MOUNT HOREB AREA SCHOOL DISTRICT

District Wide Facilities Study

March 31, 2016

bray architects
solid foundation. forward thinking.

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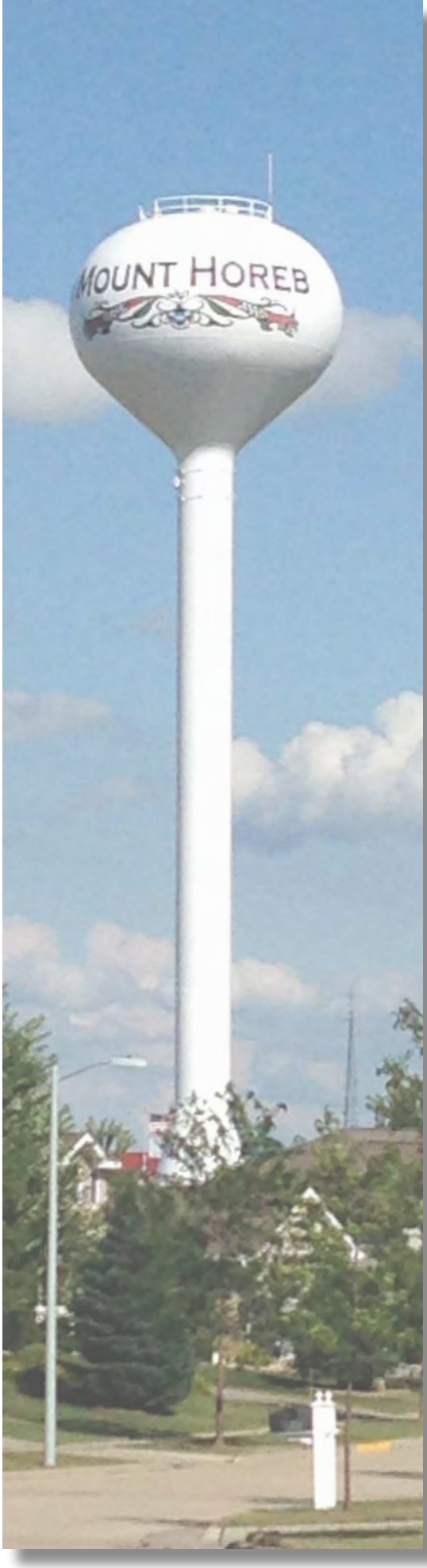

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DISTRICT INFORMATION: PROCESS

The Mount Horeb School District is located in Dane County, in central Wisconsin. The district includes the communities of the Village of Mount Horeb, Town of Cross Plains, Town of Springdale, Town of Blue Mounds, and Village of Blue Mounds. The school district is comprised of an Early Learning Center (preschool and kindergarten), a Primary Center (grades 1-2), an Intermediate Center (grades 3-5), a Middle School (grades 6-8), and a High School (grades 9-12) that serve over 2,300 students. The District also partners with four community child care centers and preschools to offer four-year-old programming.

Existing Early Learning Center:

300 Spellman Street
Mt. Horeb, WI 53572

Existing Primary Center:

207 Academy Street
Mt. Horeb, WI 53572

Existing Intermediate Center:

200 Hanneman Boulevard
Mt. Horeb, WI 53572

Existing Middle School:

900 East Garfield Street
Mt. Horeb, WI 53572

Existing High School:

305 South 8th Street
Mt. Horeb, WI 53572

2014-2015 Enrollment Numbers:

4K (Partnership Programs): 120

Early Learning Center: 179 students

Primary Center: 351 students

Intermediate Center: 552 students

Middle School: 544 students

High School: 739 students

Total Students: 2,485

Study Objective

In collaboration with the Mount Horeb School District, Bray Associates Architects has conducted an analysis of the existing Early Learning Center, Primary Center, Intermediate Center, Middle and High Schools. Initial efforts are centered around identifying academic and facility needs by recognizing opportunities and challenges at each of the existing facilities. Subsequent phases may consider potential solutions to each of the needs assessed.

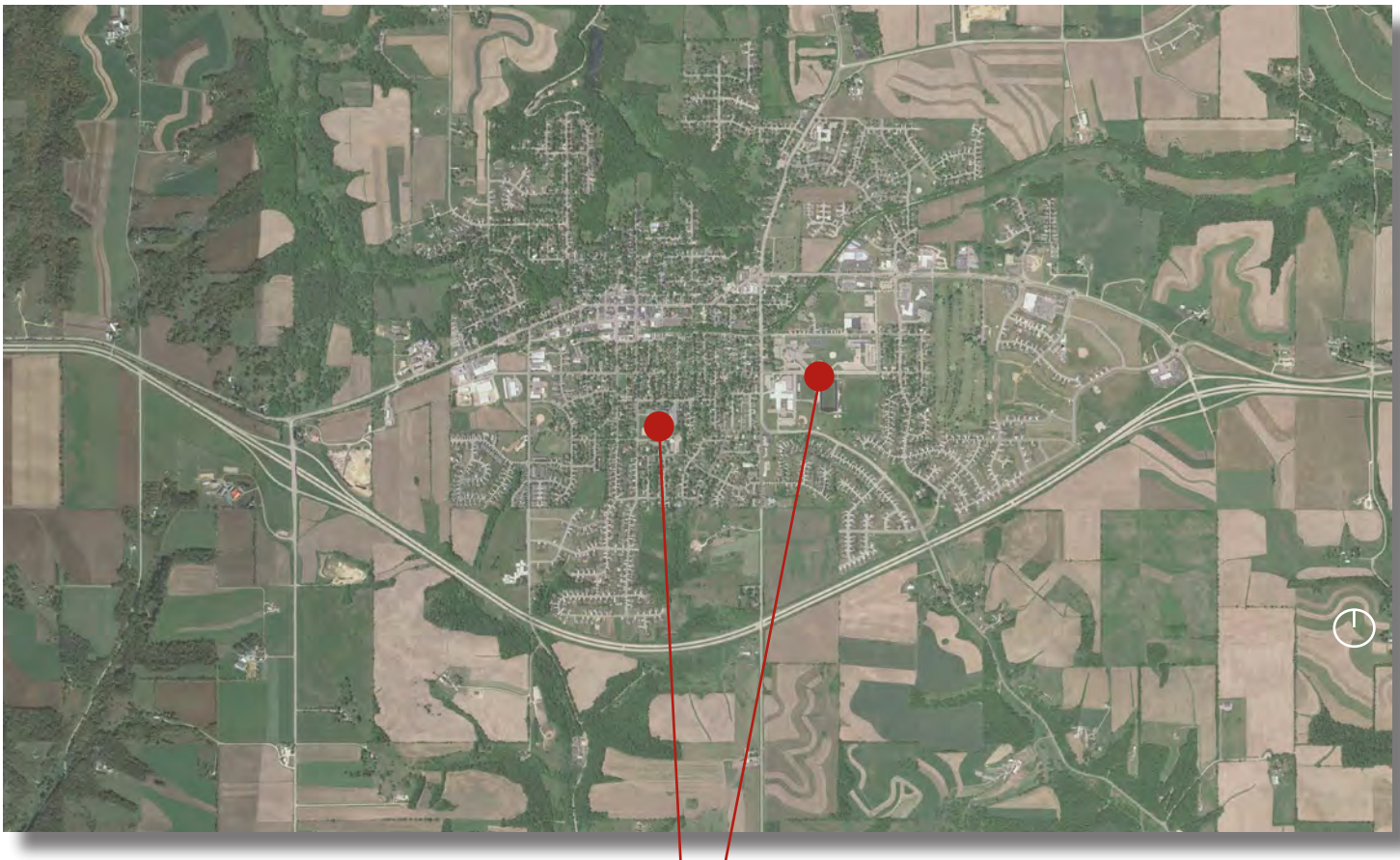
Methodology

This study process and the documents herein benefit from a wide approach to data collection and analysis.

The campus needs assessment involved interactive work sessions with District Leaders, Staff and Faculty with additional survey input from Elementary School, Middle School and High School Educators.

An existing facility condition review was also conducted by Bray Architects. This review was conducted through building tours and review of existing building drawings as well as previous planning and analysis conducted by other architectural firms.

MOUNT HOREB, WISCONSIN: SCHOOL LOCATIONS



Mount Horeb,WI

Aerial View of Mount Horeb Early Learning Center & Primary Center

Aerial View of Mount Horeb Intermediate School, Middle School & HIgh School

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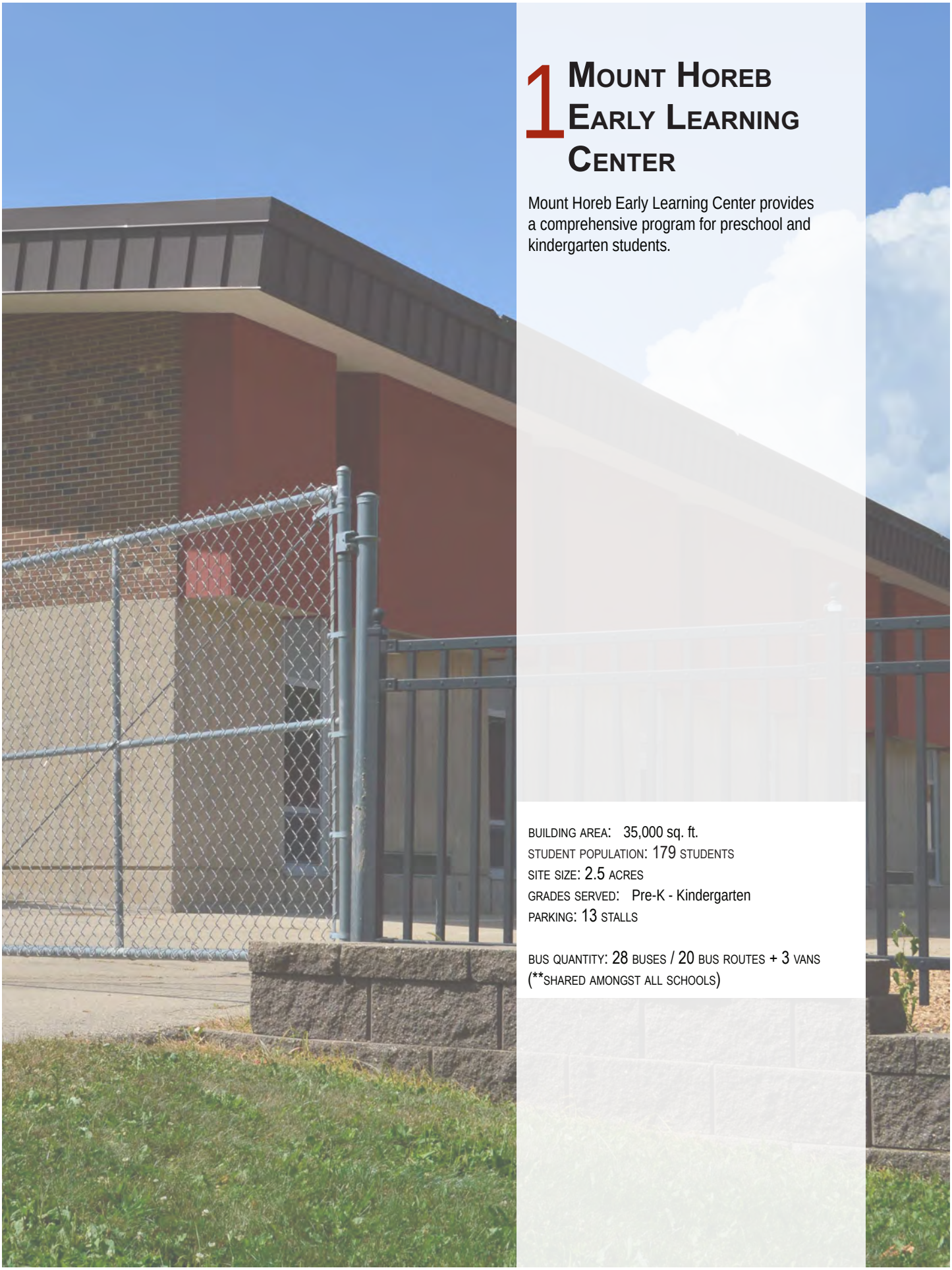


1 Mount Horeb Early Learning Center

Mount Horeb Early Learning Center provides a comprehensive program for preschool and kindergarten students.

BUILDING AREA: 35,000 sq. ft.
STUDENT POPULATION: 179 STUDENTS
SITE SIZE: 2.5 ACRES
GRADES SERVED: Pre-K - Kindergarten
PARKING: 13 STALLS

BUS QUANTITY: 28 BUSES / 20 BUS ROUTES + 3 VANS
(**SHARED AMONGST ALL SCHOOLS)

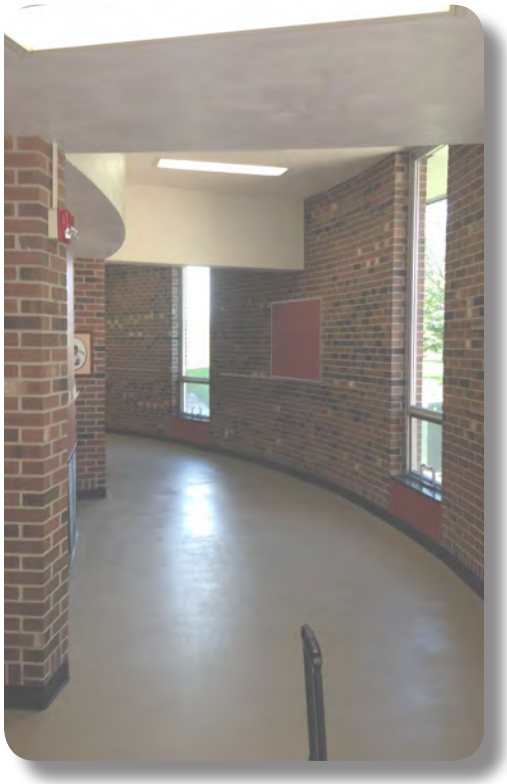
MOUNT HOREB EARLY LEARNING CENTER: BUILDING EVOLUTION

Mount Horeb Early Learning Center was originally constructed in 1967. It endured renovation in 1990, an elevator addition in 1992, and additional renovations in 1995 and 2001.

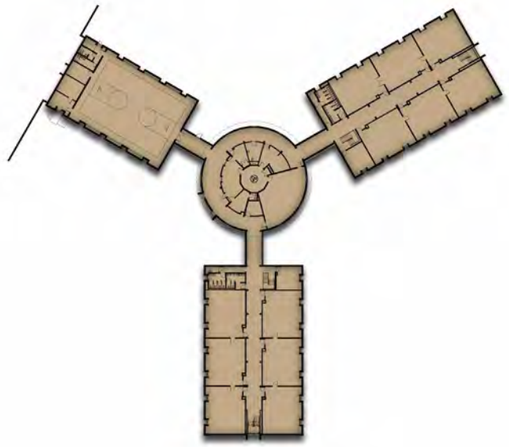
The following building evolution diagram outlines the additions made to the original building over time due primarily to student enrollment growth.

Mount Horeb Early Learning Center Main Entrance

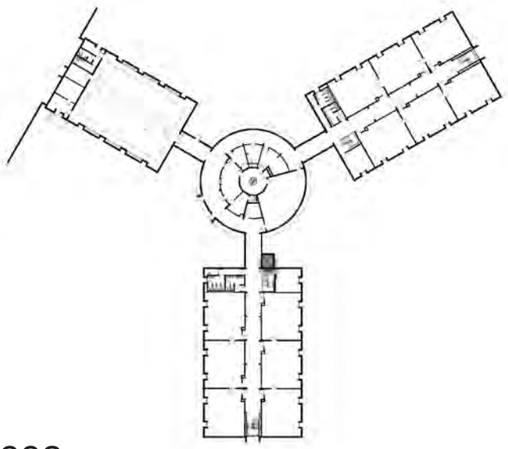
Mount Horeb Early Learning Center Classroom



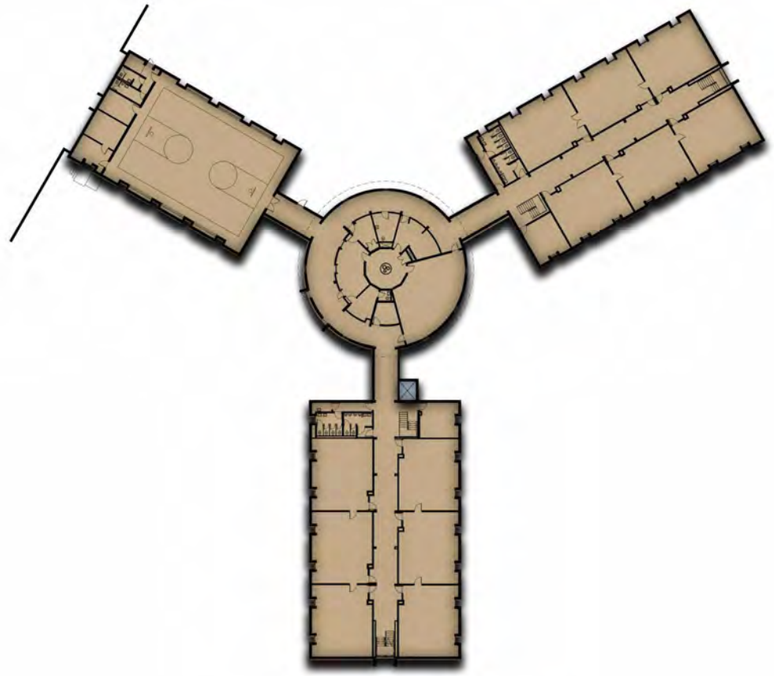
Mount Horeb Early Learning Center Central Corridor



1967



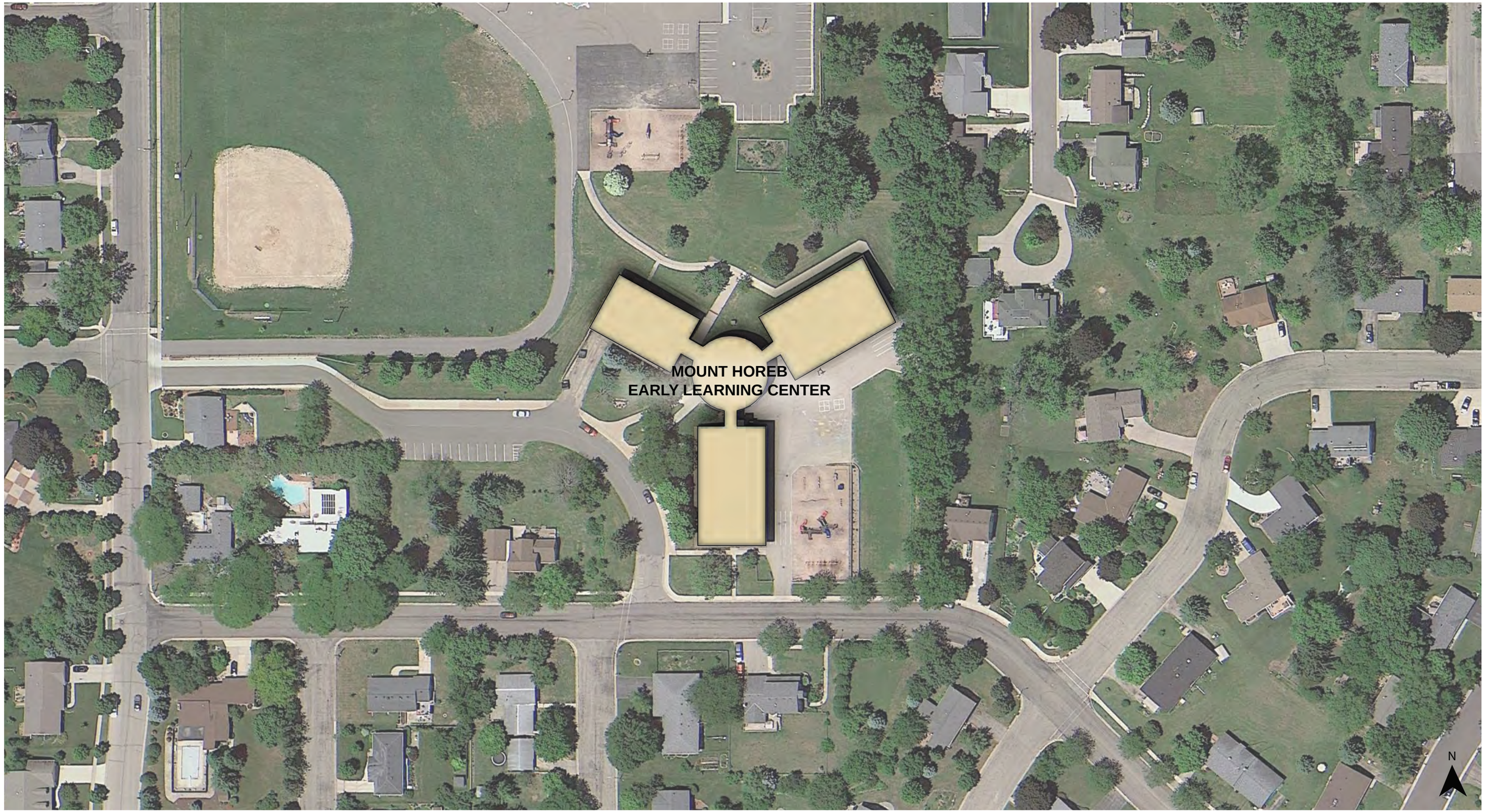
1992



FIRST FLOOR PLAN
not to scale

1967 - ORIGINAL

1992 - ELEVATOR ADDITION



SITE PLAN
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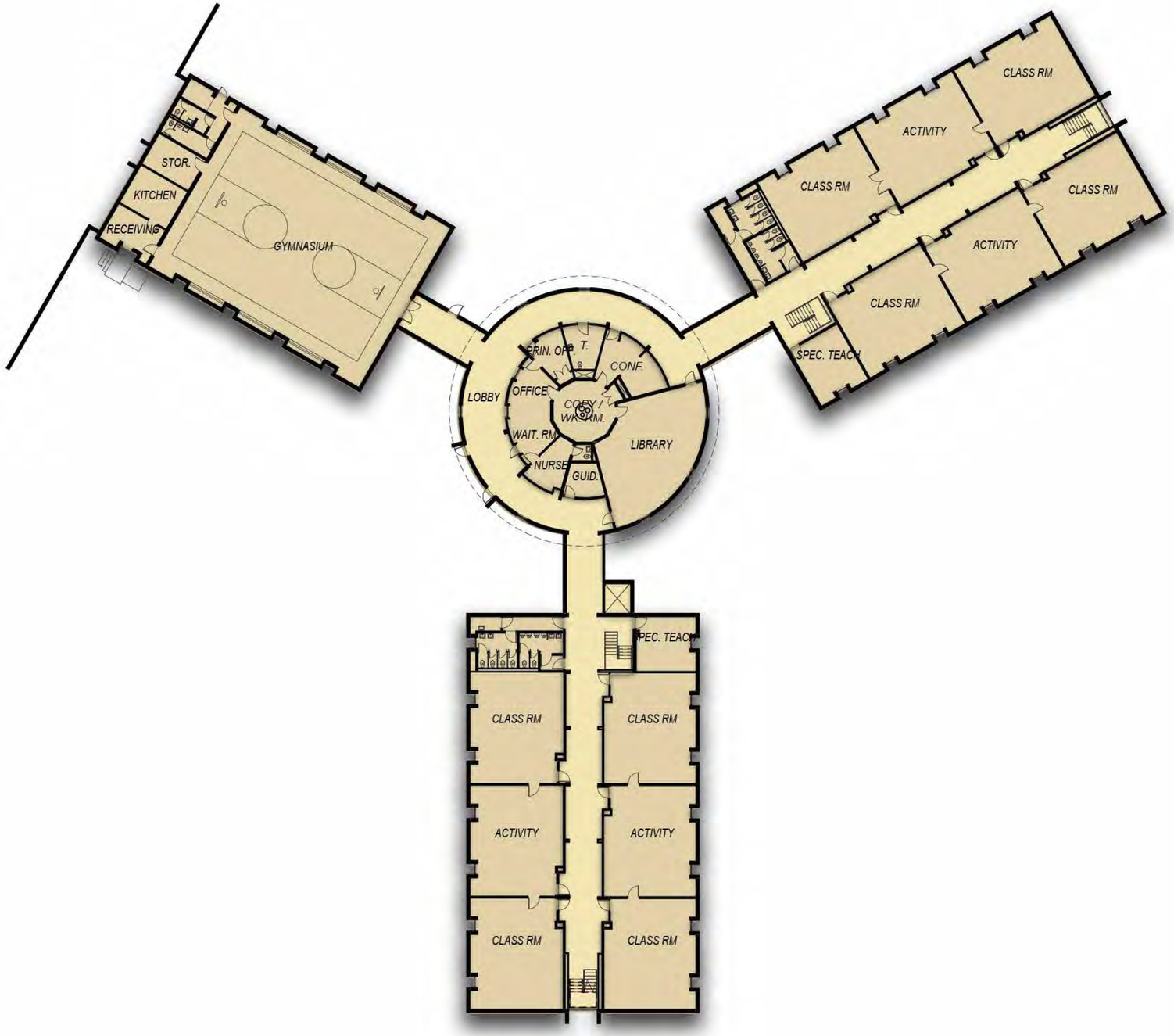

EXISTING

FIRST FLOOR PLAN

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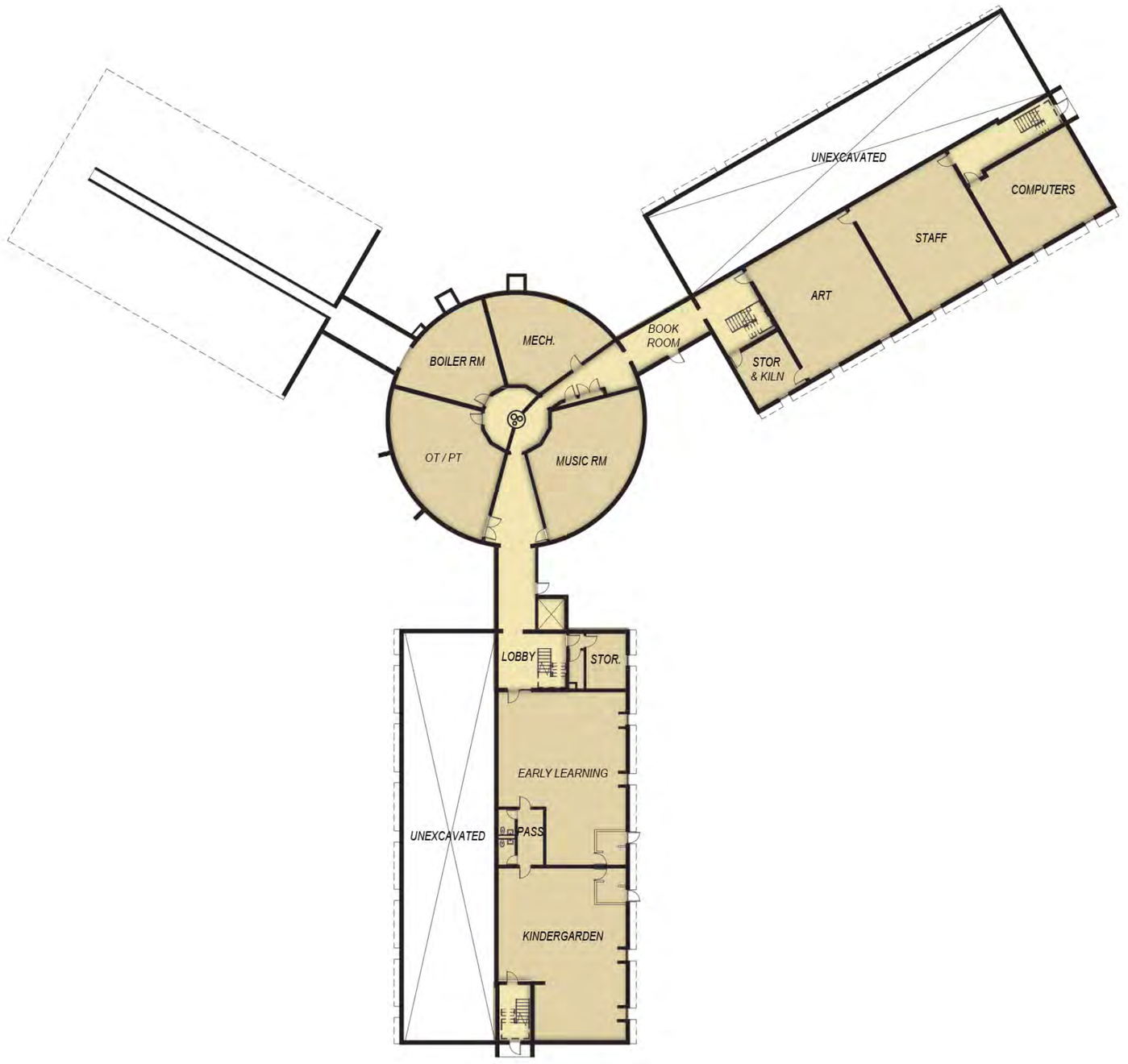


EXISTING

LOWER LEVEL FLOOR PLAN

not to scale

The following is a summary of potential improvements at Mount Horeb Early Learning Center. This is not intended to be a comprehensive list, but a summary of possible upgrades as identified by staff members, district leadership, school board members, architects and engineers. In order to generate this list, numerous meetings and listening sessions were held by district leadership and Bray Architects with the objective of casting a broad net to try and gather as much feedback regarding needs as possible.

Infrastructure/Maintenance:

- HVAC
  - No air conditioning system
  - Uncontrolled humidity; often leads to slippery floors & affects technology
  - Windows do not open or are limited; lack of proper air flow & fans are loud, interrupt students with FM system hearing needs, and pose a safety concern with exposed cords
  - Existing system is noisy, blows debris, and contains radiators with sharp corners
- Asbestos vinyl composite tiles in gymnasium; tiles throughout the building are in poor condition
- Casework and furniture upgrades
  - Some classrooms lack sinks, while others have sinks that only have cold water, are difficult to use, and are unsanitary due to mildew and age
  - Casework veneer has considerable wear and is chipped/ broken
- Plumbing upgrades
  - Toilets, fixtures and water fountains in need of replacement; lower level toilets do not flush properly
  - Original steel piping leaks, leading to water damage
- Electrical upgrades
  - Insufficient placement and number of outlets; fuses are often blown
  - Electrical cords are often left exposed, especially in the lab
  - Dyson hand dryers are loud, and many children are afraid to use them
  - Insufficient exterior lighting, especially near playground and areas in-between wings
  - Fire panel/system issues; fire alarms not directly tied to a monitoring system or fire department
  - No sound system in the gymnasium
- Asphalt needs to be replaced throughout
- Drainage issues throughout site
  - Water run-off and ice near dumpsters and throughout sidewalk leading to PC

Academic, Educational/Student Life:

- Efficiency of staff compromised by traveling between PC and ELC buildings
- Failure to meet ADA accessibility code requirements and/or meet the needs of handicapped students
  - Sometimes required to travel through other rooms in order to access the elevator
  - Many doors are not handicap accessible or are too heavy for students to open; exterior wing doors are not wheelchair accessible
  - Group restrooms do not meet accessibility needs for handicapped students
  - Lower level kindergarten classroom has no handicap accessible toilets; only one accessible toilet in building
- Most windows do not have shades
  - No control of direct sunlight in the classroom compromises visibility of SMART board
  - Cause for distraction within the classroom
- Lack of parking for staff and visitors

Safety and Security Upgrades:

- No secure entry
  - Power assisted/push button accessible door desired
  - Little to no visibility of main entry doors from office
  - Only two doors are FOB-controlled
- Exterior/Site
  - Some fencing, but yards and play areas are not entirely enclosed, and some fencing is broken
  - Much of sidewalk is cracking/buckling, tripping hazard
  - Parent drop-off/pick-up areas are not well defined; lack of separation/curb between buses and walk areas
  - Traffic through the site is uncontrolled; one-way traffic not enforced

Department Need:

Many departments and rooms are at capacity or are inadequately sized and supported

GYMNASIUM/CAFETERIA
- (1) Lunch period for entire school occupies gym from 10:00 a.m. to 12:50 p.m.
- Undersized; seating for 220 students in cafeteria and full court gymnasium desired
- Support Spaces/Restrooms are not ADA compliant
- Ideally gymnasium and cafeteria would be two separate spaces
- Lack of storage and space for kitchen and servery equipment; safety concern
- Lack of oven requires food to be prepared at 9:00 a.m. off-site at high school kitchen and transported to Early Learning Center
- No bleachers
- Additional multipurpose space for 550-600 students desired

LIBRARY
- Odd-shaped/small space limits shelving and furniture arrangements; no space for tables and chairs or proper circulation desk
- Shelving is unstable/dangerous
- No A/V professional resources or technology

CLASSROOMS
- Activity rooms and classrooms are too large/open for small group instruction and are often utilized by other staff; currently using tables in the hallway; smaller SGI space preferred
- Limited storage, some accessible by ladder only
- Early Childhood classrooms preferably located on entry level

SPECIAL EDUCATION
- Undersized
- No room for “safe space” within the classroom
- OT/PT located in basement with no windows and exposed electrical wiring; sensory room needed
- No classroom for special education
- Lack of office space for school counselor and psychologist
- Lack of therapy space for speech pathologist

OFFICES
- Undersized
- Lack of natural light; doors lack vision glass
- Lack of collaboration/meeting space with adequate technology for staff use
- Staff bathrooms
- Additional offices for Social Worker and potential Assistant Principal desired

HEALTH
- Separate Nurse’s Office and Health Office; current combined room prohibits necessary confidentiality
- Viewing window between Nurse’s Office and Health Room desired
- Small fridge with separate freezer door desired
- Sink within Health Room desired (clinic set-up)
- Layout at Primary Center is preferred

CORRIDORS
- Lack of sufficient storage for students in the corridors; not enough hooks per student and sanitary concern of hooks being close enough for students’ belongings to touch

Mount Horeb Early Learning Center Staff Prep / Corridor

The following is summary of Plumbing, HVAC and Electrical needs. Full engineers' reports are located later in this document.

Plumbing:

• Piping appears to be in fair condition, and piping to the gymnasium is located in tunnels underground. Continually monitor for leaks.

• Water pressure in the building appears to be good. All hot water and cold water to plumbing fixtures is softened.

• Investigate grounding problem at the water service entrance to the building.

• Sanitary piping appears in fair condition. Interior sewers below grade should be investigated with an interior sewer camera.

• A grease inceptor (likely interior) should be installed in the Kitchen, as none exists. Per current codes, this would be a code violation.

• New grading and new exterior storm piping is required to correct the existing condition of the site; further investigation required.

• All plumbing equipment is in good condition. Should the water heater be replaced, the unit should be replaced with a sealed-combustion energy eficient model.

• Verify that all toilet rooms are ADA compliant.

• Schedule existing electric water coolers and classroom sinks for replacement.

• Provide continual maintenance on waterless urinals.

HVAC

• Boilers are in very good condition, and boiler water chemical systems are in place and properly maintained. Original hot water piping appears to be in good condition, and insulation appears to be of adequate thickness and in good condition. Continue preventative maintenance on the system.

• Replace unit ventilators; they have exceeded their service life and have deteriorated in their performance.

• Constant volume multi-zone air handling units have exceeded their service life. Refurbish to last another 10 years, or replace and convert the units to modern variable air volume systems.

• If air conditioning is installed, the entire building should be air conditioned in order to avoid high humidity and condensation.

• Remove the existing pneumatic control system and install a fully digital Building Automation System to control all building temperature control systems and communicate with the District's existing central monitoring systems.

Electrical:

• Replace main electrical service due to age and full service panel.

• Replace all (approximately 10) old style panelboards with new in place. Existing feeders can remain.

• No generator present; no CATV service to the building at this time.

• Consider replacement of T12 lamps and ballasts with new T8 type; may require upgrading of light fixtures. Consider replacement of exterior lighting with LED type.

• Replace all existing exit lights with new battery backup type, and provide new emergency battery egress lighting throughout.

• Fully replace fire alarm system due to age and non-addressable devices and to meet full code compliance.

• In case of addition or upgrade, recommend wireless clocks such as Primex or Equal as a solution.

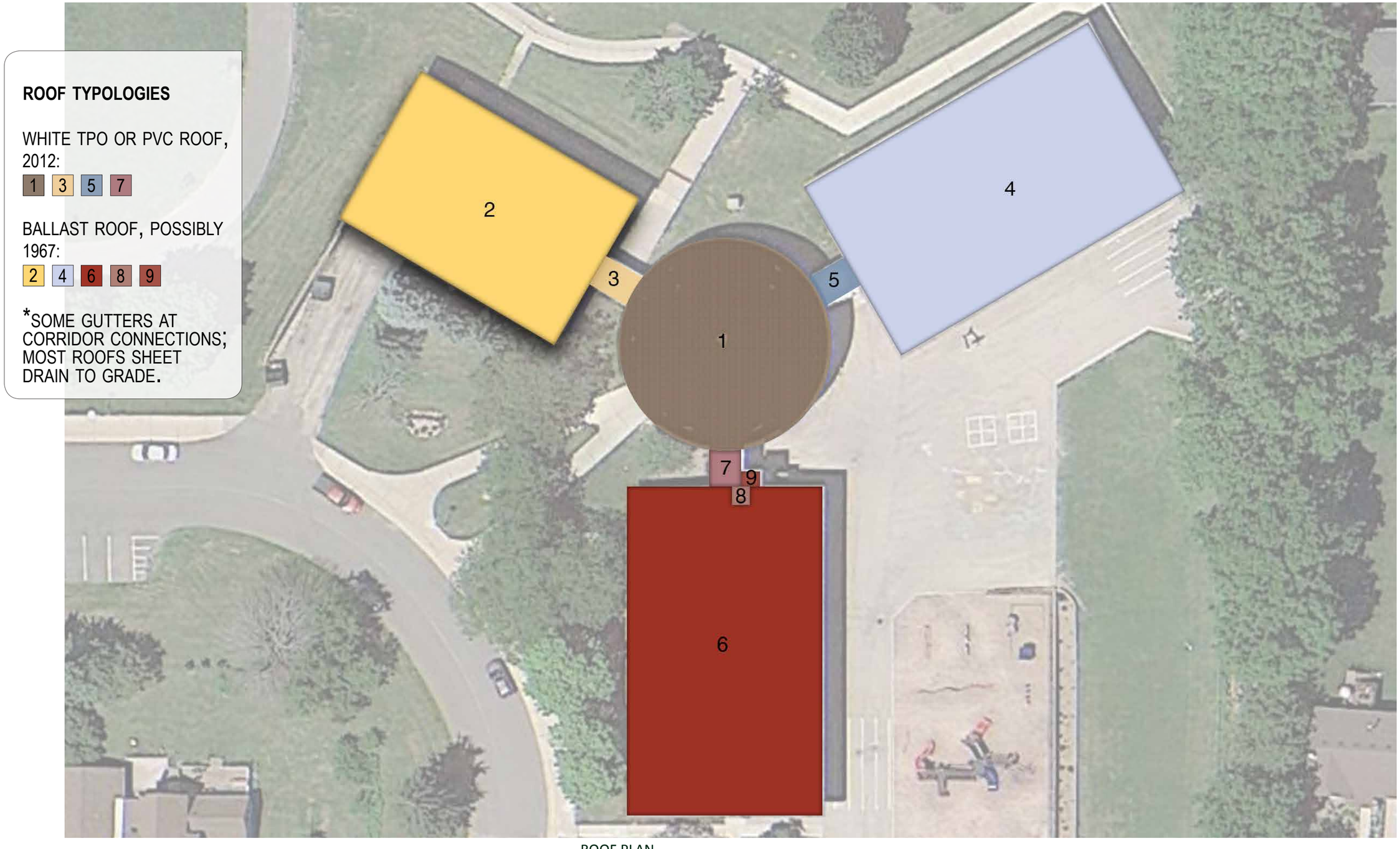
• Provide additional speakers for the public address system on exterior and provide for full coverage on the interior to allow for emergency notification. Possibly upgrade the head end system.

• Phone system is non IP type; possible upgrade to IP solution.

• Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added. If building addition requires data cable to have a total installed length of over 300 feet, then additional IDF data rack is required.

• Provide a Networked keyless entry system to allow for an IP based network system; reuse existing strikes and readers and install new data to a controller at door and new software.

• Numerous broken receptacles and electrical devices in need of upgrade.



ROOF PLAN

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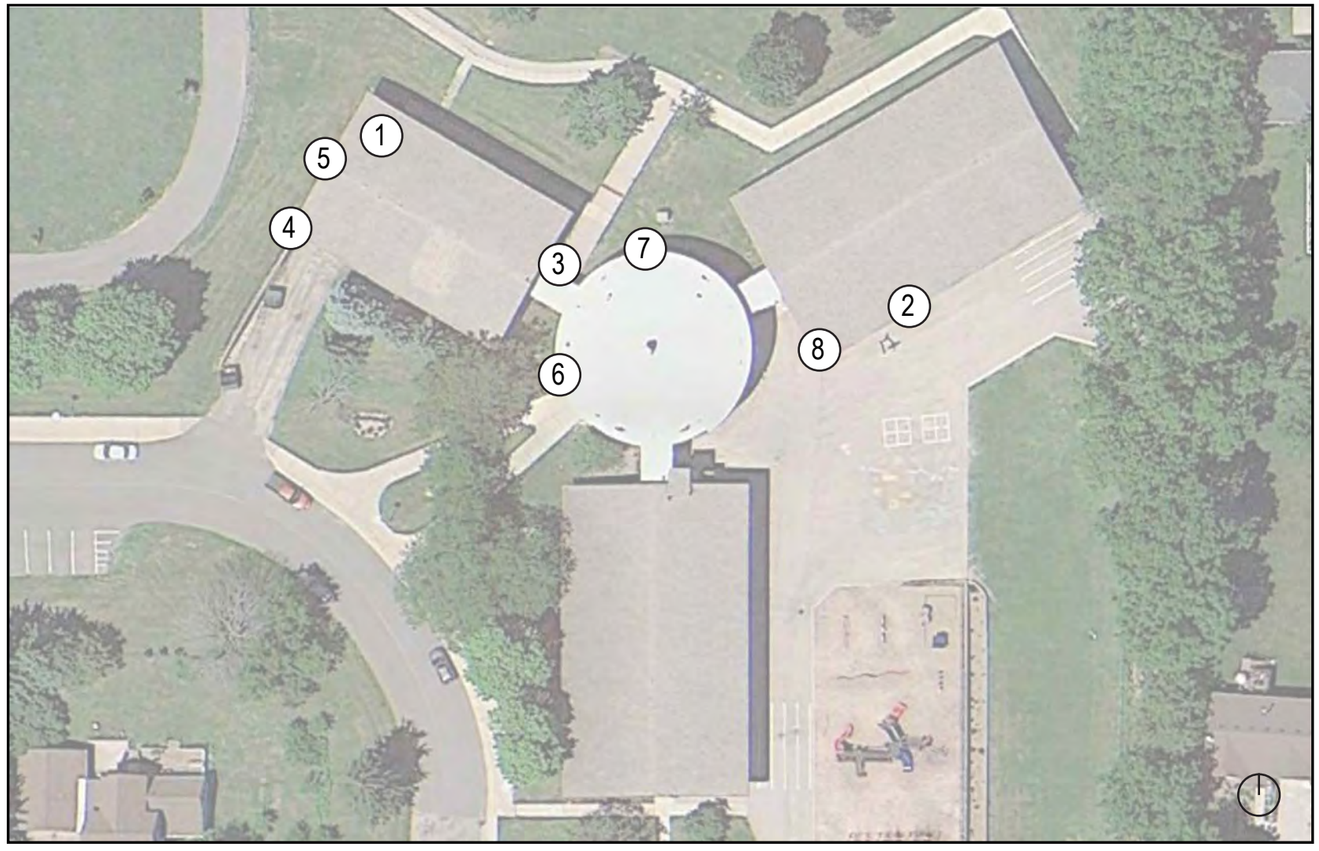
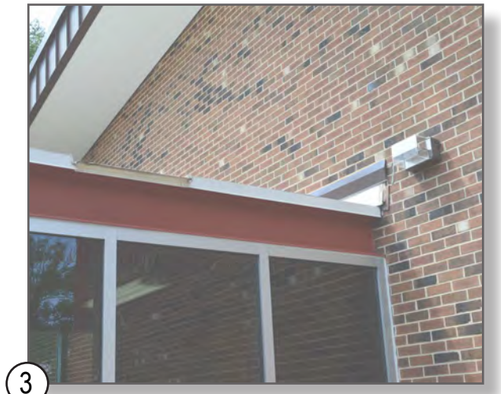


1 BALLAST ROOF

2 ROOF SCUPPER



3 ROOF TO WALL CONNECTION WITH SCUPPER

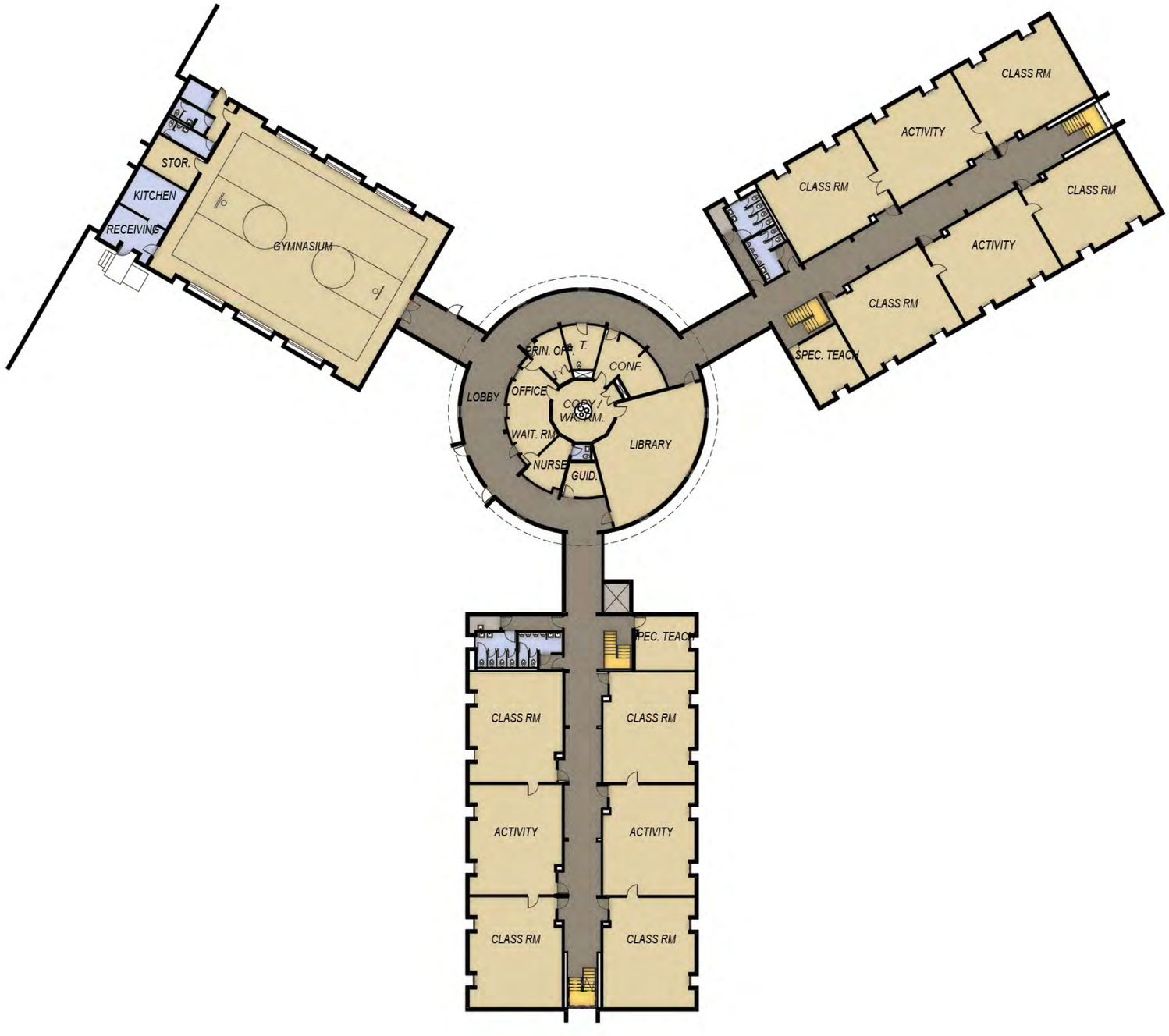
4 SOFFIT EDGE CONDITION

5 METAL FASCIA AND SOFFIT CONDITION

6 CIRCULAR ROOF METAL FASCIA

7 SOFFIT CONDITION

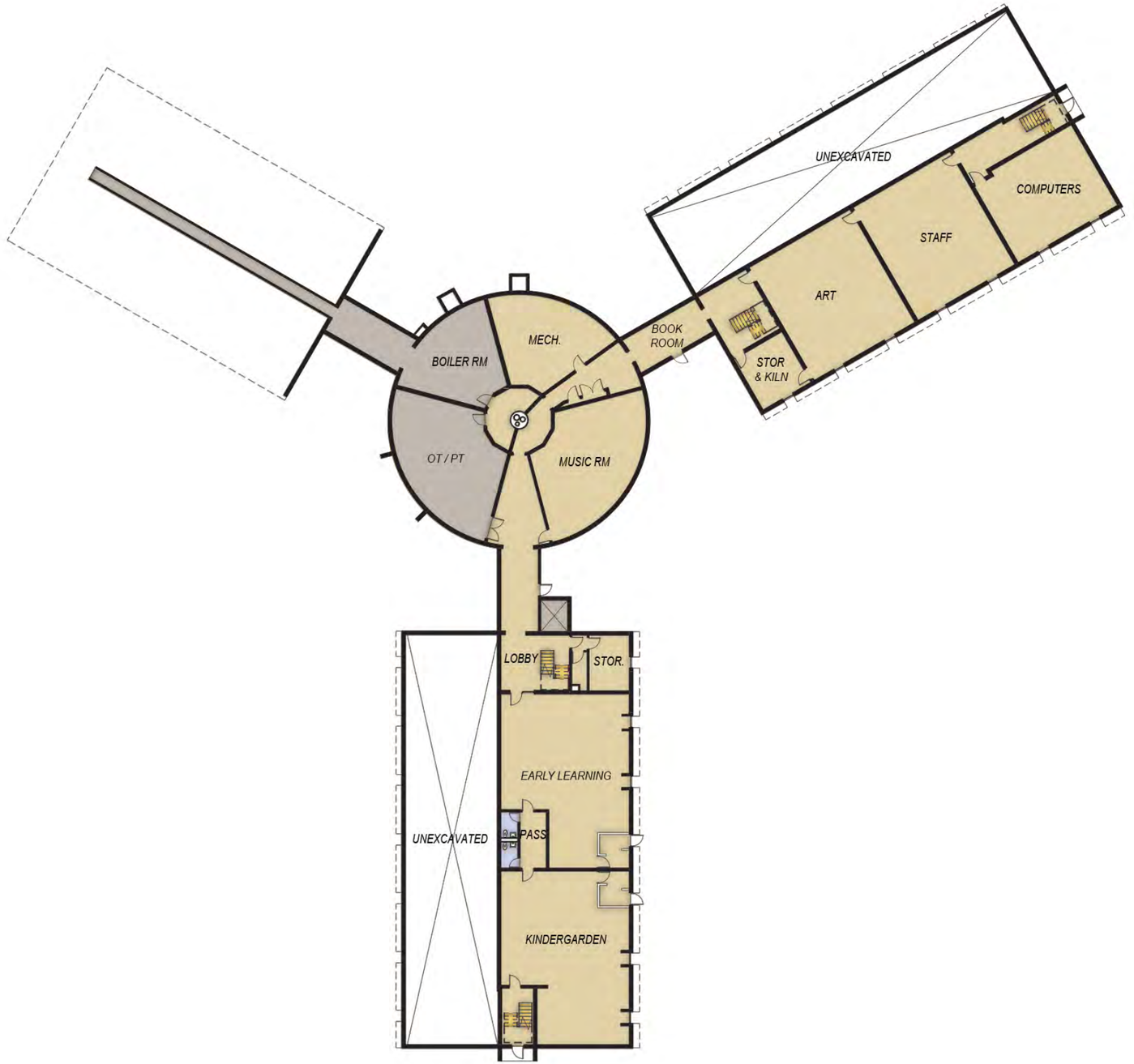
8 ROOF TO WALL CONNECTION & ROOFTOP VENTS



- VCT
- EPOXY
- CERAMIC TILE
- RUBBER
- CONCRETE

FIRST FLOOR PLAN

not to scale



- VCT
- EPOXY
- CERAMIC TILE
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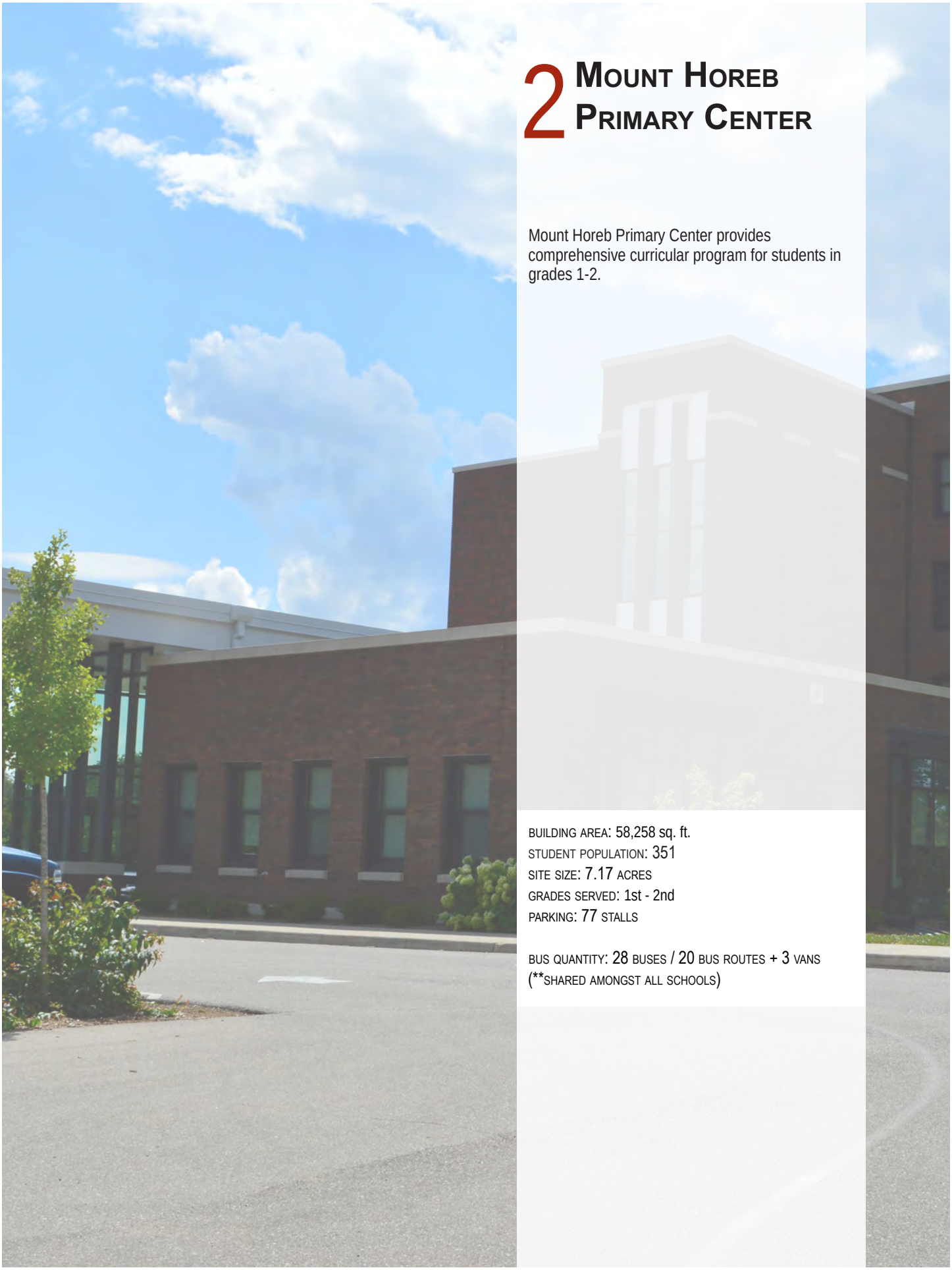
LOWER LEVEL FLOOR PLAN

not to scale



2 Mount Horeb Primary Center

Mount Horeb Primary Center provides comprehensive curricular program for students in grades 1-2.

BUILDING AREA: 58,258 sq. ft.
STUDENT POPULATION: 351
SITE SIZE: 7.17 ACRES
GRADES SERVED: 1st - 2nd
PARKING: 77 STALLS

BUS QUANTITY: 28 BUSES / 20 BUS ROUTES + 3 VANS
(**SHARED AMONGST ALL SCHOOLS)

MOUNT HOREB PRIMARY CENTER: BUILDING EVOLUTION

Mount Horeb Primary Center contains a series of additions and renovations stemming from the original 1918 building. Additions were constructed in 1952 and 1971, and an elevator was added in 1992. Asbestos was removed in 1982 and 1983, and additional work occurred in 1993, 1994, 1995, and 2001. The latest renovation and addition occurred in 2012.

The following building evolution diagrams outline the original building and additions made over time to accommodate student enrollment growth.

Mount Horeb Primary Center Main Entrance

Mount Horeb Primary Center Gymnasium

1918

1952

1971

1992

2012

FIRST FLOOR PLAN

not to scale

- 1918 - ORIGINAL
- 1952 - ADDITION
- 1971 - ADDITION
- 1992 - ELEVATOR ADDITION
- 2012 - ADDITION

SITE PLAN
not to scale

The following is a summary of potential improvements at Mount Horeb Primary Center. This is not intended to be a comprehensive list, but a summary of possible upgrades as identified by staff members, district leadership, school board members, architects and engineers. In order to generate this list, numerous meetings and listening sessions were held by district leadership and Bray Architects with the objective of casting a broad net to try and gather as much feedback regarding needs as possible.

Infrastructure/Maintenance:

- HVAC
  - Uncontrolled humidity
  - Little to no temperature regulation throughout; can't control manually from classroom
  - Air vent within sealed-off room adjacent to music room; creates difficult temperature control within music room
- Flooring cracked in areas throughout the building, especially in threshold areas and areas where wood and concrete flooring systems adjoin
- Plumbing Upgrades
  - Poor water quality; softened but unpleasant to taste
- Electrical Upgrades
  - Insufficient placement and number of outlets
- Furniture/casework delamination; owner is in contact with manufacturer
- Asphalt near basketball court needs repaving; oldest section has failing seal coat and newer sections have cracks
- Conditions of baseball field
- Drainage issues throughout site
  - Water flows from playground area towards ELC site

Academic, Educational/Student Life:

- Efficiency of staff compromised by traveling between PC and ELC buildings
- Need for multi-purpose room or common area
  - Morning/afternoon waiting area for students; current gymnasium and cafeteria are not large enough and are needed by other functions (breakfast and gym classes)
  - Presentation and staff development space
  - Technology-supported
- No small group instruction space on third floor; more desired throughout

Safety and Security Upgrades:

- Secure entry
  - Vestibule contains a lot of glass; not bullet-proof
  - Electric strike needed on doors linking reception to the entry vestibule and to the corridor and on all exterior doors; key FOB system exists
  - Intercom system desired
  - Pass-through window desired
- Exterior/Site
  - Some fencing, but field and play areas are not entirely enclosed; limits play during drop-off/pick-up
  - Much of sidewalk leading to ELC is cracking/buckling, tripping hazard
  - Parent drop-off/pick-up areas are not well defined; lack of separation/curb between buses, walk areas and play areas
  - No shaded areas for outside play or seating
  - Lack of signage for vehicle access and regulation
    - Parent pick-up/drop-off
    - Traffic direction
  - No dividers between facing parking stalls; cars unsafely cut through the parking lot
  - Fencing needed to separate drop-off from parking
  - Lack of proper lighting within parking lots

Mount Horeb Primary Center Entry Vestibule

Department Need:

Many departments and rooms are at capacity or are inadequately sized and supported

CAFETERIA
- Seats 180-200 students per lunch period; (2) lunch periods
- Undersized; pinch-points near areas of high foot traffic (servery and tray return areas)
- Low ceilings
- Sound/acoustics a problem; loud
- Kitchen and equipment are new but not ideal
  - Servery equipment unstable and tips over; safety concern
  - Very long, narrow kitchen space not ideal
  - Could accommodate Early Learning Center if added onto Primary Center building; additional lunch period would be needed
- Receiving/delivery location relative to kitchen not ideal; receiving occurs at main level and delivery items must be moved downstairs to lower level kitchen

GYMNASIUM
- Lack of storage for chairs and floor tarps
- Motorized bleachers desired

CLASSROOMS
- Near capacity; rooms/spaces that could be utilized as classrooms currently serve other functions that would need to be replaced elsewhere
- South-facing classrooms need new window shades; lack of control of direct sunlight compromises visibility of SMART board

ART
- Large casework within the classroom allows for inefficient use of space
- Lack of shelving within the kiln room

SPECIAL EDUCATION
- Undersized; space for therapist's office and small group instruction desired
- Wiring for FM system

STAFF RESTROOMS
- Third floor has largest need; one staff bathroom per floor required
- Existing staff bathrooms used by students who are afraid to use automatic flush toilets and Dyson hand dryers in group bathrooms
- Space for nursing mothers desired

HEALTH
- Current layout ideal
- Would require expansion if ELC addition onto PC building was pursued

LARGE GROUP INSTRUCTION/ACTIVITY ROOM
- Undersized, not soundproofed, and not in an accessible location to all grade levels; would prefer to be located near main entry to the building to allow for better visibility/security and community accessibility

Mount Horeb Primary Center Cafeteria

Mount Horeb Primary Center Classroom

ROOF TYPOLOGIES

MECHANICALLY-FASTENED EPDM ROOF, 2012:

1 2 3 4 5 6

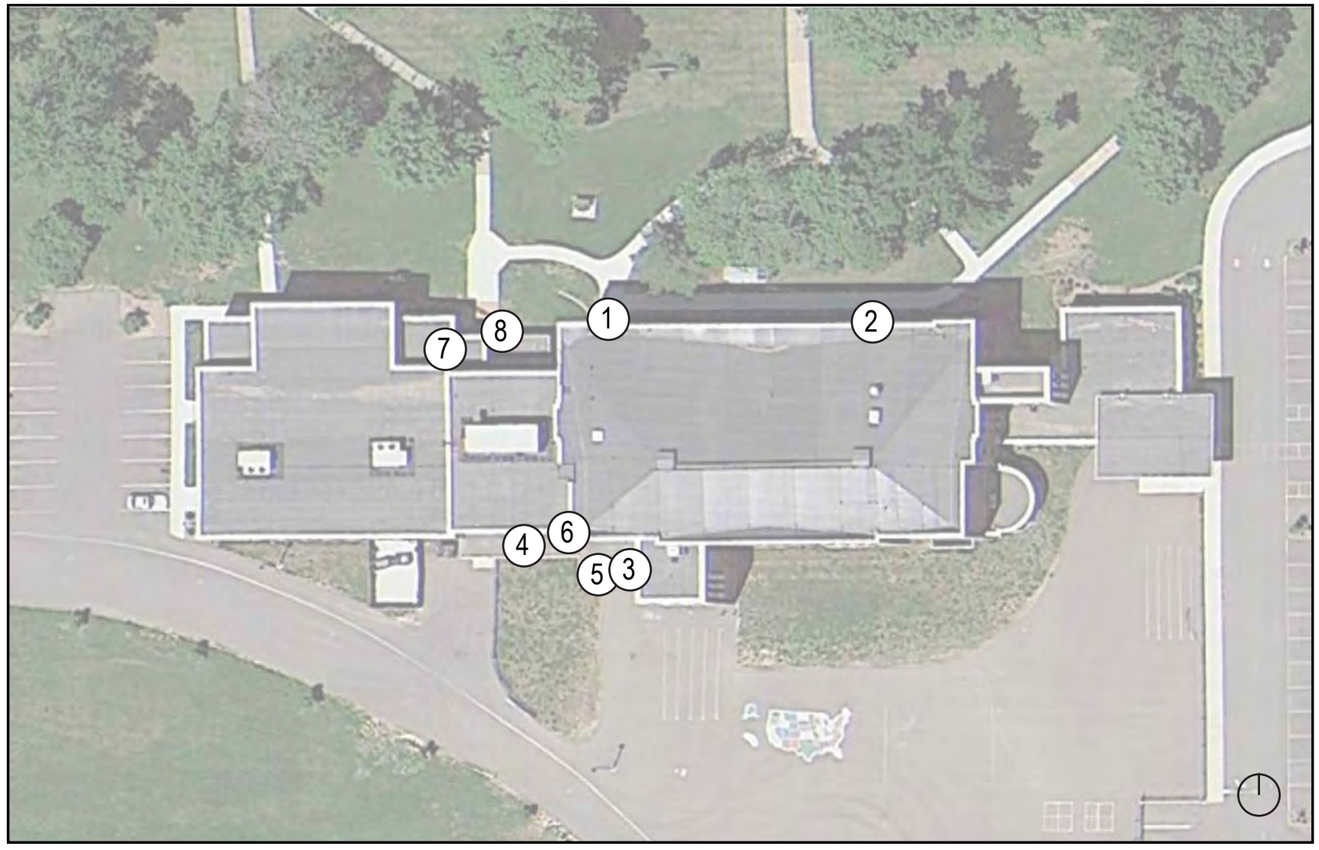
7 8 9 10 11 12

* MIX OF GUTTERS AND INTERNAL DRAINS.

* LEAKAGE PROBLEMS NEAR HVAC EQUIPMENT IDENTIFIED BY OWNER AT ROOF: 5

ROOF PLAN

not to scale

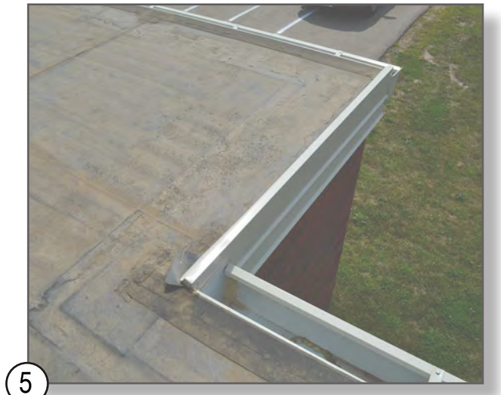


1 ROOF EDGE

2 ROOF DRAIN

3 ROOF TO WALL CONNECTION WITH GUTTER

4 ROOF CONDITION WITH VENTS

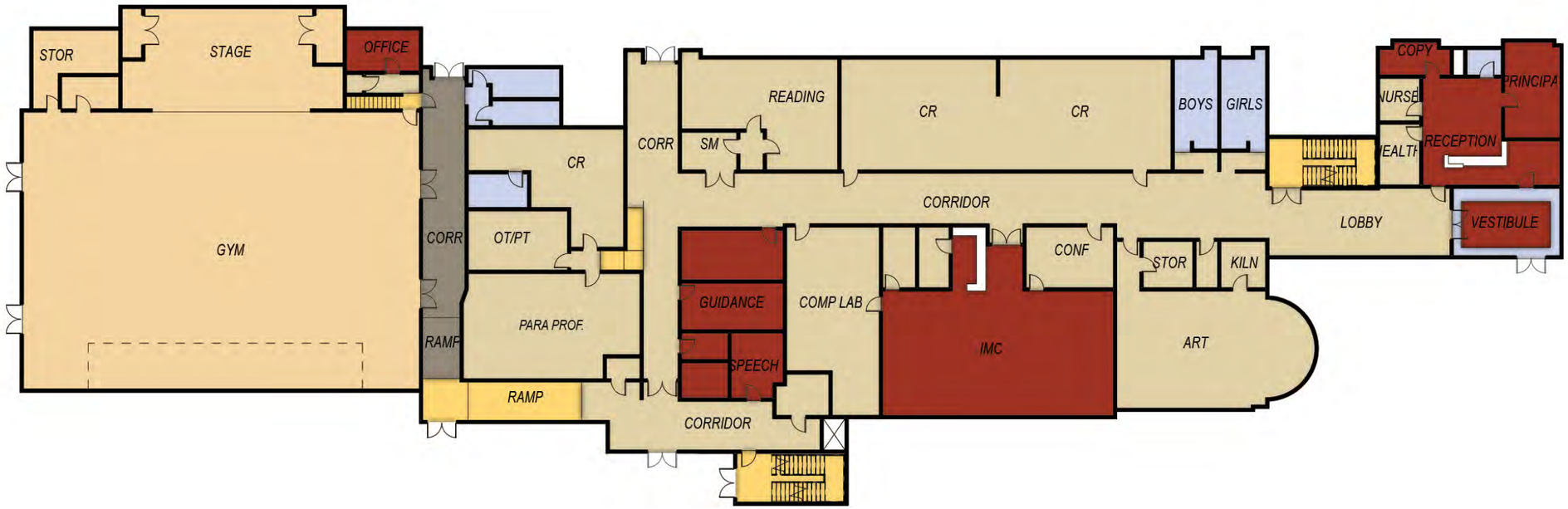


5 CORNER ROOF EDGE WITH GUTTER

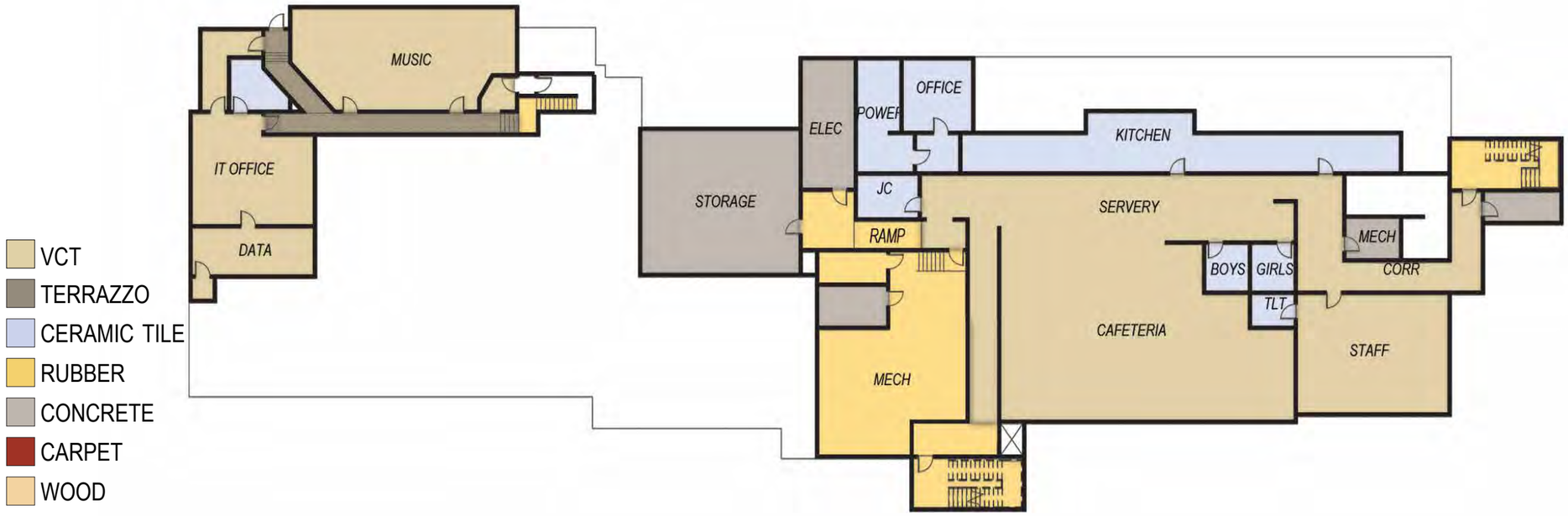
6 ROOF TO WALL CORNER CONNECTION

7 ROOF EDGE

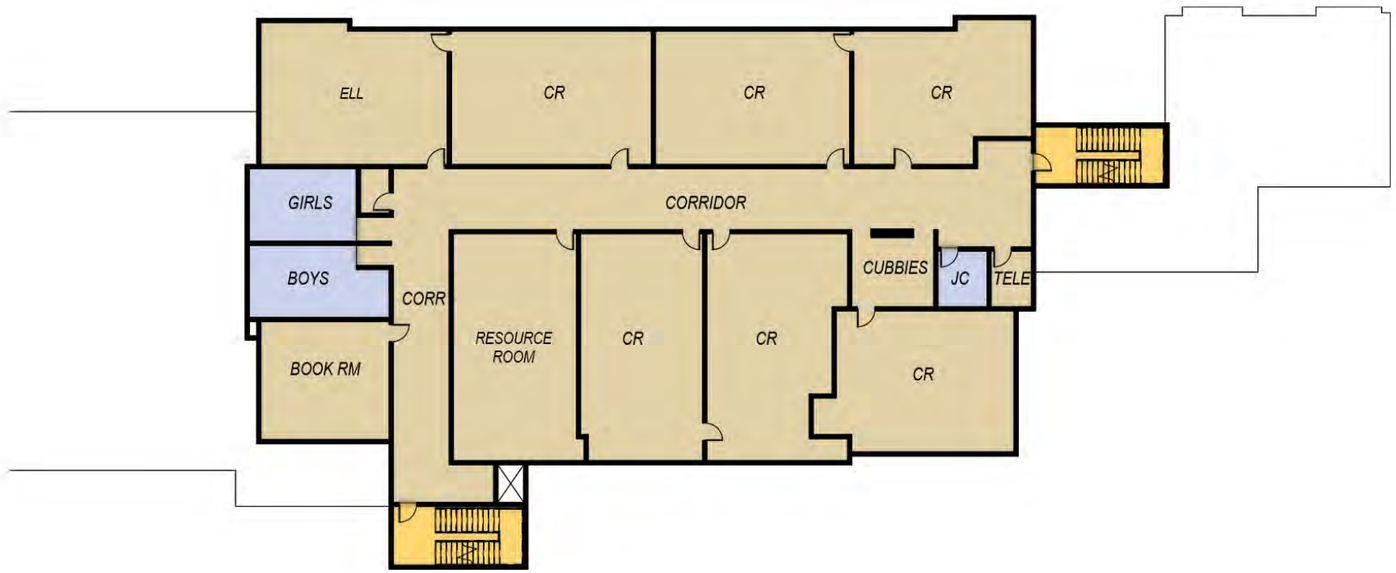
8 MULTIPLE ROOF EDGES



FIRST FLOOR PLAN
not to scale

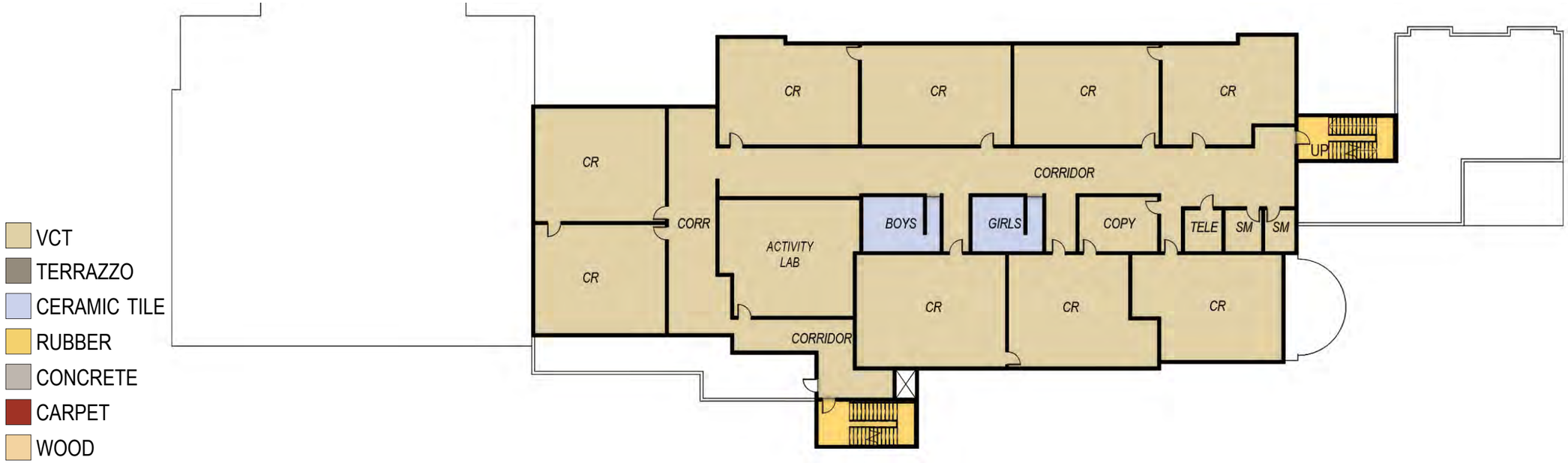


LOWER LEVEL FLOOR PLAN
not to scale



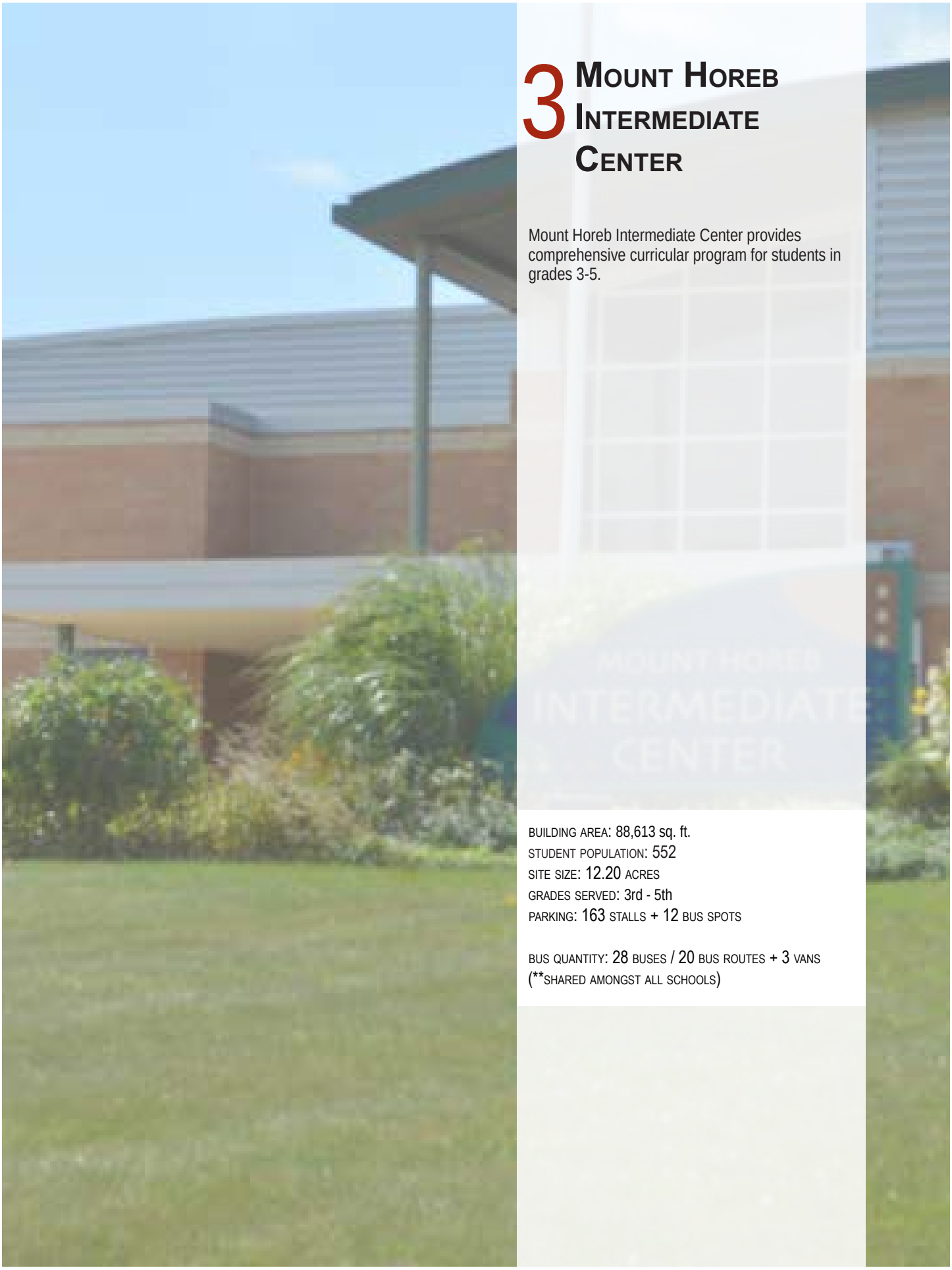
THIRD FLOOR PLAN

not to scale



SECOND FLOOR PLAN

not to scale



3 Mount Horeb Intermediate Center

Mount Horeb Intermediate Center provides comprehensive curricular program for students in grades 3-5.

BUILDING AREA: 88,613 sq. ft.
STUDENT POPULATION: 552
SITE SIZE: 12.20 ACRES
GRADES SERVED: 3rd - 5th
PARKING: 163 STALLS + 12 BUS SPOTS

BUS QUANTITY: 28 BUSES / 20 BUS ROUTES + 3 VANS
(**SHARED AMONGST ALL SCHOOLS)

MOUNT HOREB INTERMEDIATE CENTER: BUILDING EVOLUTION

Mount Horeb Intermediate Center was constructed in 2001, and has endured no additions or renovations since its initial construction.

The following building evolution diagrams outline the original building and additions made over time to accommodate student enrollment growth.

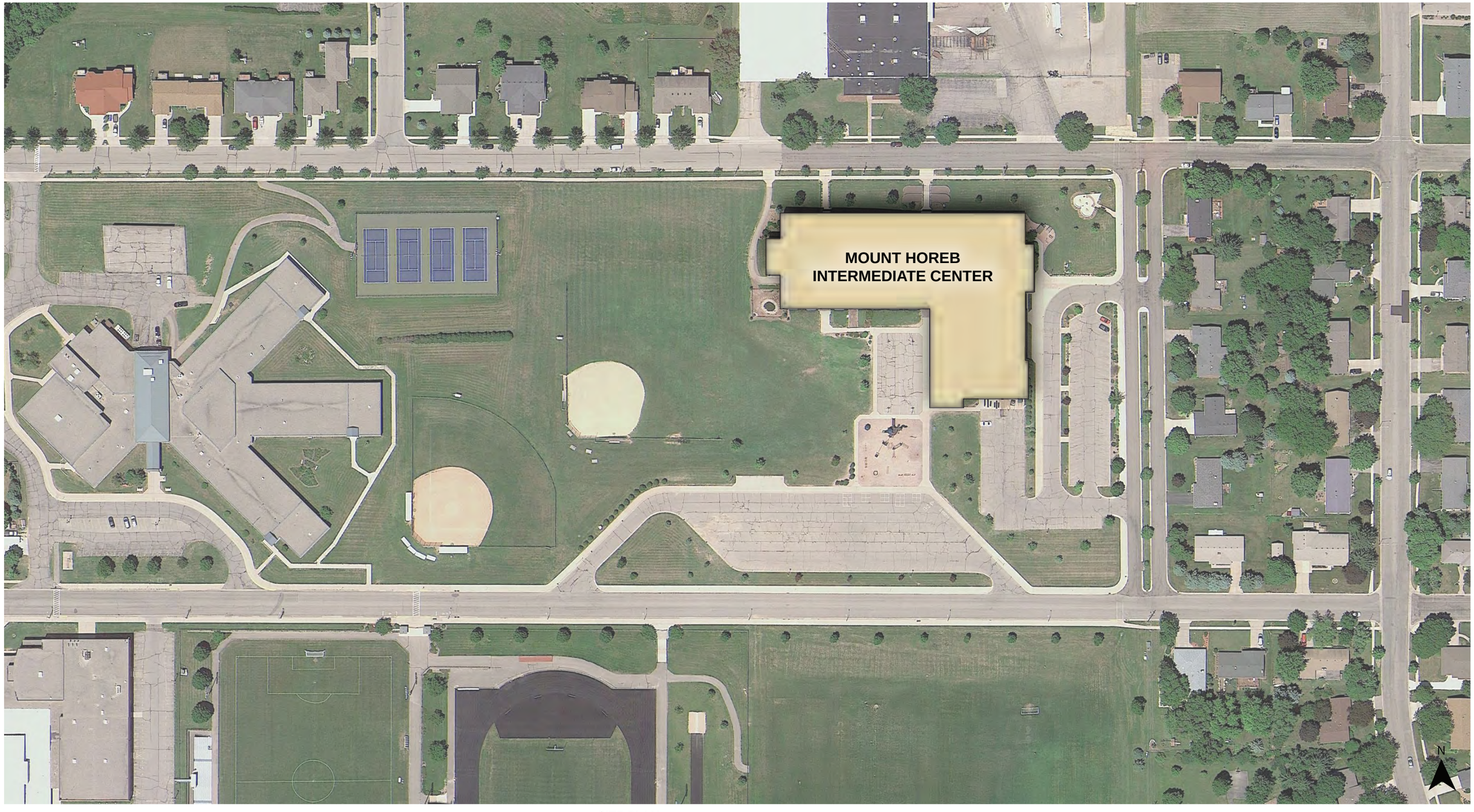
Mount Horeb Intermediate Center Main Entrance

Mount Horeb Intermediate Center Classroom

Mount Horeb Intermediate Center Secure Entry

FIRST FLOOR PLAN
not to scale

2001 - ORIGINAL



SITE PLAN
not to scale

MOUNT HOREB INTERMEDIATE CENTER: EXISTING FLOOR PLAN

FIRST FLOOR PLAN
not to scale

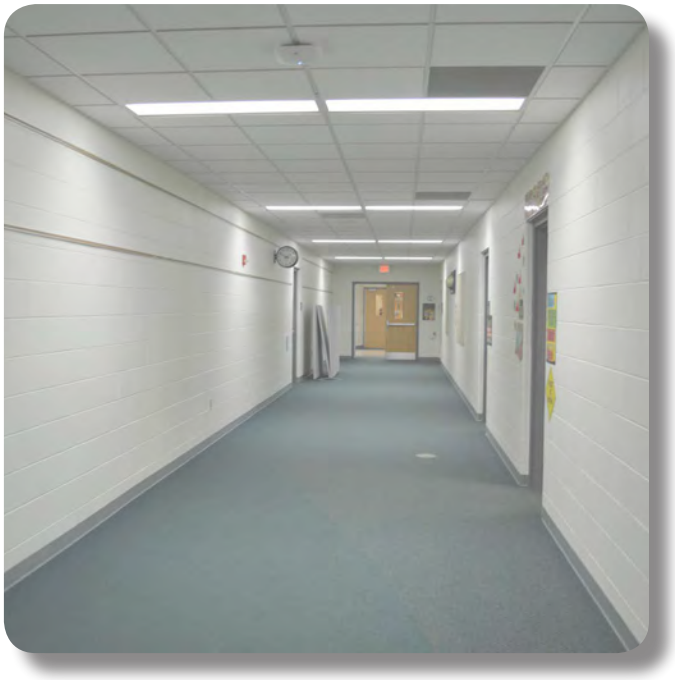
LOWER LEVEL FLOOR PLAN
not to scale

EXISTING

The following is a summary of potential improvements at Mount Horeb Intermediate Center. This is not intended to be a comprehensive list, but a summary of possible upgrades as identified by staff members, district leadership, school board members, architects and engineers. In order to generate this list, numerous meetings and listening sessions were held by district leadership and Bray Architects with the objective of casting a broad net to try and gather as much feedback regarding needs as possible.

Infrastructure/Maintenance:

- HVAC
  - Inconsistent air temperature
- Electrical Upgrades
  - Lighting within classroom is difficult to control and compromises visibility of SMART board
  - Electrical problems noted by owner in classrooms south of the library
  - Wireless internet/technology upgrades; SMART boards outdated
- Carpeting buckling and showing wear at seams
- New/more colorful paint desired throughout to improve wayfinding; potential for murals, school logo or mission statement
- Some exterior doors fail to close; replacement needed
- Exterior concrete steps failing



Mount Horeb Intermediate Center Corridor

Academic, Educational/Student Life:

- Failure to meet ADA accessibility code requirements and/or meet the needs of handicapped students in the classroom
- No small group instruction space
  - (2) Sensory rooms/specialists desired
  - Lack of collaboration/meeting space with adequate technology for staff use at each grade level
- Outdoor classroom/school garden desirable

Safety and Security Upgrades:

- Secure entry
- Camera system upgrade to include recording
- FOB access and electric strike upgrades to all doors
  - Auto-lock and notification capability
  - Door access control of interior office door to school corridor
  - Front door access for staff during non-school hours
- (2) Parent drop-off/pick-up lanes desirable to allow for pass-through traffic

Mount Horeb Intermediate Center Steps

Department Need:

Many departments and rooms are at capacity or are inadequately sized and supported

CAFETERIA
- Seats 200 students per lunch period; (3) lunch periods
- Sound/acoustics a problem; loud
- Sufficient kitchen and servery with walk-in cooler and freezer

ATHLETICS/GYMNASIUM
- Undersized/lack of gymnasium space
  - Currently (2) classes being taught in existing gymnasium at once
  - Multipurpose/gymnasium space with stage desired; (1) gym station to (1) full-size court included
  - Small locker rooms/changing rooms desired for visiting teams/community use (60+ kids) and unisex toilet

LIBRARY
- No areas for small group instruction; original rooms taken over by reading specialist and sensory room functions
- Would prefer less tables, more flexible seating and groups of tables with computers

COMPUTER ROOMS
- Limited availability of existing computer rooms
- Current computer rooms are outgrown and do not support academic need; (1) lab space per grade level desired
- Creative/flexible seating and equipment upgrades desired

CLASSROOMS
- Near capacity; rooms/spaces that could be utilized as classrooms currently serve other functions that would need to be replaced elsewhere
- Currently (3) grade levels with (8) to (9) sections supported per grade level; 24 students per class ideal
- Additional storage and outdoor classroom desired

SPECIAL EDUCATION
- Undersized classrooms and office space for therapy staff, psychologist and social worker
- Wiring for FM systems
- Access to another level in the Step Room

STAFF LOUNGE/WORK ROOM
- Existing lounge location is too public/open and loud; secluded area desired
- Lack of collaboration/meeting space with adequate technology for staff use

OFFICES
Office flow to para-professionals needs reconfiguration

READING
- (1) Book room/resource room desired

GIFTED & TALENTED
- Access (door) to corridor desired
- Conference/SGI space for 10-25 people desired

Mount Horeb Intermediate Center Computer Room

Mount Horeb Intermediate Center Staff Lounge

The following is summary of Plumbing, HVAC and Electrical needs. Full engineers' reports are located later in this document.

Plumbing:

• Domestic water piping is in good condition and the water service is large enough to provide fire protection for the building. Investigate the option for fire protection.

• Sanitary piping is in good condition and has a gravity drained system that discharges to the street. An interior grease interceptor in the kitchen and plaster traps in the art room sinks are all in good condition.

• Storm piping is a gravity drained system that is in good condition.

• Water softener is in good condition and is adequately sized.

• Remove existing water heater for the kitchen and install a new sealed combustion water heater to be manifolded together with the domestic water heater for the building.

• Plumbing fixtures are generally in good condition. Provide continual maintenance on all plumbing fixures, and schedule the faucets on the lavatories for replacement.

HVAC

• Boilers are in very good condition, boiler water chemical systems are in place and properly maintained, and insulation is in good condition. Continue preventative maintenance and install variable frequency drives and pressure differential control for the hot water distribution pumps for greater energy efficiency. Reduce by-pass flow to only that necessary to prevent pump damage at minimum system flow.

• Ventilation and air conditioning systems are in good condition and are functioning as intended. Some of the fan powered vav box fans have failed when paper construction labels have come loose fromt the ductwork and have become lodged in the fan. Little can be done to prevent this from occurring, but continue preventative maintenance on the system.

• The existing Building Automation System of automatic temperature control is in good condition, can be monitored at the main operator workstation in the building or remotely at the district office, and is acessed through the district IT system. Continue preventitive maintenance and updating of the software on the system.

Electrical:

• Add to the main electrical service if required to accommodate additional load. If a large building addition is planned, the service will need to be evaluated.

• Panelboards are new and have room for additional breakers.

• Generator is natural gas fired and air cooled, located outside in a locked and shared utility transformer enclosure, contains a life safety switch, and can accommodate additional small loads if required.

• Consider replacing exterior lighting with LED type.

• Fire alarm system, clock system, and public address system can be added to. There is no CATV service to the building.

• Phone system is non IP type; possible upgrade to IP solution.

• Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added. If building addition requires data cable to have a total installed length of over 300 feet, then additional IDF data rack is required.

• A stand-alone non networked keyless entry system is present. If desired, provide a new Networked keyless entry system by reusing existing strikes and readers and installing new data to a controller at door and new software; this allows for an IP based network system.

Mount Horeb Intermediate Center Toilet Room

ROOF TYPOLOGIES

45 MIL BALLAST EPDM ROOF, INTERNALLY DRAINED:
1 4 5

STANDING SEAM METAL ROOF WITH GUTTERS:
2

MECHANICALLY-FASTENED EPDM ROOF WITH GUTTERS:
3

BALLUST METAL ROOF CANOPY WITH GUTTERS:
6 7 8 9 10 11 12

*ALL ROOFS DATE TO 1993 ORIGINAL CONSTRUCTION.

*LEAKAGE PROBLEMS IDENTIFIED BY OWNER AT ROOFS: 1 4

ROOF PLAN
not to scale

1 ROOF EDGE WITH METAL COPING

2 CANOPY AND ROOF EDGE CONDITIONS

3 ROOF TO WALL CONNECTION

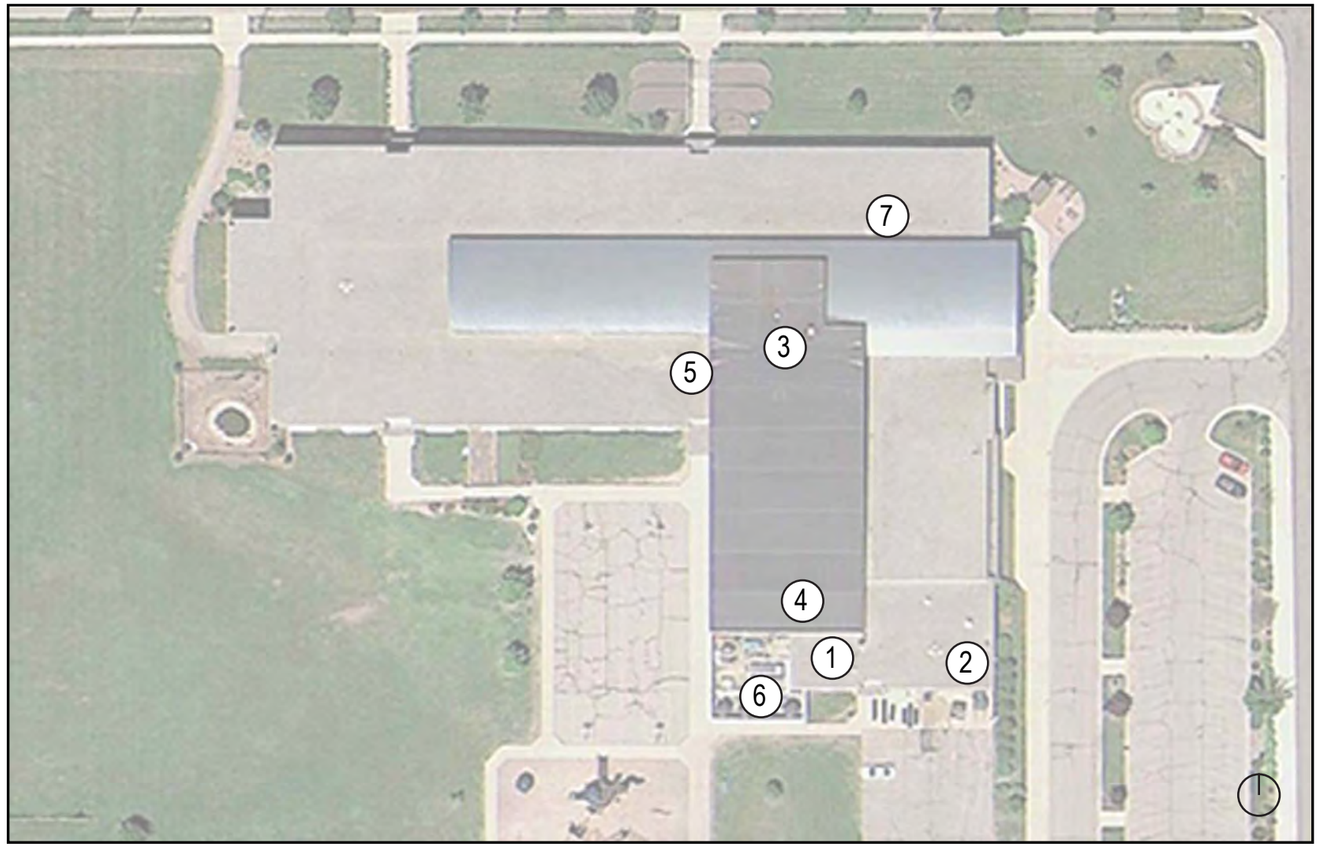
4 METAL ROOF AND FLASHING CONDITION

5 ROOF TO WALL CONNECTION AT CLERESTORY

6 ROOF EDGE

7 ROOF TO WALL CONNECTION AT CLERESTORY

8 CURVED ROOF



1 ROOFTOP VENTS & FANS

2 ROOFTOP VENTS & FANS

3 ROOFTOP MECHANICAL FAN

4 ROOFTOP VENTS

5 MECHANICAL EQUIPMENT & LOUVRE

6 MECHANICAL EQUIPMENT (AT GRADE)

7 ROOFTOP MECHANICAL FAN

- VCT
- CERAMIC TILE
- RUBBER
- CONCRETE
- CARPET
- WOOD

LOWER LEVEL FLOOR PLAN
not to scale

FIRST FLOOR PLAN
not to scale

4 Mount Horeb Middle School

Mount Horeb Middle School provides comprehensive curricular program for students in grades 6-8.

BUILDING AREA: 92,500 sq. ft.
STUDENT POPULATION: 544
SITE SIZE: 11 ACRES
GRADES SERVED: 6th - 8th
PARKING: 83 STALLS + 11 BUS STALLS

BUS QUANTITY: 28 BUSES / 20 BUS ROUTES + 3 VANS
(**SHARED AMONGST ALL SCHOOLS)

MOUNT HOREB MIDDLE SCHOOL: BUILDING EVOLUTION

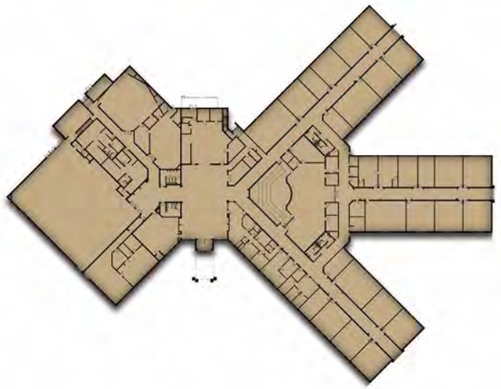
Mount Horeb Middle School was originally constructed in 1993, and contains one addition from 2000.

The following building evolution diagrams outline the original building and additions made over time to accommodate student enrollment growth.

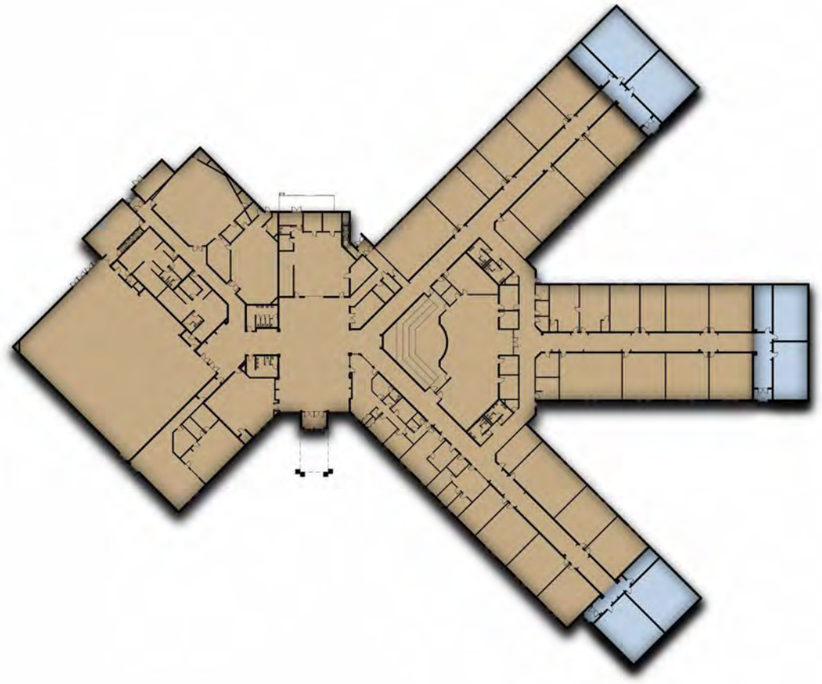
Mount Horeb Middle School Main Entrance

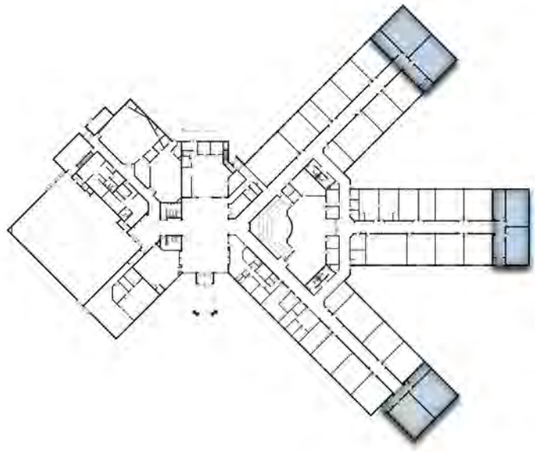
Mount Horeb Middle School Classroom

Mount Horeb Middle School Corridor



1993





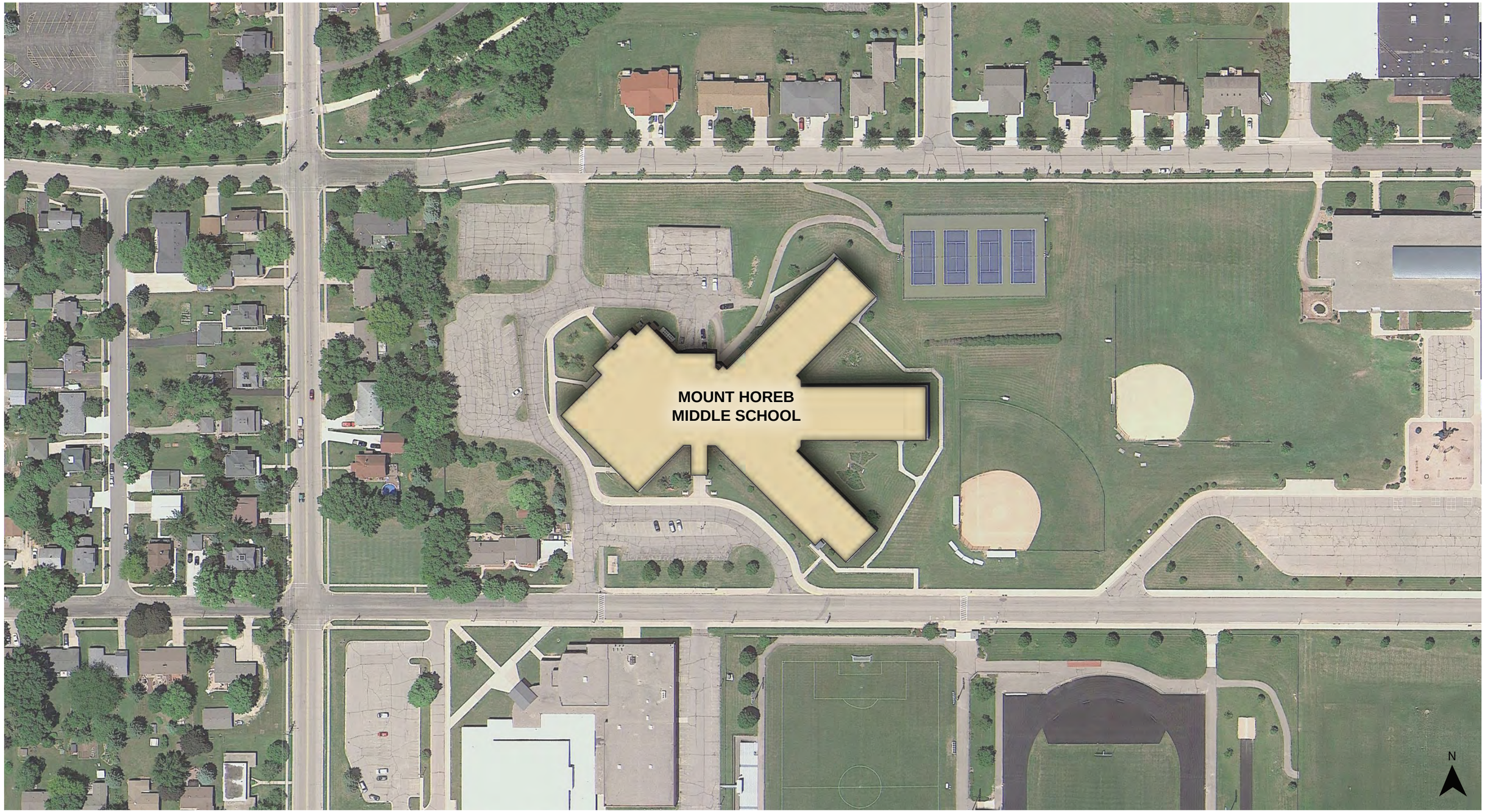
2000

FIRST FLOOR PLAN

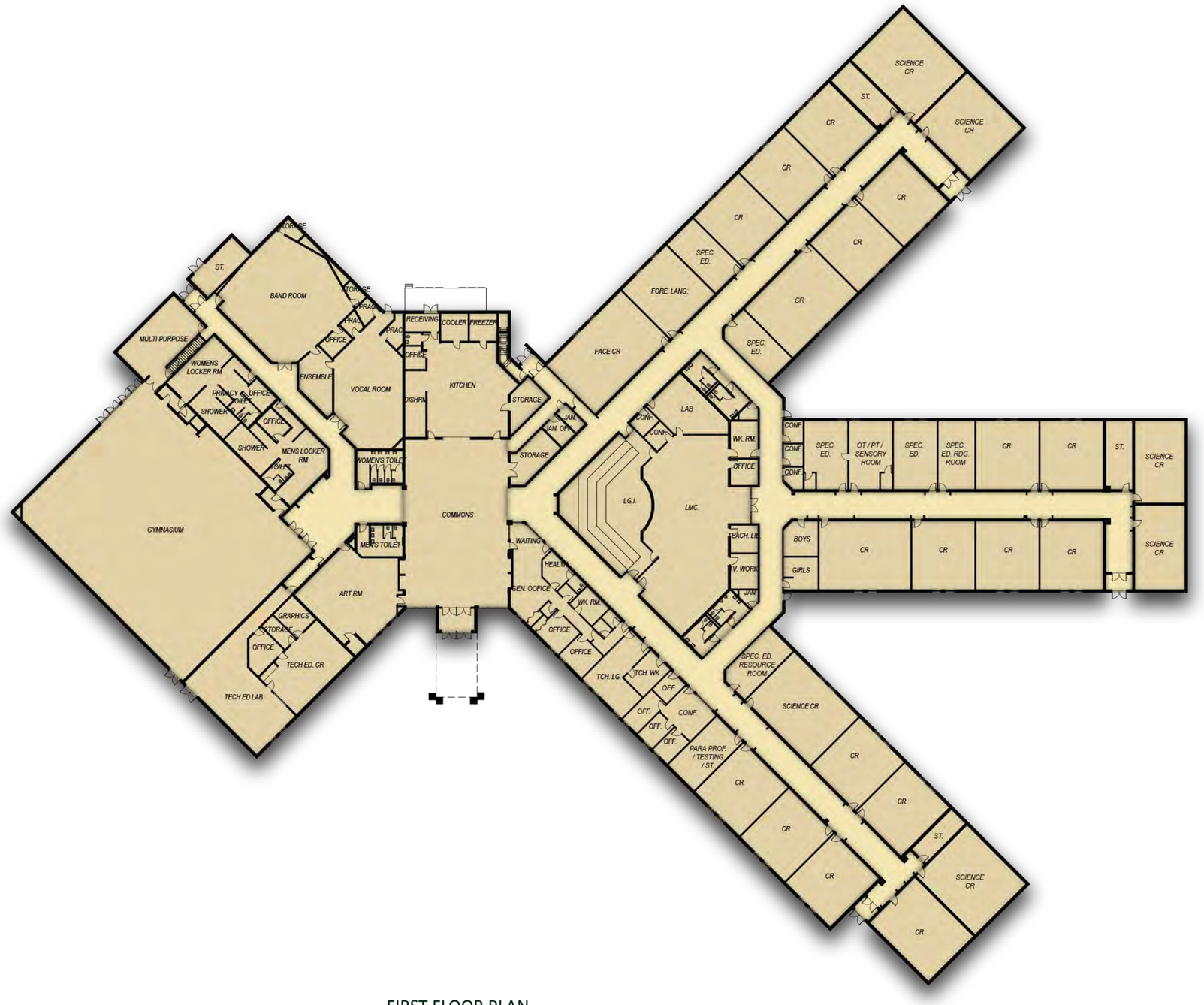
not to scale

1993 - ORIGINAL

2000 - ADDITION



SITE PLAN
not to scale



EXISTING

FIRST FLOOR PLAN

not to scale

MOUNT HOREB MIDDLE SCHOOL: NEEDS ASSESSMENT

The following is a summary of potential improvements at Mount Horeb Middle School. This is not intended to be a comprehensive list, but a summary of possible upgrades as identified by staff members, district leadership, school board members, architects and engineers. In order to generate this list, numerous meetings and listening sessions were held by district leadership and Bray Architects with the objective of casting a broad net to try and gather as much feedback regarding needs as possible.

Infrastructure/Maintenance:

- HVAC
  - Ventilation issues identified by owner near locker rooms, Tech. Ed. Department, and throughout
  - Students with environment allergies an issue
- Electrical Upgrades
  - Gymnasium sound system inadequate
  - Gymnasium technology upgrade to include heart rate monitoring, exercise and wellness equipment
  - P.A. system upgrade
  - Clock system upgrade
  - Phone system upgrade
- New gymnasium floor planned for next summer
- Roof replacement/roof repair needed; roof vents need repainting
- Carpeting buckling; replacement needed throughout
- Replacement of worn/buckling floor tile
- Replacement of rusted out (hollow metal) door frames
- Replacement of caulking around windows and doors
- All asphalt needs repaving
- Outdoor basketball court sidewall requires further investigation
- Replacement or repainting of corridor lockers

Mount Horeb Middle School Carpet Conditions

Academic, Educational/Student Life:

- Failure to meet ADA accessibility code requirements and/or meet the needs of handicapped students
  - Exterior doors to corridor near kitchen on north side of building leading to playground
  - Front entrance
  - No ADA-accessible toilets nor adequate changing areas
  - STEP room levels
- Wider corridors or removal of lockers in corridors preferred
- Insufficient parking and traffic flow
  - Paved play area overlaps with receiving and dumpsters
- No playground equipment

Safety and Security Upgrades:

- No secure entry
- Electric strike upgrades to all exterior doors
  - Most exterior doors are FOB-controlled
  - Exterior doors do not close well
- No camera/recording security system
- Tornado shelters are small; some are used as storage
- Exterior/Site
  - No separation between playground area and loading dock
  - Exterior lighting upgrades and additions needed
  - Supervision difficulty on rear sides of building

Mount Horeb Middle School Main Entry

Department Need:

Many departments and rooms are at capacity or are inadequately sized and supported

CAFETERIA
- Seats (1) grade level per lunch period; (3) lunch periods
- At capacity; not enough space to hold all students for waiting before and after school
- Sufficient kitchen and servery with walk-in cooler and freezer

GYMNASIUM
- At capacity with gym space; additional separate gym/wrestling room with (1) court/station desired
- Adaptive P.E. space desired
- No wrestling room
- Undersized locker rooms, offices and storage
- No community access

LIBRARY MEDIA CENTER
- No areas for small group instruction or staff work room
- Insufficient storage
- Concerns with separation of student and teacher printing/ copying
- Noise from adjacent Step Room

MUSIC
- Undersized band and choir rooms; no designated orchestra room
  - Band room for 120 seated desired
  - Choir room for 120 seated desired
  - Orchestra for 40 seated desired
- Lack of instrument, equipment and music library storage; additional casework with sink and storage/shelving for musical props and costumes desired
- Shared office suite with vision glass into rooms desired; desks for (4) teachers and (1) student teacher
- Lack of practice rooms; (5) banked practice rooms desired
- No mini-lab
- No space for show choir
- Acoustical soundproofing of all music and practice rooms inadequate

ART
- Undersized

TECH. ED.
- Undersized and antiquated
- Separate woods lab/manufacturing lab from computer lab preferred
- Possible future S.T.E.M. integration
- Visibility/accessibility issues

LARGE GROUP INSTRUCTION/STEP ROOM
- Undersized; ideally would like to seat 200 or one grade level
- Underutilized due to tiers; non-flexible space

CLASSROOMS
- Currently, (3) grade levels with (8) sections supported per grade level
  - (8) Classrooms, (1) Flexible Classroom, and (1) Flexible Technology/Resource Room desired
- 6th Grade prefers to remain as part of Middle School facility
- Separate classroom for health teacher desired
- Lack of small group instruction space
- Lack of large group instruction space
  - Existing STEP room is undersized; would need to hold (1) grade level
  - Mini-auditorium desired
- Lack of storage; storage rooms have been converted to classroom/teaching space
- Lack of toilets throughout the building; (1) set of student bathrooms and (1) unisex/staff toilet desired per grade level
- Lack of staff work rooms with copiers

FOREIGN LANGUAGE

- Undersized; currently (1) classroom with all other teachers on carts, and classroom is sometimes used by other faculty for computer lab space
  - (3) Classrooms needed with one of classroom larger in size; (4) classrooms ideal
  - Department office needed
    - Faculty travel between High School and Middle School
    - Students, parents and staff have difficulty contacting teachers who are on a cart
- Foreign language department with all classrooms in close proximity to one another is preferred

OFFICES & HEALTH

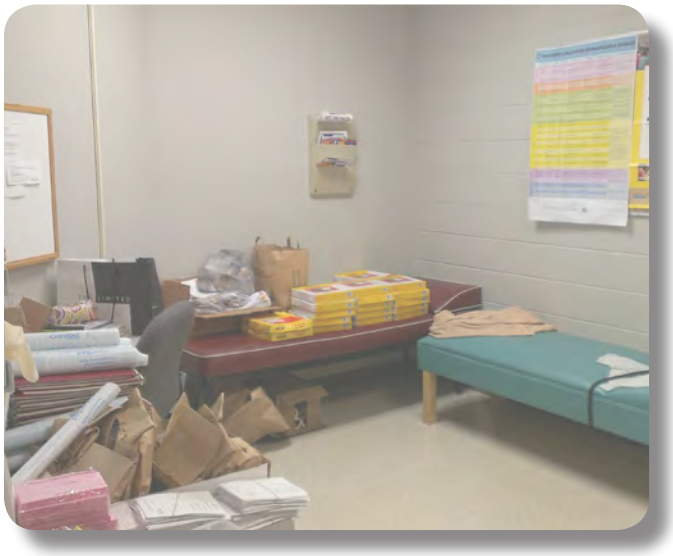
- Undersized; inadequate space to support current front desk personnel
- Lack of privacy/confidentiality
- Lack of conference rooms and collaboration/meeting space with adequate technology for staff use at each grade level
- Existing “fish bowl” conference room lacks privacy and is overbooked
- Health room is undersized
  - Health room and separate nurse’s office desired to maintain confidentiality; location near main office ideal
  - Separate unisex toilet for health room desired
  - Sink within health room desired
  - Emergency alert system desired for throughout the building
- Undersized student services office and storage
  - Conference room with adequate privacy
- Existing staff lounge is undersized

SPECIAL EDUCATION

- Undersized special education classrooms & support spaces
  - Two classrooms connected with shared kitchen, washer/dryer, bathroom and domestic life/work skills space ideal
  - Small group instruction rooms and recreational OT/PT sensory space/”cool down” area desired
  - Swing desired
  - Toilet/changing room with changing table needed
  - Unisex toilet needed per special education classroom
- Existing cafeteria is too loud and crowded for autistic students; additional, quieter cafeteria/commons space desirable
- Wiring for FM systems
- Access to another level in the Step Room
- Sound separation in special education classrooms desired
- Would prefer special education to be spread out throughout entire building (not together as one department)

GREENSPACE

- Underutilized/underdeveloped; outdoor classrooms desired



Mount Horeb Middle School Health Room

MOUNT HOREB MIDDLE SCHOOL: BUILDING SYSTEMS SUMMARY

The following is summary of Plumbing, HVAC and Electrical needs. Full engineers' reports are located later in this document.

Plumbing:

• Water service and water meter are adequately sized for the building and future expansion. Should the building be renovated or expanded, the remaining unsprinkled portion of the building would most likely require fire protection.

• Sanitary and storm piping systems are in good condition. Provide continual maintenance for the grease interceptor, acid basin and plaster traps.

• Schedule the existing water heating equipment for replacement; it is oversized and should be resized for the actual building demand. Install new gas-fired, sealed combustion modulating water heaters.

• Provide a new battery operated sensor flush valve at urinals to comply with ADA requirements. Schedule lavatory faucets and FACE lab faucet for replacement.

HVAC

• Boilers are in good condition, but consider replacement with new high efficiency condensing boilers. Continue preventative maintenance.

• Remove existing pump system throttling valve and install variable frequency drives and digital pressure differential control for direct pump modulation.

• If mechanical couplings in piping system begin leaking even when system is hot or if there is a need to allow boiler plant shutdown, replace the original gaskets and couplings. Maintain existing conditions as long as possible to avoid expensive total system gasket replacement costs that wouldn't justify energy savings.

• Continue preventative maintenance on ventilation and air conditioning systems.

• Remove fan inlet vanes and install frequency drives and digital controls for vav system supply and return air fans.

• Replace air cooled compressor condensing units and vav boxes as they fail. Air handling units are in good condition but need refurbishing within 3-5 years to last another 10 years.

• Continue to maintain and operate digital/pneumatic control system as long as the current mechanical equipment remains. If renovations to existing equipment occurs, changeover to digital controls.

Electrical:

• The main electrical service is in good condition. Small additional loads can be added to this panel.

• Majority of panelboards are new and have room for additions.

• Generator appears to be in good condition; no problems indicated.

• Consider replacement of 2x2 fixtures with LED or T8 lamps and ballasts, and consider replacing exterior lighting with LED type.

• Possible upgrade to fire alarm system to add additional horn strobes in all areas to bring system to full code compliance.

• Clock system and public address sytem can be added to. Possible upgrade to IP solution for phone system. No CATV system service exists.

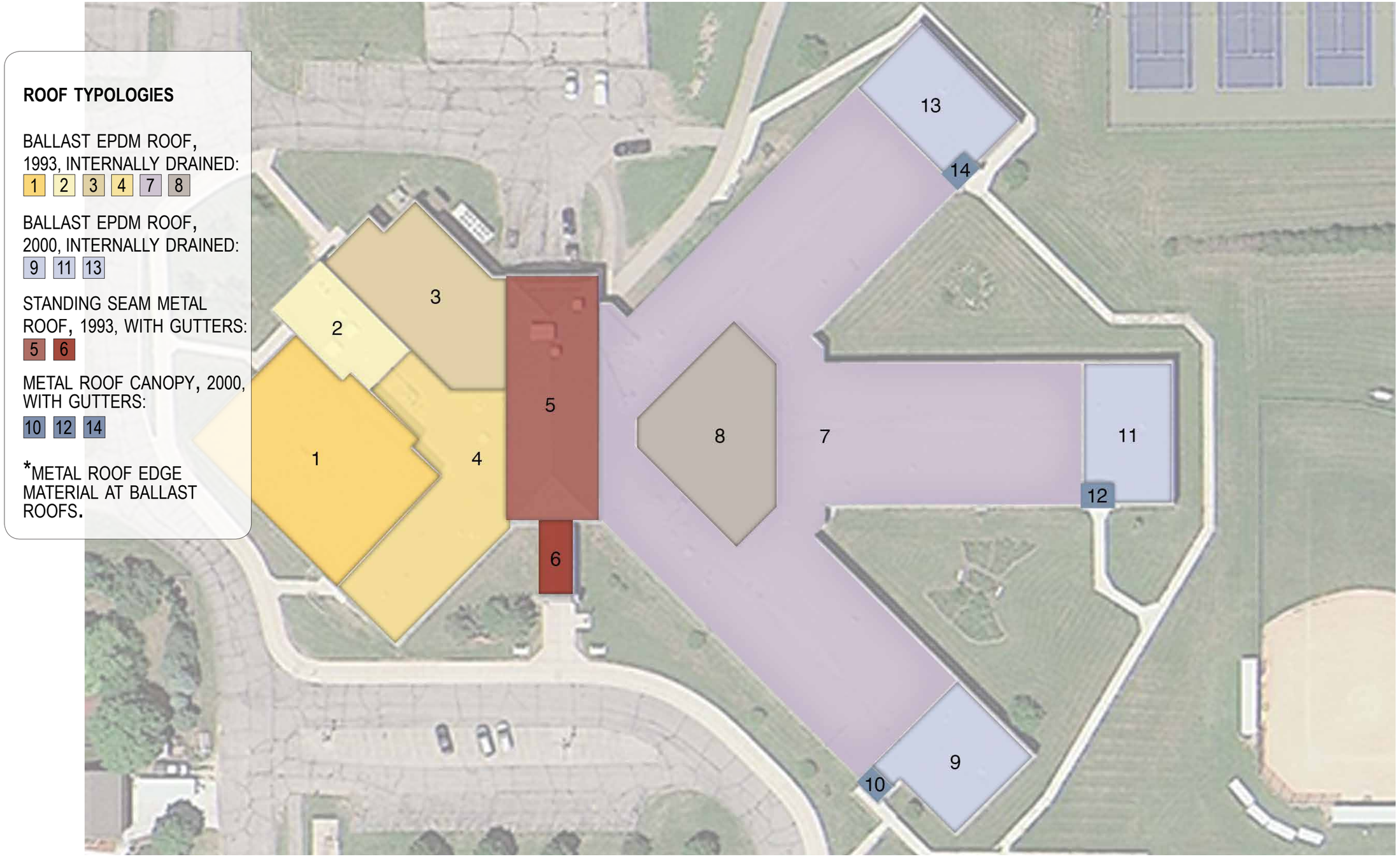
• Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added. If building addition requires data cable to have a total installed length of over 300 feet, then additional IDF data rack is required. Add independent AC to this room.

• Possible upgrade of CCTV system to IP solution with digital cameras and run system over network.

• Provide new Networked keyless entry system by reusing existing strikes and readers and installing new data to a controller at door and new software; this will allow for an IP based network system.

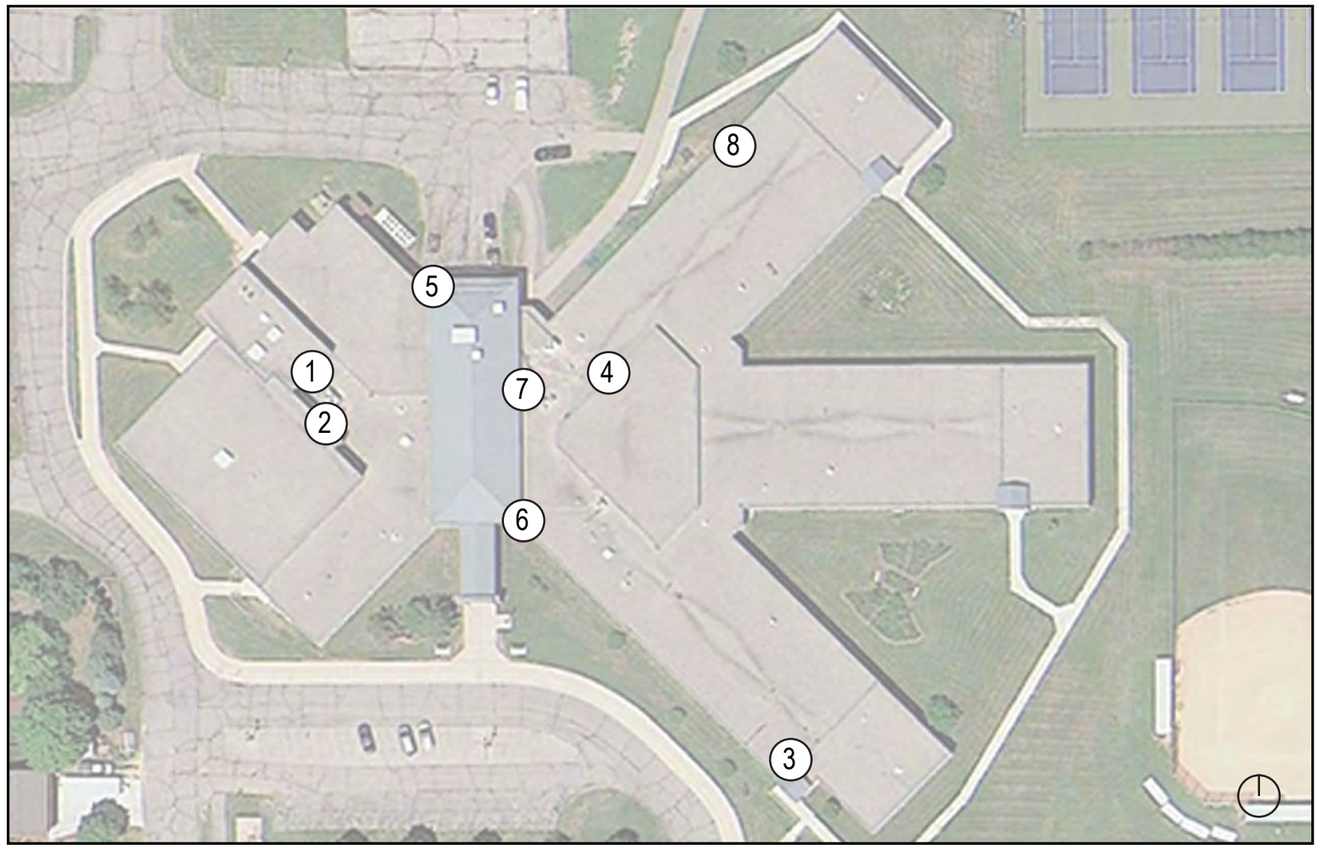
• Staff noted problems with exterior tennis court lighting wiring and controls; may require new wiring and controls.

Mount Horeb Middle School Toilet Room



ROOF PLAN | OVERALL

not to scale



1 METAL COPING

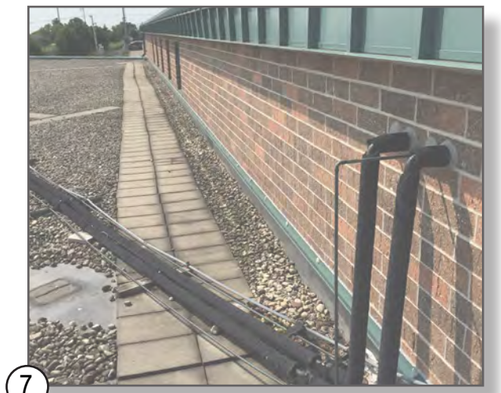
2 ROOF TO WALL CONNECTION

3 STANDING SEAM ROOF WITH SHEET DRAIN

4 ROOF SCUPPER

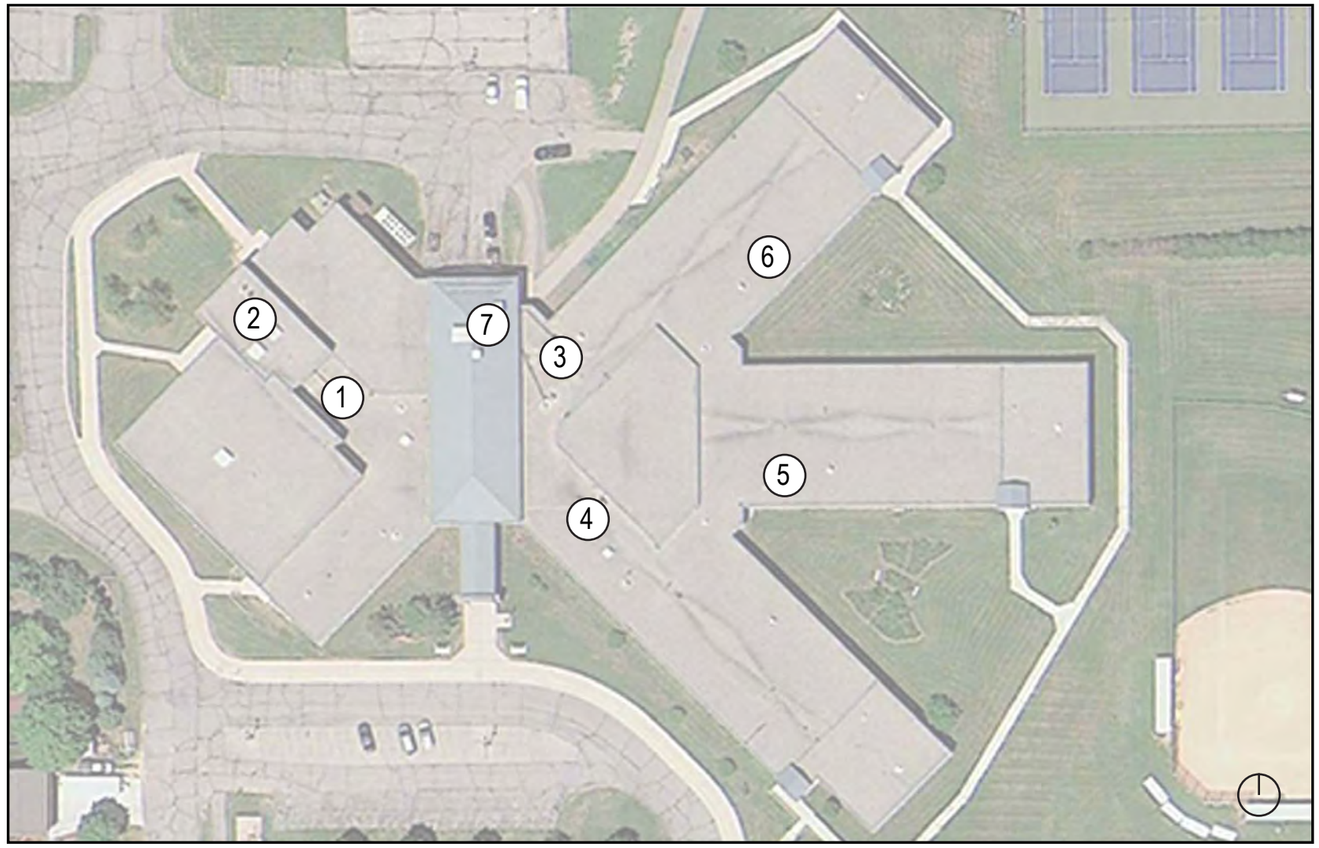
5 METAL GUTTER & SHEET DRAIN

6 ROOF TO WALL CORNER CONNECTION



7 ROOF TO WALL CONNECTION

8 METAL COPING



1 ROOFTOP MECHANICAL UNIT

2 ROOFTOP VENTS

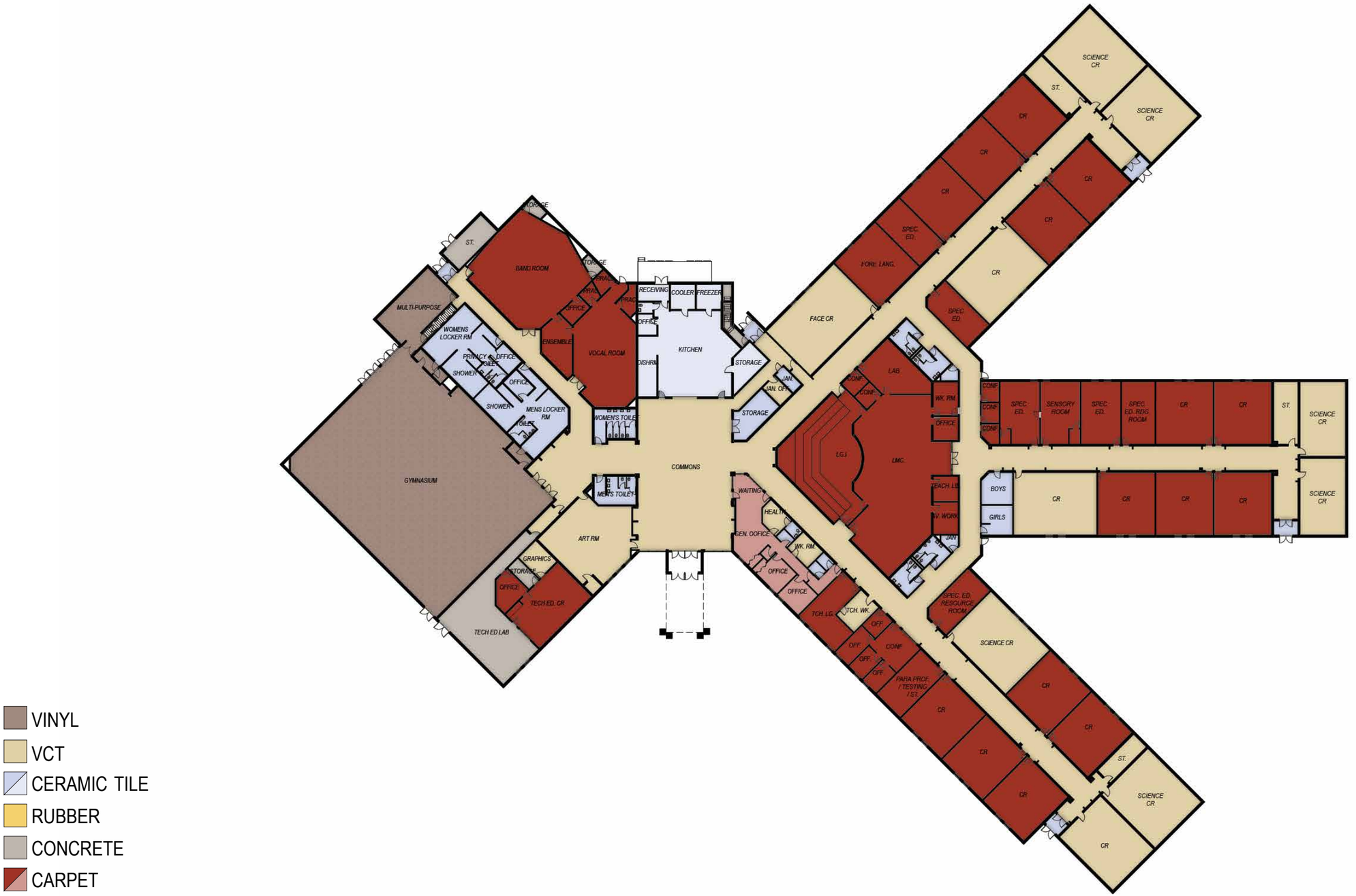
3 ROOFTOP MECHANICAL UNIT

4 ROOFTOP MECHANICAL UNIT & VENTS

5 ROOFTOP FAN

6 ROOFTOP MECHANICAL EQUIPMENT

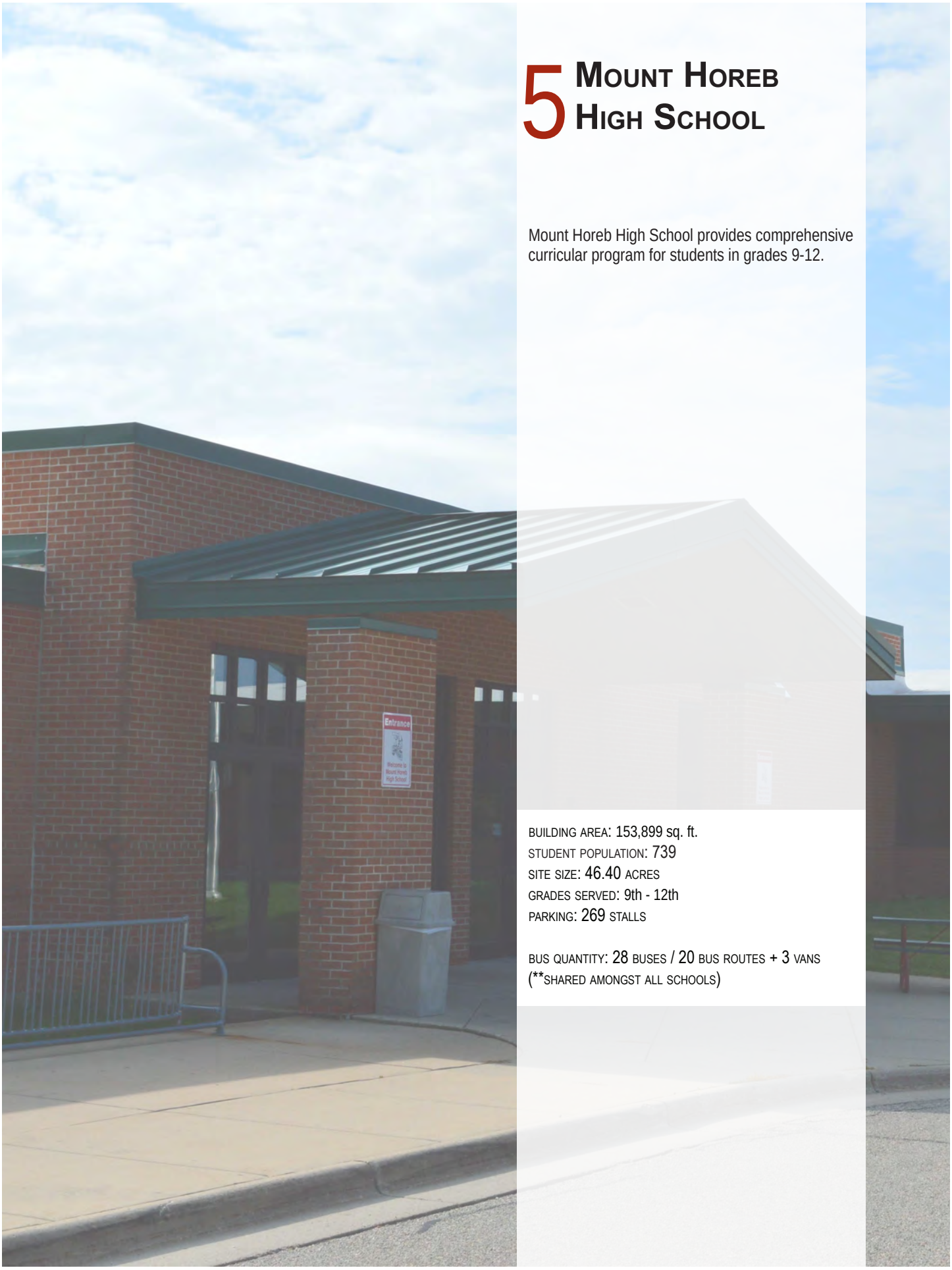
7 ROOFTOP VENTS



- VINYL
- VCT
- CERAMIC TILE
- RUBBER
- CONCRETE
- CARPET

FIRST FLOOR PLAN

not to scale



5 Mount Horeb High School

Mount Horeb High School provides comprehensive curricular program for students in grades 9-12.

BUILDING AREA: 153,899 sq. ft.
STUDENT POPULATION: 739
SITE SIZE: 46.40 ACRES
GRADES SERVED: 9th - 12th
PARKING: 269 STALLS

BUS QUANTITY: 28 BUSES / 20 BUS ROUTES + 3 VANS
(**SHARED AMONGST ALL SCHOOLS)

MOUNT HOREB HIGH SCHOOL: BUILDING EVOLUTION

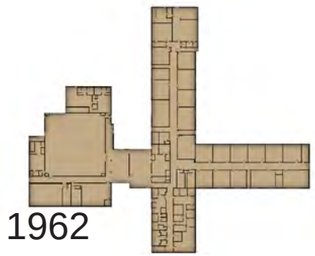
Mount Horeb High School was originally constructed in 1962, and has undergone a series of additions and renovations. The first addition was constructed in 1975 , and was followed by an asbestos removal in 1982. Future additions included a 1987 weight room addition, 1990 locker room addition, 1991 greenhouse addition, 1997 addition and renovation, 2000 concession stand and athletic field complex additions, a 2001 athletic field storage addition, and a 2014 weight room addition.

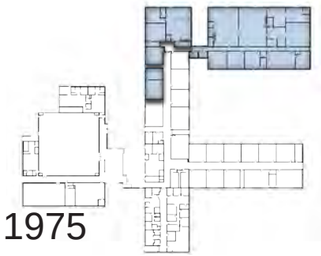
The following building evolution diagrams outline the original building and additions made over time to accommodate student enrollment growth.

Mount Horeb High School Main Entrance

Mount Horeb High School Classroom

Mount Horeb High School Corridor


1962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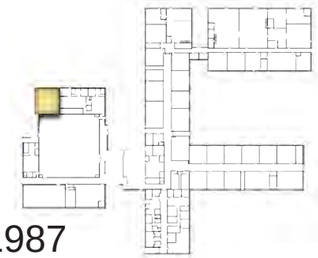
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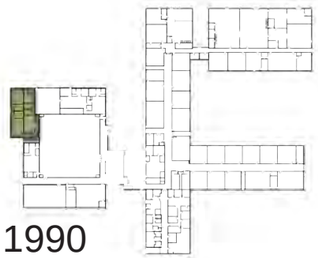
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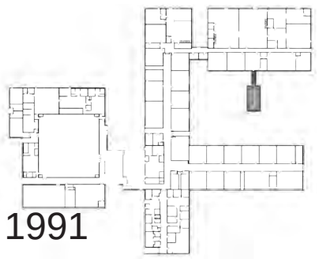
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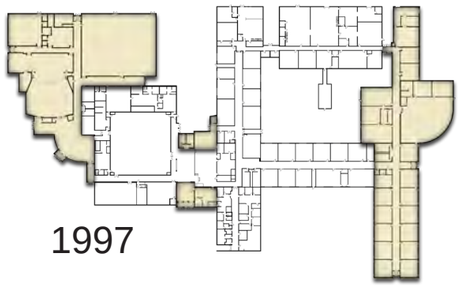
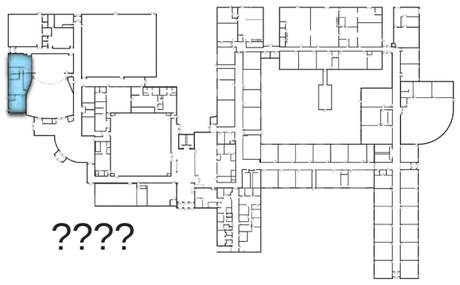

1997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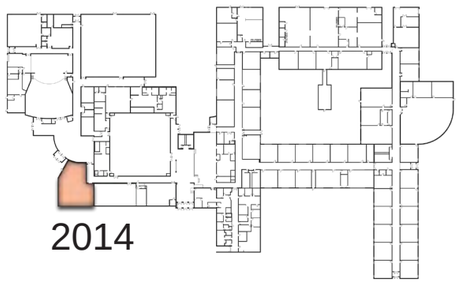
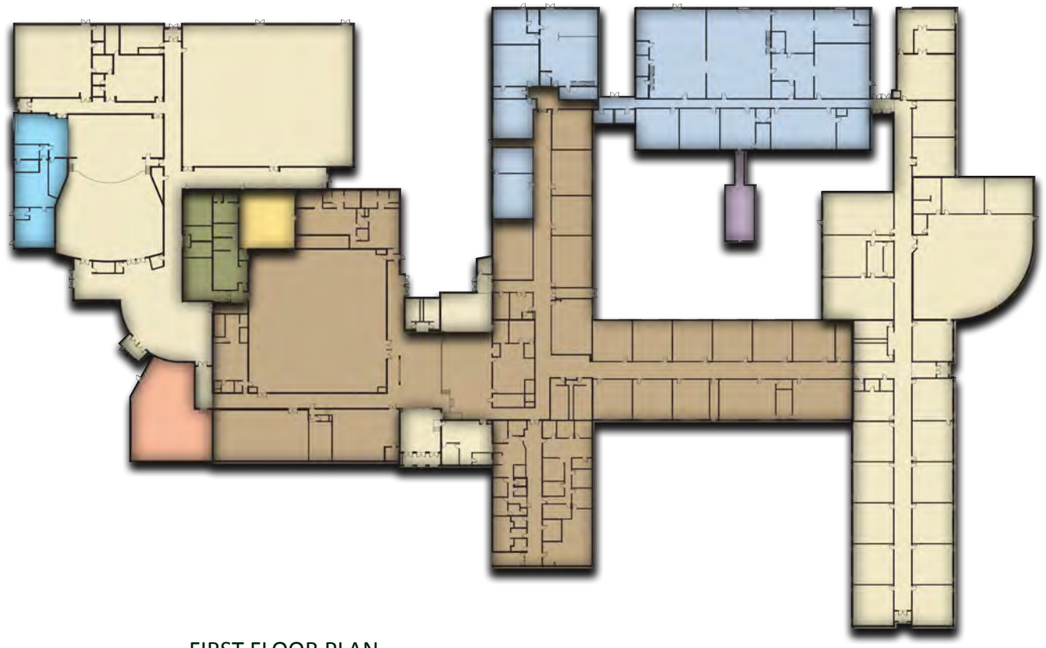
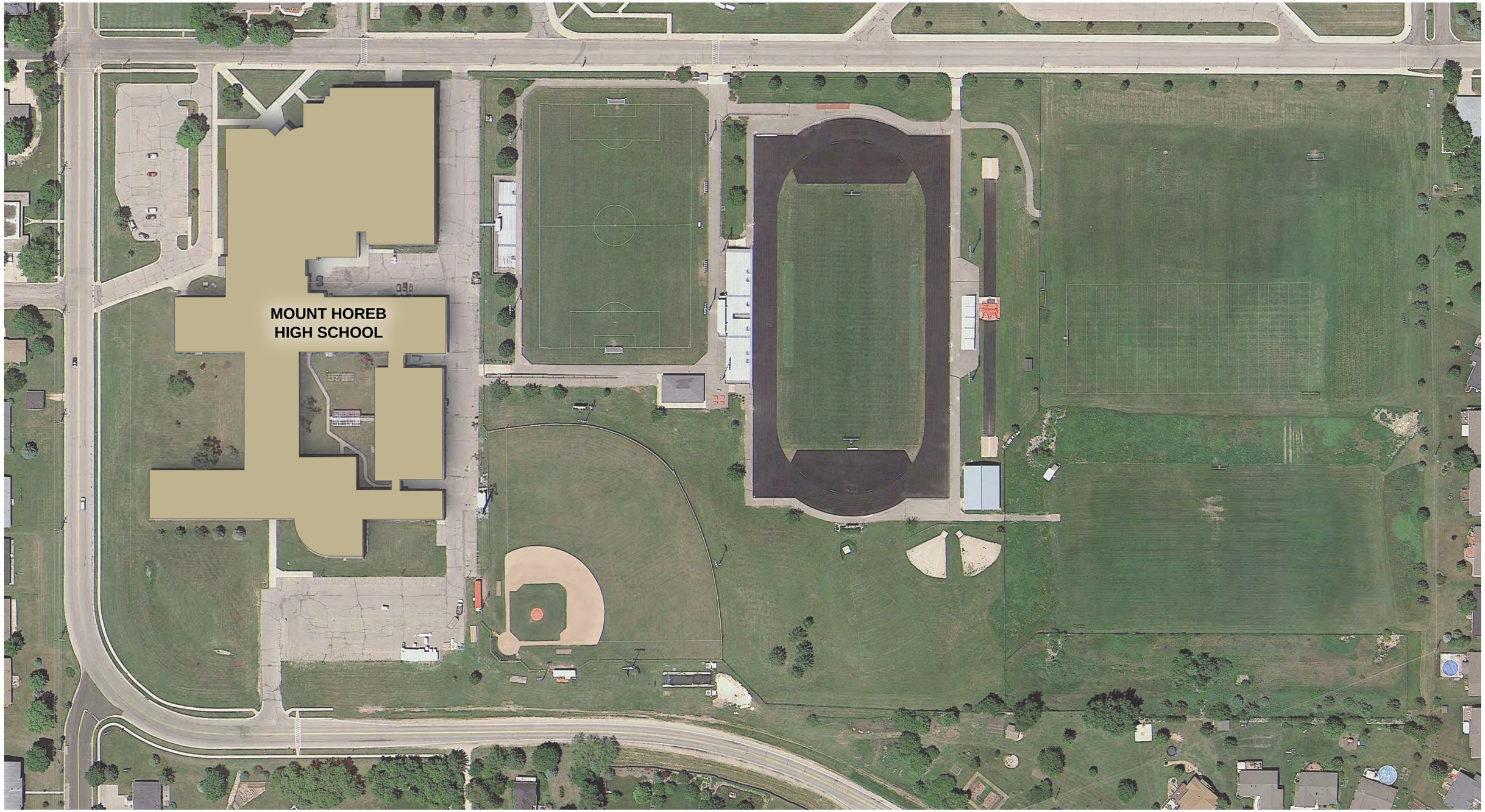

2014

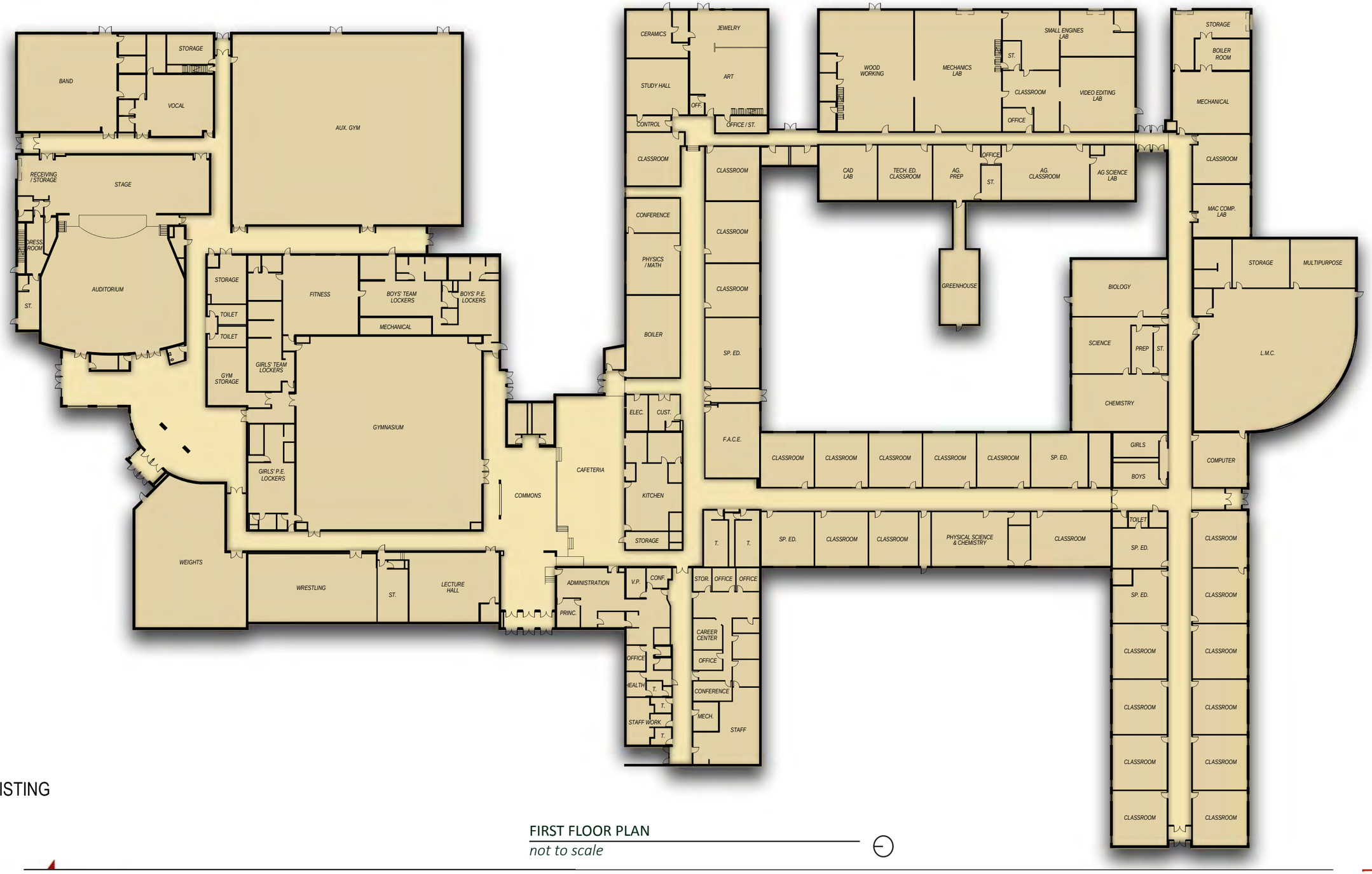


FIRST FLOOR PLAN
not to scale

- 1962 - ORIGINAL
- 1975 - ADDITION
- 1987 - WEIGHT ROOM ADDITION
- 1990 - LOCKER ROOM ADDITION
- 1991 - GREENHOUSE ADDITION
- 1997 - ADDITION & RENOVATION
- ???? - AUDITORIUM ADDITION & RENOVATION
- 2014 - WEIGHT ROOM ADDITION



SITE PLAN
not to scale



EXISTING

FIRST FLOOR PLAN

not to scale

MOUNT HOREB HIGH SCHOOL: NEEDS ASSESSMENT

The following is a summary of potential improvements at Mount Horeb High School. This is not intended to be a comprehensive list, but a summary of possible upgrades as identified by staff members, district leadership, school board members, architects and engineers. In order to generate this list, numerous meetings and listening sessions were held by district leadership and Bray Architects with the objective of casting a broad net to try and gather as much feedback regarding needs as possible.

Infrastructure/Maintenance:

- HVAC
  - No air conditioning system in portions of the building (Science, Business/Marketing)
  - Ventilation issues or lack of ventilationidentified by owner throughout, especially in Tech. Ed. areas, F.A.C.S., and science classrooms
- Asbestos pipe within art storage/office to be removed
- Replacement of hollow metal doors with aluminum doors (south side exterior doors stick)
- Electrical Upgrades
  - Insufficient placement and number of outlets in F.A.C.S.; exposed cords
  - Electrical issues/inadequate power identified by owner; fuses often blown in science labs, F.A.C.S., Art, and throughout
  - Lighting upgrades needed in classrooms, especially Math classrooms; some fixtures are missing covers
- Plumbing Upgrades
  - Science labs, Art, and Tech. Ed./Agriculture have sinks that have leaky faucets or do not work; need of remediation or replacement
  - Art sinks need clay traps
  - Need for additional or restored restrooms (existing dark rooms) and water fountain near Art and Tech. Ed. departments
  - Sewer smell identified by owner throughout 600 corridor
- Repair floor grate in Tech. Ed./Ag. Mechanics Lab
- Replace Lexan covering in greenhouse and seal air space between hallway and greenhouse
- Repair rain gutter system near Tech. Ed. Department
- Wall near Agriculture classroom allows for water penetration and needs further investigation and remediation
- Water issues identified by owner at Music and Tech. Ed. Exterior doors
- Windows in room 611 (Business Ed./Marketing) leak; possible replacement or new caulking; operable windows in Math classrooms desired
- Desks/furniture in need or repair or replacement
- Ceiling tiles in need of replacement; room 306 reported falling ceiling tiles

Academic, Educational/Student Life:

- Failure to meet ADA accessibility code requirements and/or meet the needs of handicapped students
  - Corridor outside art room contains stair; wheelchair must travel extensive lengths to get to Art and Agriculture hallway
  - Special education classrooms too small for wheelchair accessibility
- Poor flow of student traffic due to narrow corridors with some doors opening out onto corridors
  - Wider corridors or removal of lockers from corridors is desired
- Staff toilets and student toilets needed near art classrooms
- Food service has biggest need in district

Safety and Security Upgrades:

- No secure entry
- Insufficient ventilation within science labs/classrooms
  - Fume hoods and purge fans fail to work properly and are out of code
  - Classrooms have non-operable windows
- Exterior/Site
  - Poor traffic flow and insufficient parking on site, especially during large events
- Insufficient roof and site drainage
  - Sidewalks and stairs become icy and are cracking/eroding, particularly outside room 306

Mount Horeb High School Main Entrance

Department Need:

Many departments and rooms are at capacity or are inadequately sized and supported

CAFETERIA

- (2) lunch periods typical; (3) lunch periods during band season
- Seating for up to 400 (typically 250-300 per lunch period)
- Undersized and outdated
  - Inadequate servery space results in longer lunch lines
    - 11-15 minute lunch line wait; 25 minute lunch period
    - Many students forced to go off-campus for lunch; 10th-12th grade students allowed off-campus lunch
    - More dispersed lines and a-la-carte or kiosk-style servery space desired
    - School store and/or coffee servery desired
  - Outdated and insufficient table seating; needs replacement
    - (16) tables with (8) benches per table, (9) tables with (4) benches per table (10-12 students typically per table)
  - Undersized and outdated kitchen
    - Nearly all kitchen equipment in need of upgrading
    - Hard water damages machines
    - Each machine/equipment upgrade typically requires nearly $1000 worth of electrical upgrades to support new equipment; electrical issues identified by owner
    - Walk-in coolers and freezers desired
- Insufficient ventilation and lack of operable windows in cafeteria and kitchen

MUSIC

- Undersized space for rehearsals, practice rooms, and offices; no designated orchestra room
  - Band room for 120 seated desired
  - Choir room for 115 seated desired
  - Orchestra room for 60 seated desired; separate from choir
- Lack of instrument, equipment, music library, and marching band equipment and uniform storage
- No ensemble room or instrument repair space
- Music theory classroom with technology of 15-20 computer stations, audio/video recording equipment and tieback to rehearsal space desired
- Acoustical soundproofing of music/practice rooms inadequate
- Prefer to maintain close proximity between music classrooms, auditorium and support spaces, with Vocal and Orchestra adjacent to one another

- Auditorium
  - Undersized (at 478 seats); 750-800 seats desired
  - No space for set construction, limited storage for equipment and props
  - No light traps between lobby and auditorium house
  - LED lighting upgrades, finish upgrades, full-range sound system, and rigging desired

Mount Horeb High School Band Room

Mount Horeb High School Art Classroom

ATHLETICS

- Undersized and outdated
  - Four full-size courts and at least two separate gymnasium spaces desired
    - New fieldhouse addition with three courts or addition/ renovation of existing auxiliary gymnasium desired
    - Seating to accommodate entire student body for assemblies, host graduation, and host regional and sectional tournament events desired (1,500 - 2,000 seated)
  - Existing auxiliary gymnasium at capacity; needs upgrading
    - Existing auxiliary gymnasium contains one full-size court and one undersized court
    - New/additional bleachers or mezzanine seating desired; inadequate seating for events
    - New gymnasium floor desired; existing floor is warped and runs the opposite direction than that which is ideal
    - Acoustical remediation desired
    - Additional storage desired; especially equipment storage for sports teams
    - Space for gymnastics desired
  - Existing gymnasium at capacity; needs to be upgraded
    - Existing gymnasium contains one full-size court
    - New/additional bleachers desired
    - New gymnasium floor desired
  - Locker rooms undersized and outdated
    - Additional locker room(s) with larger lockers desired
    - Lack of necessary toilet fixtures and stalls
    - Unpleasant odor identified by owner in all locker rooms
    - Boys' team locker room is in the worst condition; would prefer to be located near outdoor athletic fields and with larger lockers for football equipment
    - Coaches office with toilet/shower desired in team locker rooms
    - Referee locker/changing rooms desired
    - Visiting team locker room desired; location near football field desired
    - Laundry facilities desired
  - Little to no storage
    - P.E. storage consists of very small closets that are located in the girls' locker room
    - Custodial risers take up majority of the fitness room
  - Inadequate parking/accommodation for sports events
  - Concessions area desired
- Existing exterior athletic fields and support spaces are sufficient and would preferably remain in existing locations
  - Utilized by High School, Middle School, Intermediate Center and community recreation groups
  - Possible upgrade of football field to turf field
  - Past consideration of pool addition

ART

- Undersized
  - Jewelry area seats (12); (17) students typical
  - Lack of space limits amount of equipment allowed
    - (3) pottery wheels; (1) wheel per (2) students desirable
    - Only (1) piece of each jewelry equipment used at a time
  - (3) rooms with shared support space is ideal
    - (1) 2D Art Classroom
    - (1) 3D Art Classroom
    - (1) Pottery / Messy classroom that is located between 2D and 3D classrooms
    - Shared storage space with area for office and small dark room
    - Senior project/photography space desired
    - Garage door access between classrooms
    - Demonstration table/station desired within classrooms
    - Sinks needed in each classroom
  - Office and storage undersized and lack separation/security
- No SMART board or technology; MAC computer lab located far from art department and lacks proper layout of computers for group teaching
- Insufficient ventilation
  - Non-operable windows
  - Opening exterior door is a safety concern

FAMILY AND CONSUMER SCIENCE

- Undersized
  - Combined classroom and lab space; would ideally be separate
  - Storage undersized; pantry and knife drawer space desired
- Insufficient casework
  - No drawer space
  - Teacher demonstration station desired
  - Metal casework needed to meet O.S.H.A. standards
- No smartboard or technology
- Windows have insufficient shades to control direct sunlight
- Heating unit and garbage disposal consistently fail/need maintenance
- Industrial/commercial kitchen ideal for community accessibility and adult education classes desired
- Separate laundry area desired
- Would like to be located near Career and Development Department (Tech. Ed., Agriculture, etc.)

BUSINESS EDUCATION/MARKETING

- Lack of storage
- Windows have insufficient shades to control direct sunlight
- Adult education/opportunity for community involvement desired

TECHNOLOGY AND ENGINEERING
- Undersized
  - Need video recording studio (1,500 SF or more)
- S.T.E.M. and engineering curriculum integration
  - Need clean/FAB lab environment with connection to CAD lab (similar to Stoughton HS)
- Auto room needs reconfiguration to become long and narrow, with (4) garage stalls with (1) lift per stall; small engines lab adjacent to it
- Lack of visibility between classrooms and laboratory spaces
- Woods lab needs overhead door
- Welding lab not needed by Tech. Ed. department
- Insufficient ventilation and dust collection system

AGRICULTURE
- Undersized
  - Need additional agriculture classroom and/or expanded agriscience lab
  - Need additional greenhouse, greenhouse prep, and storage spaces
  - Need separate welding lab with room for sheet metal equipment and (16) booths
- Animal/veterinary science lab with lab table and overhead door desired
- Ag mechanics lab with chain hoist and large overhead door for modern equipment desired
- Lack of visibility between classrooms and laboratory spaces
- Insufficient ventilation and dust collection system

SCIENCE
- Undersized existing labs and classrooms; (7) lab classrooms required / (1) classroom per faculty
  - (2) Chemistry
  - (3) Biology
  - (1) Physical Science
  - (1) Physics
- Need additional storage
  - Chemical storage
  - Shared storage between two classrooms is ideal
- Room 209 lacks lab stations, sinks and electrical
- Room 207 has inadequate power; lab stations and plumbing are dated
- Lack of technology incorporated into the lab
- Access to greenhouse is ideal; connection through corridor v. through a classroom is preferred.

GIFTED & TALENTED
- Conference/SGI space for 10-25 people desired

MATH
- Undersized
  - (7) Classrooms ideal; Math classrooms do not need to be in close proximity to one another
  - Additional storage needed
  - Small group instruction (SGI) space desired for testing

Foucault pendulum, sky theater, and Science on a Sphere as “Pie in the Sky” ideals

ENGLISH
- Department computer lab with 30 workstations needed; current school computer lab

SPECIAL EDUCATION
- Undersized classrooms, student services offices, and storage
  - Six classrooms, two of which are connected with shared kitchen, washer/dryer, bathroom and domestic life/work skills space ideal
  - Classrooms need to accommodate (7-10) students, (2) adults, and (3-4) computers
  - Small group instruction/recreational OT/PT sensory space desired
  - Computer space with technology including IPOD charging and online training capabilities
  - Toilet/changing room needed; at least (2) Special Education classrooms need an attached toilet
  - (5) offices for Psychologist, Social Worker, Speech, and (2) Guidance Counselors
- Wiring for FM systems
- Current connection to outdoors desired, but preferably more isolated space

OFFICES
- Sufficient amount of workspace and location relative to administrative office
- Assistant Principal / Athletic Director office would ideally be located closer to main office reception and principal’s office
- Main entrance upgrades
  - Bullet-proof glass desired
  - Better visibility of main entrance doors desired
  - Prefer no push-button-activation for main entrance doors due to constant student and group access
- Would prefer District Office to remain separate from high school office, unless new high school building was constructed

DISTRICT OFFICE
- Undersized & outdated
  - Need large conference/meeting room and/or training room
  - Renovation of existing building not preferable by owner
- Possible integration with High School or Early Learning Center

The following is summary of Plumbing, HVAC and Electrical needs. Full engineers' reports are located later in this document.

Plumbing:

• Schedule to replace existing galvanized piping, and relocate new copper piping from tunnels to the above existing ceilings.

• Future additions or renovations may require the building to be sprinkled; a new water service should be budgeted for future expansions and renovations.

• Install a grease interceptor at the dishwasher to comply with current codes, and install individual acid basins at a few of the old science rooms. Provide continual maintenance on existing plaster traps.

• A sewer camera is needed for all storm piping below grade to identify problems with underground piping.

• Provide all pitched roofs with gutters and downspouts, and provide splash blocks at grade.

• Schedule the water heater for replacement, and provide new gas fire-sealed combustion, modulating styled heaters; verify size of new heaters.

• Schedule water softener for replacement, soften hot and cold water, and verify size of softener.

• Continually maintain air compressor.

• Schedule original plumbing fixtures for replacement, and install hot and cold water at all science room sinks. Provide new gas shut-off controls for science rooms.

• Schedule replacement of art room sinks and plaster traps, as well as FACE room sinks.

Electrical:

• Both electrical services are in good condition, and small loads can be added to both services if required. If large loads are planned, a new service may be required.

• Replace existing 1962 distribution with new I-line type gear and new breakers.

• Replace old style panelboards with new and reuse existing feeders.

• No generator exists; recommend installing a new emergency generator. Provide emergency fixtures throughout the interior and exterior to bring facility up to full code compliance.

• Consider replacement of 2x2 fixtures with LED or T8 lamps and ballasts, and exterior lighting and auditorium lighting with LED type. Installing an emergency generator would eliminate the need for battery units throughout the facility.

• Possible upgrade to add additional horn strobes in all areas to bring fire alarm system to full code compliance. Remove old 120 volt system and device and extend Simplex system to all areas of the facility.

• Eliminate Dukane master clocks and migrate to Primex wireless solution.

• Additional intercoms can be added to public address system.

• Migrate to IP solution for phone system.

• Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added. If building addition requires data cable to have a total installed length of over 300 feet, then additional IDF data rack is required. Add independent AC to main data room at a minimum; add additional cooling to other data closets at required.

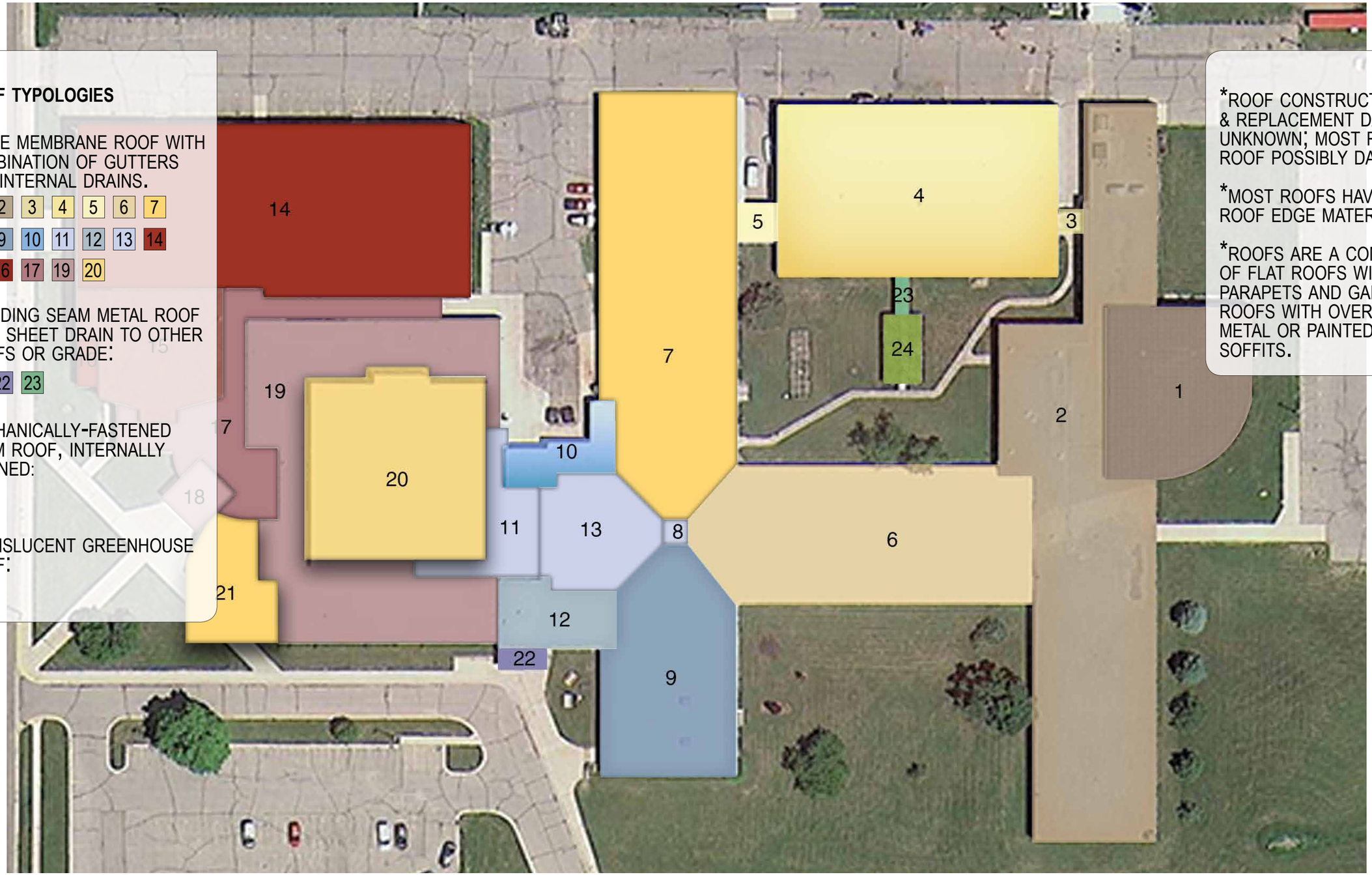
• No CATV system service exists.

• Possible upgrade to IP solution and digital cameras and run system over network.

• Provide a new Networked keyless entry system by reusing existing strikes and readers and installing new data to a controller at door and new software; this allows for an IP based network system.

• No master shut-off for shop equipment, and mag starters were not present on all shop equipment to prevent restart in event of loss of power.

• A lot of surface cabling in classrooms.



ROOF TYPOLOGIES

WHITE MEMBRANE ROOF WITH COMBINATION OF GUTTERS AND INTERNAL DRAINS.

1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 19 20

STANDING SEAM METAL ROOF WITH SHEET DRAIN TO OTHER ROOFS OR GRADE:

18 22 23

MECHANICALLY-FASTENED EPDM ROOF, INTERNALLY DRAINED:

21

TRANSLUCENT GREENHOUSE ROOF:

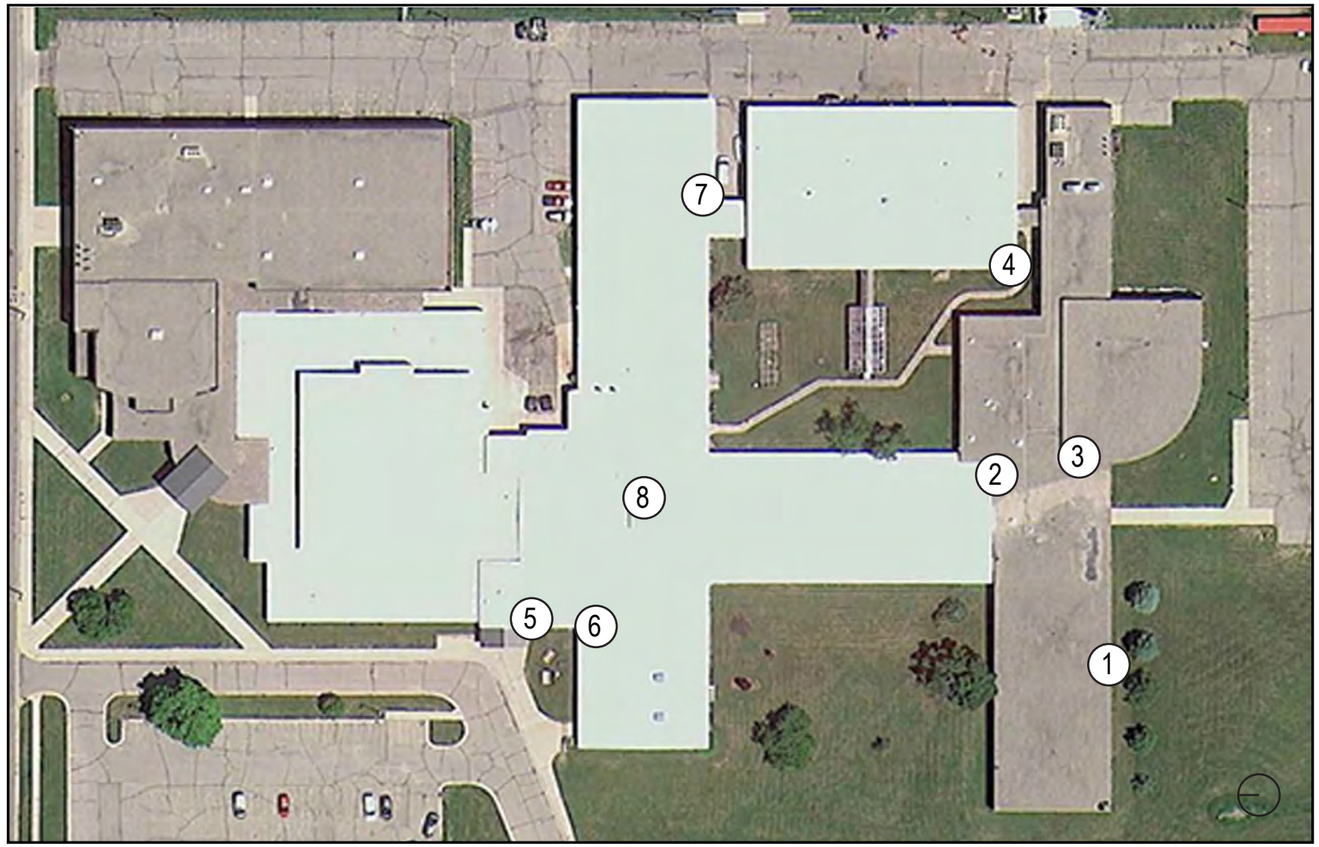
24

*ROOF CONSTRUCTION & REPLACEMENT DATES UNKNOWN; MOST RECENT ROOF POSSIBLY DATED 2012.

*MOST ROOFS HAVE METAL ROOF EDGE MATERIAL.

*ROOFS ARE A COMBINATION OF FLAT ROOFS WITH SOME PARAPETS AND GABLE-STYLE ROOFS WITH OVERHANGS AND METAL OR PAINTED WOOD SOFFITS.

ROOF PLAN
not to scale



1 ROOF EDGE

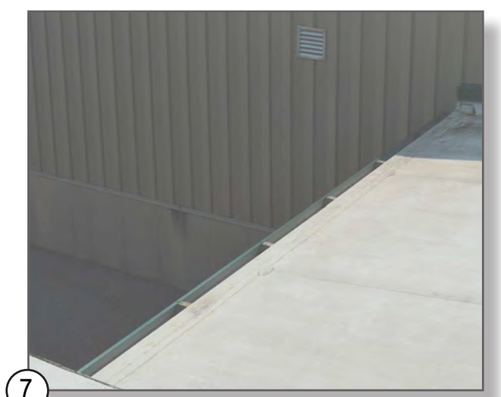
2 ROOF PARAPET WITH METAL COPING

3 ROOF EDGE WITH METAL ROOF EDGE MATERIAL

4 METAL ROOF EDGE

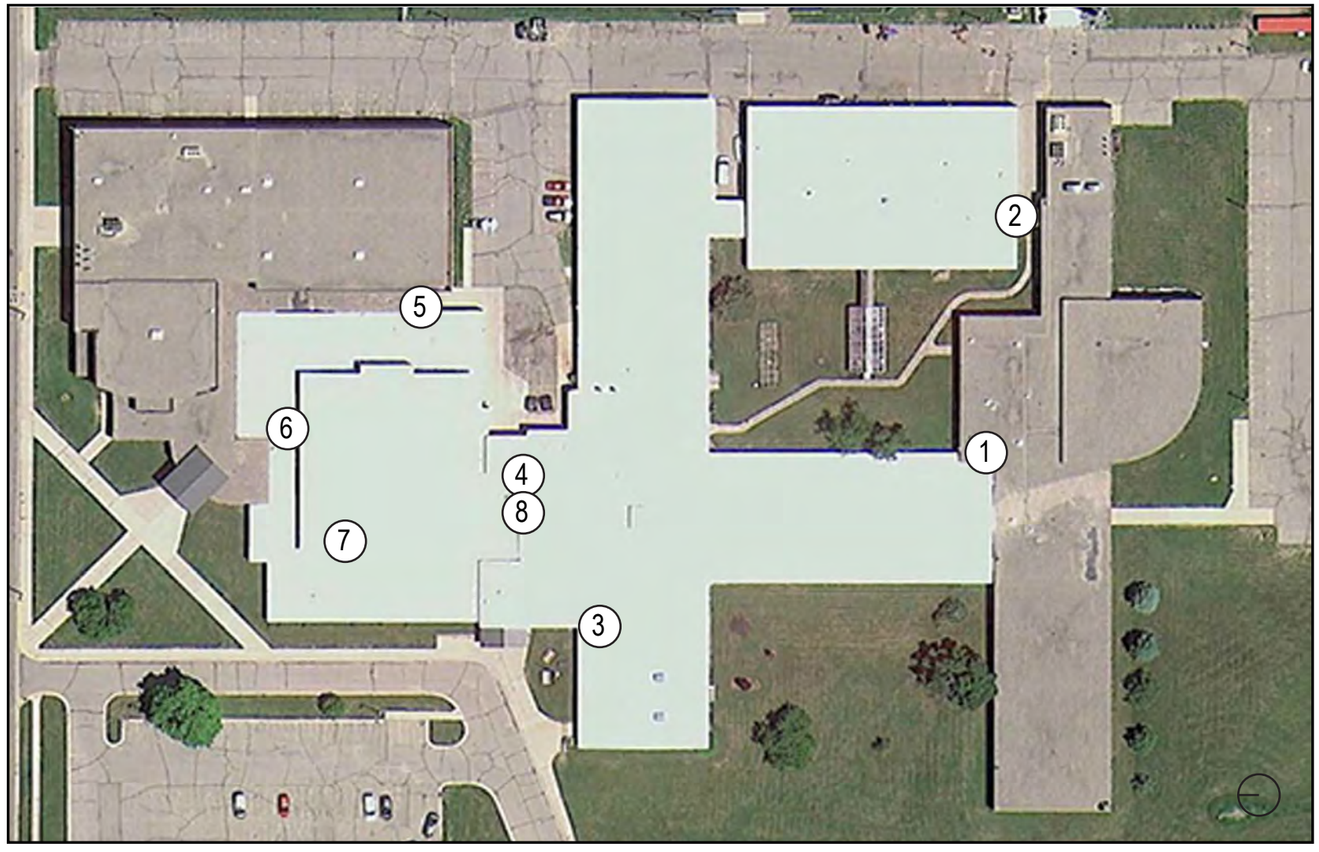
5 CANOPY ROOF AND WALL CONNECTION

6 CORNER EDGE CONDITION



7 ROOF EDGE WITH GUTTER

8 EXPOSED BACKING FASCIA



1 ROOF TRANSITION

2 ROOF TO WALL CONNECTION AT CORRIDOR

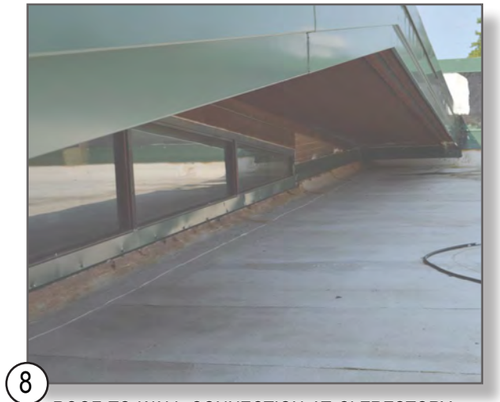
3 ROOF TO WALL CORNER CONNECTION

4 MULTIPLE ROOF TRANSITIONS

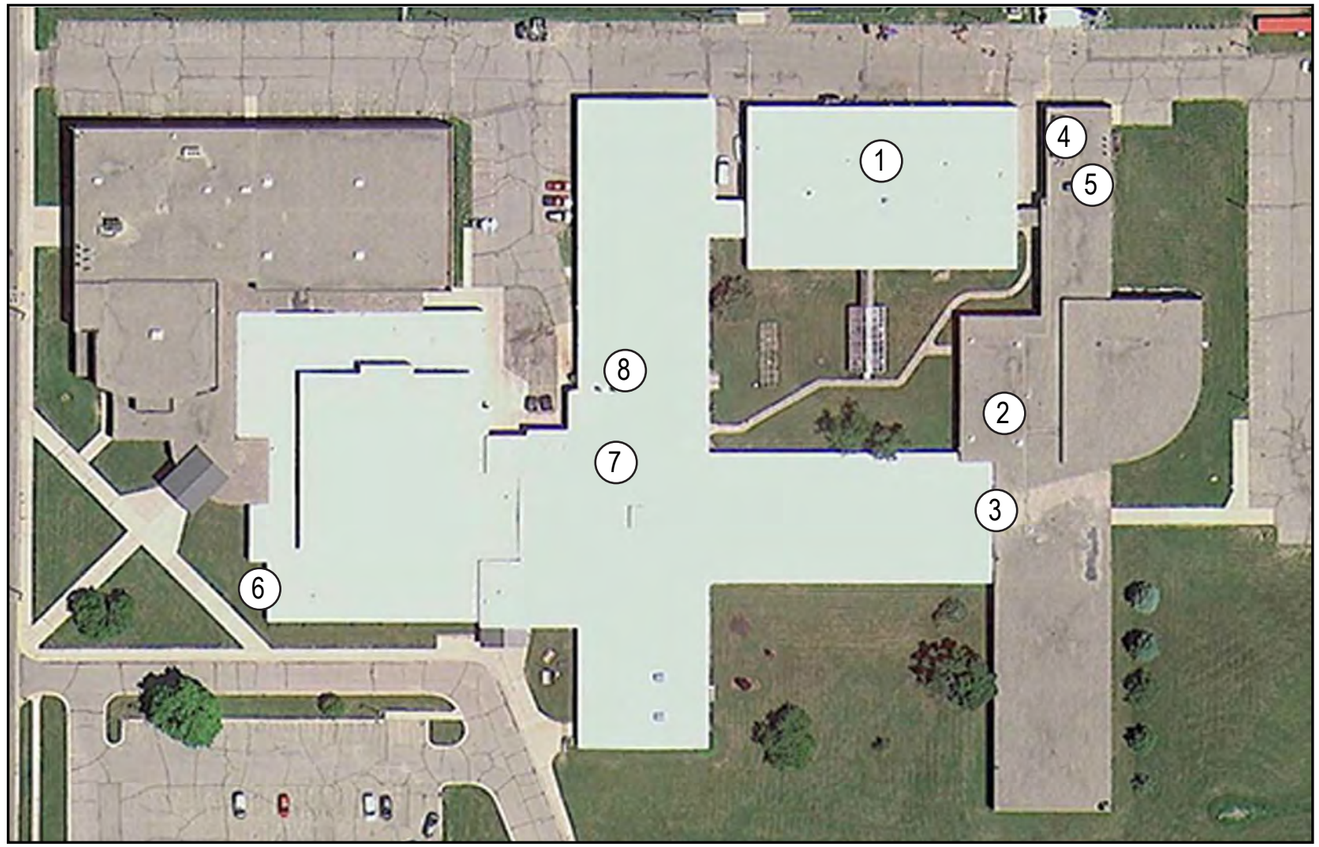
5 ROOF TO WALL CORNER CONNECTION

6 ROOF SOFFIT AND MULTIPLE ROOF TRANSITIONS

7 SOFFIT CONDITION



8 ROOF TO WALL CONNECTION AT CLERESTORY



1 ROOFTOP VENTS

2 ROOFTOP FAN

3 ROOFTOP VENT

4 ROOFTOP MECHANICAL UNIT

5 ROOFTOP VENTS

6 ROOFTOP MECHANICAL UNIT

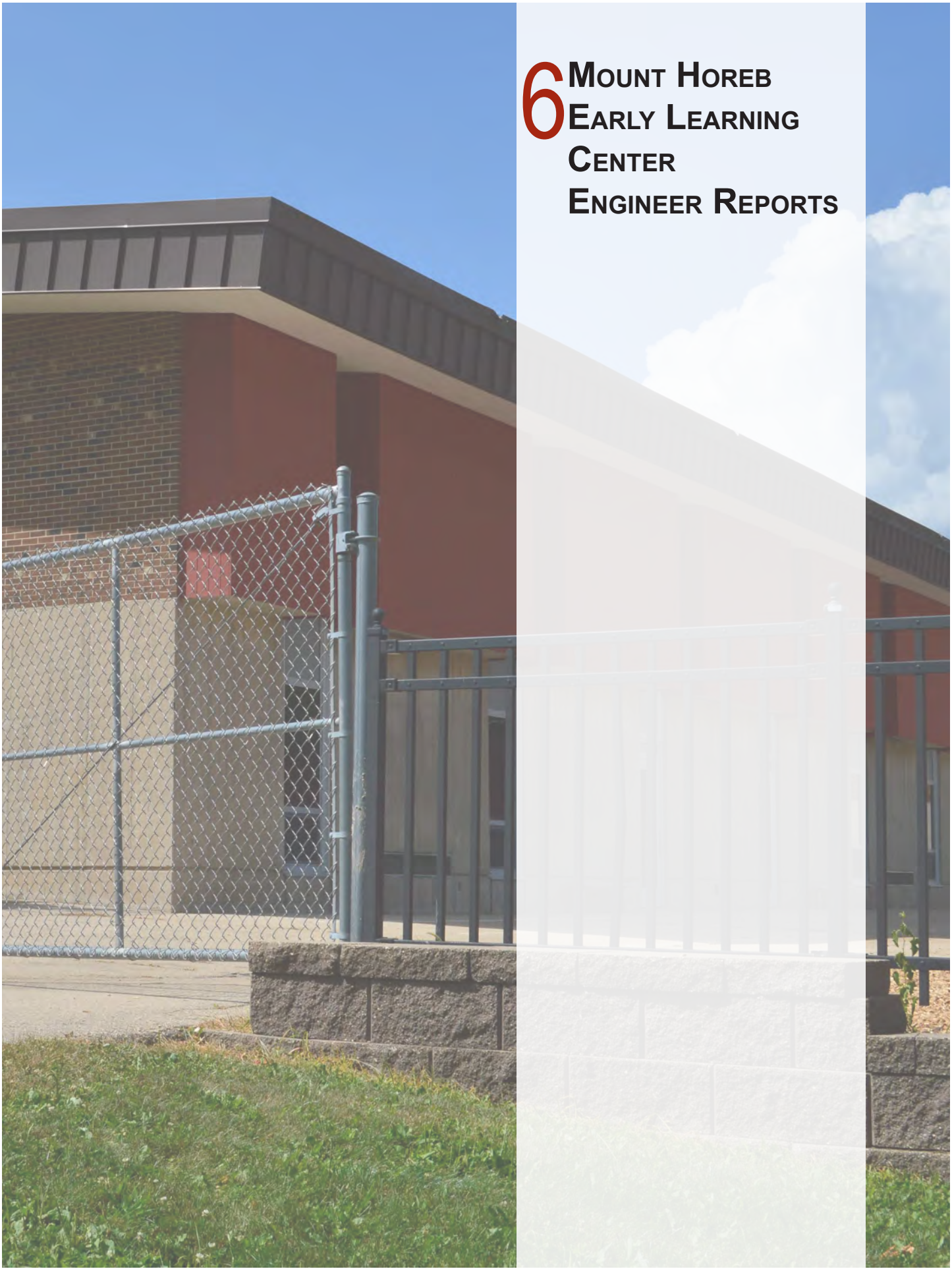
7 ROOFTOP MECHANICAL UNIT

8 ROOFTOP VENTS

- LAMINATE
- VCT
- CERAMIC TILE
- RUBBER
- CONCRETE
- CARPET
- WOOD

FIRST FLOOR PLAN

not to scale



6 Mount Horeb Early Learning Center Engineer Reports

Mount Horeb Primary Center School **Page 1 of 3**
Mount Horeb, WI

Plumbing System Review:

The following report is the result of a site visit by Tim Kehoe of Muermann Engineering, LLC that occurred on July 7th, 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

Domestic Water

Observations

A. The building is supplied by a 2" water service and 2" water meter. The majority of the water piping appears to be type "L" copper tube. The piping appears to be in fair condition.

B. Water pressure in the building appears to be good.

C. All hot water and cold water to plumbing fixtures is softened.

D. The water main into the building is grounded. There appears to be a lot of electrolysis forming on the pipe indicates that there is a problem with the ground. Further investigation is required.

E. All water piping to the gymnasium is located in tunnels below the gym floor.

Recommendations

A. Continually monitor water piping for leaks.

B. Investigate grounding problem at the water service entrance to the building.

Sanitary Piping

Observations

A. Sanitary piping is original to the building. The piping appears to be in fair condition; however, the Owner has indicated problems with the sanitary sewer near the existing Kindergarten rooms. This sewer has since been repaired.

B. The Kitchen currently does not have a grease interceptor.

C. Plaster traps are located in the Art rooms.

Recommendations

A. We recommend that interior sewers below grade should be investigated with an interior sewer camera.

B. A grease interceptor (likely interior) should be installed in the Kitchen. Per current codes, this would be a code violation.

Storm Piping

Observations

A. The existing interior storm piping system appears to be operating well. The existing room above the classroom shed directly to grade.

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Mount Horeb Primary Center School
Mount Horeb, WI

B. Exterior storm is in poor condition. Currently, storm water floods a portion of the site which then allows water to penetrate the building. This is also causing a major erosion problem along the outside of the building.

Recommendations

A. The existing site requires new grading and new exterior storm piping to correct the existing condition. Further investigation is required.

Plumbing Equipment

Observations

A. The existing water heater is a gas-fired, atmospheric vented style water heater. The heater is relatively new and in good condition.

B. The water heater appears to be sized appropriately for the building; however, the water heater is fairly inefficient.

C. The water softener has recently been replaced and is in good condition.

Recommendations

A. All equipment is in good condition. Should the water heater be replaced, the unit should be replaced with a sealed-combustion energy efficient model.

Plumbing Fixtures

Observations

A. Toilet rooms in the lower level have been recently remodeled and are in good condition.

B. Toilet rooms located on the first floor have also been recently renovated and are in good condition.

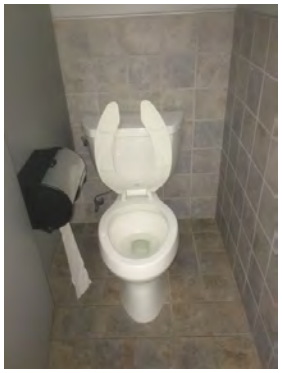
C. The toilet rooms located in the gym area are original to that building and are generally in poor condition.

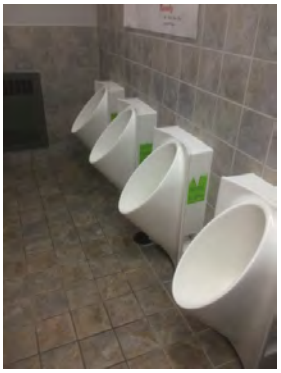
D. Electric water cools are in poor condition.

E. Classroom sinks are in poor condition.

F. Although toilet rooms have been remodeled, all rooms are not ADA compliant. Further investigation is required.

G. Water less urinals are located on the first floor. Tank type water closet and wall hung lavatories are located within the new addition.





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Mount Horeb Primary Center School
Mount Horeb, WI

H. Kitchen equipment is in good condition.

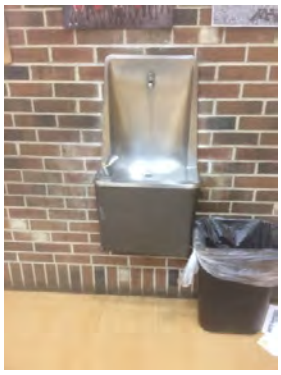
Recommendations

A. Verify that all toilet rooms are ADA complaint.

B. Schedule existing electric water coolers for replacement.

C. Schedule existing classroom sinks for replacement.

D. Provide continual maintenance on waterless urinals.



Early Learning Center
Mount Horeb School District **Page 1 of 3**

HVAC

The following report is the result of a site visit by Bert Fredericksen of Fredericksen Engineering, Inc. that occurred on July 6, 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

The building was constructed in 1967 and consists of approximately 35,000 square feet total area. There have been no additions or major remodels completed to date.

Heating System

Existing Data

The boiler plant, installed in 2003, consists of two DeDietrich hot water boilers each fired with natural gas. Each boiler has a capacity of 1,658,000 btu gross output. The boiler plant is located in the lower level of the building.

The piping and pumping system for the boiler plant consists of a single circuit with a stand-by pump. If the primary pump fails, the stand-by pump will start and provide hot water circulation to the system.

Observations

The boilers are in very good condition as they we installed only 12 years ago. With recommended maintenance, the boilers should continue to serve the facility for their expected service life of 20 to 25 years.

The boilers are operated using a reset schedule varying the temperature of the supply water from 130 deg. to 180 deg. F.

Combustion air enters the boiler room through a louver with automatic dampers. Each boiler draws its combustion air from the boiler room.

Boiler water chemical systems are in place and are properly maintained.

The hot water piping is original and appears to be in good condition with no obvious leaks noticed. According to the Owner there have been no significant leaks to date.

Insulation appears to be of adequate thickness and in good condition.

Thermometers and gauges are present and appear to be working at all locations.

Distribution piping is run above ceilings with the exception of a short tunnel running from the boiler room to the gym area.

Recommendations

Continue preventative maintenance on the system.

Early Learning Center
Mount Horeb School District **Page 2 of 3**

Ventilation and Air Conditioning Systems

Existing Data

There are two systems that provide ventilation for the facility. The two systems are classroom unit ventilators and constant volume multi-zone air handling systems.

The classrooms and gym are ventilated using classroom unit ventilators. Unit ventilators house a fan, heating coil and fresh air and return air dampers and controls in a single cabinet mounted in the classroom. Hot water piping is run to each unit ventilator. The unit ventilators are mounted on the perimeter wall.

The central core of the building is served by two constant volume multi-zone air handling units. Constant volume multi-zone systems consist of a central supply fan, which contains a heating coil, fresh air, return air and zone control dampers. A room thermostat is used to control the temperature of the air supplied to each space. This is accomplished through the zone control dampers which mix heated air with cooler by-pass air to obtain the desired supply air temperature for the zone.

Hot water cabinet heaters are located at the building entrances. It was noted that there are no vestibules at the entrances. A cabinet heater utilizes a fan and heating coil to heat the area. When the room thermostat senses a drop in space temperature the fan starts and hot water is allowed to flow through the heating coil. When space temperature is satisfied the fan stops.

Fin pipe radiation and convectors are used throughout the building for spot heating.

There are three dx mini-split fan coil units that provide air conditioning to select spaces within the central core of the building. These are the only spaces in the building that are air conditioned. None of the classrooms are air conditioned.

Observations

The constant volume multi-zone air handling units and the unit ventilators are the original units from 1967. At 48 years of service these units have all exceeded their expected service life. According to ASHRAE the average life of a unit ventilator is 20 years and an air handling unit is 25 years.

Multi-zone systems are effective in maintaining comfort but are not efficient by today's standards. In the nearly 50 years since these systems were put into service there have been many advances in HVAC system technology many of which push toward greater efficiency.

The unit ventilators are so far past their expected service life that it is now becoming difficult to maintain them. Staff report that the fresh air and face and by-pass dampers no longer seal well and the coils are clogging at an alarming rate. For now they are keeping up by blowing the coils out as they clog but it is only a matter of time before even this becomes too little. At this time the units are able to keep up only because of the recent window replacement. The installation of better insulating glass has allowed the unit ventilators to continue to heat the classrooms despite their diminished capacity due to age.

The gym is served by unit ventilators which is a little unusual. There are four units mounted above the recessed cafeteria tables with ceiling mounted destratification fans providing the mixing and air flow in the occupied zone near the floor.

Early Learning Center
Mount Horeb School District **Page 3 of 3**

Recommendations

The unit ventilators, while extremely well maintained, have exceeded their service life and have deteriorated in their performance to the point where they need to be replaced.

The constant volume multi-zone air handling units have also exceeded their service life, however, these units could be refurbished to bring their performance back to near original status and get another 10 years of service out of the equipment. As an alternative it should be considered to replace and convert the units to modern variable air volume systems. This would address the efficiency concerns as well as age of the units.

If air conditioning is contemplated for the building it is our recommendation that the entire building be air conditioned. The existing systems rely on the common corridor for return air and relief. If only a portion of the building (i.e. central core) were to be air conditioned this common return would likely result in high humidity and possibly condensation on the corridor floors. Due to space constraints within the existing structure it is unlikely a reasonable alternative to the common return could be constructed. Therefore the best solution would be to air condition the entire building or no air conditioning at all.

Control Systems

Existing Data

The entire building is served by the original Honeywell pneumatic system of automatic temperature control.

The pneumatic control system is powered by a one horsepower air compressor with a mechanical dryer.

Observations

The pneumatic control system is in poor condition. The components are old and there are many air leaks throughout the system. Additionally the limitations of the pneumatic system do result in comfort complaints. Pneumatic systems require frequent calibration to maintain accuracy. The newer digital controls are more accurate and more flexible. In addition, the industry has made such a complete changeover to digital controls that it is becoming difficult to find good pneumatic service technicians.

Recommendations

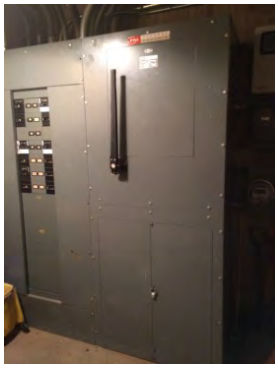
Remove the existing pneumatic control system and install a fully digital Building Automation System. The BAS would control all building temperature control systems and communicate with the District's existing central monitoring systems.

Mount Horeb Primary Center School
Mount Horeb, WI

Electrical System Review:

The following report is the result of a site visit by Curt Krupp of Muermann Engineering, LLC that occurred on July 7th 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

Main Electrical Service



Observations

A. The facility is fed with one 120/208 volt 3 phase 4 wire electrical service, 800 amps. The service is a very dated Federal Pacific type. The service is fed with a pad mounted transformer.

B. The main service switchboard does have a surge protection device.

C. The existing service panel is full and no additional space is available for additions.

D. The meter is located in the building.

E. A separate disconnect is used to feed emergency loads.

F. Owner noted water leaks in this room during a heavy rain event as the service gear is located in a lower level HVAC equipment space.

Recommendations

A. Due to the service age we would recommend full replacement.

Panelboards

Observations

A. A majority of the panels in the facility are old style and staff noted some breakers do not reset.

Recommendations

A. Replace all old style panels with new in place. Existing feeders can remain.

B. We noted approximately 10 old style panels in need of replacement.

Generator

Observations

A. No generator is present in this facility.

Recommendations

A. None at this time

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Mount Horeb, WI

Lighting Fixtures and Controls

Observations

A. Most of the fixtures in the facility are the old style T12 lamps and ballasts. Surface and recessed fluorescent lighting was present. We noted different lamp colors in areas.

B. The Gym fixtures were T8 type.

C. Exterior fixtures were Metal Halide type.

D. We noted public egress corridors and public space were lacking proper code compliant egress lighting.

E. Old style exits were noted.

F. No lighting motion sensors were noted in any areas.

G. Exterior building lighting has been upgraded in some locations to new surface HID fixtures. Parking lot lighting is old style HID type.

H. We noted incandescent lamps in areas like mechanical rooms and small storage rooms.

Recommendations

A. Consider replacement of the T12 lamps and ballasts with new T8 type. Typically in a facility of this age this would also require new light fixtures. The T12 lamps and ballasts will be phased out in the near future and will be hard to find and expensive to replace.

B. Consider replacing the exterior lighting with LED type.

C. Replace all existing exit lights with new battery backup type.

D. Provide new emergency battery egress lighting throughout entire facility.

Fire Alarm System

Observations

A. A MPC-2000 zoned Fire alarm panel is installed

B. It appears some of the devices have been updated in classrooms to new horn/strobes.

C. Old style smoke detectors were noted in corridors.

D. The fire alarm system is monitored by silent night. The owner noted this is not functioning.

Recommendations

A. Due to the age of the system and non-addressable devices, we recommend full replacement. This would bring the facility up to full code compliance with the fire alarm system.

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Mount Horeb, WI

Clock System

Observations

A. An older style Lathem clock system is installed.

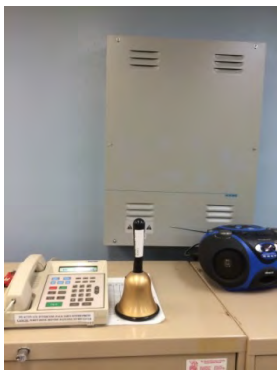
B. Staff noted the clock system fails frequently and does not sync properly.

C. The main clock panel is located in the office area.

Recommendations

A. If additional clocks need to be added or if an upgrade was considered, we would recommend a wireless clock solution such as primex or equal.

Public Address System



Observations

A. A Dukane intercom system is installed with the head end in the office area. No call in devices are installed.

B. Exterior of building does not have speakers.

C. Corridor speaker coverage is minimal.

D. Call in buttons were located in classrooms. Staff indicated they do not operate.

Recommendations

A. Provide additional speakers on exterior and provide for full coverage on the interior to allow for emergency notification.

B. Possible upgrade of the head end system due to age.

Phone System

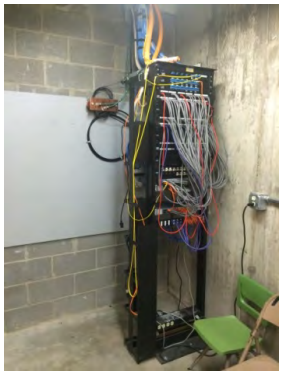
Observations

A. The facility contains Cortelco phones, non IP type.

Recommendations

A. Possible upgrade to an IP solution.

Data System



Observations

A. The facility contains one main data closet located in the lower level. The closet has air conditioning and proper grounding.

B. Wireless Access points were noted throughout.

C. Each classroom has approximately two (2) data drop locations with duplex fiber to one location.

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Mount Horeb, WI

D. The data rack was properly grounded.

Recommendations

A. Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added.

B. If a building addition would require that the data cable have a total installed length of over 300 feet, then an additional IDF data rack will be required.

CATV System

Observations

A. There is a CATV service to this building. The staff indicated it is no longer used.

Recommendations

A. None at this time

Access Control System

Observations

A. A stand-alone keyless entry system is in place and not networked.

Recommendations

B. Provide a new Networked keyless entry system. This can be done by reusing the existing strikes and readers and installing new data to a controller at door and new software. This will allow for an IP based network system.

General

Observations

A. We noted a lot of broken receptacles and electrical devices in need of upgrade.

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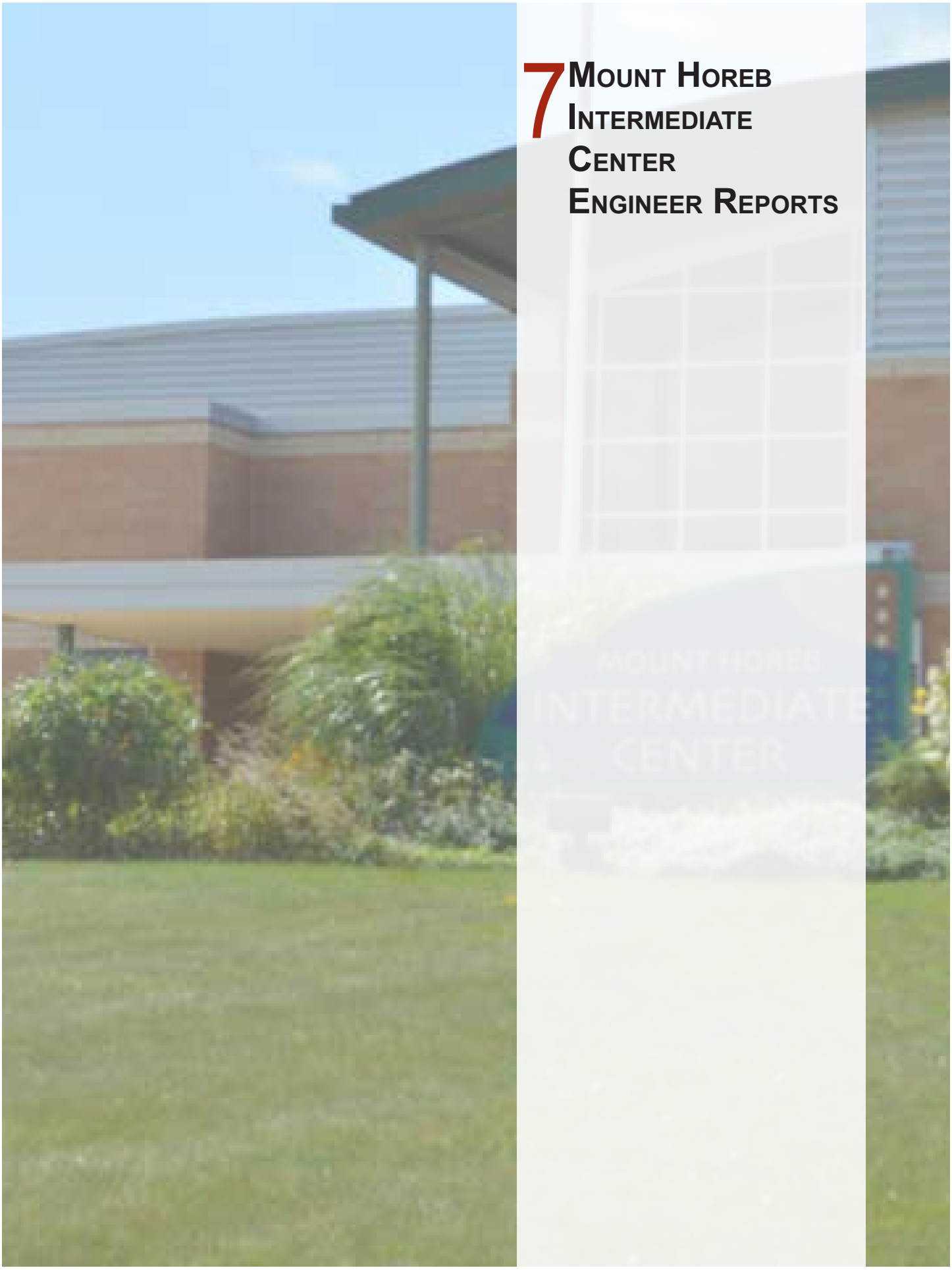


7 Mount Horeb Intermediate Center Engineer Reports

Mount Horeb Intermediate School **Page 1 of 3**
Mount Horeb, WI

Plumbing System Review:

The following report is the result of a site visit by Tim Kehoe of Muermann Engineering, LLC that occurred on July 7th, 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

Domestic Water

Observations

A. The building is supplied by a 6" combination water service with a 3" water meter. Although the water service is large enough to accommodate fire protection for the entire building, the building does not have fire protection.

B. Domestic water piping in the building is type "L" copper tube. This piping is in good condition.

C. The building also has a 3" water sub-meter for an irrigation system. The owner indicated that the irrigation system is rarely used.

D. Hot water is supplied to the Kitchen at 140 degrees.

Recommendations

A. The water service is large enough to provide fire protection for the building. Investigate the option for fire protection.

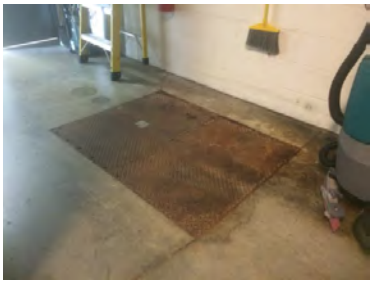
Sanitary Piping

Observations

A. The building is a gravity drained system which discharges to the street. Original sewers are schedule 40 PVC piping. Based on the age of the piping, it is expected to be in good condition.

B. The Kitchen is provided with an interior grease interceptor located at the Maintenance/Receiving area. The interceptor appears to be in good condition.

C. Art room sinks have been provided plaster traps and appear to be in good condition.



Recommendations

A. None at this time

Storm Piping

Observations

A. Storm piping is a gravity drained system with schedule 40 PVC piping. Based on the age of the piping, it is expected that the piping is in good condition.

B. The owner was unaware of existing problems with the storm drainage system.

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Mount Horeb, WI

Recommendations

A. None at this time

Plumbing Equipment

Observations

A. The building has two domestic water heaters located in the mechanical room. A gas-fired, sealed combustion water heater has been provided for the main domestic hot water for the building. The water heater appears to be appropriately sized and in good condition.

B. The water heater for the kitchen is a gravity vented water heater. The water appears to be oversized for the actual Kitchen demand. This style of heater is also rather inefficient.

C. A small in-line booster pump has been provided for the irrigation system. The Owner indicated that this system is rarely ever used.

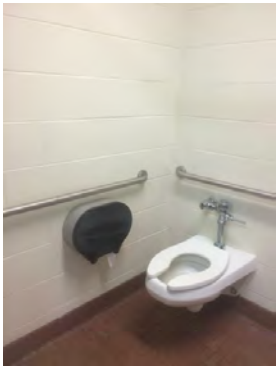
D. The water softener is in good condition and appears to be sized appropriately for the building.

Recommendations

A. Remove the existing water heater for the kitchen and installed a new sealed combustion water heater to be manifolded together with the domestic water heater for the building. This would allow the system to be more energy efficeint. The water heaters would be set at 140 degrees with a mixing valve set at 120 degrees for the domestic water load.

Plumbing Fixtures

Observations



A. Generally, plumbing fixture in this facility are in good condition and have been well maintained.

B. Toilet rooms are generally in good condition. Water closets are wall hung, manually operated flush valves. Urinals are floor outlet with hard wired sensor flush valves and the lavatories are wall hung with manual faucets. The faucets on the lavatories are generally in poor condition.

C. Classroom sinks are in stainless steel with gooseneck faucets and a bubbler attachment. The sinks are in fair condition.

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Mount Horeb, WI

D. Art room sinks are in good condition.

Recommendations

A. Provide continual maintenance on all plumbing fixtures

B. Schedule the faucets on the lavatories for replacement.

Intermediate School
Mount Horeb School District **Page 1 of 3**

HVAC

The following report is the result of a site visit by Bert Fredericksen of Fredericksen Engineering, Inc. that occurred on July 6, 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

The building was constructed in 2001 and consists of approximately 89,000 square feet total area. There have been no additions or major remodels completed to date.

Heating System

Existing Data

The boiler plant consists of four Patterson Kelley sealed combustion non-condensing hot water boilers. Each boiler has a capacity of 1,700,000 btu. The boiler plant is fueled with natural gas.

The piping and pumping system for the boiler plant is a primary/secondary arrangement. The primary circuit pumps are in-line type and provide constant flow through each boiler while it is firing. The secondary circuit pumps are base mounted pumps serving a single distribution circuit. There are two pumps with one serving as a stand-by. If the lead pump fails, the stand-by pump will provide hot water circulation to the system.

Observations

The boilers are in very good condition as they we installed only 14 years ago. With recommended maintenance, the boiler should continue to serve the facility for their expected service life of 20 to 25 years.

The boilers are operated using a reset schedule varying the temperature of the supply water from 130 deg. to 180 deg. F.

Combustion air enters the boiler room through a louver with automatic dampers. Each boiler draws its combustion air from the boiler room.

Boiler water chemical systems are in place and are properly maintained.

Insulation appears to be in good condition. Piping is labeled but it would be helpful if there were more labels as it is sometimes difficult to follow a pipe.

Thermometers and gauges are present and appear to be working at all locations.

The secondary loop distribution pumps are not provided with variable frequency drives and therefore run at full speed all of the time. It is far more common to find these pumps served by variable frequency drives to allow energy savings during times of less than full design capacity demand. It is likely that the designer provided by-pass throughout the system and relies on riding the pump curve.

Recommendations

Continue preventative maintenance on the system.

Install variable frequency drives and pressure differential control for the hot water distribution pumps for greater energy efficiency. Reduce by-pass flow to only that necessary to prevent pump damage at minimum system flow.

Intermediate School
Mount Horeb School District **Page 2 of 3**

Ventilation and Air Conditioning Systems

Existing Data

There are two system types that provide ventilation for the facility. The two systems are constant volume booster coil and variable air volume air handling systems.

Both system types consist of a central supply fan, which contains a heating coil, cooling coil, fresh air and return air dampers. The system modulates the heating and cooling coils as needed to maintain a constant 55 deg. F supply air temperature.

The booster coil systems use duct mounted heating coils to reheat the supply air as needed to satisfy the temperature needs of the room served.

The variable air volume (vav) systems add a modulating damper that reduces or increases the volume of conditioned air that is supplied to the space as needed to satisfy the temperature needs of the room served. Some of the spaces have an additional fan within the vav box. This is called fan powered vav.

Hot water cabinet heaters heat all of the entrance vestibules. A cabinet heater utilizes a fan and heating coil to heat the area. When the room thermostat senses a drop in space temperature the fan starts and hot water is allowed to flow through the heating coil. When space temperature is satisfied the fan stops.

With the exception of the office area the building is air conditioned by a 146 ton air cooled water chiller. The office area is air conditioned by a separate air cooled compressor condensing unit.

The chilled water plant also utilizes an ice storage system. This allows the building operator to create ice during off peak hours when electricity is relatively cheap. Then during peak hours the ice is melted to supplement the cooling produced by the chiller to meet the cooling needs of the building.

Observations

The systems are in good condition and are functioning as intended.

Some of the fan powered vav box fans have failed when paper construction labels have come loose from the ductwork and have become lodged in the fan. Unfortunately little can be done to prevent this from occurring at this point in time.

Recommendations

Continue preventative maintenance on the system.

Control Systems

Existing Data

The entire building is served by the original Honeywell fully digital Building Automation System of automatic temperature control.

Intermediate School
Mount Horeb School District **Page 3 of 3**

Observations

The system is in good condition and functions as intended. The system can be monitored at the main operator workstation in the building or remotely at the district office. It is accessed through the district IT system.

Recommendations

Continue preventative maintenance and updating of the software on the system.

Mount Horeb Intermediate School **Page 1 of 3**
Mount Horeb, WI

Electrical System Review:

The following report is the result of a site visit by Curt Krupp of Muermann Engineering, LLC that occurred on July 7th 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

Main Electrical Service

Observations

A. The facility is fed with a 277/480 volt 3 phase 4 wire 2000 amp service. The service is fed with a pad mounted utility transformer located outside the electrical equipment room.

B. The existing service panel has room for additional breakers and is sized to accommodate addition load.

C. The meter is located outside the building next to the utility transformer.

Recommendations

A. Add to service if required to accommodate additional load. If a large building addition is planned for this facility, the service will need to be evaluated.

Panelboards

Observations

A. The panels in the facility are new and have room for additional breakers.

Recommendations

A. None at this time

Generator

Observations

A. The generator is a 67 Kw Onan type, natural gas fired and air cooled.

B. The generator is located outside in a shared utility transformer enclosure and is locked.

C. The emergency loads are split to comply with code. A life safety and non-life safety transfer switch is present.

D. It would appear based on the loads observed in the generator panels that small loads can be added if required

Recommendations

A. None at this time

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Mount Horeb, WI

Lighting Fixtures and Controls

Observations

A. The fixtures throughout are T8 type and in good condition.

B. Exterior fixtures are HID type

Recommendations

A. Consider replacing the exterior lighting with LED type.

Fire Alarm System

Observations

A. A new Simplex 4020 addressable system is in place and appears to be code compliant at time of installation.

Recommendations

A. Additional fire alarm devices can be added to the existing system.

Clock System

Observations

A. A Dukane clock system is installed.

B. No problems were noted by staff with the clock system.

Recommendations

A. Additional clocks can be added to the existing system.

Public Address System

Observations

A. A Dukane intercom system is installed. No call in devices are installed.

Recommendations

A. Additional intercom speakers can be added.

Phone System

Observations

A. The facility contains Cortelco phones and phone switch.

Recommendations

A. Possible upgrade to an IP solution.

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Mount Horeb, WI

Data System

Observations

A. The facility contains one main data closet. The closet has air conditioning and proper grounding.

B. Wireless Access points were noted throughout.

Recommendations

A. Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added.

B. If a building addition would require that the data cable have a total installed length of over 300 feet, then an additional IDF data rack will be required.

CATV System

Observations

A. There is a CATV service to this building. The staff indicated it is no longer used.

Recommendations

A. None at this time

Access Control System

Observations

A. A stand-alone non networked keyless entry system is present.

Recommendations

A. Another option would be to provide a new Networked keyless entry system. This can be done by reusing the existing strikes and readers and installing new data to a controller at door and new software. This will allow for an IP based network system.

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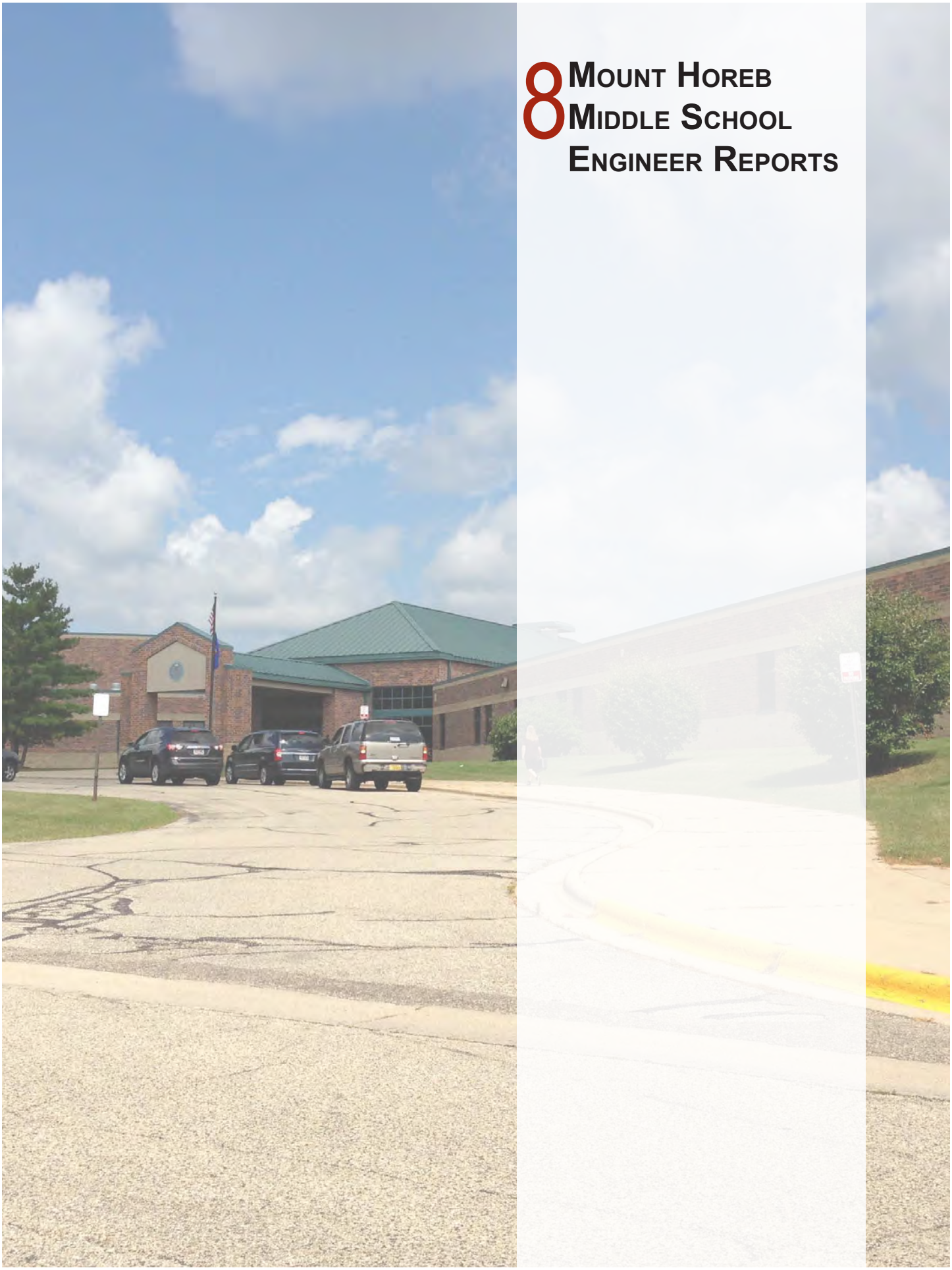

8 Mount Horeb Middle School Engineer Reports

Mount Horeb Middle School
Mount Horeb, WI

Plumbing System Review:

The following report is the result of a site visit by Tim Kehoe of Muermann Engineering, LLC that occurred on July 7th, 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

Domestic Water

Observations

A. The building is supplied by a 6" combination water service with a 4" water meter. The water service and water meter are sized adequately for the building and future expansion.

B. Water piping is type "L" copper pipe. The piping is in good condition.

C. Fire protection is located in the Kitchen, Home Economics, Art, and Technical Education rooms. The water service is large enough to provide fire protection for the entire building.

Recommendations

A. Although the entire building is not required to have a fire protection system, it is likely that should the building be renovated or expanded upon, the remaining portion of the building would require fire protection.

Sanitary / Storm Piping

Observations

A. Sanitary waste and vent, and storm piping materials are Schedule 40 PVC. Base on the age of the building, the piping systems are expected to be in good condition.

B. An interior grease interceptor is located in the floor slab of the Kitchen. The grease interceptor appears to be adequately sized.

C. An acid neutralization basin has been provided for the Science classrooms.

D. All art room sinks have been provided with plaster traps.

E. Roof drainage and storm drainage was reported to be in good condition.

Recommendations

A. Provide continual maintenance for the grease interceptor, acid basin, and plaster traps.

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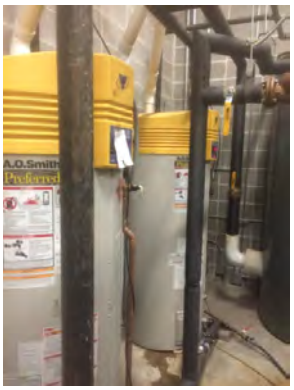
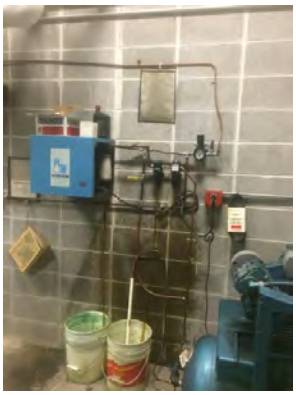
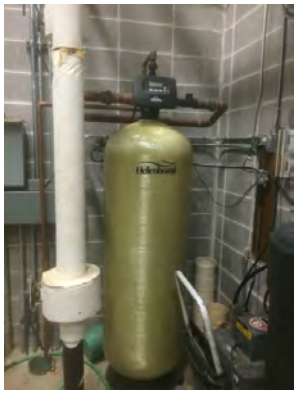
Mount Horeb Middle School
Mount Horeb, WI



Plumbing Equipment

Observations

A. The domestic hot water heating system consists of two (2) gas-fired, sealed combustion water heaters and a storage tank approximately 200 gallons in capacity.

B. The water heating system is over-sized for the actually hot water load in the building.

C. Water heating equipment is nearing the end of its life expectancy.

D. The water softener is in good condition.

Recommendations

A. Schedule the existing water heating equipment for replacement. The equipment should be resized for the actual buidling demand. Instal new gas-fired, sealed combustion modulating water heaters.

Plumbing Fixtures

Observations

A. All plumbing fixtures are original to the building. Generally, all plumbing fixtures are in good condition. Faucets in FACE room and sensor faucets located in Public toilet rooms are in fair condition.

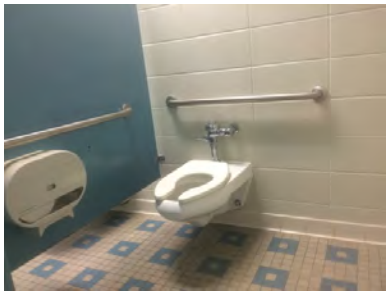
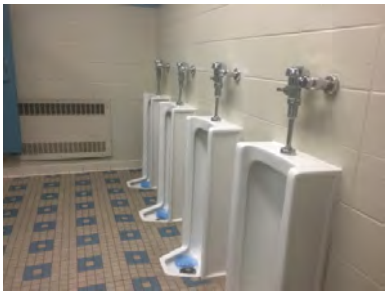
B. Water closets are wall hung fixtures with manually operated flush valves. Urinals are floor outlet fixtures with manually operated fixtures. All Toilet rooms with floor outlet urinals must have at a minimum one urinal with a sensor operated flush valve to be considered ADA compliant. Lavatories are wall hung and in good condition. Faucets are in fair condition.

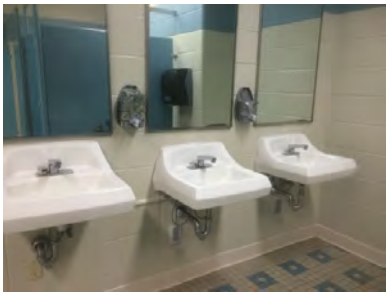
C. Science room sinks are in good condition. Lab stations are provided with hot and cold water, natural gas, and at some sink locations an emergency eye-wash. Gas outlets are controlled with a valve and emergency push button wired to a solenoid valve.

D. Art room sinks are in fair condition.

Recommendations

A. Provide a new battery operated sensor flush valve at urinals to comply with ADA requirements.



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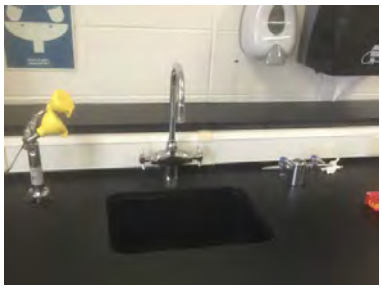
B. Schedule lavatory faucets and FACE lab faucet for replacement.



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HVAC

The following report is the result of a site visit by Bert Fredericksen of Fredericksen Engineering, Inc. that occurred on July 6, 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

The building was constructed in 1993 with a small addition completed in 2000. The building covers approximately 93,000 square feet total area.

Heating System

Existing Data

The boiler plant, installed in 1993, consists of two Burnham fire box hot water boilers each fired with natural gas. Each boiler has a capacity of 2,453,000 btu gross output. The boiler plant is located on one of the two mechanical mezzanines.

The piping and pumping system for the boiler plant consists of a single circuit with a stand-by pump. If the primary pump fails, the stand-by pump will start and provide hot water circulation to the system.

Observations

The Burnham firebox boilers are in good condition and with recommended maintenance could continue to serve the facility for several more years. The boilers are nominally 80% efficient appliances. Modern condensing boiler technology allows operation nearing 95% efficiency.

The hot water distribution pumps are modulated using a discharge line throttling valve. Based on system demand the valve will modulate as needed to meet system flow. The throttling valve causes the pump to ride the pump curve resulting in slight savings in pump energy. Modern motor technology allows the system designer to now modulate the pump motor speed directly through a variable frequency drive. The use of a vfd is a significant improvement over the older throttling valve concept.

The hot water system is kept in operation year round. Maintenance personnel report that this is done to prevent leaks from occurring within the piping system. While this is highly unusual it is not the first time we've run across this particular issue.

The piping system utilizes mechanical couplings and grooved piping at the joints. Maintenance personnel report that if they shut down the boiler plant the couplings will leak as the system cools. Typically when the system cools and the pipe contracts the gasket within the mechanical coupling will expand and maintain its seal. In this case the gaskets clearly are failing and do not maintain their seal as the system cools.

Boiler water chemical systems are in place and are routinely monitored.

Insulation at most piping is of adequate thickness and in good condition. Piping is labeled throughout the facility.

Thermometers and gauges are present and appear to be working at all locations.

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Recommendations

Continue preventative maintenance on the system.

Remove the existing pump system throttling valve and install variable frequency drives and digital pressure differential control for direct pump modulation.

Consider replacement of the existing boilers with new high efficiency condensing boilers. The existing boilers have been in service for 22 years and have an expected service life of 25 to 30 years. Additionally, the new boilers would achieve an annual gas savings of roughly 10% over current usage.

If the mechanical couplings in the piping system begin leaking even when the system is hot or if there is a need to allow boiler plant shutdown the original gaskets and couplings will need to be removed and replaced. Our recommendation would be to maintain the existing conditions as long as possible as a total system gasket replacement would be too expensive to be justified by any potential energy savings..

Ventilation and Air Conditioning Systems

Existing Data

There are two system types that provide ventilation for the facility. The two systems are single zone constant volume and variable air volume air handling systems.

Both system types consist of a central supply fan, which contains a heating coil, cooling coil, fresh air and return air dampers. The system modulates the heating and cooling coils as needed to maintain the required system supply air temperature.

In the case of the systems serving the gym, lockers and the tech ed lab the central air handling unit serving these areas do not include a cooling coil. These spaces are not air conditioned but the units were provided with space for a cooling coil should it be necessary to air condition these spaces in the future.

The constant volume systems utilize a room thermostat to adjust the system supply air temperature as needed to satisfy the temperature needs of the space.

The variable air volume (vav) systems require a constant 55 deg. F. supply air temperature. At each room a vav box with modulating damper and heating coil is used to reduce or increase the volume of conditioned air that is supplied to the space as needed to satisfy the temperature needs of the room served. In winter the heating coil in the vav box will add heat to the supply air as needed.

Hot water cabinet heaters heat all of the entrance vestibules. A cabinet heater utilizes a fan and heating coil to heat the area. When the room thermostat senses a drop in space temperature the fan starts and hot water is allowed to flow through the heating coil. When space temperature is satisfied the fan stops.

The building is air conditioned by five air cooled compressor condensing units. The total cooling capacity of the five units is 250 tons.

Observations

The air handling units are the original units from 1993 and have been in service for 22 years. According to ASHRAE the average life of an air handling unit is 25 years. The units are nearing their life expectancy.

The air cooled compressor condensing units are the original units from 1993 and have been in service for 22 years. According to ASHRAE the average life of an air handling unit is 20 years. These units have exceeded their expected service life.

The vav air handling units modulate the total air supplied to the building using inlet vanes. The inlet vanes impart a rotation on the air as it enters the fan wheel. This reduces the total air flow and results in slight motor energy savings. Modern vav systems utilize a vfd to directly control motor speed and therefore manage total air volume in a more efficient manner.

The vav boxes are manufactured by Trane. These boxes are an older design that uses a cone shaped damper moving along an axis to modulate air flow. The current vav box design uses a rectangular damper that rotates around its axis.

The cone shaped dampers worked very well but now that they are out of production they are difficult to maintain.

Recommendations

Continue preventative maintenance on the system.

Remove the fan inlet vanes and install variable frequency drives and digital controls for the vav system supply and return air fans.

Plan on replacement of the existing air cooled compressor condensing units. They should be replaced as they fail so that the entire service life of the unit can be utilized before replacement.

The air handling units are in very good condition but will need to be refurbished at some point in the next 3 to 5 years to bring their performance back to near original status and get another 10 years of service out of the equipment.

As vav boxes fail they should be replaced rather than repaired. This will allow a gradual conversion of all vav boxes over to the current rotating damper design. It will also facilitate the transition from a digital/pneumatic control system over to a fully digital system (see Control Systems below).

Control Systems

Existing Data

The entire building is served by the original Honeywell digital Building Automation System of automatic temperature control. The head end is digital but valve and damper actuation is pneumatic.

The pneumatics are powered by a ¾ hp air compressor with filter dryer.

Observations

The control system is in good condition. However the pneumatic valve and damper actuation does frustrate maintenance staff in that they cannot monitor their operation in the same way a fully digital system can be monitored. Additionally, pneumatic systems require frequent calibration to maintain accuracy. The newer digital controls are more accurate and more flexible. The industry has made such a complete changeover to digital controls that it is becoming difficult to find good pneumatic service technicians.

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The use of a combined digital/pneumatic building automation system was common when this building was constructed. The reason pneumatic valve and damper operators were used is that the electronic actuators of the time were unreliable and of poor quality.

Modern electronic actuators are now more reliable than the pneumatic actuator which explains the industry switch to fully digital systems.

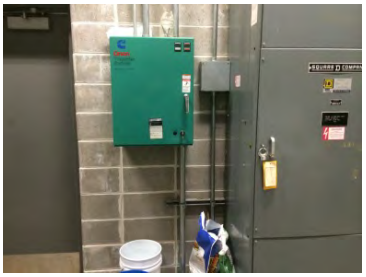
Recommendations

Continue to maintain and operate the digital/pneumatic control system as long as the current mechanical equipment remains. When any renovations to the existing equipment are made, a changeover to digital controls is strongly recommended.

Mount Horeb Middle School
Mount Horeb, WI

Electrical System Review:

The following report is the result of a site visit by Curt Krupp of Muermann Engineering, LLC that occurred on July 7th 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.



Main Electrical Service

Observations

A. The facility is fed with one 277/480 volt 3 phase 4 wire electrical service, 1600 amps. This service is fed with a utility pad mounted transformer.

B. The main service switchboard does have a Liebert surge protection device.

C. The existing service panel has space for two (2) additional breakers.

Recommendations

A. This service is in good condition. Small additional loads can be added to this panel.

Panelboards

Observations

A. A majority of the panels in the facility are new and have room for additions.

Recommendations

A. None at this time

Generator

Observations

A. An interior Onan, Natural Gas generator is located in the Mezzanine. It is water cooled.

B. A 125 amp breaker feeds one transfer switch.

Recommendations

A. The generator appears to be in good condition and operating properly.

B. Staff indicated no problems with the generator.

Lighting Fixtures and Controls

Observations

A. Most of the fixtures in the facility are T8 type.

B. We noted 2x2 fluorescent fixtures in some areas.

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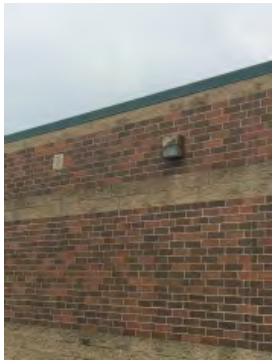

C. The Gym fixtures were T8 type.

D. Exterior fixtures were Metal Halide type.

E. No lighting motion sensors were noted in any areas.

Recommendations

A. Consider replacement of the 2x2 fixtures with LED or T8 lamps and ballasts. The PL lamps in the 2x2 fixtures will be harder to locate and will become more expensive.

B. Consider replacing the exterior lighting with LED type.

Fire Alarm System

Observations

A. A Simplex 4100 E addressable fire alarm system is installed.

B. We did note the facility has a dialer, but did not verify if it is operational.

C. The 96 wing did not contain fire alarm horn strobes in the classrooms. Horn strobes were located in the 2001 addition.

D. It was noted smoke detection is in classrooms.

Recommendations

A. A possible upgrade to add additional horn strobes in all areas to bring the system to full code compliance.

Clock System

Observations

A. A Dukane clock system is installed

B. No problems were noted by staff with the clock system.

Recommendations

A. Additional clocks can be added to the existing system.

Public Address System

Observations

A. A Dukane MCS350 intercom system is installed and the head end is located in the main data closet.

Recommendations

A. Additional intercom speakers can be added.

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Phone System

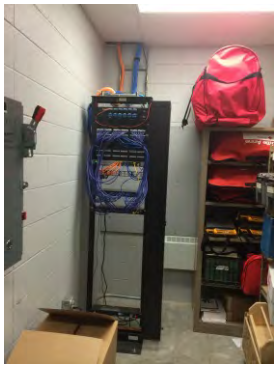
Observations

A. The facility contains Cortelco phones and phone switch.

Recommendations

A. Possible upgrade to an IP solution.

Data System



Observations

A. The facility contains two (2) data closets: one MDF and one IDF.

B. Wireless Access points were noted throughout.

C. Each classroom has approximately two (2) data drop locations with duplex fiber to one location.

D. The data rack is properly grounded.

E. It was noted this room does not have independent AC.

F. We noted cat 5 and cat 6 cabling.

Recommendations

A. Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added.

B. If a building addition would require that the data cable have a total installed length of over 300 feet, then an additional IDF data rack will be required.

C. Add independent AC to this room.

CATV System

Observations

A. There is a CATV service to this building. The staff indicated it is no longer used.

Recommendations

A. None at this time

CCTV System

Observations

A. A Pelco CCTV system is installed with nine (9) cameras located on the interior and exterior of the building.

B. The head end system is located in a storage room off the office.

C. This is a non IP type system and controlled with a non-digital recorder.

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Recommendations

A. A possible upgrade to migrate to an IP solution and digital cameras and run system over network.

Access Control System

Observations

A. A stand-alone keyless entry system is in place and not networked.

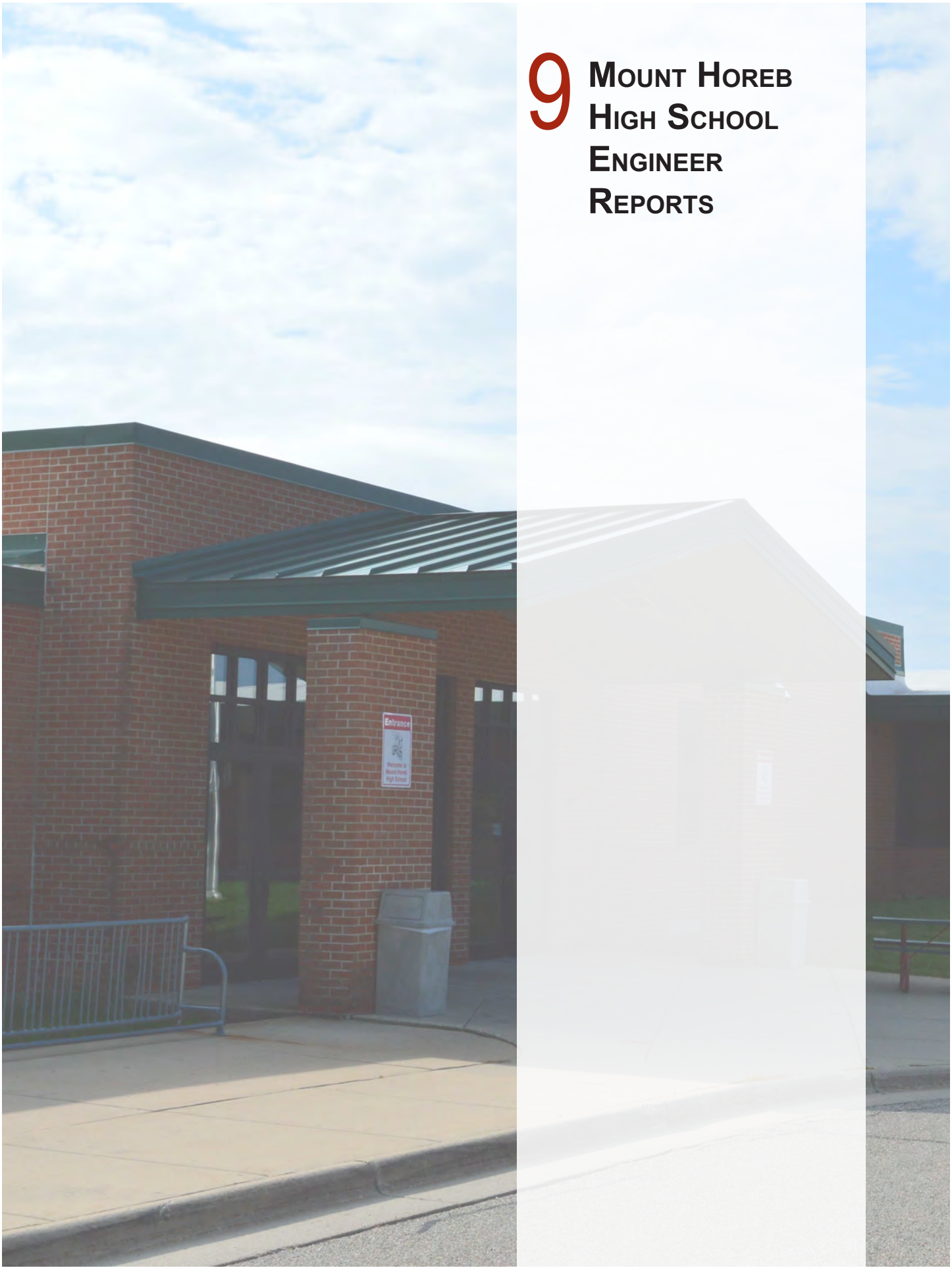
Recommendations

A. Provide a new Networked keyless entry system. This can be done by reusing the existing strikes and readers and installing new data to a controller at door and new software. This will allow for an IP based network system.

General

Observations

A. Staff noted problems with the exterior tennis court lighting wiring and controls. Due to the age of this system, it may require new wiring and controls.



9 Mount Horeb High School Engineer Reports

Mount Horeb High School
Mount Horeb, WI

Plumbing System Review:

The following report is the result of a site visit by Tim Kehoe of Muermann Engineering, LLC that occurred on July 7th, 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

Domestic Water

Observations

A. The building is supplied by a 4" water service with a 3" water meter. The water service is original to the building.

B. Original piping is galvanized and based on the age of the building likely in poor condition. Domestic water piping in the original building is located in tunnels.

C. Domestic water piping in the additions is type “L” copper tube. This piping is in good condition.

D. Only the hot water is softened in this building.

E. There are no fire protection systems in the building.

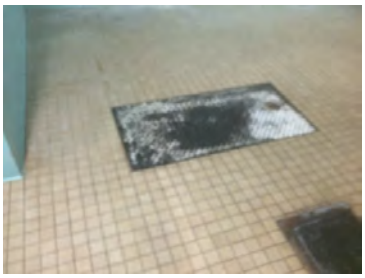
Recommendations

A. Existing galvanized piping should be scheduled for replacement.

B. Relocate new copper piping from tunnels to the above existing ceilings.

C. Future additions or renovations may require the building to be sprinkled. We recommend a new water service be budgeted for future expansions and renovations.

Sanitary Piping



Observations

A. The building is a gravity drained system which discharges to the street. Original sewers are cast iron pipe with galvanized vent piping. Based on the age of the building, it is expected that these sewers are in fair condition.

B. New additions have been provided with schedule 40 PVC piping. Based on the age of the piping it is expected to be in good condition. Based on the age of the additions it is expected that the piping is in good condition.

C. An interior grease interceptor is located in the Kitchen; however, the 3-compartment sink which it served has been removed. Should the kitchen be renovated, a new grease interceptor would be required for the dishwasher and potentially other devices.

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D. Art room sinks have been provided plaster traps. The plaster traps are old and appear to be in fair condition.

E. The original Science rooms have acid waste piping; however, they do not have an acid neutralization basin.

F. The new Science rooms have acid waste piping and an acid neutralization basin. The acid basin has not been regularly maintained.

Recommendations

A. Install a grease interceptor at the dishwasher to comply with current codes.

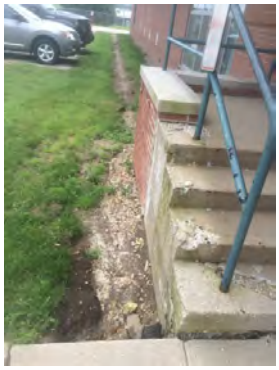
B. Install individual acid basins at a few of the old science rooms. It would be extremely difficult to re-pipe the sewers to a new below ground unit.

C. Provide continual maintenance on the existing plaster traps.

Storm Piping

Observations

A. Storm piping is a combination of gravity drained roof drains with internal piping, pitched roofs with gutters and downspouts and pitched roofs that shed directly to grade. The owner indicated there were problems with the existing underground storm drainage system.



B. Water which is shedding directing from the roof to grade is severely damaging grade at the back of the building.

Recommendations

A. We recommend using a sewer camera for all storm piping below grade to identify problems with underground piping.

B. All pitched roofs should be provided with gutters and downspouts. Provide splash blocks at grade.

Plumbing Equipment

Observations

A. The building has one main water heater. The water heater is in fair condition and appears to be appropriately sized for the building. The water heater is a gravity vented atmospheric water heater that is fairly inefficient.

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B. The existing water softener has recently had the head unit replaced. The tank of the unit appears to be original.

C. A small in-line booster pump has been provided for the irrigation system. The owner indicated that this system is rarely ever used.

D. The water softener is in good condition and appears to be sized appropriately for the building.

E. The air compressor for the Technical Ed rooms is in good condition and appears to be appropriately sized.

F. Welding booths have been provided with portable equipment.

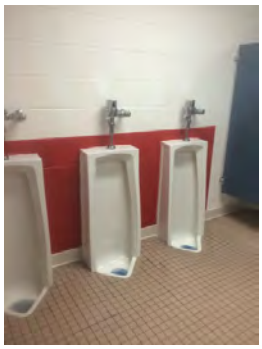
Recommendations

A. Schedule the water heater for replacement. Provide new gas-fire sealed combustion, modulating styled heaters. Verify size of new heaters.

B. Schedule water softener for replacement. Soften hot and cold water and verify size of softener.

C. Continually maintain air compressor.

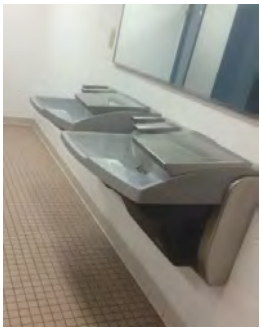
Plumbing Fixtures



Observations

A. Portions of this building have the original plumbing fixtures located in the toilet rooms, while other toilet rooms have been renovated. Original plumbing fixtures are in poor condition. Fixtures that have been replaced are in very good condition and appear to be water efficient.

B. Original Science rooms are in poor condition. Emergency gas shut-off is inadequate. Faucets have cold water only.



C. New Science rooms are in good condition. Sinks have hot and cold water, emergency gas shut-off is adequate and the rooms have an emergency eye wash and shower.

D. Art room sinks are in fair condition.

E. Home Economics/FACE room sinks are in poor condition.

Recommendations

A. Original plumbing fixtures should be scheduled for replacement.

B. Install hot and cold water at all science room sinks. Provide new gas shut-off controls for the Science rooms.

C. Schedule Art rooms sinks and plaster traps for replacement.

D. Schedule FACE rooms sinks for replacement.

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Electrical System Review:

The following report is the result of a site visit by Curt Krupp of Muermann Engineering, LLC that occurred on July 7th 2015. Site observations, construction plan review, and interviews with staff were all used in the preparation of this report.

Main Electrical Service

Observations

A. The facility is fed with two separate electrical services: the first is a 277/480 volt 3 phase 4 wire electrical service, 1200 amps. This service is fed with a utility pad mounted transformer; the second service is a 277/480 volt 3 phase 4 wire electrical service, 1200amps. This service is fed with a utility pad mounted transformer.

B. The main service switchboard does have a Liebert surge protection device.

C. The existing service panels have space for additional breakers.

D. The football field is fed with a separate electric service.

E. The existing 1962 service is still in place and backed from the service installed in 1996.

Recommendations

A. Both services are in good condition. Small additional loads can be added to both services if required. If large loads are planned, a new service may be required.

B. Replace the existing 1962 distribution with new I-line type gear and new breakers.

Panelboards

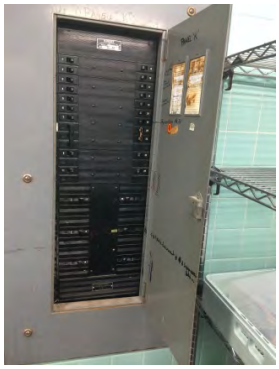
Observations

A. A majority of the panels in the facility are old style Kinney type dated to the original construction of the facility.

B. There are approximately 25 old style panels.

C. Newer sections of the facility have panels in good to fair condition and do not need replacement.

D. Staff indicated a lot of problems with breakers tripping in science labs. These are panels noted above as old style



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E. The kitchen panel was noted to be full with no additional breaker spaces.

F. The Auditorium is fed with an 800 amp disconnect.

Recommendations

A. Replace old style panels with new. Reuse existing feeders.

Generator

Observations

A. No generator is present

Recommendations

A. Due to the size of the facility and the auditorium, we would recommend a new emergency generator be installed.

B. Provide new emergency fixtures throughout the interior and exterior to bring the facility up to full code compliance.

Lighting Fixtures and Controls

Observations

A. Most of the fixtures in the facility are T12 type. Staff noted the district is in process of replacing with new T8 type.

B. We noted 2x2 fluorescent fixtures in some areas and incandescent in storage rooms.

C. The Gym fixtures were T8 type.

D. Exterior fixtures were Metal Halide type.

E. No lighting motion sensors were noted in any areas.

F. Auditorium lighting is incandescent.

G. Battery packs are located throughout the facility. We did note areas were lacking proper coverage.

Recommendations

A. Consider replacement of the 2x2 fixtures with LED or T8 lamps and ballasts. The PL lamps in the 2x2 fixtures will be harder to locate and will become more expensive.

B. Consider replacing the exterior lighting with LED type.

C. Consider replacing the Auditorium lighting with LED type.

D. Installing an emergency generator would eliminate the need for battery units throughout the facility.

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Fire Alarm System

Observations

A. Two separate systems are present. A newer Simplex 4020 addressable fire alarm system is installed in the new addition and an old style 120 volt system is installed in the existing portion of the building. The two systems are tied together to allow for annunciation.

Recommendations

A. A possible upgrade to add additional horn strobes in all areas to bring the system to full code compliance.

B. Remove the old 120 volt system and device and extend the Simplex system to all areas of the facility.

Clock System

Observations

A. A Dukane clock system is installed.

B. Some of the clocks run off 120 volt and some run off the Dukane low voltage system.

C. Staff noted clocks do not auto correct.

Recommendations

A. We recommend migration to a Primex wireless solution and eliminate the Dukane master clocks.

Public Address System

Observations

A. A Dukane intercom system is installed.

B. Bells are also installed and operational through the intercom system.

Recommendations

A. Additional intercom speakers can be added.

Phone System

Observations

A. The facility contains Cortelco phones and phone switch.

Recommendations

A. Migrate to IP solution.

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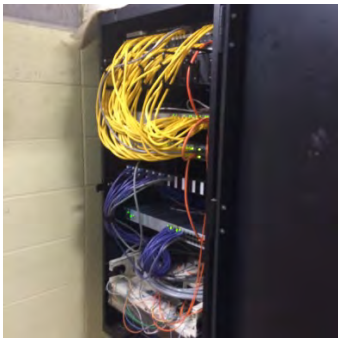
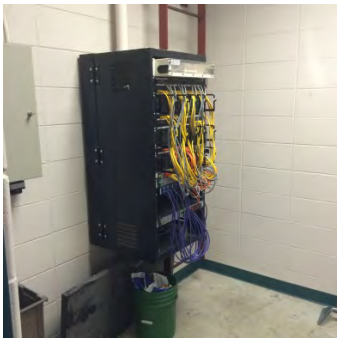
Mount Horeb High School
Mount Horeb, WI





Data System

Observations

A. The facility contains six (6) data closets; one MDF and five IDFs.

B. Wireless Access points were noted throughout.

C. Each classroom has approximately two (2) data drop locations with duplex fiber to one location.

D. The data racks were properly grounded.

E. It was noted this room did not have independent AC.

F. We noted cat 5 and cat 6 cabling.

G. Fiber interconnects all data racks.

Recommendations

A. Additional data can be added to existing racks. New floor racks may be required if a large amount of data cabling is added.

B. If a building addition would require that the data cable have a total installed length of over 300 feet, then an additional IDF data rack will be required.

C. Add independent AC to the main data room at a minimum. Add additional cooling to the other data closets as required.

CATV System

Observations

A. There is a CATV service to this building. The staff indicated it is no longer used

Recommendations

A. None at this time

CCTV System

Observations

A. A Pelco CCTV system is installed with 40 cameras located on the interior and exterior of the building.

B. This is a non IP type system and controlled with a non-digital recorder.

C. The facility also has an AI Phone system to allow for remote access.

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Recommendations

A. A possible upgrade is to migrate to an IP solution and digital cameras and run system over network.

Access Control System

Observations

A. A stand-alone keyless entry system is in place and not networked.

Recommendations

A. Provide a new Networked keyless entry system. This can be done by reusing the existing strikes and readers and installing new data to a controller at door and new software. This will allow for an IP based network system.

General

Observations

A. No master shut off for shop equipment was noted.

B. Mag starters were not present on all shop equipment to prevent re-start in the event of loss of power.

C. We noted a lot of surface cabling in classrooms.

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