

Willow Community Library

23557 West Willow Community Center Circle
Willow, Alaska



Existing Conditions Survey of the Willow Community Center



161 Klevin Street | Anchorage | Alaska | 99508

Architectural

Wolf Architecture
625 S Cobb Street
Suite 200
Palmer, AK 99645

Mechanical

Uni Group Engineering
1000 O'Malley Rd #200
Anchorage, AK 99515

Electrical

Northern Electrical Eng.
Consulting Company
721 Sesame Street Suite 2B
Anchorage, AK 99503

March 30, 2015

The Foraker Group
161 Klevin Street, Suite 101
Anchorage, Alaska 99508

Subject: Conditions Survey Report
Project location: 23557 Willow Community Center Circle
Willow, Alaska 99688
Attention: Ms. Martha Shoenthal

Dear Ms. Shoenthal,

On Friday, March 6 an on-site inspection was conducted at the Willow Community Library to document the condition of the existing Community Library and Community Center facility. The scope of the investigation was limited to non-destructive methods and visual observation and included an inspection of the existing mechanical system, the existing electrical system, an accessibility survey, and a life safety inspection. An assessment of the general observable condition of the facility was also done in terms of condition of finish surfaces, structural integrity, and existing issues that might require mitigation if the existing Community Library were to remain a part of the existing facility.

The existing conditions survey includes a review of the original 10,414 sf Willow Community Center constructed in 1983 as well as the 2,680 sf Willow Community Library addition constructed on the south end of the Community Center building in 1991. The Library addition utilizes the common use toilet rooms and the electrical system and HVAC system of the original facility.

The entire structure is built to commercial standards under a previously adopted version of model building codes and as such is generally in compliance with the currently adopted model code. Given the age of the facility the building is considered a pre-existing structure and is not required to comply with all aspects of the currently adopted code iteration. In the event new construction occurs within or onto this facility, the new construction will be required to meet the standards of the currently adopted codes and State of Alaska amendments.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gary Wolf".

Gary Wolf, AIA
Architect

Executive Summary

An existing conditions survey was performed at the Willow Community Center to evaluate the condition of the facility in order to determine the feasibility of possibly expanding the Willow Community Library Facility. The Willow Community Library is currently located in an addition on the south end of the existing facility and makes use of the common use entry and restroom facilities. It is also supported by the mechanical and electrical systems from the original Willow Community Center. Support staff for the library are on hand to provide access to the community center when needed. It was observed that some library overflow made use of the entry hallway on folding tables and chairs for computer use and as a hangout space. Small children made use of the Community Hall area while parents were in the library. Both parts of the building seem to work well together and are able to provide support for each other.

The facility was found to be well maintained and in good condition. The survey reviewed the following areas:

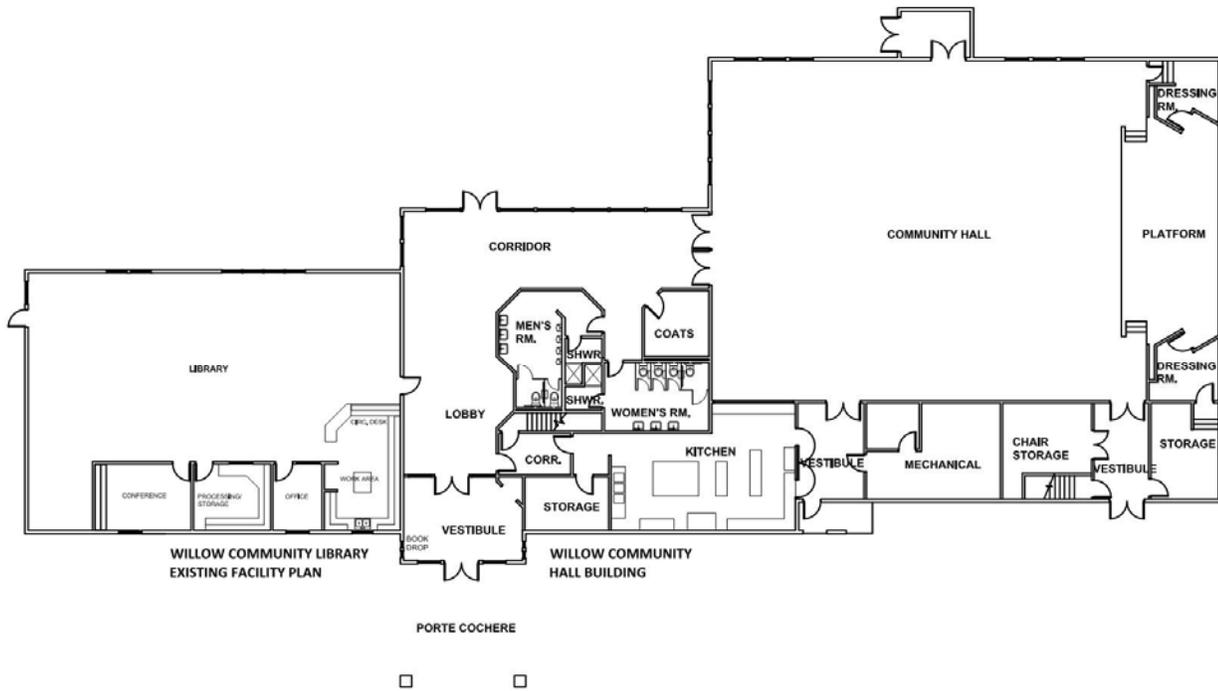
- Code analysis
- Life safety requirements
- Exterior finishes
- Doors
- Windows
- Interior finishes
- Observable construction problems
- Facility accessibility (ADA)
- Energy usage
- Electrical system overview
- Mechanical system overview

The survey has been limited to non-destructive methods and observations and describes the basic condition of the facility and has identified items requiring upgrades or maintenance.

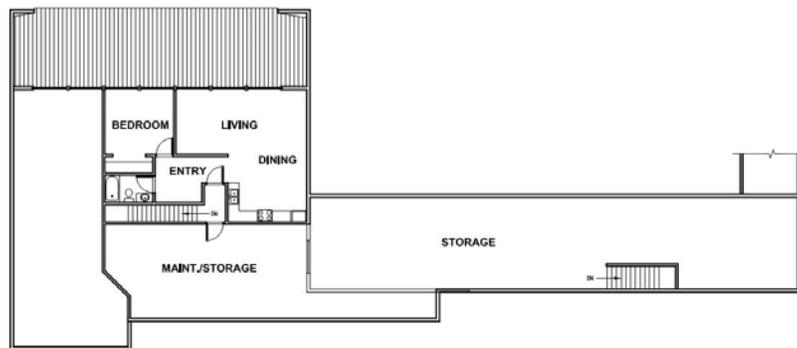
The facility has been in service for nearly forty years and many finish materials are at the end of their useful life, these include the standing seam metal roof, the vinyl composition tile in the community room, and the ceramic tile in the bathrooms. Most other finishes have had upkeep or been otherwise maintained. Similarly the mechanical and electrical systems are in serviceable condition but have had nearly forty years of use and as such could use maintenance and/or replacement.

The most critical issue to be addressed is mitigating the heat build-up in the existing roof assembly. The “warm roof” design contributes to life safety concerns of sliding ice and snow from the roof and also is a major cause to the damage of the exterior siding. A second priority is the inconsistency in glazing and lack of safety glazing where required around doors and walkways.

Building Layout



Existing First Level Floor Plan



Existing Second Level Floor Plan

Code Analysis

Code Data | Allowable |

2009 International Building Code
Chapter 34 Existing Buildings and Structures

Construction Type: V-A (1 hour) – No Sprinkler System
Occupancy Group: A3 (Community Hall / Library)
Basic Allowable Area: 2 levels / 11,500 sf
Allowable Area Increase: (75%) 8,625 sf
Total Allowable Area: 20,125 sf > 13,094 sf

Code Data | Actual |

Stories: 1 level
Area: 10,413 sf

Foundation: Reinforced CMU on continuous concrete strip footing.
Depth of footing varies between 36-48 inches
(Based on review of existing drawings)

Fire Sprinkler System: No
Fire Alarm System: Yes

Occupancy: A3 First level
(Second level occupancy not allowed
by order of Fire Marshal)

Community Hall: 4,465 sf net area
FM Occupancy Load: 580 (standing room) 270 (tables/chairs)

Library: 2,680 sf net area
Occupant Load Factor: Reading Area: 50 sf/occupant (+/-500sf) = 10 occupants
Stacks/Office: 100 sf/occupant (+/-3965 sf) = 40 occupants

Total occupant load: 50 Occupants

Side yard separation: > 30' all sides.

Architectural

General

The existing structure is a single wood frame structure built in multiple phases over a ten year period between 1983 and 1993. The original design incorporated a caretaker apartment within the second level of the original Community Center structure (1983). Subsequently the Fire Marshal has disallowed use of this area for sleeping quarters and the space is currently utilized as office space. Overall the facility is in compliance with current life safety standards for an existing facility and is generally compliant with the Americans with Disabilities Act.

The facility is a wood framed building on a presumably concrete block foundation and a monolithic concrete slab on grade floor system. The original facility was constructed in 1983 as a 10,400 sf Community Center, subsequently a 2,680 sf library was added to the south end of the facility and in 1992 a small addition was added to increase the size of the Library.

The design of the community center is poorly executed in terms of mitigating the impact of snow at entrances. The site is relatively flat and is not sufficiently graded to effectively draw water away from the building during winter and break-up months.

The building is a heavily used facility owned and maintained by the Matanuska Susitna Borough (MSB) and operated in the Community of Willow. The thirty (30) year old facility has been well maintained and for the most part the interior of the building is in fair to good condition. The exterior of facility has deteriorated somewhat as a result of climactic conditions as well as some flaws with the original building design. However, overall the building as a whole is in fair condition.

| Recommendation |

Re-grade the site to allow for adequate drainage away from entrances. Snow melt at the front entrance would help to alleviate the snow build up that occurs because of the roof design.

Exterior

- Siding

The exterior of the Willow Community Center and Library were originally sided with 1x6 drop cedar siding. Subsequently, the original cedar siding was overlaid with a vinyl siding product. This replacement/overlay siding is a residential grade vinyl siding that

has not held up and is in poor condition. You will find cracked, chipped, and missing siding throughout the building although predominately on the East and North facades.



North Elevation



East Elevation

| Recommendation |

Replace all exterior siding with new pre-finished metal siding or other durable, low maintenance exterior siding product.

- Doors

The exterior doors appear to be insulated hollow metal doors with welded hollow metal frames. The doors and hardware appear to be in good to fair condition.



East Entry Door



West Entry Door



South Entry Door

| Recommendation |

Paint all exterior doors and frames.

The glazing within and around the windows should be evaluated. It appears as though several doors and surrounding re-lites are glazed with standard plate glass and should be re-glazed with either safety or tempered glazing units.

- Roof

The roof system is comprised of a wood truss structure covered with plywood decking and overlaid with a standing seam metal roofing system. The standing seam metal roof was originally designed as a “warm” roof. Meaning the exterior surface of the roof has been designed such that the exterior surface will readily accumulate heat from the interior of the building resulting in melting snow that can cause snow avalanches on walking surfaces below.

Ice accumulation on the roof has caused damage to roof and siding materials and poses a safety threat to pedestrians below. Sloped roof assemblies in this structure shed snow/ice toward walking and driving surfaces creating a hazard for most of the winter months. The design of this roof system is responsible for many safety issues and is also causing the re-occurring siding damage.

Roof ventilation remains one of the key design issues in need of remediation with this facility. A remediation project was completed in 2003 in an attempt to address the roof heating issues at the north Community Center roof. Under this project a second roof was constructed on top of the existing roof to allow for additional ventilation space on the roof surface to prevent the interior heat from warming the exterior roof surface. It appears that a portion of the designed ventilation was not installed and additional ventilation is require at the bottom and top of the roof assembly to resolve this issue.

The roofing appears to be in fair condition in most areas and only minor leaks have been observed in the second level mechanical space. Occupants did not mention roof leaks in any other interior spaces that were causing an issue. The metal roofing system is assumed to be the same age as the building and will be nearing the end of its useful life in approximately 6-10 years.



It is recommended the roofing and flashing be replaced fairly soon. (ten years maximum).

Install additional ventilation for the North roof system. Some possible options might include:

- a. Increased size of vents at top and bottom of shed and gable roofs.
- b. Introduction of a mechanical ventilation system.
- c. Additional framing and insulation to separate heat from the main flue at the North roof.
- d. Design modifications to the roof at the main entry to deflect snow from shedding onto the main parking area.

- **Window and Door Glazing**

The windows in the original Community Center are a combination of wood fixed and operable window units. The exterior windows are typically double pane units and are seemingly in good condition and we did not identify any glazed units with broken seals. It is evident that many windows have been replaced over the years which is evident by the inconsistency and variety of glazing units in and around doors and walkways.

Glazing in and around doors is required to be either safety glazing or tempered glazing. In many cases the glass in the doors and windows is standard plate glass. It is assumed that the plate glass was of original install and the tempered and safety glazing are replacement glazing units.



| Recommendation |

It is recommended that the glazing in all doors, side lights, re-lights adjacent to doors, an large panes of glass adjacent to walking surfaces be evaluated for type and if identified as standard plate glass, that glazing be removed and replaced with tempered or safety glazing.

Interior

First Level

- Flooring

Common use areas: Broadloom Carpet

The common areas have been recently re-carpeted and the flooring is showing some wear but is in relatively good shape.

Entry Vestibules: Walk Off Carpet

Entry Vestibules have been recently re-carpeted and the flooring is in good condition.

Library: Broadloom Carpet

This area has recently been re-carpeted with broadloom carpeting the flooring is in good condition and does not show much wear



Entry Hall



Entry Vestibule



Library

Toilet Rooms: Ceramic Tile

Original 1x1 unglazed ceramic tile, Worn, Fair condition, some damaged tile from floor anchors

Community Hall: Vinyl Composition Tile (VCT)

The flooring is worn but has been well maintained and is in fair condition.

Kitchen: Quarry Tile

Good condition.



Toilet Rooms



Community Hall



Kitchen

- Walls

Interior wall finishes in the building are in fair condition and care has been taken to maintain the facility.

Most walls throughout the facility are painted gypsum with the exception to this being the common use toilet rooms which have a glazed ceramic tile finish. Additionally, a portion of the common circulation space has a carpet wainscot to approximately 42" in height. Walls are painted with a semi-gloss latex paint and the painted surface appears to be relatively new and in good condition throughout the facility.

The walls in the common use toilet rooms are 4"x4" glazed ceramic tile. The tile is original and for the most part is in good condition although there is some tile damage in both the Men's and Women's toilet rooms.



Hallway



Library Entrance



Toilet rooms

- Ceiling

Ceilings and associated light fixtures throughout the facility appear to be of original install and are in fair condition but are showing age. The facility has a mix of painted

GWB and Suspended Acoustical Tile (ACT) assemblies throughout. The Community Hall, Kitchen, and Common Use circulation areas are fitted with the original suspended acoustic ceiling systems and are in fair condition having some broken, missing, and some discolored ceiling tiles throughout. The Common use bathrooms, utility rooms, Library, Vestibules, and platform ceilings are painted GWB and in generally good condition.

The painted ceilings on the first level appear to have been painted fairly recently, that is to say, the paint does not appear to be original.

| Recommendation |

Replace damaged, stained, and missing ceiling tiles / clean all diffusers.



Community Hall



Library



Toilet Rooms

Second Level

- Flooring

Former Apartment: Broadloom carpet has been installed in the majority of the occupied portion of the second level. The exception to this being sheet vinyl in the kitchen, and ceramic tile in the bathroom. All finishes are in fair to good condition. The apartment appears to be utilized for storage and a meeting room.

Utility Space: The floors in the utility space are exposed plywood throughout.

- Walls

Former Apartment: Most walls throughout the former apartment are painted gypsum with the exception to this being the bathroom which have a glazed ceramic tile finish.

Utility Space: The walls in the utility space are level 1 GWB with no painted finish. The GWB is in good condition but staining is evidence that some leaking has occurred in the roof over the years.

- Ceiling

Former Apartment: Ceiling throughout the former apartment are painted gypsum with the exception to this a small portion of ceiling in the hallway which is suspended acoustical tile. The paint is in good condition, the suspended ceiling is in fair condition and missing some ceiling tile.

Utility Space: The walls in the utility space are level 1 GWB with no painted finish. The GWB is in good condition but staining is evidence that some leaking has occurred in the roof over the years.



Apartment



Utility Space

Accessibility Survey (Americans with Disabilities Act)

Site Access

- Parking

We were unable to identify any accessible parking spaces around or near the facility. The parking lot is gravel with non-delineated parking spaces.

- Accessible Route

An accessible route cannot be identified from the parking area to the main entrance.

| Recommendation |

Provide/install paved and signed ADA parking spots per the current ADA code including a van accessible space per every six ADA parking spaces.

Pave an accessible route from the ADA parking spaces to the main accessible entrance and install accessible route signage to meet current code requirements.

Exterior Entrances

- Main East Entrance

The double entry door has an auto-door opener that is 37" off of floor, manual operator pulls on the exterior at 31", and panic hardware on the interior at 39". Both doors are 34.5" wide. The threshold is at a proper height. The entry rug, in the vestibule, spans across the vestibule door threshold, buckling in places causing a possible tripping hazard. The vestibule doors are each 35.5" wide with a proper threshold.



Exterior View



Interior View

| Recommendation |

Provide a smaller entry rug that fits within the vestibule area and will lay flat.

- Playground West Entrance

The double door is 34 inches wide per door. The threshold is more than ¾ inches in height change. The door panic hardware is located 35 inches off of floor.



Exterior View



Interior View



Threshold View

| Recommendation |

Provide an extended threshold with a beveled slope of 1:2 max. or repour the exterior slab to meet the height change requirement of ¼ inch max.

- Library South Exit

There is a single door that is 35 inches wide with exit handles at 37 inches off of the floor. The threshold is more than ¾ inches from exterior grade. The concrete landing has some spauling.



Exterior View



Interior View



Threshold View

| Recommendation |

Provide extended threshold with beveled slope of 1:2 max. or repour exterior slab to meet height change requirement of ¼ inches max.

Repair spauled concrete at landing.

- Community Hall West Entrance

There are double doors that are 34 inches wide each. The height to handles is 32 inches exterior and 35 inches interior for the exterior door and 40 inches interior and 29 inches interior for the vestibule door. The exit lands at a wood ramp on the West side of the building. The wood ramp has a 1.5:12 slope leading to grade. The threshold height is at ¼ inch. The interior rug has curling edges that could be a tripping hazard.



Exterior View



Interior View



Threshold View

| Recommendation |

Re-build the wood landing out of a non-slip material and provide a max slope of 1:12 inches. The landing must extend 36 inches from the door at a level height and then may slope to grade.

Provide a stable, firm, and slip resistant surface from the exterior ramp to the accessible pathway.

Replace the floor mat to prevent tripping hazard.

Interior Entrances

- Library Entrance and Community Hall Entrance

The Library entrance provides an opening of 33 inches and has adequate space for approach on the pull side of the door. The entrance to the Community Hall is through two sets of double doors that provide 34 inches of opening each.



Library Entrance



Community Hall Entrance

| Recommendation |

None – meets ADA standards

Interior Accessible Route and Services

- Main Hall to Library and Community Hall

The hall is clear of obstructions and provides ample wheelchair turn around space. All projections on the path are less than 4 inches and/or are less than 27 inches off of the floor.



Hall to Library



Hall to Community Hall

| Recommendations |

None - Meets ADA standards

- Library

The reception counter is 27 inches off of the floor and is the full depth of the counter. The counter provides a parallel approach for wheelchairs.



Library Service Counter

| Recommendation |

None – meets ADA standards

- Kitchen

The service counter is 41 inches off of the floor with a 10 inch front overhang. The counter provides a parallel approach for wheelchairs.



Kitchen Service Counter

| Recommendation |

Lower a 36 inch wide minimum section of counter to a max height of 36 inches off of the floor the full depth of the counter and maintain a parallel approach.

- Stage

The stage is 24 inches off of the floor and provides stair access at each side from the Community Hall and also at each wing room. Doorways to access the stage off the wing rooms are 31 inches wide. The right side wing room has a landing prior to the stage entrance that is 36 inches wide by 53 inches deep with no handrail and loose tile flooring.



Stage Front Access



Stage Side Access



Stage Rear Access

| Recommendation |

Install a 1:12 max slope ramp with guardrails to the stage floor from the Community Hall.

Install a 36 inch minimum guardrail at wing room landing and repair flooring tiles.

- Drinking Fountain

The drinking fountain is 35.5 inches off of the floor to the top and is 30 inches clear to the underside. It projects 19 inches from the wall and is 4.5 inches from the front to the spout and 15 inches from the spout to the wall. It appears to not be functioning and is in need of repair.



Fountain in Main Hall

| Recommendation |

Repair and replace missing parts of the fountain to be in working order. Lower fountain so that clear underneath height does not exceed 27 inches.

- Library

Paths around book stacks in the library are at varying widths from 28 inches wide to 40 inches wide. Furniture in open areas limits turn around and passing space. Study tables are at 29 inches off of the floor with 26 inches clear underneath space and are 33 inches wide. Computer tables are 26 inches off of the floor. Children’s tables are 22 inches off of the floor.



Stacks



Seating



Seating



Kids seating

| Recommendation |

Uniform distances between book stacks to be 36 inches minimum in width.

Provide at least one open space with a 60 inch min. diameter for wheelchair turn around towards the back of the room.

Provide at least one accessible computer station at a table that would accommodate a wheelchair.

Toilet Rooms

Women's Toilet Room

- Entry

The room signage at the entrance door does not meet ADA standards. There is a single door entrance that is 35 inches in width and the handle is 38 inches off of the floor.

- Dispensers & Lavatories

The paper towel dispensers provided are at heights of 37 inches, 53 inches, and 56 inches. The mirrors over the lavatories are at 44 inches off of the floor. The soap dispensers are located on the mirrors at a height of 46 inches. The lavatories are 32.5 inches off of the floor and 18 inches off of the wall. The faucets provided meet ADA standards. No pipe insulation is provided under the lavatories.

- ADA Toilet Stall

The ADA toilet stall provided is 58 inches wide by 59 inches deep. There is a floor mounted toilet that is 16 inches on center off of the side partition wall. The toilet handle is on the inside face of the toilet to the stall. The toilet seat is 18 inches off of the floor. The rear and side grab bars provided are 38.5 inches off of the floor. The rear 42 inch grab bar is 8.5 inches off of the partition wall. The side 42 inch grab bar is 16 inches off of the back tiled wall. The toilet paper dispenser is 19 inches off of the front face of the toilet and is 29 inches off of the floor. There is a 2 inch gap from the toilet paper dispenser to the grab bar above. The stall door lock provided does not meet ADA operable parts requirements but door pulls on either side are provided. The stall door is self-closing. A stall door coat hook is provided at 67 inches off of the floor.

- Shower Room

There is a shower room located off of the main toilet room with a door that is 27 inches wide. The shower stall is 34 inches by 31 inches with controls at 48 inches off of the floor. The shower room provided is not ADA accessible due to entrance door width and shower stall size.





| Recommendation |

Provide/install proper ADA room signage.

Lower mirrors to be 40 inches maximum off of floor. (Soap dispensers currently meet ADA height requirements – when mirror is lowered maintain a maximum of 48 inches off of floor height for soap dispensers.)

Provide/install a pipe insulation kit under each lavatory.

Relocate the ADA stall side partition to provide a minimum 60 inch overall width. (May need to also shift the other three stall partition walls to maintain a minimum of a 30 inch width at each stall. The current standard stalls are 31 inches wide.)

Provide a toilet handle on the open side of the toilet.

Lower both grab bars to be a maximum of 36 inches off of the floor and install to meet lateral location requirements. (The rear grab bar is only required to be 36 inches wide.)

Relocated toilet paper dispenser to be 7–9 inches off of the face of the toilet and within a range of 15-48 inches from the floor.

Provide/install a stall door lock that meets the ADA operable part requirements.

Lower the stall door coat hook to be 15-48 inches off of the floor.

Men's Toilet Room

- Entry

The room signage at the entrance door does not meet ADA standards. There is a single door entrance that is 35 inches in width and the handle is 38 inches off of the floor.

- Dispensers & Lavatories

The paper towel dispensers provided are at heights of 37 inches, 52 inches, and 51 inches. The mirrors over the lavatories are at 48 inches off of the floor. The soap dispensers are located on the mirrors at a height of 48 inches. The lavatories are 33 inches off of the floor and 18 inches off of the wall. The faucets provided meet ADA standards. No pipe insulation is provided under the lavatories.

- Urinals

There are 4 wall mounted urinals that are 24 inches off of the floor and are 24 inches on center.

- ADA Toilet Stall

The ADA toilet stall provided is 60 inches wide by 59 inches deep. There is a floor mounted toilet that is 16 inches on center off of the side partition wall. The toilet handle is on the inside face of the toilet to the stall. The toilet seat is 17 inches off of the floor. The rear and side grab bars provided are 38 inches off of the floor. The rear 42 inch grab bar is 17 inches off of the partition wall. The side 42 inch grab bar is 14 inches off of the back tiled wall. The toilet paper dispenser is 16 inches off of the front face of the toilet and is 28 inches off of the floor. There is a 2 inch gap from the toilet paper dispenser to the grab bar above. The stall door lock provided does not meet ADA operable parts requirements but door pulls on either side are provided. The stall door is not self-closing. A stall door coat hook is provided at 67 inches off of the floor.

- Shower Room

There is a shower room located off of the main toilet room with a door that is 27 inches wide. The shower stall is 34 inches by 31 inches with controls at 48 inches off of the floor. The shower room provided is not ADA accessible due to entrance door width and shower stall size.





| Recommendation |

Provide/install proper ADA room signage.

Lower mirrors to be 40 inches maximum off of floor. (Soap dispensers currently meet ADA height requirements – when mirror is lowered maintain a maximum of 48 inches off of floor height for soap dispensers.)

Provide/install a pipe insulation kit under each lavatory.

Provide a toilet handle on the open side of the toilet.

Lower both grab bars to be a maximum of 36 inches off of the floor and install to meet lateral location requirements. (The rear grab bar is only required to be 36 inches wide.)

Relocated toilet paper dispenser to be 7–9 inches off of the face of the toilet and within a range of 15-48 inches from the floor.

Provide/install a stall door lock that meets the ADA operable part requirements.

Lower the stall door coat hook to be 15-48 inches off of the floor.

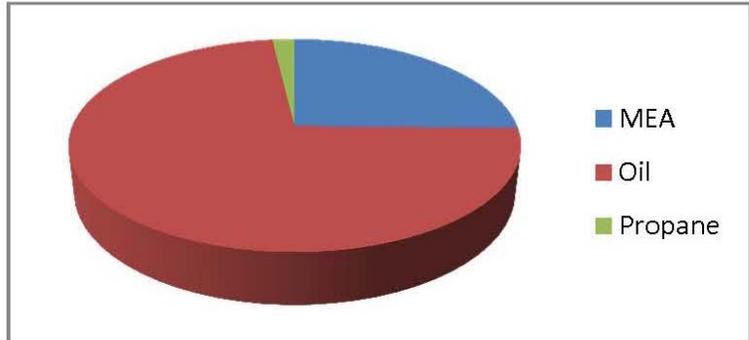
Energy Use Survey

Current Energy Use

Currently facility usage is as follows:

This includes a rough estimate for propane usage for cooking appliances.

| Fuel | Cost/Yr. |
|--------------|-----------------|
| MEA | \$10,660 |
| Oil | \$30,597 |
| Propane | \$800 |
| Total | \$42,057 |



Energy per Square Foot

The facility is approximately 13,094sf. That puts **energy use per SF at \$3.22**. This is comparable to other facilities with oil-fired heat that we see around the valley.

In general, it can be assumed that the majority 2/3 of electricity is used for lighting and equipment. The remainder 1/3 appears to be heating and ventilation related pumps and fans. Oil is completely related to heating and, as is typical of Alaska, is the largest energy bill.

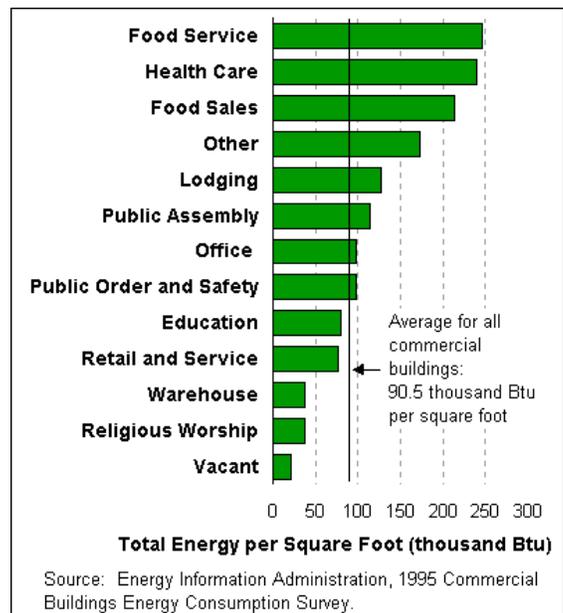
EUI Energy Use Intensity

This places the facilities EUI or energy use intensity at approximately 125. See how that compares to the national average on the chart to the right. This aligns with an average Public Assembly facility.

Ground Source Heat Pump System

It is our understanding that an RFP for a Ground Source Heat Pump System will soon be released by the MSB. If accepted and implemented correctly, such a system could cut the heating bill in half. It should be noted that while such a system would remove the cost of oil heating, it will more than double the cost of electricity for the facility.

If the GSHP System is implemented, any work on the oil boilers becomes redundant since they will not be used except as a back-up.



Mechanical Narrative

I. Plumbing

A. Building Water Service

Water supply for the building is provided by a well located in the southeast corner of the building adjacent to the library. An extensively engineered water treatment was installed in *(year unknown - TBD)*.

- Existing Conditions: The existing water well and the water treatment system appeared to be in good service condition and are well maintained.
- Deficiencies: While no specific deficiency related to the water service and treatment systems was observed, the following are noted,
 1. There is a general lack of seismic restraints on the various vertical tanks.
 2. The water treatment system room appears to be poorly ventilated.
 3. Some piping penetrations through walls and ceiling are not properly sealed. These penetrations may need to be listed penetration assemblies if required by the room assembly ratings.
 4. Some minor piping deficiency including unsupported piping and apparent improper installation of CPVC piping.
- Upgrade Opportunities: None except the remediation of the reported deficiencies may be included in future building renovation opportunities.
- Comments: None.

B. Building Sanitary Sewer Service

Sanitary sewer from the building is discharged to a septic tank/field north of the building.

- Existing Conditions: The condition of the septic field could not be observed due to snow cover but is presumed to be in serviceable condition.
- Deficiencies: Unknown.
- Upgrade Opportunities: Unknown.

- Comments: The existing septic field was developed in ca. 1985 for the original building project.

C. Building Domestic Water Systems

The domestic water system piping appeared to be of the original construction, ca. 1985. The domestic hot water generation system appeared to be of more recent retrofit installation, ca. *(unknown)*. The domestic hot water is generated at a Bradford White Model SW2120L, 116-Gal indirect hot water generator heated by the building hydronic heating system. The system is protected by a thermal expansion tank and is circulated by a small circulator to maintain hot water temperature at the fixtures.

- Existing Conditions: No major deficiency was observed.
- Deficiencies: None except the age of the piping system. See upgrade opportunity discussion below.
- Upgrade Opportunities: The existing water piping system is approximately 40 years old. We recommend including the total replacement of the building domestic water piping system as part of any future major building renovation opportunities.
- Comments: None.

D. Building Drain, Waste, and Vent Systems

The drain, waste, and vent systems appeared to be of the original construction, ca. 1985.

- Existing Conditions: No major deficiency was observed.
- Deficiencies: None.
- Upgrade Opportunities: None.
- Comments: Building drain, waste, and vent piping system can normally be expected to remain in service for the life of the building. Unless otherwise affected by future renovation project, we do not expect the existing drain, waste, and vent piping system to be in need of replacement.

E. Plumbing Fixtures

The plumbing fixtures throughout the building appeared to be somewhat dated but in serviceable conditions.

- Existing Conditions: In good condition.
- Deficiencies: The following deficiencies were noted,
 1. The existing drinking fountain appeared to be non-ADA compliant.
 2. The existing restroom lavatories lack service guard/insulation kits for ADA compliance.
- Upgrade Opportunities: Except specific deficiencies noted, the replacement of the plumbing fixtures shall be subject to the extent of future major building renovation opportunities.
- Comments: None.

F. Food Service Kitchen Plumbing Systems

The building has an existing commercial grade food service kitchen. A propane tank located outdoors near the existing underground fuel oil tank serves the appliances.

- Existing Conditions: The kitchen plumbing system appeared to be in good condition. Drainage from the 3-compartment sink is discharged through a grease interceptor. The conveyor dishwasher is equipped with both an electric booster heater (may be unused) and chemical detergent feed systems.
- Deficiencies: The following deficiencies are noted.
 1. The kitchen is not equipped with a food prep sink with appropriate indirect discharge. This deficiency will likely become an issue in future kitchen inspections by AHJ.
 2. Discharges from the dishwasher do not have proper air gap separation.
- Upgrade Opportunities: None except the correction of the deficiencies noted.
- Comments: None

G. Propane System

The propane for the food service kitchen is delivered from a 250-Lb DOT cylinder located above the existing underground fuel oil tank. The building trash dumpster is located adjacent to the propane tank. It was not possible to observe the base of the propane tank due to snow cover.

- Existing Conditions: The area of the existing propane tank appeared to be somewhat clustered. Although there are traffic bollards around the propane tank, they do not appear to present an adequate protective perimeter around the propane tank and the underground fuel oil tank piping extending aboveground.
- Deficiencies: The following deficiencies were noted.
 1. Area around the propane tank/underground storage tank may be improved as a service island for better protection from parking lot vehicle traffic.
 2. It was not possible to observe the base of the propane tank due to snow cover. If verified, the tank should be secured with seismic restraint.
- Upgrade Opportunities: None except deficiencies noted above.
- Comments: None.

II. Heating and Ventilation Systems

A. Fuel Oil Systems

An underground (1000-gal capacity based on the 1985 as-built record) fuel oil storage tank located in the parking lot (co-located with the propane tank) provides the fuel supply to the building. The fuel oil is drawn from the underground tank by a Simplex SST-10 day tank in the mechanical room and dispensed to the heating boilers.

- Existing Conditions: The condition of the underground storage tank and the underground piping cannot be observed.
- Deficiencies: We were unable to confirm the condition of the underground fuel oil system. However, the following were noted,
 1. No visible sign at the fuel oil piping entrance into the building to suggest the underground piping is equipped with leak containment system.
 2. No underground fuel tank record was found in the mechanical room.
 3. No underground tank leak detection equipment was found in the mechanical room.

4. No record of recent underground tank replacement was available for review.

Based on the observations, we believe a more thorough review of the existing underground fuel tank system is warranted.

- Upgrade Opportunities: The underground fuel oil system is likely to be of the original construction and approximately 40 years old. We recommend including the total replacement of the underground fuel oil system as part of any future major building renovation opportunities.
- Comments: We recommend considering aboveground storage and distribution piping systems for the future replacement fuel oil systems. Aboveground systems have distinct advantages over underground systems in terms of better long-term maintenance and management practices.

B. Building Heat Generation System

The building is heated by duplex forced draft cast-iron oil-fired boilers (Burham V904As). Boiler B-1 is a ca. 1994 installation and Boiler B-2 is a ca. 2002 installation (presumably a replacement unit). These boilers are, respectively, 20 and 12 years old and have substantial remaining service lives (typically 50 years for cast-iron boilers).

The heating system is fully equipped with expansion tanks, good quality high performance air separator, and automatic glycol make-up system. The hydronic zone pumps (4-zones) are of late vintage high efficiency types.

- Existing Conditions: The overall appearance of the heat generation system appeared to be in good condition. There is an engineered combustion air system. There is generally good maintenance clearance around the equipment. The mechanical room was noticeably warm and humid.
- Deficiencies: The following were noted,
 1. There is not containment tray under the fuel oil piping between the day tank and the boilers.
 2. The fuel oil piping on the floor is a tripping hazard.
 3. The boilers are installed on the floor without housekeeping pad. (This is noted for reference only and not meant to be for remediation.)
 4. The fuel oil day tank does not have an overflow return line back to the underground tank. (See separate discussions on the existing underground fuel oil storage and piping system.)

- Upgrade Opportunities: There are some potential opportunities for upgrades,
 1. Boiler Upgrades: The opportunity for efficiency improvement for oil-fired boilers is unfortunately limited. The newer 3-pass boilers such as Weil-McLain's Ultra series and Burnhams MPO series gives a marginal efficiency improvement to 87% compared to the 84% with the existing V9 boilers.

We do not recommend boiler replacement unless it is substantiated by an engineering economic review or necessitated by the future building renovation project.

2. Pump Efficiency Upgrades: There may be the possibility of replacing the existing zone circulation pumps with new smart high efficiency pumps with ECM motors and provide some form of variable speed control. Considerations for this should be based on in-depth engineering study, as it needs to take into account the potential impact on the operation and performance of the boilers.
- Comments:
 1. Heat Generation System Capacity Analysis: The combined heating output of the two boilers provides a per square foot heating capacity of approximately 50 Btuh/SF which is a reasonable heating index for this building. The existing heat generation capacity is not capable of supporting any building addition of any significant size or that requires substantial ventilation load.

$$\begin{aligned}
 \text{Heating Index} &= \text{Total Net Heating Capacity} / \text{Total Square Footage Area} \\
 &= 840 \text{ MBH} / 16,500 \text{ SF} \\
 &= 50 \text{ Btuh/SF (Approx.)}
 \end{aligned}$$

C. Building Hydronic Piping Systems

Majority of the building hydronic system piping appeared to be of the original construction, ca. 1983.

- Existing Conditions: No major deficiency was observed. Where observable, insulation on piping systems remain relatively intact except some localized disturbances.

- Deficiencies: None except the age of the piping system. See upgrade opportunity discussion below.
- Upgrade Opportunities: Significant portions of the existing hydronic piping system is approximately 30 years old. We recommend including the total replacement of the building hydronic piping system as part of any future major building renovation opportunities.
- Comments: None.

D. Terminal Heating Systems, Community Hall

The Community Hall and the adjacent spaces are heated by hydronic fin-tube baseboards and cabinet unit heaters. These terminal heating systems appeared to be, for the most part, from the original 1983 building construction.

- Existing Conditions: The baseboards and the cabinet unit heaters are in generally good condition. They are, however, as much as 30 years old and are expected to be near their service life.
- Deficiencies: None except the age of the equipment. See upgrade opportunity discussion below
- Upgrade Opportunities: The existing terminal heating units are approximately 30 years old. We recommend including the replacement of the building terminal heating systems as part of any future major building renovation opportunities.
- Comments: None.

E. Terminal Heating Systems, Library

The Library is heated by hydronic fin-tube baseboards. These baseboards appeared to be from the 1993 renovation project.

- Existing Conditions: The baseboards and the cabinet unit heaters are in generally good condition.
- Deficiencies: The following deficiencies were noted,
 1. The fin-tube baseboards in the library appeared to be poorly zoned (as indicated by the owner's representative). One single zone serves the entire library space.

2. The baseboard zone thermostat appeared to be poorly located behind the librarian station.
- Upgrade Opportunities: The baseboards should be retrofitted and divided into multiple subzones for better zone coverage.
 - Comments: None.

F. Ventilation Systems, Community Hall

A 7,000 CFM central air-handling unit provide ventilation for the community hall and the adjacent support spaces. A central exhaust fan serves the public men restrooms.

- Existing Conditions: Following observations were made,
 1. The air-handling unit appears to be in good condition.
 2. The air-handling unit heating coil appears to be clean and in good condition.
 3. The ductwork system appeared to be in good condition.
 4. The control dampers appeared to be in good condition. The control damper and valve actuators are, however, old and will need replacement.
- Deficiencies:
 1. The entryway, the lobby, and the corridor are not ventilated. The existing ductwork should be extended to provide ventilation in these areas.
- Upgrade Opportunities: The following are possible upgrades proposed,
 1. Ceiling Fans – Provide ceiling fans for spaces including the community hall, the corridor, and the lobby area. Ceiling fans will help minimize heat stratification, particularly in the community hall, and reduce load on the heating system. For the community hall, if ceiling fans are found to be inappropriate, sidewall mounted dis-stratification fans may be used.
 2. Demand Ventilation Control – The control of the air-handling system should incorporate a carbon dioxide sensor/monitor for active control of the outside air intake.
 3. Distributed Restroom Exhaust Fans – The existing central exhaust system may be replaced by energy efficient terminal exhaust fans equipped with occupancy/motion sensor such as the Panasonic Whisper Sense series.

- Comments: None.

G. Ventilation System, Library

The main library space does not have a ventilation system. A small heat recovery ventilator provides ventilation air for some of the perimeter offices.

- Existing Conditions: The library is in need of ventilation upgrades.
- Deficiencies: Discussions with the owner's representative indicates there are times during the summer when the main library space is uncomfortably warm.
- Upgrade Opportunities: A code compliance mechanical ventilation system should be provided for the library.
- Comments: None.

H. Kitchen Ventilation Systems

- Existing Conditions: The kitchen space communicates with the community hall through the large opening at the serving counter. The exhaust port of the existing Type II hood over the dishwasher was observed to be purposely blocked off by a cardboard. An actuated control damper was noted in the Type I hood exhaust duct. It is likely these retrofits were done to address a negative building pressure problem resulting in excessive infiltration of cold outside air through the duct openings. Infiltration problem due to negative building pressure needs to be corrected.
- Deficiencies: The following deficiencies are noted.

Problems related to the infiltration of outside air through hood exhaust openings may be addressed by retrofitting the hood exhaust ducts to new exhaust fans on the second floor level. The vertical exhaust duct risers will promote a natural warm air draft inside the exhaust duct to counter the cold air infiltration.

Additional deficiencies include,

1. Provision for kitchen hood exhaust make-up air appeared to be missing. This can be accomplished by interlocking the kitchen hood exhaust fan with the community hall air-handling system controls.

2. Hood exhaust fan(s) damaged by snow and ice shedding. Consider provide protection over the exhaust fans or use indoor inline centrifugal exhaust fans.
 3. Hood exhaust fan type may not be appropriate. The exhaust fans should be replaced with either sidewall exhaust fans that discharge away from the building or indoor inline centrifugal exhaust fans.
 4. The existing control (isolation) damper in the Type I hood exhaust duct is non-code compliant.
- Upgrade Opportunities: None.
 - Comments: None.

Electrical Narrative

In general, the overall condition of the electrical system is good. The service is 600 amp/120/240 volt single phase. There is also a 50KVA generator and automatic transfer switch. After the transfer switch is a 600 amp exterior disconnect which feeds a 600 amp distribution panel on the second floor. This distribution panel feeds a number of panels throughout the building.

The meter is not a demand type meter so we cannot look at historical demand on the building. During our visit the peak usage was 102.2 amps. The kitchen and apartment were not in use at the time and are both fed with 100/2 circuits. The only other load of concern is the theater. It has (2) 70 amp dimming panels and a 225 amp dimming panel. The large dimming panel is designed to be able to put lights at various places around the theater. Although they may use the full 20 amps on at one of the 24 locations they would never use all 24 circuits at full load.

A realistic look at the load on the service would be the 102 amps recorded plus 100 amps for the kitchen and the now defunct apartment and an additional 240 amps for the theater lighting. All together this comes to 442 amps. The service is sized for the building and there would be no problem with doubling the size of the library.

The following code deficiencies were noted:

1. Exit signs are expired. The current exit signs use tritium, a radioactive material that is required to be disposed of in an approved manner. Since they are expired they are no longer bright enough and must be replaced.



2. Exterior receptacles are required to have in-use covers on them. At the time of installation they would have been compliant but with recent code changes they no longer are.



3. Extension cords are not allowed as permanent wiring. There is clearly a lack of receptacles in the library and so extension cords are used in several locations. There were no complaints about breakers tripping so there is enough capacity it is just that the receptacles are not where they are needed. Although this should be fixed at all locations throughout the building the biggest issue is in the entry way where the cord is going through a door. The opening and shutting of a door on a wire quickly destroys the insulation and becomes a fire and safety issue.



Cord thru doorway

4. The conduit fitting at the well head has been broken and needs to be replaced.



5. In order to use an automatic transfer switch the generator has to be able to handle the full load of the building or have automatic load shedding. The 50KVA generator has a max capacity of 208 amps. The generator is not capable of carry the peak load of this building and needs to be able to shut off some loads as required. Shunt trip breakers should be installed in the main distribution panel and controlled by the generator as required.