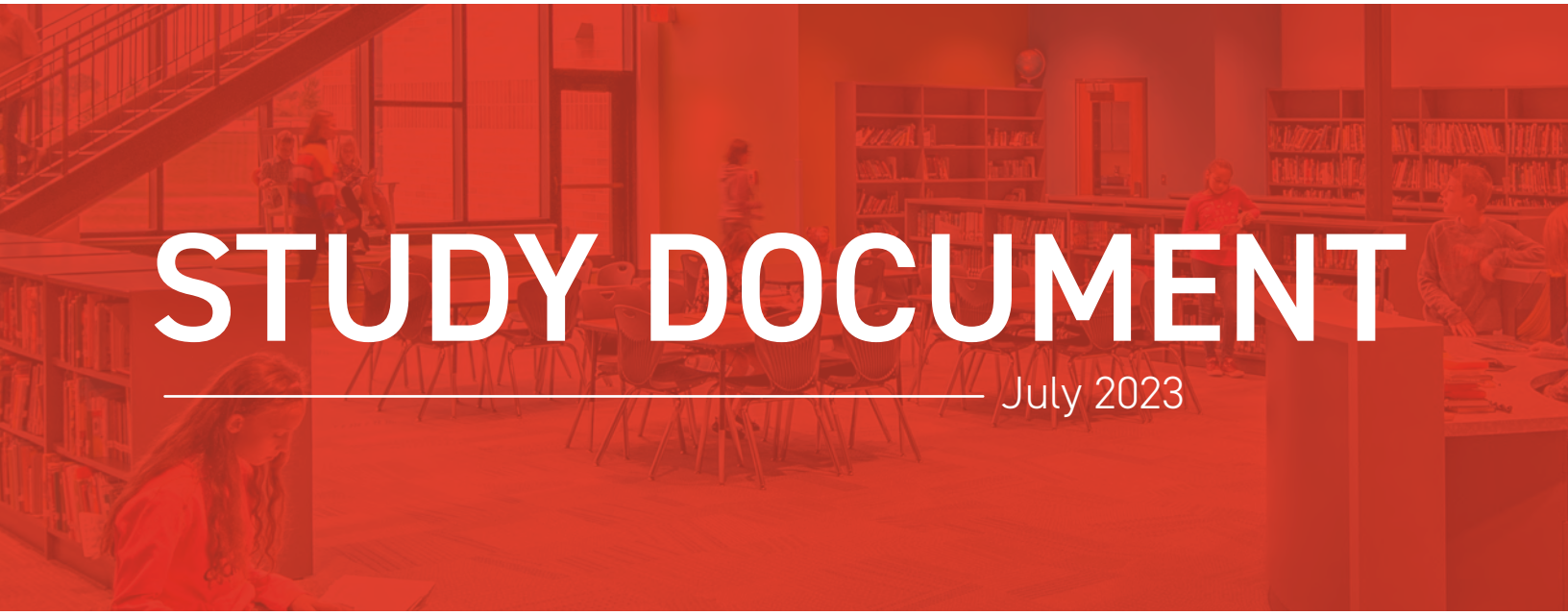
Markesan District Schools

District-wide Facilities Study



STUDY DOCUMENT

July 2023

BRAYARCHITECTS

BRAYARCHITECTS

contents

MARKESAN DISTRICT SCHOOLS

Administration Team // Markesan, Wisconsin

MARKESAN DISTRICT SCHOOLS

Board of Education // Markesan, Wisconsin

BRAY ASSOCIATES - ARCHITECTS, INC.

Bray Team // Milwaukee, Wisconsin

CD SMITH CONSTRUCTION, INC. / CA

Construction Administration Team // Milwaukee, Wisconsin

FREDERICKSEN ENGINEERING, INC. / CA

HVAC + Mechanical Engineering Team // Mequon, Wisconsin

MSA PROFESSIONAL SERVICES, INC. / CA

Plumbing, Electrical, + Life Safety Team // Appleton, Wisconsin

POINT OF BEGINNING, INC. / CA

Civil Team // Stevens Point, Wisconsin

document introduction

FIRM INTRODUCTION

Bray Architects was founded in 1962 and after leadership by two generations of the Bray family, ownership was transitioned to Matthew Wolfert, Stephen Kuhnen, and Ronet Rodewald. Under their leadership, Bray Architects has grown into an architecture and interior design firm focusing on various project types ranging in size from $100,000 to $175 million.

Bray Architects has evolved into a diverse group of specialists focusing almost exclusively on the planning and design of PreK-12 education projects. We are guided by the idea that public architecture and public buildings must above all function well, put the user at the center of the design, and connect those users to their communities.

HOW TO USE THE FACILITIES STUDY DOCUMENT

This document reflects observations made by Bray Architects and their consulting engineers surrounding the conditions of any building(s) and associated systems at the time of initial building walk-throughs. Observations include what can be visibly seen at the time of the walk-through, and do not include analysis of any buried, hidden or structural elements that would require partial demolition, extensive investigation or additional testing.

assessment: process

Observations are given an assessment of "Good / Fair / Poor" that is based on both generalized and numerical criteria and can be established at the individual, categorical, building and District-wide level. This assessment assists in providing a high-level identification of the overall condition of each element, as well as identifying which elements have the most need. While such assessment does not include prioritization of identified needs, it may be used by the District as a tool for making such decisions once needs are identified.

Below is the defined criteria for each level of assessment:

GOOD	No visible damage, wear or need for repair; no replacement required.
FAIR	Some visible damage, wear or need for repair; no immediate replacement required.
POOR	Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

It is important to note that any and all observations are not a direct reflection of the maintenance teams or their work. Even with proper maintenance, it is inevitable that buildings and their associated systems will wear with time and use.

scorecard breakdown

1.00 Building Systems Summary **83%**

Plumbing, Mechanical, Electrical, Life Safety

2.00 Interior Analysis **74%**

Building Interior (walls, doors, openings, misc.), Ceiling, Flooring

3.00 Exterior Analysis **77%**

Building Exterior + Envelope, Doors, Windows, Roof Identification

4.00 Site Assessment **62%**

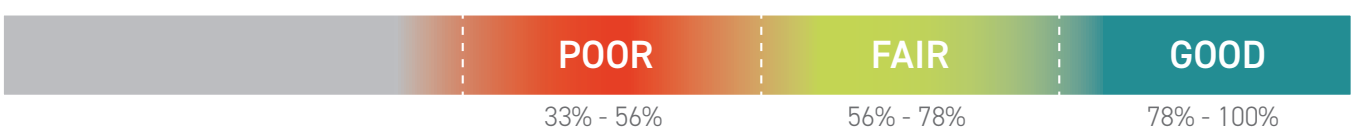
5.00 ADA Condition + Assessment **68%**

Assessment Weight

- Building Systems Summary
- Interior Analysis
- Exterior Analysis
- Site Assessment
- ADA Condition + Assessment

Overall Building

75.0%



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EXECUTIVE SUMMARY

markesan district schools

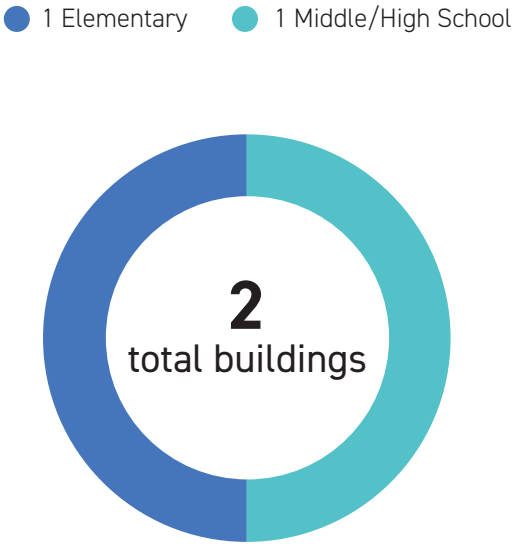
Acres Owned: 142.08 Acres
Grades Served: EC-12th Grades
Total Buildings Assessed: 2/2
Average Classroom Size: 940 sf

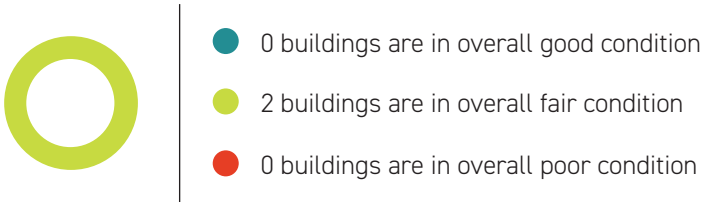
District Architectural Condition Overview

District ADA Condition Overview

District Building Systems Overview

District Site Condition Overview





markesan elementary scorecard breakdown

1.00 Building Systems Summary **75%**

Plumbing, Mechanical, Electrical, Life Safety

2.00 Interior Analysis **66%**

Building Interior (walls, doors, openings, misc.), Ceiling, Flooring

3.00 Exterior Analysis **61%**

Building Exterior + Envelope, Doors, Windows, Roof Identification

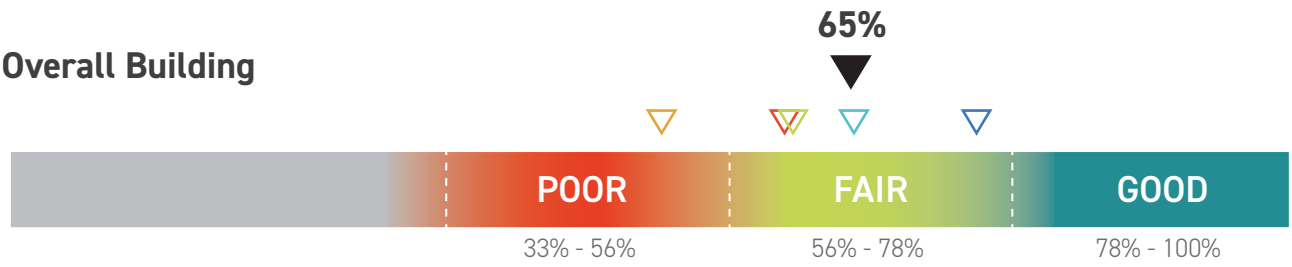
4.00 Site Assessment **50%**

5.00 ADA Condition + Assessment **60%**

Assessment Weight

- Building Systems Summary
- Interior Analysis
- Exterior Analysis
- Site Assessment
- ADA Condition + Assessment

Overall Building



markesan middle/high school scorecard breakdown

1.00 Building Systems Summary **83%**

Plumbing, Mechanical, Electrical, Life Safety

2.00 Interior Analysis **74%**

Building Interior (walls, doors, openings, misc.), Ceiling, Flooring

3.00 Exterior Analysis **77%**

Building Exterior + Envelope, Doors, Windows, Roof Identification

4.00 Site Assessment **62%**

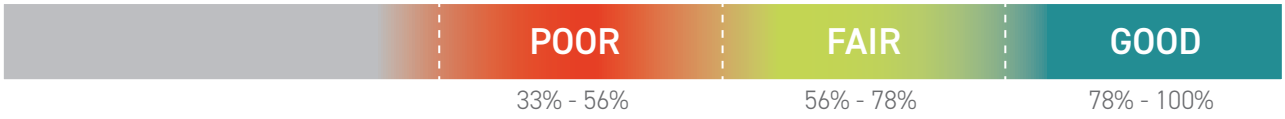
5.00 ADA Condition + Assessment **68%**

Assessment Weight

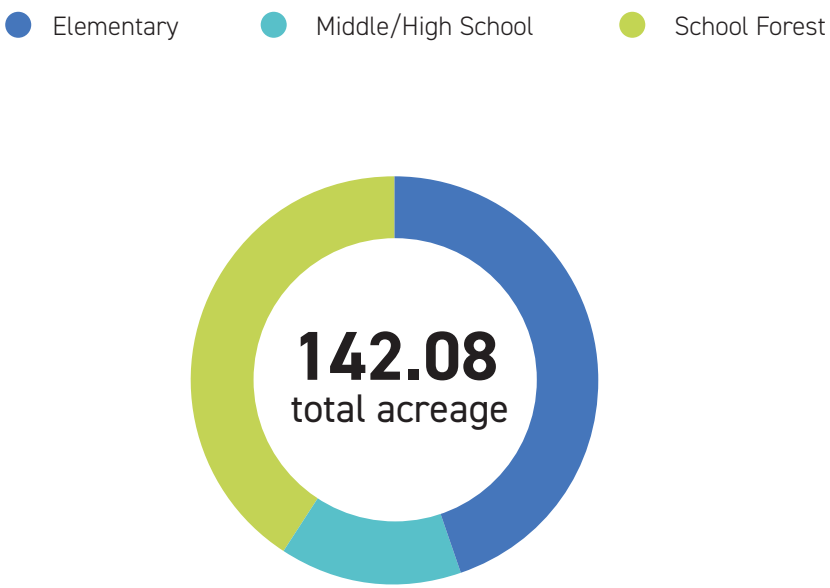
- Building Systems Summary
- Interior Analysis
- Exterior Analysis
- Site Assessment
- ADA Condition + Assessment

Overall Building

75.0%



district-owned property + boundaries map



elementary

1 Markesan Elementary (63.56)

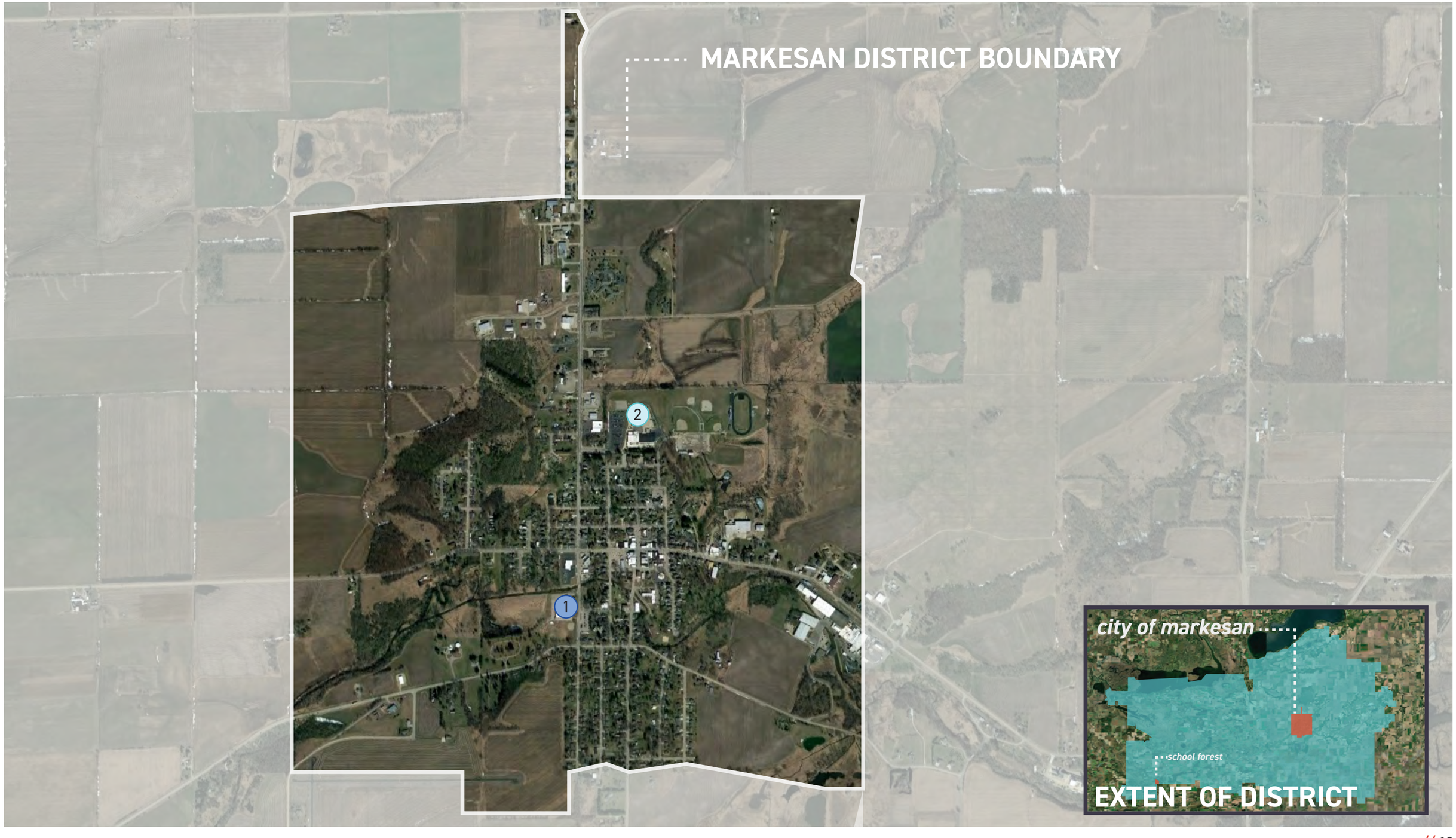
middle/high school

2 Markesan Middle/High School (20.52)

other district owned property

3 School Forest (58.00)

district-owned property + boundaries map



01

markesan elementary school

Scorecard Rating

FAIR

65.0%

Architectural Condition

FAIR

ADA Condition

FAIR

Building Systems

FAIR

Site Condition

POOR

SUMMARY

Markesan Elementary School provides a comprehensive program for Early Childhood - 5th grade students.

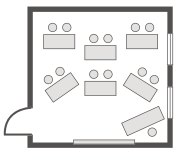
Grades Served: EC - 5th Grades
Site Size: 63.56 acres
Parking: 77 stalls

Original Date of Construction

1936

As of 2023: 87 years old

Average Core Classroom
Size Comparison



874 sq. ft.

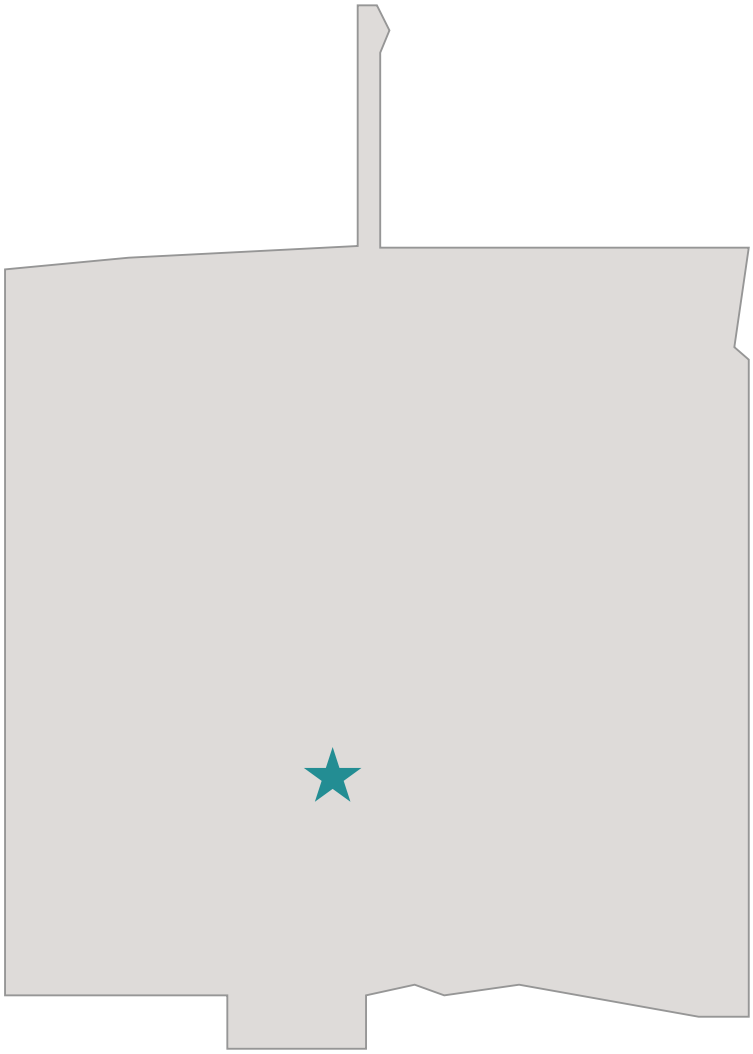
Recommended Size

1st -12th: 900 sq. ft.
Kindergarten: 1200 sq. ft.

Square Footage

83,160 Sq. Ft.

markesan elementary school



**School Location in Marksan School District Boundary*

KEY TAKEAWAYS

- A Freshwater Emergent Wetland is located on the West and Northwest portion of the site.
- There is no parking directly connected to the school, however, there are two offsite parking lots to the east that serve the school's parking needs.
- The athletic fields contain two baseball diamonds and mulched playground areas with playground equipment are present.

PARCEL DIVISION

- Building
- Playgrounds
- Paved Area
- Athletic Fields

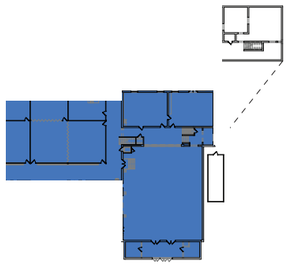
BUSES ON SITE

Current Capacity: 3 Buses

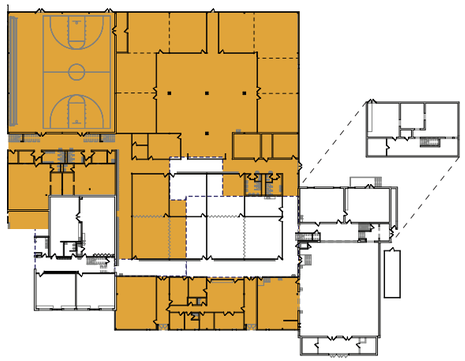
2 Vans

markesan elementary school site map

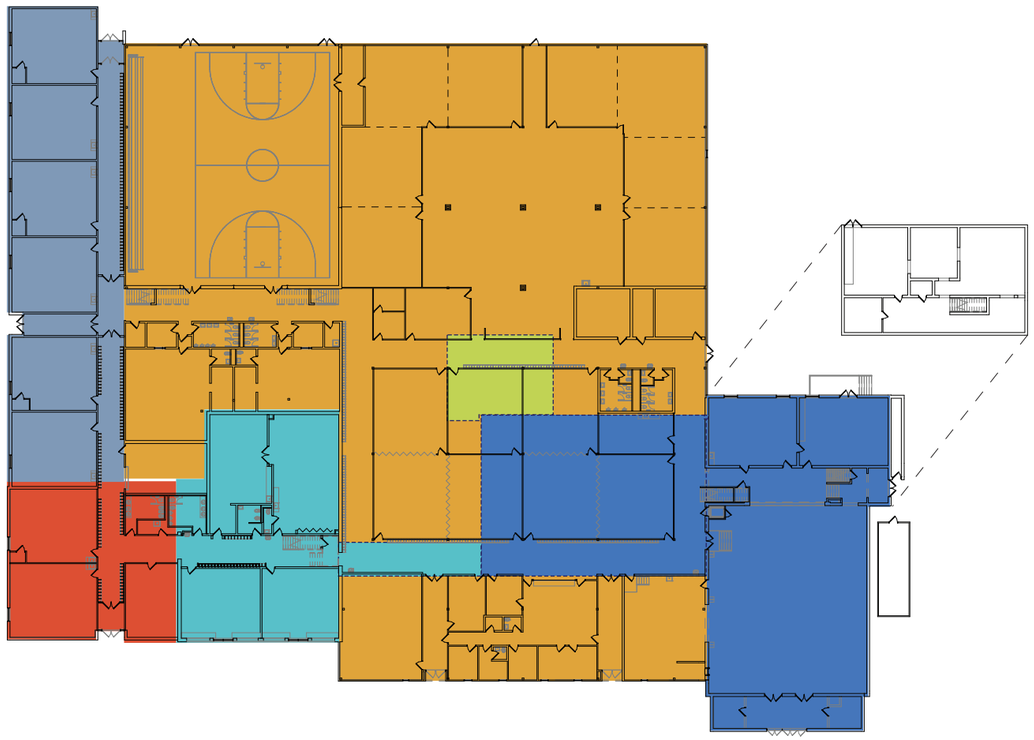
markesan elementary school building evolution

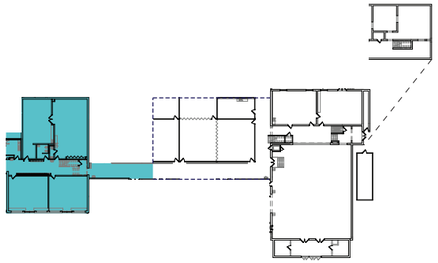


1936 - Original Building

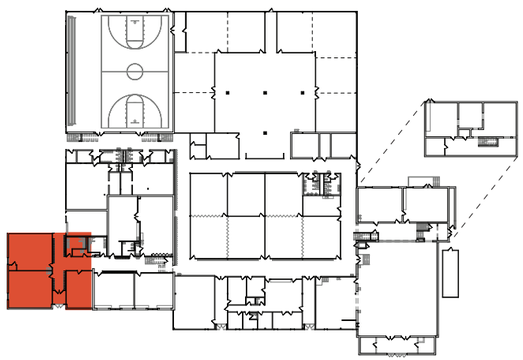


1973 - Gym/Classroom Addition

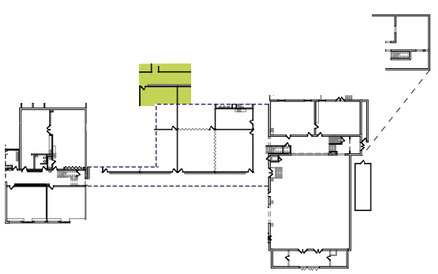




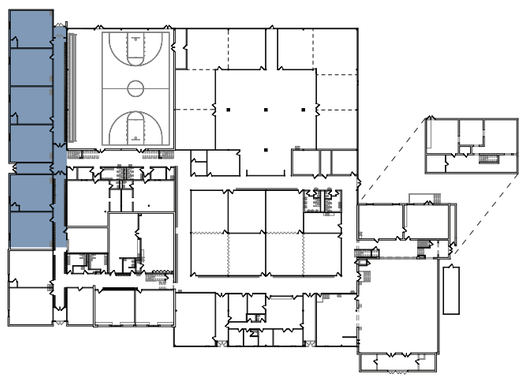
1948 - Classroom Addition



1989 - Classroom Addition



1953 - Classroom Addition



1990 - Classroom Addition

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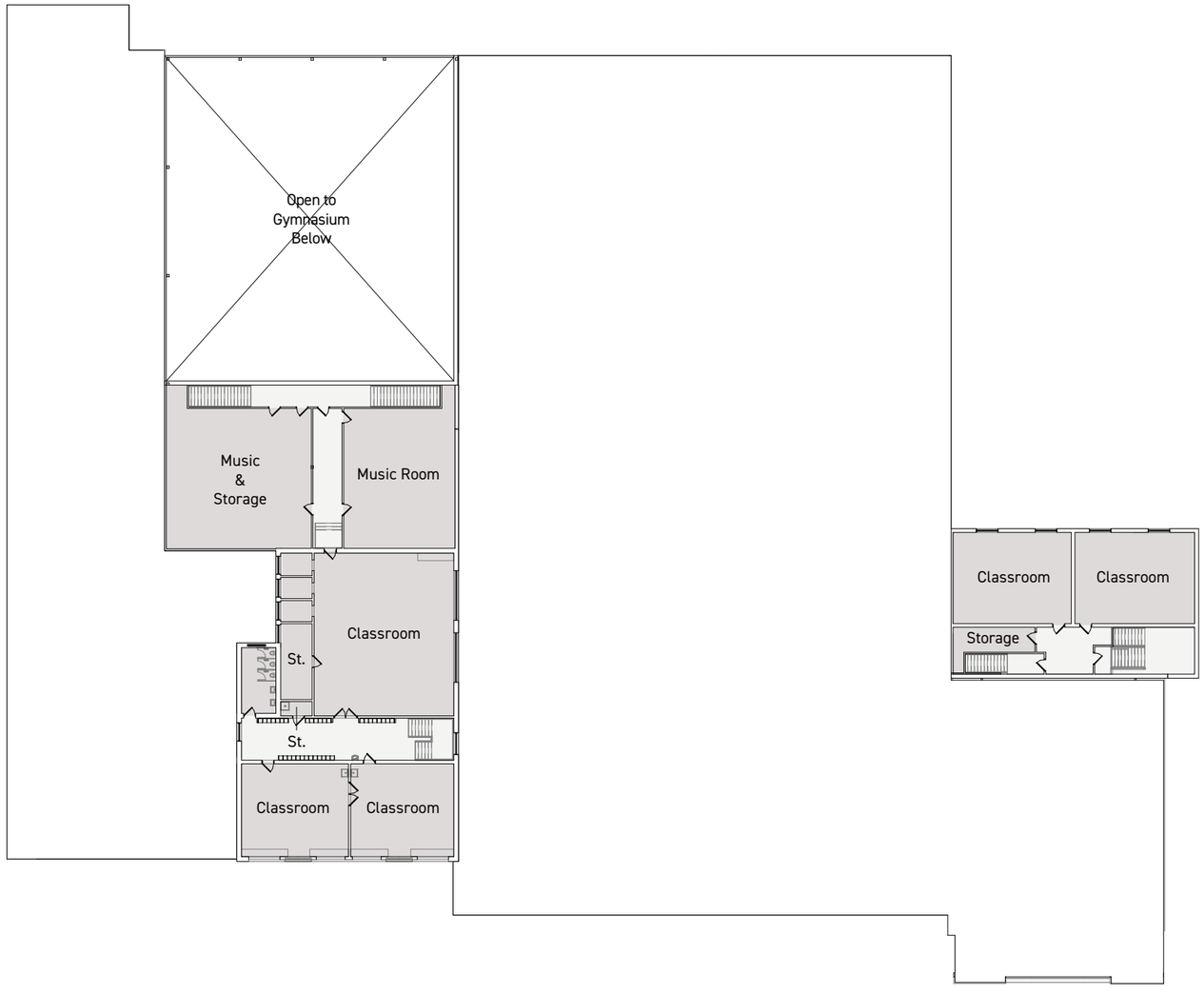
markesan elementary school floor plan | first floor

N

markesan elementary school floor plan | second floor



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markesan elementary school building systems summary

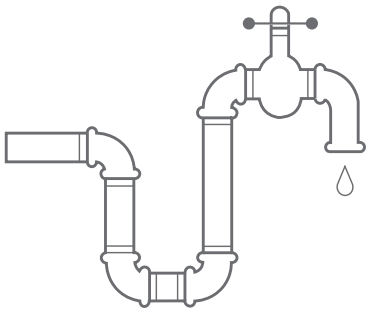
Good Condition
No visible damage, wear or need for repair; no replacement needed.

Fair Condition
Some visible damage, wear or need for repair; no immediate replacement required.

Poor Condition
Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Plumbing
Condition Overview

Replace all piping with new copper piping



PLUMBING

Domestic Water System	■	
Water Service	●	4" water service w/ 3" water meter.
Water Distribution Piping	●	Copper piping. The original piping appears to be in fair condition, but is reaching the end of its life expectancy.
Water Softening System	●	Hot water only.
Backflow Preventer	○	
Irrigation System	○	
Pressure	●	Adequate
Fire Sprinkler System	○	
Sanitary System	■	
Sanitary Sewer	○	No issues with the system were reported.
Sanitary Drain, Waste + Vent Piping	○	No issues with the system were reported.
Acid Waste Piping + Basin	○	
Interceptors	●	No issues with the system were reported.
Storm System	□	
Storm Sewer	○	
Storm Drain Piping	○	
Roof Drainage	○	
Sump Pump	○	
Natural Gas System	■	No issues with the system were reported.

* See appendix for full engineer reports + additional information.

markesan elementary school building systems summary

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Poor Condition
Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Plumbing
Condition Overview

Consider replacing flush valves and faucets with sensor operation

PLUMBING

Plumbing Equipment		
Water Heater		Multiple water heaters - no issues were reported.
Water Softener		Hot water only.
Circulator Pump		Multiple pumps @ 5-15 gpm.
Grease Interceptor		No issues with the system were reported.
Plumbing Fixtures		No issues with the system were reported.
Water Closets		Floor mounted water closets with manual flush valves.
Urinals		Wall mount with manual lever flush valve.
Lavatories		Wall mount with a mixture of sensor battery and manual faucets.
Electric Water Coolers		Single use with and without bottle filling stations.
General Sinks		Stainless steel drop-in basins with manual lever faucets.

* See appendix for full engineer reports + additional information.

markesan elementary school building systems summary

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Poor Condition
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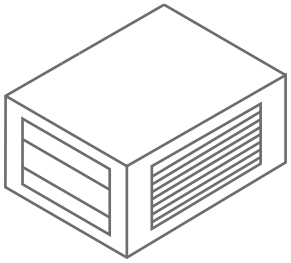
Mechanical Condition Overview

Plan to replace 1973 air handling unit and booster coils



MECHANICAL

Heating	■	
Boiler Plant	●	The boilers were installed between 2010 – 2013 and appear to be in satisfactory condition. The boilers have an estimated 20-year life expectancy.
Pumps	●	The exact age of the pumps is not known, but they appear to be about 25 years old and are in satisfactory condition. The pumps have an estimated 25-year life expectancy.
Ventilation + A/C Systems	■	
Air Handling Units	●	The main air handling unit was installed in 1973 and is in marginal condition. The air handling unit has an estimated 30-year life expectancy.
Air Conditioning Systems	●	The air-cooled condensing unit serving the main air handling unit and the unit serving the office blower coil unit were both replaced in 2021 and are in excellent condition. The condensing units serving the furnaces in the 1990 addition were replaced in 2009 and appear to be in good condition. The larger condensing unit serving the main AHU has an estimated 25-year life expectancy while the smaller units serving the office and the 1990 addition have an estimated 15-year life expectancy.
Blow/Fan Coil Units	●	The blower coil unit serving the office area was replaced in 2021 and is in excellent condition. The residential-grade furnaces serving the 1990 addition are replacement units from 2009 and 2022 and are all in good condition. However, these units seem to fail at different rates. The blower coils and furnaces have an estimated 15-year life expectancy.
Control Systems	■	The building is served by a Johnson Controls Metasys System installed in 2021.

* See appendix for full engineer reports + additional information.

markesan elementary school building systems summary

Good Condition
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Fair Condition
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Poor Condition
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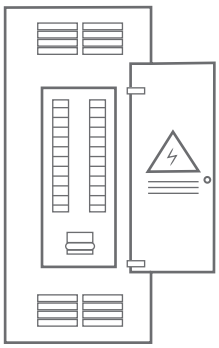
Electrical Condition Overview

Replace Service Switchboard



ELECTRICAL

Electrical Service	■	Consider adding a surge protective device at each service location to provide protection from incoming surges such as lightning.
Utility Service	●	It appears that the service size is adequate for the facility.
Switchboard	●	Based on the service equipment's age and condition, we recommend the replacement of the service switchboard with new. This will ensure reliability of equipment and breakers will trip upon fault.
Panelboards	◥	A. The old Square D and Kinney type panelboards and loadcenters are very old, have reached the end of their useful life and should be replaced based on their age and condition. B. The newer Square D NQOD type panelboards are in good working condition, in general have room for additional breakers and can remain. Add to the existing panelboards as necessary. C. Complete an Arc Flash Study of the existing electrical system and add arc flash labels to all electrical panelboards. This will increase the safety of personnel maintaining or operating equipment along with occupants in the vicinity of the equipment. D. Provide type-written directories and engraved panelboard labeling for all electrical panelboards throughout the building to prevent loss of information.
Light Fixtures + Controls	■	Light fixtures throughout the building have recently been upgraded and can remain. Replace fixtures throughout the building as necessary.
Interior Lighting	●	
Corridor Lighting	●	
Exit Lights	●	
Exterior Lights	●	

* See appendix for full engineer reports + additional information.

markesan elementary school building systems summary

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Fair Condition
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Poor Condition
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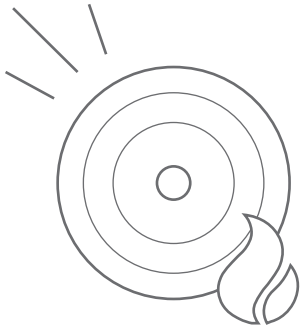
Life Safety
Condition Overview

Replace Access Control System



LIFE SAFETY

Emergency Generator

A. Due to the age and condition of the emergency generator, we recommend providing a new exterior rated natural gas generator. We recommend the generator to be sized to feed life-safety loads such as emergency egress lighting and fire alarm, as well as non-life-safety loads such as the main office complex, data closets, phone, intercom, boiler, boiler circulating pump and cooler/freezer.
B. We also recommend providing (2) new transfer switches fed from the generator which would separate life-safety and non-life-safety loads throughout the building. To bring the facility up to code, the new transfer switches would be located in a separate room from the main electrical service and boilers.

Emergency Egress Lighting	Add interior and exterior egress lighting to emergency generator or provide additional battery backup egress lighting to comply with current codes.
Fire Alarm System	Although the fire alarm system is operational, it is more than 20 years old and has reached the end of its life expectancy. We recommend replacing the existing addressable system head end and all devices to a new, code approved voice addressable fire alarm system with all new voice annunciated devices throughout the entire facility.
Public Address System	The existing Audio Enhancement Epic IP head end is in good working condition and can remain. Continue to add additional speakers to the existing intercom head end as necessary.
Access Control System	A new access control system should be considered. We propose a new Mercury device installed above each existing exterior door with a new CAT6 cable routed back to the network switch and provide new software. The existing equipment at each door can remain or additional device detection can be added. This will allow all door hardware to be run off any software and not require the replacement of the devices at the existing doors. This will allow for numerous features including the ability to open a door from a remote device such as a cell phone.
Security System	Add additional IP cameras to the existing system as required.

* See appendix for full engineer reports + additional information.

markesan elementary school interior analysis

OVERALL CONDITION RATING & KEY TAKEAWAYS

- Majority of the aluminum doors with aluminum frames are in good condition. Some doors in fair condition due to staining and/or surface scratches.
- Majority of the wood doors with hollow metal frames are in good condition. Some doors in fair condition due to staining and/or surface scratches.
- Majority of the concrete block walls are in good condition. There are some areas in poor condition due to cracking, splitting, broken and/or missing blocks.
- There are several instances where the tile wall base is in poor condition due to chipping, cracking, and/or missing tiles.
- The railing at the stage of the cafeteria currently consists of vertical metal posts with rope barriers between, posing a potential safety/code issue.
- Some doors contain transfer grilles.

WALLS

1. Concrete Block
2. Gypsum
3. Brick
4. Precast
5. Tile
6. Glazed Block
7. Wood Paneling
8. Plywood
9. Partition Walls
10. Vinyl Base
11. Tile Base
12. Glazed Block Base

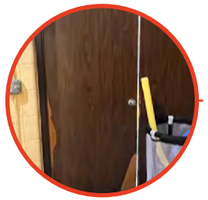
DOORS / OPENINGS

13. Wood Door w/ Hollow Metal Frame
14. Aluminum Door w/ Aluminum Frame
15. Folding Door
16. Rolling Door
17. Hollow Metal Borrowed Lite
18. Solid Surface Sill
19. Marble Sill
20. Hollow Metal Door w/ Hollow Metal Frame
21. Wood Door w/ Aluminum Frame
22. Tile Sill

MISCELLANEOUS

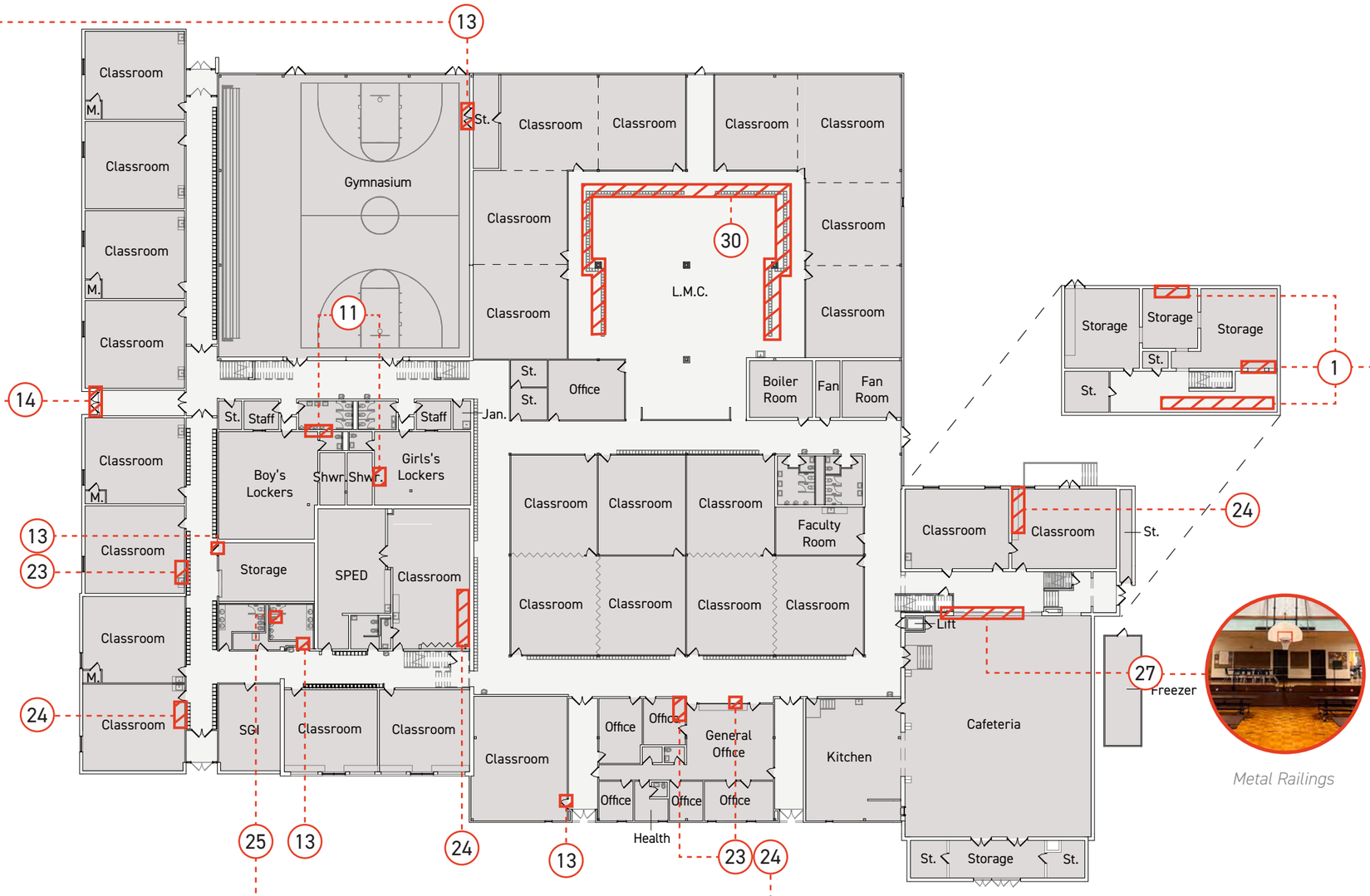
23. Laminate Casework
24. Wood Casework
25. Metal Toilet Partitions
26. Wood Railings
27. Metal Railings
28. Metal Lockers
29. Bleachers
30. Wood Cubbies

markesan elementary school interior identifications + analysis | first floor



Wood Door w/ Hollow Metal Frame

Aluminum Door w/ Aluminum Frame



Concrete Block

Metal Railings

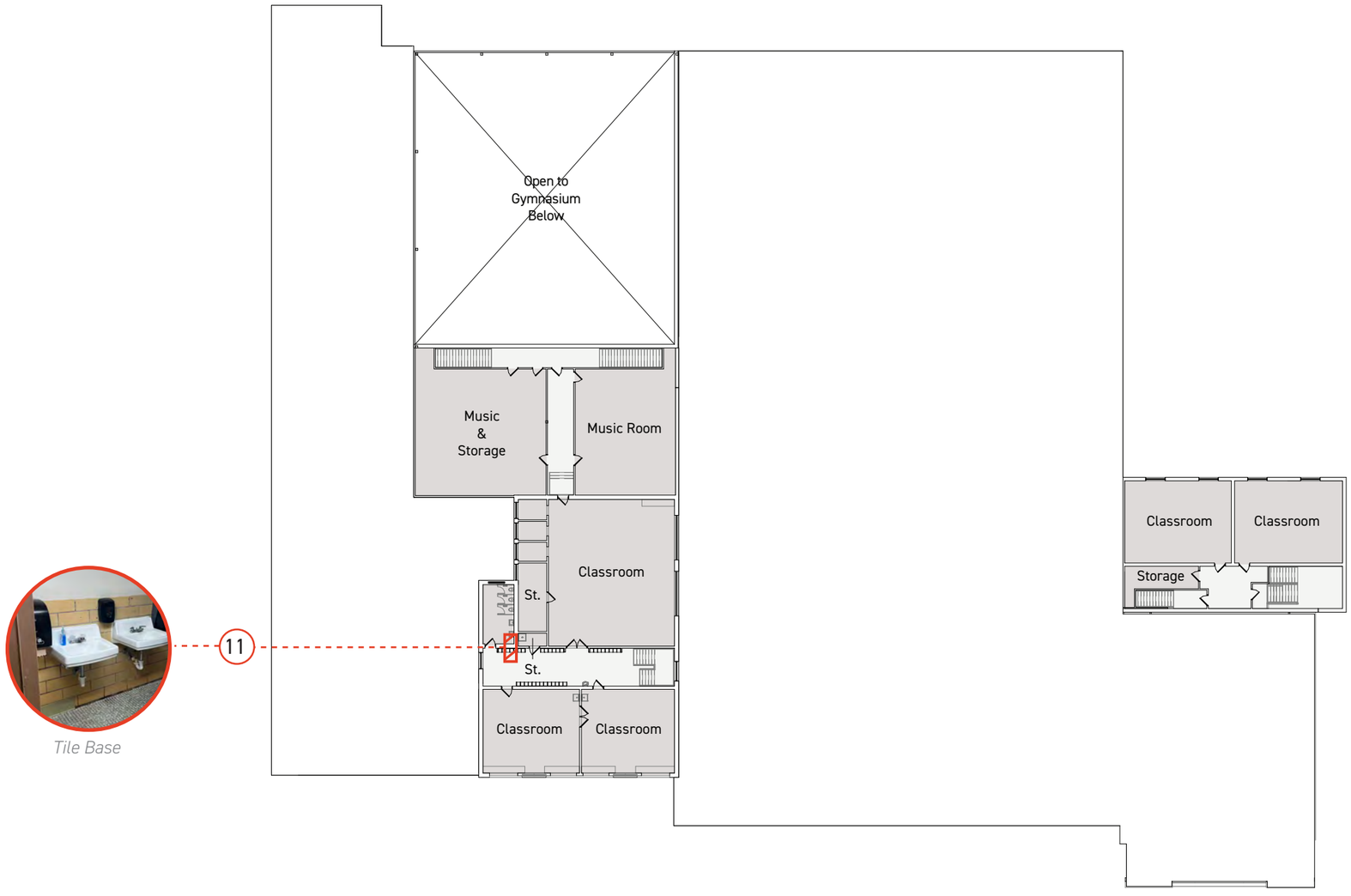
Metal Toilet Partitions

Laminate Casework

***Note:** The diagram above reflects instances of materials in poor condition, but does not reflect the material's overall condition.

N

markesan elementary school interior identifications + analysis | second floor



Tile Base

***Note:** The diagram above reflects instances of materials in poor condition, but does not reflect the material's overall condition.

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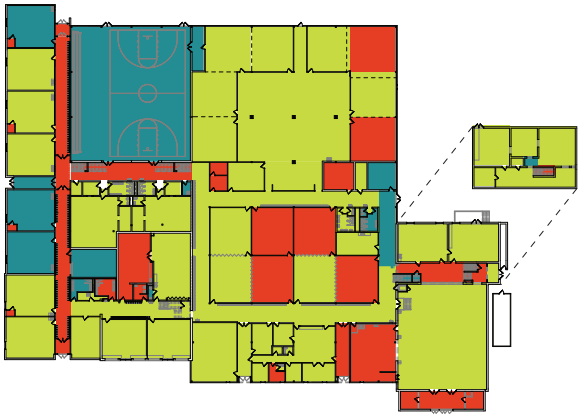
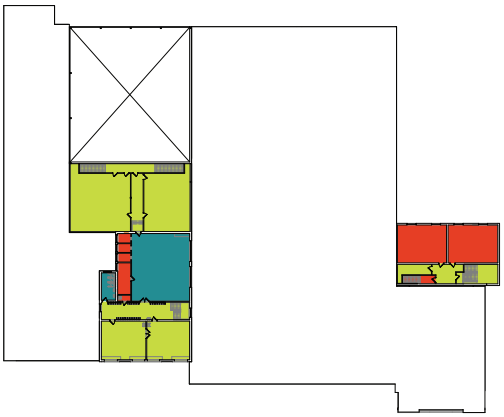
markesan elementary school ceiling analysis



First & Lower Floor



Second Floor

KEY TAKEAWAYS

- Materials identified as potentially containing asbestos are considered to be in poor condition.
- Spline ceilings are identified as a potential asbestos containing material.
- There is spline located in the Special Education Classroom on the first floor.
- Majority of the acoustical panel ceilings are in fair condition due to staining and/or cracking. Some acoustical panel ceilings are in poor condition due to excessive staining.

HIGHLIGHT

of ceilings were identified as potentially containing asbestos

OVERALL CEILING CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan elementary school ceiling material identification | first floor

Color Key

- Acoustical Panel
- Exposed Deck
- Exposed Insulation
- Spline
- Gypsum
- Plaster
- No Data

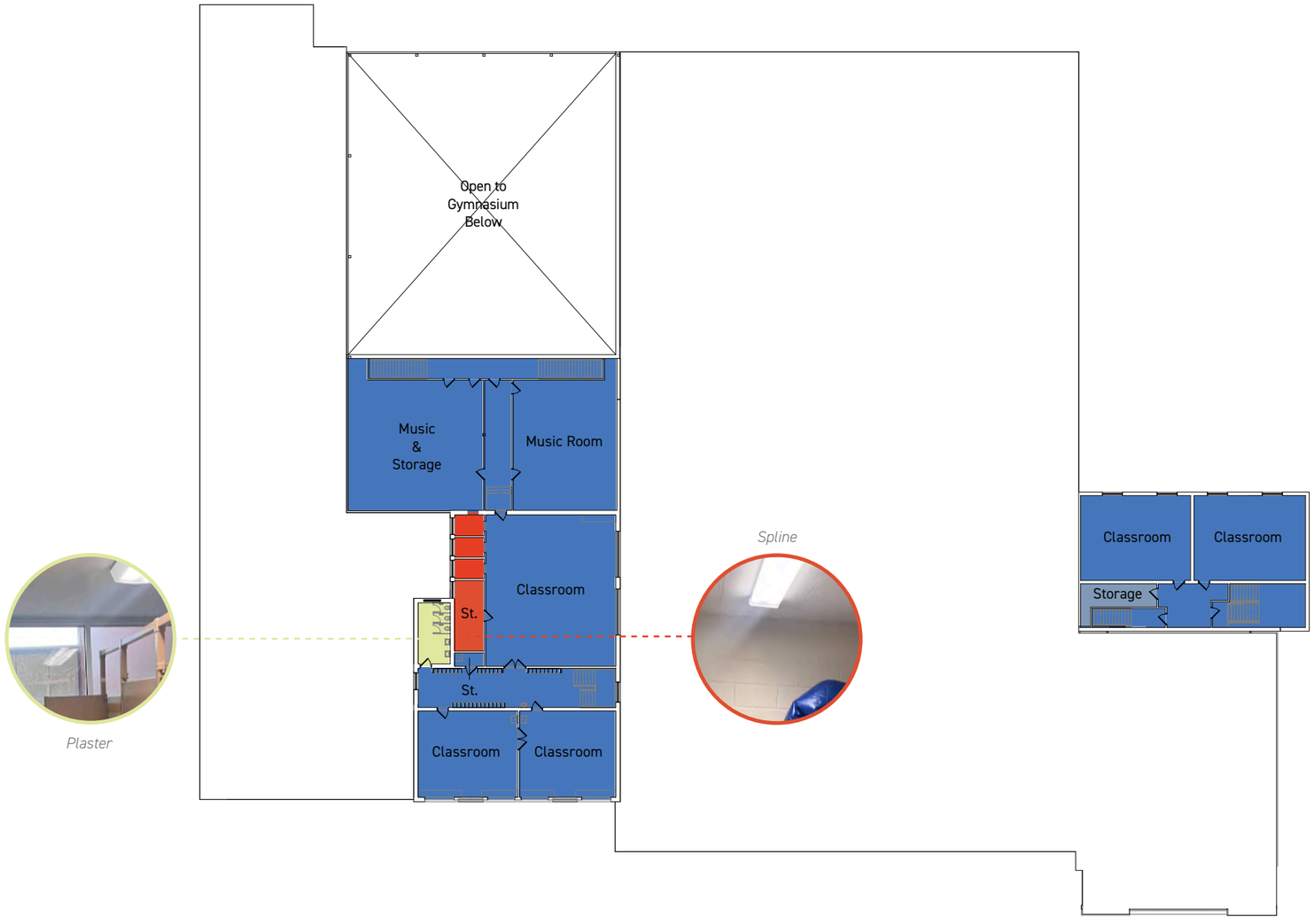
Potential of Asbestos Containing Materials

Asbestos is a material that was used in the construction industry, most commonly between 1960 - 1990. **There was no asbestos testing performed for this assessment.** Observations and assumptions were made based on common older building materials that typically have been identified to containing asbestos.

markesan elementary school ceiling material identification | second floor

Color Key

- Acoustical Panel
- Exposed Deck
- Exposed Insulation
- Spline
- Gypsum
- Plaster
- No Data



Potential of Asbestos Containing Materials

Asbestos is a material that was used in the construction industry, most commonly between 1960 - 1990. **There was no asbestos testing performed for this assessment.** Observations and assumptions were made based on common older building materials that typically have been identified to containing asbestos.

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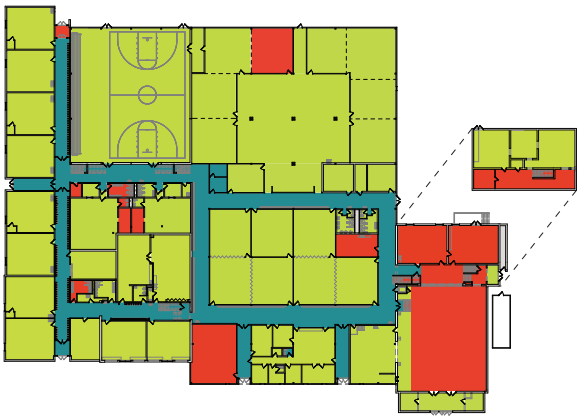
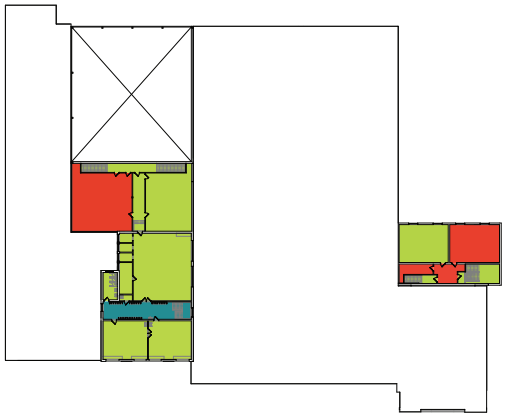
markesan elementary school flooring analysis



First & Lower Floor



Second Floor

KEY TAKEAWAYS

- Materials identified as potentially containing asbestos are considered to be in poor condition.
- 9" x 9" vinyl tile flooring is identified as potential asbestos tile.
- There are some areas where the wood flooring is in poor condition due to cracking, chipping, and/or surface scratches.
- There are some areas where the concrete flooring is in poor condition due to cracking, chipping, and/or surface scratches.
- There are some areas where the floor tile is in poor condition due to surface cracking and/or splitting tiles.

HIGHLIGHT

of floors were identified as potentially containing asbestos

OVERALL FLOORING CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan elementary school flooring material identification | first floor

Color Key

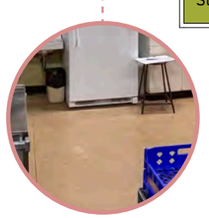
- Carpet
- Vinyl Composite Tile
- Resinous
- Wood
- Potential Asbestos Tile
- Rubber
- Sealed Concrete
- Tile
- Terrazzo
- Sheet Vinyl
- Painted Concrete
- No Data

Rubber

Carpet

Sealed Concrete

Tile



Sheet Vinyl

Wood

Potential of Asbestos Containing Materials

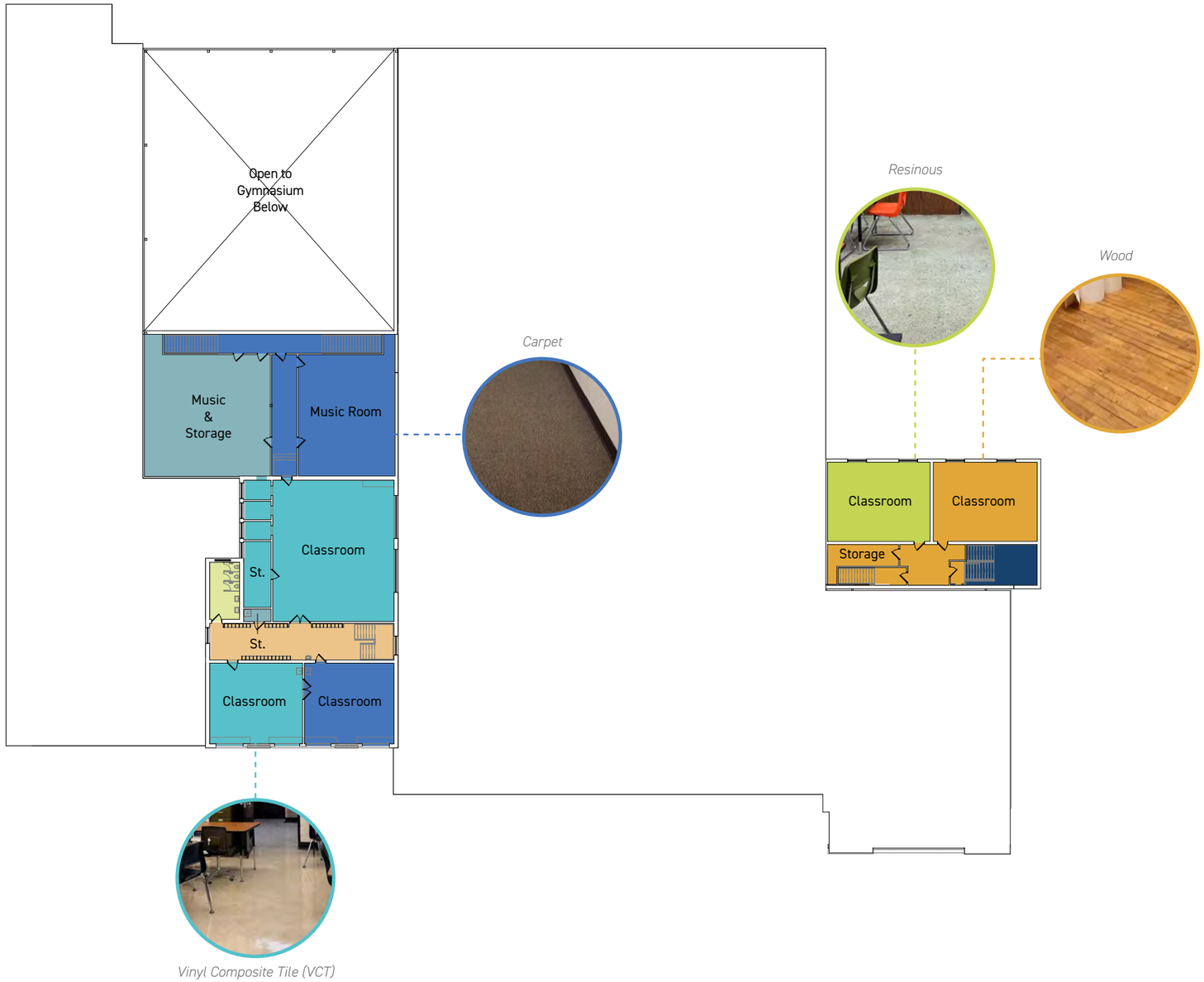
Asbestos is a material that was used in the construction industry, most commonly between 1960 - 1990. **There was no asbestos testing performed for this assessment.** Observations and assumptions were made based on common older building materials that typically have been identified to containing asbestos.

N

markesan elementary school flooring material identification | second floor

Color Key

- Carpet
- Vinyl Composite Tile
- Resinous
- Wood
- Potential Asbestos Tile
- Rubber
- Sealed Concrete
- Tile
- Terrazzo
- Sheet Vinyl



Potential of Asbestos Containing Materials

Asbestos is a material that was used in the construction industry, most commonly between 1960 - 1990. **There was no asbestos testing performed for this assessment.** Observations and assumptions were made based on common older building materials that typically have been identified to containing asbestos.

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markesan elementary school exterior analysis

OVERALL CONDITION RATING & KEY TAKEAWAYS

- Majority of the precast is in fair condtion with some areas in poor condition due to staining and/or cracking.
- Majority of the brick is in fair condition. Some areas in poor condition due to cracking and/or crumbling.
- Majority of the metal panel is in fair condition due to peeling paint.
- Majority of caulking at wall joints is in poor condition due to deterioration.
- Some instances where the wood siding is in poor condition due to surface weathering.
- Metal grates on windows are in poor condition due to rusting.

WALLS

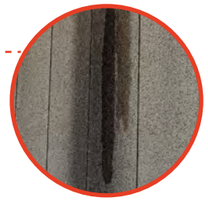
1. Precast
2. Metal Panel
3. Brick
4. Vinyl Siding
5. Wood Siding
6. Concrete Foundation

MISCELLANEOUS

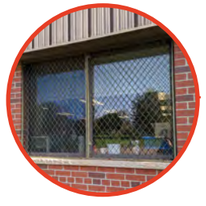
7. Metal Fascia
8. Metal Roof Edge
9. Stone Sill
10. Concrete Sill
11. Metal Sill
12. Metal Soffit
13. Plywood Soffit
14. Metal Window Grates
15. Metal Gutters

markesan elementary school exterior identifications + analysis | first floor

Metal Panel



Precast



Metal Window Grate

Brick

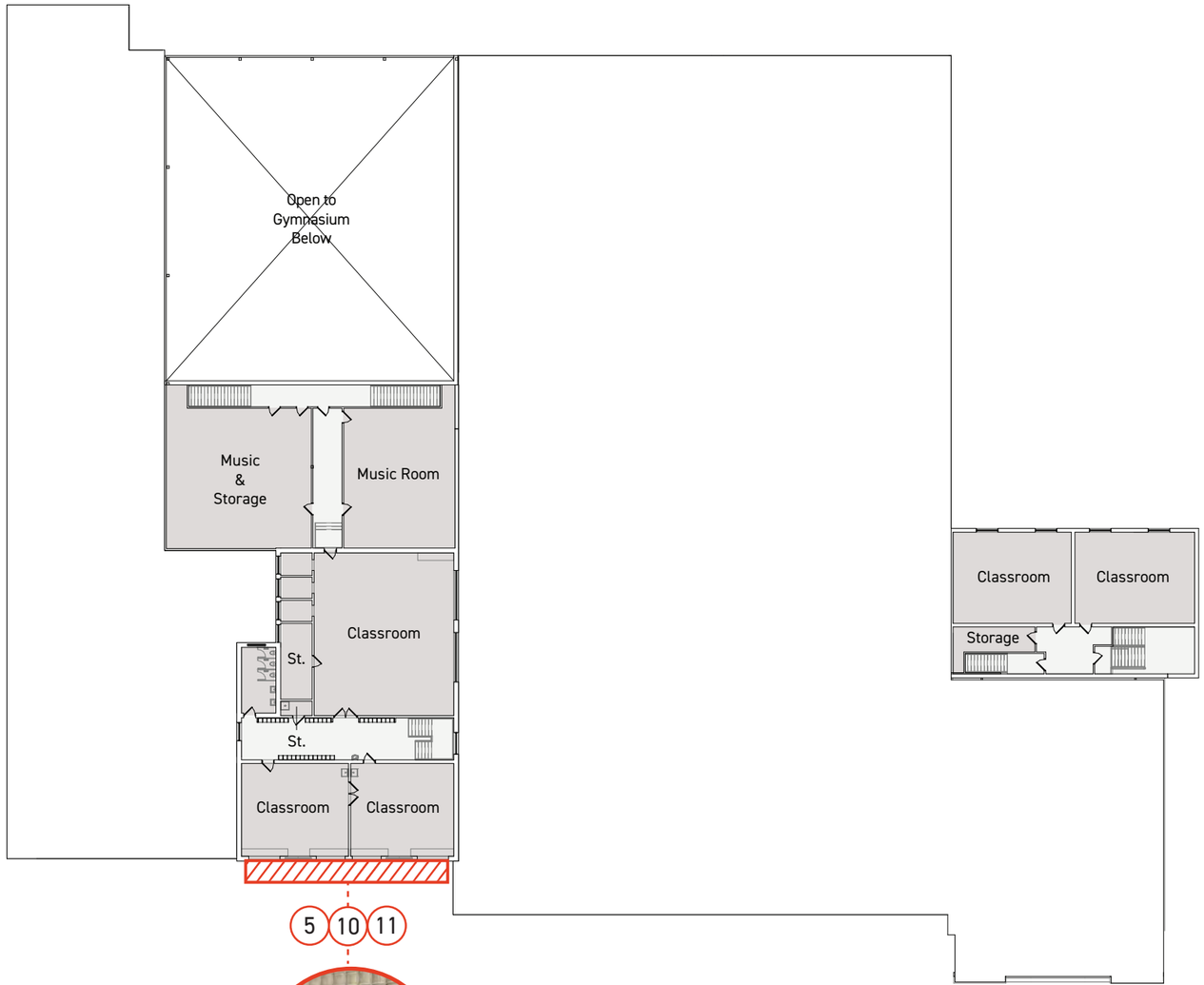
Wood Siding, Concrete Sill, + Metal Sill

Concrete Foundation

***Note:** The diagram above reflects instances of materials in poor condition, but does not reflect the material's overall condition.

N

markesan elementary school exterior identifications + analysis | second floor



Wood Siding, Concrete Sill, + Metal Sill

***Note:** The diagram above reflects instances of materials in poor condition, but does not reflect the material's overall condition.

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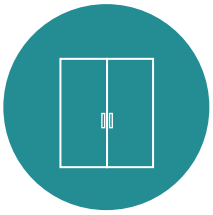
markesan elementary school exterior door analysis

No.	Door Type / Door Frame
1	Aluminum / Aluminum
1.1	Hollow Metal / Hollow Metal
1.2	Hollow Metal / Hollow Metal
1.3	Wood / Wood
2	Aluminum / Aluminum
3	Aluminum / Aluminum
4	Aluminum / Aluminum
4.1	Aluminum / Aluminum
5	Aluminum / Aluminum
5.1	Hollow Metal / Hollow Metal
5.2	Hollow Metal / Hollow Metal
6	Aluminum / Aluminum

KEY TAKEAWAYS

- Majority of the aluminum doors and frames are in good condition.
- Several instances where hollow metal doors are in poor condition due to rusting, weathering, surface scratches, paint peeling off and/or surface bubbling.
- Wood doors are in poor condition due to weathering, surface cracking, and paint peeling off.

MOST COMMON EXTERIOR DOOR



Aluminum Door(s) w/ Aluminum Frame

OVERALL EXTERIOR DOOR CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan elementary school exterior door identification + analysis | first floor

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markesan elementary school exterior window analysis

No.	Frame Type / Glass Type
1	Aluminum / Double Pane
2	Aluminum / Double Pane
3	Aluminum / Double Pane
4	Aluminum / Double Pane
5	Aluminum / Double Pane
6	Aluminum / Double Pane
7	Aluminum / Single Pane
8	Aluminum / Single Pane
8.1	Glass Block
9	Aluminum / Double Pane
10	Aluminum / Double Pane
11	Aluminum / Double Pane
12	Aluminum / Double Pane
13	Aluminum / Double Pane
14	Aluminum / Double Pane
15	Aluminum / Double Pane
16	Aluminum / Double Pane
17	Aluminum / Double Pane
18	Vinyl / Double Pane
19	Vinyl / Double Pane
20	Aluminum / Single Pane
21	Aluminum / Single Pane
21.1	Glass Block
22	Aluminum / Double Pane
23	Aluminum / Double Pane
24	Aluminum / Double Pane
25	Aluminum / Double Pane
26	Glass Block

KEY TAKEAWAYS

- Majority of the aluminum framed windows with double pane glass are in good condition.
- Majority of the vinyl windows are in poor condition due to weathering.
- Window #2 is in poor condition due to a crack in the glass.

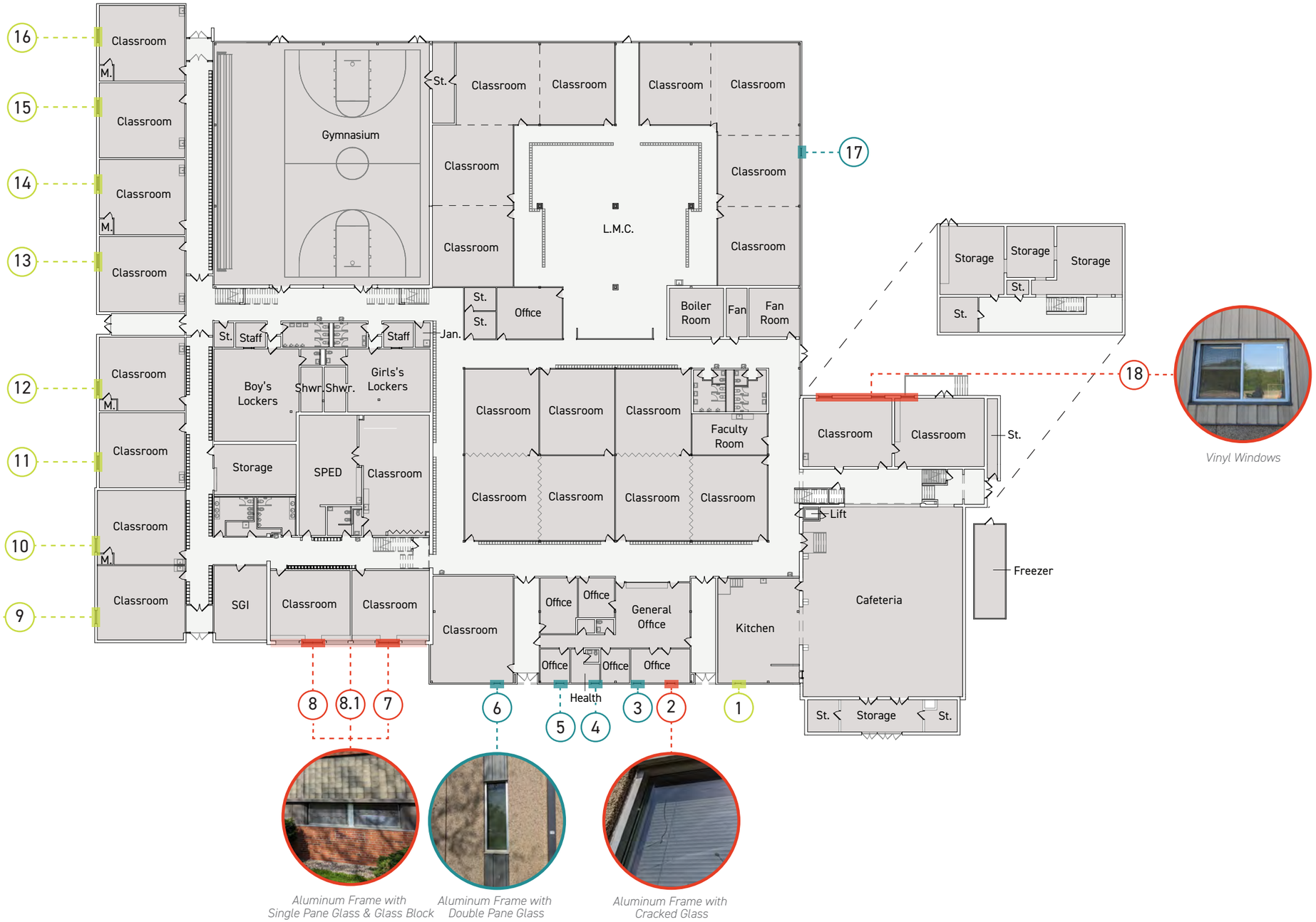
MOST COMMON EXTERIOR WINDOW

Aluminum with Double Pane Glass

OVERALL EXTERIOR WINDOW CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan elementary school exterior window identification + analysis | first floor



Aluminum Frame with Double Pane Glass

Vinyl Windows

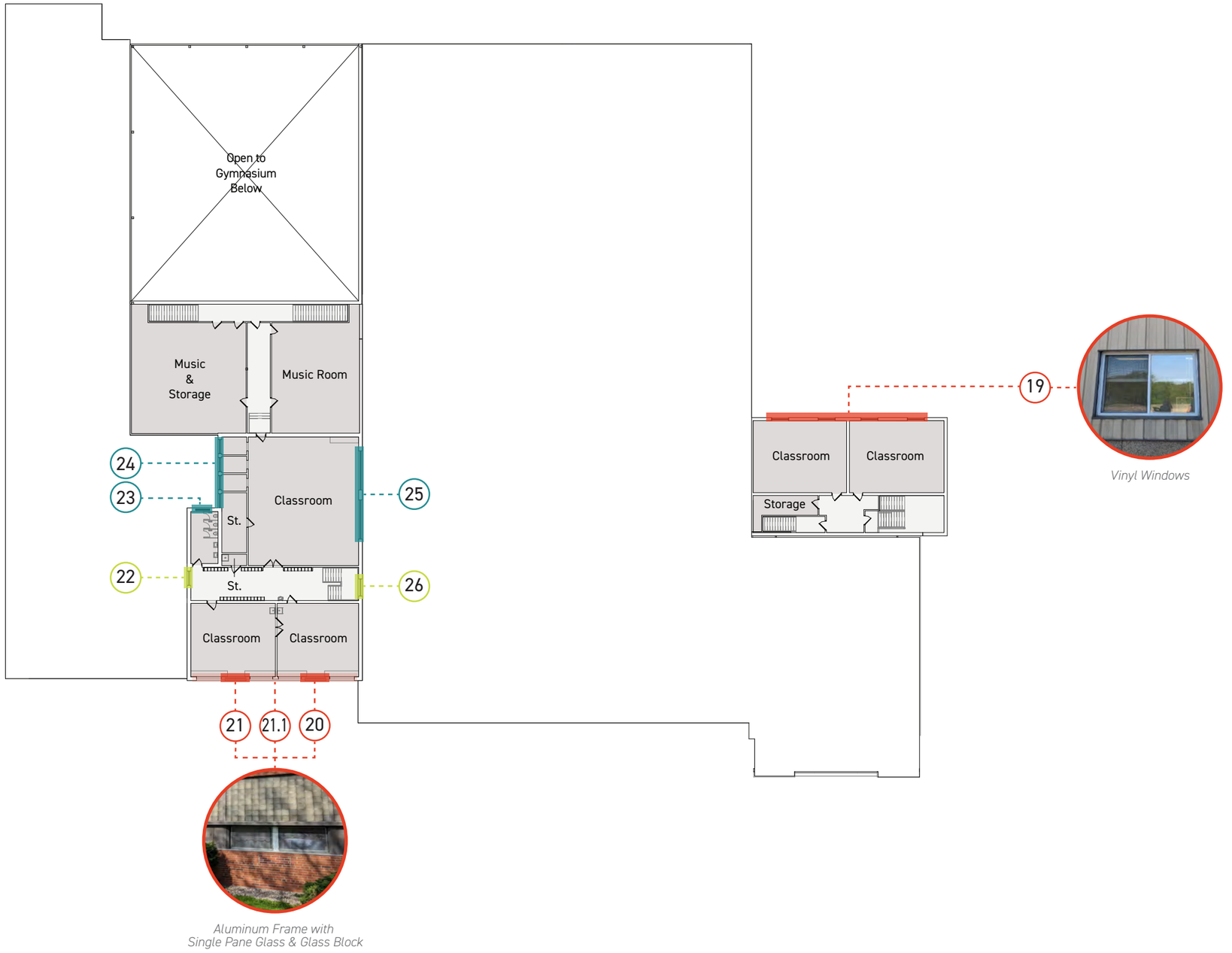
Aluminum Frame with Single Pane Glass & Glass Block

Aluminum Frame with Double Pane Glass

Aluminum Frame with Cracked Glass

N

markesan elementary school exterior window identification + analysis | second floor



Aluminum Frame with
Single Pane Glass & Glass Block

Vinyl Windows

N

markesan elementary school roof identification

OVERALL CONDITION RATING

POOR

0%

75%

25%

ROOF AREAS

1 = 2006 Installation, Condition Index: 56

2 = Unknown Installation, Condition Index: Unknown

3 = 2008 Installation, Condition Index: 66

4 = 2012 Installation, Condition Index: 47

5 = 2006 Installation, Condition Index: 81

6 = 2006 Installation, Condition Index: 85

7 = 1990 Installation, Condition Index: Unknown

ROOF ASSESSMENT

= Good (10+ Years of Service Life Remaining) Condition Index: 0 to 31

= Fair (5-10 Years of Service Life Remaining) Condition Index: 32 to 64

= Poor (<4 Years of Service Life Remaining) Condition Index: 65 to 95

*Assessment of "Good/Fair/Poor" based on information by the District.
**Condition Index provided by APEX Building Consultants.

markesan elementary school site assessment

OVERALL CONDITION RATING:

POOR

IDENTIFICATION + OVERALL ASSESSMENT

1. Athletic Fields
2. Site Concrete
3. East Parking Lot
4. Playground
5. North Parking Lot

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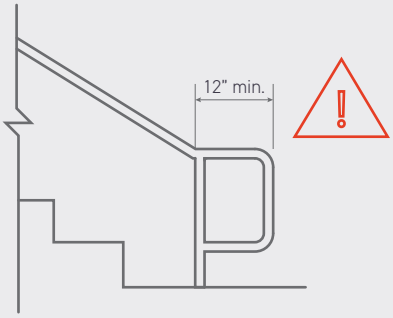
markesan elementary school ada conditions + assessment

Overall Condition Rating:

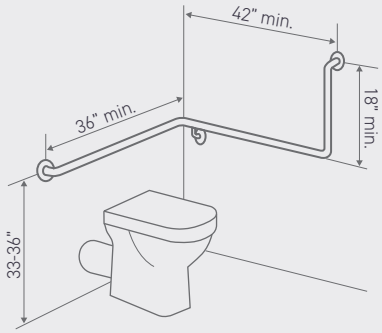
FAIR

Most Concerning Item That Does Not Meet Code Requirements:



Not providing ADA compliant railings at stairs

Most Frequently Occurring Item That Does Not Meet Code Requirements:



Not providing at proper grab bars at ADA accessible toilet.

GENERAL ASSESSMENT OF ADA CONDITIONS

- **Building Entrance Accessibility**
- **ADA Parking Stalls**
- **Accessible Routes of Travel**
  - Ramps
  - Lifts
  - Elevators
- **Railings**
  - Ramp Railings
  - Stair Railings
- **Door Hardware**
- **Door Clearances**
  - Push / Pull
  - Thresholds
  - Maneuvering
- **Toilet Rooms**
  - 5'-7" Wheelchair Clearance
  - ADA Accessible Stall
  - Unisex Toilet Room
  - Grab Bars
  - Showers
- **Protruding Objects**
- **Drinking Fountains**
- **Casework**
  - Transaction Counters
  - Workstations Counters
  - Counters with Sinks

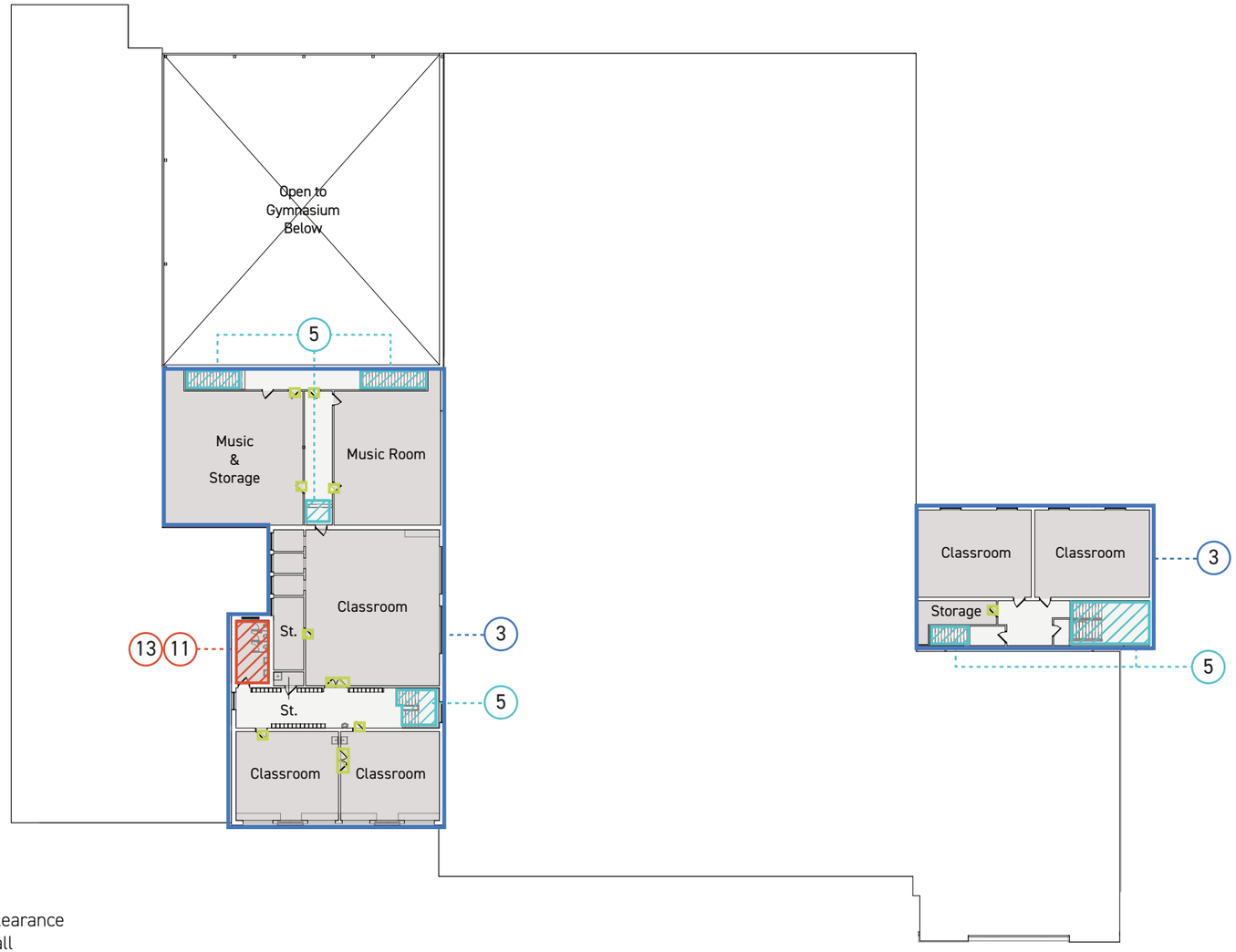
markesan elementary school ada conditions + assessment | first floor

Color Key

- **Accessible Routes of Travel**
  1. Ramps
  2. Lifts
  3. Elevators
- **Railings**
  4. Ramps
  5. Stairs
- **Door Hardware**
  6. Door Hardware
- **Door Clearances**
  7. Push / Pull
  8. Thresholds
  9. Maneuvering
- **Toilet Rooms**
  10. 5'-7" Wheelchair Clearance
  11. ADA Accessible Stall
  12. Unisex Toilet Room
  13. Grab Bars
  14. Showers
- **Protruding Objects**
  15. Protruding Objects
- **Casework**
  16. Transaction Counter
  17. Workstation Counters
  18. Counters with Sinks

N

markesan elementary school ada conditions + assessment | second floor



Color Key

- **Accessible Routes of Travel**
  - 1. Ramps
  - 2. Lifts
  - 3. Elevators
- **Railings**
  - 4. Ramps
  - 5. Stairs
- **Door Hardware**
  - 6. Door Hardware
- **Door Clearances**
  - 7. Push / Pull
  - 8. Thresholds
  - 9. Maneuvering
- **Toilet Rooms**
  - 10. 5'-7" Wheelchair Clearance
  - 11. ADA Accessible Stall
  - 12. Unisex Toilet Room
  - 13. Grab Bars
  - 14. Showers
- **Protruding Objects**
  - 15. Protruding Objects
- **Casework**
  - 16. Transaction Counter
  - 17. Workstation Counters
  - 18. Counters with Sinks

N

02

markesan middle/high school

Scorecard Rating

FAIR

75.0%

Architectural Condition

FAIR

ADA Condition

FAIR

Building Systems

GOOD

Site Condition

FAIR

SUMMARY

Markesan Middle/High School provides a comprehensive program for 6th - 12th grade students.

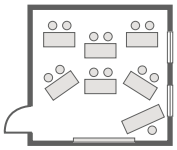
Grades Served: 6th - 12th Grades
Site Size: 20.52 acres
Parking: 204 stalls

Original Date of Construction

1959

As of 2023: 64 years old

Average Core Classroom
Size Comparison



884 sq. ft. - HS
1,060 sq. ft. - MS

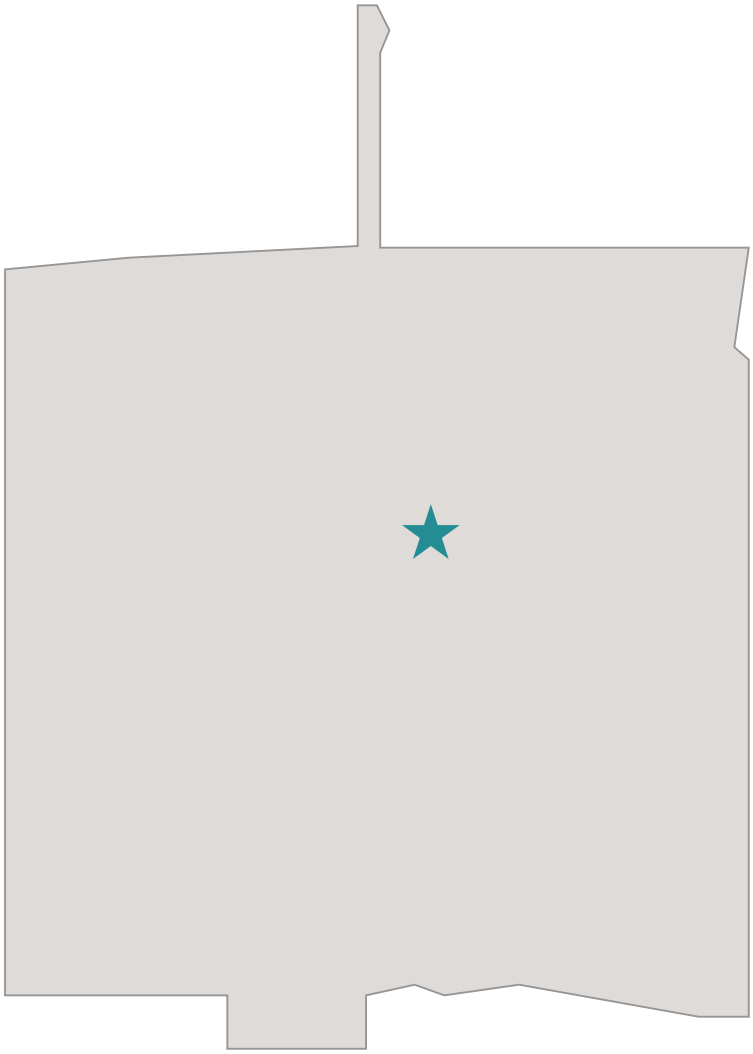
Recommended Size

1st -12th: 900 sq. ft.
Kindergarten: 1200 sq. ft.

Square Footage

166,130
Sq. Ft.

markesan middle/high school



*School Location in Marksan School District Boundary

KEY TAKEAWAYS

- There is a main parking lot on the west side of the site with additional event parking near the athletic fields.
- There is a large field on the southeast corner of the site. The soccer field is also located there.
- There are athletic fields on the northeast corner of the site including a track, football field, baseball field, and softball field.

PARCEL DIVISION

- Building
- Paved Area
- Athletic Fields
- Greenspace

BUSES ON SITE

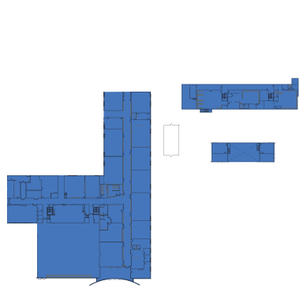
Current Capacity: 3 Buses

1 Van

markesan middle/high school site map

N

markesan middle/high school building evolution



1959 - Original Building

1965 - Classroom Addition

Unknown - Tech Ed/Band Addition

1998 - Gym/Classroom Addition

N

markesan middle/high school floor plan | first floor

N

markesan middle/high school building systems summary

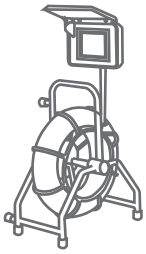
Good Condition
No visible damage, wear or need for repair; no replacement needed.

Fair Condition
Some visible damage, wear or need for repair; no immediate replacement required.

Poor Condition
Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Plumbing
Condition Overview

Camera video inspection underground plumbing to determine system quality and proper flow



PLUMBING

Domestic Water System	■	
Water Service	●	4" water service w/ 3" water meter.
Water Distribution Piping	●	Copper piping. The original piping appears to be in fair working condition, but is reaching the end of its life expectancy.
Water Softening System	●	Hot water only - No issues reported.
Backflow Preventer	○	
Irrigation System	○	
Pressure	●	No issues with the system were reported.
Fire Sprinkler System	○	
Sanitary System	■	
Sanitary Sewer	●	No issues with the system were reported.
Sanitary Drain, Waste + Vent Piping	●	No issues with the system were reported.
Acid Waste Piping + Basin	●	No issues with the system were reported.
Interceptors	●	No issues with the system were reported.
Storm System	■	
Storm Sewer	●	No issues with the system were reported.
Storm Drain Piping	●	No issues with the system were reported.
Roof Drainage	●	No issues with the system were reported.
Sump Pump	●	Flooding in lower level.
Natural Gas System	■	No issues with the system were reported.

* See appendix for full engineer reports + additional information.

markesan middle/high school building systems summary

Good Condition
No visible damage, wear or need for repair; no replacement needed.

Fair Condition
Some visible damage, wear or need for repair; no immediate replacement required.

Poor Condition
Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Plumbing
Condition Overview

Consider replacing flush valves and faucets with sensor operation

PLUMBING

Plumbing Equipment		
Water Heater		No issues with the system were reported.
Water Softener		No issues with the system were reported.
Circulator Pump		No issues with the system were reported.
Grease Interceptor		No issues with the system were reported.
Plumbing Fixtures		
Water Closets		The water closets are a mix of wall and floor mound water closets with manual and sensor flush valves.
Urinals		The urinals are a mix of wall and floor mount with manual and sensor operated flush valves.
Wash Fountains		Wash fountains are floor mounted foot operated pedal type.
Electric Water Coolers		Water coolers are wall mounted units. Some with a bottle filler.
General Sinks		The sinks are a mix of stainless steel and enameled cast iron drop in units with manual gooseneck faucets.

* See appendix for full engineer reports + additional information.

markesan middle/high school building systems summary

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Fair Condition
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Poor Condition
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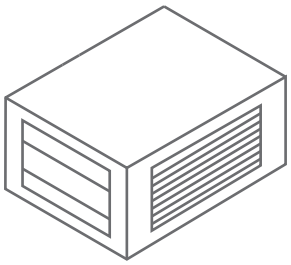
Mechanical
Condition Overview

Plan to replace
1959 air handling units



MECHANICAL

Heating	■	
Boiler Plant	●	The boilers were installed in 1999 and recently retrofitted with modulating burners. The boilers have an estimated 30-year life expectancy.
Pumps	●	The pumps were installed in 1999 and appear to be in good condition. The pumps have an estimated 25-year life expectancy.
Ventilation + A/C Systems	■	
Air Handling Units	●	The middle school air handling units were installed in 1999 and are in good condition. The roof-mounted 1999 units are showing signs of environmental wear. The 1959 air handling units are in need of replacement. The air handling units have an estimated 30-year life expectancy.
Air Conditioning Systems	●	The chiller was replaced in 2021 and is in excellent condition. The chiller has an estimated 25-year life expectancy. The chilled water pumps were installed in 1999 and appear to be in good condition. The pumps have an estimated 25-year life expectancy.
Blower/Fan Coil Units	●	The blower coil units serving the Band and Vocal rooms are poorly located and very difficult to maintain. The fan coil units serving the shop areas were installed in 2021 and are in very good condition. The blower coils and fan coils have an estimated 15-year life expectancy.
Control Systems	■	The building is served by a Johnson Controls Metasys System installed in 2021.

* See appendix for full engineer reports + additional information.

markesan middle/high school building systems summary

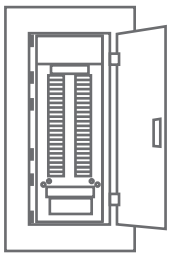
Good Condition
No visible damage, wear or need for repair; no replacement needed.

Fair Condition
Some visible damage, wear or need for repair; no immediate replacement required.

Poor Condition
Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Electrical Condition Overview

Replace Federal Pacific and GE Panelboards and Replace Cloth Branch Circuit Wiring and Feeders



ELECTRICAL

Electrical Service		Consider adding a surge protective device at each service location to provide protection from incoming surges such as lightning.
Utility Service		The existing main electric services are in good working condition and can remain. It appears that there is adequate service capacity.
Switchboard		The existing service switchboard is in good working condition and can remain. Add additional loads to the existing switchboards as necessary.
Panelboards		
		The old Federal Pacific and GE type panelboards and loadcenters are very old, have reached the end of their useful life and should be replaced based on their age and condition.
		The newer Cutler Hammer PRL1a and PRL2a type panelboards are in good working condition, in general have room for additional breakers and can remain. Add to the existing panelboards as necessary.
Light Fixtures + Controls		Light fixtures throughout the building have recently been upgraded and can remain. Replace fixtures throughout the building as necessary.
Wiring Devices		
		We recommend the replacement of the old cloth branch circuit wiring and feeders as it is susceptible to damage from rodents, bugs, etc. Replacing the old cloth wiring will minimize the risk of exposed wiring throughout the facility.
		We did not verify shared neutral loads on any existing circuits; this should be done by a qualified electrician prior to adding any additional devices. We would recommend a separate neutral be installed on any shared neutral loads or add multipole breakers to bring the circuiting up to code.
		We did not verify if circuits contained independent grounding conductors. This should be done by a qualified electrical contractor or at a minimum verify grounding continuity in all circuits.
Clock System		The existing clock system head end is very old. Consider replacing the existing clock system head end with a new GPS clock system with all new battery powered clocks throughout the building.
Data / Telephone		If a portion of the building were converted from non-plenum ceiling to plenum ceiling, all non-plenum data cabling would need to be replaced with plenum rated cabling.

* See appendix for full engineer reports + additional information.

markesan middle/high school building systems summary

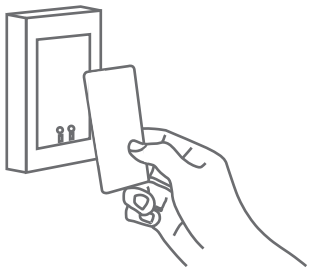
Good Condition
No visible damage, wear or need for repair; no replacement needed.

Fair Condition
Some visible damage, wear or need for repair; no immediate replacement required.

Poor Condition
Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

Life Safety
Condition Overview

Replace Door Access Control System to an IP Based System



LIFE SAFETY

Emergency Generator	☐	One option is to continue to use battery backup exit lights and egress fixtures. Another option would be to consider adding a new generator and remove battery backup exit lights and egress lighting, provide power to data closets, phones, keyless entry, coolers and freezers as well as circulation pumps on boilers. Provide complete, new, code approved egress lighting paths throughout the facility.
Emergency Egress Lighting	■	Add interior and exterior battery backup egress lighting as necessary to comply with current codes.
Fire Alarm System	■	The fire alarm system is less than 5 years old, is in good working condition and can remain. Add devices to the existing system as necessary.
Public Address System	■	The existing Audio Enhancement Epic IP head end is in good working condition and can remain. Continue to add additional speakers to the existing intercom head end as necessary.
Access Control System	■	A new access control system should be considered. We propose a new Mercury device installed above each existing exterior door with a new CAT6 cable routed back to the network switch and provide new software. The existing equipment at each door can remain or additional device detection can be added. This will allow all door hardware to be run off any software and not require the replacement of the devices at the existing doors.
Security System	■	Add additional IP cameras to the existing system as required.

* See appendix for full engineer reports + additional information.

markesan middle/high school interior analysis

OVERALL CONDITION RATING & KEY TAKEAWAYS

- Majority of the wood doors in the southern portion of the building are in poor condition due to chipping, surface scratches, and finish peeling off. Majority of the wood doors in the northern addition are in good condition. Some doors contain door transfer grilles.
- The glazed block in the southern portion of the building is in poor condition due to chipping and stains on both the block and the grout.
- Majority of the concrete block, gypsum, and brick walls are in good condition.
- The lower level locker rooms are in poor condition due to rusting lockers, chipping tile walls / base, and walls that have been patched with plywood.
- There are some areas where casework is in poor condition due to surface scratches and/or finish peeling off.

WALLS

1. Concrete Block
2. Gypsum
3. Brick
4. Precast Panel
5. Tile
6. Glazed Block
7. Concrete
8. Pegboard
9. Wood Paneling
10. Plywood
11. T&G Wood
12. Carpet

WALLS CONT.

13. Vinyl Base
14. Tile Base
15. Quarry Tile Base
16. Glazed Block Base
17. Tackable Surface
18. Stainless Steel
19. Metal Base

DOORS / OPENINGS

20. Wood Door w/ Hollow Metal Frame
21. Aluminum Door w/ Aluminum Frame
22. Wood Door w/ Aluminum Frame
23. Hollow Metal Door w/ Hollow Metal Frame
24. Wood Door w/ Wood Frame
25. Folding Partition
26. Rolling Door
27. Hollow Metal Borrowed Lite
28. Wood Framed Borrowed Lite

MISCELLANEOUS

29. Laminate Casework
30. Metal Railings
31. Metal Lockers
32. Metal Toilet Partitions
33. Plastic Toilet Partitions
34. Metal Display Cases
35. Wood Display Cases
36. Wood Casework
37. Wood Bleachers
38. Metal Bookshelves
39. Wood Railings

markesan middle/high school interior identifications + analysis | first floor

Gypsum

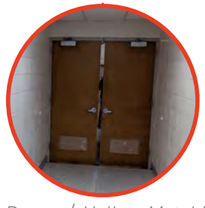
Wood Door w/ Hollow Metal Frame

Metal Lockers

Vinyl Wall Base

Glazed Block

Glazed Block Base



Wood Door w/ Hollow Metal Frame

Wood Casework

***Note:** The diagram above reflects instances of materials in poor condition, but does not reflect the material's overall condition.

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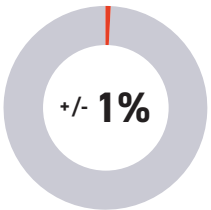
markesan middle/high school ceiling analysis

KEY TAKEAWAYS

- Materials identified as potentially containing asbestos are considered to be in poor condition.
- Spline ceilings are identified as a potential asbestos containing material.
- Majority of the acoustical panel ceilings are in good condition. Some areas in fair condition due to staining and/or cracking. Some acoustical panel ceilings are in poor condition due to excessive staining.
- The exposed insulation in the shop areas is in fair condition due to ripping, staining, and holes in the insulation.

HIGHLIGHT



of floors were identified as potentially containing asbestos

OVERALL FLOORING CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan middle/high school ceiling material identification | first floor

Color Key

- Acoustical Panel
- Exposed Deck
- Gypsum
- Concrete
- Spline
- Metal
- Wood
- Exposed Insulation
- No Data

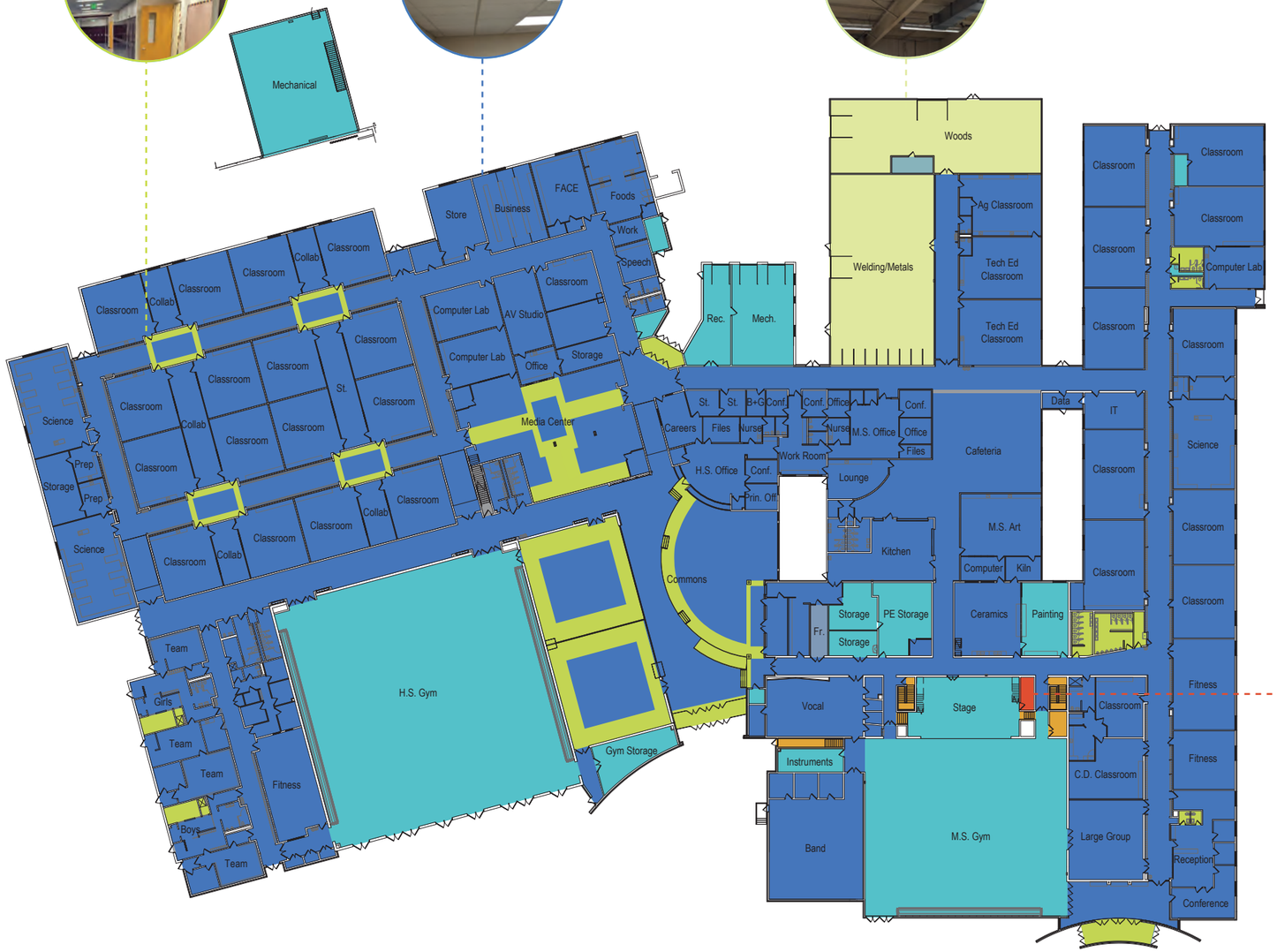
Gypsum

Acoustical Panel

Exposed Insulation

Concrete

Spline



Potential of Asbestos Containing Materials

Asbestos is a material that was used in the construction industry, most commonly between 1960 - 1990. **There was no asbestos testing performed for this assessment.** Observations and assumptions were made based on common older building materials that typically have been identified to containing asbestos.

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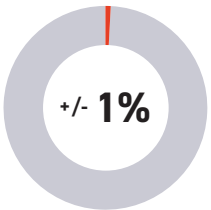
markesan middle/high school flooring analysis

KEY TAKEAWAYS

- Materials identified as potentially containing asbestos are considered to be in poor condition.
- 9" x 9" vinyl tile flooring is identified as potential asbestos tile.
- There are a few areas such as classrooms in both the MS and HS that are used for other things than a classroom which have caused the intended flooring to become poor. i.e. classrooms as cardio or storage.

HIGHLIGHT



of floors were identified as potentially containing asbestos

OVERALL FLOORING CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan middle/high school flooring material identification | first floor

Color Key

- Resinous
- Carpet
- Vinyl Composite Tile
- Tile
- Potential Asbestos Tile
- Sealed Concrete
- Wood
- Painted Concrete
- Terrazzo
- Quarry Tile
- Sports Rubber
- No Data

Vinyl Composite Tile (VCT)

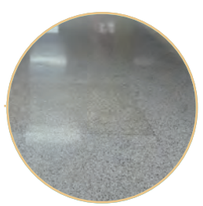
Sealed Concrete

Resinous

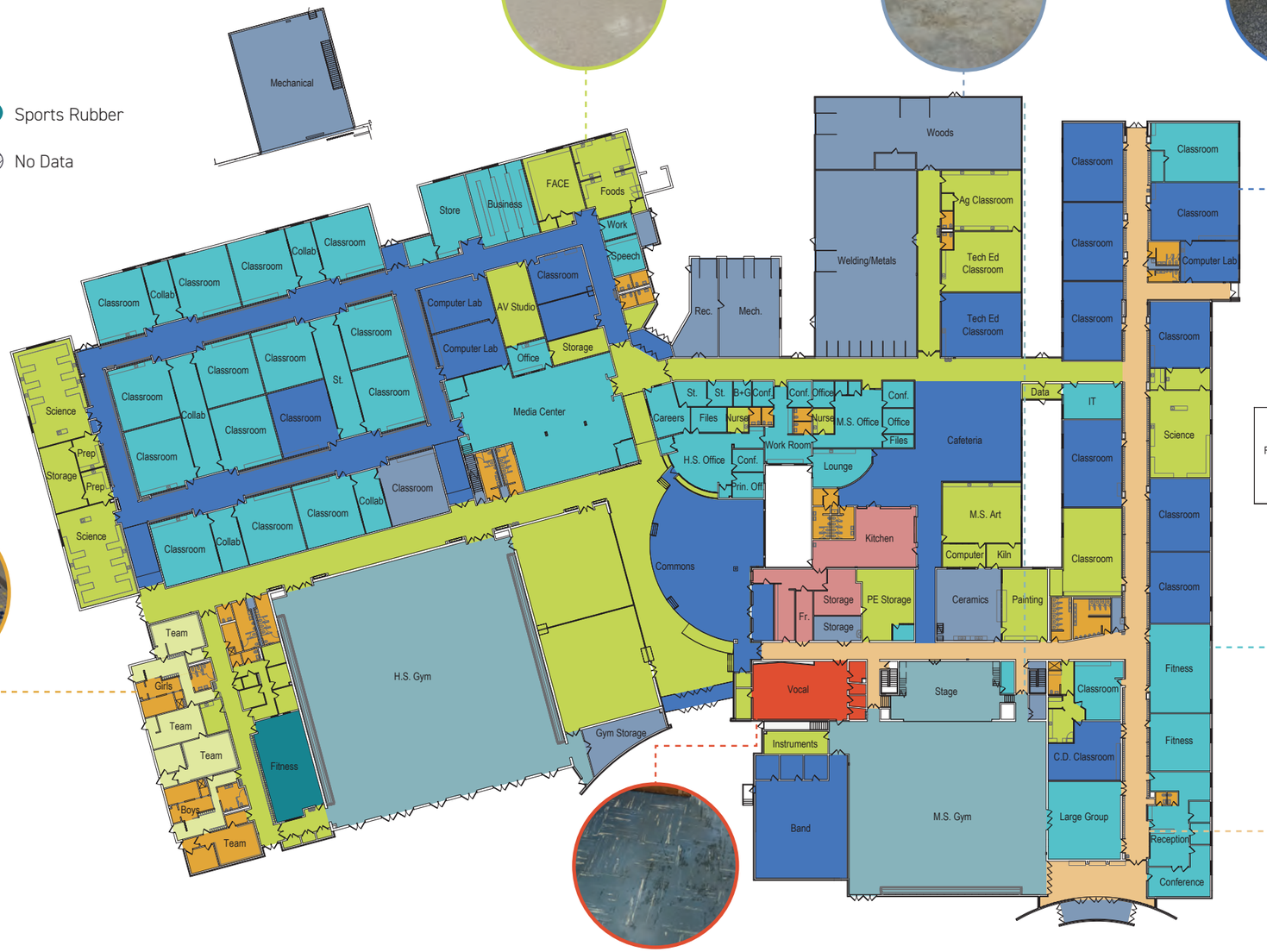
Tile

Potential Asbestos Tile

Carpet



Terrazzo



Potential of Asbestos Containing Materials

Asbestos is a material that was used in the construction industry, most commonly between 1960 - 1990. **There was no asbestos testing performed for this assessment.** Observations and assumptions were made based on common older building materials that typically have been identified to containing asbestos.

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markesan middle/high school exterior analysis

OVERALL CONDITION RATING & KEY TAKEAWAYS

- Majority of the brick is in good condition. There are a few areas in poor condition due to cracking and chipping, especially near corners.
- Majority of the precast is in fair condition due to cracking and staining, especially above doors and windows. There is one wall of the south boiler room in poor condition due to extensive cracking.
- Corrugated metal siding at the tech ed wing of the building is in poor condition due to rusting and/or denting, especially near the base of the wall.
- Cast stone sills are in fair condition as they appear to be holding shape, however all sills are stained.
- The greenhouse is in poor condition due to cracking and staining walls, dented louvers, and surface scratches on the doors.
- There are several instances where the insulation is exposed near the buildings foundation.

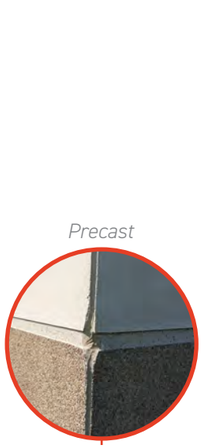
WALLS

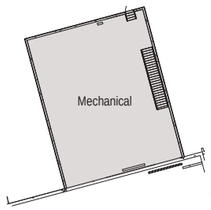
1. Brick
2. Precast
3. EIFS
4. Corrugated Metal Siding
5. Greenhouse
6. Exposed Concrete Foundation
7. Concrete Block

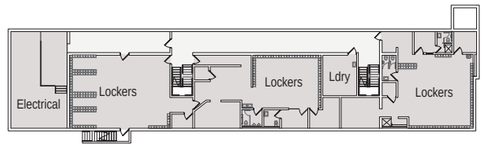
MISCELLANEOUS

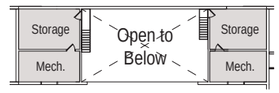
8. Metal Roof Edge
9. Cast Stone Sill
10. EIFS Soffit
11. Precast Signage

markesan middle/high school exterior identifications + analysis | first floor









***Note:** The diagram above reflects instances of materials in poor condition, but does not reflect the material's overall condition.

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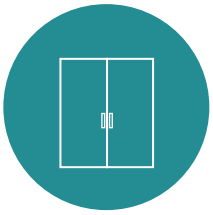
markesan middle/high school exterior door analysis

No.	Door Type / Door Frame
1	Hollow Metal / Hollow Metal
2	Aluminum / Aluminum
2.1	Hollow Metal / Hollow Metal
2.2	Hollow Metal / Hollow Metal
2.3	Hollow Metal / Hollow Metal
2.4	Hollow Metal / Hollow Metal
2.5	Hollow Metal / Hollow Metal
2.6	Hollow Metal / Hollow Metal
2.7	Hollow Metal / Hollow Metal
3	Hollow Metal / Hollow Metal
L1	Hollow Metal / Hollow Metal
L2	Hollow Metal / Hollow Metal
L3	Hollow Metal / Hollow Metal
L4	Hollow Metal / Hollow Metal
L5	Overhead Door (on shed)
L6	Aluminum / Aluminum
4	Hollow Metal / Hollow Metal
5	Hollow Metal / Hollow Metal
6	Hollow Metal / Hollow Metal
E1	Hollow Metal / Hollow Metal
E2	Hollow Metal / Hollow Metal
6.1	Hollow Metal / Hollow Metal
6.2	Hollow Metal / Hollow Metal
7	Hollow Metal / Hollow Metal
8	Hollow Metal / Hollow Metal
8.1	Coiling Doors
8.2	Hollow Metal / Hollow Metal
8.3	Hollow Metal / Hollow Metal
8.4	Sectional Overhead Door
8.5	Hollow Metal / Hollow Metal
8.6	Sectional Overhead Door
8.7	Sectional Overhead Door
8.8	Hollow Metal / Hollow Metal
8.9	Hollow Metal / Hollow Metal
9	Hollow Metal / Hollow Metal
10	Hollow Metal / Hollow Metal
G1	Hollow Metal / Hollow Metal
G2	Hollow Metal / Metal
11	Aluminum / Aluminum
12	Aluminum / Aluminum
13	Hollow Metal / Hollow Metal
14	Hollow Metal / Hollow Metal
15	Hollow Metal / Hollow Metal
16	Aluminum / Aluminum
17	Aluminum / Aluminum
18	Hollow Metal / Hollow Metal

KEY TAKEAWAYS

- The hollow metal doors and frames range from good to poor condition depending on location of the building and associated weathering. The doors in poor condition are due to either rusting at the bottom of the frame, or finish that has come off the door.
- Sectional and coiling doors throughout the building are in good or fair condition.
- Doors that contain single pane glass are in poor condition.

MOST COMMON EXTERIOR DOOR



Hollow Metal Door(s) w/ Hollow Metal Frame

OVERALL EXTERIOR DOOR CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan middle/high school exterior door identification + analysis | first floor

Coiling Doors

Hollow Metal Doors with Hollow Metal Frame

Hollow Metal Doors with Hollow Metal Frame

Aluminum Doors with Aluminum Frame

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markesan middle/high school exterior window analysis

No.	Frame Type / Glass Type
1	Aluminum / Double Pane
2	Aluminum / Double Pane
3	Aluminum / Double Pane
4	Aluminum / Double Pane
5	Aluminum / Double Pane
6	Aluminum / Double Pane
7	Aluminum / Double Pane
8	Aluminum / Double Pane
9	Aluminum / Double Pane
10	Aluminum / Double Pane
11	Aluminum / Double Pane
12	Aluminum / Double Pane
13	Aluminum / Double Pane
14	Aluminum / Double Pane
15	Aluminum / Double Pane
16	Aluminum / Double Pane
17	Aluminum / Double Pane
18	Aluminum / Double Pane
19	Aluminum / Double Pane
20	Aluminum / Single Pane
21	Aluminum / Double Pane
22	Aluminum / Double Pane
23	Aluminum / Double Pane
24	Aluminum / Double Pane

KEY TAKEAWAYS

- Majority of the aluminum framed windows with double pane glass are in fair condition due to splitting at the mullions.
- Window #20 is in poor condition due to containing single pane glass.

MOST COMMON EXTERIOR WINDOW

Aluminum with Double Pane Glass

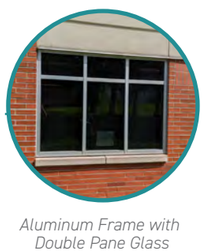
OVERALL EXTERIOR WINDOW CONDITION

Good	No visible damage
Fair	Some visible damage
Poor	Substantial visible damage

markesan middle/high school exterior window identification + analysis

Aluminum Frame with Double Pane Glass

Aluminum Frame with Double Pane Glass



Aluminum Frame with Double Pane Glass

Aluminum Frame with Single Pane Glass

markesan middle/high school roof identification

markesan middle/high school site assessment

OVERALL CONDITION RATING

FAIR

IDENTIFICATION + OVERALL ASSESSMENT

1. Athletic Fields
2. Hardscape + Parking Lots
3. Site Concrete
4. Playgrounds

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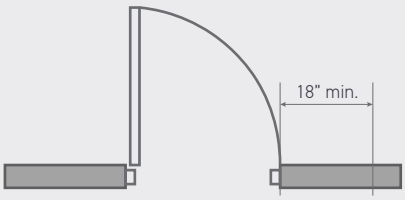
markesan middle/high school ada conditions + assessment

Overall Condition Rating:

Most Concerning Item That Does Not Meet Code Requirements:



Not providing at least 18" minimum clearance required on the pull side of the door, parallel to doorway.

Most Frequently Occurring Item That Does Not Meet Code Requirements:

Toilet rooms do not contain ADA compliant stall

GENERAL ASSESSMENT OF ADA CONDITIONS

- **Building Entrance Accessibility**
- **ADA Parking Stalls**
- **Accessible Routes of Travel**
  - Ramps
  - Lifts
  - Elevators
- **Railings**
  - Ramp Railings
  - Stair Railings
- **Door Hardware**
- **Door Clearances**
  - Push / Pull
  - Thresholds
  - Maneuvering
- **Toilet Rooms**
  - 5'-7" Wheelchair Clearance
  - ADA Accessible Stall
  - Unisex Toilet Room
  - Grab Bars
  - Showers
- **Protruding Objects**
- **Drinking Fountains**
- **Casework**
  - Transaction Counters
  - Workstations Counters
  - Counters with Sinks

markesan middle/high school ada conditions + assessment | first floor

Color Key

- **Accessible Routes of Travel**
  - 1. Ramps
  - 2. Lifts
  - 3. Elevators
- **Railings**
  - 4. Ramps
  - 5. Stairs
- **Door Hardware**
  - 6. Door Hardware
- **Door Clearances**
  - 7. Push / Pull
  - 8. Thresholds
  - 9. Maneuvering
- **Toilet Rooms**
  - 10. 5'-7" Wheelchair Clearance
  - 11. ADA Accessible Stall
  - 12. Unisex Toilet Room
  - 13. Grab Bars
  - 14. Showers
- **Protruding Objects**
  - 15. Protruding Objects
- **Casework**
  - 16. Transaction Counter
  - 17. Workstation Counters
  - 18. Counters with Sinks

N

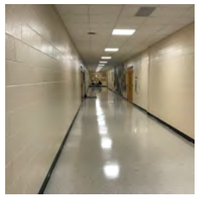
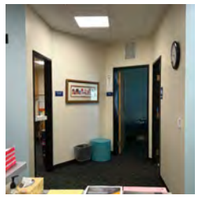
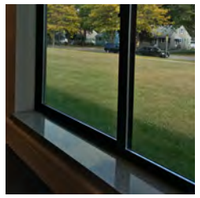
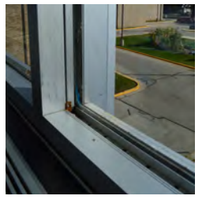
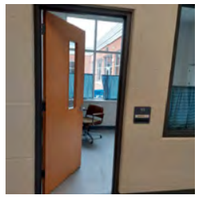
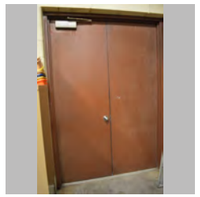
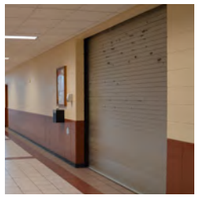
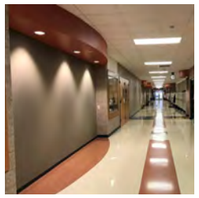
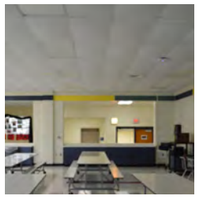
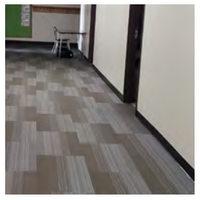
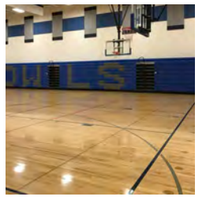
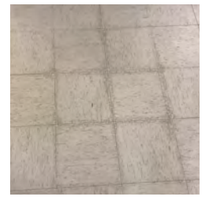
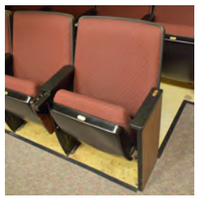
appendix

REFERENCE PAGES

The following pages are examples of images used as a reference to determine whether a material / object is in good, fair, or poor condition.

The images used in the appendix are **not** specific to the school district identified in this study. The images shown on the following pages have been chosen from a variety of past studies to better help represent a range of materials / objects in good, fair, and poor conditions.

building interior

	GOOD	FAIR	POOR
	No visible damage, wear or need for repair; no replacement required.	Some visible damage, wear or need for repair; no immediate replacement required.	Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.
INTERIOR WALLS (interior walls, partition walls, acoustical wall panels)	  	  	  
WINDOW INTERIOR & INTERIOR OPENINGS (interior side of exterior windows, interior storefront, borrowed lites, transaction windows, interior window sills)	  	  	  
INTERIOR DOORS (classroom doors, storage doors, rolling/coiling doors)	  	  	  
CEILINGS (ceilings, clouds, ceiling-applied acoustical panels)	  	  	  
FLOORING (flooring, base, stair treads)	  	  	  
MISCELLANEOUS (casework, fixed furniture/tables/ seating, curtains, railings)	  	  	  

building exterior /envelope

GOOD	FAIR	POOR
No visible damage, wear or need for repair; no replacement required.	Some visible damage, wear or need for repair; no immediate replacement required.	Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

EXTERIOR WALLS
(exterior walls, foundation walls, wall paneling, wall accents)









WINDOWS & STOREFRONT
(windows, storefront, transaction windows, window sills, window screens, window security screens)









EXTERIOR DOORS
(exterior doors, storefront, storage doors, rolling/coiling doors)









ROOF
(roof*, roof edge, roof soffit)

*typically included with documentation or summarization of a third party report, but not included in assessment.









MISCELLANEOUS
(exterior railing, grilles/vents, building-mounted accessories)









site development

GOOD	FAIR	POOR
No visible damage, wear or need for repair; no replacement required.	Some visible damage, wear or need for repair; no immediate replacement required.	Substantial visible damage, wear or need for repair, or identified as containing potential asbestos; most pressing replacement needed.

ASPHALT/PAVING
(hard surface areas, hard surface play areas, parking lots, drop-off/ pick-up lanes, driveways, walking paths, tennis courts)

SITE CONCRETE
(sidewalks, stairs, ramps, stoops, retaining walls)

GREENSPACE
(greenspace, athletic fields, practice fields, gardens)

PLAYGROUND
(playground equipment, basketball hoops, playground surface and border)

MISCELLANEOUS
(fencing, gates, flag poles, bollards, bike racks, school signage, benches, picnic tables)

Plumbing System Review:

The following report is the result of a site visit by Justin Monk and Justin Davis of MSA Professional Services, Inc. that occurred on April 10,2023. Site observations and interviews with staff were all used in the preparation of this report.

The original building was built in 1953. Renovations / Additions include:
1955, 1962, 1973, 1988, 1989, 1990, and 1998.

Domestic Water Piping System

Observations

A. The building is supplied by the municipal water utility. It has a 4" ductile iron water service with a 3" water meter. The system piping material is majority galvanized piping with some areas consisting of type L copper. The isolations valves consist of gate valves and ball valves. There are no backflow preventers to serve the kitchen equipment. The system consists of cold water, hot water supply and hot water return. Majority of the piping is uninsulated. The system pressure is 45-60 pisg. The hot water delivery time to the most remote fixture is under 30 seconds. There are no reports of leaks but reported water hammering issues. The overall system is in poor condition.

Recommendations

A. All piping shall be replaced with new copper piping and ball valves. Any future renovations and or additions, shall account for the resizing of the domestic water pipe mains in order to provide adequate pressure and flow to any new and existing fixtures. Current plumbing and energy codes required faster hot water delivery time to all fixtures. This will extend the domestic hot water piping system piping closer to all hand washing type fixtures and increase the size of the pipe main and circulation pump.

B. Provide water hammer arrestors upstream of all flush valves and faucets with quick closing valves.

C. Provide insulation on all domestic water piping.

D. Provide backflow protection on kitchen equipment.

Fire Suppression Piping System

Observations

A. There is no automatic fire sprinkler system in the building.

Recommendations

A. Existing water service is not capable of supporting a whole building automatic fire sprinkler system. A new properly sized water service will be required to support a whole building automatic fire sprinkler system.

Sanitary Drain, Waste and Vent Piping System

Observations

A. The building system discharges to the municipal sewer. Some of the floor areas that are prone to spills have floor drains. The HVAC boilers are served by hub drains. The main system piping material is Cast Iron & PVC piping. The kitchen area fixtures, and equipment are served by a grease interceptor with no-hub cast iron and PVC grease waste piping material. No issues reported with system and is in fair condition.

Recommendations

A. Provide drain piping with jetting cleaning maintenance once a year.

B. All interceptors shall be maintained as required and pumped out twice a year.

C. Camera video inspection of all underground piping shall be acquired to determine system quality and proper flow. Replace any problem areas with PVC piping.

Storm and Clear Water Drain, Waste and Vent Piping System

Observations

A. The roof is not served by interior roof drains, but it is sloped to exterior rain gutters that discharge to grade.

Recommendations

A. None at this time.

Natural Gas Piping System

Observations

A. The building is supplied by the local gas utility. The system serves the HVAC, plumbing and kitchen equipment. Main system pressure is 2-5psi with a 7”-14” w.c. pressure regulator serving the equipment. The system piping material is black iron steel. The isolations valves are ball valves - Fair condition.

Recommendations

A. None at this time.

Plumbing Equipment

Observations

A. Water Softener – Hot water only – 65gpm simplex resin/mineral tank with single brine tank. Fair Condition.

B. Water Heater – 40 Gallon, 240V Single Phase, 4500W, electric water heater, no expansion tank, temperature is 120degrees. Fair condition.

C. Water Heater – 50 Gallon, 240V Single Phase, 4500W, electric water heater, no expansion tank, temperature is 120degrees. Fair condition.

D. Water Heater – 80 Gallon 199,000btu, high efficiency gas water heater, no expansion tank, temperature setting is 120degrees. Fair condition.

E. Water Heater – 118 Gallon 199,000btu, atmospheric gas water heater with no expansion tank, temperature is 120degrees. Fair condition.

F. Circulating Pump – Multiple – 5-15gpm pump, temperature is 120degrees. Fair Condition.

G. Thermostatic Mixing Valve – n/a

H. Grease Interceptor – Kitchen Area – 30gpm. Poor Condition.

I. Clearwater Sump Basin and Pump – n/a

Recommendations

A. Provide one domestic water heating plant to serve the entire building. Provide power vent, high efficiency gas water heater(s) with expansion tank and re-circulating pump to and from new hot water storage tank and distribution system circulating pump(s).

B. Provide a point of use thermostatic mixing valve for all hot water supplied plumbing fixtures to protect the end user from hot water scolding.

Plumbing Fixtures

Observations

A. Water Closets – Vitreous china floor mount bowl with brass chrome plated manual lever flush valve. Pair condition.

B. Lavatories – Vitreous china wall mount and integral basin with brass chrome plated sensor battery and manual faucets. Fair condition.

C. Urinals – Vitreous china floor mount basin with brass chrome plated sensor battery and manual flush valve. Poor condition.

D. Kitchen Sinks – Stainless steel floor mount basin with brass chrome plated manual lever faucets. Fair condition.

E. General Sinks – Stainless steel drop-in basin with manual lever faucets. Poor condition.

F. Classroom Sinks – Stainless steel drop-in basin with brass chrome plated manual lever faucets. Poor condition.

G. Service Sinks – PVC molded and terrazzo floor mount and wall mount basin with brass chrome plated manual lever faucets and vacuum breaker spouts. Poor condition.

H. Showers – Stainless steel single and multiply use brass manual lever showers valves. Poor condition.

I. Electric Water Cooler – Single use with and without bottle filling station. Poor condition.

Recommendations

A. Upgrade all plumbing fixtures to ADA compliant, wall mounted with sensor operated flush valves and faucets.

B. Provide floor drains with trap seal protection in all toilet rooms.

Plumbing System Review:

The following report is the result of a site visit by Justin Monk and Justin Davis of MSA Professional Services, Inc. that occurred on April 10, 2023. Site observations and interviews with staff were all used in the preparation of this report.

The original building was built in 1959. Renovations / Additions include: 1965 and 1998.

Domestic Water Piping System

Observations

A. The building is supplied by the municipal water utility. It has a 4" ductile iron water service with a 3" water meter and pressure reducing valve. The system piping material is majority type L copper with some areas consisting of galvanized piping. The isolations valves are ball valves and butterfly valves for large pipe sizes. There are no backflow preventers that serves the kitchen equipment and HVAC boilers. The system consist of cold water, hot water supply and hot water return. Pipe insulation is in fair condition. The system pre pressure reducing valve is 80-100psig, post pressure reducing valve is 45-55 pisg. The hot water delivery time to the most remote fixture under 30 seconds. There are no reports of leaks or system issues. The overall system is in fair condition.

Recommendations

A. All piping shall be replaced with new copper piping and ball valves. Any future renovations and or additions, shall account for the resizing of the domestic water pipe mains in order to provide adequate pressure and flow to any new and existing fixtures. Current plumbing and energy codes required faster hot water delivery time to all fixtures. This will extend the domestic hot water piping system piping closer to all hand washing type fixtures and increase the size of the pipe main and circulation pump.

B. Provide water hammer arrestors upstream of all flush valves and faucets with quick closing valves.

C. Provide insulation on all domestic water piping.

D. Provide backflow protection on kitchen equipment.

Fire Suppression Piping System

Observations

A. There is no automatic fire sprinkler system in the building.

Recommendations

B. Existing water service is not capable of supporting a whole building automatic fire sprinkler system. A new properly sized water service will be required to support a whole building automatic fire sprinkler system.

C. Any renovations in the technical education area will required fire sprinklers for any paint spray / finishing rooms, HVAC dust exhaust duct greater than 10" and a dry fire sprinkler connection to an exterior HVAC dust collector.

Sanitary Drain, Waste and Vent Piping System

Observations

D. The system relies on a sanitary ejector pump for the whole building. Pumps have been replaced in 2014. Some of the floor areas that are prone to spills have floor drains. The HVAC boilers are served by hub drains. The main system piping material is no-hub cast iron with PVC piping in

some areas. The kitchen area fixtures and equipment are served by a grease interceptor with no-hub cast iron and PVC grease waste piping material. There are no issues reported. The overall system is in fair condition.

Recommendations

A. Provide drain piping with jetting cleaning maintenance once a year.

B. All interceptors shall be maintained as required and pumped out twice a year.

C. Camera video inspection of all underground piping shall be acquired to determine system quality and proper flow. Replace any problem areas with PVC piping.

Storm and Clear Water Drain, Waste and Vent Piping System

Observations

A. The building system contains multiple sewer laterals discharging to the local municipal storm piping. The roof is served by interior roof drain and conductor piping system discharging to storm drainage system and to grade. There are multiple primary roof drains not covered by secondary overflow roof drains. The HVAC air handling equipment are served by hub drains. The system piping material is Cast Iron, Galvanized & PVC. PVC located in repaired areas and sections. Pipe insulation is in fair condition. There are no reports of back-up but reports of flooding in lower levels. The overall system is in poor condition.

Recommendations

A. Camera video inspection of all underground piping shall be acquired to determine system quality and proper flow. Replace any problem areas with PVC piping.

B. All the existing clay, cast iron and galvanized underground piping shall be replaced with new PVC or approved piping material.

C. Provide inspection and installation of new Drain tile and Clear water sumps / pumps as required.

Natural Gas Piping System

Observations

D. The building is supplied by the local gas utility. The system serves the HVAC, plumbing and kitchen equipment. Main system pressure is 2-5psi with a 7”-14” w.c. pressure regulator serving the equipment. The system piping material is black iron steel. The isolations valves are ball valves - Fair condition.

Recommendations

E. None at this time.

Compressed Air Piping System

Observations

A. The system is served by 80 gallon 150psig air compressor which is piped to work stations, equipment and booths. The majority of the pipe termination has pressure regulators and filters.

The system piping material is black iron steel. The isolations valves are ball valves. The overall system is in Poor condition.

Recommendations

A. None at this time.

Welding Gas Piping System

Observations

A. The building does not contain this piping system.

Recommendations

A. None at this time.

Plumbing Equipment

Observations

A. Water Softener – Water Heaters – 75gpm duplex resin/mineral tank with single brine tank. Poor condition.

B. Water Heater – Whole Building – Two 119 gallon 199,000btu power vent, high efficiency gas water heater with expansion tank, temperature is 130 degrees. Fair condition.

C. Thermostatic Mixing Valve – Shower / Locker Rooms – Expanding Wax Type, temperature is 120degrees. Poor condition.

D. Circulating Pump – General Plumbing Fixtures – Multiple 15gpm pump, temperature is 120degrees. Poor condition.

E. Grease Interceptor – Food Sciences – Multiple 200-250gpm. Was not able to inspect at time of site visit. Fair condition.

F. Solids Interceptor – Ag Classroom – 50gpm. Was not able to inspect at time of site visit. Fair condition.

G. Acids Nuetralization Basin - Science – 115-150gpm. Was not able to inspect at time of site visit. Fair condition.

H. Multiple Clearwater Sump Basin and Pump – Foundation Drain Tile – Was not able to inspect at time of site visit. One of the Clearwater sumps discharges to existing unused shower. Poor condition.

Recommendations

A. Provide a point of use thermostatic mixing valve for all hot water supplied plumbing fixtures for protect the end user from hot water scolding.

Plumbing Fixtures

Observations

A. Water Closets – Vitreous china wall and floor mount bowls with brass chrome plated manual lever and sensor battery flush valves. Fair to poor condition.

B. Lavatories – Vitreous china wall mount and integral basins with brass chrome plated manual and sensor battery faucets. Good to fair condition.

C. Urinals – Vitreous china wall and floor mount basins with brass chrome plated manual lever and sensor battery flush valves. Fair to poor condition.

D. Kitchen Sinks – Stainless steel floor mount basin with brass chrome plated manual lever faucets. Good condition.

E. General Sinks – Stainless steel drop-in basin with brass chrome plated manual lever faucets. Fair condition.

F. Classroom Sinks – Stainless steel drop-in basin with brass chrome plated manual lever faucets and drinking fountains. Fair condition

G. Art Room Sinks – Stainless steel floor mount and drop-in with brass chrome plated manual lever faucets and point of use solid interceptors. Poor condition.

H. Science Room Sinks – Epoxy resin under mount basin with brass chrome plated manual lever faucets and vacuum breaker spouts. Poor condition.

I. Service Sinks – Cast floor with enamel mount, Mold PVC and Terrazzo basin floor and wall mounted with brass chrome plated manual lever faucets and vacuum breaker spouts. Good condition.

J. Tech Ed Sinks –PVC basin floor mounted with Foot manual lever faucets. Emergency eye wash discharging into sink basin. Fair condition.

K. Showers – Stainless steel single and multiply use brass manual lever showers valves. Poor condition.

L. Wash fountain – Molded Plastic - manual foot operated. Poor condition.

M. Electric Water Cooler – Single use with and without bottle filling station. Fair condition.

N. Emergency Fixture – Eye wash with cold water supply only. Good condition.

Recommendations

A. Replace all plumbing fixtures that are 15 years and older. Provide ADA compliant, wall mount fixtures where possible and senor operated flush valves / faucets in toilet rooms to improve hygiene and sanitary efforts.

B. Provide floor drains with trap seal protection in all toilet rooms.

C. Provide monthly testing of emergency fixtures.

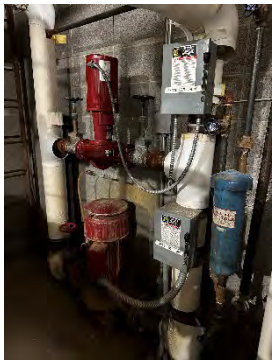
HVAC

The following report is the result of a site visit by Randy All of Fredericksen Engineering, Inc. that occurred on April 10, 2023. Site observations and interviews with staff were used in the preparation of this report.

Heating, Ventilation and Air Conditioning Systems

A. Existing Data

1. The building is served by a hot water boiler plant consisting of two (2) De Dietrich sectional boilers each rated at approximately 1,226,000 btu gross output.
2. The hot water pumping system is a primary-secondary constant flow arrangement with a constant speed primary pump serving each boiler and two (2) constant speed system pumps of differing capacities for summer and winter operation.



3. The building is air conditioned by a 50-ton Johnson Controls outdoor air-cooled condensing unit that is piped to a cooling coil located within a single large built-up air handling unit that serves the majority of the building. The 1990 classroom addition is air conditioned by residential-grade outdoor condensing units that are piped to individual gas-fired furnaces.
4. The majority of the building is ventilated by a large indoor built-up air handling unit that contains a hot water heating coil and a direct-expansion cooling coil. The office area is ventilated by a blower coil that is installed above the ceiling. The 1990 classroom addition is ventilated by four (4) gas-fired residential furnaces. All units are constant volume. The large air handling unit system also has duct-mounted hot water booster coils for zone control.
5. The building is controlled by a Johnson Controls Metasys digital control system.

B. Observations

1. The boilers are believed to have been installed between 2010 and 2013 although the exact date is not known at this time. They appear to be in good condition. The boilers have all been well maintained. The ASHRAE service life expectancy is 20-25 years.
2. The hot water system pumps appear to be about 25 years old. Their ASHRAE service life expectancy is approximately 20-25 years.
3. The large JCI 50-ton condensing unit was recently installed in 2021. It is in excellent condition. The ASHRAE service life expectancy for this unit is approximately 20-25 years.

4. The large indoor air handling unit was installed in 1973. Although it has been well maintained, it has exceeded its ASHRAE service life expectancy of approximately 30-35 years.
5. The air handling unit has been retrofitted with a GPS bipolar ionization system in 2020 to help kill airborne viruses and bacteria.
6. The blower coil unit and outdoor condensing unit serving the office area were recently installed in 2021 and are in excellent condition. The ASHRAE service life expectancy for these units is approximately 15-20 years.
7. The residential furnaces and outdoor condensing untis serving the 1990 addition vary in age with two (2) of the furnaces and condensing units installed in 2009 and two (2) furnaces and condensing units recently replaced in 2022. The units all appear to be in good condition. The ASHRAE service life expectancy for these units is approximately 15-20 years.
8. The Johnson Controls digital control system was installed in 2021 and is still getting some final programming completed.

C. Recommendations

1. Continue with preventive maintenance on all equipment to maximize life expectancies.
2. Plans should be made for the removal and replacement of the 1973 air handling unit currently serving the largest portion of the building with a high-efficiency unit with a direct-drive fan, variable air volume (VAV) control, and a variable frequency drive to control fan motor speed. At that time, the duct-mounted hot water booster coils would be replaced with variable air volume (VAV) boxes with hot water reheat coils to provide a complete VAV system to significantly improve energy efficiency and system performance.
3. Install multiple variable speed roof exhaust fans for building pressure control utilizing variable frequency drives on the fan motors and building static pressure sensors.
4. Remove the existing boilers and constant flow pumping system and replace with a new high-efficiency boiler plant consisting of multiple condensing hot water boilers and a variable speed pumping system.

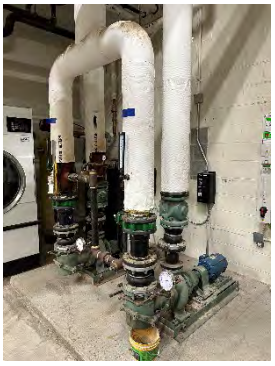
HVAC

The following report is the result of a site visit by Randy All of Fredericksen Engineering, Inc. that occurred on April 10, 2023. Site observations and interviews with staff were used in the preparation of this report.

Heating, Ventilation and Air Conditioning Systems

A. Existing Data

1. The building is served by a hot water boiler plant consisting of two (2) Bryan flexible tube boilers each rated at approximately 4,800,000 btu gross output.
2. The hot water pumping system is a primary-secondary variable flow arrangement with a constant speed primary pump serving each boiler and a variable speed system pump with a full stand-by pump.
3. The entire building is air conditioned by a 250-ton York outdoor air-cooled chiller with variable speed screw compressors that is piped to cooling coils located within individual air handling units. The chilled water pumping system is a primary-secondary variable flow system with a single chiller pump and a single system pump.

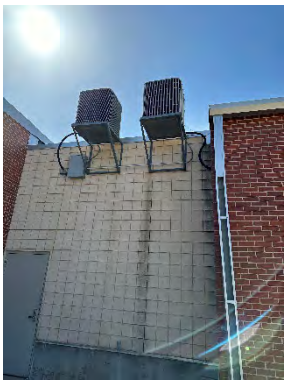


4. The building is ventilated by indoor and outdoor air handling units with hot water and chilled water coils. The air handling units consist of both constant volume and variable volume units.
5. The Band and Vocal rooms are served by individual constant-volume blower coil units with hot water heating coils and direct-expansion cooling coils that are piped to outdoor condensing units.
6. The Woods and Metals shops contain ducted constant-volume fan coil units with hot water heating coils.
7. The building is controlled by a Johnson Controls Metasys digital control system.

B. Observations

1. The boilers were installed in 1999 and are in good condition. The boilers have all been well maintained. The boilers were more recently retrofitted with Riello high-efficiency burners that are in excellent condition. The flexible tube boiler ASHRAE service life expectancy is 30-35 years.
2. The hot water system pumps are also from 1999 and appear to be in good condition. However, their ASHRAE service life expectancy is approximately 20-25 years.
3. The air-cooled chiller was recently installed in 2021 to replace the previous unit and is in excellent condition. The ASHRAE service life expectancy for this chiller is approximately 25-30 years.

4. The chilled water system pumps are from 1999 and appear to be in good condition. However, their ASHRAE service life expectancy is approximately 20-25 years.
5. The indoor and outdoor air handling units vary in age ranging from installation dates of 1959 to 1999. All units have been well maintained, but the older 1959 units are in need of replacement. The 1999 units are in good condition and have been well maintained, but the roof-mounted outdoor units are starting to show some aging. The ASHRAE service life expectancy for these units is approximately 30-35 years.



6. The air handling units were retrofitted with GPS bipolar ionization systems in 2020 to help kill airborne viruses and bacteria.
7. The blower coil units serving the Band and Vocal rooms are suspended in locations that are difficult to access for maintenance. The residential-grade condensing units that provide cooling for these untis are mounted on steel supports at the edge of the roof near the main entrance. None of this equipment is currently installed in very desirable locations from a maintenance standpoint.
8. The fan coil units serving the Woods and Metals shops were recently installed in 2021 and are in very good condition. The ASHRAE service life expectancy for these units is approximately 15-20 years.
9. The Johnson Controls digital control system was installed in 2021 and is still getting some final programming completed.

C. Recommendations

1. Continue with preventive maintenance on all equipment to maximize life expectancies.
2. Plans should be made for the removal and replacement of the 1959 air handling units currently serving the middle school gymnasium with high-efficiency units with direct-drive fans, variable air volume (VAV) control, and variable frequency drives to control fan motor speed.
3. Plans should be made for the eventual replacement of the roof-mounted air handling units.

4. Remove the existing blower coil units and outdoor condensing units that currently serve the Band and Vocal rooms. Install new roof-mounted, packaged units with hot water and chilled water coils and variable speed, direct-drive fans.

Electrical System Review:

The following report is the result of a site visit by Mike Pasineau of MSA Professional Services, Inc. that occurred on April 10, 2023. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

The original building was constructed in the 1953 with additions/renovations in 1955,1962, 1973, 1988, 1989, 1990 and 1998.

Main Electrical Service

Observations

A. The elementary building is fed by one main electric service and exceeds its useful lifespan. This service is a 120/208 volt, 3-phase, 4-wire, 1600 amp and is fed from a pad mounted utility transformer on the east side of the building and the C/T is located in the main electrical room adjacent to the service switchboard. The service switchboard is a Kinney type switchboard with a 1600A main and is over 50 years old.

B. The peak demand on the service was not known at the time of the walk through, but based on the size and building square footage, we believe the service size is adequate for this facility.

C. The main electric service does not have a surge protective device.

D. The serving utility is Alliant Energy.

Recommendations

A. Based on the service equipment age and condition, we recommend the replacement of the service switchboard with new. This will ensure reliability of equipment and breakers will trip upon fault.

B. If a large building addition is constructed or construction is located at the service location, a new larger service or relocation may be required.

C. Consider adding a surge protective device at each electric service location. This will provide protection from incoming surges such as lightning.

Panelboards

Observations

A. There are a variety of panelboards throughout this facility with many of them exceeding their useful lifespan. Many of the existing panelboards throughout the older portion of the building consist of old Kinney and Square D panelboards and loadcenters. These panelboards and loadcenters are over 50 years old and have minimal space for additional breakers. These panelboards have reached the end of their useful life.

B. The remaining panelboards throughout the facility are original to the 1998 addition and remodel project. These panelboards are Square D NQOD type panelboards, have room for additional breakers and appear to be in good working condition.

C. Panelboards throughout the building do not have Arc Flash Warning Labels indicating available fault current at each panelboard, approach boundary restrictions and flash boundary restrictions.

D. A majority of the panelboards throughout the building have hand-written circuit directories.

Recommendations

A. The old Square D and Kinney type panelboards and loadcenters are very old, have reached the end of their useful life and should be replaced based on their age and condition.

B. The newer Square D NQOD type panelboards are in good working condition, in general have room for additional breakers and can remain. Add to the existing panelboards as necessary.

C. Complete an Arc Flash Study of the existing electrical system and add arc flash labels to all electrical panelboards. This will increase the safety of personnel maintaining or operating equipment along with occupants in the vicinity of the equipment.

D. Provide type-written directories and engraved panelboard labeling for all electrical panelboards throughout the building to prevent loss of information.

Generator

Observations

A. The emergency generator is a very old Kohler 120/208 volt, 3-phase, 4 wire, natural gas fired 11kW unit. This generator is original to the building, has very minimal capacity and is past its useful life expectancy. The generator set is pad mounted inside the building adjacent to the electrical room. The generator is in the same room as the main electric service.

B. There (1) transfer switch present in the facility. This transfer switch feeds an electrical panel that contains both life-safety and non-life-safety loads. The transfer switch and associated panelboard are very old, are at maximum capacity and are located in the same room as the main electrical service equipment.

Recommendations

A. Due to the age and condition of the emergency generator, we recommend providing a new exterior rated natural gas generator. We recommend the generator to be sized to feed life-safety loads such as emergency egress lighting and fire alarm, as well as non-life-safety loads such as the main office complex, data closets, phone, intercom, boiler, boiler circulating pump and cooler/freezer.

B. We also recommend providing (2) new transfer switches fed from the generator which would separate life-safety and non-life-safety loads throughout the building. To bring the facility up to code, the new transfer switches would be located in a separate room from the main electrical service and boilers.

Interior and Exterior Lighting

Observations

A. All light fixtures throughout the building were recently retrofitted with LED replacement tubes.

A. All exterior lighting has recently been upgraded to LED, including parking lots.

B. Old occupancy sensors are present in classroom spaces.

C. Classrooms contain zoned switching and manual lever switches.

Recommendations

A. Light fixtures throughout the building have recently been upgraded and can remain. Replace fixtures throughout the building as necessary.

B. We did not verify shared neutral loads on LED or any existing circuits. This should be done by a qualified electrician prior to adding any additional LED lighting. We would recommend a separate neutral be installed on any shared neutral loads.

Emergency Lighting

Observations

A. Emergency lighting and exit lighting is accomplished through battery backup bug-eye type fixtures as well as emergency lighting fed from the generator.

B. We did not verify full egress compliance during our walk through but assume some areas could use upgraded egress lighting to comply with current codes.

Recommendations

A. See recommendations from generator section.

B. Add interior and exterior egress lighting to emergency generator or provide additional battery backup egress lighting to comply with current codes.

Wiring Devices

Observations

A. The receptacles and switches are commercial grade 15 and 20 amp with a mix of plastic and stainless steel plates. The devices vary in age and condition and for the most part show signs of general wear and tear.

B. Upon opening various junction boxes, cloth covered branch circuit wiring and feeder wiring was present in the old portion of the building

Recommendations

A. Replace wiring devices and plates that are damaged.

B. Add additional receptacles and circuits as necessary.

C. We recommend the replacement of the old cloth branch circuit wiring and feeders as it is susceptible to damage from rodents, bugs, etc. Replacing the old cloth wiring will minimize the risk of exposed wiring throughout the facility.

D. We did not verify shared neutral loads on any existing circuits; this should be done by a qualified electrician prior to adding any additional devices. We would recommend a separate neutral be installed on any shared neutral loads or add multipole breakers to bring the circuiting up to code.

E. We did not verify if circuits contained independent grounding conductors. This should be done by a qualified electrical contractor or at a minimum verify grounding continuity in all circuits. It was common in schools in Wisconsin to use the conduit as a grounding system on some older facilities. Over time the conduit may have disconnected causing ungrounded circuit conditions. We always recommend a separate grounding conductor be installed in every conduit.

Fire Alarm System

Observations

A. The fire alarm is a very old Bonafide addressable system. Staff indicated the existing fire alarm system is operational. The owner indicated the fire alarm system is in good operating condition and has had minimal issues. The fire alarm control panel is located in the first floor main office area.

B. There are pull stations by all exterior doors.

C. There are horn/strobe devices in all public spaces including corridors, classrooms, LMC, etc.

D. There are strobe devices in private spaces including offices and toilet rooms.

E. There are smoke detectors are present in corridors.

Recommendations

A. Although the fire alarm system is operational, it is more than 20 years old and has reached the end of its life expectancy. We recommend replacing the existing addressable system head end and all devices to a new, code approved voice addressable fire alarm system with all new voice annunciated devices throughout the entire facility.

Clock System

Observations

A. The existing clock system contains 120V American Time clocks synchronized to an old Simplex 2350 Master Time Clock system.

Recommendations

A. The existing clock system head end is very old. Consider replacing the existing clock system head end with a new GPS clock system with all new battery powered clocks throughout the building.

Public Address System

Observations

A. The intercom system is an Audio Enhancement Epic system and was installed in 2019. The system head end is located in the first floor main office area. Staff indicated that they have had no issues with the existing system.

B. The facility also contains an old Bogen intercom system that is still in operation and remains in the facility as a backup system. The system is very old, but staff indicated it still works if they need it as a backup.

C. Numerous types of speakers are located throughout the facility of different ages and types. The new Audio Enhancement Epic system contains new, round flush and surface mounted ceiling speakers throughout the facility and are in good condition. There are many additional speakers that remain for the old Bogen intercom system that are very old, but staff indicated they still work with the old system.

D. Call in devices are installed in all classrooms and instructional spaces.

Recommendations

A. The existing Audio Enhancement Epic IP head end is in good working condition and can remain. Continue to add additional speakers to the existing intercom head end as necessary.

B. The old Bogen intercom system and speakers are still operational and can remain as a backup system.

Data

Observations

A. There is one data rack located in the main office area that serves the entire facility. This is possible due to the plenum ceiling throughout the building. The building is fed with fiber.

B. The data system consists of a mixture of CAT 5E, and CAT 6 type data cable which is routed to patch panels in the data rack.

C. The building has wireless access points.

D. Through random sampling of data cable, we found CAT6 and CAT5E plenum rated cabling throughout the building. The owner indicated that some non-plenum rated cabling may be present in the building.

Recommendations

A. Additional CAT6 cable can be added to rooms as needed.

B. Due to the entire building being plenum rated. All non-plenum rated cabling should be replaced with new CAT6 plenum rated cabling.

Keyless Entry System

Observations

A. There is a Keyscan security door access control system in the facility that serves a majority of the exterior doors around the perimeter of the facility.

B. The owner indicated that the existing system is old and would ideally like to upgrade to a new IP based system.

C. There is a non-IP two-way intercom system with no camera at the main office exterior entry.

Recommendations

A. A new access control system should be considered. We propose a new Mercury device installed above each existing exterior door with a new CAT6 cable routed back to the network switch and provide new software. The existing equipment at each door can remain or additional device detection can be added. This will allow all door hardware to be run off any software and not require the replacement of the devices at the existing doors. This will allow for numerous features including the ability to open a door from a remote device such as a cell phone.

CCTV System

Observations

A. There is an existing ExacVision IP based security system with a mixture of Hikvision, Vivotek and Panasonic cameras throughout the building.

B. There appears to be adequate coverage through both the interior and exterior of the facility.

Recommendations

A. Add additional IP cameras as required.

Electrical System Review:

The following report is the result of a site visit by Mike Pasineau of MSA Professional Services, Inc. that occurred on April 10, 2023. Site observations, existing plan review and interviews with staff were all used in the preparation of this report.

The original building was constructed in the 1959 with additions/renovations in 1965 and 1998.

Main Electrical Service

Observations

A. The building is fed by one main electric service installed in 1999. This service is a 277/480 volt, 3-phase, 4-wire, 2500 amp and is fed from a pad mounted utility transformer on the north side of the building and the C/T is located in the main electrical room adjacent to the service switchboard. The service switchboard is a Cutler Hammer Pow-R-Line type switchboard that was installed in 1999 and appears to be in good working condition.

B. The peak demand on the service received from the power meter on the main service switchboard reads 873 amps. This indicates that there is additional capacity on the existing service for future additions.

C. The main electric service does not have a surge protective device.

D. The serving utility is Alliant Energy.

Recommendations

A. The existing main electric service and switchboard is in good working condition and can remain. It appears that there is adequate service capacity for the electric service in the building. Add to the existing electric service as necessary.

B. If a large building addition is constructed or construction is located at the service location, a new larger service or relocation may be required.

C. Consider adding a surge protective device at each electric service location. This will provide protection from incoming surges such as lightning.

Panelboards

Observations

A. There are a variety of panelboards throughout this facility with many of them being very old. Many of the existing panelboards throughout the older portion of the building consist of old Federal Pacific and GE panelboards and loadcenters. These panelboards and loadcenters are over 50 years old and have minimal space for additional breakers. These panelboards have reached the end of their useful life.

B. The remaining panelboards throughout the facility are original to the 1998 addition and remodel project. These panelboards are Cutler Hammer PRL1a and PRL2a type panelboards, have room for additional breakers and appear to be in good working condition.

C. Panelboards throughout the building do not have Arc Flash Warning Labels indicating available fault current at each panelboard, approach boundary restrictions and flash boundary restrictions.

D. A majority of the panelboards throughout the building have hand-written circuit directories.

Recommendations

A. The old Federal Pacific and GE type panelboards and loadcenters have exceeded their useful lifespan and should be replaced based on their age and condition.

B. The newer Cutler Hammer PRL1a and PRL2a type panelboards are in good working condition, in general have room for additional breakers and can remain. Add to the existing panelboards as necessary.

C. Complete an Arc Flash Study of the existing electrical system and add arc flash labels to all electrical panelboards. This will increase the safety of personnel maintaining or operating equipment along with occupants in the vicinity of the equipment.

D. Provide type-written directories and engraved panelboard labeling for all electrical panelboards throughout the building to prevent loss of information.

Generator

Observations

A. This facility does not have a generator.

Recommendations

A. One option is to continue to use battery backup exit lights and egress fixtures.

B. Another option would be to consider adding a new generator and remove battery backup exit lights and egress lighting, provide power to data closets, phones, keyless entry, coolers and freezers as well as circulation pumps on boilers. Provide complete, new, code approved egress lighting paths throughout the facility if new generator is added.

Interior and Exterior Lighting

Observations

A. Throughout the facility, there is a mixture of LED light fixtures and retrofit LED replacement tubes. These fixtures were updated within the last 5 years.

B. The light fixtures in the main commons and cafeteria area contain tunable LED light fixtures.

C. Light fixtures in all other areas of the building contain retrofit LED replacement tubes.

A. All exterior lighting has recently been upgraded to LED, including parking lots.

D. Old occupancy sensors are present in classroom spaces.

E. Classrooms contain zoned switching and a mixture of manual lever and dimming switches.

Recommendations

A. Light fixtures throughout the building have recently been upgraded and can remain. Replace fixtures throughout the building as necessary.

Emergency Lighting

Observations

A. Emergency lighting and exit lighting is accomplished through a mixture of battery backup light fixtures and battery backup bug-eye type fixtures with some of them being very old incandescent type light fixtures.

B. We did not verify full egress compliance during our walk through but assume some areas could use upgraded egress lighting to comply with current codes.

Recommendations

A. See recommendations from generator section.

B. Add interior and exterior egress lighting to emergency generator to comply with current codes.

C. Replace old incandescent egress light fixtures.

Wiring Devices

Observations

A. The receptacles and switches are commercial grade 15 and 20 amp with a mix of plastic and stainless steel plates. The devices vary in age and condition and for the most part show signs of general wear and tear.

B. Upon opening various junction boxes, cloth covered branch circuit wiring and feeder wiring was present.

Recommendations

A. Replace wiring devices and plates that are damaged.

B. Add additional receptacles and circuits as necessary.

C. We recommend the replacement of the old cloth branch circuit wiring and feeders as it is susceptible to damage from rodents, age, etc. Replacing the old cloth wiring will minimize the risk of shock hazard throughout the facility.

D. We did not verify shared neutral loads on any existing circuits; this should be done by a qualified electrician prior to adding any additional devices. We would recommend a separate neutral be installed on any shared neutral loads or add multipole breakers to bring the circuiting up to code.

E. We did not verify if circuits contained independent grounding conductors. This should be done by a qualified electrical contractor or at a minimum verify grounding continuity in all circuits. It was common in schools in Wisconsin to use the conduit as a grounding system on some older facilities. Over time the conduit may have disconnected causing ungrounded circuit conditions. We always recommend a separate grounding conductor be installed for every circuit.

Fire Alarm System

Observations

A. The fire alarm is a Simplex addressable system and was installed within the last 5 years. The owner indicated the fire alarm system is in good operating condition and has had minimal issues. The fire alarm control panel is located in the first floor district office.

B. There are pull stations by all exterior doors.

C. There are horn/strobe devices in all public spaces including corridors, classrooms, LMC, etc.

D. There are strobe devices in private spaces including offices and toilet rooms.

E. There are smoke detectors are present in sections of the building, but not throughout the facility.

Recommendations

A. The fire alarm system is less than 5 years old, is in good working condition and can remain. Add devices to the existing system as necessary.

Clock System

Observations

A. The existing clock system contains 120V American Time clocks synchronized to a very old Simplex Master Time Clock system.

Recommendations

A. The existing clock system head end is very old. Consider replacing the existing clock system head end with a new GPS clock system with all new battery powered clocks throughout the building.

Public Address System

Observations

A. The intercom system is an Audio Enhancement Epic system and was installed in 2021. The system head end is located in the first floor main office area. Staff indicated that they have had no issues with the existing system.

B. The facility also contains an Old Dukane intercom system that is still in operation and remains in the facility as a backup system. The system is very old, but staff indicated it still works if they need it as a backup.

C. Numerous types of speakers are located throughout the facility of different ages and types. The new Audio Enhancement Epic system contains new, round flush and surface mounted ceiling speakers throughout the facility and are in good condition. There are many additional speakers that remain for the old Dukane intercom system that are very old, but staff indicated they still work with the old system.

D. Call in devices are installed in all classrooms and instructional spaces.

E. Intercom strobes are present in the gymnasium and band room.

Recommendations

A. The existing Audio Enhancement Epic IP head end is in good working condition and can remain. Continue to add additional speakers to the existing intercom head end as necessary.

B. The old Dukane intercom system and speakers are still operational and can remain as a backup system or could be removed in its entirety.

Data

Observations

A. The MDF data rack is located adjacent to the cafeteria on the east side of the building. There are (4) additional IDF data closets throughout the building. MDF data closet is fed with fiber and fiber is used to connect all switches throughout the building.

B. The data system consists of a mixture of CAT 5, and CAT 6 type data cable which is routed to patch panels in the data rack.

C. The building has wireless access points.

D. Through random sampling of data cable, we found CAT6 plenum rated cabling throughout the building. The owner indicated that some non-plenum rated cabling may be present in the building.

Recommendations

A. Additional CAT6 cable can be added to rooms as needed.

B. If a portion of the building were converted from non-plenum ceiling to plenum ceiling, all non-plenum data cabling would need to be replaced with plenum rated cabling.

Keyless Entry System

Observations

A. There is a TCN security door access control system in the facility that serves a majority of the exterior doors around the perimeter of the facility.

B. There is a non-IP two-way intercom system with no camera at the main office exterior entry.

Recommendations

A. A new access control system should be considered. We propose a new Mercury device installed above each existing exterior door with a new CAT6 cable routed back to the network switch and provide new software. The existing equipment at each door can remain or additional device detection can be added. This will allow all door hardware to be run off any software and not require the replacement of the devices at the existing doors. This will allow for numerous features including the ability to open a door from a remote device such as a cell phone.

CCTV System

Observations

A. There is an existing ExacVision IP based security system with a mixture of Hikvision, Vivotek and Panasonic cameras throughout the building.

B. There appears to be adequate coverage through both the interior and exterior of the facility.

Recommendations

A. Add additional IP cameras as required.

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Markesan School District Elementary Roof Inspection Summary

Date: April 27, 2019
Client: Markesan School District

Core cuts were taken on the roofs at the following locations in April of 2019:
High School / Middle School / Elementary

Core Information

Elementary School – 5 Duro-Last Roofs, 1 Metal Roof. No Asbestos in Areas That Could Be Tested

Roof 01 (Three Roof Assemblies)
Metal Deck
.5" Wood Fiberboard
Hot Asphalt Smooth Roof
1" XPS Insulation
.5" Wood Fiberboard
Hot Asphalt Smooth Roof
1" EPS
Duro-Last Membrane

Roof 03 (Three Roof Assemblies)
Metal Deck
.5" Wood Fiberboard
Hot Asphalt Smooth Roof
1" XPS Insulation
.5" Wood Fiberboard
Hot Asphalt Smooth Roof w/ modified bitumen cap sheet
1/4" EPS
Duro-Last Membrane

Roof 04 (Three Roof Assemblies)

Metal Deck
.5" Wood Fiberboard
Hot Asphalt Smooth Roof
1" XPS Insulation
.5" Wood Fiberboard
Hot Asphalt Smooth Roof
2.5" EPS
Plastic Vapor Barrier
Duro-Last Membrane

Roof 05 (Two and Possibly Three Roof Assemblies)
This roof area was underwater except for a small area near the parapet wall. Core was taken that consisted of Duro-Last membrane, 2" polyisocyanurate insulation and then a Built Up Roof with the gravel surfacing intact. Technician could not get through the gravel and there was not enough area or a desire to open up more area with an ax. It is assumed that there is likely minimal insulation (wood fiberboard) under the BUR. Possibility of another roof assembly as well. This is an example of poor design of the last roof installed (Duro-Last), as the gravel roof should not have been left in place with the gravel intact prior to installation of the roof over top.

Roof 06 (Two and Possibly Three Roof Assemblies)
This roof was completely under water and no core cuts could be taken. It is assumed that this roof is similar to roof section 05 as they are adjacent to each other and on the same elevation.

Insulation R-Value Information

Elementary School

Roof 01
R-Value of 10. Well below code. Previous re-roofs did not take code into consideration.

Roof 03
R-Value of 10. Well below code. Previous re-roofs did not take code into consideration.

Roof 04
R-Value of 18. Below code.

Roofs 05 and 06 Cores were incomplete but what was found would indicate no more R-Value than 15.

All District Roofs are below current code for insulating value.

From this information all roofs were evaluated and given a condition index score based on current observed conditions:

1.0 Leak and Damage History or Potential
0 - None, 7 - Minimal, 15 - Moderate, 23 - Heavy, 30 - Widespread

2.0 Field Membrane
0 - Good, 5 - Maintainable, 10 - Repairable, 15 - Prefailure, 20 - Failed

3.0 Perimeter Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed

4.0 Penetration Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed

5.0 Roof Related Sheet Metal
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed

6.0 Drainage
0 - Good, 2 - Minor Ponding, 3 - Moderate Ponding, 4 - Major Ponding, 5 - No Drainage

7.0 Miscellaneous / Adjacent Conditions
0 - None, 3 - Minimal, 5 - Moderate, 8 - Threatening, 10 – Damaging

The lower the score on the condition index the better the roof is. This condition index helps to provide an initial snapshot to prioritize allotment of repair, restoration or replacement funds. Roof conditions will change year to year and priorities will also change. Additional factors that will also play into decisions regarding the roofs are energy efficiencies, long-term building and facilities plans, risk factors (is the roof over a gym floor or high priced computer equipment), and funding. All of the roof areas are lacking in insulation as at the time of construction the building code had lower requirements than today's current and proposed codes. Many of the replacement roofs were also installed in the past without regard for existing code as they did not add the appropriate insulation or they added a roof to systems that already had two roof assemblies. If energy efficiency upgrades are to be performed on other building components this needs to be factored into the roof planning.

Condition Index

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Elementary School

Section 01

15 1.0 Leak and Damage History or Potential
0 - None, 7 - Minimal, 15 - Moderate, 23 - Heavy, 30 - Widespread
10 2.0 Field Membrane
0 - Good, 5 - Maintainable, 10 - Repairable, 15 - Prefailure, 20 - Failed
5 3.0 Perimeter Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
5 4.0 Penetration Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
6 5.0 Roof Related Sheet Metal
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
2 6.0 Drainage
0 - Good, 2 - Minor Ponding, 3 - Moderate Ponding, 4 - Major Ponding, 5 - No Drainage
8 7.0 Miscellaneous / Adjacent Conditions
0 - None, 3 - Minimal, 5 - Moderate, 8 - Threatening, 10 - Damaging

Total Raw Roof Condition Index = 51
Total Adjusted Roof Condition Index = 56

Section 03

15 1.0 Leak and Damage History or Potential
0 - None, 7 - Minimal, 15 - Moderate, 23 - Heavy, 30 - Widespread
10 2.0 Field Membrane
0 - Good, 5 - Maintainable, 10 - Repairable, 15 - Prefailure, 20 - Failed
5 3.0 Perimeter Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
5 4.0 Penetration Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
6 5.0 Roof Related Sheet Metal
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
2 6.0 Drainage
0 - Good, 2 - Minor Ponding, 3 - Moderate Ponding, 4 - Major Ponding, 5 - No Drainage
8 7.0 Miscellaneous / Adjacent Conditions
0 - None, 3 - Minimal, 5 - Moderate, 8 - Threatening, 10 - Damaging

Total Raw Roof Condition Index = 51
Total Adjusted Roof Condition Index = 66

Section 04

10 1.0 Leak and Damage History or Potential
0 - None, 7 - Minimal, 15 - Moderate, 23 - Heavy, 30 - Widespread
8 2.0 Field Membrane
0 - Good, 5 - Maintainable, 10 - Repairable, 15 - Prefailure, 20 - Failed
5 3.0 Perimeter Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
5 4.0 Penetration Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
6 5.0 Roof Related Sheet Metal
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
1 6.0 Drainage
0 - Good, 2 - Minor Ponding, 3 - Moderate Ponding, 4 - Major Ponding, 5 - No Drainage
7 7.0 Miscellaneous / Adjacent Conditions
0 - None, 3 - Minimal, 5 - Moderate, 8 - Threatening, 10 - Damaging

Total Raw Roof Condition Index = 42
Total Adjusted Roof Condition Index = 47

Section 05

25 1.0 Leak and Damage History or Potential
0 - None, 7 - Minimal, 15 - Moderate, 23 - Heavy, 30 - Widespread
15 2.0 Field Membrane
0 - Good, 5 - Maintainable, 10 - Repairable, 15 - Prefailure, 20 - Failed
8 3.0 Perimeter Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
7 4.0 Penetration Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
8 5.0 Roof Related Sheet Metal
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
4 6.0 Drainage
0 - Good, 2 - Minor Ponding, 3 - Moderate Ponding, 4 - Major Ponding, 5 - No Drainage
9 7.0 Miscellaneous / Adjacent Conditions
0 - None, 3 - Minimal, 5 - Moderate, 8 - Threatening, 10 - Damaging

Total Raw Roof Condition Index = 76
Total Adjusted Roof Condition Index = 81

Section 06

27 1.0 Leak and Damage History or Potential
0 - None, 7 - Minimal, 15 - Moderate, 23 - Heavy, 30 - Widespread
15 2.0 Field Membrane
0 - Good, 5 - Maintainable, 10 - Repairable, 15 - Prefailure, 20 - Failed
8 3.0 Perimeter Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
7 4.0 Penetration Flashings
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
8 5.0 Roof Related Sheet Metal
0 - Good, 3 - Maintainable, 5 - Repairable, 8 - Replace, 10 - Failed
5 6.0 Drainage
0 - Good, 2 - Minor Ponding, 3 - Moderate Ponding, 4 - Major Ponding, 5 - No Drainage
10 7.0 Miscellaneous / Adjacent Conditions
0 - None, 3 - Minimal, 5 - Moderate, 8 - Threatening, 10 - Damaging

Total Raw Roof Condition Index = 80
Total Adjusted Roof Condition Index = 85

Roof Condition Index

Roof Area	Age	Type	Condition Index	Sq.Ft.	R-Value
1.) ES 06	13?	Duro*(2-3)	85	2,600	<15
2.) ES 05	13?	Duro*(2-3)	81	2,600	<15
3.) ES 03	11	Duro*(3)	66	32,000	10
4.) ES 01	13?	Duro*(3)	56	4,000	10
5.) ES 04	7	Duro*(3)	47	12,000	18
6.) ES 07	29	Metal *Repair or Retrofit*		14,000	

Type Code: FA = Fully Adhered, B = Ballasted, EPDM = Ethylene Propylene Diene Monomoer (rubber), BUR= Built Up Roof, MBUR = Modified Bitumen Hybrid Built Up Roof, Duro = Duro-Last Thermoplastic Single Ply
*Multiple Roof Assemblies Present

Many of the roof areas have multiple roof assemblies, as previous re-roofs did not involve tearing off of the old roof assembly. This provided costs savings at the time, but also created problems. Many of the Elementary areas have three roofs. Wet materials are trapped within the roof assemblies and leaks can been masked as they migrate laterally within the roof assemblies. In a sense some of the old roofs could still be

providing waterproofing creating situations where leaks may not be known until the extent, volume and damage is extensive. This moisture entrapment also creates a scenario where deterioration occurs creating low spots and issues with other building components (deck deterioration for example). There is also the potential for mold growth within the roof assembly as insulation that is wet can promote this condition.

The brick wall behind the metal wall panels was inspected and found to be sound. The brick is not cracking, moving or deteriorated. The metal wall panel is keeping the original wall protected from the elements and no work is needed on those areas.

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Markesan School District High School / Middle School Summary

Date: April 17, 2023
Client: Markesan School District

The High School and Middle School roofs have been replaced or are currently being replaced in 2023.

Information

High School – Roofs were all replaced with Ballasted EPDM assemblies in 2020 (05,06,08,09) and 2021(01,02,03,04,07).

Middle School – Roofs were replaced in 2022 (03,04,05) and 2023 (01,02,06,07) with Fully Adhered EPDM assemblies.