceiling speakers, amplifiers, microphones and microphone jacks. Systems are in satisfactory condition.

The building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants.

Speaker and visuals are not installed in the teleconference room. It is recommended that these devices be installed.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located in individual offices and administrative spaces. Data drops, via the wide area network data system from main Downtown Building data center, are located in offices and administrative spaces. A video system via projectors is located in the teleconference room. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor spaces. No electronic access control system is present at this building. System is monitored by the building safety office located in this building. Consideration should be given to installations of an access control system and cameras for surveillance.

10. Miscellaneous

Provide GFI receptacles as required by the National Electrical Code in food court and in food prep areas.

A. General Comments

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B. Building Description

Campus Name: Downtown Campus (Main)
Building Name(s): Storage Building
Building Address: 739 W. Juneau Avenue
Milwaukee, WI 53233
Number of Stories: 2
Approximate Area (SF): 8,016

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems
No mechanical systems in this building.
2. Ductwork Systems
No mechanical systems in this building.
3. Terminal Units
No mechanical systems in this building.
4. Room Systems
No mechanical systems in this building.
5. Exhaust Systems
No mechanical systems in this building.
6. Boiler Plant
No mechanical systems in this building.
7. Chiller/Cooling Plants
No mechanical systems in this building.
8. Building Control Systems
No mechanical systems in this building.
9. Miscellaneous
 - a. No comments.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems
No plumbing systems in this building.
2. Waste and Vent Systems
No plumbing systems in this building.
3. Water Heaters
No plumbing systems in this building.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)
No plumbing systems in this building.
5. Fire Protection
No plumbing systems in this building.
6. Miscellaneous
 - a. No comments.

F. Engineering Assessments – Electrical System

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The main 120/240-volt, 1-phase electric service is underground from the service pole terminating a single 12 circuit panelboard with no main disconnect. This panelboard serves all the necessary branch circuits in the building. It is recommended that this single panel be replaced with panelboard incorporating a main disconnect switch and be provided with surge protection.
2. Branch Distribution Systems
No branch distribution panels are present in the building.
3. Emergency Power Systems
No emergency power systems are present in the building. It is recommended that emergency lighting and exit signs be provided in the building.
4. Master Clock Systems
No master clock system is present in the building.
5. Lighting Systems and Controls
The building is equipped with incandescent type light fixtures. It is recommended that new fluorescent vaportight type lighting be installed.

Building is equipped with single level only lighting control and no occupancy sensors. Occupancy sensors should be installed throughout the building.

Exterior lighting consists of wall mounted lights over exterior doors. These lights should be replaced with more energy efficient LED lights. Additional LED type lights should be installed around the perimeter of the building.
6. Fire Alarm Systems
No fire alarm system is present in the building. Consideration should be given for installation of a system that provides protection for items stored.
7. Sound Systems
No specialty sound or MASS notification systems are in the building.
8. Voice/Video/Data Systems
A single voice and data drop is present in the building. It is unknown if the drops are operational.
9. Security Systems
No security system is present in the building. . Consideration should be given for installation of a system that provides protection for items stored.
10. Miscellaneous
No comments.

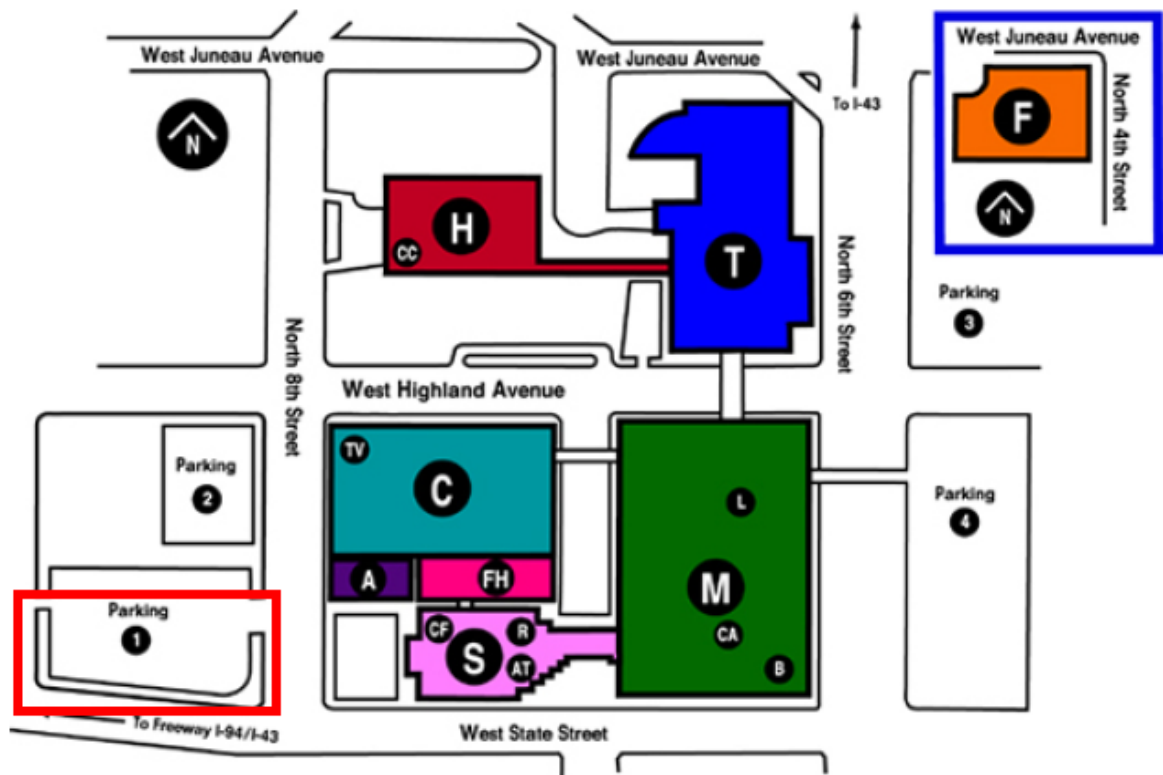
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B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	Student Annex Bookstore (8 th and State Parking Facility)
Building Address:	800 West State Street Milwaukee, WI 53233
Number of Stories:	1
Approximate Area (SF):	1,901

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. **Air Handling Unit Systems**
The Student Annex Bookstore has multiple air handling units throughout this building area and due to the more recent renovation of this portion of the building, these air handling units are in satisfactory condition and can remain in place. A detailed review and minor modifications of these air handling units could allow for more energy efficiency, improved indoor air quality, and improved occupant comfort.
2. **Ductwork Systems**
The existing ductwork in the Student Annex Bookstore is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.
3. **Terminal Units**
Similar to the ductwork for the air distribution system in the Student Annex Bookstore, the VAV (Variable Air Volume) Terminals Units are in satisfactory condition and can remain in place.
4. **Room Systems**
In the Student Annex Bookstore, the supply and return air diffusers are in satisfactory condition and can remain in place. Existing perimeter heat along the exterior wall currently exists in some spaces and is in satisfactory condition and can remain in place.
5. **Exhaust Systems**
The existing exhaust air systems in the Student Annex Bookstore are in satisfactory condition and can remain in place.
6. **Heating Plant**
The existing heating water boilers are not the original boilers and have been replaced. Due to the more recent installation of these boilers, they are in satisfactory condition and can remain in place. The existing heating water circulating pumps and piping for this portion of the building are in satisfactory condition and can remain in place. A detailed review and minor modifications of these boilers could allow for more energy efficiency.
7. **Chiller/Cooling Plants**
The existing cooling system for this area of the building consists of DX cooling coils located in all the air handling units and associated outdoor air cooled condensing units which are in satisfactory condition and can remain in place.
8. **Building Control Systems**
The existing temperature control system in this building is a DDC control system and is in satisfactory condition.
9. **Miscellaneous**
 - a. It was noted that there are some occupant comfort issues in this building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems
The existing domestic water system in the Student Annex Bookstore is the original equipment when the building was originally constructed and due to the more recent construction of this building, the domestic water system is in satisfactory condition and can remain in place.
2. Waste and Vent Systems
No issues were noted concerning the waste and vent systems in the Student Annex Bookstore.
3. Water Heaters
The existing domestic hot water heater, circulating pumps, and piping in the Student Annex Bookstore is the original equipment and is in satisfactory condition and can remain in place.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)
Due to the more recent construction of this building, the plumbing fixtures are in satisfactory condition and can remain in place. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.
5. Fire Protection
The Student Annex Bookstore has a fire protection sprinkler system.
6. Miscellaneous
 - a. The Parking Garage portion of this building does not have a fire protection sprinkler system.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The electric service is underground from pad mounted a transformer located on first level of the parking garage.

A fusible type switchboard with main fusible switch is located in the basement level electrical room. This switchboard is without ground fault protection as required by the National Electrical Code. The switchboard should be replaced with new that is equipped with ground fault protection.

It is anticipated that feeders from this distribution equipment and panelboards are of copper conductors in conduit.

Circuit breaker type panelboards are present in the building without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

2. Branch Distribution Systems

The building is equipped with circuit breaker type distribution panels in satisfactory condition.

Branch panelboards located in second floor electrical room (battery inverter room) are in need of replacement due to water damage. These panelboards are still operational.

3. Emergency Power Systems

A non-working central battery inverter system is serving the exit signs and emergency lights in the parking garage. It is recommended that the inverter system be replaced with new emergency lights and exit signs connected to a generator.

The bookstore area of the building is equipped with battery pack type emergency lights and exit signs in satisfactory condition.

4. Master Clock Systems

No master clock system is present in the building.

5. Lighting Systems and Controls

The parking garage is equipped with surface mounted LED type light fixtures in satisfactory condition. The bookstore area is equipped with recessed parabolic type fixtures with T8 lamps. The bookstore mechanical deck is equipped with industrial strip fixtures with T12 lamps. These mechanical deck fixtures should be replaced with fixtures equipped with T8 lamps and electronic ballast.

The bookstore area is equipped with single level only lighting controls and occupancy sensors.

Exterior lighting consists of wall mounted high pressure sodium fixtures providing floodlighting of building face.

6. Fire Alarm Systems

Facility is equipped with two fire alarm systems. One system serves the parking garage and the other the system strictly serves the bookstore area.

The system that serves the parking garage is a zoned analog system supervising the elevator, basement electrical room and mechanical room. The bookstore area is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the main Downtown Campus building.

7. Sound Systems

The bookstore area is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.

8. Voice/Video/Data Systems

The bookstore is provided with a standalone voice system. Voice drops are located in individual office spaces. Data drops, via the wide area network data system from main data center in the building, are located in office spaces. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The parking garage is not equipped with a security system.

The bookstore security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior cameras are located in the sales area and main entrance. Exterior cameras are located at the main bookstore entrance. Electronic access control system is located at the main entrance.

10. Miscellaneous

No Comments

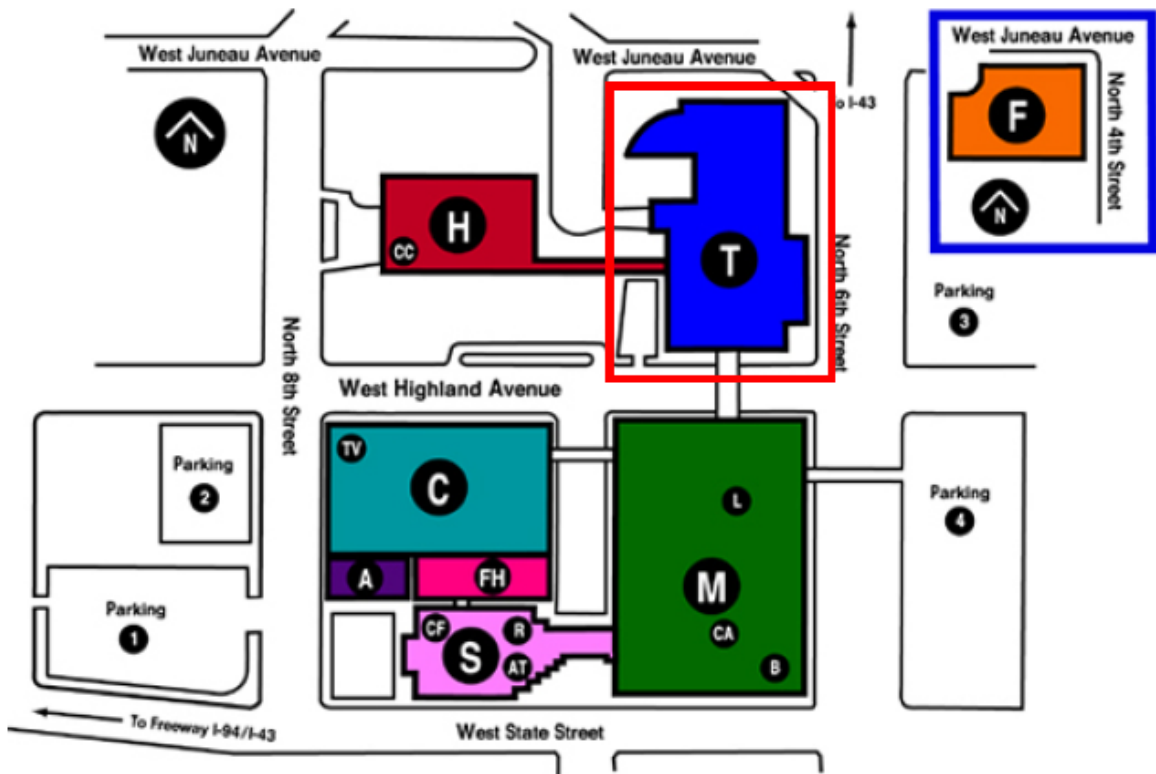
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B. Building Description

Campus Name:	Downtown Campus (Main)
Building Name(s):	Technology Building (T Building)
Building Address:	1101 North 6 th Street Milwaukee, WI 53233
Number of Stories:	4
Approximate Area (SF):	146,126

C: Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The Technical Building has a combination of older and newer air handling unit systems. There are multiple older air handling units and classroom unit ventilators throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building. There are also a number of newer air handling units that have recently been replaced and are in satisfactory condition that can remain in place.

2. Ductwork Systems

The majority of the existing ductwork in the Technical Building is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

Similar to the ductwork for the air distribution system in the Technical Building, most of the VAV (Variable Air Volume) Terminal Units are the original equipment. The original VAV Terminal Units consist of a damper only and no reheat coil. As some of the areas of the building have been renovated, the VAV Terminal Units have been replaced with a unit consisting of a damper and reheat coil. Replacement of all VAV Terminal Units containing a reheat coil would allow for improved occupant comfort.

4. Room Systems

The air distribution system in occupied spaces consists of a combination of ceiling linear slot diffusers and square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork and VAV Terminal Unit replacement. Existing perimeter heat along the exterior wall currently exists in spaces where the VAV Terminal Units do not have a reheat coil. The perimeter heat could be eliminated if a reheat coil was added to the VAV Terminal Unit when replaced with a new unit.

5. Exhaust Systems

The majority of the existing exhaust air systems in the Technical Building are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Heating Plant

The existing heating water system for the Technical Building comes from a steam to heating water heat exchanger. Steam comes from the City Steam System. This heat exchanger, heating water circulating pumps, and piping throughout this building are the original equipment and although well maintained, this equipment and piping has exceeded its useful life due to the age of this equipment. Replacement of this equipment and piping would allow for more energy efficiency, improved occupant comfort, and extend the overall useful life of the building. There is also some existing steam heating coils throughout this building and due to the age of this equipment and piping, replacement of this equipment and piping would extend the overall useful life of the building.

7. Chiller/Cooling Plants

The existing chilled water system for the Technical Building comes from the cooling plant in the Main Building. This equipment and piping throughout this building is in satisfactory condition and can remain in place. There are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.

8. Building Control Systems

The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous

a. It was noted that the occupant comfort was very poor in this building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

Most of the existing domestic water system in the Technical Building is the original equipment when the building was originally constructed and has exceeded its useful life due to the age of this system and may be considered for replacement.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in the Technical Building.

3. Water Heaters

The existing domestic hot water system comes from a steam to hot water heat exchanger. Most of this equipment, circulating pumps, and piping is the original equipment and has exceeded its useful life due to the age of this equipment and needs to be replaced.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

Most of the plumbing fixtures have been replaced and are in satisfactory condition except for the service sinks which need to be replaced due to the age of this equipment. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection
The Technical Building does not have a fire protection sprinkler system.
6. Miscellaneous
No comments.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The electric service consists of a 13.2Kv (13,200-volt) primary feed from the Main “M” building. Primary feed is in satisfactory condition.

The electric service terminates in a multi-section fusible metal clad 13.2Kv switchgear located in the Electrical Equipment Room located on the First floor. This room is equipped with one egress door when two means of egress are required by the National Electrical Code. The current location of this switchgear does not provide the required working space clearances in front of the equipment as required by the National Electrical Code.

It is anticipated that feeders from this substation to distribution equipment and panelboards are of copper conductors in conduit. Feeders in the building may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated.

A mixture of original and newer type panelboards exist. The new circuit breaker type panelboards are equipped with surge protection devices. The older circuit breaker type panelboards are without surge protection. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

2. Branch Distribution Systems
The building consists of circuit breaker type distribution equipment that serves branch panelboards. It is recommended that the branch distributions systems that have not been renovated be replaced along with its associated branch circuit wiring.

A direct current (DC) type distribution system is currently installed in the building but is unknown if it's operational and being utilized.

3. Emergency Power Systems
Only the recently renovated area of the building is equipped with battery type emergency lights and exit signs in satisfactory condition. It is recommended that a new natural gas generator be installed that serves new emergency lights and exit signs.

4. Master Clock Systems

It is recommended that the hardwired clock system in the building be replaced with the (Primex) wireless clock system.

5. Lighting Systems and Controls

Various types of fluorescent lighting is used the building. These types include, enclosed vaportight, recessed prismatic and industrial strip equipped with T12 or T8 lamps. The fixtures in recently renovated area are in satisfactory condition. It is recommended that all the light fixtures in the non-renovated areas be replaced with fixtures equipped with T8 lamps and electronic ballast.

Rooms are equipped with single level only lighting control. Renovated spaces are equipped with occupancy sensors. It is recommended that all non-renovated rooms in the building be equipped with occupancy sensors and new switches with associated wiring be installed.

The auditorium is equipped with recessed incandescent fixtures over the seating area along with theatrical front of stage and over stage lighting. All this lighting is controlled through a dimmer controller on the stage. The dimmer control unit is need of replacement to its deteriorated condition.

Exterior lighting consists of wall mounted fixtures at building perimeter and recessed soffit lights in satisfactory condition.

6. Fire Alarm Systems

The building is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the main Downtown Campus building. The fire alarm system in the renovated portion of the building is in compliance with ADA regulations. It is recommended that the portion of system in the non-renovated areas be replaced due to non-compliance with ADA regulations.

7. Sound Systems

The auditorium is equipped with a dedicated sound system but its condition is unknown.

The building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. All is in satisfactory condition.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located in office spaces. Data drops, via the wide area network data system from main data center in the building, are located in office spaces. It is recommended that the standalone voice system be replaced with a voice

system over IP (VOIP) and that video projectors with instructors control station be installed in classrooms.

9. Security Systems
It is unknown to what extent the building is equipped with a security system.
10. Miscellaneous
Remove direct current (DC) distribution system if abandoned.

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B. Building Description

Campus Name: Downtown Campus (Main)
Building Name(s): Union 212 Building
Building Address: 739 West Juneau Avenue
Milwaukee, WI 53233
Number of Stories: 1
Approximate Area (SF): 2,320

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems
The Union 212 Building has multiple gas fired furnace units serving this building and due to the more recent installation of these units they are in satisfactory condition and can remain in place. A detailed review and minor modifications of these furnace units could allow for more energy efficiency, improved indoor air quality, and improved occupant comfort.
2. Ductwork Systems
The existing ductwork in the Union 212 Building is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.
3. Terminal Units
In the Union 212 Building, the existing air systems are constant volume systems and terminal units are not a part of these air systems.
4. Room Systems
In the Union 212 Building, the supply and return air diffusers are in satisfactory condition and can remain in place.
5. Exhaust Systems
The existing exhaust air systems in the Union 212 Building are in satisfactory condition and can remain in place.
6. Heating Plant
The existing heating system consists of multiple gas fired furnace units which are in satisfactory condition and can remain in place.
7. Chiller/Cooling Plants
The existing cooling system for this building consists of furnace units with DX cooling coils and associated outdoor air cooled condensing units which are in satisfactory condition and can remain in place.
8. Building Control Systems
The existing temperature control system in this building consists of furnace unit package controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.
9. Miscellaneous
 - a. The gas fired furnace units and associated condensing units are residential type units.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

The existing domestic water system in the Union 212 Building is the original equipment and is in satisfactory condition.

2. Waste and Vent Systems
No issues were noted concerning the waste and vent systems in the Union 212 Building.
3. Water Heaters
The existing domestic hot water heaters in the Union 212 Building are in satisfactory condition.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)
Due to the more recent renovation of this building, the plumbing fixtures are in satisfactory condition and can remain in place. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.
5. Fire Protection
The Union 212 Building does not have a fire protection sprinkler system.
6. Miscellaneous
No comments.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The main 120/240-volt, 1-phase electric service is underground from the service pole terminating a single 42 circuit panelboard. A safety switch is being used as the interior building disconnect switch. This panelboard serves all the necessary branch circuits in the building. It is recommended that this single panel be provided with surge protection.
2. Branch Distribution Systems
No branch distribution panels are present in the building. It is recommended that additional receptacles be added in the offices for general use.
3. Emergency Power Systems
The building is equipped with battery type emergency lights and exit signs in satisfactory condition.
4. Master Clock Systems
No master clock system is present in the building.
5. Lighting Systems and Controls
The building is equipped with recessed parabolic type fixtures with T8 lamps. Fixtures are in satisfactory condition.

Offices are equipped with single level only lighting control and occupancy sensors. Spaces exist in the building where occupancy sensors should be installed.

Exterior lighting consists of wall mounted lights over exterior doors. These lights should be replaced with more energy efficient LED lights. Additional LED type lights should be installed around the perimeter of the building.

6. Fire Alarm Systems

The building is provided with an analog type system that has limited amount of smoke detectors and horn strobes only installed in the main hallway. It is recommended that a new complete system be installed providing smoke protection throughout the building and a system which includes strobe type devices in occupied spaces conforming to ADA requirements.

7. Sound Systems

No specialty sound or MASS notification systems are in the building.

8. Voice/Video/Data Systems

The building is provided with a standalone voice system. Voice drops are located in office spaces. Data drops, via the wide area network data system from main data center in the building, are located in office spaces. It is recommended that the standalone voice system be replaced with a voice system over IP (VOIP).

9. Security Systems

The building security system consists of exterior door contact switches for intrusion protection. Building is not equipped with interior or exterior video cameras. No electronic access control system is present at this building. Consideration should be given to installations of an access control system and cameras for surveillance

10. Miscellaneous

Provide GFI type receptacle adjacent to sinks to comply with the National Electrical Code requirements.

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	Main Building	Supply Air Fan SF-1 (Comment No. 1)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Supply Air Fan SF-2 (Comment No. 1)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Supply Air Fan SF-3 (Comment No. 1)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Supply Air Fan SF-4 (Comment No. 1)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Multiple Air Handling Units (Comment No. 2)	1	Supply/Return/Outside Air	1	Constant Volume	1	Ceiling Diffusers	1	General Exhaust	1
		Multiple Make-up Air Units	2	Supply/Return/Outside Air	2	Constant Volume	2	Ceiling Diffusers	2	General Exhaust	2
		Main Building Comments:									
		1. Building has some existing cast iron heating radiators. 2. Air Handling Unit serving Cooley Auditorium has been recently replaced. 3. Separate from the main building cooling plant an Air Cooled Chiller with remote barrel is serving Cooley Auditorium.									

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	"A" Building	Air Handling Unit AHU-1	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Air Handling Unit AHU-2	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
Downtown	Student Services Building	Multiple Air Handling Units	3	Supply/Return/Outside Air	3	VAV Damper (With Reheat)	3	Ceiling Diffusers/Perimeter Heat	3	General Exhaust with Kitchen Exhaust Hoods in Kitchen Area	3
		Package Rooftop Units (Third Floor Bank Area)	3	Supply/Return/Outside Air	3	Constant Volume	3	Ceiling Diffusers	3	NA	NA
		Air Handling Unit (Third Floor Student Senate Room)	3	Supply/Return/Outside Air	3	Constant Volume	3	Ceiling Diffusers/Perimeter Heat	3	NA	NA
Downtown	Foundation Hall	Multiple Multi-Zone Air Handling Units (Comments No. 1 and No. 2)	1	Supply/Return/Outside Air	1	Multi-Zone Constant Volume (Comment No. 3)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Foundation Hall Comments:									
		1. Building has some existing cast iron radiators. 2. Third floor and fourth floor are currently being used for storage with no air system and no ventilation. 3. Poor temperature control in occupied spaces.									

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	"C" Building	Air Handling Unit (Serving Second and Third Floor Interior Spaces)	1	Supply/Return/Outside Air	1	Constant Volume (Comment No. 1)	1	Ceiling Diffusers	1	General Exhaust	1
		Floor-mounted Unit Ventilators (Serving Exterior Spaces)	1	NA	NA	Constant Volume	1	Floor-mounted Unit Ventilators	1	General Exhaust	1
		Air Handling Unit (Serving Cooley Auditorium)	1	Supply/Return/Outside Air	1	Constant Volume	1	Ceiling Diffusers	1	NA	NA
		Multiple Air Handling Units (Serving Shop Areas)	1	Supply/Return/Outside Air	1	Constant Volume	1	Exposed Ductwork	1	General and Shop Area Exhaust	1
		Multiple Air Handling Units (Serving TV Studio Areas)	1	Supply/Return/Outside Air	1	Duct Mounted Reheat Coils	1	Ceiling Diffusers	1	General Exhaust	1
		Self-Contained Cooling Units (Serving Main Technology Equipment Room)	3	Supply	3	Constant Volume	3	Ceiling Diffusers/Floor-mounted Units in the Space	3	NA	NA
		"C" Building Comments:									
		1. Poor temperature control in occupied spaces. 2. Air-Cooled Chiller with indoor evaporator barrel provides off-peak and partial building cooling.									

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	"T" Technical Building	Multiple Air Handling Units (Serving First Floor Shop Area)	1	Supply/Return/Outside Air	1	Constant Volume (Comment No. 1)	1	Ceiling Diffusers/Exposed Ductwork and Diffusers	1	General and Shop Area Exhaust	1
		Air Handling Unit AHU-2 (Serving Renovated First Floor Shop Area)	3	Supply/Return/Outside Air	3	VAV Damper (With Reheat)	3	Exposed Ductwork and Diffusers	3	General and Shop Area Exhaust	1
		Air Handling Unit AHU-1 (Serving Renovated Second Floor Area)	3	Supply/Return/Outside Air	3	VAV Damper (With Reheat)	3	Ceiling Diffusers/Perimeter Heat	3	General Exhaust	3
		Air Handling Unit (Serving Second Floor Administrative Office Area)	3	Supply/Return/Outside Air	3	VAV Damper (No Reheat)	3	Ceiling Diffusers/Perimeter Heat	3	General Exhaust	3
		Air Handling Unit (Serving Technical Building Auditorium)	1	Supply/Return/Outside Air	1	Constant Volume	1	Ceiling Diffusers	1	General Exhaust	1
		Rooftop Air Handling Unit (Serving Second Floor Shop Area)	2	Supply/Return/Outside Air	2	VAV Damper (No Reheat)	2	Ceiling Diffusers	2	General Exhaust	2
		Air Handling Units AHU-3 and AHU-4 (Serving Third and Fourth Floor Area)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Floor-mounted Unit Ventilators (Serving Exterior Spaces)	1	NA	NA	Constant Volume	1	Floor-mounted Unit Ventilators	1	General Exhaust	1
		"T" Technical Building Comments:									
		1. Poor temperature control in occupied spaces.									

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	"H" Building - Health Sciences Technology Center	Air Handling Unit AHU-1 (Serving All Floors on West Side of Building) (See Comment No. 1)	3	Supply/Return/Outside Air	3	VAV Damper (With Reheat)	3	Ceiling Diffusers/Perimeter Heat	3	General Exhaust	3
		Air Handling Unit AHU-2 (Serving All Floors on East Side of Building) (See Comment No. 1)	3	Supply/Return/Outside Air	3	VAV Damper (With Reheat)	3	Ceiling Diffusers/Perimeter Heat	3	General Exhaust	3
		"H" Building - Health Sciences Technology Center									
		1. Poor temperature control in occupied spaces.									
Downtown	"F" Building - Industrial Training Center	Multiple Air Handling Units (Serving Shop Areas) (See Comment No. 1)	1	Supply/Return/Outside Air	1	Constant Volume	1	Exposed Ductwork and Diffusers	1	General and Shop Area Exhaust	1
		Floor-mounted Unit Ventilators (Serving Classroom Spaces) (See Comment No. 1)	1	NA	NA	Constant Volume	1	Floor-mounted Unit Ventilators	1	General Exhaust	1
		"F" Building - Industrial Training Center									
		1. Heating only units - no cooling available. 2. Existing steam boiler is currently not being used.									
Downtown	"MEC" Building - Milwaukee Enterprise Center	Multi-Zone Air Handling Unit AHU-1 (Serving Office Area)	2	Supply/Return/Outside Air	2	Multi-Zone Constant Volume (Comment No. 3)	2	Ceiling Diffusers	2	General Exhaust	2
		Steam Propeller Unit Heaters (Serving Industrial Areas) (See Comments No. 1 and No. 2)	1	NA	NA	NA	NA	NA	NA	General and Shop Area Exhaust	1
		"MEC" Building - Milwaukee Enterprise Center									
		1. Heating only units - no cooling available. 2. No ventilation air in the Industrial Areas. 3. Poor temperature control in occupied spaces.									

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	Union 212 Building	Multiple Gas Fired Furnace Units	2	Supply/Return/Outside Air	2	Constant Volume	2	Ceiling Diffusers	2	General Exhaust	2
Downtown	Ward Storage Buildings	No Air System in these Buildings	NA	NA	NA	NA	NA	NA	NA	No Exhaust in these Buildings	NA
Downtown	Transmitter Building	Multiple Air Handling Units (See Comment No. 1)	3	Supply/Return/Outside Air	3	Constant Volume	3	Exposed Ductwork and Diffusers	3	General Exhaust	3
		Transmitter Building									
		1. The FM Rooms are set up to have their own individual heating/cooling systems installed in each room independent of the building heating/cooling systems. 2. The DDC Control System in this building is monitored through a front end computer located in this building.									
Downtown	Parking Garage / Bookstore	Air Handling Unit AHU-1 (Serving Bookstore and Office Area) (See Comment No. 1)	2	Supply/Return/Outside Air	2	VAV Damper (With Reheat)	2	Ceiling Diffusers/Perimeter Heat	2	General Exhaust	2
		Parking Garage / Bookstore									
		1. Poor temperature control in occupied spaces.									

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
Downtown	Main Building	City Steam System	NA	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Water Cooled Chiller with Cooling Tower	4	Chilled Water Piping	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		City Steam System	NA	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Water Cooled Chiller with Cooling Tower	4	Chilled Water Piping	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		City Steam System	NA	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Water Cooled Chiller with Cooling Tower	4	Chilled Water Piping	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		City Steam System	NA	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Water Cooled Chiller with Cooling Tower	4	Chilled Water Piping	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		City Steam System	NA	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Water Cooled Chiller with Cooling Tower (Comment No. 3)	4	Chilled Water Piping	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		City Steam System	NA	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Water Cooled Chiller with Cooling Tower	4	Chilled Water Piping	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
Downtown	"A" Building	Heating Water from "C" Building	1	Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	NA	Chilled Water Piping	2	Chilled Water from Main Building Cooling Plant	NA	Combination Pneumatic/DDC Controls	1
		Heating Water from "C" Building	1	Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	NA	Chilled Water Piping	2	Chilled Water from Main Building Cooling Plant	NA	Combination Pneumatic/DDC Controls	1
Downtown	Student Services Building	City Steam System to Heating Water Heat Exchangers	1	Heating Water Piping	3	Base Mounted End Suction	3	Chilled Water from Main Building Cooling Plant	NA	Chilled Water Piping	3	Chilled Water from Main Building Cooling Plant	NA	Combination Pneumatic/DDC Controls	1
		Packaged Rooftop Unit	NA	NA	NA	NA	NA	Packaged Rooftop Unit	NA	NA	NA	NA	NA	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Heating Water Piping	3	Base Mounted End Suction	3	Outdoor Condensing Unit/AHU with DX Cooling Coil	NA	Refrigerant Piping	3	NA	NA	Combination Pneumatic/DDC Controls	1
Downtown	Foundation Hall	City Steam System	NA	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Air Cooled Chillers	1	Chilled Water Piping	2	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
Downtown	'C' Building	City Steam System to Heating Water Heat Exchangers	1	Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant (See Comment No. 2)	2	Chilled Water Piping	2	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant (See Comment No. 2)	2	Chilled Water Piping	2	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant (See Comment No. 2)	2	Chilled Water Piping	2	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant (See Comment No. 2)	2	Chilled Water Piping	2	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant (See Comment No. 2)	2	Chilled Water Piping	2	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		NA	NA	NA	NA	NA	NA	Outdoor Condensing Unit/AHU with DX Cooling Coil	3	Refrigerant Piping	3	NA	NA	DDC Controls	2

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
Downtown	"T" Technical Building	City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	2	Chilled Water Piping	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	2	Chilled Water Piping	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	2	Chilled Water Piping	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	2	Chilled Water Piping	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	2	Chilled Water Piping	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Outdoor Condensing Unit/RTU with DX Cooling Coil	2	Refrigerant Piping	2	NA	NA	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	2	Chilled Water Piping	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	1	Steam and Heating Water Piping	1	Base Mounted End Suction	1	Chilled Water from Main Building Cooling Plant	2	Chilled Water Piping	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
Downtown	"H" Building - Health Sciences Technology Center	City Steam System to Heating Water Heat Exchangers	3	Heating Water Piping	3	Base Mounted End Suction	3	Chilled Water from Main Building Cooling Plant	3	Chilled Water Piping	3	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
		City Steam System to Heating Water Heat Exchangers	3	Heating Water Piping	3	Base Mounted End Suction	3	Chilled Water from Main Building Cooling Plant	3	Chilled Water Piping	3	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
Downtown	"F" Building - Industrial Training Center	City Steam System (See Comment No. 2)	1	Steam Piping	1	Condensate Receiver and Circulating Pump	1	No Cooling Plant Available	NA	NA	NA	NA	NA	Pneumatic Controls	1
		City Steam System (See Comment No. 2)	1	Steam Piping	1	Condensate Receiver and Circulating Pump	1	No Cooling Plant Available	NA	NA	NA	NA	NA	Pneumatic Controls	1
Downtown	"MEC" Building - Milwaukee Enterprise Center	Gas Fired Steam Boiler	1	Steam Piping	1	Condensate Receiver and Circulating Pump	1	Outdoor Condensing Unit/AHU with DX Cooling Coil	2	Refrigerant Piping	2	NA	NA	Combination Pneumatic/DDC Controls	1
		Gas Fired Steam Boiler	1	Steam Piping	1	Condensate Receiver and Circulating Pump	1	NA	NA	NA	NA	NA	NA	Combination Pneumatic/DDC Controls	1

HVAC ASSESSMENT - DOWNTOWN CAMPUS (Main)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
Downtown	Union 212 Building	Multiple Gas Fired Furnace Units	2	NA	NA	NA	NA	Outdoor Condensing Unit/Furnace Unit with DX Cooling Coil	2	Refrigerant Piping	2	NA	NA	Furnace Unit - Package Controls	2
Downtown	Ward Storage Buildings	No Heat in these Buildings	NA	NA	NA	NA	NA	No Cooling in these Buildings	NA	NA	NA	NA	NA	Na	NA
Downtown	Transmitter Building	Electric Heat	3	NA	NA	NA	NA	Outdoor Condensing Units/AHU's with DX Cooling Coil	3	Refrigerant Piping	3	NA	NA	DDC Controls (See Comment No. 2)	3
Downtown	Parking Garage / Bookstore	Gas Fired Heating Water Boiler	2	Heating Water Piping	2	In-Line	2	Outdoor Condensing Units/AHU's with DX Cooling Coil	2	Refrigerant Piping	2	NA	NA	DDC Controls	2

PLUMBING ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Domestic Water		Waste and Vent Piping		Water Heaters		Pumps		Toilet Fixtures & Trim	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	Main Building	Hot and Cold Water (See Comment No. 1)	1	Waste and Vent (See Comment No. 2 and No. 3)	1	Steam to Domestic Hot Water Heat Exchanger with Domestic Hot Water Storage Tank	1	Combination Base-Mounted and In-Line Circulating Pumps	1	See Comments No. 4 and No. 5	2
Downtown	"A" Building	Hot and Cold Water	1	Waste and Vent	1	Domestic Hot Water from "C" Building	NA	Domestic Hot Water from "C" Building	NA	See Comments No. 1 and No. 2	2
Downtown	Student Services Building	Hot and Cold Water (Comment No. 1)	1	Waste and Vent	3	Domestic Hot Water from Main Building	NA	Domestic Hot Water from Main Building	NA	See Comments No. 2 and No. 3	2
Downtown	Foundation Hall	Hot and Cold Water	1	Waste and Vent	1	Electric Domestic Hot Water Heater	1	In-Line Circulating Pumps	1	See Comments No. 1 and No. 2	1
Downtown	"C" Building	Hot and Cold Water	1	Waste and Vent (See Comment No. 1)	1	Steam to Domestic Hot Water Heat Exchanger	1	Combination Base-Mounted and In-Line Circulating Pumps	1	See Comments No. 2 and No. 3	2
Downtown	"T" Technical Building	Hot and Cold Water	1	Waste and Vent	1	Steam to Domestic Hot Water Heat Exchanger	1	In-Line Circulating Pumps	1	See Comments No. 1 and No. 2	2
Downtown	"H" Building- Health Sciences Technology Center	Hot and Cold Water	3	Waste and Vent	3	Steam to Domestic Hot Water Heat Exchanger	3	In-Line Circulating Pumps	3	See Comments No. 1 and No. 2	3

PLUMBING ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Domestic Water		Waste and Vent Piping		Water Heaters		Pumps		Toilet Fixtures & Trim	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
Downtown	"F" Building - Industrial Training Center	Hot and Cold Water	1	Waste and Vent	1	Multiple Electric Domestic Hot Water Heaters	1	In-Line Circulating Pumps	1	See Comments No. 1 and No. 2	1
Downtown	"MEC" Building - Milwaukee Enterprise Center	Hot and Cold Water	1	Waste and Vent	1	Multiple Electric and Gas Fired Domestic Hot Water Heaters	1	In-Line Circulating Pumps	1	See Comments No. 1 and No. 2	1
Downtown	Union 212 Building	Hot and Cold Water	3	Waste and Vent	3	Gas Fired Domestic Hot Water Heater	3	In-Line Circulating Pumps	3	See Comments No. 1 and No. 2	3
Downtown	Ward Storage Buildings	No Domestic Water Service in these Buildings	NA	NA	NA	NA	NA	NA	NA	NA	NA
Downtown	Transmitter Building	Hot and Cold Water	3	Waste and Vent	3	Electric Domestic Hot Water Heater	3	In-Line Circulating Pumps	3	See Comments No. 1 and No. 2	3
Downtown	Parking Garage / Bookstore	Hot and Cold Water	3	Waste and Vent	3	Gas Fired Domestic Hot Water Heater	3	In-Line Circulating Pumps	3	See Comments No. 1 and No. 2	3

PLUMBING ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Lavatories & Trim		Service Sinks & Trim		Fire Protection		Fire Pumps		Comments
		System Identification	Rating	System Identification	Rating	Type	Rating	Type	Rating	
Downtown	Main Building	See Comment No. 6	2	See Comment No. 7	1	Small Portion of this building has sprinkler system	3	No Fire Pump	NA	<ol style="list-style-type: none"> 1. Building has a domestic water booster pump system. 2. Building has an acid waste tank and piping system for science classroom area. 3. There has been a problem with the sanitary and storm system backing up in the building basement area during periods of heavy rain fall. 4. Combination of wall mounted and floor mounted toilet fixtures with a combination of manual flush and automatic flush valves. 5. Combination of wall mounted and floor mounted urinals with a combination of manual flush and automatic flush valves. 6. Combination of lavatories and wash fountains with a combination of manual and automatic faucets. 7. Combination of wall mounted and floor mounted service sinks.
Downtown	"A" Building	See Comment No. 3	2	See Comment No. 4	1	Building has no sprinkler system	NA	No Fire Pump	NA	<ol style="list-style-type: none"> 1. Floor mounted toilet fixtures with manual flush valves. 2. Floor mounted urinals with manual flush valves. 3. Lavatories with automatic faucets. 4. Combination of wall mounted and floor mounted service sinks.
Downtown	Student Services Building	See Comment No. 4	2	See Comment No. 5	3	Building has sprinkler system (See Comment No. 6)	3	No Fire Pump	NA	<ol style="list-style-type: none"> 1. It was reported that there has been a problem with the domestic water piping leaking. 2. Wall mounted toilet fixtures with automatic flush valves 3. Wall mounted urinals with manual flush valves. 4. Lavatories with a combination manual and automatic faucets. 5. Combination of wall mounted and floor mounted service sinks. 6. Atrium area has a smoke control system.
Downtown	Foundation Hall	See Comment No. 3	1	See Comment No. 4	1	Building has no sprinkler system	NA	No Fire Pump	NA	<ol style="list-style-type: none"> 1. Floor mounted, tank type toilet fixtures with manual flush valves. 2. Wall mounted urinals with automatic flush valves. 3. Lavatories with manual faucets. 4. Combination of wall mounted and floor mounted service sinks.
Downtown	"C" Building	See Comment No. 4	2	See Comment No. 5	1	Building has no sprinkler system	NA	No Fire Pump	NA	<ol style="list-style-type: none"> 1. Building has an acid waste tank and piping system for science classroom area. 2. Wall mounted toilet fixtures with a combination of manual flush and automatic flush valves. 3. Floor mounted urinals with a combination of manual flush and automatic flush valves. 4. Combination of lavatories and wash fountains with a combination of manual and automatic faucets. 5. Combination of wall mounted and floor mounted service sinks.
Downtown	"T" Technical Building	See Comment No. 3	2	See Comment No. 4	1	Building has no sprinkler system	NA	No Fire Pump	NA	<ol style="list-style-type: none"> 1. Wall mounted toilet fixtures with a combination of manual flush and automatic flush valves. 2. Combination of wall mounted and floor mounted urinals with a combination of manual flush and automatic flush valves. 3. Combination of lavatories and wash fountains with a combination of manual and automatic faucets. 4. Combination of wall mounted and floor mounted service sinks.
Downtown	"H" Building-Health Sciences Technology Center	See Comment No. 3	3	See Comment No. 4	3	Building has sprinkler system (See Comment No. 5)	3	No Fire Pump	NA	<ol style="list-style-type: none"> 1. Wall mounted toilet fixtures with a combination of manual flush and automatic flush valves. 2. Wall mounted urinals with automatic flush valves. 3. Lavatories with automatic faucets. 4. Combination of wall mounted and floor mounted service sinks. 5. Main stairways have smoke control system.

PLUMBING ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Lavatories & Trim		Service Sinks & Trim		Fire Protection		Fire Pumps		Comments
		System Identification	Rating	System Identification	Rating	Type	Rating	Type	Rating	
Downtown	"F" Building - Industrial Training Center	See Comment No. 3	1	See Comment No. 4	1	Building has no sprinkler system	NA	No Fire Pump	NA	1. Combination of wall mounted and floor mounted toilet fixtures with a combination of manual flush and automatic flush valves. 2. Combination of wall mounted and floor mounted urinals with a combination of manual flush and automatic flush valves. 3. Combination of lavatories and wash fountains with a combination of manual and automatic faucets. 4. Combination of wall mounted and floor mounted service sinks.
Downtown	"MEC" Building Milwaukee Enterprise Center	See Comment No. 3	1	See Comment No. 4	1	Building has sprinkler system	1	No Fire Pump	NA	1. Combination of wall mounted and floor mounted toilet fixtures with a combination of manual flush and automatic flush valves. 2. Floor mounted urinals with a combination of manual flush and automatic flush valves. 3. Combination of lavatories and wash fountains with manual faucets. 4. Combination of wall mounted and floor mounted service sinks.
Downtown	Union 212 Building	See Comment No. 3	3	NA	NA	Building has no sprinkler system	NA	No Fire Pump	NA	1. Floor mounted toilet fixtures with manual flush valves. 2. Floor mounted urinals with automatic flush valves. 3. Lavatories with manual faucets.
Downtown	Ward Storage Buildings	NA	NA	NA	NA	NA	NA	NA	NA	No Comments.
Downtown	Transmitter Building	See Comment No. 3	3	See Comment No. 4	3	Building has no sprinkler system	NA	No Fire Pump	NA	1. Floor mounted toilet fixtures with manual flush valves. 2. No urinal fixtures in this building. 3. Lavatories with manual faucets. 4. Floor mounted service sink.
Downtown	Parking Garage / Bookstore	See Comment No. 3	3	NA	NA	Building has sprinkler system (See Comment No. 4)	3	No Fire Pump	NA	1. Wall mounted toilet fixtures with a combination of manual flush and automatic flush valves. 2. Floor mounted urinals with automatic flush valves. 3. Lavatories with manual faucets. 4. Bookstore and Offices have a Sprinkler System. Parking Garage Area does not have a Sprinkler System.

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Building Service Entrances		Switchboard		
		System Identification	Rating	Type	Rating	Code /Comment
Downtown	Main Building	Parallel underground 13,200-volt primary feeders from service pole to multi-section 15 Kv switchgear.	3	277/480-volt, 3-phase, 240-volt, 3-phase 'ground b', and 120/208-volt, 3-phase sub-stations	2	Switchboard is not equipped with ground fault protection or surge protection.
	A Building	Underground 400 amp 120/208-volt 3 phase service from building "FH" Foundation Hall.	3	Circuit breaker type panelboard rated 400 amp 120/208-volt 3-phase main lug only.	3	No comments.
	Student Services Building	Underground 13200-volt, 3-phase feed from Foundation Hall "FH" building 15kv switchgear.	3	Single 15kv fusible switch serving sub-station. Sub-station consists of 2000 Kva transformer serving 2500 amp 277/480-volt distribution section with main 2500 amp disconnect. This sub-station serves a separate 500 Kva transformer serving a 2000 amp 120/208-volt, 3-phase switchboard with 2000 amp main switch.	3	No comments.
	Foundation Hall	Underground 13200-volt, 3-phase feed from main building 15kv switchgear.	3	15kv fusible unit sub-station with 15Kv main switch. Sub-station consists of 750 Kva transformer serving 30000 amp 120/208-volt distribution section with main 3000 amp disconnect.	3	No comments.
	"C" Building	Underground 13200-volt, 3-phase feed from main building 15kv switchgear.	3	Four section 15kv fusible switch serving four substations. Sub-station No. 1 - 500 Kva transformer, 800 amp 120/208-volt, 3-phase distribution section with 800 amp main disconnect. Sub-station No. 2 - 1000 Kva transformer, 300 amp 120/208-volt, 3-phase distribution section with 3000 amp main disconnect. Sub-station No. 3 - 500 Kva transformer, 1600 amp 120/208-volt, 3-phase distribution section with 1600 amp main disconnect. Sub-station No. 4 - 400 Kva transformer, 1200 amp 120/208-volt, 3-phase distribution section with 1200 amp main disconnect.	2	Electrical room housing the four section switchgear and sub-station No. 1 does not comply with the number of exits required or working clearances in front of switchgear requirements per the National Electrical Code. Sub-station No. 2 has a 3" water line running directly above the equipment.
	"T" Technical Building	Interior and underground 13200-volt, 3-phase from main building 15Kv oil switch to 15Kv switchgear in main electrical room.	3	Six section 15kv fusible switch serving three substations. Sub-station No. 1 and No. 3 - 500 Kva transformer, 600 amp 277/480-volt, 3-phase distribution section. Sub-station No. 2 - 500 Kva transformer, 1200 amp 240-volt, 3-phase distribution section.	2	Electrical room housing equipment does not comply with the number of exits required or working clearances in front of switchgear requirements per the National Electrical Code.
	"H" Building-Health Sciences Technology Center	Underground 13200-volt, 3-phase feed from building "T" 15Kv switchgear.	3	15kv fusible unit sub-station with 15Kv main building switch. Sub-station - 1000 Kva transformer, 1600 amp 277/480-volt distribution section with main 1600 amp disconnect. Distribution section is equipped with ground fault protection. Sub-station is equipped with surge protection.	3	No comments.
	"F" Building - Industrial Training Center	Underground 13200-volt, 3-phase from service pole to 15Kv switchgear located in main electrical room.	3	15kv fusible unit sub-station with 15Kv main building switch. Sub-station consists of 1500 Kva transformer serving 2500 amp 277/480-volt distribution section with main 2500 amp disconnect. Distribution section is equipped with ground fault protection.	2	Sub-station is in violation of National Electric Code front of unit working clearances.
	"MEC" Building-Milwaukee Enterprise Center	Underground 13200-volt, 3-phase from service pole to 15Kv switchgear located in main electrical room.	3	15kv fusible switchgear with two 15Kv switches serving two unit sub-stations.	2	15Kv switchgear is in violation of National Electric Code front of unit working clearances.
	Union 212 Building	Underground 120/240-volt, 1-phase from service pole to main electric panel.	3	Circuit breaker type panel with adjacent safety switch main disconnect.	3	No comments.
	Ward Storage Buildings	Underground 120/240-volt, 1-phase from service pole to main electric panel.	3	A single circuit breaker type panel with no main disconnect.	2	Provide new panelboard with main circuit breaker.
	Transmitter Building	Multiple (three) 277/480-volt, 3-phase services from pad mount transformers to main distribution switchboard with main building disconnect. A single pad mount transformer serves the building proper and MPTV transmitter area. The second transformers serves first floor tenant spaces.	3	Circuit breaker type switchboard rated 1600 amp 277/480-volt 3-phase with main circuit breaker switch for building proper. Circuit breaker type switchboard rated 2000 amp 277/480-volt 3-phase with main circuit breaker switch for MPTV area. Circuit breaker type switchboard rated 1600 amp 277/480-volt 3-phase with main circuit breaker switch for tenant spaces. Switchboards are provided with surge suppression devices.	3	No comments.
	Parking Garage / Bookstore	Underground 277/480-volt, 3-phase from pad mount transformer to main distribution switchboard with main building disconnect.	3	Fusible type switchboard rated 1200 amp 277/480-volt 3-phase with main fusible switch.	2	Switchboard is not equipped with ground fault protection or surge protection.

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Feeders		Panelboards			
		Type	Rating	Type	Rating	Comment	
Downtown	Main Building	A mixture of various 60 degree and 75 degree rated copper conductors in conduit for underground service feed and interior building feeders.	2	Original feeders have reached or exceeding current capacities. Conductors with asbestos insulation is present.	A mixture of older and new panelboards are present. Non-surge protected circuit breaker type. 42 circuit capacity.	2	Replace panelboards that original being served by conductor type RW. Install surge protection.
	A Building	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	2	Original feeders may be reaching or exceeding current capacities.	Non-surge protected circuit breaker type with 42 circuit capacity.	2	Install surge protection.
	Student Services Building	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	3	No comments	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.
	Foundation Hall	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	2	Original feeders may be reaching or exceeding current capacities and be in a deteriorated state.	Non-surge protected circuit breaker or fusible type. 42 circuit capacity.	2	Install surge protection.
	"C" Building	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	2	Original feeders may be reaching or exceeding current capacities and be in a deteriorated state. More in depth investigation required. No excessive over heating or overcurrent protection tripping was indicated.	A mixture of older and new panelboards are present. Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection. Repalce panelboards that are more 30 years old. Replace panelboards in basemnt with new due to water damage.
	"T" Technical Building	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	2	Original feeders may be reaching or exceeding current capacities and be in a deteriorated state.	Combination new panelboards with surge protection installed in recently renovated area and Non-surge protected circuit breaker type in original building.	1	Remove panelboards in non-renovated areas with new panelboards with surge protection.
	"H" Building -Health Sciences Technology Center	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	3	No comments	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.
	"F" Building - Industrial Training Center	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	2	Original feeders may be reaching or exceeding current capacities and be in a deteriorated state. More in depth investigation required. No excessive over heating or overcurrent protection tripping was indicated.	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Complete replacement. .
	"MEC" Building-Milwaukee Enterprise Center	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	2	Original feeders may be reaching or exceeding current capacities and be in a deteriorated state. More in depth investigation required. No excessive over heating or overcurrent protection tripping was indicated.	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Complete replacement. .
	Union 212 Building	No feeders are present only branch circuits wiring.	-	-	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.
	Ward Storage Buildings	No feeders are present only branch circuits wiring.	-	-	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.
	Transmitter Building	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	3	No comments	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.
	Parking Garage / Bookstore	Anticipate copper conductors in conduit for underground service feed and interior building feeders. No conductors were visibly seen.	3	No comments	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection. Replace panelboards that are located in the battery invertor room due to water deterioration.

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Branch Distribution & Substations			Emergency Power Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment
Downtown	Main Building	Mixture of fusible and circuit breaker type distribution equipment serving panelboards.	2	Replace conductor type RW distribution and branch circuits more than 30 years old.	Battery type equipment serving emergency lights and exit signs.	2	Provide generator to serve emergency and standby loads.
	A Building	Circuit breaker type distribution equipment serving panelboards.	2	Install additional receptacles with new branch circuit wiring.	Battery type equipment serving emergency lights and exit signs.	2	Provide generator to serve emergency and standby loads.
	Student Services Building	Combination of fusible or circuit breaker type distribution equipment serving panelboards.	3	No comments	Combination of battery and generator sources. Natural gas generator with single transfer switch serves fire alarm and smoke exhaust system.	2	(See Emergency/Exit Lighting)
	Foundation Hall	Combination of fusible or circuit breaker type distribution equipment serving panelboards.	2	Replace branch circuit wiring.	Battery type equipment serving emergency lights and exit signs.	2	Provide generator to serve emergency and standby loads.
	"C" Building	Circuit breaker type distribution equipment serving panelboards.	2	Replace branch circuit wiring more than 30 years old.	Generators provide emergency power. Generator No. 1 located in basement provide emergency power for exit sign and emergency lights in building corridors. Generator No. 2 located on roof provides power to Milwaukee Public Tv station equipmnt. Generator No. 3 supplies power to main campus data center on third floor.	2	Replace generato No. 1 due leaking oil and generator No. 2 for being undersized to handle on MPTV equipment.
	"T" Technical Building	Circuit breaker type distribution equipment serving panelboards. 15kv substation consists of various Kva size transformer serving 277/480-volt, 3-phase distribution, 240-volt, 3-phase distribution and 120/208-volt, 3-phase distribution systems. Direct current (DC) voltage system distribution system is present in the building with unknown operational status.	2	Replace branch circuit wiring in areas that have not been recently renovated.	Battery type equipment serving emergency lights and exit signs in renovated areas only.	2	(See Emergency/Exit Lighting)
	"H" Building-Health Sciences Technology Center	Circuit breaker type distribution equipment serving panelboards.	3	No comments	Original 100 Kw natural gas generator with single transfer switch. Generator serves fire alarm, emergency lighting, exit signs and exit signs.	2	Further investigation is required for report that generator maybe of insufficient size to carrying existing elevator load.
	"F" Building - Industrial Training Center	Fusible type distribution equipment serving panelboards.	2	Complete replacement of distribution equipment, distribution feeders and branch circuits.	Battery type equipment serving emergency lights and exit signs served by panelboard connected ahead of main switch.	2	Provide generator to serve emergency and standby loads.
	"MEC" Building-Milwaukee Enterprise Center	Circuit breaker type distribution equipment serving panelboards. 15kv substation consists of various Kva size transformer serving 277/480-volt distribution, 240-volt ground "B" distribution and 120/208-volt distribution systems.	2	Substations violate primary and secondary overcurrent protection of transformers. Switchgear is not equipped with ground fault protection or surge protection. Complete branch circuit replacement accept for third floor sewing lab.	Battery type equipment serving emergency lights and exit signs served by panelboard connected ahead of main switch.	2	Provide generator to serve emergency and standby loads.
	Union 212 Building	Facility has only one panelboard and no substations.	2	Install additional receptacles with new branch circuit wiring.	Battery type equipment serving emergency lights and exit signs.	3	No comments
	Ward Storage Buildings	Circuit breaker type distribution equipment serving panelboards.	3	No comments	No emergency power source is present.	2	Provide battery powered emergency source.
	Transmitter Building	Circuit breaker type distribution equipment serving panelboards.	3	No comments	750Kw diesel generator with emergency and standby distribution systems serving MPTV transmitters and combiners. 75 Kw natural gas generator with emergency distributions for building proper serves fire alarm, emergency lighting, security system and exit signs.	2	The emergency distribution sytem in serving both emergency (life safety) a non-life safety equipment. This is a National Electrical Code violation. Provide separate dedicated standby distribution system including transfer switch and panelboards.
	Parking Garage / Bookstore	Circuit breaker type distribution equipment serving panelboards.	3	No comments	Central battery inverter equipment serving emergency lights and exit signs in parking garage was reported as non-working. Battery type equipment serving emergency lights and exit signs in bookstore.	2	Provide generator to serve emergency and standby loads in parking garage.

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Master Clock System			Classroom Lighting		
		System Identification	Rating	Comment	Type	Rating	Comment
Downtown	Main Building	Hardwired 120-volt clocks connected to master clock control panel.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Mixture of recessed parabolic type, recessed prismatic lensed type, direct/indirect type, and linear type fluorescent equipped with T8 for T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens. Equates to approximately 40% of classroom lighting. Replace
	A Building	No master clock system is present.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.
	Student Services Building	No master clock system is present.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Recessed prismatic lensed fluorescent equipped with T8 fluorescent lamps in office areas, decorative pendant fluorescent in atrium, and recess metal halide in multi-purpose room.	3	No comment.
	Foundation Hall	No master clock system is present.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.
	"C" Building	Hardwired 120-volt clocks connected to master clock control panel.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Mixture of recessed parabolic type, recessed prismatic lensed type, and linear type fluorescent equipped with T8 for T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens. Replace lighting in classrooms on the third and fourth floors.
	"T" Technical Building	Hardwired 120-volt clocks connected to master clock control panel.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Enclosed vaportight fixtures in renovated lab areas. Recessed prismatic lensed fluorescent equipped with T8 fluorescent lamps in renovated classrooms. Open type industrial strip fixtures in non-renovated labs.	2	Complete replacement with fluorescent with T8 lamps except in new renovated areas.
	"H" Building-Health Sciences Technology Center	No master clock system is present.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Recessed parabolic fluorescent equipped with T8 fluorescent lamps.	3	No comments
	"F" Building - Industrial Training Center	No master clock system is present.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Combination of recessed prismatic lensed fluorescent, open industrial fluorescent strip equipped with T12 fluorescent lamps. Combination of open industrial fluorescent strip equipped with T12 fluorescent lamps and HID in lab areas.	2	Complete replacement with fluorescent with T8 lamps.
	"MEC" Building-Milwaukee Enterprise Center	No master clock system is present.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps in tenant spaces. Highbay HID in high assembly spaces and new compact fluorescent highbay in new sewing lab.	2	Complete replacement with fluorescent with T8 lamps except for new sewing lab.
	Union 212 Building	No master clock system is present.	3	No comments	Recessed parabolic fluorescent equipped with T8 fluorescent lamps.	3	No comments
	Ward Storage Buildings	No master clock system is present.	3	No comments	Incandescent fixtures with exposed bulbs.	2	Provide to vaportight fluorescent type fixtures with T8 lamps.
	Transmitter Building	No master clock system is present.	3	No comments	Suspended industrial strip fluorescent equipped with T8 fluorescent lamps.	3	No comments
	Parking Garage / Bookstore	No master clock system is present.	3	No comments	Surface mounted LED type fixtures in parking area and circulation area. Recessed parabolic fluorescent equipped with T8 fluorescent lamps in bookstore.	3	No comments

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Corridor/Public Space Lighting			Mechanical Space Lighting		
		Type	Rating	Comment	Type	Rating	Comment
Downtown	Main Building	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.	Industrial strip with T12 fluorescent lamps.	2	Replace T12 lamps with T8 Lamps. Complete replacement of fixtures in basement.
	A Building	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.	Industrial strip with T12 fluorescent lamps.	2	Replace T12 lamps with T8 Lamps
	Student Services Building	Combination of recessed prismatic lensed fluorescent equipped with T8 fluorescent lamps and recessed compact fluorescent downlights.	3	No comment.	Suspended industrial strip type fluorescent equipped with T8 fluorescent lamps.	3	No comment.
	Foundation Hall	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.	Industrial strip with T12 fluorescent lamps.	2	Complete replacement with new fluorescent fixtures with T8 lamps.
	"C" Building	Recessed prismatic lensed fluorescent equipped with T8 fluorescent lamps.	3	No comments	Industrial strip with T12 fluorescent lamps. Led type lighting in parking garage area.	2	Replace fixtures in first floor mechanical room and West Penthouse.
	"I" Technical Building	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Provide new lighting throughout facility except in recently renovated areas.	Industrial strip with T12 fluorescent lamps.	2	Complete replacement with new fluorescent fixtures with T8 lamps.
	"H" Building-Health Sciences Technology Center	Recessed parabolic fluorescent equipped with T8 fluorescent lamps.	3	No comments	Industrial strip with T8 fluorescent lamps.	2	No comments
	"F" Building - Industrial Training Center	Recessed prismatic lensed fluorescent equipped with T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.	Industrial strip with T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.
	"MEC" Building-Milwaukee Enterprise Center	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Complete replacement with fluorescent with T8 lamps.	Industrial strip with T12 fluorescent lamps.	2	Replace T12 lamps with T8 Lamps
	Union 212 Building	Recessed parabolic fluorescent equipped with T8 fluorescent lamps.	3	No comments	Industrial strip with T8 fluorescent lamps.	3	No comments
	Ward Storage Buildings	Not applicable	-	No comments	Not applicable	-	No comments
	Transmitter Building	Recessed prismatic lensed fluorescent equipped with T8 fluorescent lamps.	3	No comments	Suspended industrial strip fluorescent equipped with T8 fluorescent lamps.	3	No comments
	Parking Garage / Bookstore	Not applicable	-	No comments	Industrial strip with T12 fluorescent lamps.	2	New light fixtures with T8 Lamps

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Interior Lighting Controls			Specialty Lighting		Emergency/Exit Lighting		
		Type	Rating	Comment	System Identification	Rating	Component/System	Rating	Comment
Downtown	Main Building	Classrooms equipped with dual level control toggle switches for video presentations. Some rooms are equipped with occupancy sensors.	2	Sensors are 20 years old and some are non-working. Provide occupancy sensors in occupied spaces throughout facility. Lower light fixture switches for	Dimmer controlled front and over stage incandescent. Incandescent type lighting over seating area.	3	Unworking battery type equipment serving emergency lights and exit signs.	2	Provide new exit signs and emergency lights connected to generator.
	A Building	Single level control toggle switches. Only the large open office space is equipped with occupancy sensors.	2	Provide all rooms an spaces with occupancy sensors.	Not applicable to this building	-	Battery type equipment serving emergency lights and exit signs.	2	Provide new exit signs and emergency lights connected to generator.
	Student Services Building	Single level control toggle switches. Some rooms are equipped with occupancy sensors.	2	Install new sensors in current spaces without sensors.	Incandescent downlights connected to dimmer control system in teleconference room and student multi-purpose room.	3	Unworking battery type equipment serving emergency lights and exit signs.	2	Complete replacement with additional emergency light added.
	Foundation Hall	Single level control toggle switches. Some rooms are equipped with occupancy sensors.	2	Complete replacement of light fixture switches and occupancy sensors.	Not applicable to this building	-	Battery type equipment serving emergency lights and exit signs.	2	Existing equipment is in deteriorated condition.
	"C" Building	Classrooms equipped with dual level control toggle switches for video presentations. Some rooms are equipped with occupancy sensors.	2	Sensors are 20 years old and some are non-working. Provide occupancy sensors in occupied spaces throughout facility.	Dimmer controlled front and over stage incandescent.	2	Fluorescent emergency lights and compact fluorescent or LED exit signs connected to generator.	2	Spaces are present that need additional equipment, require new or needs replaced. For instance auto shop, auditorium, mechanical room, and interior classrooms without natural light.
	"T" Technical Building	Single level control toggle switches. Some rooms are equipped with occupancy sensors.	2	Complete replacement of light fixture switches and occupancy sensors.	Dimmer controlled front and over stage incandescent.	2	Battery type equipment serving emergency lights and exit signs in renovated areas only.	2	Provide new exit signs and emergency lights connected to generator.
	"H" Building-Health Sciences Technology Center	Classrooms equipped with dual level control toggle switches for video presentations. Some rooms are equipped with occupancy sensors.	2	Install new sensors in current spaces without sensors.	Not applicable to this building	-	Fluorescent emergency lights and compact fluorescent or LED exit signs connected to generator.	3	No comments
	"F" Building - Industrial Training Center	Single level control toggle switches. Some rooms are equipped with occupancy sensors.	2	Complete replacement of light fixture switches and occupancy sensors.	Not applicable to this building	-	Battery type equipment serving emergency lights and exit signs served by panelboard connected ahead of main switch.	2	Existing equipment is in deteriorated condition and spaces are present that require or need additional equipment.
	"MEC" Building-Milwaukee Enterprise Center	Single level control toggle switches. no rooms are equipped with occupancy sensors.	2	Complete replacement of light fixture switches and occupancy sensors.	Not applicable to this building	-	Battery type equipment serving emergency lights and exit signs served by panelboard connected ahead of main switch.	2	Existing equipment is in deteriorated condition and spaces are present that require or need additional equipment.
	Union 212 Building	Offices equipped with single or dual control toggle switches. Rooms are not equipped with occupancy sensors.	2	Provide occupancy sensors in occupied spaces throughout facility.	Not applicable to this building	-	Battery type equipment serving emergency lights and exit signs.	3	No comments
	Ward Storage Buildings	Spaces are equipped with single control toggle switches. Rooms are not equipped with occupancy sensors.	2	Provide occupancy sensors in occupied spaces throughout facility.	Not applicable to this building	-	No emergency lights and exit signs are present.	2	Provide battery type equipment serving emergency lights and exit signs.
	Transmitter Building	Rooms and spaces equipped with single level control toggle switches. Rooms and spaces are equipped with occupancy sensors.	3	No comments	Not applicable to this building	-	Fluorescent emergency lights and compact fluorescent or LED exit signs connected to generator.	3	No comments
	Parking Garage / Bookstore	Bookstore equipped with single level control toggle switches. Bookstore rooms are equipped with occupancy sensors.	2	In bookstore provide time clock mechanism to assure automatic off of lights for compliance with ASHRAE 90.1 regulations.	Not applicable to this building	-	Emergency lights and exits in parking garage connected to non-working central battery invertor. Battery type equipment serving emergency lights and exit signs in bookstore.	2	Connect emergency lights and exit signs in parking garage to working emergency power source.

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Site Lighting			Voice/Data/Video			Specialty Sound Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment	Type	Rating	Comment
Downtown	Main Building	Exterior wall mounted type fixtures only at building entrances.	2	Provide new exterior mounted wall mount lights at	Stand alone voice system located in individual office, conference room and administrative space. Wide area network data system from downtown campus data center with data drops located in office, conference rooms, administrative spaces,	2	Continue with conversion of stand alone voice system to voice over IP (VOIP).	Classrooms are provided with sound enhancement system connected to projector. Dedicated system in Auditorium consisting on suspended speakers,	3	No comment.
	A Building	Exterior wall mounted type fixtures only at building entrances.	2	Provide new exterior mounted wall mount lights at	Stand alone voice system located in offices and open office space. Wide area network data system from downtown campus data center with data drops located in offices and open office area.	2	Continue with conversion of stand alone voice system to voice over IP (VOIP). Provide video projectors in	Not applicable to this building	-	-
	Student Services Building	Exterior pole mounted area lights serving plaza and walks. Recessed lights at entrance soffits. Wall mounted type fixtures at building perimeter.	3	No comment.	Stand alone voice system located in individual office and administrative space. Wide area network data system from downtown campus data center with data drops located in office and administrative spaces. Video system via projectors in teleconference room.	3	No comment.	Dedicated system in teleconference and student multi-purpose rooms consisting on recessed ceiling speakers, amplifiers, microphones and microphone jacks.	3	No comment.
	Foundation Hall	None required. Interior campus building.	-	No comment.	Stand alone voice system located in individual offices. Wide area network data system from downtown campus data center with data drops located in offices.	2	Provide complete new voice over IP (VOIP) telephone system.	Not applicable to this building	-	-
	"C" Building	Exterior pole mounted lights serving walks and wall mounted type fixtures around building perimeter.	3	No comment.	Stand alone voice system located in individual office, conference room and administrative space. Wide area network data system from downtown campus data center with data drops located in office, conference rooms, administrative spaces, and classrooms. Video system via projectors in classrooms with video drops in conference rooms.	2	Continue with conversion of stand alone voice system to voice over IP (VOIP).	Not applicable to this building	-	-
	"T" Technical Building	Exterior wall mounted lights serving walks and parking area. Recessed downlights in exterior soffit at main entrance.	3	No comment.	Stand alone voice system located in individual offices. Data drops are present in offices and classrooms.	2	No comment.	Unknown condition of auditorium sound system equipment.	-	-
	"H" Building-Health Sciences Technology Center	Exterior pole mounted lights serving walks and wall mounted type fixtures around building perimeter.	3	No comment.	Stand alone voice system located in individual office, conference room and administrative space. Wide area network data system from downtown campus data center with data drops located in office, conference rooms, administrative spaces, and classrooms. Video system via projectors in classrooms with video drops in conference rooms.	3	Continue with conversion of stand alone voice system to voice over IP (VOIP)	Classrooms are provided with sound enhancement system connected to projector.	3	-
	"F" Building - Industrial Training Center	Exterior wall mounted type fixtures around building perimeter.	3	No comment.	Voice system and data drop in some spaces.	2	Continue with conversion of stand alone voice system to voice over IP (VOIP). Consider installations of video projector and instructors technology desk with video	Not applicable to this building	-	-
	"MEC" Building-Milwaukee Enterprise Center	Limited exterior mounted lights serving walks and building perimeter. LED lighting in paking areas.	1	Provide new exterior mounted wall mount lights around perimeter of building.	Voice system and data drop in some spaces.	2	Continue with conversion of stand alone voice system to voice over IP (VOIP). Consider installations of video projector and instructors technology desk with video controls similar to other campus	Not applicable to this building	-	-
	Union 212 Building	Exterior wall mounted lights located over exterior doors.	2	Provide new exterior wall mounted lights over exterior doors	Stand alone voice system located in offices. Data drops are present in offices. No interior video system is present.	2	Provide complete new voice over IP (VOIP) telephone system.	Not applicable to this building	-	-
	Ward Storage Buildings	Exterior wall mounted light located over one exterior doors.	2	Provide new exterior wall mounted lights over exterior doors	single voice system and data drop were present. Unknown if operational.	2	Verify if voice and data are operational and provide new drops if required.	Not applicable to this building	-	-
	Transmitter Building	Exterior wall mounted type fixtures around building perimeter. No parking area lights at building parking lot. Parking area pole mounted fixtures are present at large parking area Southeast of building.	3	No comment.	Stand alone voice system located in individual offices and spaces. Data drops are present in some rooms. No interior video system is present.	3	No comment.	Not applicable to this building	-	-
	Parking Garage / Bookstore	Exterior wall mounted high pressure sodium type fixtures around building perimeter.	3	No comment.	Stand alone voice system located in bookstore offices. Data drops are present in bookstore offices.	2	Provide complete new voice over IP (VOIP) telephone system.	Not applicable to this building	-	-

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Fire Alarm		Security			
		Type	Rating	System Identification	Rating		
Downtown	Main Building	Honeywell hardwired analog system incorporating smoke detectors, pull stations, visuals and horns. System is connected to Central Station in downtown campus main building safety office.	2	Provide additional strobes in all occupied rooms to comply with ADA requirements and additional heat/smoke detectors in current spaces without heat/smoke detectors for complete coverage.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. Exterior cameras located on building. No electronic access control	2	Consideration should be given to installation of access control system.
	A Building	Honeywell hardwired analog system incorporating smoke/heat detectors, pull stations, and horns. System is connected to Central Station in downtown campus main building safety office.	2	Not all occupied spaces are equipped with strobe devices. Provide strobe devices and lower pull stations to conform to ADA.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. Exterior cameras located on building. No electronic access control	2	Consideration should be given to installation of access control system.
	Student Services Building	Honeywell analog zoned system incorporating heat detectors, pull stations, strobes and horns.	2	Provide additional strobes in all occupied rooms to comply with ADA requirements and additional heat/smoke detectors in current spaces without heat/smoke detectors for complete building coverage.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office.	2	Consideration should be given to installation of access control system.
	Foundation Hall	Honeywell hardwired analog system incorporating heat detectors, pull stations, visuals and horns.	2	Provide visual strobes for ADA compliance in all habitable rooms along or with heat/smoke detectors. Provide mechanical air handling equipment with duct detectors. Lower pull station mounting height to comply with ADA requirements.	Limited system incorporating motion detectors and cameras.	2	Provide access control system, interior cameras, motion sensors and additional exterior cameras.
	"C" Building	Honeywell hardwired analog system incorporating smoke/heat detectors, pull stations, and horns. System is connected to Central Station in downtown campus main building safety office.	2	Provide additional strobes in all occupied rooms to comply with ADA requirements and additional heat/smoke detectors in current spaces without heat/smoke detectors. Lower height of pull stations for compliance with ADA.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Exterior video cameras are only a portion of the building perimeter. No electronic access control system is present at this building.	2	Consideration should be given to installation of access control system.
	"T" Technical Building	Honeywell addressable system incorporating heat detectors, pull stations and horns.	2	Provide complete new ADA compliant system incorporating horns, strobes in all occupied rooms, smoke/heat detectors and pull stations mounted at ADA height in all spaces not renovated.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Exterior video cameras are only a portion of the building perimeter. No electronic access control system is present at this building.	2	Consideration should be given to installation of access control system, interior cameras and additional exterior cameras.
	"H" Building-Health Sciences Technology Center	Honeywell addressable system incorporating pull stations, horns and partial heat/smoke detectors and strobes.	2	Provide additional strobes in all occupied rooms to comply with ADA requirements and additional heat/smoke detectors in current spaces without heat/smoke detectors.	Consists of a combination of exterior door contact switches, motion detectors for intrusion protection and interior video cameras. Exterior video cameras are only a portion of the building perimeter. No electronic access control system is present at this building.	2	Consideration should be given to installation of access control system, and additional exterior cameras.
	"F" Building - Industrial Training Center	Honeywell addressable system incorporating heat detectors, pull stations and horns.	2	Provide complete new ADA compliant system incorporating horns, pull stations and strobes in all occupied rooms and smoke/heat detectors.	Motion detectors at first floor entrance and one exterior video camera. are only a portion of the building perimeter. No electronic access control system is present at this building.	2	Complete system replacement consisting of exterior door contact switches, interior motion detectors for intrusion protection, exterior video cameras for building perimeter supervision and access control system.
	"MEC" Building-Milwaukee Enterprise Center	Non working Silent Knight control panel only supervising fire suppression system and boiler water.	2	Provide complete new ADA compliant system incorporating horns, pull stations and strobes in all occupied rooms and smoke/heat detectors.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Exterior video cameras are only a portion of the building perimeter. No electronic access control system is present at this building.	2	Consideration should be given to installation of access control system, interior cameras and additional exterior cameras.
	Union 212 Building	Analog system incorporating heat detectors in some spaces, pull stations and horns/strobes in corridor.	2	Provide complete new ADA compliant system incorporating horns, strobes in all occupied rooms and smoke/heat detectors throughout the facility.	Consists of exterior door contact switches. No electronic access control system is present at this building.	2	Provide access control system, interior cameras and exterior cameras.
	Ward Storage Buildings	No fire alarm is present.	2	Consideration should given for a system to be installed for protection of equipment.	No system is present.	2	Consideration should given for a system to be installed for protection of equipment.
	Transmitter Building	Simplex 4010 addressable system incorporating heat detectors, pull stations strobes and horns. System is monitored by ADT.	3	No comment.	Consists of exterior door contact switches for intrusion protection. Exterior video cameras are providing surveillance of photovoltaic fields. Electronic access control system on entrance doors.	3	No comment.
	Parking Garage / Bookstore	Simplex analog zoned system supervising elevator, transformer room and basement mechanical room in parking garage area. Honeywell hardwired analog system incorporating smoke detectors and duct detectors in bookstore. Central Station in downtown campus main building safety office is supervising bookstore.	3	No comment.	No security system is present in the parking garage. Bookstore system consists of a combination of exterior door contact switches, interior motion detectors for intrusion protection and interior cameras. Exterior camera surveillance of main entrance to bookstore.	2	No comment.

ELECTRICAL ASSESSMENT - DOWNTOWN CAMPUS (MAIN)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	MASS Notification			Miscellaneous	
		System Identification	Rating	Comment	Component/System	Rating
Downtown	Main Building	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	Metal flammable storage cabinets are present without electrical grounding. Provide GFI receptacles at locations as required by the National Electrical code.	-
	A Building	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	Provide GFI receptacles at locations as required by the National Electrical code.	-
	Student Services Building	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	2	Provide speakers and visuals indicating devices in teleconference room.	Provide GFI receptacles at locations as required by the National Electrical code in food court and in food prep areas of food court vendors.	-
	Foundation Hall	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff.	3	No comments	Remove abandoned electrical distribution equipment and feeders. Vending machines are present without GFI protection.	-
	"C" Building	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	Metal flammable storage cabinets are present without electrical grounding. Provide GFI receptacles at locations as required by the National Electrical code.	-
	"T" Technical Building	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	Remove abandoned direct current (DC) distribution equipment and panelboards.	-
	"H" Building-Health Sciences Technology Center	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	Metal flammable storage cabinets are present without electrical grounding.	-
	"F" Building - Industrial Training Center	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	-	-
	"MEC" Building-Milwaukee Enterprise Center	No system present in the building.	2	Provide system with capability of emergency announcements from downtown campus safety office.	-	-
	Union 212 Building	No system present in the building.	3	No comment.	Provide near sinks with GFI protection.	-
	Ward Storage Buildings	No system present in the building.	3	No comment.	-	-
	Transmitter Building	No system present in the building.	3	No comment.	-	-
	Parking Garage / Bookstore	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comment.	-	-

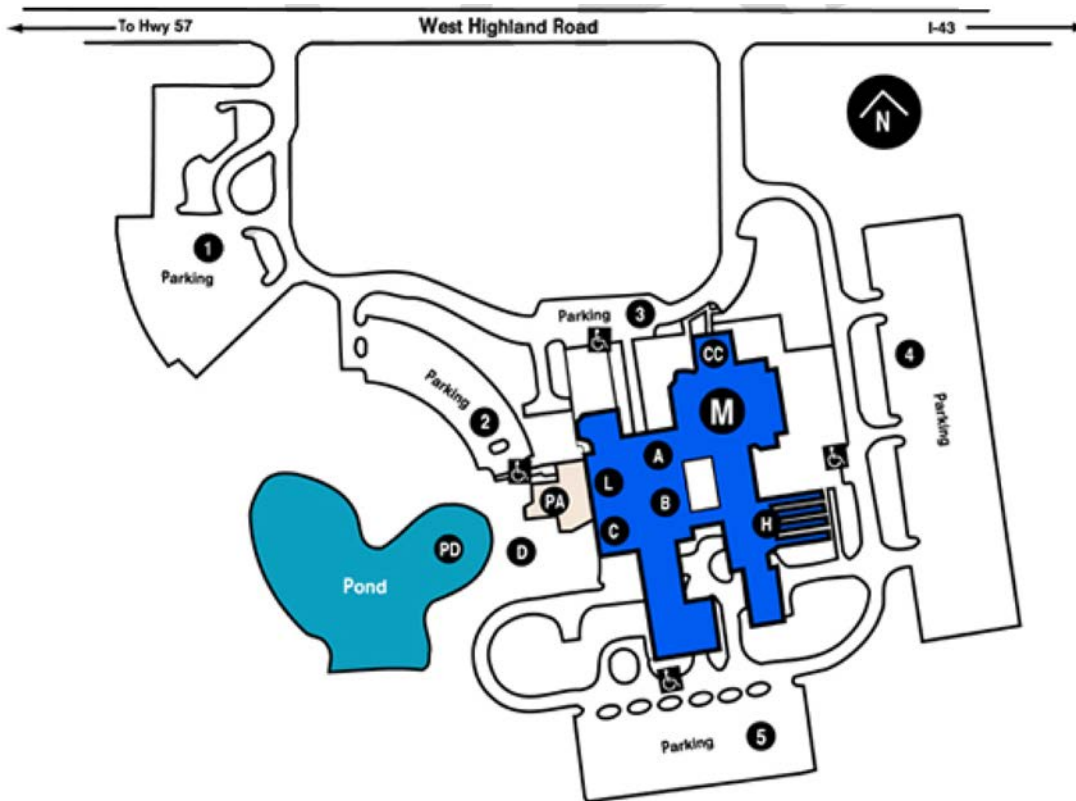
A. General Comments

1. This portion of the assessment evaluates the mechanical, plumbing, and electrical systems in each campus facility.
2. The information included in the field notes are supplemental to any notes taken on existing plans supplied by MATC.
3. Spreadsheets providing the assessed condition of the engineering systems for each facility on campus are included within the context of this document.
4. Where evaluations are provided, please use the following scoring system:
 - 1 = End of Useful Life
 - 2 = In Need of Repair / Replacement
 - 3 = Condition is Satisfactory
 - 4 = New / Recently Repaired

B. Building Description

Campus Name: Mequon Campus (North)
Building Name(s): Main Building A and B / Barn / Shed
Building Address: 5555 West Highland Road, Mequon, WI 53092-1143
Number or Stories: 2
Approximate Area (SF): 202,674

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The Main Building has multiple air handling units throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

The Shed and the Barn currently do not have any air systems in these buildings.

2. Ductwork Systems

The majority of the existing ductwork in the Main Building is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

Similar to the ductwork for the air distribution system in the Main Building, most of the VAV (Variable Air Volume) Terminal Units are the original equipment. The original VAV Terminal Units consist of a damper and no reheat coil. As some of the areas of the building have been renovated, the VAV Terminal Units have been replaced with a unit consisting of a damper and reheat coil. Replacement of all VAV Terminal Units containing a reheat coil would allow for improved occupant comfort.

4. Room Systems

The air distribution system in occupied spaces consists of a combination of ceiling linear slot diffusers and square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork and VAV Terminal Unit replacement. Existing perimeter heat along the exterior wall currently exists in spaces where the VAV Terminal Units do not have a reheat coil. The perimeter heat could be eliminated if a reheat coil was added to the VAV Terminal Unit when replaced with a new unit.

5. Exhaust Systems

The majority of the existing exhaust air systems in the Main Building are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Boiler Plant

The existing heating water boilers for the Main Building are not the original boilers (except for the Greenhouse Area) and have been replaced. Although

these heating water boilers have been replaced they still have some age on them and may want to consider replacement with new more energy efficient heating water boilers to extend the overall life of the building. The existing heating water circulating pumps have exceeded their useful life due to the age of this equipment and need to be replaced. The existing heating water piping throughout the building is the original piping and should be considered for replacement to extend the overall life of the building. The heating water boilers serving the Greenhouse Area of the Main Building are the original boilers and due to the age of these boilers they need to be replaced.

7. Chiller/Cooling Plants

The existing chiller and associated cooling tower have recently been replaced, however the chiller is oversized for this building and due to that is currently not operating correctly. Consideration should be given to replace this chiller with a properly sized unit to serve this building. The existing chilled water circulating pumps have exceeded their useful life due to the age of this equipment and need to be replaced. The existing chilled water piping throughout the building is the original piping and should be considered for replacement to extend the overall life of the building. There are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.

8. Building Control Systems

The existing temperature control system in this building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous

- a. It was observed that in some of the shop and lab areas, poor ventilation currently exists in these spaces.
- b. It was observed that some of the shop and lab areas are heated only and no air conditioning was available for these spaces.
- c. No mechanical systems currently exist in the Shed and Barn buildings.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

The domestic water system in the Main Building appears to be in good condition with copper piping throughout the building. A small water softener serves the Children's Center but the remaining portion of the Main Building does not have a water softener system.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in this building. The science classrooms are equipped with an acid waste tank and piping system.

3. Water Heaters
The domestic water heater has recently been replaced and is in satisfactory condition. The domestic water circulating pump needs to be replaced due to the age of this equipment.
4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)
Most of the plumbing fixtures have been replaced and are in good shape except for the service sinks which need to be replaced due to the age of this equipment. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.
5. Fire Protection
No fire protection sprinkler system is in this building.
6. Miscellaneous
Water has been shut off to the Shed and Barn buildings.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
Electric services are underground for the main building, shed and barn. The barn is served by the shed distribution system. The main electric panels in the shed and barn are in a deteriorated condition and need replacement. The main switchboard/substation in the main building is need of replacement due to being in violation of primary and secondary overcurrent protection of transformers per the National Electrical Code.

Circuit breaker type panelboards are present without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.
2. Branch Distribution Systems
Aluminum type conductors are being used for feeders from main switchboard to distribution panels and panelboards. The lug terminations of these conductors in panelboards and distribution panels should be checked for torque values and tightness.
3. Emergency Power Systems
The current 75Kw natural gas generator only serves emergency lights, exit signs and the fire alarm system. This unit should be replaced with a larger Kw generator that serves current life safety equipment but also data, voice, video and security systems.

The shed and barn are not equipped with emergency lights or exit signs in spaces occupied by students.
4. Master Clock Systems
Existing wireless master clock (Primex) is present.

5. Lighting Systems and Controls

The main building is undergoing a lighting replacement program that provides new parabolic fixtures equipment with T8 lamps and electronic ballast. The replacement program is 50% complete. It is recommended that the remaining 50% of replacement be completed.

Classrooms are equipped with dual level switching that reduces light output for video presentations. Classrooms are equipped with occupancy sensors that are not working or are in excess of 20 years old. New occupancy sensors should be installed in classrooms and in other spaces throughout the facility.

The barn and shed are equipped with incandescent or high intensity discharge (HID) fixtures in a deteriorated condition. These fixtures should be replaced with more energy efficient fluorescent type fixtures.

The main building Lecture Hall is equipped with incandescent front of stage lights connected to dimmer control console in need of replacement.

6. Fire Alarm Systems

No fire alarm system is present in the barn or shed. Consideration should be given to installation of detection devices in storage spaces and instructional spaces.

The main building fire alarm system does not include visual devices in the Cad or Computer Labs. The remaining portions of the building, incorporates smoke detectors, horns, strobes and pull stations in compliance with ADA regulations.

7. Sound Systems

No work recommended. Classroom spaces are equipped with sound enhancement systems. The main building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants.

8. Voice/Video/Data Systems

The main building is equipped with a standalone voice system. Voice drops are located in individual office, conference room and administrative spaces. Data drops, via the wide area network data system from the downtown campus data center, are located in office, conference rooms, administrative spaces, and classrooms. Video system is via projectors in classrooms with video drops in conference rooms. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The main building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office. Consideration should be given to installations of an access control system.

No security systems are present in the shed or barn. Consideration should be given to installing system in these building for protection of stored items.

10. Miscellaneous

Metal flammable storage cabinets are present without electrical grounding. No GFI protection exists for vending machines. There are no emergency shut-down button in labs.

HVAC ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
North	Main	Air Handling Unit AHU-1 (A-Wing)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Air Handling Unit AHU-2 (B-Wing)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Multiple Air Handling Units (A-Wing Auto/Landscape Labs)	1	Supply/Return/Outside Air	1	AHU's hanging in the space	1	AHU's hanging in the space	1	General and Shop Area Exhaust	1
		Multiple Air Handling Units (B-Wing Auto Labs)	1	Supply/Return/Outside Air	1	AHU's hanging in the space	1	AHU's hanging in the space	1	General and Shop Area Exhaust	1
		Air Handling Units (Greenhouse Area)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers	1	General Exhaust for Greenhouse Area	1
		Air Handling Units (Lecture Hall Area)	2	Supply/Return/Outside Air	2	AHU's Constant Volume	2	Ceiling Diffusers	2	General Exhaust	2
		Air Handling Unit AHU-3 (Children's Center)	1	Supply/Return/Outside Air	2	VAV Damper (With Reheat)	2	Ceiling Diffusers	2	General Exhaust	2
North	Shed	No Air Handling Units in this Building	NA	NA	NA	NA	NA	NA	NA	NA	NA
North	Barn	No Air Handling Units in this Building	NA	NA	NA	NA	NA	NA	NA	NA	NA

HVAC ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
North	Main	Gas Fired Heating Water Boilers	2	Steel/Copper	1	Base Mounted End Suction	1	Water Cooled Chiller with Cooling Tower (see comment #3)	2	Steel/Copper	1	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel/Copper	1	Base Mounted End Suction	1	Water Cooled Chiller with Cooling Tower (see comment #3)	2	Steel/Copper	1	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel/Copper	1	Base Mounted End Suction	1	Water Cooled Chiller with Cooling Tower (see comment #3)	2	Steel/Copper	1	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel/Copper	1	Base Mounted End Suction	1	Combination Water Cooled Chiller with Cooling Tower and Outdoor Condensing Unit/AHU with DX Cooling	2	Steel/Copper	1	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	1	Steel	1	In-Line	1	NA	NA	NA	NA	NA	NA	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel/Copper	2	Base Mounted End Suction	1	Water Cooled Chiller with Cooling Tower (see comment #3)	2	Steel/Copper	2	Base Mounted End Suction	1	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel/Copper	2	Base Mounted End Suction	1	Water Cooled Chiller with Cooling Tower (see comment #3)	2	Steel/Copper	2	Base Mounted End Suction	2	Combination Pneumatic/DDC Controls	1
North	Shed	Steam Boiler not working	1	Steel	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
North	Barn	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

PLUMBING ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Domestic Water		Waste and Vent Piping		Water Heaters		Pumps		Toilet Fixtures & Trim	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
North	Main	Hot and Cold Water (A-Wing)	2	Waste and Vent (See Comment No. 1)	2	Gas Fired Water Heater with Storage Tank	3	In-line	1	See Comments No. 2 and No. 3	2
		Hot and Cold Water (B-Wing)	2	Waste and Vent	2	Gas Fired Water Heater with Storage Tank	3	In-line	1	See Comments No. 1 and No. 2	2
		Hot and Cold Water (Greenhouse Area)	2	Waste and Vent	3	Gas Fired Water Heater with Storage Tank	3	In-line	1	See Comments No. 1 and No. 2	2
		Hot and Cold Water (Lecture Hall Area)	3	Waste and Vent	3	Gas Fired Water Heater with Storage Tank	3	In-line	1	NA	NA
		Hot and Cold Water (Children's Center)	3	Waste and Vent	3	Electric Hot Water Heater	3	In-line	3	Toilets	3
North	Shed	Hot and Cold Water (See Comment No. 1)	NA	Waste and Vent	NA	NA	NA	NA	NA	Toilets	1
North	Barn	Cold Water Only (See Comment No. 1)	NA	Waste and Vent	NA	NA	NA	NA	NA	NA	NA

PLUMBING ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Lavatories & Trim		Service Sinks & Trim		Fire Protection		Fire Pumps		Comments
		System Identification	Rating	System Identification	Rating	Type	Rating	Type	Rating	
North	Main	See Comment No. 4	2	See Comment No. 5	1	No sprinkler system in this building	NA	No Fire Pump	NA	1. Building has an acid waste tank and piping system for science classroom area. 2. Combination of wall mounted and floor mounted toilet fixtures with a combination of manual flush and automatic flush valves. 3. Combination of wall mounted and floor mounted urinals with a combination of manual flush and automatic flush valves. 4. Combination of lavatories and wash fountains with a combination of manual flush and automatic flush valves. 5. Combination of wall mounted and floor mounted service sinks.
		See comment No. 3	2	See Comment No. 4	1	No sprinkler system in this building	NA	No Fire Pump	NA	1. Combination of wall mounted and floor mounted toilet fixtures with a combination of manual flush and automatic flush valves. 2. Combination of wall mounted and floor mounted urinals with a combination of manual flush and automatic flush valves. 3. Combination of lavatories and wash fountains with a combination of manual flush and automatic flush valves. 4. Combination of wall mounted and floor mounted service sinks.
		Lavatories/Sinks	2	Service Sinks	1	No sprinkler system in this building	NA	No Fire Pump	NA	1. Combination of wall mounted and floor mounted toilet fixtures with a combination of manual flush and automatic flush valves. 2. Combination of wall mounted and floor mounted urinals with a combination of manual flush and automatic flush valves.
		NA	NA	Service Sinks	1	No sprinkler system in this building	NA	No Fire Pump	NA	
		Lavatories/Sinks	3	Service Sinks	3	No sprinkler system in this building	NA	No Fire Pump	NA	
North	Shed	Lavatories/Sinks	1	NA	NA	No sprinkler system in this building	NA	No Fire Pump	NA	1. Water has been shut off to this building.
North	Barn	NA	NA	NA	NA	No sprinkler system in this building	NA	No Fire Pump	NA	1. Water has been shut off to this building.

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Building Service Entrances		Switchboard		
		System Identification	Rating	Type	Rating	Code /Comment
NORTH	MAIN	Underground 277/480-volt, 3-phase from pad mount transformer to main distribution switchboard with main building disconnect. This switchboard distributes electrical energy to various substations and distribution panelboards	3	Fusible type 4000 amp 277/480-volt 3-phase with main fusible switch.	2	Substations violate primary and secondary overcurrent protection of transformers.
	Maintenance Shed	Underground 120/240-volt, 1-phase	3	Circuit breaker type panelboard rated 100 amp 120/240-volt 1-phase with main circuit breaker switch.	2	Panelboard in deteriorated condition
	Maintenance Barn	Underground 120/240-volt, 1-phase fed from maintenance shed	3	Circuit breaker type panelboard rated 100 amp 120/240-volt 1-phase with main circuit breaker switch.	2	Panelboard in deteriorated condition

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Feeders			Panelboards		
		Type	Rating	Comment	Type	Rating	Comment
NORTH	MAIN	Aluminum conductors in conduit. No overheating was reported.	3	Consideration should be given to investigation of torque values and tightness of aluminum termination lugs.	Non-surge protected circuit breaker type. 42 circuit capacity.	3	Install surge protection.
	Maintenance Shed	No interior facility feeders are present. Anticipate copper conductors in conduit fro underground service feed.	3	No comments	No branch panelboards are present. Only main service panelboard.	2	Replace branch circuit wiring.
	Maintenance Barn	No interior facility feeders are present. Anticipate copper conductors in conduit fro underground service feed.	3	No comments	No branch panelboards are present. Only main service panelboard.	2	Replace branch circuit wiring.

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Branch Distribution & Substations			Emergency Power Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment
NORTH	MAIN	Fusible type distribution serving transformation equipment or incorporated into substations. Other Voltages: 240-volt Delta; 120/240-volt 1 phase; 120/208-volt 3 phase	2	Substations violate primary and secondary overcurrent protection of transformers. Various non-standard voltages should be replaced.	Original 75 Kw natural gas generator with single transfer switch. Generator serves fire alarm, emergency lighting and exit signs.	2	Install larger capacity generator for emergency and standby systems. Generator to serve emergency and standby system equipment along with serving as backup to data, voice, video ads security equipment.
	Maintenance Shed	No branch panelboards are present. Only main service panelboard.	-	Replace branch circuit wiring.	No generator or battery type equipment serving emergency lights and exit signs are present in the building	2	Consideration should be given to installation of emergency system serving rest area, restrooms, and storage areas.
	Maintenance Barn	No branch panelboards are present. Only main service panelboard.	-	Replace branch circuit wiring.	No generator or battery type equipment serving emergency lights and exit signs are present in the building	2	Consideration should be given to installation of emergency system serving teaching spaces.

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Master Clock System			Classroom Lighting		
		System Identification	Rating	Comment	Type	Rating	Comment
NORTH	MAIN	Primex wireless clock system	3	-	Recessed prismatic lensed troffer or direct/indirect fluorescent equipped with T8 or T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens.
	Maintenance Shed	No master clock system is present.	-	-	Facility lighting includes recessed fluorescent, metal halide highbay type fixtures, incandescent and fluorescent lights that are not working.	2	Replace with more efficient and higher output fluorescent.
	Maintenance Barn	No master clock system is present.	-	-	Porcelain open incandescent lamp holders	2	Replace with more efficient and higher output fluorescent.

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Corridor/Public Space Lighting			Mechanical Space Lighting		
		Type	Rating	Comment	Type	Rating	Comment
NORTH	MAIN	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens.	Industrial strip with T12 fluorescent lamps.	2	Replace T12 lamps with T8 Lamps
	Maintenance Shed	-	-	-	-	-	-
	Maintenance Barn	-	-	-	-	-	-

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Interior Lighting Controls			Specialty Lighting		Emergency/Exit Lighting		
		Type	Rating	Comment	System Identification	Rating	Component/System	Rating	Comment
NORTH	MAIN	Classrooms equipped with dual level control toggle switches for video presentations. Some rooms are equipped with occupancy sensors.	2	Sensors are 20 years old and some are non-working. Provide occupancy sensors in occupied spaces throughout facility.	Dimmer controlled front and over stage incandescent.	2	Fluorescent corridor lights and compact fluorescent or LED exit signs connected to generator. Battery equipped	3	-
	Maintenance Shed	Toggle type light switches.	2	-	Not applicable to this building	-	No emergency lighting is present in the building	2	Consideration should be given to installation of emergency system serving rest area, restrooms, and storage areas.
	Maintenance Barn	Toggle type light switches.	2	-	Not applicable to this building	-	No emergency lighting is present in the building	2	Consideration should be given to installation of emergency system serving teaching spaces.

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Site Lighting			Voice/Data/Video			Specialty Sound Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment	Type	Rating	Comment
NORTH	MAIN	Exterior pole mounted high pressure sodium and metal halide area lights serving parking areas and wall mounted high pressure sodium wallpak type fixtures around building perimeter.	2	Replace lighting with LED type fixtures.	Stand alone voice system located in individual office, conference room and administrative space. Wide area network data system from downtown campus data center with data drops located in office, conference rooms, administrative spaces, and classrooms. Video system via projectors in classrooms with video drops in conference rooms.	3	Continue with conversion of stand alone voice system to voice over IP (VOIP)	Classrooms are provided with sound enhancement system connected to projector.	3	-
	Maintenance Shed	No area lighting is present. Security at door.	2	Consider for improved building security.	No system present in the building.	-	-	Not applicable to this building	-	-
	Maintenance Barn	No exterior lighting is present	2	Consider for improved building security.	No system present in the building.	-	-	Not applicable to this building	-	-

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Fire Alarm		Security			
		Type	Rating	System Identification	Rating	Comment	
NORTH	MAIN	Honeywell hardwired analog system incorporating smoke detectors, pull stations, visuals and horns. System is connected to Central Station in downtown campus main building safety office.	2	Rooms are equipped with visual strobes for ADA compliance. Visuals are not currently installed in Cad Labs or Computer Labs to comply with ADA requirements.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office.	3	Consideration should be given to installation of access control system.
	Maintenance Shed	No system present in the building.	2	Consideration should be given to installation of detection devices in storage areas	No system present in the building.	2	Consideration should be given to installation of devices for property protection.
	Maintenance Barn	No system present in the building.	2	Consideration should be given to installation of devices in teaching spaces.	No system present in the building.	2	Consideration should be given to installation of devices for property protection.

ELECTRICAL ASSESSMENT - MEQUON CAMPUS (NORTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	MASS Notification		Miscellaneous		
		System Identification	Rating	Component/System	Rating	
NORTH	MAIN	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building or from main campus safety office.	3	-	Metal flammable storage cabinets are present without electrical grounding. No GFI protection for vending machines. No emergency shut-down button in labs.	2
	Maintenance Shed	No system present in the building.	-	No comments	Wiring that is present is installed in conduit.	-
	Maintenance Barn	No system present in the building.	2	Consideration should be given to installation of devices in teaching spaces.	Wiring that is present is installed in conduit.	-

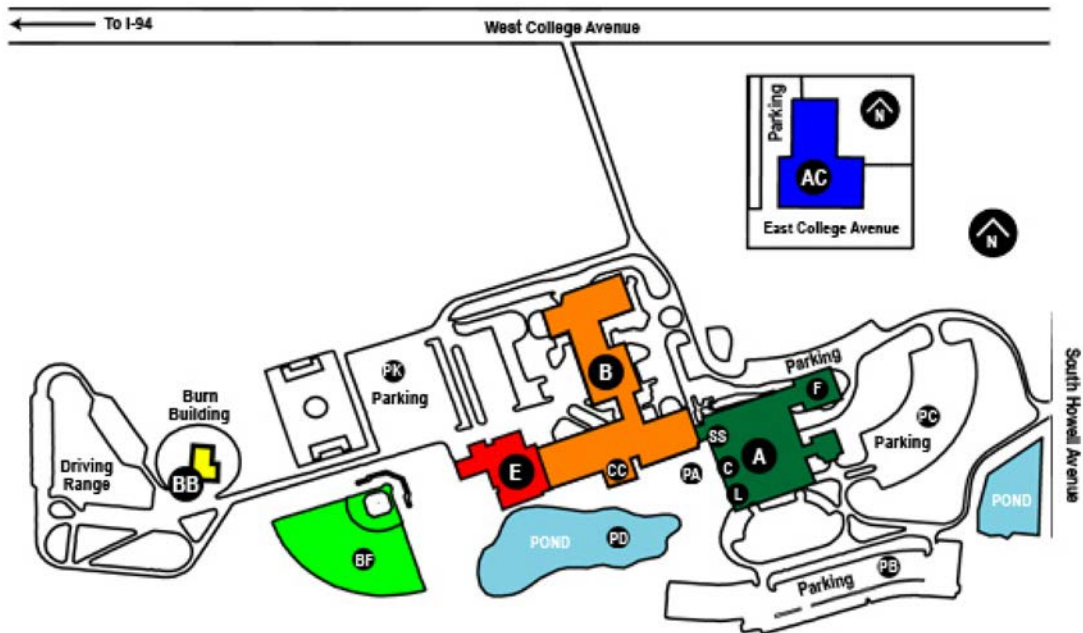
A. General Comments

1. This portion of the assessment evaluates the mechanical, plumbing, and electrical systems in each campus facility.
2. The information included in the field notes are supplemental to any notes taken on existing plans supplied by MATC.
3. Spreadsheets providing the assessed condition of the engineering systems for each facility on campus are included within the context of this document.
4. Where evaluations are provided, please use the following scoring system:
 - 1 = End of Useful Life
 - 2 = In Need of Repair / Replacement
 - 3 = Condition is Satisfactory
 - 4 = New / Recently Repaired

B. Building Description

Campus Name:	Oak Creek Campus (South)
Building Name(s):	A Building including C Rooms, B Building, E-CAM, and Aviation Center
Building Address:	6665 South Howell Avenue, Oak Creek, WI 53154
Number or Stories:	2
Approximate Area (SF):	353,503

C: Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The Main Building (A and B Wings) has multiple air handling units throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

The ECAM portion of the Main Building has multiple air handling units throughout and due to the more recent construction of this portion of the building, these air handling units are in satisfactory condition and can remain in place.

The Aviation Building has multiple air handling units throughout the building and all of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

2. Ductwork Systems

In the Main Building (A and B Wings), the majority of the existing ductwork is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

In the ECAM portion of the Main Building, the existing ductwork is in satisfactory condition and can remain in place.

In the Aviation Building, the majority of the existing ductwork is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

In the Main Building (A and B Wings), similar to the ductwork for the air distribution system, most of the VAV (Variable Air Volume) Terminal Units are the original equipment. The original VAV Terminal Units consist of a damper and no reheat coil. As some of the areas of the building have been

renovated, the VAV Terminal Units have been replaced with a unit consisting of a damper and reheat coil. Replacement of all VAV Terminal Units containing a reheat coil would allow for improved occupant comfort.

In the ECAM portion of the Main Building, the existing VAV Terminal Units are in satisfactory condition and can remain in place.

In the Aviation Building, the existing air systems are constant volume systems and as previously stated under Air Handling Unit Systems and Ductwork Systems this equipment and ductwork has exceeded its useful life due to its age and needs to be replaced.

4. Room Systems

In the Main Building (A and B Wings), the air distribution system in the occupied spaces consists of a combination of ceiling linear slot diffusers and square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork and VAV Terminal Unit replacement. Existing perimeter heat along the exterior wall currently exists in spaces where the VAV Terminal Units do not have a reheat coil. The perimeter heat could be eliminated if a reheat coil was added to the VAV Terminal Unit when replaced with a new unit.

In the ECAM portion of the Main Building, the supply and return air diffusers are in satisfactory condition and can remain in place.

In the Aviation Building, the air distribution system in the occupied spaces consists of square ceiling supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork replacement.

5. Exhaust Systems

In the Main Building (A and B Wings), the majority of the existing exhaust air systems are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

In the ECAM portion of the Main Building, the exhaust air systems are in satisfactory condition and can remain on place.

In the Aviation Building, the majority of the existing exhaust air systems are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

6. Boiler Plant

The existing heating water boilers for the Main Building are not the original boilers and have been replaced. Although these heating water boilers have been replaced they still have some age on them and may want to consider replacement with new more energy efficient heating water boilers to extend the overall life of the building. The existing heating water circulating pumps have exceeded their useful life due to the age of this equipment and need to be replaced. The existing heating water piping throughout the building is the original piping (except for the ECAM portion of the building) and should be considered for replacement to extend the overall life of the building. The existing heating water piping in the ECAM portion of the building is in satisfactory condition and can remain in place.

In the Aviation Building, the existing heating water boilers and circulating pumps are not the original equipment and have been replaced. These existing boilers and circulating water pumps are in satisfactory condition and can remain in place. The existing heating water piping throughout the building is the original piping and should be replaced.

7. Chiller/Cooling Plants

The existing chiller and associated cooling tower have recently been replaced and are in satisfactory condition and can remain in place. The existing chilled water circulating pumps have been replaced and are in satisfactory condition and can remain in place. The existing chilled water piping throughout the building is the original piping (except for the ECAM portion of the building) and should be considered for replacement to extend the overall life of the building. The existing chilled water piping in the ECAM portion of the building is in satisfactory condition and can remain in place. There are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.

In the Aviation Building, there are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.

8. Building Control Systems

The existing temperature control system in the Main Building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in the Main Building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

In the Aviation Building, the existing temperature control system currently is a pneumatic control system. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

9. Miscellaneous

- a. It was observed that some of the shop and lab areas, poor ventilation currently exists in these spaces.

- b. It was observed that in some of the shop and lab areas are heated only and no air conditioning was available for these spaces.
- c. The Kitchen and Culinary Area has recently been renovated with new kitchen exhaust hoods and make-up air unit.
- d. The main technology equipment room is cooled with a dedicated VRF (Variable Refrigerant Flow) System.
- e. There is a small (3) bore hole geothermal system serving the Digital Controls Lab in the ECAM portion of the Main Building.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

The domestic water system in the Main Building (except for the ECAM portion of the building) and the Aviation Building has exceeded its useful life due to the age of this system and may be considered for replacement. Neither of these buildings currently have a water softener system.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in either the Main Building or the Aviation Building. The science classrooms in the Main Building are equipped with an acid waste tank and piping system.

3. Water Heaters

In the Main Building and the Aviation Building, the domestic water heater and the circulating pumps are not the original equipment and have been replaced. Although this equipment has been replaced, it still has some age on it and may be considered for replacement with new more energy efficient equipment to extend the overall life of the building.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

In the Main Building, most of the plumbing fixtures have been replaced and are in good condition except for the service sinks which need to be replaced due to the age of these sinks. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

In the Aviation Building, most of the plumbing fixtures are the original fixtures to the building and need to be replaced due to the age of these fixtures. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

5. Fire Protection

The Main Building has a fire protection sprinkler system throughout the building.

The Aviation Building does not have a fire protection sprinkler system.

6. Miscellaneous

- a. Solar thermal panels located on the roof with associated heat exchangers in the main boiler room are connected to the domestic water system.

F. Engineering Assessments – Electrical Systems

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)
The main building (A and B Wings) are each served separately underground from a 13.2 Kv distribution switchgear located on the site. Each of these electric services terminates at a main sub-station. The ECAM portion of the building acquires electrical energy from main building B-wing sub-station. The electric service is underground for the Aviation Building from an exterior pad mounted transformer.

The main switchboard/substations in each of the main building (A and B Wing) are in need of replacement due to being in violation of primary and secondary overcurrent protection of transformers per the National Electrical Code. No single switchboard is present in the ECAM Building. The electrical distribution system is comprised of multiple distribution panels with transformers producing 120/208-volt and 240-volt distribution systems. The Aviation Building circuit breaker type main distribution panel is in need of replacement due to its deteriorated condition.

Circuit breaker type panelboards are present in the main building (A Wing, B Wing and ECAM Building) without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

Original feeders in main building (A and B Wings) may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated. The feeders for the ECAM Building are relatively new and are in satisfactory condition. The feeders for the Aviation Building are original and are in satisfactory condition.

2. Branch Distribution Systems
The main building (A Wing, B Wing and ECAM Building) are equipped with circuit breaker type distribution equipment and bus ducts in satisfactory condition. The Aviation Building is not equipped with distribution panels but only with branch panelboards. The branch circuit wiring from these panelboards is need of replacement due to its continuing deterioration.

3. Emergency Power Systems
A 750 Kw natural gas generator serves the main building (A Wing, B Wing and ECAM Building). The generator serves an emergency and standby distribution system. The emergency distribution serves the fire pump, fire alarm system, emergency lighting and exit signs in the ECAM and A Wing of the main building. The standby distribution serves as back-up for the data, voice, video, and security systems along with the campus wide MASS notification system. The B Wing portion is equipped with battery pack type exit signs and emergency lights that should be replaced with exit signs and emergency lights connected to generator.

The Aviation Building is equipped with inadequate quantity of battery type emergency lights and exit signs. It is recommended that a new natural gas generator be installed that serves new emergency lights and exit signs.

4. Master Clock Systems

Existing wireless master clock system (Primex) is present in the main building A Wing and ECAM portion. It is recommended that the hardwired clock system in the main building (B Wing) be replaced with the wireless clock system matching the remainder of the building. The Aviation Building is not equipped with a master system but it is recommended that a wireless system be installed.

5. Lighting Systems and Controls

Various types of fluorescent lighting is used the main building (A Wing, B Wing and ECAM Building). These types include recessed parabolic, recessed direct/indirect, recessed prismatic and industrial strip. All these fixtures are equipped with T8 lamps except for the mechanical areas of A Wing and B Wing which are equipped with T12 lamps. These T12 lamps should be replaced with T8 lamps and electronic ballasts. The highbay lab areas of the B Wing are equipped with metal halide HID type highbay fixtures. These fixtures should be replaced with more energy efficient highbay type fluorescent fixtures.

The Aviation Building is equipped with recessed prismatic type fixtures with yellowing lenses and T12 lamps. These fixtures should be replaced with new fixtures equipped with T8 lamps and electronic ballast. The aircraft repair portion of the building is equipped with metal halide HID highbay type fixtures. These fixtures should be replaced with more energy efficient highbay type fluorescent fixtures.

Classrooms in the main building (A Wing, B Wing and ECAM Building) are equipped with dual level switching that reduces light output for video presentations. Classrooms in the main building (A Wing and B Wing) and Aviation Building are equipped with occupancy sensors that are not working or are in excess of 20 years old. New occupancy sensors should be installed in classrooms and in other spaces throughout both facilities.

The main building Lecture Hall is equipped with incandescent front of stage lights connected to dimmer control console in need of replacement.

Exterior building lighting and parking area lighting is adequate for the main building and the Aviation Building. Consideration should be given to installation of new walkway lights leading from the parking area to patio area of the main building A Wing.

6. Fire Alarm Systems

The main building (A Wing, B Wing and ECAM Building) is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the Downtown Campus. Not all student occupied spaces in A Wing and B wing are equipped with strobes for ADA compliance. It is recommended that these spaces be equipped with strobes per ADA requirements.

The Aviation Building is equipped with a fire alarm that does not include strobes for ADA compliance. A complete system replacement is recommended

7. Sound Systems

Classrooms in the main building (A Wing, B Wing and ECAM Building) are equipped with sound enhancement systems. The main building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants.

The Aviation Building is not equipped with classroom sound enhancement or the MASS notification system. It is recommended that these systems be installed.

8. Voice/Video/Data Systems

The main building (A Wing, B Wing and ECAM Building) is provided with a standalone voice system. Voice drops are located in individual office, conference room and administrative spaces. Data drops, via the wide area network data system from downtown campus data center, are located in office, conference rooms, administrative spaces, and classrooms. Video system is via projectors in classrooms with video drops in conference rooms. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

The Aviation Building is provided with stand alone voice system drops located in individual offices. Data drops via the wide area network data system from downtown campus data center are located in classrooms. No video systems via projectors are located in classrooms. It is recommended that the standalone voice system be replaced with a voice system over IP (VOIP) and that video systems be installed in classrooms.

9. Security Systems

The main building (A Wing, B Wing and ECAM Building) security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. Exterior cameras are located on the A wing and B wing. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office. Consideration should be given to installations of an access control system.

The Aviation Building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Exterior cameras are located only on a portion of the building. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office. Consideration should be given to installations of an access control system, interior cameras and additional exterior cameras.

10. Miscellaneous

Metal flammable storage cabinets are present without electrical grounding in the main building (A Wing) and the Aviation Building.

HVAC ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
South	Main Building "A"	Supply Air Fan SF-1	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Supply Air Fan SF-2	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Multiple Air Handling Units (Firing Range Area)	1	Supply/Return/Outside Air	1	AHU's Constant Volume	1	Ceiling Diffusers	1	Firing Range Area Exhaust	1
		Multiple Air Handling Units (Lecture Hall Area)	2	Supply/Return/Outside Air	2	AHU's Constant Volume	2	Ceiling Diffusers	2	General Exhaust	2
South	Main Building "B"	Supply Air Fan SF-3	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Multiple Air Handling Units (Automotive Labs Area)	1	Supply/Return/Outside Air	1	AHU's Constant Volume	1	AHU's hanging in the space with exposed ductwork	1	General and Shop Area Exhaust	1
		Multiple Air Handling Units (Machine/Welding Labs Area)	1	Supply/Return/Outside Air	1	AHU's Constant Volume	1	AHU's hanging in the space with exposed ductwork	1	General and Shop Area Exhaust	1
South	Main Building ECAM	Multiple Air Handling Units	3	Supply/Return/Outside Air	3	Combination VAV Damper (With Reheat) and Constant Volume	3	Ceiling Diffusers	3	General and Shop Area Exhaust	3
South	Aviation Building	Multiple Air Handling Units	1	Supply/Return/Outside Air	1	AHU's Constant Volume	1	Ceiling Diffusers	1	General and Shop Area Exhaust	1

HVAC ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
South	Main Building "A"	Gas Fired Heating Water Boilers	2	Steel	1	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	1	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel	1	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	1	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel	1	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	1	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel	1	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	1	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
South	Main Building "B"	Gas Fired Heating Water Boilers	2	Steel	1	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	1	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel	1	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	1	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	2	Steel	1	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	1	Base Mounted End Suction	3	Combination Pneumatic/DDC Controls	1
South	Main Building ECAM	Gas Fired Heating Water Boilers	2	Steel	3	Base Mounted End Suction	2	Water Cooled Chiller with Cooling Tower	3	Steel	3	Base Mounted End Suction	3	DDC Controls	3
South	Aviation Building	Gas Fired Heating Water Boilers	2	Steel	1	In-Line	2	Outdoor Condensing Unit with DX Cooling	1	NA	NA	NA	NA	Pneumatic Controls	1

PLUMBING ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Domestic Water		Waste and Vent Piping		Water Heaters		Pumps		Toilet Fixtures & Trim	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
South	Main Building "A"	Hot and Cold Water	1	Waste and Vent (See Comment No. 1)	1	Gas Fired Water Heater with Storage Tank	1	In-line	1	Toilets/Urinals	3
South	Main Building "B"	Hot and Cold Water	1	Waste and Vent	1	Gas Fired Water Heater with Storage Tank	1	In-line	1	Toilets/Urinals	3
South	Main Building ECAM	Hot and Cold Water	3	Waste and Vent	3	Gas Fired Water Heater with Storage Tank	1	In-line	1	Toilets/Urinals	3
South	Aviation Building	Hot and Cold Water	1	Waste and Vent	1	Gas Fired Water Heater	1	In-line	1	Toilets/Urinals	1

PLUMBING ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Lavatories & Trim		Service Sinks & Trim		Fire Protection		Fire Pumps		Comments
		System Identification	Rating	System Identification	Rating	Type	Rating	Type	Rating	
South	Main Building "A"	Lavatories/Sinks	3	See Comment No. 2	1	Building has Sprinkler System	3	In-line Fire Pump	3	1. Building has an acid waste tank and piping system for science classroom area. 2. Combination of wall mounted and floor mounted service sinks.
South	Main Building "B"	Lavatories/Sinks	3	See Comment No. 1	1	Building has Sprinkler System	3	In-line Fire Pump	3	1. Combination of wall mounted and floor mounted service sinks.
South	Main Building ECAM	Lavatories/Sinks	3	See Comment No. 1	3	Building has Sprinkler System	3	In-line Fire Pump	3	1. Combination of wall mounted and floor mounted service sinks.
South	Aviation Building	Lavatories/Sinks	1	Service Sinks	1	No Sprinkler System in this Building	NA	NA	NA	No Comments

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Building Service Entrances		Switchboard		
		System Identification	Rating	Type	Rating	Code /Comment
South	A Building	Underground 13,200-volt primary from service pole to 15 Kv switchgear and then from the two compartment fused switchgear underground 13,200-volt primary is run to individual pad mount transformers that serve Building "A" and Building "C". Underground 277/480-volt, 3-phase from pad mount transformer to main distribution switchboard in Building "A" and Building "B".	3	Fusible type 3000 amp 277/480-volt 3-phase with main fusible switch.	2	Substations violate primary and secondary overcurrent protection of transformers. Switchboard is not equipped with ground fault protection or surge protection.
	B Building	Underground 120/240-volt, 1-phase	3	Circuit breaker type panelboard rated 100 amp 120/240-volt 1-phase with main circuit breaker switch.	2	Panelboard in deteriorated condition
	ECAM (Energy Conservation & Management)	Acquires electrical energy from building "B" . Sevice conduits are run overhead within building.	3	No single swithboard is present. System is comprised of multiple distribution panels with transformers producing 120/208-volt and 240-volt distribution systems.	2	No comments.
	Aviation Building	Underground 120/208-volt, 3-phase from pad mount transformer to main distribution switchboard with main building disconnect. This switchboard distributes electrical energy to various panelboards	3	Circuit breaker type distribution panel rated 800 amp 120/208-volt 3-phase with main circuit breaker switch.	2	Panelboard in deteriorated condition

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

- 1. End of useful life
- 2. In need of Repair/Replacement
- 3. Condition is satisfactory
- 4. Recently replaced

Campus	Building	Feeders			Panelboards		
		Type	Rating	Comment	Type	Rating	Comment
South	A Building	Anticipate copper conductors in conduit for underground service feed. No conductors were visibly seen.	2	Original feeders may be reaching or exceeding current capacities. More in depth investigation required. No excessive over heating or evercurrent protection tripping was indicated.	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.
	B Building	No interior facility feeders are present. Anticipate copper conductors in conduit for underground service feed.	3	No comments	No branch panelboards are present. Only main service panelboard.	2	Replace branch circuit wiring.
	ECAM (Energy Conservation & Management)	Anticipate copper conductors in conduit for underground service feed. No conductors were visibly seen.	3	No comments	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.
	Aviation Building	Anticipate copper conductors in conduit for underground service feed. No conductors were visibly seen.	3	No comments	Non-surge protected circuit breaker type. 42 circuit capacity.	2	Install surge protection.

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Branch Distribution & Substations			Emergency Power Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment
South	A Building	Fusible type distribution serving transformation equipment or incorporated into substations. Other Voltages: 240-volt Delta; 120/240-volt 1 phase; 120/208-volt 3 phase	2	Substations violate primary and secondary overcurrent protection of transformers. Various non-standard voltages should be replaced.	Original 75 Kw natural gas generator with single transfer switch. Generator serves fire alarm, emergency lighting and exit signs.	2	Install larger capacity generator for emergency and standby systems. Generator to serve emergency and standby system equipment along with serving as backup to data, voice, video ads security equipment.
	B Building	No branch panelboards are present. Only main service panelboard.	-	Replace branch circuit wiring.	No generator or battery type equipment serving emergency lights and exit signs are present in the building	2	Consideration should be given to installation of emergency system serving rest area, restrooms, and storage areas.
	ECAM (Energy Conservation & Management)	Circuit breaker type distribution equipment serving panelboards.	3	No comments	Receives emergency power from generator located at Building B.	-	-
	Aviation Building	Circuit breaker type distribution equipment serving panelboards.	2	Replace branch circuit wiring.	Battery type equipment serving emergency lights and exit signs.	2	(See Emergency/Exit Lighting)

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Master Clock System			Classroom Lighting		
		System Identification	Rating	Comment	Type	Rating	Comment
South	A Building	Primex wireless clock system	3	-	Recessed prismatic lensed troffer or direct/indirect fluorescent equipped with T8 or T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens.
	B Building	No master clock system is present.	-	-	Facility lighting includes recessed fluorescent, metal halide highbay type fixtures, incandescent and fluorescent lights that are not working.	2	Replace with more efficient and higher output fluorescent.
	ECAM (Energy Conservation & Management)	Existing wireless Primex system.	3	No comments	Recessed direct/indirect fluorescent equipped with T8 fluorescent lamps. Highbay type fluorescent in Manufacturing and Digital Controls rooms.	3	No comment.
	Aviation Building	No master clock system is present.	2	Provide Primex battery operated wireless clock system to meet campus standard system.	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens.

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Corridor/Public Space Lighting			Mechanical Space Lighting		
		Type	Rating	Comment	Type	Rating	Comment
South	A Building	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens.	Industrial strip with T12 fluorescent lamps.	2	Replace T12 lamps with T8 Lamps
	B Building	-	-	-	-	-	-
	ECAM (Energy Conservation & Management)	Suspended industrial strip type fluorescent equipped with T8 fluorescent lamps.	3	No comment.	Suspended industrial strip type fluorescent equipped with T8 fluorescent lamps.	3	No comment.
	Aviation Building	Recessed prismatic lensed fluorescent equipped with T8 or T12 fluorescent lamps.	2	Continue with current T12 fixture replacement. Replace fixtures with yellowing lens.	Industrial strip with T12 fluorescent lamps.	2	Replace T12 lamps with T8 Lamps

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Interior Lighting Controls			Specialty Lighting		Emergency/Exit Lighting		
		Type	Rating	Comment	System Identification	Rating	Component/System	Rating	Comment
South	A Building	Classrooms equipped with dual level control toggle switches for video presentations. Some rooms are equipped with occupancy sensors.	2	Sensors are 20 years old and some are non-working. Provide occupancy sensors in occupied spaces throughout facility.	Dimmer controlled front and over stage incandescent.	2	Fluorescent corridor lights and compact fluorescent or LED exit signs connected to generator.	3	-
	B Building	Toggle type light switches.	2	-	Not applicable to this building	-	No emergency lighting is present in the building	2	Consideration should be given to installation of emergency system serving rest area, restrooms, and storage areas.
	ECAM (Energy Conservation & Management)	Classrooms equipped with dual level control toggle switches for video presentations. Rooms are equipped with occupancy sensors. Corridor lights controlled by building management system (BAS).	3	No comment.	Not applicable to this building	-	Generator powered equipment serving emergency lights and exit signs.	3	No comment.
	Aviation Building	Classrooms equipped with single level control toggle switches. Some rooms are equipped with occupancy sensors.	2	Sensors are 20 years old and some are non-working. Provide occupancy sensors in occupied spaces throughout facility.	Not applicable to this building	-	Battery type equipment serving emergency lights and exit signs.	2	Existing equipment is in deteriorated condition and spaces are present that require or need additional equipment.

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Site Lighting			Voice/Data/Video			Specialty Sound Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment	Type	Rating	Comment
South	A Building	Exterior pole mounted high pressure sodium and metal halide area lights serving parking areas and wall mounted high pressure sodium wallpak type fixtures around building perimeter.	2	Replace lighting with LED type fixtures.	Stand alone voice system located in individual office, conference room and administrative space. Wide area network data system from downtown campus data center with data drops located in office, conference rooms, administrative spaces, and classrooms. Video system via projectors in classrooms with video drops in conference rooms.	3	Continue with conversion of stand alone voice system to voice over IP (VOIP)	Classrooms are provided with sound enhancement system connected to projector.	3	-
	B Building	No area lighting is present. Security at door.	2	Consider for improved building security.	No system present in the building.	-	2	Not applicable to this building	-	-
	ECAM (Energy Conservation & Management)	Exterior pole mounted area lights serving parking areas and walks. Recessed lights at entrance soffits. Wall mounted type fixtures at building perimeter.	3	No comment.	Stand alone voice system located in individual office and administrative space. Wide area network data system from downtown campus data center with data drops located in office, administrative spaces, and classrooms. Video system via projectors in classrooms with video drops.	3	No comment.	Not applicable to this building	-	-
	Aviation Building	Exterior pole mounted lights serving walks and wall mounted type fixtures around building perimeter.	3	-	Stand alone voice system located in individual offices. Data drops are present in some rooms. classrooms.	2	Provide complete new voice over IP (VOIP) telephone system. Provide data drops in offices and conference rooms with video drops	Not applicable to this building	-	-

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Fire Alarm		Security			
		Type	Rating	System Identification	Rating		
South	A Building	Honeywell hardwired analog system incorporating smoke detectors, pull stations, visuals and horns. System is connected to Central Station in downtown campus main building safety office.	2	Rooms are equipped with visual strobes for ADA compliance. Visuals are not currently installed in Cad Labs or Computer Labs to comply with ADA requirements.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office.	3	Consideration should be given to installation of access control system.
	B Building	No system present in the building.	2	Consideration should be given to installation of detection devices in storage areas	No system present in the building.	2	Consideration should be given to installation of devices for property protection.
	ECAM (Energy Conservation & Management)	Fire Control Instruments addressable system incorporating heat detectors, pull stations, strobes and horns.	3	No comment.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office.	2	Consideration should be given to installation of access control system.
	Aviation Building	Fire Control Instruments addressable system incorporating heat detectors, pull stations and horns.	2	Provide complete new ADA compliant system incorporating horns, strobes in all occupable rooms and smoke/heat detectors.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Exterior video cameras are only a portion of the building perimeter. No electronic access control system is present at this building.	2	Consideration should be given to installation of access control system, interior cameras and additional exterior cameras.

ELECTRICAL ASSESSMENT - OAK CREEK CAMPUS (SOUTH)

Ratings based on the following scoring system

- 1. End of useful life
- 2. In need of Repair/Replacement
- 3. Condition is satisfactory
- 4. Recently replaced

Campus	Building	MASS Notification			Miscellaneous	
		System Identification	Rating	Comment	Component/System	Rating
South	A Building	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building or from main campus safety office.	3	-	Metal flammable storage cabinets are present without electrical grounding. No GFI protection for vending machines. No emergency shut-down button in labs.	2
	B Building	No system present in the building.	-	No comments	Wiring that is present is installed in conduit.	-
	ECAM (Energy Conservation & Management)	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building or from main campus safety office.	3	No comments	No comments	-
	Aviation Building	No system present in the building.	2	Provide system with capability of emergency announcements from downtown campus safety office.	Metal flammable storage cabinets are present without electrical grounding.	-

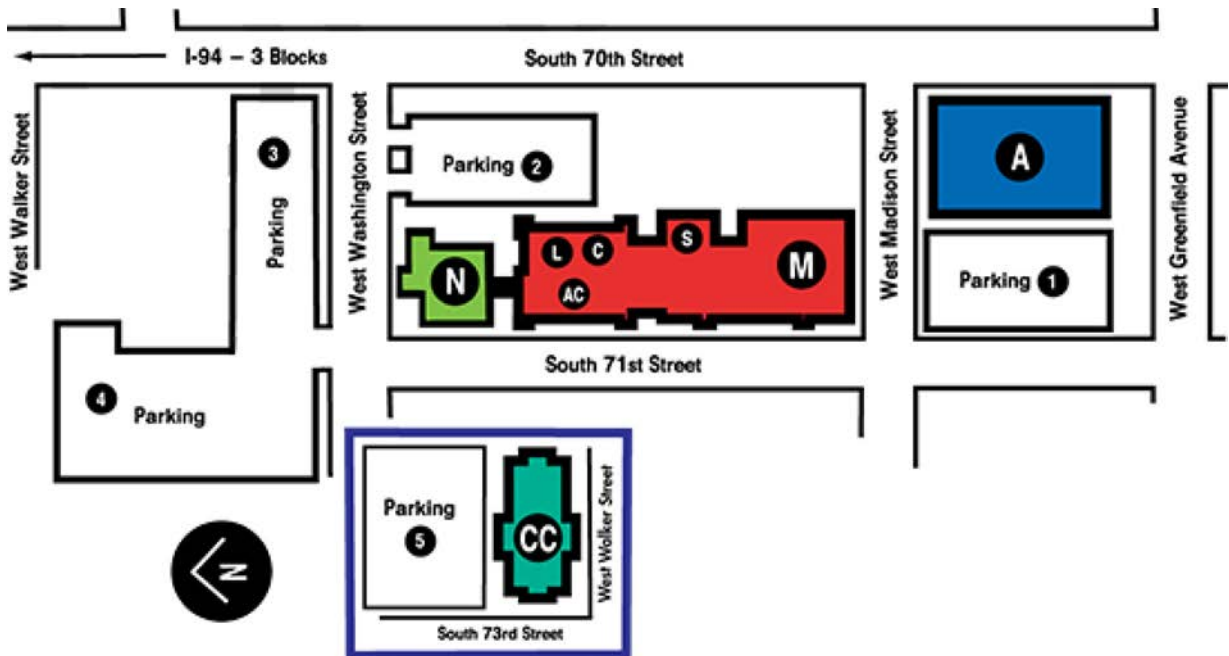
A. General Comments

1. This portion of the assessment evaluates the mechanical, plumbing, and electrical systems in each campus facility.
2. The information included in the field notes are supplemental to any notes taken on existing plans supplied by MATC.
3. Spreadsheets providing the assessed condition of the engineering systems for each facility on campus are included within the context of this document.
4. Where evaluations are provided, please use the following scoring system:
 - 1 = End of Useful Life
 - 2 = In Need of Repair / Replacement
 - 3 = Condition is Satisfactory
 - 4 = New / Recently Repaired

B. Building Description

Campus Name:	West Allis Campus (West)
Building Name(s):	Main Building, A Building, Children’s Center, and Funeral Services Program Space
Building Address:	1200 South 71 st Street, West Allis, WI 53214-3110
Number or Stories:	Main Building (3), A Building (1), Children’s Center (1)
Approximate Area (SF):	180, 365

C. Reference Site Plan



D: Engineering Assessments – Heating, Ventilating, and Air Condition Systems

1. Air Handling Unit Systems

The Main Building has multiple air handling units throughout the building and most of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units except for the Newer 3-Story Classroom Addition. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

The Newer 3-Story Classroom Addition portion of the Main Building is served by a rooftop air handling unit and due to the more recent construction of this portion of the building; this unit is in satisfactory condition and can remain in place.

The A Building has multiple air handling units throughout the building and all of these units are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded their useful life due to the age of the units. Replacement of this equipment would allow for more energy efficiency, improved indoor air quality, improved occupant comfort, and extend the overall useful life of the building.

The Children's Center is served by an air handling unit and due to the more recent construction of this building; this air handling unit is in satisfactory condition and can remain in place.

The Funeral Services Program Space has multiple air handling units throughout and due to the more recent renovation of this building; these air handling units are in satisfactory condition and can remain in place.

2. Ductwork Systems

In the Main Building, the majority of the existing ductwork is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system except for the ductwork systems located in the 1995 Addition and the Newer 3-Story Classroom Addition. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

In the 1995 Addition and the Newer 3-Story Classroom Addition portions of the Main Building, the existing ductwork is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

In the A Building, the majority of the existing ductwork is the original ductwork installed when the building was originally built. Due to the amount of air required per current codes in each occupied space, replacement of this

ductwork would be required to ensure proper sizing of ductwork would match the proposed air distribution system. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

In the Children's Center, the existing ductwork is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

In the Funeral Services Program Space, the existing ductwork is in satisfactory condition and can remain in place. Any existing ductwork remaining in place would need to be properly cleaned to ensure acceptable indoor air quality.

3. Terminal Units

Similar to the ductwork for the air distribution system in the Main Building (except for the Newer 3-Story Classroom Addition), most of the VAV (Variable Air Volume) Terminal Units are the original equipment. The original VAV Terminal Units consist of a damper and no reheat coil. As some of the areas of the building have been renovated, the VAV Terminal Units have been replaced with a unit consisting of a damper and reheat coil. Replacement of all VAV Terminal Units containing a reheat coil would allow for improved occupant comfort.

In the Newer 3-Story Classroom Addition portion of the Main Building, the existing VAV Terminal Units are in satisfactory condition and can remain in place.

In the A Building, the existing air systems are constant volume systems and as previously stated under Air Handling Unit Systems and Ductwork Systems this equipment and ductwork has exceeded its useful life due to its age and needs to be replaced.

In the Children's Center and the Funeral Services Program Space, the existing VAV Terminal Units are in satisfactory condition and can remain in place.

4. Room Systems

In the Main Building (except for the 1995 Addition and the Newer 3-Story Classroom Addition), the air distribution system in the occupied spaces consists of a combination of ceiling linear slot diffusers and square supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork and VAV Terminal Unit replacement. Existing perimeter heat along the exterior wall currently exists in spaces where the VAV Terminal Units do not have a reheat coil. The perimeter heat could be eliminated if a reheat coil was added to the VAV Terminal Unit when replaced with a new unit.

In the 1995 Addition and the Newer 3-Story Classroom Addition portion of the Main Building, the supply and return air diffusers are in satisfactory condition and can remain in place.

In the A Building, the air distribution system in the occupied spaces consists of square ceiling supply air diffusers. Replacement of all ceiling supply air diffusers would need to occur as part of the ductwork replacement.

In the Children's Center and the Funeral Services Program Space, the supply and return air diffusers are in satisfactory condition and can remain in place.

5. Exhaust Systems

In the Main Building, the majority of the existing exhaust air systems are the original systems except for the Newer 3-Story Classroom Addition. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

In the Newer 3-Story Classroom Addition portion of the Main Building, the exhaust air systems are in satisfactory condition and can remain on place.

In the A Building, the majority of the existing exhaust air systems are the original systems. It was observed that some spaces requiring exhaust currently do not have exhaust air or the proper amount of exhaust air. Although well maintained, most of these exhaust air systems have exceeded their useful life due to the age of the units. Replacement of these exhaust air systems would ensure proper exhaust air in all the required spaces.

In the Children's Center and the Funeral Services Program Space, the exhaust air systems are in satisfactory condition and can remain in place.

6. Boiler Plant

The existing heating water boilers for the Main Building are not the original boilers and have been replaced. Although these heating water boilers have been replaced they still have some age on them and may want to consider replacement with new more energy efficient heating water boilers to extend the overall life of the building. The existing heating water circulating pumps have exceeded their useful life due to the age of this equipment and need to be replaced. The existing heating water piping throughout the building is the original piping and should be considered for replacement to extend the overall life of the building.

In the A Building, the existing heating water boiler and circulating pump are the original equipment when the building was originally constructed. Although well maintained, this equipment has exceeded its useful life due to its age and needs to be replaced. The existing heating water piping throughout the building is the original piping and should be replaced.

In the Children's Center and the Funeral Services Program Space, the existing heating water boilers, existing circulating pumps, and existing heating water piping are in satisfactory condition and can remain in place.

7. Chiller/Cooling Plants

In the Main Building, the existing chiller and associated cooling tower have recently been replaced and are in satisfactory condition and can remain in place. The existing chilled water circulating pumps have been replaced and are in satisfactory condition and can remain in place. The existing chilled water piping throughout the building is the original piping and should be considered for replacement to extend the overall life of the building. There are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.

In the A Building, there are several existing outdoor air-cooled condensing units associated with an air handling unit that need to be replaced to match the requirements of the new air handling unit.

In the Children's Center, there is an existing outdoor air-cooled condensing unit associated with an air handling unit that is in satisfactory condition and can remain in place.

In the Funeral Services Program Space, the existing chiller/cooling plant for this building has recently been renovated and is in satisfactory condition and can remain in place.

8. Building Control Systems

The existing temperature control system in the Main Building currently is a combination of pneumatic and DDC (Direct Digital Controls) controls. Replacement of all controls in the Main Building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

In the A Building, the existing temperature control system currently is a pneumatic control system. Replacement of all controls in this building with new state of the art DDC Controls would allow for more energy efficiency in operating the mechanical systems and improved occupant comfort.

In the Children's Center, the existing temperature control system currently is a DDC control system and is in satisfactory condition and can remain in place.

In the Funeral Services Program Space, the existing temperature control system currently is a DDC control system and is in satisfactory condition and can remain in place.

9. Miscellaneous

- a. In the Main Building, it was noted that currently there is no make-up air units serving the third floor Chemistry Lab and Biology Lab.
- b. In the A Building, poor ventilation exists in the Shop Areas.

E. Engineering Assessments – Plumbing Systems

1. Domestic Water Systems

The domestic water system in the Main Building (except for the Newer 3-Story Classroom Addition portion of the building) and the A Building has exceeded its useful life due to the age of this system and may be considered for replacement. Neither of these buildings currently have a water softener system.

In the Children's Center, the domestic water system appears to be in satisfactory condition with copper piping throughout the building.

In the Funeral Services Program Space, the domestic water system for this area of the building has recently been renovated and appears to be in satisfactory condition.

2. Waste and Vent Systems

No issues were noted concerning the waste and vent systems in the Main Building, the Children's Center, or the Funeral Services Program Space. The science classrooms in the Main Building are equipped with an acid waste tank and piping system.

In the A Building, it was noted that the sanitary sewer backs up in the building occasionally in the Men's and Women's Shower Rooms and needs to be further investigated as to what may be causing this problem. Also, in the A Building, the shop areas occasionally have a smell of an open sewer coming up through the existing floor drains.

3. Water Heaters

In the Main Building and the A Building, the domestic water heaters and the circulating pumps are not the original equipment and have been replaced. Although this equipment has been replaced, they still have some age on them and may be considered for replacement with new more energy efficient equipment to extend the overall life of the building.

In the Children's Center, the domestic water heater is in satisfactory condition and can remain in place.

In the Funeral Services Program Space, the domestic water system for this area of the building has recently been renovated and appears to be in satisfactory condition.

4. Plumbing Fixtures and Trim (WC, UR, LAV, and SK)

In the Main Building, most of the plumbing fixtures have been replaced and are in good condition except for the service sinks which need to be replaced due to the age of these sinks. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

In the A Building, most of the plumbing fixtures are the original fixtures to the building and need to be replaced due to the age of these fixtures. Automatic flush valves and automatic faucets should be considered for all plumbing fixtures and sinks.

In the Children's Center, due to the more recent construction of this building, the plumbing fixtures are in satisfactory condition and can remain in place.

In the Funeral Services Program Space, due to the more recent renovation of this building, the plumbing fixtures are in satisfactory condition and can remain in place.

5. Fire Protection

The Main Building, the Children's Center, and the Funeral Services Program Space have a fire protection sprinkler system throughout the building.

The A Building does not have a fire protection sprinkler system.

6. Miscellaneous

No comments.

**F. Engineering Assessments – Electrical Systems
Main Building**

1. Building Electrical Service Entrances (entrance, switchboards, panelboards, feeders)

The electric service for the main building is underground from an exterior located pad mount transformer. The A Building incorporates an overhead electric service that serves classroom section of the building and another underground electric service that serves the welding lab area of the building.

The electric service for the Children's Center building is underground from a exterior located pad mount transformer. The Funeral Service Program Space does not have a dedicated electric service. This space is being served by the electric distribution system of the building that the Funeral Service Program is located.

The main switchboard for the main building is located in a room that requires two means of egress per the requirements of the National Electrical Code when only one means of egress is present. Consideration should be given to room modifications for installation of another egress door. The fusible switchboard that serves the classroom portion of the A Building should be replaced due the replacement switches not being available.

The main switchboard for the Children's Center building is in satisfactory condition.

Original feeders in main building may be reaching or exceeding current capacities. A mixture of original and new conductors for feeders is present. Asbestos insulated wiring for reported. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated.

Original feeders in classroom portion of the A Building may be reaching or exceeding current capacities. More in depth investigation is required. No excessive over heating or overcurrent protection tripping was indicated. The feeders for the welding lab area of the A Building are original and are in satisfactory condition.

The feeders for the Children's Center building are relatively new and are in satisfactory condition.

Circuit breaker type panelboards are present in the main building, A Building, Children's Center, and the Funeral Service Program without surge protection devices. Surge protection devices need installed at panelboards for protection of computers and other electronic equipment that the panelboard serves.

The main building original 120/240-volt single phase panelboards are in need of replacement.

2. Branch Distribution Systems

The main building has distribution voltages of 277/480-volt three phase, 120/208-volt three phase, 120/240-volt 3 phase delta, and 120/240-volt single phase. Consideration should be given to the replacement of the 120/240-volt three phase delta and 120/240-volt single phase distribution systems.

Various substations within the main building are in need of replacement due to being in violation of primary and secondary overcurrent protection of transformers per the National Electrical Code.

3. Emergency Power Systems

The main building is served by a new 750 Kw natural gas generator with emergency and standby distribution systems. The emergency distribution system serves the fire pump, fire alarm system, emergency lighting and exit signs in of the main building. The standby distribution serves as back-up for the data, voice, video, and security systems along with the campus wide MASS notification system. Classrooms exist on the first floor that would require emergency lighting because of no natural light entering the space.

The A Building is equipped with battery pack type exit signs and emergency lights that should be replaced with exit signs and emergency lights connected to generator.

The Children's Center is equipped with battery pack type exit signs and emergency lights. It was reported that some exit signs and emergency lights to not operate under the battery power. Replace non-working batteries with new.

The Funeral Service Program Space is equipped with battery pack type exit signs and emergency lights. Some rooms that this program occupies require installation of additional exit signs and emergency lights.

4. Master Clock Systems

It is recommended that the hardwired clock system in the main building and the A Building be replaced with the wireless clock (Primex) system matching other MATC campus buildings. The Children's Center is not equipped with a master clock system but it is recommended that a wireless system be installed.

5. Lighting Systems and Controls

The main building is undergoing a lighting replacement program that provides new parabolic fixtures equipped with T8 lamps and electronic ballast. The replacement program is 50% complete. It is recommended that the remaining 50% of replacement be completed. Mechanical spaces in the main building are equipped with industrial strip fixtures with T12 lamps. These fixtures should be replaced with new fixtures equipped with T8 lamps and electronic ballasts.

Various types of fluorescent lighting is used the A Building. These types include recessed parabolic, recessed prismatic and industrial strip. All these fixtures are equipped with T12 lamps. A complete replacement of lighting system that incorporates fluorescent fixtures equipped with T8 lamps and electronic ballasts is recommended.

Lighting systems in the Children's Center and Funeral service Program Space is in satisfactory condition.

Classrooms in the main building are equipped with dual level switching that reduces light output for video presentations. Occupancy sensors exist that are not working or are in excess of 20 years old. New occupancy sensors should be installed in classrooms and in other spaces throughout the building.

The A Building and Children's Center classrooms are equipped with single level switch controls. A few of the classrooms are equipped with occupancy sensors. It is recommended that new occupancy sensors be installed throughout the building.

Spaces compiling the Funeral Service Program Space are equipped with single level switch controls. A few of the spaces are equipped with occupancy sensors. It is recommended that occupancy sensors be installed in spaces without them.

Exterior building lighting and parking area lighting at the main building, A Building and Children's Center is adequate but incorporates high pressure sodium type fixtures. It is recommended that these fixtures be replaced with more energy efficient and maintenance free LED type fixtures.

6. Fire Alarm Systems

The main building, A Building and Children's Center is provided with a fire alarm system incorporating horn, strobes, pull stations and smoke detectors. System is monitored by the central station at the Downtown Campus. Not all student occupied spaces in these buildings are equipped with strobes for ADA compliance. It is recommended that these spaces be equipped with strobes per ADA requirements.

7. Sound Systems

Classrooms in the main building are equipped with sound enhancement systems. The main building is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. Spaces exist within the building that should have the notification system installed.

The A Building and Children's Center is equipped with a MASS notification system, consisting of speakers and strobes, for emergency notifications to the building occupants. System is in satisfactory condition.

8. Voice/Video/Data Systems

The main building, A Building and Children's Center is provided with a standalone voice system. Voice drops are located in individual office, conference room and administrative spaces. Data drops, via the wide area network data system from the downtown campus data center, are located in office, conference rooms, administrative spaces, and classrooms. Video system is via projectors in classrooms with video drops in conference rooms. It is recommended that the standalone voice system be replaced with a voice system over IP. (VOIP)

9. Security Systems

The main building, A Building and Children's Center building security system consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office. Consideration should be given to installations of an access control system.

10. Miscellaneous

In the main building, metal flammable storage cabinets are present without electrical grounding. GFI protection is required at receptacles adjacent to sinks.

In the A Building, GFI protection should be added for vending machines. Consideration should be given for installation of receptacles in the welding booths for operation of grinding tools.

HVAC ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Air Handling Systems		Duct Systems		Terminal Units by System		Room Systems		Exhaust Systems	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
West	Main	Supply Air Fan SF-2 (1920 Building)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Supply Air Fan SF-1 (1970 Building)	1	Supply/Return/Outside Air	1	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Supply Air Fan AHU-1 (1995 Building)	3	Supply/Return/Outside Air	3	VAV Damper (No Reheat)	1	Ceiling Diffusers/Perimeter Heat	1	General Exhaust	1
		Rooftop Unit (Newer Classroom Addition)	3	Supply/Return Air	3	VAV Damper (With Reheat)	3	Ceiling Diffusers/Perimeter Heat	3	NA	NA
West	Building "A"	Combination Air Handling Units, Rooftop Units and Make-up Air Units	1	Supply/Return/Outside Air	1	Duct Mounted Reheat Coils	1	Ceiling Diffusers	1	General and Shop Area Exhaust	1
West	Children's Center	Air Handling Unit	3	Supply/Return/Outside Air	3	VAV Damper (No Reheat)	3	Ceiling Diffusers/Radiant Ceiling Panels	3	General Exhaust	3
West	Funeral Services	Combination Air Handling Unit and Rooftop Units	4	Supply/Return/Outside Air	4	VAV Damper (With Reheat)	4	Ceiling Diffusers	4	General Exhaust	4

HVAC ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Heating Plant		Piping		Pumps		Cooling Plant		Piping		Pumps		Building Control Systems	
		System Identification	Rating	Type	Rating	Type	Rating	System Identification	Rating	Type	Rating	Type	Rating	Component/System	Rating
West	Main	Gas Fired Heating Water Boilers	1	Steel	1	In-Line	1	Water Cooled Chiller with Cooling Tower	4	Steel	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	1	Steel	1	In-Line	1	Water Cooled Chiller with Cooling Tower	4	Steel	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	1	Steel	1	In-Line	1	Water Cooled Chiller with Cooling Tower	4	Steel	3	Base Mounted End Suction	4	Combination Pneumatic/DDC Controls	1
		Gas Fired Heating Water Boilers	1	Steel	1	In-Line	1	Water Cooled Chiller with Cooling Tower	4	Steel	3	Base Mounted End Suction	4	DDC Controls	3
West	Building "A"	Gas Fired Heating Water Boiler and Gas Fired Make-up Air Units	1	Steel	1	In-Line	1	Outdoor Air Cooled Condensing Units	1	NA	NA	NA	NA	Pneumatic Controls	1
West	Children's Center	Gas Fired Heating Water Boilers	3	Steel	3	In-Line	3	Outdoor Air Cooled Condensing Units	3	NA	NA	NA	NA	DDC Controls	3
West	Funeral Services	Combination Heating Water and Gas Fired Rooftop Units	4	Steel	4	?	4	Combination Outdoor Condensing Unit and Package Rooftop Units with DX Cooling	4	NA	NA	NA	NA	DDC Controls	3

PLUMBING ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Domestic Water		Waste and Vent Piping		Water Heaters		Pumps		Toilet Fixtures & Trim	
		System Identification	Rating	Type	Rating	Type	Rating	Type	Rating	System Identification	Rating
West	Main	Hot and Cold Water (See Comment No. 1)	1	Waste and Vent (See Comment No. 2)	1	Gas Fired Water Heater with Storage Tank	1	In-line	1	See Comments No. 3 and No. 4	2
West	Building "A"	Hot and Cold Water	1	Waste and Vent (See Comment No. 1)	1	Gas Fired Water Heater	1	In-line	1	See Comment No. 2	2
West	Children's Center	Hot and Cold Water	3	Waste and Vent	3	Gas Fired Water Heaters	3	In-line	3	Toilets	3
West	Funeral Services	Hot and Cold Water from the Main Building Domestic Water System	4	Waste and Vent	4	Domestic Hot Water from Main Building Hot Water System	4	Main Building Domestic Water System	4	Toilets/Urinals	4

PLUMBING ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Lavatories & Trim		Service Sinks & Trim		Fire Protection		Fire Pumps		Comments
		System Identification	Rating	System Identification	Rating	Type	Rating	Type	Rating	
West	Main	See Comment No. 5	2	See Comment No. 6	1	Building has sprinkler system	3	In-line Fire Pump	3	1. Building has a domestic water booster pump system. 2. Building has an acid waste tank and piping system for science classroom area. 3. Combination of wall mounted and floor mounted toilet fixtures with a combination of manual flush and automatic flush valves. 4. Combination of wall mounted and floor mounted urinals with a combination of manual flush and automatic flush valves. 5. Combination of lavatories and wash fountains with a combination of manual flush and automatic flush valves. 6. Combination of wall mounted and floor mounted service sinks.
West	Building "A"	See comment No. 3	2	Service Sinks	1	No sprinkler system in this building	NA	No Fire Pump	NA	1. There is a history of the sanitary sewer backing up in the toilet rooms in this building. The floor drain in the welding shop area is open to the sanitary sewer. 2. Floor mounted toilet fixtures with manual flush valves. 3. Combination of lavatories and wash fountains with a combination of manual flush and automatic flush valves.
West	Children's Center	Lavatories/Sinks	3	Service Sink	3	Building has sprinkler system	3	No Fire Pump	NA	No Comments
West	Funeral Services	Lavatories/Sinks	4	Service Sink	4	Building has sprinkler system	4	Extension of Fire Protection System from the Main Building	NA	No Comments

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Building Service Entrances		Switchboard		
		System Identification	Rating	Type	Rating	
WEST	MAIN	Underground 277/480-volt, 3-phase from pad mount transformer to main distribution switchboard with main building disconnect.	3	Fusible type 4000 amp 277/480-volt 3-phase with main fusible switch.	3	Non-Compliant. Electric rooms requires two exits and violate clearance requirements.
	A Building	Building incorporates two electric services. One overhead service and one underground service. The overhead service serves the classroom and masonry portion of the building. The underground service serves the welding labs. In the welding lab, electrical energy is being transformed from 240-volt, 3-phase to 480-volt, 3-phase to serve welding stations.	3	Classroom area: 600 amp, 120/240-volt, 1-phase fusible Saflex. Welding Area: Fusible type 2000 amp, 240-volt, 3-phase, 3-wire with main fusible switch.	2 (Class) 3 (Weld)	Non-renewable replacement switches available for Saflex switchboard.
	Children's Center	Underground 120/208-volt, 3-phase from pad mount transformer to main distribution switchboard with main building disconnect.	3	Circuit breaker type 800 amp 120/208-volt 3-phase, 4-wire with main circuit breaker switch.	3	No comments
	Funeral Services (Leased Space)	Unknown. Electrical energy is being supplied by buildings leasers system.		Unknown. Electrical energy is being supplied by buildings renter system.	3	No comments

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Feeders			Panelboards		
		Type	Rating	Comment	Type	Rating	Comment
WEST	MAIN	Copper conductors in conduit. Unknown quantity of original wiring. Asbestos insulated conductors in some areas.	3	Original feeders may be reaching or exceeding current capacities.	Non-surge protected circuit breaker type. 30 - 42 circuit capacity.	2	Various non-standard voltages should be replaced. Install surge protection.
	A Building	Anticipate copper conductors in conduit. Unknown quantity of original wiring in classroom section of building.	3	Original feeders in classroom building section and newer feeders in welding lab building section.	Non-surge protected circuit breaker type. 30 - 42 circuit capacity. Newer panelboards throughout building.	3	Install surge protection.
	Children's Center	Anticipate copper conductors in conduit.	3	No comments	Non-surge protected circuit breaker type. 30 - 42 circuit capacity. Newer panelboards throughout building.	3	Install surge protection.
	Funeral Services (Leased Space)	Unknown. Electrical energy is being supplied by buildings renter system.	3	No comments	Non-surge protected circuit breaker type. 30 - 42 circuit capacity. Newer panelboards throughout building.	3	Install surge protection.

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Branch Distribution & Substations			Emergency Power Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment
WEST	MAIN	Fusible type distribution serving transformation equipment or incorporated into substations. Other Voltages: 240-volt Delta; 120/240-volt 1 phase; 120/208-volt 3 phase	2	Substations violate primary and secondary overcurrent protection of transformers. Various non-standard voltages should be replaced.	New natural gas generator with emergency and standby distribution systems. Emergency distributions serves fire pump, fire alarm, emergency lighting and exit signs. Standby system to serve data, voice, video and security systems.	3	New generator and distribution system is currently being installed.
	A Building	Fusible type distribution serving panelboards and transformation equipment.	3	No comments	No generator present. Battery type equipment serving emergency lights and exit signs.	3	Consideration should be given for installation of generator to serve emergency, egress, data, voice, video and security systems.
	Children's Center	Circuit breaker type distribution equipment serving panelboards.	3	No comments	No generator present. Battery type equipment serving emergency lights and exit signs.	2	It was reported that the emergency lighting and exit signs are not working under battery power.
	Funeral Services (Leased Space)	Circuit breaker type distribution equipment serving panelboards.	3	No comments	No generator present. Battery type equipment serving emergency lights and exit signs in MATC leased spaces.	2	MATC leased spaces exists that would require new emergency lighting.

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Master Clock System		Classroom Lighting			
		System Identification	Rating	Type	Rating		
WEST	MAIN	Hardwired 120-volt clocks connected to Simplex Model 2351 master clock control panel.	2	Replace with Primex battery operated wireless clock system to meet campus standard system.	Recessed parabolic or direct/indirect fluorescent equipped with T8 or T12 fluorescent lamps.	3	Continue with current T12 fixture replacement.
	A Building	Hardwired 120-volt clocks connected to Simplex Model 2351 master clock control panel.	2	Replace with Primex battery operated wireless clock system to meet campus standard system.	Mixture of recessed with acrylic lenses and recessed parabolic equipped with T12 fluorescent lamps. Welding labs incorporate open industrial strip fixtures with T12 fluorescent lamps.	2	Complete replacement along with installation of dual level lighting controls for video presentations in classrooms. This replacement should include individual lights in welding booths.
	Children's Center	No master clock system is present.	2	Consider installation of Primex battery operated wireless clock system.	Infant, toddlers and early pre-school rooms are equipped with recessed acrylic lensed fixtures with T8 fluorescent lamps. Preschool, older preschool and muscle rooms are equipped with linear indirect fixtures with T8 fluorescent lamps.	3	No comments
	Funeral Services (Leased Space)	No master clock system is present.	3	No comments	Recessed direct/indirect fluorescent equipped with T8 fluorescent lamps.	3	No comments

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Corridor/Public Space Lighting			Mechanical Space Lighting		
		Type	Rating	Comment	Type	Rating	Comment
WEST	MAIN	Recessed parabolic or direct/indirect fluorescent equipped with T8 or T12 fluorescent lamps.	3	Continue with current T12 fixture replacement.	Industrial strip opened fixture with T12 fluorescent lamps.	2	Replace T12 lamps with T8 Lamps. Install more fixtures in third floor mechanical room.
	A Building	Recessed parabolic type equipped with T8 fluorescent lamps.	3	No comments	Industrial strip opened fixture with T12 fluorescent lamps.	2	Complete replacement.
	Children's Center	Recessed downlights incorporating compact fluorescent lights.	3	No comments	Surface with wrap around lens with T8 fluorescent lamps.	3	No comments
	Funeral Services (Leased Space)	Existing lighting by leaser.	3	No comments	Existing lighting by leaser.	3	No comments

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Interior Lighting Controls			Specialty Lighting		Emergency/Exit Lighting		
		Type	Rating	Comment	System Identification	Rating	Component/System	Rating	Comment
WEST	MAIN	Classrooms equipped with dual level control toggle switches for video presentations. Rooms are equipped with occupancy sensors.	2	Sensors are 20 years old and some non-working. Spaces exist that are not equipped with sensors	Not applicable to this building		Fluorescent corridor lights and compact fluorescent exit signs connected to generator.	3	Student occupied spaces exist without emergency lighting.
	A Building	Classrooms equipped single toggle switch. Few rooms are equipped with occupancy sensors.	2	Install new sensors throughout the building. Replace the few existing.	Not applicable to this building		Battery pack LED emergency lights and compact fluorescent exit signs.	3	Consideration should be given for replacing the compact fluorescent exit signs to LED type.
	Children's Center	Toggle type light switches with some rooms incorporating occupancy sensors.	2	Install new sensors in current spaces without sensors.	Not applicable to this building		Battery operated combination exit lights with emergency lighting heads	2	Replace. It was reported that the batteries do not work under power loss.
	Funeral Services (Leased Space)	Toggle type light switches with some rooms incorporating occupancy sensors.	2	Install sensors in classroom spaces without sensors.	Not applicable to this building		Battery operated combination exit lights with emergency lighting heads	2	Install battery operated emergency lighting in MATC classrooms without windows.

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Site Lighting			Voice/Data/Video			Specialty Sound Systems		
		System Identification	Rating	Comment	System Identification	Rating	Comment	Type	Rating	Comment
WEST	MAIN	Exterior pole mounted high pressure sodium area lights serving parking areas and wall mounted high pressure sodium wallpak type fixtures around building perimeter.	2	Replace lighting with LED type fixtures.	Stand alone voice system located in individual office, conference room and administrative space. Wide area network data system from downtown campus data center with data drops located in office, conference rooms, administrative spaces, and classrooms. Video system via projectors in classrooms with video drops in conference rooms.	3	Continue with conversion of stand alone voice system to voice over IP (VOIP)	Classrooms are provided with sound enhancement system connected to projector.	3	
	A Building	Exterior pole mounted high pressure sodium area lights serving parking areas and recessed high pressure sodium type in building entrance soffit.	2	Replace lighting with LED type fixtures.	Stand alone voice system located in administrative space. Wide area network data system from downtown campus data center with data drops located in office, and classrooms.	2	Continue with conversion of stand alone voice system to voice over IP (VOIP). Consider installations of video projector and instructors technology desk with video controls similar to other campus classrooms.	Not applicable to this building		
	Children's Center	Exterior pole mounted high pressure sodium area lights serving parking areas and wall mounted high pressure sodium wallpak type fixtures around building perimeter. Lighting is controlled by on-site time clock.	2	Replace lighting with LED type fixtures.	Stand alone voice system located in administrative spaces. Wide area network data system from downtown campus data center with data drops located in offices.	2	Continue with conversion of stand alone voice system to voice over IP (VOIP)	Not applicable to this building		
	Funeral Services (Leased Space)	Unknown. Existing provided by leaser.	2	No comments				Not applicable to this building		

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	Fire Alarm			Security		
		Type	Rating	Comment	System Identification	Rating	Comment
WEST	MAIN	Honeywell hardwired analog system incorporating smoke detectors, pull stations, visuals and horns. System is connected to Central Station in downtown campus main building safety office.	2	A few rooms are equipped with visual strobes for ADA compliance. Visuals are not currently installed in rooms occupied by students or staff to comply with ADA requirements. Mechanical system duct detectors are not present third floor and penthouse air handling units.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances and interior corridor locations. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office.	3	Consideration should be given to installation of access control system.
	A Building	Honeywell hardwired analog system incorporating smoke detectors, pull stations, visuals and horns. System is connected to Central Station in downtown campus main building safety office.	2	In remodeled areas rooms are equipped with visual strobes for ADA compliance. Visuals are not currently installed in rooms occupied by students or staff to comply with ADA requirements.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office.	2	Consideration should be given to installation of access control system and exterior mounted cameras.
	Children's Center	Honeywell hardwired analog system incorporating smoke detectors, pull stations, visuals and horns. System is connected to Central Station in downtown campus main building safety office.	2	Visuals are not currently installed in all rooms occupied by students or staff to comply with ADA requirements. Heat/smoke detectors are installed in all spaces for complete coverage.	Consists of a combination of exterior door contact switches and motion detectors for intrusion protection. Interior video cameras are located at building entrances. No electronic access control system is present at this building. System is monitored by the downtown campus main building safety office.	3	Consideration should be given to installation of access control system.
	Funeral Services (Leased Space)	Existing fire alarm protection devices are connected to leaser existing system. Existing addressable Fire Lite MS 9200 control panel. MATC spaces are protected by smoke detectors.	3	No comments			

ELECTRICAL ASSESSMENT - WEST ALLIS CAMPUS (WEST)

Ratings based on the following scoring system:

1. End of useful life
2. In need of Repair/Replacement
3. Condition is satisfactory
4. Recently replaced

Campus	Building	MASS Notification		Miscellaneous		
		System Identification	Rating	Comment	Component/System	
WEST	MAIN	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	2	Student occupied rooms are present without system speaker.	Metal flammable storage cabinets are present without electrical grounding. Some receptacles adjacent to sinks are not provided with ground fault protection.	2
	A Building	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	vending machines are present without ground fault protection. Consideration should be given for addition of 120-volt receptacles in welding booths.	2
	Children's Center	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	3	No comments	No comments	3
	Funeral Services (Leased Space)	Stand alone electronic sound communication system consisting of speakers and visuals in areas connected to control unit with microphone. System for emergency communications to students and staff. Announcements may be produced from building of from main campus safety office.	2	MATC classroom spaces are not equipped with speaker/strobe devices.	No comments	3