Facility Overview

School District:	Wrangell Public School District
Facility:	Stikine Middle School
Inspection Date(s):	May 16-19, 2023

Dates of Construction and Additions

	Date	GSF
Original Construction:	1975-79	16,943
Addition:	1989	4,024
Interior renovation	2008	
Roof Replacement:	1998	
	Total:	20,967

*Confirm dates and GSF with DEED Facility Database

Renovations and System Replacement

Date	Description (including renovations as part of above additions)
1989	Addition joined vocational education facility to the middle school.
1991	Middle School Renovations

Survey Team

Name	Firm
Sean Boily, AIA	NorthWind Architects, LLC - Juneau
Shannon Crossley, Assoc. AIA	NorthWind Architects, LLC- Juneau
Harper Gunn, Assoc. AIA	NorthWind Architects, LLC- Juneau
Brian Nielsen , PE, SE	PND Engineers, Inc. - Juneau
Sean Sjostedt, PE	PND Engineers, Inc. - Juneau
Ken Ratcliffe, PE, EE	AMC Engineers, Inc. - Anchorage
Mark Langberg, PE, ME	AMC Engineers, Inc. - Anchorage

Notes

Priority projects for funding are highlighted in yellow. Pricing in the report escalated to 2024. The summary provided on last page provides totals escalated to 2025.

Regulatory Data

Codes Utilized

2021 International Building Code (IBC)
2021 International Existing Building Code (IEBC)
2021 International Mechanical Code (IMC)
International Fuel Gas Code 2021 Edition (IFGC)
2021 International Fire Code (IFC)
2020 National Electrical Code (NEC)

Additional relevant codes and standards:

2022 NFPA 72, National Fire Alarm and Signaling Code
Illuminating Engineering Society of North America (IESNA) Lighting Library
ASME CSD-1 Controls and Safety Devices for Automatically Fired Boilers
Uniform Plumbing Code
NFPA 30 – Flammable and Combustible Liquids Code
ASCE/SEI 7-2016 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures
Alaska DEED School Design and construction Standards, 2022

Codes of Original Construction

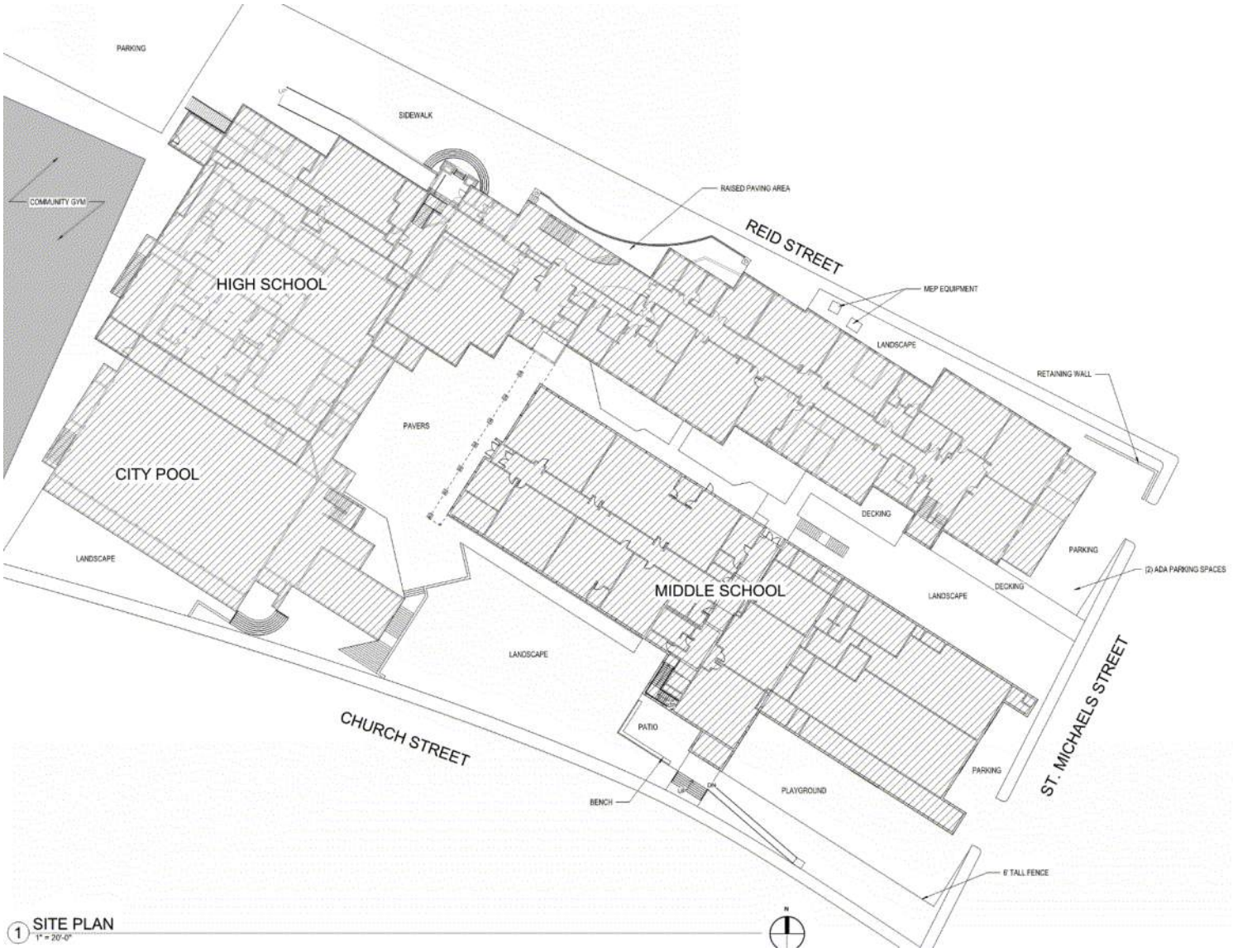
Uniform Building Code 1974 Edition
City of Wrangell- local modifications:
Design Loads: Snow Load- 50 PSF Wind Load- 30 PSF
Requirements based on Occupancy:
Requirements based on occupancy:
Section 802.2.c Storage and janitor closets – 1 hour separation
Section 808 Boiler rooms – 1 hour separation

Code Analysis, UBC 1988

Occupancy Group: E-1
Type of Construction: Type 5N: Sprinklered (UBC Sec 508)
Floor Area:
Allowable Floor Area: sq ft./floor Table 5-C: 9,100 sf.
Allowable Area Increases: separation 2 sides = 27.5% x 9100 = 2,052 sf (Section 506 a1)
Total allowable area per floor: 11,602 sf.
Actual floor areas: First floor = 9,392 sf.
Second floor = 11,575 sf
Allowable number of Floors: 1. Sprinkler increase allowable floors: 2 (Sec. 507)
Total Area: 20,967 sq. ft.

Site and Infrastructure

Site Improvements Overview



Vehicular Surfaces

Description of Existing Systems

Site vehicular surfaces are limited to the vocational wing loading area on the east side of the building, off of St. Michaels Street. All other facility parking is on-street.

Existing Conditions

The vehicular surface is gravel.

Code Deficiencies

C-1: There is no off-street parking. Verify required parking count and ADA space requirements.

Recommendations

C-1: Pending parking requirement evaluation.

C-2: Priority #3 Re-grade approximately 30’x20’ of parking area with 6” of gravel. Priority #1

Re-grading vocational gravel parking area at southeast end of building.

Estimates

C-1 Parking, No Recommendation	$0
C-2 Regrade Parking 30'x20'	$2,256

Pedestrian Surfaces

Description of Existing Systems

Concrete walkways at north, south and west sides of building. The courtyard to the west has integrated brick paver areas addressed in architectural landscape comments.

Existing Conditions

General conditions are fair, with evidence of damage from snow and ice removal, and weathering.

Code Deficiencies

C-3: Several areas of concrete sidewalk do not meet ADA standards.

Recommendations

C-3a: Priority #1 Replace concrete apron at base of breezeway stairs (9’x17’).

Replace concrete apron at base of stairs leading down from breezeway

C-3b: Priority #1 Replace 12'x5' of concrete sidewalk on southwest side of building. Alternatively, this defective sidewalk could be removed entirely as it serves no functional purpose and ends abruptly near a steep slope.

Wide gap between panels in sidewalk on southwest side of building, top level

Abrupt drop between panels in sidewalk on southwest side of building, top level

Sidewalk on southwest side of building, top level, ends abruptly near steep slope

C-4: Priority #3 Consider replacing existing 10'x5' concrete stoop at door exiting building on northeast side.

Replacing existing 10'x5' concrete stoop at door exiting building

C-5: Priority #3 Consider constructing a 5'x5' concrete stoop at door exiting building on northeast side that does not currently have one.

The following offsite sidewalk sections are likely part of facility pedestrian access and should be considered for replacement: 4'x26' with depressed curb at vocational wing driveway.

Estimates

C-3 Replace Concrete Sidewalks	$8,411
C-4 Replace Concrete Stoop	$1,975
C-5 Replace Concrete Stoop	$989

Elevated Decks, Stairs & Ramps

Description of Existing Systems

There is each a concrete Ramp and Stair from the front entry to the sidewalk on Church Street.

There is a timber-framed stairway from the second floor to grade/Vocational Education level on the north side of the building.

Existing Conditions

The concrete access ramp leading from an offsite sidewalk to the building entrance on Church Street. The concrete is in fair condition.

Stairs leading to the building entrance on Church Street appear to have settled and water likely ponds at the base, which may freeze and create a slip hazard.

Stairs connecting the courtyard to the sidewalk on Church Street have a wall near the uppermost landing that separates lawn area above from the landing below. The wall height is approximately 3'.

The timber framed stairs on the north side of the building appears to be in fair condition. The wood pickets in handrail/guardrail elements at stairs and at second level landing exceed current allowable widths of 4" clear.

Code Deficiencies

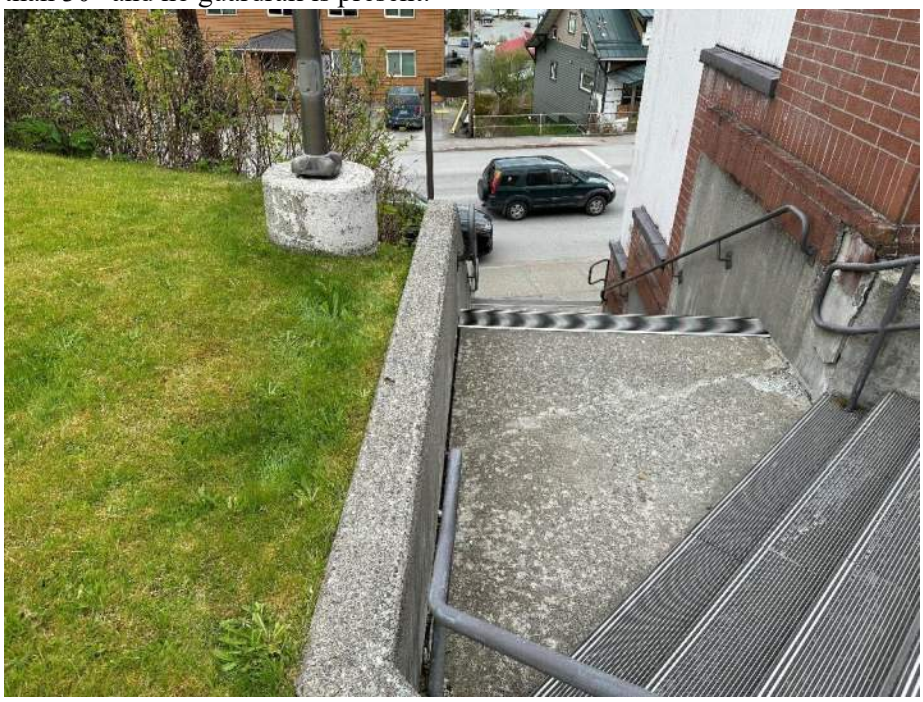
C-6: The concrete access ramp longitudinal slope occasionally exceeds the ADA maximum.

Location where access ramp longitudinal slope exceeds the ADA maximum

C-7: A gap at the construction joint at the top of the concrete access ramp is wider than the ADA maximum.

A gap at the construction joint at the top of the concrete access ramp is wider than the ADA maximum.

C-8: The elevation difference between the lawn and stair landing at the northwest staircase is greater than 30” and no guardrail is present.



Elevation difference between the lawn and stair landing at the northwest staircase is greater than 30” and no guardrail is present.

A-1: At the timber framed stair and upper landing on the north side of the building the painted steel pickets in handrail/guardrail elements exceed current allowable widths of 4” clear.

Recommendations

C-6: Priority #1 Re-construct the ramp to ADA standards.

C-7: Priority #1 Fill and seal construction joint at top of ramp.

C-8: Priority #1 Install guardrail atop concrete wall separating lawn from stair landing at northwest staircase.

A-1: At the timber framed stair and upper landing on the north side of the building, install additional painted steel pickets between existing handrail/guardrail elements to close gap to allowable. These are 1.5"x1.5" steel tubes approximately 48" long with end caps, through bolted to the wood riling panels. Quantity 63 at stairs. Priority #1

Estimates

C-6 Reconstruct Ramp	$15,596
C-7 Fill and Seal Construction Joint at Top of Ramp	$873
A-1 Stair and Landing at North Side of Bldg	$5,541

Site Walls

Description of Existing Systems

There is a terraced concrete block wall below the breezeway connecting the middle school to the high school. This wall assembly stabilized soils on the hillside between structures.

Existing Conditions

The wall is in good condition with no signs of settling, rotation, or sliding.

Code Deficiencies

None

Recommendations
None

Estimates

Landscaping & Irrigation

Description of Existing Systems
The front of the school is on Church Street to the south, which is a hillside lawn above rock outcroppings, with a margin of small shrubbery plantings and trees between grass area and sidewalk.

Front door to lower level, with hillside lawn and patio to the west, paved recreation area to the east.

To the East of the building is the access drive to the shops with a vegetated area between Middles School and the High School up the hill, no landscape features.

To the north the site between the lower level of the Middle School building (the Vocational Shop area) and the rock terrace below the High School is a vegetated area, mostly grasses accumulating standing water at grade. The facility fuel tank is located here.

Lower level, North side.

Upper level North side

Landscape between the upper level of the north side the Middle School and the High School is comprised of concrete walk and a strip of lawn, with strips of washed rock between hard and vegetated surface and the buildings. This are ai well drained.

The west end of the building abuts the courtyard between the Middle School, the High School and the City operated Pol facility. This largely a hardscape landscape.

Existing Conditions

Landscape components are in fair condition, with landscape plantings well maintained. The planted landscape does not have a fixed irrigation system and does not need one.

Code Deficiencies
None

Recommendations
A-2: Repoint all of the grout joints at the brick pavers in the courtyard, approximately 300 sf of large format brick paver system. Priority #1

Hardscape brick-wok to be repointed.

A-3: trench and drain the low-lying area between Middle School and High School See Civil C-18. Priority #2

Estimates

A-2 Repoint All Grout Joints at Brick Pavers	$35,489
A-3 Trench and Drain Low Lying Area	$40,227

Fencing and Gates

Description of Existing Systems
The recreation area to the south of the Automotive shop is enclosed by a 6' tall chain link fence with an opening near the school lower entry and at the southeast corner of the vocational shop area.

Existing Conditions
Fair condition. A maintenance task will be to re-connect dislodged fence post caps at basketball court.

Code Deficiencies
None

Recommendations
A-4: Priority #3 Consider constructing a fence on the southwest lawn perimeter at top of steep slope.

Estimates

A-4 Construct Fence	$25,342

Site Furnishing & Equipment

Description of Existing Systems
A dimensional lumber plaza bench is located on the north side of the south entry of the school This bounds two wedges of a concrete paved area with hexagonal picnic table.

Wood furnishings at patio, south of lower level entry

Picnic table and timber seat walls at upper patio, southwest corner.

Existing Conditions
Landscape plants are well maintained. Wood site furnishings are weathering.

Code Deficiencies
None

Recommendations
A-5: Wall top timber benches at middle school 3x8, typical: Strip, epoxy seal, paint approximately 50 LF. Replace with new, painted approximately 20 lf. Priority #1

A-6: Clean and re-stain two picnic tables and the patio seat edge (approximately 60lf.). Priority #3

Estimates

A-5 Wall Top Timber Benches, Refinish/Replace	$4,725
A-6 Restain picnic tables and benches	$5,449

Playgrounds

Description of Existing Systems
There is a basketball court on the southwest side of the vocational wing.

Existing Conditions
The basketball court is surfaced with ACP and is generally in good condition with the exception of several cuts made to install cleanouts.

Code Deficiencies
C-9: Does not appear to be any ADA access (verify if this is required).

Recommendations

C-10: Priority #1 Construct two patches at cuts around cleanouts, (1) measuring 5'x5' and (1) measuring 4'x4'. Priority #2

ACP cutouts around cleanouts

C-11: Priority #2 Remove weeds along building and at concrete/ACP joint to prolong surfacing life. Priority #2

Remove weeds along building and pavement edges

Estimates

C-9 ADA Access - Verify, No Solution Presented	$0

C-10 Patches at Cleanouts	$1,543
C-11 Remove Weeds Along Building & Conc Joints	$8,709

Other Site Improvements - None

Site Structures Overview

Synopsis

In the site structures category is the canopy at the west courtyard end of the building and the canopy between the Middle School and High school at the north side of the building. These appear to be of the same generation of construction as the 1979 Middle School with some work applied with the mid-1980s high school.

Freestanding Shelters - none

Attached Shelters

Description of Existing Systems

The attached canopy at the west courtyard end of the building and the canopy between the Middle School and High school at the north side of the building appear to be of the same generation of construction as the 1979 Middle School with some work applied with the mid-1980s high school. They the north canopy has the same roofing as the high school, the west canopy was re-roofed as a part of the 1998 roofing project that replaced roofing on the middle school. At tht time it was also given the same parapet extension and sheet metal siding band. Both have wood soffits that match building siding. The west canopy columns have a brick cladding wrap that matches brickwork on the high school, with terracotta caps.

Existing Conditions

Canopies are in fair condition. The brick cladding the west canopy is in fair condition but the terracotta cap at the southwest corner is damaged.

Code Deficiencies

none

Recommendations

A-7: Repair terracotta wall cap at indicated canopy column cover. Repair to remove and reinstall existing components with new grout, and reseal at preservative treated structural post. Priority #1

Estimates

A-7 Repair Wall Cap, Terracotta	$14,579

Support Buildings - None

Civil/Mechanical Utilities Civil/Mechanical Utilities Overview

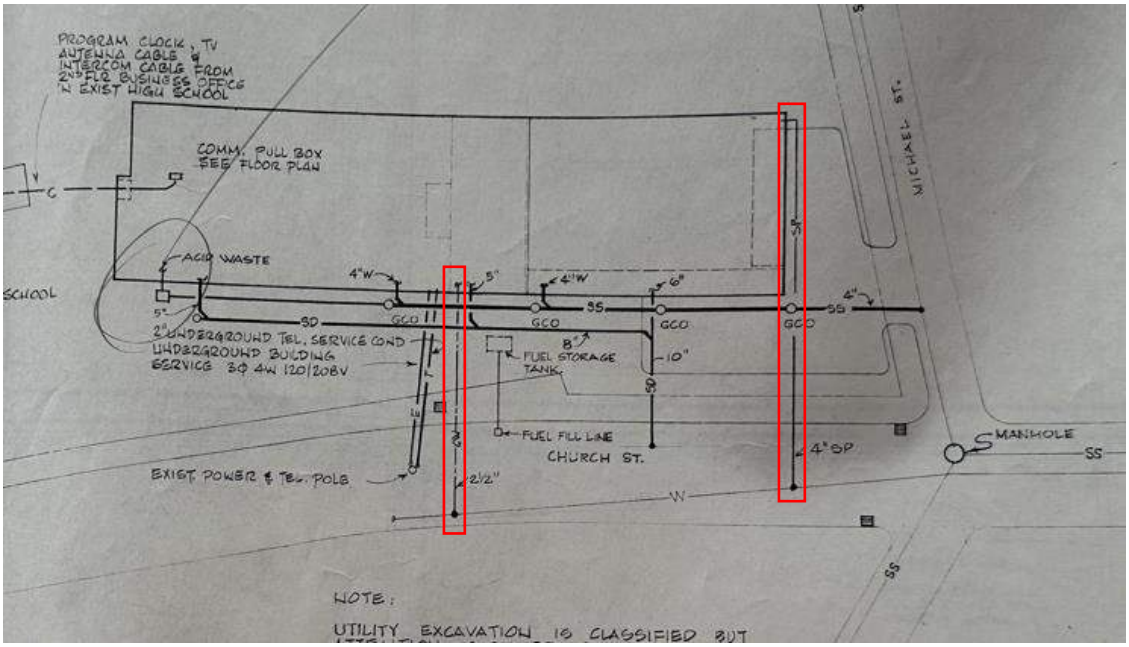
Water System

Description of Existing Systems

The facility water supply is provided by the municipal water system.

Existing Conditions

Available plans indicate that there are two water services feeding the building. A 2.5" cold water supply enters the building near the middle of the southwest side, and a 4" sprinkler service enters the building near the east corner. Both services come from a main in Church Street. No materials are specified. The plans differ from observations by the MEP consultant during this condition survey, and also differ from information by CBW staff. The MEP consultant observed only the 4" service entering the east corner and noted that this service splits to both domestic and sprinkler branches, and does not believe the separate 2.5" service exists. CBW staff indicated that the facility was supplied by a 6" service coming from the main in Church Street. Staff did not indicate any issues with pressure, turbidity, odor, or taste. The nearest fire hydrant is approximately 160' (hose length) from the building Fire Department Connection (FDC).



Code Deficiencies

N/A

Recommendations

C-12: Priority #1 Access to the FDC was hindered by a parked vehicle and materials staged against the wall. Recommend the area be kept clear.

Access to FDC hindered

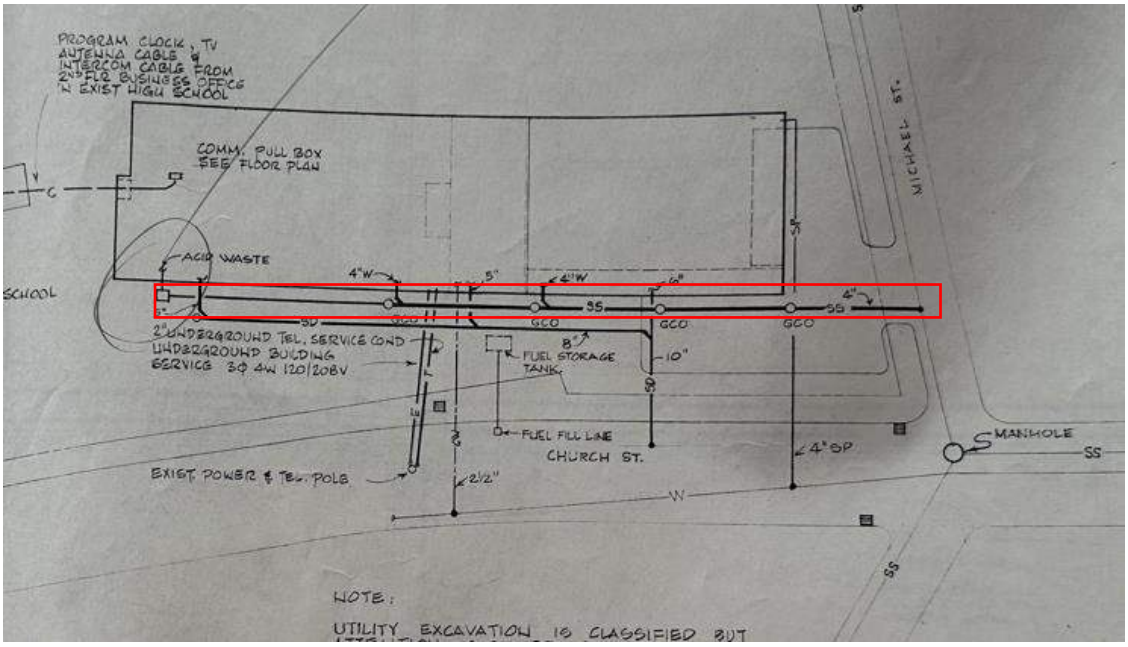
Sanitary Sewer

Description of Existing Systems

The facility sanitary sewer is provided by the municipal sanitary sewer system.

Existing Conditions

Available plans indicate that the building sanitary sewer service is located on the southwest side of the building. The building discharges to the service through three connections, all on the southwest side. Two connections are listed as 4". The third connection does not have a size and is listed as "acid waste." No materials are specified. The service leaves the site near the south building corner and heads southeast to a main in St. Michael Street. The service is listed as 4", no material specified. CBW personnel indicate that the building sanitary sewer system may differ from that shown on the plans because of an elevator addition. The service may also be larger than that shown on the plans. One known blockage occurred after the elevator addition was constructed, and was reportedly caused by rock in the pipe. No other blockages or back-ups have occurred per CBW staff.



Code Deficiencies

N/A

Recommendations

C-13: Priority #1 Camera all existing sanitary sewer lines to assess condition and look for breaks, sags, etc.

Estimates

C-13 Camera All Existing Sanitary Sewer Lines	$14,664

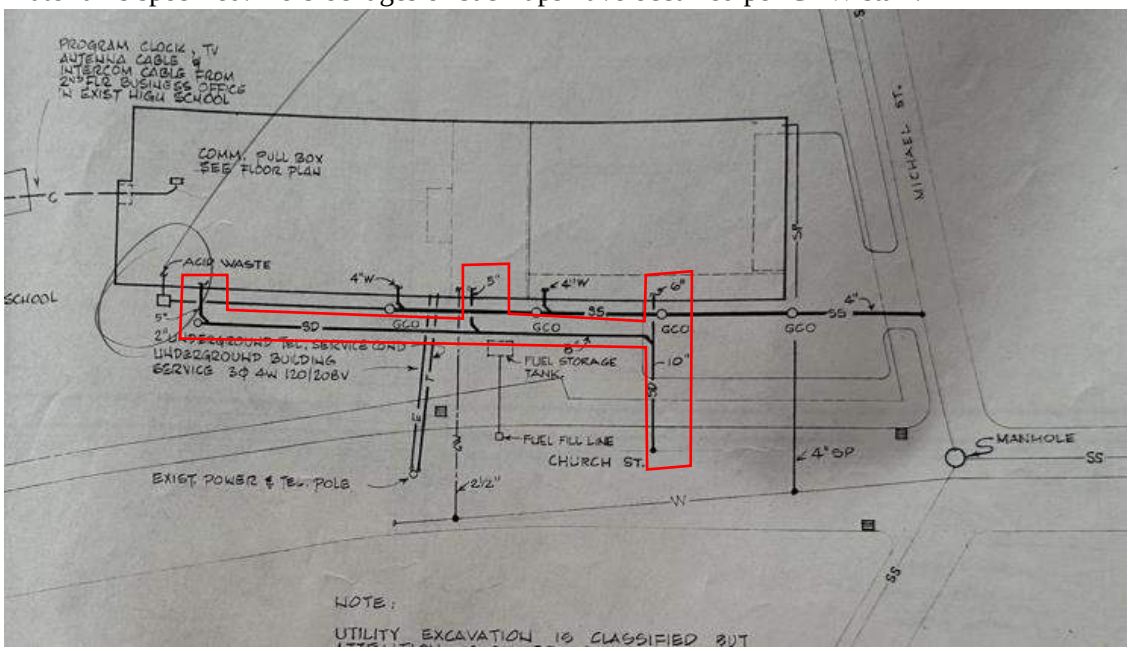
Storm Water

Description of Existing Systems

The building storm drain system is conveyed via pipe to the municipal storm drain system. Site storm water appears to be handled via surface runoff, infiltration, and limited collection and conveyance to the municipal system.

Existing Conditions

Available plans indicate that the building has three storm drain services (two 5" services and one 6" service) leaving the southwest side of the building. These three services merge into a single 10" service before leaving the site and connecting to the municipal system in Church Street. No pipe material is specified. No blockages or back-ups have occurred per CBW staff.



Site runoff is either shed, infiltrated through landscaping, or collected by a limited number of catch basins and pipes.

Visible pipes and structures had debris accumulation although were not completely blocked, nor were there any signs of storm water back-ups. The overall pipe network layout was not obvious as the visible pipe alignments did not seem to connect visible structures.

Several areas intended to either shed or infiltrate are not performing adequately. These include:

- A rock mulch buffer on the northeast side of the building, top level, that reportedly floods and freezes.
- A grass area on the northeast side of the building, ground level, is reportedly constantly saturated with standing water.
- A grass landscape buffer on the southwest side of the building, top level, between the building and a sidewalk is unnecessarily graded towards the building. However there are no signs of water accumulation.

Code Deficiencies
N/A

Recommendations
C-14: Priority #1 Camera all storm drain pipes to assess for condition, sags, etc.

C-15: C-1: Priority #1 Clean (2) onsite catch basins.

C-16: Priority #1 Clean pipe adjacent to east building corner (size, length and discharge point unknown).

Inlet and pipe near east building corner

C-17: Priority #1 Clean 4" drain pipe (approximately 15 LF) immediately northwest of entrance on Church Street.

Drain pipe immediately northwest of building entrance on Church Street

C-18: Priority #1 Consider a 4" perforated CPP underdrain (approximately 80 LF) in the grass area northeast of the vocational wing. Connect to existing catch basin in St. Michael Street with 40 LF of 4" PVC.

Saturation and standing water in vegetated area northeast of vocational wing

C-19: Priority #1 Consider a 4" perforated CPP underdrain (approximately 100 LF) in the rock mulch buffer on the northeast side of the building. Connect to existing High School catch basin with 20 LF of 4" PVC.

Buffer on northeast side of building, top level

C-20: Priority #1 Re-grade vegetated buffer on southwest side of building, approximately 90'x4', to drain away from building and re-vegetate.

Vegetative buffer on northwest side of building, top level

Estimates

C-14 Camera All Existing Storm Drain Lines	$14,664
C-15 Clean Onsite Catch Basins	$5,074
C-16 Clean Pipe Adjacent to East Corner of Bldg	$5,074
C-17 Clean Pipe 4"	$381
C-18 Underdrain 4"	$14,194
C-19 Underdrain 4"	$21,686
C-20 Regrade Vegetated Buffer at SW	$8,334

Fuel Systems – See Special Mechanical Systems, Fuel Supply (Oil)

Heating/Cooling Piping & Utilidors - None

Site Electrical Overview

Synopsis

Site electrical consists of the electrical power and communication utility services to the building and site lighting as described below.

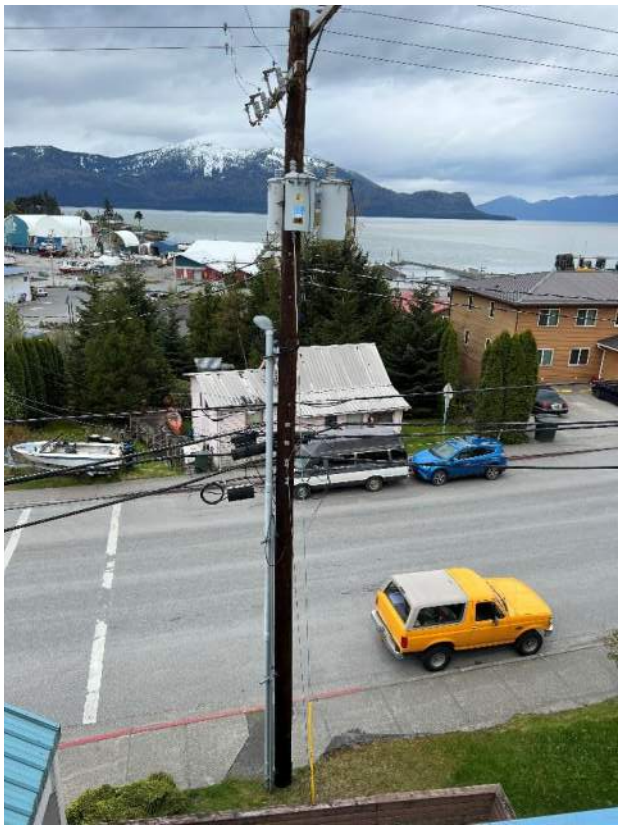
Supply & Distribution

Description of Existing Systems

The building is served by Wrangell Municipal Light and Power via an overhead distribution line on the south side of the building at Church Street. The utility primary line connects to (3) pole mounted 25kVA single phase utility transformers which supply the building at 208Y/120V, 3-Phase, 4-Wire. From the utility transformers, the overhead service conductors riser down the pole to underground and feed the interior service entrance inside an electrical room located off the commons of the middle school building (Mechanical 155). The service entrance consists of an interior current transformer (CT) switchgear section, meter base and distribution switchgear section with main disconnect. The main service disconnect consists of a 400A circuit breaker. The grounding electrode conductor was not observable, and a grounding electrode conductor was not visible at the water service entry.

Existing Conditions

The supply and distribution system appears to be in marginal condition having exceeded its useful life.



Code Deficiencies

E-1: The grounding electrode system is not bonded together in accordance with National Electrical Code (NEC) 250.50. In addition to the existing ground rod, the grounding electrode conductor is required to be bonded to the metal water pipe.

E-2: Service disconnect not marked in accordance with NEC 230.70(B).

Recommendations

E-1: Bond the grounding electrode system to the metallic water pipe. Priority #1.

E-2: Label service disconnect in accordance with NEC 230.70(B). Priority #1.

E-3: If major renovations are undertaken, provide a new electrical service for with a main exterior service disconnect. Priority #3.

Estimates

E-1 Grounding Corrections	$1,782
E-2 Label Service Disconnect	$206
E-3 New Service	$85,760

Data/Comm Service & Distribution

Description of Existing Systems

The Data /Comm Service consists of an abandoned copper cabling service that terminates on protector blocks located in the main electrical room. Service to the middle school building is now provided by a connection to the high school communications service entrance. Refer to high school report for additional information.

Existing Conditions

The service is no longer in use.

Code Deficiencies

None noted.

Recommendations

E-4: Disconnect and remove abandoned cabling. Priority #3

Estimates

E-4 Remove Abandoned Cables	$1,734

Lighting & Equipment

Description of Existing Systems

Exterior area lighting is provided by high pressure sodium (HPS) surface canopy fixtures, mercury vapor downlights, HPS downlights and pole mounted HPS area lights. Exterior fixtures are photocell controlled except the entrance canopy fixtures were noted to be energized during daylight hours indicating a failure of their photocell control.

Existing Conditions

The fixtures are in poor condition.

Code Deficiencies

E-5: Two pole mounted area lights on east side are inoperative due to a break in the underground branch circuit.

Recommendations

E-5: Troubleshoot and repair branch circuit feeding pole mounted area lights at east side. Priority #2.

E-6: Troubleshoot and repair photocell controls for front entrance canopy fixtures. Priority #1.

E-7: Replace all exterior lighting fixtures with LED equivalent including fixture housings. Priority #2.

Estimates

E-5 Troubleshoot and Repair Light Circuits	$7,339
E-6 Troubleshoot and Repair Photocell	$1,027
E-7 Replace All Exterior Lighting Fixtures	$32,167

Security Systems - None

Offsite Work Overview - None

Substructure

Synopsis

The substructure of the building generally appears to be in good condition and functioning as expected. Our assessment was limited to the foundation elements visible without performing any destructive testing or excavations. The visible portions of the foundations were visually inspected for signs of distress and deterioration, such as cracked or spalling concrete, exposed steel reinforcement or differential settlement within the structure. The original structural drawings were also utilized in our assessment. Our assessment assumes the foundation elements specified on the original drawings were installed unless observed otherwise during assessment.

Standard Foundations & Basements Overview

Synopsis

Overall, the foundation systems appear to be in good condition where observations could be performed.

Continuous & Column Footings

Description of Existing Systems

The building substructure consists of a conventional reinforced concrete shallow foundation. Around the perimeter of the lower building are 8-inch wide conventional reinforced concrete foundation walls on 16-in wide x 8-in thick strip footings founded on bedrock or buried a minimum of 3-feet. In the two covered areas the slab edges are thickened slabs with 2-feet of bury and 2.5-foot square spread footings support the canopy columns. The original covered area along the south end of the building was infilled after original construction, however there are no indications that the foundation was modified during the infill project. Lengthwise along the center of the building is a concrete foundation wall with 16-in wide x 8-in thick strip footing buried 18-inches below the finished slab elevation. The floor is 4-inch slab-on-grade with welded wire reinforcement.

The upper building foundations are an 8-inch-wide conventional reinforced concrete wall anchored and founded on bedrock or supported by 16-in wide x 8-in thick strip footings around the perimeter of the building. Lengthwise along the interior of the building are two concrete foundation walls with 16-in wide x 8-in thick strip footing buried 18-inches below the finished slab elevation. The floor is 4-inch slab-on-grade with welded wire reinforcement. The upper canopy posts are supported on a foundation similar to the thickened slab supporting interior bearing walls.

Existing Conditions

Overall, the continuous and column footings appear to be in good condition. While the inspection was limited to those elements of the foundation that were visible, there were not signs of significant deterioration or distress in the foundation elements. There were also no signs of significant settlement of the structural elements, indicating no significant distress or deterioration of the foundation.

Code Deficiencies

None

Recommendations

None

Estimates
TBD by estimator

Foundation Walls & Treatment

Description of Existing Systems
The existing foundation walls are reinforced concrete 8-inches wide, founded and anchored on bedrock or supported on the continuous footings described previously. Exposed sections of the foundation walls are painted and it appears the paint terminates at the interface with existing grade.

Existing Conditions
Overall, the foundation walls appear to be in good condition based on visual observation. There were no signs of significant deterioration or distress in the foundation elements. There were also no signs of significant settlement of the structural elements, indicating no significant distress or deterioration of the foundation.

Other than the paint on the exposed sections of the foundation walls, there were no indications that the walls have been treated with dampproofing.

Code Deficiencies
S-1: Cracks in the exterior walls of the concrete foundation walls.

Crack in foundation wall

S-2: Exterior foundation walls have not been dampproofed.

Recommendations
S-1: Small cracks in the exterior concrete wall for the upper building. These cracks likely occurred during initial construction and are due to temperature and shrinkage. They should be monitored to ensure they are not opening or allowing water infiltration into the foundation. If the cracks are found to be expanding, cracks they should be repaired with structural epoxy. Priority #3

S-2: Provide dampproofing on exterior foundation walls. Priority #3

Estimates
S-1 Monitor Cracks - No Estimate $0

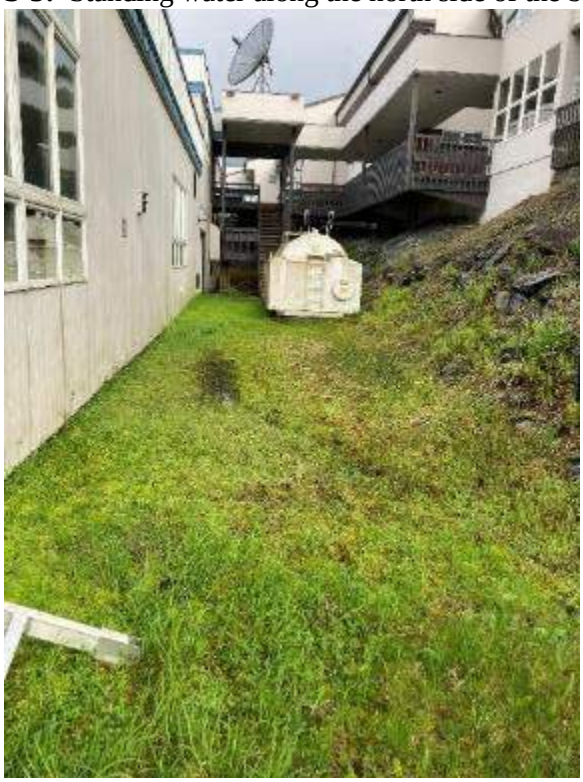
S-2 Dampproofing $161,823

Foundation Drainage

Description of Existing Systems
Foundation drains were not shown on the existing drawings or identified in the field.

Existing Conditions
Not Applicable

Code Deficiencies
S-3: Standing water along the north side of the building. Priority #2



Standing water on the north side of the building

Recommendations
S-3: Provide drainage along the north side of the building to divert water away from the foundation and building. Priority #1

Estimates
S-3 Drainage on North of Bldg $32,182

Slab on Grade Overview

Synopsis
Our assessment was limited to the slab-on-grade elements visible without performing any destructive testing or excavations. The visible portions of the slab-on-grade were visually inspected for signs of distress and deterioration, such as cracked or spalling concrete, exposed steel reinforcement or differential

settlement within the structure. Overall, the slab-on-grade appears to be in good condition where observations could be performed.

Structural & Non-structural Slabs

Description of Existing Systems

The slab-on-grade for the building is 4-inch thick reinforced concrete slab. Design drawings show the reinforcement is a welded wire reinforcement 6 x 6 W2.9x W2.9. In addition to the welded wire reinforcement, #4 reinforcing bars are placed at 18-inch on center in each direction. The slab is connected to the exterior foundation elements with #4 dowels spaced 12-inches on center with 1-foot embedded into the foundation wall and 2-foot of embedment into the slab on grade.

Existing Conditions

A majority of the slab-on-grade is covered by floor finishes. Areas where the slab-on-grade was exposed were in good condition. There are some cracks in the concrete, however these cracks appear to be temperature and shrinkage cracks which occurred during construction. The cracks do not appear to be expanding. Areas with floor covering did not show any signs of significant distress, which would be indicated by uneven floors or damaged finishes due to movement.

Code Deficiencies

S-4: Temperature and shrinkage cracks in the slab on grade.

Crack in slab-on-grade in shop

Recommendations

S-4: Cracks should be monitored and filled with grout or structural epoxy if they are found to be expanding. Priority #3

Estimates

S-4 Monitor Cracks - No Estimate	$0

Trench, Pit, and Pad

Description of Existing Systems

The elevator pit is constructed using conventional reinforced concrete. In the corner of the floor is a lowered area approximately 18-inches by 18-inches for a sump pump.

Existing Conditions

The elevator pit is in good condition.

Code Deficiencies

None

Recommendations

None

Underslab Elements – Unknown – see Architectural comments on floor finishes

Special Foundations Overview – Not Applicable

Superstructure

Synopsis

The superstructure of the building appears to be in good to fair condition and functioning as expected. The building is constructed using conventional light-framed timber construction. Framing typically consists of 2x timber studs with some larger timber sections at areas of concentrated load. The second floor is supported by pre-engineered timber trusses. Plywood was used for the floor diaphragm and shear walls to transfer and resist lateral forces. PND was informed of potential areas of concern and previous maintenance work that had been performed on the facility in regard to the structural systems. PND assessed the entirety of the building where accessible. The original structural drawings and renovation drawings were also utilized in our assessment. Our assessment assumes the structural framing specified on the original and renovation drawings was installed unless different framing was observed.

Floor Structure Overview

Synopsis

The ground floors of the building are slabs-on-grade. See slabs-on-grade for detailed description. The elevated floors and roofs are supported by pre-engineered timber trusses. The floor and roof diaphragm is comprised of plywood sheathing secured to the timber trusses, which also serves as the flooring and roofing substrate.

Lower & Main Floors

Description of Existing Systems

The ground floors consist of reinforced concrete slabs-on-grade. See Slabs-on-Grade section for detailed description of the floor systems.

Existing Conditions

See Slabs-on-Grade section for detailed description of the floor systems.

Code Deficiencies

See Slabs-on-Grade section for detailed description of the floor systems.

Recommendations

See Slabs-on-Grade section for detailed description of the floor systems.

Estimates

See Slabs-on-Grade section for detailed description of the floor systems.

Upper Floors

Description of Existing Systems

The second floor is supported on pre-engineered timber framed trusses with steel plate connectors between 2x chords and webs. Trusses are spaced at 24-inches on center. At locations with concentrated loads and beneath the mechanical penthouse either utilize multiple pre-engineered timber trusses matching the floor framing or reinforced pre-engineered timber trusses. The floor diaphragm is constructed using ¾" plywood sheathing secured to the floor trusses. The plywood sheathing also serves as a flooring substrate for architectural floor finishes.

During the 1987 renovation a bearing wall was relocated to increase the size of Mechanical Room 155. To accommodate the altered bearing location, the existing pre-engineered timber trusses were reinforced with plywood sheathing near the bearing point. The plywood sheathing was secured to the top and bottom chords, and the truss webs.

Existing Conditions

While there are some isolated locations where the floor trusses are damaged, overall the timber floor trusses are in good condition. The floor sheathing could not be observed from the top side due to floor covering, the plywood when observed from the underside was in good condition.

Code Deficiencies

S-5: Timber truss above Snack Room 157 had damage to bottom chord. It is not clear if this happened during original construction or during a renovation.

Damaged bottom chord of floor truss

Recommendations

S-5: The bottom chord should be reinforced to meet the original design capacity. Design should be completed by professional structural engineer licensed in the State of Alaska. Priority #2

Estimates

S-5 Repair Bottom Truss Chord	$27,035

Ramps – None, not applicable

Special Floors

Description of Existing Systems

The floor in the Mechanical Penthouse is comprised of the same framing described in the upper floor, except that the plywood sheathing has been overlayed with concrete. The concrete topping slab is likely not intended to be a structural slab or diaphragm, however it does provide dampening for the attached mechanical equipment.

Existing Conditions
The floor for the mechanical penthouse is in good condition.

Code Deficiencies
None

Recommendations
None

Roof Structure Overview

Synopsis
Overall the roof structural system is in good condition. Most of the building is comprised of a flat roof supported by pre-engineered timber trusses. Plywood sheathing serves as diaphragm and as a substrate for the roofing membrane. Above the mechanical penthouse and the lower covered entry and atrium is a pitched gable roof which is supported by pre-engineered timber trusses. Again, the pitched roofs are sheathed with plywood which serves as a diaphragm and structural roofing substrate.

Pitched Roofs

Description of Existing Systems
The only pitched roofs on the structure is the roof over the mechanical penthouse and the lower covered entry and atrium. The structural roof system for the covered entry/atrium and mechanical penthouse are pre-engineered timber framed trusses with plate connectors between 2x chords and webs. The roofs are sheathed with plywood sheathing which provides lateral force transfer as a diaphragm and serves as structural support for the roofing system.

Existing Conditions
Overall the structural systems of the pitched roofs above the mechanical room and covered entry/atrium appear to be in good condition. The structural roof systems could not be visually observed during the site visit as they were enclosed. However, there were no signs of structural distress in the wall covering that warranted destructive testing to observe the structural systems.

Code Deficiencies
S-6: Mechanical unit suspended from mechanical penthouse roof structure not seismically braced.

Suspended mechanical not seismically braced

Recommendations

S-6: Install seismic bracing for suspended mechanical unit. Design should be completed by a professional structural engineer licensed in the State of Alaska. Priority #2

Estimates

S-6 Seismic Bracing for Suspended Mechanical Unit	$14,359

Flat Roofs

Description of Existing Systems

The existing flat roofs are supported by pre-engineered timber trusses with steel plate connectors between 2x chords and webs. The diaphragm is created using ¾" plywood sheathing which also serves as structural roof substrate. At locations with concentrated loads the floor trusses have either been doubled up or reinforced with plywood sheathing.

Existing Conditions

Overall, the flat roof framing appears to be in good condition. It was noted that several trusses along south side of the building had been repaired and reinforced in the past. It is assumed that the wood trusses had degraded due to water infiltration into the building. The trusses were repaired and reinforced with structural steel angles where damaged. The roofing was soft in numerous places indicating potential water infiltration. There was a lot of airflow above the ceiling, which likely has reduced moisture and rot due to water infiltration through the roofing.

Code Deficiencies

S-7: Rotten roof sheathing. While no rotten roof sheathing was observed, we assume that there may be some due to the condition of the roofing.

S-8: Unprotected exterior column. Existing HSS3x3x1/4 east of shops (Rooms 113 and 114) is not protected from vehicles. Column is extremely small for its height and would likely fail with minimal impact from a vehicle. Failure of the column could result in collapse of covered roof.

Recommendations

S-7: Replace rotten roof sheathing in kind when roofing is replaced. Priority #1

S-8: Typically bollards could be installed to protect the column form impact. But due to the size of the column and the proximity to vehicles, recommend the column is encased in concrete its full height. Priority #1

Unprotected exterior column

S-9: Install bollards in front of wall to protect the wall from impacts. Priority #1


Vehicular damage to exterior wall

S-10: Clear material from in front of exterior wall. Priority #2


Materials stored against exterior wall

Estimates

S-7 Replace Rotten Roof Sheathing $69,183

S-8 Add Bollards at Column	$3,180
S-9 Install Bollards in Front of Wall T Protect Wall	$22,261
S-10 Clear Material Near Wall	$3,671

Special Roofs – Not Applicable

Stairs Overview

Synopsis

Due to the construction of the stairs, the stair framing could not be observed and is not included in available design structural drawings. It is assumed the stairs are of conventional wood construction. There were no indications in architectural finishes that the stair structure has degraded or deficient.

Stair Structure

Description of Existing Systems

Unknown

Existing Conditions

Unknown

Code Deficiencies

Unknown

Recommendations

Unknown

Stair Railings – See Architectural

Ladders and Steps – See Architectural

Exterior Enclosure

Synopsis

The Middle School building is a wood framed structure comprised of 2x framed exterior walls, flat chord roof trusses supported beams and bearing walls over a concrete perimeter stem wall and footing system. Roofs are low sloped/flat with single ply membrane roofing. A wood famed mechanical penthouse with sloped roofs exists over the east end of the second-floor classroom over commons addition. Typical school siding is painted1x6 T&G cedar (vertically oriented) with a sheet metal clad parapet at all perimeters, extended down to serve as siding to top of original siding. Siding at mechanical penthouse is T-111 plywood, painted. Entries are full light aluminum doors with sidelights, windows are vinyl clad wood.

Exterior Walls & Soffits Overview

Synopsis

All elevations are comprised of vertically oriented painted 1x6 T&G cedar siding for the full height of insulated wall and rafter cavity. Later construction in 1998 added a parapet around all roof surfaces, which is clad with 24 ga sheet metal siding. Canopy soffits are of the same finish material.

Exterior Walls

Description of Existing Systems

Vertically oriented 1x6 T&G CVG red cedar, painted over furring and spun olphan weather barrier (Tyvek brand) installed in 1988 and 1989. Original framed walls are wood studs with outboard sheathing, batt insulation (R19) fill between studs, vapor retarder and gypsum wall board interior finish.

The mechanical penthouse constructed in 1989 is clad with painted T-11 Plywod on the rooftop-facing elevations.

Exterior wall structural framing consists of 2x6 at 16-inches on center wall studs. Wall sheathing is ½" plywood sheathing.

Existing Conditions

Wood siding is compromised at bottom edges and at fenestrations where sealant joints have failed, resulting in degradation at end grain. Further, the wood overlay trim applied to the 1989 addition (emulating trim detail at high school) retains moisture against the siding and causes further deterioration. Any future work should include removal and disposal of this material.

Sheetmetal siding at parapet is in fair condition and life may be extended with cleaning and spot repairs.

T-11 plywood at mechanical penthouse is in serviceable condition, but needs repainting.

Concrete foundation at middle school is from 1970's construction and in good condition, but it is unknown as to if it is insulated. It is not installed on the exterior side.

Exterior wall framing could only be visually observed above the ceilings. In locations that were visible, the wall framing was in good condition. In the mechanical penthouse, the wall finish was stained near the base indicating potential water infiltration.

Code Deficiencies

A-8: Existing Wall assembly affords minimal thermal performance of R-19 at stud cavities. Though not a code deficiency in the State of Alaska for the timeframe in which these buildings were built, Chapter 4 of the 2021 International Energy Conservation code describes minimum standards for thermal assemblies, which includes continuous insulation outboard of framed stud cavities: R-20 + R3.5 continuous insulation.

A-10: With consideration of same energy conservation standards, there is no apparent insulation at exposed concrete foundations or at under slab conditions of either the original middle school footprint or the Vocational Shops. This is a significant path for heat loss at the building perimeter.

S-9: Vehicular damage to exterior wall. Exterior wall on south and east side of Room 115 is damaged by vehicles in numerous places. It appears that this area is used for parking resulting in vehicle impacts.

S-10: Materials are stored against exterior wall on north side of shop (Room 113). This can trap moisture in the wall and result in rot in exterior wall framing.

S-11: Exterior siding appeared to be in fair condition, but there likely is some rot in the wall sheathing and potentially the wall framing. The mechanical penthouse walls and the wall at deficiency S-10 are of particular concern.

Rotten siding at base of mechanical penthouse wall

Water intrusion behind siding

Siding in poor condition at mechanical penthouse

Recommendations

A-9A: Option #1, Priority #1; Siding repairs - Re-seal all fenestrations, replace severely damaged material (approximately 250 sf). Repaint all siding, approximately 11,000 sf, less fenestration area.

A-9B: Option #2, Priority #2**;** Siding Replacement with thermal improvement: replace all wood and metal siding with new resin composite siding (Resysta or similar), approximately 14,300 sf less fenestration, over furring with air gap, 1.5" continuous rigid insulation and weather barrier as a long-term thermally improved solution. Anticipate 5% sheathing replacement due to failure of painted wood siding as a part of any residing project. Coordinate with window replacement.

A-10: Priority #3 foundation thermal improvement: excavate building perimeter, install damp-proofing at concrete face, 3" rigid insulation panels 24" down concrete foundation wall from bottom of siding, provide sheet metal top transition flashing a to siding (steel 3x3x1/4" angle at door thresholds). Repair will require hardscape and landscape removal to 24:" off existing concrete

foundation walls. concrete slabs, gravel strips and vegetation removed. 574 lineal feet of installation. Of that, 60 lf will have steel threshold transition, 80 lf will require concrete cutting, removal and replacement, and 100 lf will require asphalt cutting, removal and replacement.

S-9: Install bollards in front of wall to protect the wall from impacts. Priority:#3

S-10: Clear material from in front of exterior wall. Priority #3

S-11: Replace rotten wall sheathing and framing where uncovered during siding replacement. Priority #1

Estimates

A-9A Siding Repairs and Repair	$77,692
A-9B Siding Replacement	$883,010
A-10 Foundation Thermal Improvements	$110,399
S-9 Install Bollards	$15,900
S-10 Removed Stored Materials	$10,362
S-11 Replace Sheathing	$12,079

Fascias & Soffits

Description of Existing Systems

24 ga PVDF coated sheet metal, interlocking rib profile, with flashings (the 1998 parapet extension).

Soffits at entry area canopies are T&G wood, matching siding.

Existing Conditions

Both sheet metal parapet fascia and painted wood soffits are in good condition and serviceable for another 10-15 years. Metal fascial assembly may be replaced with any siding replacement incorporating thermal improvement.

Code Deficiencies

None

Recommendations

None

Curtainwalls & Non-bearing Walls - None

Exterior Glazing Overview

Synopsis

All window units in the school were replaced with new vinyl clad wood windows in 1999 with the exception of those at the 1989 addition and renovation which are all-vinyl triple pane “Alaska Windows”, relatively new in 1989. We believe the storefront entries into the building on the lower level were installed as a part 1989 project, with entries into the second floor classroom level installed at some more recent date.

Windows

Description of Existing Systems

Andersen Commercial, vinyl clad wood windows, installed 1999. Typical unit module configuration is a fixed unit over wither a fixed or hand crank operated awning, in groups of 2 and 4. The units have 1/2" thermal glazing and are painted or clear finished wood interior, white vinyl exterior. The installation is flanged.

A typical Andersen unit module is a fixed 36" wide x 40" tall unit above an awning or fixed approximately 36" wide x 20" tall unit. Groups described below are generally comprised of a number of units. Total count by orientation and level:

- North elevation second floor is 16 Andersen modules: 3 groups of 4, 2 groups of 2.
- North elevation first floor is 1 Andersen assembly that is 4 modulus wide (about 144" x 60" tall) and a special assembly in the wood shop that is comprised of 9 units in opening approximately 144" wide x 96" tall.
- West elevation only occurs on the second level, with 8 Andersen modules: 4 groups of 2. At the 1989 addition there are two Alaska Window units; a 2-module approximately 48" wide by 80" tall and a 3-modual approximately 108" wide by 80" tall.
- East elevation second floor is above vocational shops, and has six Andersen window units, one comprised of a pair of awning units totaling approximately 72" wide x 36" tall, and tow comprised of four fixed and operable units 144" wide x 36" tall. There are also two 2-module Alaska Windows unit sets 80" wide x 60" tall.

- East elevation first floor, 1989 addition there are two 3-module Alaska Window approximately 108" wide by 80" tall each.
- South elevation second floor Andersen windows there are 16 modules: 4 groups of 4, 1 group of 2. At the 1989 addition there is a single 3-module Alaska Window approximately 108" wide by 80" tall.
- South elevation first floor Andersen windows there are 16 modules: 4 groups of 4, 1 group of 2. At the 1989 addition there are two 3-module Alaska Window approximately 108" wide by 80" tall.

Existing Conditions

Andersen units are in fair condition with functional operators and finishes, though thermal performance with ½" glazing is substandard. Anticipate 7-10 years remaining service.
The Alaska windows have high thermal performance but need some maintenance. One triple pane unit is fogged. At two other units the glazing installation gaskets have popped loose and need to be reset. With maintenance to gaskets and replacement of fogged unit these units have greater than 7-10 years' service life.

Code Deficiencies

None

Recommendations

None

Storefronts - None

Structural Window Walls - None

Translucent Panels - None

Exterior Doors Overview

Synopsis

Entrance doors are typically full light aluminum, with original configuration as inner and outer vestibule doors that matched in configuration. Doors from education spaces are typically painted insulated hollow metal with no lite, in egress-only configuration. The Vocational shops are each equipped with insulated panel sectional overhead doors. The unheated vocational shop storage area is equipped with an uninsulated overhead coiling door tht is likely original to the 1975 Vocational Shop construction.

Personnel Doors

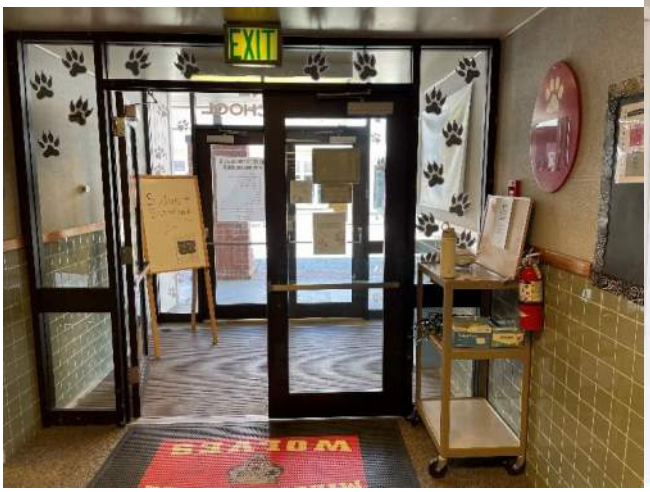
Description of Existing Systems

Aluminum entry doors: Doors at 1989 addition construction are clear anodized glazed aluminum door in hollow metal frames. Doors and frames on the 2nd floor classroom level are full lite thermal glazed dark bronze anodized aluminum with side lights and transoms. Entrances are typically

configured with bar-type panic hardware, all other with ADA levers on mortice locksets. Door hardware finish brushed nickel or stainless steel. All are equipped with stainless steel ball bearing butts, door closers and weather seals.

Existing Conditions

All doors are maintained in good operating condition. The bar type panic hardware is antiquated but functional. Some weather seals are worn, most of the entrances are in otherwise serviceable condition.



The steel frame at the aluminum entrances exhibit some corrosion at the frame and are clearly subject to harder use, and therefore exhibit greater signs of wear.

The inner vestibule door set has been removed at the North facing entrance.

Classroom egress doors are in fair condition, but the exterior faces and edges of frames could use another coat of paint.

Code Deficiencies

A-11: No motor operator operator at accessible entrance.

Recommendations

A-11: Provide accessibility motor operator at the south (front) door and inner vestibule door in coordination to repairs to the accessibility ramp to the front door of the school. These entry doors are in worn condition and should be replaced with reconfiguration for accessibility. Priority #1

A-12: Retrofit motor operator at the north door of the hallway (facing high school) in coordination with establishing an accessible path between schools. This will support an accessible path from high school to vocational shops. Priority #1

Estimates

A-11 Motor Operator on Accessible Entrance	$17,482
A-12 Retrofit Motor Operator at North Entry	$8,742

Special Doors

Description of Existing Systems

The Vocational shops are each equipped with insulated panel sectional overhead doors. The unheated vocational shop storage area is equipped with an uninsulated overhead coiling door that is likely original to the 1975 Vocational Shop construction.

Existing Conditions

All three of the overhead doors at the vocational shops are functional and equipped with both manual and motor operators.

Code Deficiencies

None

Recommendations

None

Exterior Accessories Overview - None

Roof Systems

Synopsis

The existing roof was installed in 1995-98 over the existing building concurrent with installation at the Elementary Intermediate School. The original roofing was removed down to structural sheathing prior to installation. The roof assembly is applied directly over wood structural decking is comprised of vapor retarder, rigid insulation, Oriented Strand Board (OSB) cover board mechanically fastened through to original structural decking with deck screws, and an adhered EPDM membrane. At the time of installation a 24" tall wood famed parapet assembly was installed, with EPDM membrane extending up and across top of parapet and terminated under a sheet metal coping. There is no OSHA compliant fall restraint anchor system on these rooftops. Access is to the upper roof over the classroom wing is by fixed ladder located in a janitorial closet off the main hallway, through a roof hatch, and affords access to the mechanical penthouse. Access to the roof over the Vocational Shops wing is by portable ladder outside of building. A small slope roof mechanical penthouse exists in the center of the larger roof area.

Pitched Roof Overview

Synopsis

The mechanical penthouse tht was a part of the original 1979 classroom wing construction and heavily modified in 1989 is provided with sloped metal roofing, approximately 4:12 pitch. Roofing profile is "delta rib" concealed fastener type, 24 ga.

Pitched Roofing

Description of Existing Systems

The mechanical penthouse roof is a wood framed assembly in cold vented attic configuration, with a sloped metal roofing, approximately 4:12 pitch. Roofing profile is "delta rib" concealed fastener type, 24 ga.

Existing Conditions
Metal roofing, flashings and trim are in serviceable condition with 7-10 year life remaining.

Code Deficiencies
None

Recommendations
None

Gutters & Downspouts - None

Flat Roof Overview

Synopsis
The primary building roof assembly is applied directly over wood structural decking is comprised of (from the structural decking up) vapor retarder, rigid insulation and Oriented Strand Board (OSB) cover board mechanically fastened through to original structural decking with deck screws, covered with an adhered EPDM membrane. At the time of installation a 24" tall wood famed parapet assembly was installed, with EPDM membrane extending up and across top of parapet and terminated under a sheet metal coping.

Note that in 1995 the north and west canopy roofs were not replaced and are still the uninsulated gravel ballasted EPDM roof system from the original 1970's construction.

Flat Roofing

Description of Existing Systems

Reinforced EPDM membrane, 0.45", by Manville adhered to OSB cover bord. The cover board is mechanically fastened through 6" rigid insulation and polyethylene vapor retarder to structural decking with deck screws and plate washers. Installed in 1995.

Looking west from Penthouse.

Overlooking Vocational shops to the west.

Ballasted north canopy roof

West Canopy roof meeting insulated building roof

Roof assembly profile at access hatch curb.

Existing Conditions

At year 20 since installation the primary insulated roofing system is at the end of useful life. Water leakage at penetrations and where laps have come unglued. OSB substrate has absorbed water and is swelling "pillowing" in all roof areas. This in turn has resulted in membrane adhesion being compromised, loss of thermal integrity through water saturated insulation and occasional water damage in spaces below. The older ballasted membrane canopy roofs suffer from similar seam delamination, and surface degradation of the visible membrane surfaces is apparent. Some areas have

heavy vegetated growth in the rock ballast material.

Delaminating laps in 1995 roof.

Delam and water-swelling OSB visible

Holes in older canopy roof membrane

Code Deficiencies

1) The roof lacks OSHA fall restraint anchoring system or sufficient parapet height to protect unrestrained personnel during maintenance activity.
2) In numerous locations the roof does not appear to meet minimum slope requirements, and there is evidence of ponding. The inspection occurred in exceptionally hot and dry weather, so this is based on location and quantity of sediment deposits.
3) Existing Roof assembly affords minimal thermal performance (R5.5 x 6" = R33, but water saturated insulation has a much lower thermal value than design values. Chapter 4 of the 2021 International Energy Conservation code describes minimum standards for thermal assemblies, which includes continuous insulation at roofs of R-30 in zone 5C, but conventions in our region are typically targeting R-40 as a minimum.

Recommendations

A-13: Option 1, Priority #1 Short term – continued patching maintenance – 1-3 years. Patching and repairs, 20 location allowance

A-14: Option 2, Priority #1 Replacement of all (insulated roof and canopy roof) membrane, cover board, insulation, and vapor retarder, along with all roof drain receptors, penetration boots, curbs, copings, and flashings. Increase slop of ponding areas by using tapered insulation. Include budget for 1000 sf roof sheathing replacement. Install new ice and waters shield vapor retarder, R-40 insulation, cover board and new single-ply PVC or TPO roofing. Provide walking/protection mats to penthouse and maintenance points. Insulated roof areas: 19,250 square feet. Canopy roof areas: 2600 sf.

A-15: Priority #1 Install OSHA post type fall restrain anchoring points as part of new roof installation. Anticipate 24 locations.

Estimates

A-13 Patch Roof	$18,837
A-14 Replace Roofs	$1,211,546
A-15 Fall Protection Posts	$14,364

Roof Drains & Piping

Description of Existing Systems

Primary drains are cast iron type receptors with cast iron debris baskets. One drain in each roof area is provided with heat trace. Secondary/overflow drainage is provided via scuppers through parapet. Main rain leaders through building are insulated.

Existing Conditions

Drains and debris cages are intact and in operation but should likely be inspected for replacement with any reroofing project.

Code Deficiencies

None noted.

Recommendations

Replace with roofing replacement.

Estimates

See Roof Replacement cost.

Roof Accessories Overview

Skylights - None

Roof Hatches

Description of Existing Systems

The roof over the classroom win is accessed via a single uninsulated 30”x30” Bilko-type roof hatch with factory curb.

Existing Conditions
Hatch is in serviceable condition

Code Deficiencies
Not insulated.

Recommendations
A-16: With roof replacement, replace hatch with insulated hatch and curb assembly. Priority #1

Estimates

A-16 Roof Hatch	$9,229

Roof Decks, Walls & Railings - None

Other Roof Accessories - None

Interiors

Synopsis
The 1979 school was substantially renovated in 1989 and 2008, with durable interior finishes, including ceramic tile wainscoting in hallways, modular tile floor carpet, ACT ceilings, flattened texture and painted gypsum wall board partition faces. All other finishes have been renewed at one time or another over the life of the building.

Partitions/Soffits Overview

Synopsis
Middle school partitions are wood framed, typically with gypsum board, and a finish overlay. Partitions between classrooms and offices are typically gypsum wall board on wood stud framing with painted finish. The hallways have a 4x4 ceramic tile wainscot to 44" capped with a clear finished wood chair rail, and with a durable textile wall covering above to the ceiling. All bearing and non-bearing walls are wood framed, 2x6 typical. Main student bathrooms have ceramic tile wainscots to 50" with painted gypsum board above. The student bathrooms and hallways were completed in 2008 renovations.

Fixed Partitions

Description of Existing Systems
See Synopsis

Existing Conditions
The partition appears to be in good condition, primarily 2x6 framing.

Code Deficiencies
None

Recommendations
See Wal Finishes.

Soffits & Ceilings

Description of Existing Systems
Typical ceilings at hallways 250A and 250E, Offices, and classrooms are ACT in in 2x4 grid. Hallway 250C, Bathrooms, wood shop and metal shop spaces have painted gypsum board ceilings.

Existing Conditions
Some damaged and stained ceiling tiles are in Commons. Ceiling tile at the Vocational Vestibule space are very dark and dirty.

Code Deficiencies
ID-1: Given age of installation areas of the ACT grid at the Commons and in the vocational shop vestibule, is likely not seismically braced.

Recommendations
ID-1: inspect and provide seismic bracing components at the commons vocational shop vestibule ceiling. Priority #2

Estimates

ID-1 ACT Seismic Bracing	$27,305

Special Partitions Overview - None

Interior Openings Overview

Synopsis

Typical original interior doors are solid core wood doors in hollow metal frames. Many have been replaced with plastic laminate faced (simulated wood) solid core doors in in new hollow meal frames in the 2008 renovation. Existing doors are generally in good condition. Personnel Doors are equipped commercial with mortice locksets, 5-knuckel ball bearing hinges, door closers in serviceable condition, except for two late-addition doors in wood frames and trim located in the Metals Shop – these do not have accessibility compliant hardware. Classroom doors were replaced with new in 2008, Commons area openings date to 1989 construction, Vocational Shop openings are from original building construction period. All doors are serviceable.

Personnel Doors

Description of Existing Systems

Typical classroom and office doors: solid core wood or wood print plastic laminate panels in painted hollow metal frames. Most have a fire rating of 20 or 60 min. Classroom doors are equipped with vision lites, interior locking mechanisms, and closers in compliance with DEED standards.
Typical doors in the Vocational shop area wood veneer faced in hollow metal frames, except to the tool and compressor room doors which have wood frames.

Existing Conditions

Typical Hallway and office doors: Door and frame conditions. Score 4.
Vocational shop doors and frames: score 3.
Later addition wood doors in metal shop (tool room and compressor room) are in inconsistent with standard in the school, and do not have ADA lever hardware. Score 2

Code Deficiencies

ID-2: Door latching mechanisms into classrooms do not meet NFPA 101 or DEED Design Standards for latching function. These door latches do not have a means of securing the classroom from the inside without a key or opening the door and keying the mechanism from the outside. However they can be keyed from the inside or outside. This is a security deficiency that needs to be evaluated by the School district.

Recommendations

ID-2: Replace mortice locksets at 9 locations in the school (classrooms, library, faculty space, school district offices) with new mortice locksets with keyless classroom securing function. Priority #1

Estimates

ID-2 Replace Locksets, Mortice	$9,274

Special Doors

Description of Existing Systems
Snack bar in commons is equipped with overhead coiling counter door, manually operated with fire release.

Existing Conditions
Overhead coiling counter door appears to be in serviceable condition.

Code Deficiencies
None Noted

Recommendations
None

Windows & Sidelites

Description of Existing Systems
Wire glass relites between vocational shop office and each vocational shop teaching space, and between shop teaching spaces, in hollow metal frames. There are also two similar relites located in a wall between 260 (Computer) and 261.

Existing Conditions
Relites seem to be in serviceable condition. Relite between wood shop and welding end of the metal ship have been covered over with tool storage racks on the wood ship side and painted over on the metal shop side. Assumed to afford UV shielding of occupants on the wood shop side.

Code Deficiencies
None noted.

Recommendations
None

Interior Finishes Overview

Synopsis
Most interior floor finishes appear to have been renewed in the 2008 renovation, other than vocational spaces which are concrete.

Floor Finishes

Description of Existing Systems
Hallways and stairs: Commercial carpet tile

Classrooms: Commercial carpet tile, with sheet vinyl at wet areas (like the Home-Ec classroom)

Student and staff bathrooms, Classroom level: Ceramic tile

Student bathrooms vocational level: Sheet vinyl

Vestibules: walk-off carpet tile.

Vocational shops: Concrete

Existing Conditions

Carpet tile- hallways and classrooms: As communicated by School district by maintenance, the carpet tile is proving problematic in that it will seasonally "curl" up at the edges, permitting dirt to get

under the perimeters, then they will not lay back down unless removed cleaned and reglued. This may be due to unknown sub-slab conditions on the classroom level. For example if there is no vapor retarder under the slab there maybe seasonal moisture working through the slab (this is a hillside site on bedrock, with known water infiltration issues in the adjacent high school basement areas up hill from the middle school. The raised seams oof the carpet tile require a lot of maintenance attention annually as they quickly become tripping hazards. Score 2.
Ceramic tile in bathrooms is in good condition – Score 4
Sheet vinyl in bathrooms and classrooms is in good condition – Score 4.
Sealed concrete floors in vocational spaces is in fair and serviceable conditions, score 3.

Code Deficiencies
None

Recommendations
ID-3: remove problem areas of carpet tile (second floor classrooms and hallways. Clean and seal slab with vapor retarding sealer compatible with carpet glues. Reinstall carpet tile. Priority #1

Estimates

ID-3 Replace Carpet Tiles, 2nd Floor	$162,275

Wall Finishes

Description of Existing Systems
Ceramic tile wainscot and wall textile used in hallways scored 4. Some missing base tile at corners need to be replaced.

Ceramic tile wainscot in main boys and girls bathrooms and staff bathroom is in good condition, score 4.

Gypsum wall board throughout second floor classroom wing scored 3 – needs patching repairs and painting touchup, primarily in classroom spaces.

Gypsum wallboard throughout first floor commons and vocational areas scored 3 – needs to be patched in some places, largely repairable, paintable.

Code Deficiencies
None

Recommendations
ID-4: patching and painting throughout Commons and Vocational shop spaces. Wall board repairs and complete repainting at 2nd level classrooms. Replace missing ceramic tile base tile missing in hallway. Priority #1

ID-5: Considering the nature of the wear in the classrooms (furniture damage), add 30" tall durable material wainscot at exposed wall surfaces in classroom, approximately 30% of perimeter of each classroom. 6mm phenolic resin panel, with oak cap trim, adhered to wall above existing rubber base. Priority #1

Estimates

ID-4 Patch and Paint, Commons and Voc. Shops	$111,735

ID-5 Wall Protection, Classrooms $16,487

Ceiling Finishes

Description of Existing Systems

Acoustic Ceiling tile (ACT) in 2x4 grid suspended below structure at Classrooms, Commons, and Hallways 250B and E.

Painted gypsum board ceiling are typical bathrooms, vestibules, utility spaces and at the vocational shops and the main hallway 250C in the classroom wing.

Existing Conditions

ACT is generally in serviceable condition with approximately 5% needing replacement or repainting, given staining cracked or missing condition. We anticipate the 2008 work is sufficiently seismically braced, but anticipate ACT in the Commons in the lobby of the vocational shop area will not be.

Painted gypsum bord ceilings are in good condition.

Deficiencies

See Ceilings and Soffits for Comments on Seismic bracing.

Recommendations

ID-6: Paint or replace all stained, broken, or missing ACT ceiling tiles. Approximately 5% of the area of classrooms, commons, and office areas. Replace ACT in lobby of the Vocational shop, approximately 200 sf, with new. Priority #1

Estimates

ID-6 Paint/Replace ACT $4,842

Other Finishes - None

Specialties Overview

Synopsis

The Middle School is equipped with specialties typically found in educational facilities, as listed under the Description of Existing Systems.

Interior Specialties

Description of Existing Systems

Room/Panel Signage – are plastic resin type, mounted on the wall at the strike side of the hallway doors, and appear to meet accessibility requirements in terms of dimensional character and size and contrast, and provisions for braille.

Tackboards are infrequent, the only wall size aluminum framed unit being located in the Vocational Shop Classroom 110. Small tack boards show up in some classrooms.

Typical classroom, with white and chalk boards, smart board.

Classrooms were originally equipped with chalk boards. Five of 8 still have them. Five of them have a section of whiteboard installed.

Smart boards: five classrooms were noted having smartboards.
Display case at Hallway: Aluminum frame with hinged glass panels, recessed into wall construction.

Main hallway illustrates typical classroom door, display case, and lockers.

Metal lockers are recessed into hallway wall construction, of two type:

- 2-two-tiered half height, quantity 92.
- Full height, quantity 30

Main hallway illustrates typical classroom door, signage, and lockers.

Toilet room accessories are provided at staff and student bathrooms, including provisions for accessibility (mirror, literary, toilet heights and clearances, grab bars at Accessible toilet).

Toilet Room partitions are plastic laminate type, utilized at student bathrooms.

Corner guards are not utilized in this facility.

Fire extinguishers are provided on wall brackets with no fire extinguisher cabinets.

Recessed Aluminum Entry Floor system: The west vestibules is underlain by an aluminum and traction surface entry floor over a recessed pit/pan. The other two entry vestibules have applied tile type walk off carpet.

Existing Conditions

Room/Panel Signage – are plastic resin type, mounted on the wall at the strike side of the hallway doors, and appear to meet accessibility requirements in terms of dimensional character and size and contrast, and provisions for braille - Score 4.

Tackboards are not widespread, with material just posted to wall textile in the hallways.

The display case in main hallway next to room 265 is in good condition, but unused – score 4.

Metal lockers are located on the north side of the main hallway are in good condition, with two latch mechanisms noted as missing - score 3.

Classrooms were originally equipped with chalk boards, three of eight still have them. Five have a section of whiteboard overlaying the old chalk boards. The school installs white bords overlaying chalk boards so as to not damage the walls by removing the chalkboards – score 3.

Smart boards: five classrooms were noted having smartboards, they are in operational condition – score 3.

Toilet room accessories are provided at staff and student bathrooms, including provisions for accessibility (mirror, literary, toilet heights and clearances, grab bars at Accessible toilet). These were installed under older accessibility provisions and do not include the upright section of grab bar by the toilet as required in the current code. Score 3 for condition of accessories, score 2 for the missing grab bar component. Also noted missing back bar at staff bathroom.

Toilet Room partitions are plastic laminate type, utilized at student bathrooms. These are in good condition, score 4.

Corner guards are not utilized in this facility. With the tile and textile carpet wall covering the hallway walls do not appear to easily damage. Corners in classrooms are damaged.

Retracting projector screens are not provided in each classroom, contrary to DEED standards. May not be necessary with TVs and Spart boards. .

Fire extinguishers are provided on wall brackets with no fire extinguisher cabinets. Score 2. Noted all extinguishers will expire in June, this is when they are scheduled for annual inspection.

Recessed Aluminum Entry Floor system x2 vestibules: at high traffic entry points the carpet strips bonded to the aluminum bars are worn, but serviceable.

Code Deficiencies

ID-7: missing upright grab bar at toilet rooms x 4 and missing back bar in staff bathroom x 1

ID-8: No fire extinguisher cabinets per DEED standards. X 8

ID-9 No corner guards in classrooms per DEED Standards

Recommendations

ID-7: install missing upright grab bar at toilet rooms x 4 and missing back bar in staff bathroom x1. Priority #1

ID-8: Provide fire extinguisher cabinets for fire extinguishers per DEED standards. X 8. Priority #2

ID-9: Install corner guards at damaged corners gypsum board wall corners x9 locations as a part of interior painting work. Priority #1

Estimates

ID-7 Upright Grab Bars	$3,187
ID-8 Fire Extinguisher Cabinets	$9,225
ID-9 Corner Guards	$5,369

Casework/Millwork

Description of Existing Systems

Existing Architectural millwork through facility is commercial plastic laminate over particleboard boxes, door, and drawer panels with PVC edge banding. Countertops are plastic laminate, self-edged (edge matching tops). Door hinges are knuckling type stainless steel, pulls are recesses finger pull type. Science classroom casework matching typical classroom casework, with plastic laminate lab

countertops. Unique conditions exist at classrooms 257, 258 and 259, where the cabinets are a different color pattern and configuration, apparently newer condition, with wire type pulls.

Existing Conditions

The commercial cabinet boxes and shelves appear sound and design configuration seem functional, but door and drawer faces are chipped and damaged in numerous locations.

The science classroom laboratory type furnishing have undermounted sinks, the plastic laminate countertops are severely water damaged in all locations.

Code Deficiencies

ID-10: Closed cabinets under sink bases do not meet accessibility requirements.

Recommendations

ID-10: Millwork Repairs. Priority #1:

- Remove and replace sink base with accessible assembly at 4 locations; remove box and provide new configuration to afford accessible clearance and plumbing guard. The existing stainless-steel sink and touch free faucet may be salvaged and reinstalled.
- Remove all drawer and door faces that are damaged and replace with new to match,14 locations.
- Remove and replace five science classroom lab countertops (each is 12' x 30"). Salvage undermount sink and touch free faucet. Provide new black solid surfaces countertops to receive reinstall of sinks and faucets.

Estimates

ID-10 Millwork Repairs	$49,033

Seating - None

Window Coverings

Description of Existing Systems

Vertical louver slat blinds, PVC, retractable to sides.

Existing Conditions

Mostly intact and operational but not functional. Operation requires sill and mullions be cleared, spaces commonly used as shelves for plants and other classroom related items that must be moved to deploy the blinds. Rapid deployment of blinds is not possible in an emergency.

Code Deficiencies

ID-11: These blinds do not meet DEED Design and construction Standards which identify roller blinds as a baseline standard.

Recommendations

ID-11: Remove and replace existing blinds with new roller shades at 20 installation locations. Priority #1

Estimates

ID-11 Roller Shades	$18,987

Conveying Systems

Passenger Conveyors Overview

Synopsis

The Middle School is served by a single Otis two-stop elevator installed as a part of the 1991 renovation connection the classroom wing with the vocational shops.

Passenger Elevators

Description of Existing Systems

Otis, Alaska elevator number H00529, 2000 lb capacity/100 feet per minute.

Existing Conditions

The elevator is rarely used so is in good material condition, passing its most recent inspections and testing. Interior cab is clad with white plastic laminate panels, floor carpet matches that used in Commons.

Code Deficiencies

Controls do not meet current accessibility requirements.

Recommendations

A-19: Cab controls, and controls on both levels to meet accessibility requirements. Priority #2

Estimates

ID-19 Elevator Cab and Controls	$52,371

Lifts & Other Conveyors - none

Material Handling Systems Overview - None

Mechanical

Synopsis

Mechanical and plumbing systems in this school are generally either from the original 1979 construction or the 1991 remodel. Individual conditions vary for systems and components, but overall, they are generally in marginal to good condition, despite being beyond the ends of their useful service lift. The pneumatic controls are non-functional.

Plumbing Overview

Synopsis

Plumbing systems in this school are generally either from the original 1979 construction or the 1991 remodel, so piping is aged but serviceable. Fixtures are also in serviceable condition.

Plumbing Fixtures

Description of Existing Systems

The toilets, urinals, lavatories, two drinking fountains, and some other sinks were new with the 1991 remodel. The remaining plumbing fixtures (primarily the science room and home economics rooms sinks) date from the original 1979 construction. The first floor drinking fountain in the commons is a fairly new unit, equipped with a bottle filler. The wood shop has a older wash fountain and a newer (age unknown) drinking fountain. Most faucets in the building were changed out in 2020 to be low flow, hard-wired sensor faucets for hands free operation. All flush valves in the building have been retrofit in 2020 with Sloan brand battery powered, low consumption, automatic flush power heads. Some toilet flush valves have a water saving low flow-high flow sensor function, based on dwell time. In addition to sensor operation, these flush valves have a manual flush button and the flush valves for the toilets have a water saving 2 button option. The stainless steel sinks in various classroom have been retrofit with a sensor operated faucet. The Teachers room has a kitchenette with a stainless steel sink, a refrigerator, and 2 microwaves. The sink was installed in 1991 and has been retrofit with a sensor operated faucet. The home economics classroom has a residential type washer and dryer set, along with two small counter-mounted stainless steel sinks with sensor faucets.

Existing Conditions

Fixtures are generally in adequate condition. Faucets are in poor to good condition. Flush valves are in good to almost new condition. The service sink in the Janitor's closet is in adequate condition. The second floor drinking fountains are from 1991, with one of them out of order. The drinking fountain / bottle filler in the first floor commons is like new. The drinking fountain and wash fountain in the wood shop are adequate condition.

Code Deficiencies

MP-1: None of the lavatories are equipped with an ASSE 1070 compliant tempering valve, as required by section 407.3 of the Uniform Plumbing Code.

Recommendations

MP-1: Provide ASSE 1070 compliant tempering valves for the lavatories. Priority #1.

MP-2: The existing toilets and urinals are older designs not engineered for use with low consumption flush valves. Consequently, the flush valves have been adjusted to a higher flow for proper flushing action. If saving water is a concern, it is recommended these fixtures be changed out for modern versions that can better utilize the capability of the low consumption flush valves. Replace the two second floor drinking fountains with a single high-low unit equipped with a bottle filler. Any ADA compliance issues should be addressed. Priority #2.

Estimates

MP-1 Tempering Valves for Lavatories	$64,942
MP-2 Replace All Toilets and Urinals	$68,988

Plumbing Piping

Description of Existing Systems

A 4" water service comes into the building at the sawdust collection room adjacent to the wood shop. Immediately above the floor penetration, it tees off separately for domestic and fire protection. The 2" domestic cold water is routed into the building. There is no water meter on the system. There is no check valve on cold water (CW) pipe to the water heaters to prevent HWC water backflowing into the CW piping. Water pressure into the building is in the 60 PSIG range.

Existing Conditions

Visible piping is generally in adequate to good condition, with some unions in poor condition. Some pipe insulation is in poor condition or missing and needs to be replaced. Some of the isolation valves in the building are gate valves and should be considered suspect for proper function. Due to age, it is assumed all trap primers in the building do not function.

Code Deficiencies

There is not a double check valve assembly on the fire protection branch, so there is no backflow protection for the domestic system. This item is addressed under the fire protection section of this report.

Recommendations

MP-3: It is recommended a check valve be added to the CW pipe upstream of the HWC connection to prevent recirculated hot water from getting into the CW piping to the fixtures. Priority #1.

MP-4: Cycle each gate valve on the system and if operation is questionable or difficult, replace the valve with a ball valve. Priority #1.

For future planning, recommend replacing domestic water piping within the next 7-10 years. Replace the trap primers. Priority #3.

Estimates

MP-3 Check Valve in Cold Water	$1,277
MP-4 Replace Gate Valves with Check Valves	$7,452

Plumbing Equipment

Description of Existing Systems

Domestic hot water is generated by a side-arm heat exchanger in the boiler and stored in an Amtrol Storagemate water tank. It is a model SM80, 80 gallons in size. The heating loop between the storage tank and the boiler is pumped with a small Teel brand pump, controlled to maintain the storage tank water temperature set point. The hot water circulation (HWC) pump is a small Teel brand pump that connects to the cold water piping upstream of the cold water connection to the storage tank. Hot water is stored and distributed at about 120 degrees F.

Existing Conditions

The age of the Amtrol hot water storage tank is not known, but it looks to be in adequate condition. Both the tank heating circulation pump and the HWC pump are not new but are in adequate condition.

Code Deficiencies

MP-5: The Amtrol storage tank is not either strapped to the wall or anchored to the floor to prevent overturning, which is a violation of section 507.2 of the Uniform Plumbing Code and Chapter 13 of ASCE/SEI Standard 7-2016 (Minimum Design Loads for Buildings and Other Structures).

Recommendations

MP-5: Prior to replacement, recommend the Amtrol tank be anchored to the floor or be strapped to the wall. Priority #1.

MP-6: Even though the age of the Amtrol storage tank is unknown, it is known that Amtrol has not manufactured these units for quite a while. Also, given the age of the boiler and its need for replacement (see heating equipment section of this report), it is recommended planning for this tank to be replaced at the same time as the heating system replacement work. Priority #1 See boiler replacement.

The domestic hot water pumps are commonly used in all the schools and looks to be a commodity item. Recommend a spare pump be kept on the shelf for ready replacement when the need arises.

Estimates

MP-5 Anchor Amtrol Tank	$2,131
MP-6 Replace Amtrol Tank	$14,297

Waste & Vent Piping

Description of Existing Systems

DWV (Drain, Waste and Vent) piping is either original to the building or to the 1991 remodel work and is believed to be all cast iron. Waste pipe routing is not documented, but it flows via gravity to a common discharge point out of the south side of the building at the commons. Vent piping is routed within walls and above ceilings, discharging through the roof. Rain leader piping also is routed down into the underground, where it flows via gravity to a common discharge point out of the building.

Existing Conditions

Visible piping is generally in adequate to good condition. No complaints of blockages or venting issues.

Code Deficiencies

MP-7: The six science room island sinks have improper island venting within the cabinet. Section 909 of the Uniform Plumbing requires the island vent to be as high as possible under the countertop. This was not done during the original construction. Note, this piping is Duriron.

Recommendations

MP-7: Even though the science classroom island sinks are not vented in accordance with the UPC, it appears most of these sinks are not used on a regular basis, so the piping replacement could be deferred for the foreseeable future. For future planning, recommend replacing this DWV piping should the room function change to include extensive water usage. Priority #3

For future planning, recommend for the DWV piping to be replaced in the next 7-10 years. Priority #3.

Estimates

MP-7 DWV Piping at Science Sinks	$18,368

Special Systems - None

HVAC Overview

Synopsis

The HVAC system is pretty typical for a school of this age and location. It has an oil-fired boiler and three single zone air handling units with passive return to provide ventilation. With the Voc-Ed program, there is a sawdust collection system and three welding exhaust systems. General exhaust air systems located where appropriate.

Heating Equipment

Description of Existing Systems

This school is equipped with one oil-fired, cast-iron sectional boilers Weil McLain model PF-510 with a Beckett burner, installed with the original construction in 1979. There are two circulation pumps that circulate heating water through the school. One is an inline pump and the other a base mounted pump. The inline pump is a Bell & Gossett series 90 pump (size 33T L88), and the base mounted pump is an Armstrong brand (unknown model). Both pumps presumably predate the 1991 remodel. The expansion tank is an old type with a site glass. The system is piped in a primary-only configuration. The HWS flow is directed through an air separator, and then is routed to the two pumps, where the heating water is circulated to various locations on both floors.

Existing Conditions

The equipment is generally in marginal to poor condition. The boiler has a leaky section.

Code Deficiencies

MP-8: The boiler safety relief valve is piped with using 3 elbows to reach the floor drain. Pipe runs with numerous elbows will inhibit flow through the relief valves and potentially create a safety hazard, which does not comply with section 1006 of the International Mechanical Code or the ASME Boiler and Pressure Vessel Code requirements. When the boiler is replaced, the new relief valve should have 1 elbow that directs the flow to the floor drain and terminate no more than 6 inches above the floor.

Recommendations

MP-8: Pipe the boiler safety relief valve to have only 1 elbow. Priority #1.

MP-9: The boiler is approximately 44 years old, has leaking issues, and is well beyond the end of its expected useful life. Recommend the boiler and entire heating plant, pumps, piping, and appurtenances in the boiler room be replaced within the next 1-3 years. During equipment and piping replacement, it is recommended to provide a new Spirotherm brand Spirovent coalescing air and dirt separator. Priority #1.

Estimates

MP-8 Boiler Safety Relief Valve	$935
MP-9 Replace Boilers and Appurtenances	$219,110

Heating Distribution Systems

Description of Existing Systems

Heating piping and valves related to the 1991 remodel work (in the boiler room and penthouse fan room) are at least 32 years old. Other heating piping is original to the building construction, so are

about 44 years old. Some of the isolation valves are gate valves and should be considered suspect for proper function. Piping typically runs above the ceilings. Piping is insulated, with some damage or gaps in places. Heating terminal units consist of baseboard fintube, unit heaters, cabinet unit heaters, and hydronic convectors.

Existing Conditions

Heating system and heating terminal devices are overall is in good to adequate condition. Control valves are properly functioning. Some of the pipe insulation needs to be repaired or replaced. The two science classroom convectors have damaged grilles.

Code Deficiencies

None noted.

Recommendations

MP-10: Tasks as follows:

- Cycle each gate valve on the system and if operation is questionable or difficult, replace the valve with a ball valve. Priority #1.
- The three AHU heating coils do not have a dedicated isolation valve on the return piping, so these should be added. Priority #1.
- Replace heating piping in the as mentioned under the heating equipment section.
- Replace all control valves at room terminal units in conjunction with the DDC upgrade. Priority #1.
- Clean and flush entire heating system. Priority #1.
- Replace the grilles on the top of the two convectors in the science classroom. Priority #2.
- Repair pipe insulation. Priority #2.

MP-11: Conduct TAB (Testing, Adjusting, and Balancing) exercise on the system to bring it into balance and help save energy. Priority #1

Estimates

MP-10 Valves & Misc Corrections	$1,626,804
MP-11 Conduct TAB	$67,346

Ventilation Equipment

Description of Existing Systems

This school is served by three ventilation systems. An AHU (Air Handling Unit) tagged AHU-1 is located in the penthouse fan room and serves all the classrooms and other rooms on level 2 as a single zone. AHU-1 is a constant volume unit and was new with the 1991 remodel. It is a Pace brand B-24AF fan, capable of moving 11,430 CFM at 1.75" static pressure. This is a plenum return air system, with all either migrating back to the fan room and AHU-1 or being exhausted by the relief air hood on the roof above the west end of the hallway. The second AHU, AHU-2, serves the commons area on the first floor with a constant volume of supply air. It is a Trane brand Climate Changer draw through unit model CCDB06A, new in 1990, capable of moving 2,900 CFM at 1.5" static pressure. Relief air is exhausted by the relief air hood on the roof above the south entrance of the commons. The third AHU, HV-5, system serves the wood shop and welding shop areas and dates from 1979. It is a Pace brand B-16F fan, capable of moving 5,200 CFM at 1" static pressure. This AHU is a gravity return air system back into the unit. Ventilation fan VF-1 is located in the boiler room and is used to cool the room by discharging air up onto the roof. This fan was new in 1991 and is sized to move 1,500 CFM at 0.4" SP.

There are several exhaust fans in the school. Exhaust fan EF-1 is located in the penthouse fan room and serves the toilet rooms and the janitor closet on the second floor. It was new in 1991 and is sized to move 995 CFM at 0.75" SP. There is a roof mounted exhaust fan on the first floor roof that serves the two toilet rooms outside the shop area. This fan is an Acme model P10D4 fan that looks to be original construction (1979). Specifics on the fan are not known, and the fan does not operate. The home economics classroom has 3 Nutone brand range hoods above residential type stoves, along with a larger Best brand hood over a fourth stove. The ducts for these 4 hoods are all ganged together above the ceiling to discharge out a common gooseneck hood on the roof. The home economics classroom also has a large Rupp Air Type II hood, coupled with an upblast roof exhaust fan above, a Rupp Air model DU30HRA. This fan and the hood were new in 2014. There is a small, wall mounted exhaust fan in the old paint booth room, now used as storage. Specifics on the fan are not known, but the fan does operate when turned on. The backdraft damper is stuck open.

Existing Conditions

Despite their age and being beyond or well beyond their expected useful life, the main AHUs are generally in adequate to good condition due to good maintenance practices. The relief hoods for AHU-1 and AHU-2 are showing extensive rust on the top surface.

In general, the various exhaust fan range in condition from broken or worn out to good condition. Except for the Rupp Air fan fan, the rest of the fans are at or beyond their expected useful life. However, the Rupp Air fan is very noisy and should be replaced soon.

Code Deficiencies

MP-12: All the AHUs are not properly anchored against seismic events per section 1613 of the International Building Code and Chapter 13 of ASCE/SEI Standard 7-2016 (Minimum Design Loads for Buildings and Other Structures).

MP-13: HV-5 does not provide adequate ventilation for the two shop areas.

MP-14: The 4 Home Economics residential hoods need to be independently ducted to the outdoors as required by section 505.3 of the International Mechanical Code.

Recommendations

MP-12: Properly anchor AHU-1 and AHU-2 in accordance with current seismic restraint requirements. Priority #1

MP-13: Plan for replacement of HV-5 in the next 1-3 years with a larger capacity system, say 4,000 CFM (capacity needs to be confirmed). Replace unit with an air-to-air heat exchanger to provide 100% outside and exhaust air, including hydronic duct reheat coils for each zone. A unit that is 100% outside air and exhaust air will provide superior air quality to these spaces. Provide new distribution ductwork for supply and exhaust to serve the wood shop, welding shop, and associated rooms. Priority #1

Fans are beyond their expected useful life. Recommend planning for the following replacements:

1. **MP-15:** Option 1, priority #2: AHU-1 and AHU-2 to be replaced within the next 3-7 years. Note, so these cabinets potentially could be saved for retrofitting a "fan wall" type of arrangement.
2. **MP-16:** Option 2, Priority #2: Prior to replacing AHU-1, consider replacing the entire system with a modern VAV (variable air volume) system, complete with new medium pressure ductwork, VAV boxes, low pressure ductwork and diffusers. The supply air ducts and VAV

boxes will be located above the ceiling. This system will require extensive reworking of all the ductwork above the ceiling.

3. **MP-17:** Replace the relief hoods for AHU-1 and AHU-2 within the next 3-7 years. Priority #1.
4. **MP-18:** Replace general exhaust fan EF-1 within the next 3-7 years. Priority #2.
5. **MP-19:** Replace general exhaust fan for the first floor toilet rooms within the next year. Priority #1.
6. **MP-14:** Replace Home Economics residential exhaust fans within the next 1-3 years and revise the ductwork to independently bring 4 gooseneck hoods through the roof. Priority #1.
7. **MP-20:** Replace Home EC Rupp Air exhaust fan in the next 1-3 years, depending on level of use. Priority #1.
8. **MP-21:** Since the wood shop paint room is no longer used for painting, manually close the backdraft damper and de-energize the fan. Priority #1.

Estimates

MP-12 Seismic Anchorage, AHUs	$30,322
MP-13 Replace HV-5 with HRV	$335,754
MP-14 Residential Hoods Need Ducting	$10,331
MP-15 Option 1 - Replace AHU-1,2	$138,203
MP-16 Option 2 - Replace with VAV System	$1,024,500
MP-17 Replace AHU-1,2 Relief Hoods	$46,662
MP-18 Replace EF-1	$7,323
MP-19 Replace General Exhaust Fan 1st Floor	$19,321
MP-20 Replace the EC Rupp Fan	$13,476
MP-21 De-Energize Fan and Close Off Damper	$3,456

Ventilation Distribution Systems

Description of Existing Systems

AHU-1 distribution ductwork routes supply air to each second-floor room except the teachers toilet rooms and the janitor closet. Except for the Boys and Girls toilet room, return air pulls air from the same spaces. The exhaust air ductwork pulls air from the toilet rooms and the janitor closet. Diffuser and grille locations are generally reasonable for good air distribution. The classrooms have a return air grille attached to an acoustically lined transfer elbow which transfers the air to the plenum above the corridor. Air in the plenum is either returned to the penthouse fan room for reuse or relieved from the building at the relief air hood. Relief air hood opening is controlled by a motorized damper.

AHU-2 has exposed ducts serving the first floor Commons that is painted. Return air transfers directly back into the fan room where it is drawn into the AHU.

HV-5 distribution ductwork routes supply air to each of the main shops. Duct routing and return air path is concealed and is not documented but does bring return air back to the unit.

Existing Conditions

The ductwork is generally in good condition.

Code Deficiencies

MP-22: The above ceiling return air path on second floor for AHU-1 is combustible construction (plywood) on the top side of the ceiling assembly, which does not comply with the IBC requirements.

Recommendations

MP-22: Revise the ceiling assembly on the second floor corridors to eliminate exposure of combustible materials. Priority #1.

See MP-11: Conduct TAB (Testing, Adjusting, and Balancing) exercise on the system to bring it into balance and help save energy.

See the more detailed discussion under the Ventilation Equipment recommendations for replacement of the AHU-1 system and the HV-5 system.

Estimates

MP-22 Ceiling System at 2nd Floor Corridors	$33,484

Cooling Equipment - None

Cooling Distribution Systems - None

Heat Recovery System - None

Integrated Automation Overview

Synopsis

Existing system is a Honeywell Niagara N4 DDC system installed in 2020 by Meridian Systems as part of a districtwide controls upgrade project. System is partially DDC over pneumatics, with the remainder full DDC. Existing pneumatic system is used to drive terminal heating unit valve actuators, as well as room thermostats. Many pneumatic devices are problematic to properly control. The ventilation systems and the boiler are completely DDC (no pneumatics).

Control Systems

Description of Existing Systems

See above. Room thermostats are Johnson Controls pneumatic type devices. The air compressor is in the Welding shop storage room. See the Air compressor section of this report.

Existing Conditions

DDC portion of the system for both buildings is in very good condition. There are some programming items to clean up and miscellaneous control glitches to sort out. The pneumatic portion

of the system in both buildings is in poor to very poor condition. See the Air compressor section of this report. Classroom 105 has a thermostat located in the middle of a white board.

Code Deficiencies
None noted.

Recommendations
MP-23: Remove all pneumatic thermostats, actuators, devices, and tubing, and replace with digital thermostats, devices, and actuators. Update programming and graphics. Troubleshoot issues with the system. As part of the upgrade, relocate classroom 105 thermostat to be adjacent to the white board. As part of the upgrade, eliminate all crank timers for ventilation system override and replace with programming. Priority #1.

MP-24: Retro commissioning: Have the controls contractor and TAB contractor work with district maintenance personnel to adjust the heating and ventilation systems for proper operation. Priority #1.

Estimates

MP-23 Replace Control System with DDC	$505,064
MP-24 Retro Commissioning	$38,666

Other Automation - None

Fire Protection Overview

Synopsis
Building is equipped with a wet pipe system fed off the 4" water service entry.

Riser & Equipment

Description of Existing Systems

The school has a wet pipe system: The 4" water service entrance and sprinkler riser is in small room inside the sawdust collector room. This system serves the entire building. It is regularly maintained and was recertified in August of 2022. The system does not have double check valve assembly.

Existing Conditions

The sprinkler system is generally in good condition and is certified annually.

Code Deficiencies

MP-25: The system does not have a double check valve assembly, so there is no backflow protection for the domestic system, in violation of section 603 of the Uniform Plumbing Code. This needs to be installed right away.

Recommendations

MP-25: Provide a 4" double check valve assembly on the fire protection branch after the domestic water tees off. This will require shutting the system down and completely re-piping the sprinkler riser. Priority #1.

Estimates

MP-25 Double Check Valves	$6,519

Sprinklers & Piping

Description of Existing Systems

Piping is both concealed and exposed, depending on the room and building construction. In the penthouse fan room there is a check valve in the piping serving this room and downstream of the check valve the system is filled with glycol for freeze protection.

Existing Conditions

Sprinklers and piping are generally in good condition.

Code Deficiencies

None noted.

Recommendations

With MP-26: Recommend updating the system in the penthouse fan room by removing the glycol. Use the wet pipe system within the fan room and use dry heads in the outside air plenum. Priority #1.

Estimates

MP-26 Penthouse Fire Protection Fluids	$111,326

Special Suppression Systems - None

Special Mechanical Systems Overview

Synopsis

This school has an above ground fuel oil storage tank and day tank; a sawdust collection system, three welding exhaust fans and a newer shop air compressor for the Voc-Ed program; as well as a very old and broken controls air compressor.

Fuel Supply (Oil)

Description of Existing Systems

There is an existing 4,000 gallon above ground storage tank (AST) close to the building. Supply and return piping between the AST and the building is underground and appears to be an older double wall type that is not vented. Piping transitions to threaded schedule 40 steel pipe above ground just outside the building and is routed above the ceiling to and from the boiler room. Within the boiler room, piping transitions to copper and is routed to the day tank and from the day tank to the boiler and back to the day tank. The day tank is an older Simplex brand 25-gallon day tank.

Existing Conditions

The AST was installed in 1990 is in adequate condition. Piping within the boiler room is in good condition. The boiler burner does not have a drip pan to contain any oil leakage.

Code Deficiencies

MP-27: The AST vent does not extend a minimum of 12 feet above grade, as required by NFPA 30, section 27.8.1.

Recommendations

MP-27: Extend the AST vent pipe so it terminates a minimum of 12 feet above ground level. Priority #1.

For long term planning, recommend replacing the AST with a new double wall above ground storage tank within the next 7-10 years. Priority #3.

Estimates

MP-27 Extend AST Vent Pipe	$83,464

Dust Collection Systems

Description of Existing Systems

The sawdust collector exhaust fan is located in a room adjacent to the wood shop on the first floor. It is an AAF International model 1853126-001 size AR2-7.5, capable of moving XXXX CFM at XX" static pressure. The exhaust ductwork for this fan connects to two floor sweeps and 15 drops for tool connections and discharges out an exterior sidewall of the room. The welding shop has 3 utility type exhaust fan serving the space, tagged EF-1, EF-2, and EF-2. These are AirPro brand fans, new in 2007. These are used on a regular basis for welding activities. Two of the fans serve the welding booths and the other one serves the swing arm.

Existing Conditions
In general, the fan appears to be in good condition and the ductwork is in very good condition.

Code Deficiencies
MP-28: The sawdust collector is not equipped with a deflagration (explosion) vent as required by section 511.1.5 of the International Mechanical Code.

Recommendations
MP-28: Sawdust collector needs to have an explosion vent installed that discharges to the outdoors. Priority #1.

Recommend replacing unit within the next 3-7 years, depending on level of use. Priority #3.

Estimates

MP-28 Dust Collector Explosion Proof Vent	$29,835

Compressed Air & Vacuum Systems

Description of Existing Systems
A Johnson Controls brand air compressor is used to provide control air for the pneumatic controls in the school. This is a horizontal tank with duplex compressors, floor mounted with vibration isolation. This compressor is from the 1991 building remodel and is approximately 32 years old. System is equipped with regulators.

A Jet brand air compressor is used for shop air in the welding shop. This is a vertical tank and single compressor, floor mounted with vibration isolation.

Existing Conditions
The controls air compressor system is broken and has not operated for several years. Heating for the rooms is manually adjusted by maintenance as needed on a frequent basis (generally weekly).

The welding shop air compressor was replaced in 2021 and is maintained and in very good condition.

Code Deficiencies
None noted.

Recommendations
With MP-23: Remove this air compressor system when the controls are upgraded to DDC. Remove existing controls tubing throughout the school where feasible. Priority #1.

Estimates
See MP-23

Other Special Mechanical Systems

Description of Existing Systems
The welding shop has 3 utility type exhaust fans serving the space, tagged EF-1, EF-2, and EF-2. These are AirPro brand fans, new in 2007. These are used on a regular basis for welding activities. Two of the fans serve the welding booths and the other one serves the swing arm.

Existing Conditions
In general, the fan appears to be in good condition and the ductwork is in very good condition.

Code Deficiencies
None noted.

Recommendations
MP-29: Replace welding exhaust fans EF-1, EF-2, and EF-3 within the next 7-10 years, depending on level of use. Priority #3.

Estimates

MP-29 Replace Welding Exhaust Fans EF-1,2,3	$147,821

Electrical

Synopsis
The electrical systems for the building include power distribution, lighting fixtures and lighting control, and low voltage systems such a fire alarm, intercom, communications, etc. These systems are described fully under the sub-headings below.

Service & Distribution Overview

Synopsis
The building is served at 208Y/120V from the local electrical utility. The utility does not record electrical demand data; however, the service size is appropriate for a facility of this size with appropriate spare capacity.

Main Distribution Panels & Switchgear

Description of Existing Systems
The main distribution panel consists of a 208Y/120V, 3-Phase, 4-Wire, 400A main breaker distribution switchboard located in an electrical room off the main commons area. The distribution section contains (10) feeder breakers which supply branch circuit panelboards and equipment throughout the facility. Some of the feeder breakers are not labeled or identified.

Existing Conditions
The system condition is determined to be marginal due to the system exceeding its useful life.

Code Deficiencies
E-8: Feeder breakers in main distribution panel are not labeled in accordance with NEC 408.4.

Recommendations

E-8: Label main and feeder breakers in accordance with NEC 408.4. Priority #1.

Estimates

E-8 Labe Feeder Breakers	$647

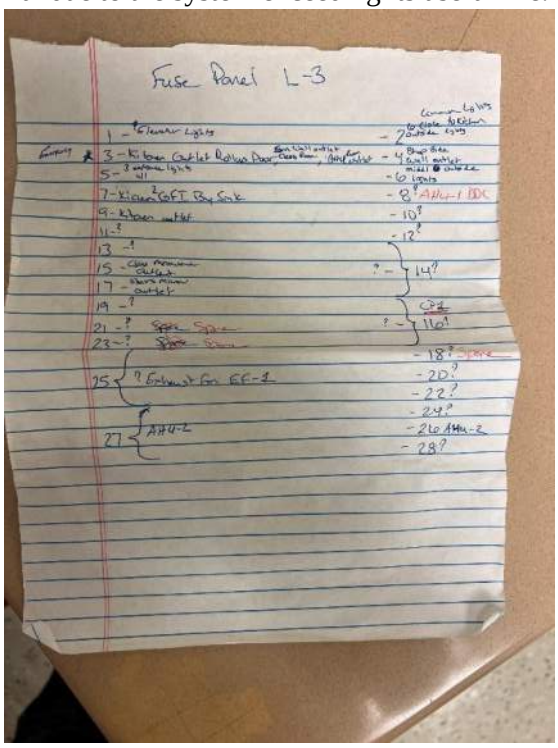
Panels & Motor Control Centers

Description of Existing Systems

There are numerous branch circuit panels located throughout the building. Branch circuit panels reflect changes over the years with marked up circuit descriptions. Many of the branch circuit panels do not have accurate panel schedules and required working spaces in front of panels have not been maintained.

Existing Conditions

The system condition is determined to be marginal due to the system exceeding its useful life.



Code Deficiencies

E-9: Panel schedules in branch circuit panelboards are not wholly accurate and require relabeling in accordance with NEC 408.4.

E-10: Maintain working space/clearance is front of panelboards in accordance with NEC 110.26.

Recommendations

E-9: Confirm branch circuit loads and recreate panel schedules in accordance with NEC 408.4. Priority #1.

E-10: Provide working space/clearance is front of all panelboards in accordance with NEC 110.26. Priority #1.

Estimates

E-9 Panel Schedules	$37,746
E-10 Working Space Clearance	$8,671

Transformers

Description of Existing Systems
There are no electrical distribution transformers in the facility.

Conduit & Feeders

Description of Existing Systems
Conduit systems in use include, rigid metal conduit (RMC), electrical metallic tubing (EMT), flexible metal conduit (FMC), rigid polyvinyl chloride conduit (PVC), armored cable (AC), and metal clad cable (MC).

Existing Conditions
In general, the conduit systems in use are in good condition.

Code Deficiencies
None noted.

Recommendations
None.

Lighting Overview

Synopsis
See below.

Light Fixtures

Description of Existing Systems
Interior lighting is provided by a variety of fixture types including recessed 2'x4', linear strips, surface wraparound style, surface fluorescent fixtures and recessed downlights. The predominant lamp type is fluorescent with T12, T8, High Output (HO) and compact fluorescent lamps in use. As the fluorescent lamps fail, the ballasts have been removed and direct wired tubular LED lamps are provided. Some of the fixtures throughout the school have been converted to tubular LED lamps. Lighting levels were observed to be appropriate for the spaces throughout the facility. The exception being the main electrical room/boiler room (Mechanical 155) and the lower-level fan room (Generator 109). Both spaces had porcelain keyless fixtures with compact fluorescent lamps and lighting levels were not sufficient.

Emergency egress lighting is provided by individual battery pack wall mounted emergency lighting units (ELUs or so called "bug-eyes"). Interior emergency egress lighting coverage is not adequate. Exit signs are the powered type with incandescent lamp and battery backup. Some of the exit sign lamps have been replaced with LED equivalent.

Existing Conditions

While functional, the lighting fixtures in the facility are classified as marginal due to the components exceeding their useful life. Numerous lighting diffusers were noted to be damaged or missing. The style of fixtures is dated and light distribution while adequate would be greatly improved using volumetric style lighting fixtures with LED lamps.

Code Deficiencies

E-11: Code required emergency exit lighting at exterior landings was not evident to meet IBC requirements.

E-12: Path of egress emergency lighting is not adequate to meet IBC requirements.

E-13: No emergency lighting unit in boiler/electrical room 155.

E-14: No emergency lighting unit in Shop 113 and Shop 114.

E-15: Exit missing at east end of Hall 250C.

E-16: Exit sign unsupported at Vestibule 106.

E-17: Inadequate lighting level in Timeout 153.

Recommendations

E-11 through E-17: Provide a complete lighting upgrade for the entire facility with energy efficient LED fixtures and exit signs. Provide remote emergency lighting heads at exterior landings to meet IBC requirements. Provide battery pack wall mounted emergency lighting units in paths of egress to meet IBC required exit lighting levels. Priority #1 Life Safety Items (Emergency Lighting), Priority #2 Remaining items.

Estimates

E-11 through E-17 Lighting Upgrade	$692,923

Lighting Controls

Description of Existing Systems

Lighting controls are generally simple line voltage switches. Bi-level switching is provided in classroom areas. Corridor lighting control is provided by momentary switches controlling multipole lighting contactors. Digital and mechanical time switch controls and photocells control contactors for exterior lighting control. A couple of restrooms (107 & 108) included ceiling mounted occupancy sensors.

Existing Conditions

The existing lighting control system is adequate.

Code Deficiencies

None noted.

Recommendations

E-18: As part of a complete lighting upgrade, replace the existing lighting control system with a low voltage lighting control system providing dimming capability and occupancy-based control. Priority #2.

Estimates

E-18 Replace The Existing Lighting Control System	$66,351

Conduit & Wiring

Description of Existing Systems

Conduit systems in use include, rigid metal conduit (RMC), electrical metallic tubing (EMT), flexible metal conduit (FMC), rigid polyvinyl chloride conduit (PVC), armored cable (AC), and metal clad cable (MC). Wiring consists typically of THHN style.

Existing Conditions

In general, the conduit and wiring systems in use are in good condition.

Code Deficiencies

None noted.

Recommendations

None.

Power Overview

Synopsis

The following sections describe electrical devices and associated power connections.

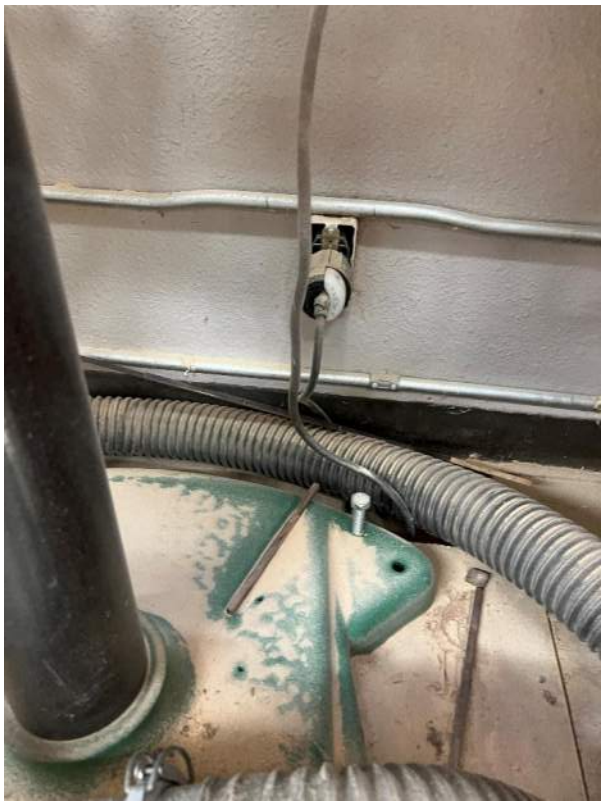
Devices & Connections

Description of Existing Systems

Receptacles consist of recessed devices in public areas and surface mounted devices in utility areas. Devices appear to be original. Some classrooms have surface mounted raceway/plugmold for mounting devices. Device plates are typically stainless steel. The shops include an emergency stop button to disconnect power to equipment in the shop.

Existing Conditions

Receptacles appear to be original equipment and are classified as marginal due to exceeding useful life.



Code Deficiencies

E-19: Receptacle for laundry washer in Classroom 265 is not GFCI per NEC 210.8(B)(11).

E-20: Receptacle for garbage disposals in Classroom 265 is not GFCI per NEC 210.8(B)(5).

E-21: Some floor receptacles in Classroom 265 missing device covers.

E-22: Receptacle in Girls 252 and Boys 253 is not GFCI per NEC 210.8(B)(1).

E-23: Two receptacles in Snack 157 are not GFCI per NEC 210.8(B)(5).

E-24: Numerous device plates missing for receptacles in Shop 113 and Shop 114.

E-25: Roof heat trace is not ground fault protected for equipment (GFPE) per NEC 427.22.

E-26: No receptacle within 25' of exhaust fan on upper room and exhaust fan on lower roof per NEC 210.63.

Recommendations

E-19: Provide GFCI receptacle for laundry washer in Classroom 265. Priority #1.

E-20: Provide GFCI receptacle for garbage disposals in Classroom 265. Priority #1.

E-21: Provide missing device covers for floor receptacles in Classroom 265. Priority #1.

E-22: Provide GFCI receptacles in Girls 252 and Boys 253. Priority #1.

E-23: Provide two GFCI receptacles in Snack 157. Priority #1.

E-24: Provide missing device plates for receptacles in Shop 113 and Shop 114. Priority #1.

E-25: Provide GFPE breaker for roof heat trace circuit. Priority #1.

E-26: Provide GFCI receptacle within 25' of exhaust fan on upper room and exhaust fan on lower roof. Priority #1.

E-27: Provide additional permanent receptacles behind flat screens to avoid stringing cords across room spaces. Priority #2.

E-28: Receptacle in elevator machine room (Mechanical 154) is not GFCI per NEC 620.6. Priority #1.

E-29: Overcurrent protection for car lights and ventilation not in elevator machine room (Mechanical 154) per NEC 620.22. Priority #1.

Estimates

E-19 Laundry Receptacle Replace	$104
E-20 Replace Receptacle GFCI	$104
E-21 Device Cover Plate, Floor Receptacle	$85
E-22 Replace GFCI at Boys/Girls 252,253	$418
E-23 Replace Receptacle GFCI	$209
E-24 Replace Cover Plates	$864
E-25 Provide GFPE Breaker	$516
E-26 Add GFI Outlet Near Fan	$4,264
E-27 Add Receptacle	$1,104
E-28 Replace Receptacle GFCI	$104
E-29 Overload Protection for Elevator	$975

Conduit & Wiring

Description of Existing Systems

Conduit systems in use include, rigid metal conduit (RMC), electrical metallic tubing (EMT), flexible metal conduit (FMC), rigid polyvinyl chloride conduit (PVC), armored cable (AC), and metal clad cable (MC). Wiring consists typically of THHN style.

Existing Conditions

In general, the conduit and wiring systems in use are in good condition.

Code Deficiencies

E-30: Conduit in Paint Room 113A requires sealing at room penetration.

Recommendations

E-30: Seal conduit in Paint Room 113A at room penetration. Priority #1.

Estimates

E-30 Seal Conduit	$1,402

Special Systems Overview

Synopsis

The systems described below fall under the category of low voltage systems as described in Article 725 of the NEC.

Fire Alarm

Description of Existing Systems

A hardwired, zone based fire alarm system (Edwards 6500) located in the high school serves the middle school facility. The system includes the main fire alarm panel located in the high school facilities office (Office 133), field devices including horn-strobes, horns, smoke detectors, heat detectors and manual pull stations. A detailed review of the existing system was not conducted as it is being replaced in its entirety as part of a construction project scheduled for this summer (2023).

Existing Conditions

The system is in poor condition having exceeded its useful life.

Code Deficiencies

E-31: The system likely met code requirements when installed, however current code requirements have changed. Educational occupancies now require fire alarm systems with voice evacuation control.

Recommendations

E-31: Proceed with new fire alarm system replacement in its entirety scheduled for the Summer of 2023. Priority #1.

Estimates

E-31 Replace FA System	$199,292

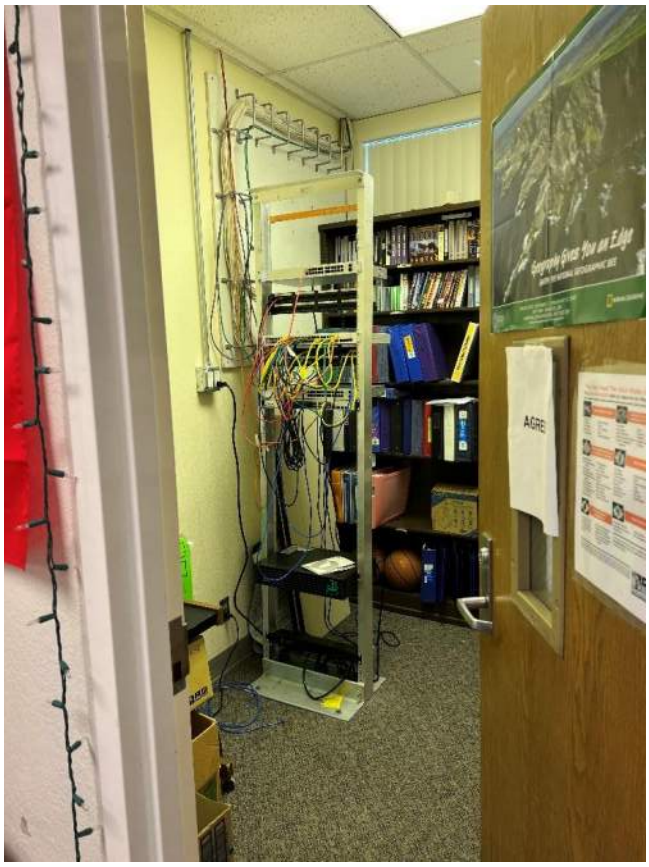
Data & Communications

Description of Existing Systems

The telecom distribution system consists of a floor mounted telecommunication rack (IDF) located in Office 262A. The IDF is supported from the MDF located in the High School building. Category 5, plenum rated, unshielded twisted pair cabling is routed from modular patch panel(s) in the IDF to multiport telecommunications outlets throughout the building via open wiring in accessible ceiling spaces. From inspection it appears that the network cabling currently supports IP phones and wireless access points. Very few computers are connected to the wired connections, and it is reported that most users utilize the wireless network.

Existing Conditions

The cabling is considered marginal as it has exceeded its useful life.



Code Deficiencies

E-32: Abandoned cables that are accessible require removal per NEC 725.25 and 800.25.

Recommendations

E-32: Remove abandoned phone/telecom wiring and unused equipment. Priority #2.

E-33: Add additional cable management to organize cabling at racks. Priority #2.

E-34: Upgrade telecommunication cabling to support higher data rates. Priority #2.

Estimates

E-32 Remove Abandoned Phone/Telecom Wiring and Equipment	$6,937
E-33 Add Additional Cable Management	$10,807
E-34 Upgrade Cables	$49,091

Security Systems

Description of Existing Systems

No security system exists in the building.

Existing Conditions

N/A

Code Deficiencies

N/A

Recommendations
None.

Clock Systems

Description of Existing Systems
Wall mounted, synchronized, powered clocks are provided throughout the facility and classrooms. These clocks are supported from a master clock located in the High School building. Refer to High School building condition survey for additional information.

Existing Conditions
The system is functional but categorized as marginal since it has exceeded its useful life.

Code Deficiencies
None noted.

Recommendations
E-35: Replace existing synchronized clocks with GPS based master clock system to provide long term useability. Priority #2.

Estimates

E-35 Replace Existing Synchronized Clocks	$30,911

Intercom Systems

Description of Existing Systems
The intercom system consists of a Dukane intercom headend located in the High School building. The system provides intercom and bell service throughout the facility via recessed and surface mounted speakers in the corridors and classrooms. Refer to the High School building condition survey for additional information.

Existing Conditions
The system is functional but categorized as marginal since it has exceeded its useful life.

Code Deficiencies
None noted.

Recommendations
E-36: Replace existing intercom system with IP based system to provide long term useability. Priority #2.

Estimates

E-36 Replace Existing Intercom System	$132,279

Other Special Systems

Description of Existing Systems

TV: A cable TV distribution system is present consisting of signal distribution amplifiers, coaxial cabling, and cable outlets. The system is no longer used.

Satellite TV: A satellite TV system is present consisting of satellite dishes on roof, coaxial cabling, and cable outlets in a few locations. The system is no longer used.

Classroom Sound Enhancement: Classroom sound enhancement systems were in use in several classrooms. The system appears to have been installed with the classroom smartboards and consists of a small amplifier with wireless mic and source inputs and surface mounted classroom speakers. The system appeared to be in use in several classrooms.

Commons Sound System: A sound system is present in Commons 101. The system consists of a headend rack in Office 152 with amplifier, input mixing controls and a hearing-impaired FM transmitter. The system is connected to hard wired microphone jacks and surface ceiling speakers in the Commons area. It is unknown if the system works properly.

Existing Conditions

TV: No longer used.

Satellite TV: Poor condition.

Classroom Sound Enhancement: Good condition.

Commons Sound System. Appears to be in adequate condition.

Code Deficiencies

E-37: Abandoned TV cables that are accessible require removal per NEC 725.25.

E-38: Abandoned satellite cables that are accessible require removal per NEC 725.25. Remove associated satellite dishes.

Recommendations

E-37: Demolish existing, unused cable TV system including antennas, amplifiers, outlets, and associated cabling. Priority #2.

E-38: Demolish existing, unused satellite TV system including antennas, amplifiers, outlets, and associated cabling. Priority #2.

E-39: Several of the commons sound system speakers appear to be tilted on their supports. Re-support sound system speakers to structure above. Priority #1.

Estimates

E-37 Demolish Unused TV System	$8,671
E-38 Demo TV Satellite System	$8,671
E-39 Resupport Speakers	$2,161

Other Electrical Systems Overview

Synopsis

See below.

Power Generation & Distribution

Description of Existing Systems

An abandoned diesel fueled generator and associated day tank, and automatic transfer switch is in Generator 109. Facilities reported that some telecommunications branch circuits in the Middle School are supported by the generator in the High School. Refer to High School condition survey for additional information.

Existing Conditions

Abandoned equipment.

Code Deficiencies

N/A

Recommendations

E-37A: Disconnect and remove abandoned generator, fuel tank, automatic transfer switch and associated abandoned cabling. Priority #1.

Estimates

Electrical Heating Systems

Description of Existing Systems

There are no electrical heating systems in the building.

Grounding Systems

Description of Existing Systems

See site electrical/supply and distribution.

Existing Conditions

See site electrical/supply and distribution.

Code Deficiencies

See site electrical/supply and distribution.

Recommendations

See site electrical/supply and distribution.

Equipment and Furnishings

Synopsis
The Middle School has a large Home Science/Home Economics classroom.
The Middle School building incorporates the Vocational Wood and Metal shops that are tied to High School programming.

Equipment Overview

Synopsis
Equipment identified herein is in the Middle School and Vocational sops building (single combined facility).

Food Service & Kitchen Equipment

Description of Existing Systems
Kitchen Equipment:
- 6 residential electric ranges
- 1 large double door and 1 single door commercial refrigerator/freezers
- 3 residential upright refrigerator/ freezers
- One large type 2 large commercial range hood covers 2 ranges and an oven.
- 3 small residential range hoods.
- Commercial style oven
- Miscellaneous rolling racks
- Residential clothing washer and dryer.

Existing Conditions
All equipment appears to be in serviceable condition.
No type 1 range hood, though exception for a teaching space may apply.

Code Deficiencies
Coordinate with mechanical.

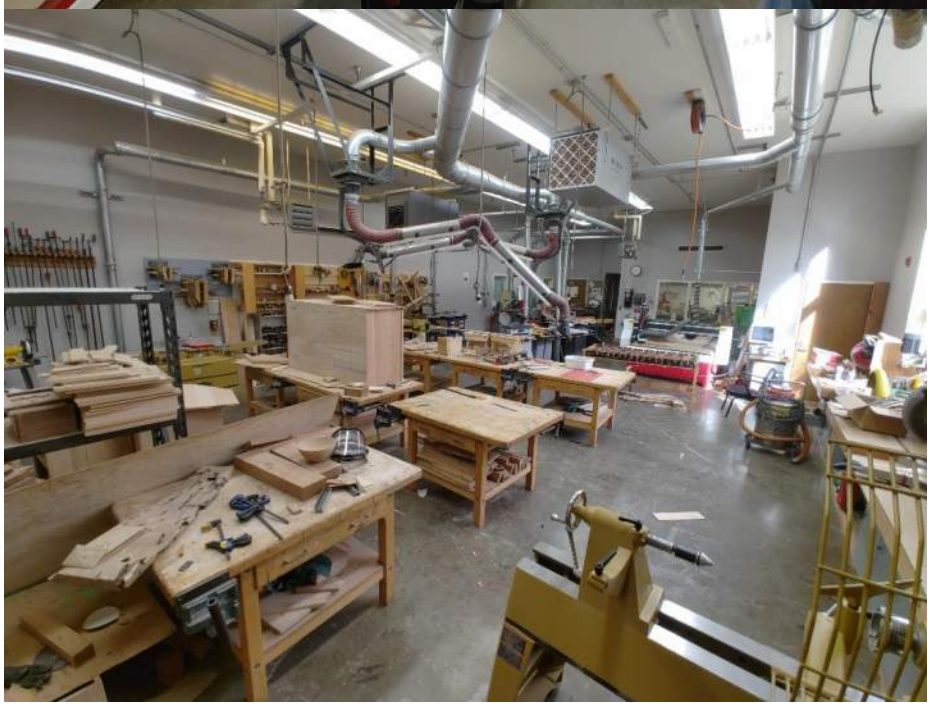
Recommendations
None

Athletic Equipment – None, See High School

Career & Technology Equipment

Description of Existing Systems
Wood Shop Equipment:
- (2) Wood Lathe
- (2) Miter Saw
- (2) Bench Sander

- (1) Bench Grinder
- (3) Planer
- (1) CNC router/cutter table
- (2) Band Saw
- (1) Drill Press
- (2) Table Saw
- Dust Collection System – see mechanical



Metal Shop Equipment:

- Arclight Dynamics Arcmax 5X10 CNC Plasma Cutting Table with computer control.
- (12) varied Miller MIG, TIG Arc welders
- Baldor Bench grinder
- Dmetal cutting bandsaw
- Small Lathe - Select Machine Tools
- Large Lathe - Enterprise 1550
- Ellis metal cutting band saw
- Blackhawl hydraulic brake/press
- large Drill Press - Enco
- Large Drill Press - Jet
- (3) large metal worktables
- Large wok bench w/ (6) bench sanders, different types and makes
- Air compressor hose reels - ceiling and wall mounted. piped air throughout.
- Multiple large rolling small-tool cabinets.
- JD Squared Model 54 Pipe Bender
- Jet metal cutting chop saw
- Tennsmith 8' sheet metal break
- Everlast Plazma welder/cutter
- (4) oxy/Acetylene boots - cmu on three sides with piped gas, workbench.
- Fume collection motors and ducting above, see mechanical.
- Delta Metal cutting table saw.
- - Jet metal cutting chop saw.

Aluminum stock storage racks, south wall.

- welding gas bottle
- Five (5) arc welding booths, concrete block on three sides, bench and welders, UV/fire curtain

Existing Conditions
All equipment appears to be in working order. [4]. The shop spaces are crowded with projects and equipment but appear to be functional.

Code Deficiencies
None Apparent

Recommendations
None

Science Equipment – Limited to cabinets – see previous section.

Library Equipment – None, See High School

Theater Equipment – None, See High School

Art Equipment -– None, See High School

Loading Dock Equipment - None

Other Equipment - None

Furnishings Overview

Synopsis

Facility furnishings, including desks, chairs, tables, carts, racks, etc. are of mixed generations but all seem serviceable for their intended purpose.

Fixed Furnishings

Description of Existing Systems

Bookshelves in the library, storage rooms and classrooms.
File cabinets
Freestanding wardrobe cabinets
Desks
Appliances

Existing Conditions

The condition of fixed furnishings is typically fair to good, score 3, with most matching in spaces used.

Code Deficiencies

None noted.

Recommendations

None

Mats – None – see High School

Other Furnishings - None

Special Conditions - None

Appendices

Appendices may include subjects such as special inspections, checklists, engineering calculations, photographs, drawings, estimate worksheets, etc. Floor plans, with building area designations, room identification, and door numbers used in the survey should be included.

Survey, reports, and other documentation such as ADA Surveys, AHERA Surveys, Fire Marshal Inspection Reports, and similar documentation shall be referenced under this section of the condition survey and attached as an appendix if available.

- Architectural Appendices 1: Dimensioned plans with room numbers for coordination purposes.
- Architectural Appendices 2: Photo record with condition assessment field notes illustrating magnitude of facility.
- Civil Appendices – photos of task related condition.
- Structural Appendices – photos of task related conditions
- AHERA update as provided by Owner

Cost Estimating Summary:
Priority #1 Tasks: $5,573,475
Priority #2 Tasks: $3,379,944
Priority #3 Tasks: $585,992

Total: $9,539,341

Priority Funding Tasks 2024: $2,085,118

Escalated to 2025: $2,210,225.