



**FACILITY ASSESSMENT REPORT
MAPLE VALLEY SCHOOL DISTRICT
TOWER CITY SCHOOL**

APRIL 2016

ICON
ARCHITECTURAL GROUP



Karges-Faulconbridge, Inc.
Engineers



FACILITY SUMMARY

The school for the Maple Valley School District located in Tower City, ND is currently occupied by grades 7 through 12. The original 19,460 sf building was built in 1952. A 1,575 sf addition for offices was built in 1995. The most recent 8,055 sf addition in 2013 consisted of three classrooms, two locker rooms, a music room, and 1,171 sf of lower level space including a staff lounge, restroom, storage, and official's locker room. The school consists of eleven classrooms, library, cafeteria, kitchen, gymnasium with stage, locker rooms, one set of public restrooms, music room, teachers lounge, and office space.

The Tower City School is located on a 4.7 acre lot with Maiden Lane/34th St SE to the south, Broadway St to the west, Maple St to the north and Maine St to the east. The school district also owns the 6.2 acre lot to the east of Maine St which currently has a baseball field, practice football field and parking space for school buses. In the summer of 2015 a sewer line running north/south was added to the east of Maine St to service home to the south of Maiden Lane/34th St SE.

The original building is concrete masonry walls with a wood roof structure. The gymnasium is concrete masonry exterior walls, three-point hinged laminated arches and wood ceiling. There is very little to no insulation in the gymnasium, making it inefficient and difficult to climate control. The addition, built in 2013, is concrete masonry walls with a steel post and beam structure. New storefront and windows have been installed throughout the building along with interior finish renovations.

In 1952, the original building was constructed and is heated with the original coal fired furnace that was converted over to natural gas. The gas burner is a Gordon-Piatt burner that was installed in 2002. Gordon-Piatt went out of business in 2009. The supply air is distributed via tunnels to floor grilles into each classroom. The return air is transferred through door grilles to the corridor and returned back to the furnace through a common return grille in the corridor wall. The existing HVAC system for this portion of the building does not meet current ventilation and energy codes. Replacing the existing ventilation system would be recommended for this portion of the building.

The existing HVAC system for the gymnasium does not meet current codes and would need to be replaced.

Existing bathrooms and janitor's closet ventilation does not meet current codes. New exhaust fans and transfer grilles would need to be installed.

New electric unit heater has been added to north vestibule and could be reused.

Existing kitchen ventilation system does not meet current codes and would need to be replaced. Makeup air unit would need to be replaced.

Data equipment is stored in the mechanical room and is not properly temperature controlled. Auxiliary cooling unit would need to be added and equipment should be relocated to another dedicated data room space.

There is no air conditioning in the original 1952 building, except in the computer lab where a large heat load is generated from occupants and computer stations. This system should be replaced to meet current ventilation and energy codes.

In 1995, a small office addition was added including a new rooftop heating and ventilation system that served this area (the administrative office areas). The HVAC system serving this area does not meet current ventilation and energy codes and is near the end of its useful life. This HVAC system should be replaced.

In 2013, classrooms, music rooms, locker rooms, and lower level areas were added. Each of these spaces included new rooftop HVAC systems per current codes. These systems should remain and be reused. The existing HVAC systems meet current codes for ventilation and energy codes. No work required.

The building control system varies throughout the building ranging from standalone controls, to electric controls, to Honeywell DDC controls. Control system should be converted over to one DDC building automated control system with a user interface station throughout.

The existing building is not protected with a fire suppression system. A new fire suppression system would need to be installed. The existing water services are under sized for adding a new fire sprinkler system. The existing water service would need to be increased to add a fire sprinkler system to the building, or a new 6-inch water service would need to be brought to the building. There was a new 2-inch service brought into the building in 2013 as part of the locker room addition.

Given the age of the building, the domestic water piping in the 1952 portion of the building should be replaced throughout.

There are two electric water heaters that serve the original 1952 building. One electric water heater was installed in 2001 and it approaching the end of its useful life. The other was installed in 2013 and could be reused. There was also a new high-efficiency, gas-fired water heater added for the locker room in 2013 and could be reused.

The bathrooms in the original 1952 building appeared to have been remodeled, but they do not meet current ADA requirements and would need to be reconfigured, which would include reinstalling the existing plumbing fixtures at the required ADA heights.

Drinking fountains in the original building do not meet ADA requirements and would need to be replaced. Drinking fountains in the 2013 additions meet ADA requirements.

The existing locker room addition meets current codes for plumbing fixtures and ADA requirements. No work required.

The art room sink needs a new plaster/sediment trap installed.

Adequate and reliable illumination is required for all means of egress. Emergency and exit lighting systems should be evaluated for compliance with current Life Safety codes.

Renovations would require compliance with ADA regulations for new systems installed as well as for any architectural modifications; examples include ensuring accessibility for the building entry, parking, building signage and displays, water fountains and bathroom fixtures, adequate doorway widths, timing for automatic doors, doorknobs and playground equipment.

School lockdown function should be looked at to determine if there is a quicker and safer means to accomplish lockdown for the facility. Additional camera monitoring is typically required in corridors and exterior entrances for the facility.

New lighting fixtures with LED lamps will reduce energy consumption and allow for greater flexibility in lighting levels. High efficiency lamps, multiple lighting levels, direct and indirect lighting, occupancy sensors and light monitoring sensor provide greater control and improved comfort in the classroom. Lighting controls are not saving energy the way that current lighting controls provide for spaces such as these with daylighting controls, dimming, and occupancy/vacancy sensor controls.

Adequate provision and placement of general purpose receptacles meeting new tamper resistant requirements and data outlets should be installed in all areas to eliminate overuse of extension cords and multi plug strips. Tamper resistant receptacles to replace one-for-one all receptacles are recommended in public and classroom locations as that is required in current codes and designs.

Additional load to the electrical service may be required with the installation of new mechanical equipment and electrical systems.

The audio and video within the facility is not updated as a typical school for this age group and would recommend updating to current flat panel technology for student population.

Along with an upgraded fire suppression system, the fire alarm system would require upgrading and replacement with a modern addressable system compliant with the IFC and ADA requirements, including demolition and removal of all abandoned devices and cabling above ceilings.

Upgrades to kitchen ventilation would require connection to fire suppression system.

Grounding connections to building structure and new fire suppression system and other systems should be evaluated and upgraded if necessary.

Electrical panelboards have not been properly maintained and need replacing. Some panels are not adequately or properly labeled. Circuit breakers or plates are missing leaving the interior of the panelboard exposed.

Some electrical devices are very old and are a potential fire hazard and should be replaced.

A detailed engineering assessment and load study should be completed to evaluate the additional load requirements with existing service capacities.

Overall the building is in good condition and capable of meeting building codes with the replacement of the issues addressed above such as replacement of the mechanical system, providing air-conditioning throughout, installation of fire-suppression system, renovation to provide accessibility, and other life safety discussed.



FACILITY ASSESSMENT

2012 IBC: SECTION 903.2.3 GROUP E

- An automatic sprinkler system shall be provided for Group E occupancies as follows:
 - Throughout all Group E fire areas greater than 12,000 square feet in area.

Corrective Action: Provide automatic sprinkler system throughout existing building.



FACILITY ASSESSMENT

2012 IBC: SECTION 903.2.3 GROUP E

- An automatic sprinkler system shall be provided for Group E occupancies as follows:
 - Throughout all Group E fire areas greater than 12,000 square feet in area.

Corrective Action: Provide automatic sprinkler system throughout existing building. Provide smoke detection in gymnasium. Replace light fixtures with energy efficient fixtures.



FACILITY ASSESSMENT

Corrective Action: New lighting fixtures with LED lamps will reduce energy consumption and allow for greater flexibility in lighting levels. High efficiency lamps, multiple lighting levels, direct and indirect lighting, occupancy sensors and light monitoring sensor provide greater control and improved comfort in the classroom. Lighting controls are not saving energy the way that current lighting controls provide for spaces such as these with daylighting controls, dimming, and occupancy/vacancy sensor controls.



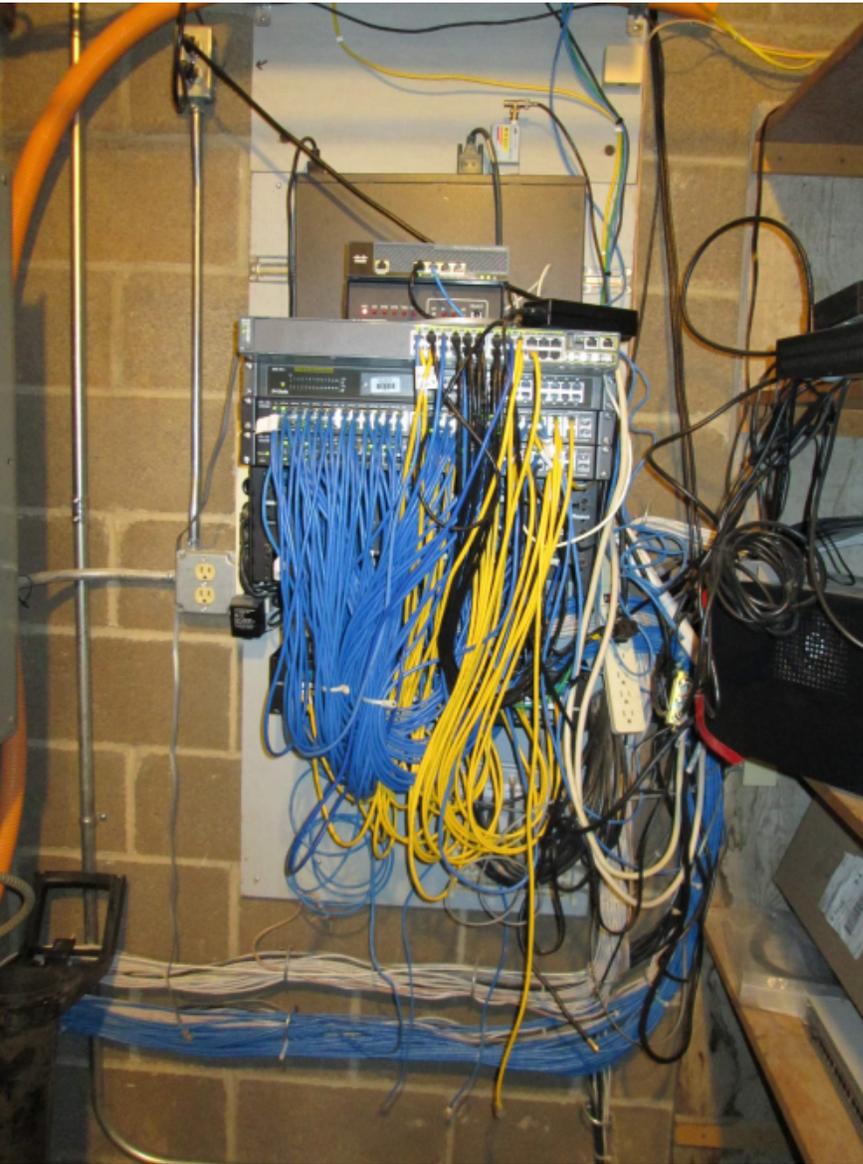
FACILITY ASSESSMENT

Corrective Action: The supply air is distributed via tunnels to floor grilles into each classroom. The return air is transferred through door grilles to the corridor and returned back to the furnace through a common return grille in the corridor wall. The existing HVAC system for this portion of the building does not meet current ventilation and energy codes. Replacing the existing ventilation system would be recommended for this portion of the building.



FACILITY ASSESSMENT

Corrective Action: There are two electric water heaters that serve the original 1952 building. One electric water heater was installed in 2001 and it approaching the end of its useful life. The other was installed in 2013 and could be reused. There was also a new high-efficiency, gas-fired water heater added for the locker room in 2013 and could be reused.



FACILITY ASSESSMENT

Corrective Action: Data equipment is stored in the mechanical room and is not properly temperature controlled. Auxiliary cooling unit would need to be added and equipment should be relocated to another dedicated data room space.



FACILITY ASSESSMENT

2012 IBC: SECTION 716.5.3 DOOR ASSEMBLIES IN CORRIDORS AND SMOKE BARRIERS

- Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in corridor walls or smoke barrier walls

2012 IBC: SECTION 1008.1.9.1 HARDWARE

- Door handles, pulls, latches, locks and other operating devices on doors required to be accessible by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to operate.

Corrective Action: Replace all doors and frames in corridors with properly fire-rated doors and frames including fire-rated glass and louvers. Replace all door hardware with accessible hardware.



FACILITY ASSESSMENT

2012 IBC: SECTION 1109.2 TOILET AND BATHING FACILITIES

- Each toilet room and bathing room shall be accessible. At least one of each type of fixture, element, control or dispenser in each accessible toilet room and bathing room shall be accessible.

Corrective Action: Provide accessible restrooms and add fixtures to meet required plumbing counts.



FACILITY ASSESSMENT

Corrective Action: Exterior walls, roof and windows of gymnasium provide poor insulation and should be corrected to provide a comfortable and efficient environment.



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FACILITY ASSESSMENT

2012 IBC: SECTION 1104.1 SITE ARRIVAL POINTS

- Accessible routes within the site shall be provided from public transportation stops; accessible parking; accessible passenger loading zones; and public streets or sidewalks to the accessible building entrance served.

Corrective Action: Provide paved parking for designated accessible parking.



FACILITY ASSESSMENT

Corrective Action: The building control system varies throughout the building ranging from standalone controls, to electric controls, to Honeywell DDC controls. Control system should be converted over to one DDC building automated control system with a user interface station throughout.



FACILITY ASSESSMENT

Corrective Action: Provide school resource officer office with direct line of sight of vestibule entrance. Provide intrusion detection system for all entrances. Provide panic / alert devices in all classrooms.