Haines Borough
Pool Condition Survey
Haines, Alaska

June 2007

Prepared by: **Jensen Yorba Lott, Inc.**

TABLE OF CONTENTS

EXECUTIVE SUMMARY

On June 20, 2007 a facility condition survey was completed of the Haines Borough Swimming Pool The survey was conducted by a multidisciplinary team led by Wayne Jensen of Jensen Yorba Lott, Inc.

The purpose of the survey is to assess the architectural, structural, mechanical, electrical, and aquatic facility conditions of the facility to determine the basic soundness of the structure, the present condition of existing systems and assemblies, and to project the remaining life of all major systems.

The report includes a prioritized list of items requiring attention and a cost analysis of the work.

Team

The survey team consisted of the following members:

Jensen Yorba Lott, Inc.
Wayne Jensen, AIA
522 West 10th Street
Juneau, AK 99801
907-586-1070

Aquatic Excellence
Richard Scott, AIA
6311 Tasajillo Trail
Austin, TX 78739
502-809-7482

PND, Inc.
Chris Gianotti, P.E.
9360 Glacier Highway, Suite 100
Juneau, AK 99801
907-586-2093

Murray and Associates, P.C.
Doug Murray, P.E.
P.O. Box 021081
Juneau, AK 99802
907-780-6151

Morris Engineering Group, Inc.
Mark Morris, P.E.
8429 Livingston Way
Juneau, AK 99801
907-789-3350

Building History

The building was constructed in 1981 as addition to the Haines High School. The building was designed by EMPS Architects and Engineers and constructed by Omni North General Contractors. The pool is owned and operated by the Haines Borough.

The building is founded on piling. A portion of the pool facility is constructed on the roof of the high school locker rooms which established the pool deck level at 12'-1" above the floor of the high school. The building is a wood frame structure with metal siding.

Public access to the facility is from the south side via a single door and a series of ramps that lead to the pool level. The pool tank is made of aluminum, supported by a steel and wood structure. The area around the pool tank under the pool deck is open and the pool equipment is located in this space.

The roof of the pool building was originally covered with metal roofing this was replaced in 1999 with granular surfaced membrane roofing. The site around to pool is currently scheduled for improvement as part of the addition and remodeling of the high school.

ARCHITECTURAL ANALYSIS

Building Code

The original drawings do not indicate which edition of the Uniform building Code was used to design the building, but it was probably the 1976 or the 1979 edition. The following is an analysis of the building relative to the current code, the 2006 International Building Code (IBC)

1. **Handrails**: The handrails at the entry ramps and the stairs to the viewing balcony are set at approximately 32" above the walking surface. The current code requires handrails to be set between 34" and 38" above the walking surface.

   Recommendation**:** *The handrails should be replaced*.

2. **Guardrails**: Guard rails are required on the open side of the ramps that are more than 30" above the adjacent ramp and at the edge of the viewing balcony. The rails need to be at least 42" above the floor and have intermediate rails or panels that prevent a 4" sphere to pass through the rail. The existing ramp and balcony rails do not meet this requirement.

Recommendation: *The existing rails should be replaced or modified*.

3. **Use of space under pool deck**: The space under the pool deck is used for storage, an exercise room and for pool equipment. Storage needs to be accomplished in a manner that does not interfere with the sprinkler coverage.

Recommendation: *The exercise room needs to meet the requirements for an occupied space, which means adequate exits, lighting, heating and ventilation.*

4. **Stairs to balcony**: The stairs to the viewing balcony have a riser height of approximately 7 ½" and a tread width of approximately 10." The current code requires stairs to have a maximum riser height of 7" and a minimum tread width of 11."

Recommendation: *It is reasonable to retain these stairs as they probably met the Code when designed*.

5. **Attic access**: The access to the attic area above the pool is through a removable wood panel approximately 24" square. The code requires the attic access to be at least 20" x 30."

Recommendation: *The attic access should be replaced*.

Accessibility

The following is an analysis of the facility relative to the 2003 edition of the American National Standard, Accessible and Usable Buildings and Facilities (ICC/ANSI A117.1). The ANSI standard is the current standard incorporating the requirements of the Americans with Disabilities Act (ADA).

1. **Ramps at Entry**: The slope of the entry ramps, the ramp widths, and the dimensions of the landings meet the standard. However, the rails do not. The handrails are 32 inches above the ramps. They need to be between 34 and 38 inches above the ramps. There are two intermediate rails below the top rail leaving a space approximately 10 inches between rails. The bottom rail needs to be set to provide no more than 4 inches between the rail and the surface of the ramp. There are additional building code requirements related to the rails.

   Recommendation: *The rails should be replaced if the ramp system is retained.*

2. **Access to showers**: Both showers have a large gang shower area. In addition the Women's Locker has 2 private showers. The showers all have a curb surrounding the area. The dimensions of the private showers do not meet the requirements of the standard for making them accessible.

   Recommendation: *A portion of the curb around the gang showers needs to be removed to allow wheelchair access to the shower area. In addition a fold-down seat needs to be installed in each area. An alternate, and a preferred option, to this change is to construct a separate accessible shower in each locker room which would provide privacy for disabled users*.

3. **Signage**: Accessibility signage utilizing both words and Braille is not consistently installed throughout the facility as required by ANSI.

   Recommendation: *Signage indicating accessibility in both words and Braille needs to be installed*.

4. **Pipe insulation at lavatories**: The piping under the lavatories in the locker rooms is exposed to people in wheelchairs.

   Recommendation: *Install insulated pipe covering.*

Functional Analysis

The following observations address features of the building that in our opinion could be improved to increase the functional efficiency, esthetics or the environment of the facility.

1. **Building Entry**: The entry to the building is not inviting. The single door leading to a narrow corridor and a series of ramps does not present a positive approach to the facility. The current entry requires all users to traverse the long series of ramps. Even though this system makes the facility accessible it is cumbersome for both the able bodied and disabled users.

   Recommendation: *Improve the entry by constructing a common entry vestibule with the High School, removing the ramps and installing an elevator and a stair to the pool level creating a high entry area which could be enhanced by providing additional natural light to the space. This would help provide an arctic entry to the facility to prevent unwanted gusts of wind and make the entry more pleasant and efficient. It could also provide an opportunity for large artwork to enhance the entry.*

2. **Pool Lobby**: The pool lobby is small and provides limited opportunity for parents or spectators to view the activities in the pool.

   Recommendation: *Improve this area in conjunction with improvements to the entry*.

3. **Acoustics**: The Entry, the Pool Lobby the Pool Room all have hard surfaced walls and ceilings which reflect sound making the spaces very noisy.

   Recommendation: *Consideration should be given to applying sound absorbent materials on these surfaces to make them more pleasant to occupy*.

4. **Locker Room Ceilings**: The use of a suspended acoustical ceiling in the locker rooms helps absorb sound making them less noisy, but the suspended ceiling is not a durable or a secure ceiling for this type of space. Noise can transmit between locker rooms, moisture has damaged the panels and supporting grid system and access from the locker rooms into the ceiling space is possible.

   Recommendation: *Installing either a painted gypsum board ceiling or a moisture resistant suspended ceiling with secured panels should be considered*.

5. **Ventilation**: The ventilation system is undersized for a pool. This will be discussed in more detail in another section of the report. The ventilation equipment is located in an attic space above the Pool Lobby. Access to the ventilation equipment for service is difficult. Replacing the equipment or installing equipment that will increase the capacity of the ventilation system is not possible. If improvements to the ventilation system capacity are undertaken, a different space will need to be identified.

   Recommendation: *One option is to construct a larger penthouse in the current location*. *This will require removing and reconstructing the roof system and closing the pool for an extended period of time. Other options include constructing a new ventilation equipment room adjacent to the Pool or locating the equipment in a space under the pool deck.*

6. **Lighting**: The lighting, especially in the Pool Room is inappropriate for the environment. The quality of light from the strip fluorescent fixtures is harsh and the older style tubes are inefficient. In the Pool Room it causes glare on the water surface.

Recommendation: *Replace existing fixtures in Pool Room to provide more efficient and appropriate lighting to the area.*

Condition Survey

The following is an analysis of the architectural building systems.

1. **Site Work**: The existing site immediately surrounding the Pool is a dirt parking and circulation area. The area is scheduled to be improved as part of the High School remodeling project currently underway. The improvements will provide accessible parking, improved parking for the general public and landscaping.

2. **Exterior Walls**: According to the original drawings, the exterior wall system consists of 2x6 and 2x8 studs, plywood exterior sheathing, 2 layers of 2 inch thick foam insulation and metal siding. The interior of the walls are finished with 5/8 inch gypsum board and/or plywood covered with fiberglass panels. The stud cavities are insulated with R-19 batt insulation with a vapor retarder applied to the inside of the studs. The resulting R-value of the walls is approximately R-40. The insulation value is appropriate for current conditions. No evidence of rot or deterioration in the walls was observed. The siding is damaged in several places and the paint coating is weathered.

Recommendation: *The siding should either be replaced or refinished.*

3. **Exterior Doors and Windows**: The exterior doors and frames are painted steel. They are in poor condition. The hardware and weatherstipping should be inspected and replaced as necessary. *The doors and frames should be cleaned and painted or replaced*. Seals on several of the windows in the Pool Lobby have broken and have moisture between the panes of glass. The aluminum window frames appear to be in good condition.

Recommendation: *The glass units with the broken seals should be replaced*.

4. **Roofing**: The original metal roofing was replaced in 1999 with a membrane roof system. The membrane is a modified bitumen with a granular top surface. It is in good condition and should last another 15-20 years without significant work. There are several roof penetrations for toilet exhaust fans and attic vents. These penetrations are places that are more prone to leaks. They should be inspected regularly and repaired as needed. The roof over the covered walk between the High School and the Pool entry is the original metal roofing and has been damaged. The attic is insulated with 2 thicknesses of fiberglass batt insulation. The R-value according to the original design was to be R-60, it may not be that high not due to some of the insulation being compressed over time, but the attic is well insulated and does not need improvement.

Recommendation: *Replace roof over covered walk way between the High School and the Pool Entry. Inspect roofing annually and perform minor repairs.*

5. **Interior Construction**: The building appears to be well maintained, but due to its age is showing signs of deterioration due to "wear and tear." The sheet flooring in the locker rooms and on the pool deck is showing wear at high traffic areas and should be monitored. The metal toilet partitions and lockers in the locker rooms are rusted near the floor. The suspended acoustic ceiling system in the locker rooms is deteriorating. There is a joint between the pool deck and the aluminum pool. The joint varied in width from about ½" to 1" and the deck was also ½" to 1" higher than the pool. The pool was empty at the time of the survey. Reportedly the joint width closes somewhat when the pool is full and the tank expands. This joint has been filled with liquid sealant in the past.

Recommendation: *Replace sheet vinyl flooring in locker rooms and pool deck. Clean and paint toilet partitions in locker rooms. Clean and paint or replace lockers. Replace suspended acoustic ceiling in locker rooms. Install a stainless steel or aluminum joint cover across the joint between pool deck and aluminum tank with a rubber membrane to seal water from entering the joint from the pool.*

Natatorium Analysis

Immediate needs for the swimming pool include the following work:

1. Replace the aluminum main drain and inlet piping due to scaling. Scaling is caused by a build-up of calcium carbonate. The pool operator should calculate the Saturation Index, which is a modified version of the Langelier Index for the swimming pool industry. Keeping the index as close to zero as possible will reduce corrosion (of the heater, not piping after it is replaced with PVC) or scaling (of heater and piping). Estimated cost: $25,000.

2. Replace all valves in the piping with PVC butterfly valves. $2,000.

3. Install an automatic chemical controller to adjust the pH and chlorine. This may help in keeping the water balanced and non-scaling. Estimated cost: $8,000-$15,000 depending on model.

Renovation needs in 5 to 10 years:

1. Replace filter. Estimated cost: $15,000.

2. Replace pump. $5,000 (motor on hand, but entire pump will need replacement.)

3. Balance tank or “bustle” on side of pool in filter room will corrode and leak eventually. The openings from the gutter should be welded shut and new piping installed from the gutter and main drain to a stainless steel or fiberglass surge tank with a float valve and air vent (above water level). Estimated cost: $10,000.

4. Gutter will eventually corrode. It can be opened up and coated with an industrial epoxy coating to protect it. Estimated cost $20,000. Ultimately when the gutter corrodes, it will be time to replace the pool at an estimated cost of $600,000 to $750,000, depending on the materials used in the pool construction.

Structural Analysis

Background

The structural system of the Haines Borough Pool Building consists of a timber pile foundation supporting a perimeter concrete grade beam and the pool. The perimeter concrete grade beam supports timber bearing walls on the north and east sides of the building. The west wall of the pool building is the east wall of the adjacent high school gym. There is a slab-on grade at the ground level floor, under the pool and pool deck.

The second floor of the pool building serves as the pool deck and is framed with pressure preservative treated timber joists supporting a layer of treated plywood which in turn supports a layer of marine grade plywood. At the north and east sides of the pool the joists span from the north and east timber perimeter walls and a line of glu lam beams adjacent to the pool. West of the pool the deck is supported on the gymnasium wall, with a ledger bolted to the precast concrete panels, and a line of glu lam beams adjacent to the pool. South of the pool the deck is supported by the gym locker room per-cast concrete north wall and a line of glu lams adjacent to the pool.

Second level pool locker, office and storage rooms are supported on the roof and walls of the high school locker rooms. The high school locker room perimeter concrete pre-cast walls serve as bearing and shear walls supporting a steel pan deck covered with concrete which is the floor of the locker rooms, offices and storage rooms.

South of the pool there is a viewing mezzanine which is supported by timber stud walls bearing on the gym locker room roof. The viewing mezzanine floor is framed with 2x8 joists supporting a plywood deck.

The pool is supported separately from the rest of the building by timber piles with concrete caps supporting steel girders which in-turn support heavy timber stringers which support the aluminum pool tank, gutters and perimeter deck drain. Aluminum pipe diagonal braces provide lateral support for the pool walls and deliver lateral loads from seismic forces to the concrete pile caps.

A fan room is above the second level hallway. The fan room floor joists are 2x joists supported by the hallway walls, which in-turn are supported by the gym locker room roof and walls.

Roof framing consists of pre-engineered timber trusses spanning from the north wall of the pool building to a line of steel wide-flange beams above the north wall of the gym locker rooms. A second set of trusses span from the line of steel beams to a line of glu lams 25 feet south of the north wall of the gym locker rooms (approximately at the center of the gym locker rooms). A third set of trusses spans from the line of glu lams to the perimeter stud wall at the south building wall. The steel and glu lam beams are supported tube steel posts.

The lateral load resisting system is not detailed on the plans but appears to consist of plywood diaphragms at the roof, viewing mezzanine and pool deck supported by plywood shear walls at the north and east perimeter walls and the pre-cast concrete walls at the high school gym and high school gym locker rooms. The concrete covered steel pan deck at the gym locker rooms serves as a rigid floor diaphragm for the offices, pool locker rooms and storage rooms.

East of the locker rooms is the main building entry which has a 5-leg ramp from the ground level entry door to the pool-deck-level lobby. The ramp is framed with 2x joists and plywood deck supported by timber beams and posts or stud bearing walls. The floor at the ground level appears to be a vapor barrier over rigid insulation. The foundation consists of isolated footings under posts.

A low roof along the south wall over the exterior sidewalk is framed with 2x joists supporting a plywood deck. The joists are supported by the south perimeter wall and a line of glu lam beams above the outside edge of the exterior sidewalk. The glu lam beams are supported by round, turned heavy timber posts.

There is an exterior exit landing at the second level at the north end of the east wall. This landing is supported by pressure treated timber beams cantilevered from the interior deck to the exterior. The cantilevered beams support stair stringers and posts for a roof covering the landing. An intermediate landing between the ground level and second level floor supported by diagonal braces tied to the east perimeter wall of the building.

Available plans used in this assessment include the 1982 as-builts as well as pool tank, roof truss, steel girder and handrail shop fabrication drawings.

Inspection and Observations

PND performed a limited inspection of the Haines Borough Swimming Pool. Our inspection was limited to observations, measurements, limited probing and limited destruction of finishes at the 2nd Floor ceiling to determine the condition of framing at the mechanical mezzanine floor.

Observations include:

O1) Roof framing appears in good condition. The attic space was accessed above the viewing mezzanine and the attic space above the pool from the access hatch to the ridge was inspected. No mold or fungus was observed. Individual vents along the ridge appear to be functional. Eave vents at the north wall appear to be functional as daylight could be seen along the north wall from the attic space near the ridge.

There are water marks at the interior beams above the locker and storage rooms. Maintenance staff indicate that the original roofing leaked and was replaced with a modified bitumastic adhered roof. The beams appear sound at the watermarks. Maintenance staff report that there are no active roof leaks.

O2) The viewing mezzanine framing could not be inspected but appears to be functioning well with no signs of distress or excessive deflection.

O3) The fan room floor joists have experienced water damage and are covered with mold. The joists appear sound with no sign of distress or excessive deflection.

O4) Second floor framing at the pool deck is in good condition. The only discrepancy is that many joists are not blocked at their bearing points.

O5) Exterior stud walls appear in good condition, are generally plumb and are with no sign of excessive deflection or deterioration. Some water stains exist on the interior surfaces below the second level deck but these do not appear to be active and there is no sign of fungus or mold growth.

O6) Pool support framing appears to be acceptable. Several 6x stringers at the west end of the pool are checked near the mid depth of the stringers. The stringers do not deflect excessively and appear to be in otherwise good condition.

O7) The foundation appears to be functioning well. We did not observe any signs of significant settlement. The slab at the ground level is not even with the top of some interior pile caps but it appears that this was the result of the original construction or some long-ago settlement and not a current problem.

O8) The exterior stairs and landings appear to be in good condition. However, the roof over the exit landing at the east wall of the building is not well tied to the roof. One roof rafter is broken with a portion missing.

O9) There are water marks on the underside of the low roof at the south edge of the building, near the west end of the low roof. Metal roofing above the plywood is damaged.

Photographs of deficiencies are included to sheets at the end of this report.

Conclusions and Recommendations

Based upon the observations and findings PND makes the following recommendations:

R1) Remove the ceiling below fan room joists and apply biocide to the joists.

R2) Install blocking between the 2nd level deck joists at their bearing points.

R3) Laterally tie the roof over the exit landing on the east side of the building to the building stud walls to adequately resist seismic loads. Replace the broken roof rafter or sister an new rafter to the existing rafter.

R4) Investigate the soundness of the roof deck at the low roof south of the building, when replacing damaged roofing.

Photographs

Photo S1 Water marks under second level deck at exterior wall

Photo S2 No blocking between 2nd level deck joists at interior beam.

Photo S3 Water stains on roof glu lam beam

Photo S4 Roof over exit landing east side of building

Photo S5 Water marks at underside of low roof along south wall, west end.

Mechanical Analysis

Existing Conditions and Observations

Mechanical equipment and systems were observed on June 20th, 2007 and non-destructive means were utilized for the investigation. Mechanical systems were off due to the pool building being closed to the public for an extended period. Mechanical equipment and systems serving the pool were installed during the original 1982 construction. Domestic cold and hot water, heating, and sprinkler piping systems were extended from the adjacent high school respective systems with piping generally routed through an underground utilidor from the original school boiler room. Pool piping and chemical systems are not covered by this section, see Pool Consultant's report.

Executive Summary of Mechanical Systems

The mechanical systems have reached the end of their service life. Some maintenance work is required to bring the ventilation and controls systems back to operating mode; however this will only extend their life a few years. All fans need major cleaning effort and regular maintenance immediately. See Letter Report of January 2007 for additional scope of work. Piping systems will continue to experience leaks and require minor repairs. Increasing maintenance will be required on all systems. Expect major replacement of most mechanical systems in 5 years.

Ventilation and Exhaust Air Systems

Ventilation fans are located in a ceiling area above the Lobby area. The fan equipment and controls are accessible from a ladder in a storage room off the Lobby and then by crawling, roughly 15 feet, along wood planking above the lobby ceiling. Outside intake is shared by the ventilation fans with the intake hood located high on the south lobby wall. Exhausted ventilation air exits the building through a roof cap above the fan room. Roof exhaust fans exhaust air from the toilet and locker rooms.
Fan units VU-1A and EF-1A (each 6000 cfm design) supply ventilation and heating air to the swimming pool area. A mixing damper section allows for humidity control by modulating the exhaust air and return air dampers to allow humid pool air to recirculate back to enter the inlet of VU-1A and recirculate back into the pool area.
Fan Unit VU-2A (1075 cfm design) is a single fan system and supplies tempered outside air to the locker room and office areas. VU-2A heating coil bottom row has been disconnected from the heating water, probably due to a past coil freezing problem. VU-2A does not have typical freeze protection for the heating coil such as face & bypass dampers at the heating coil

The fans are PACE manufactured internally isolated cabinet fans, good quality fans at the time. Both VU's have a heating coil and filters. Coils were dirty and need cleaning. Interior lining of the cabinet fans is tearing away from the wall in many areas. The interior of the fans are dirty and all three fan scroll wheels are very dirty. Both VU belts are loose and need to be tightened. The exterior insulation has come off the ductwork and there is evidence of condensation dripping onto the floor. A flexible membrane drip pan has been installed under the ductwork but is not effective. The interior dampers are old, caked with dirt and stiff in operation, and do not close totally so bypass leakage is prevalent. See Pictures 1-5 at end of report.

A cross flow heat exchanger is installed between the outside air and exhaust air streams of VU-1A and EF-1A. The heat exchanger transfers heat from the exhaust air to the incoming outside air. There are no access doors to the heat exchanger or duct thermometers so it could not be assessed in condition. However since there is no access for cleaning the interior cross-flow heat exchanging core has probably never been cleaned.

Interior of the ductwork was dirty. Ventilation and exhaust ductwork joints are not sealed. Exhaust plenum on inlet to EF-1A is leaking severely limiting the ability to pull moist exhaust air from the pool area.
See the January 2007 Ventilation system letter report for more information regarding the ventilation system existing condition and scope of work recommended.
All three fan systems are in poor to fair condition with approximately 5 years left of reasonable service life.

Roof exhaust fan EF-2 exhausts air from the pool toilet room and is in fair condition. Roof exhaust fan EF-3 exhausts from the first floor school locker rooms and is in poor condition. The fans are located on the roof above the pool; both are dirty with fasteners missing. EF-3 fan top is secured with rope and wire. EF-3 was apparently relocated from the previous roof when the pool was built as it had a date code of 1972.
Roof exhaust fans are at the end of their service life; major replacement could be expected at any time.

Heating

Heating water is obtained from the high school generation system. Heating mains are routed through the utilidor to the pool area where two pumps, located in the pool equipment area, circulate the heating water. Pool area is heated by VU-1A unit and Pool offices and lockers rooms are heated by VU-2A unit. Other areas are heated by unit heaters.

Pump P-1A circulates heating water to the fan unit heating coils. P-1A has had the coupling section replaced in the past. Pump P-3A circulates heating water to the unit heaters that supply heating to storage rooms and mechanical spaces. Pump P-3A has had the motor replaced in the past. See Picture 7. Pump P-4A circulates heating water to the pool heater. P-4A pump has been replaced with a Grundfos type. See picture 8.

Condition of the piping is fair with several patches and repairs evident. Most of the piping is insulated, with exposed piping un-insulated at previous repairs. Throughout the piping system there was evidence of several past pipe leak problems with patches and repairs. ***Condition of piping and heating units are fair with approximately 5-10 years of service life left with increasing maintenance issues.***

Controls

Pneumatic-electric controls operate the ventilation system and electric controls operate the roof top exhaust fans and the various unit heaters. The pneumatic controls are essentially non-functional and the main controllers need to be replaced. Electric controls are in fair to poor condition. See Picture 6. See the January 2007 letter report for more information regarding the ventilation/controls system and scope of work recommended. A pneumatic compressor, located in high School old Boiler Room, supplies the pneumatic air for the pool controls. ***Controls systems are in poor condition and need major refurbishment for correct operation of systems.***

Domestic Water

Domestic water system is an extension of the school system with hot and cold water mains routed through the first floor Storage room above the utilidor entrance adjacent to the gym corridor. Domestic water piping is copper with soldered joints. Piping was reported to have experienced increasing leaks including pinhole leaks. A tempering valve is located there that mixes the supplied hot water to all plumbing fixtures and the shower valves in the pool locker rooms and the gym locker rooms. The mixing valve is old and shows evidence of leaking at fittings. See Picture 9. A hot water recirculating pump P-2A is located at the ceiling to circulate domestic hot water through the locker room areas. P-2A is a small unitized pump and has recently been replaced. Sanitary waste and vent piping is generally cast-iron but various repairs were seen in the system with some plastic piping used. Plumbing fixtures are in fair condition but none meet ADA requirements for disabled type fixtures. See pictures 10-12. ***Condition of fixtures and piping is fair with approximately 5-10 years of service life left with increasing maintenance issues.***

Sprinkler

The sprinkler system is a wet and dry pipe system with the sprinkler headers located in the high school original boiler room. The under pool area and entry ramp area are served by the dry pipe system with the respective alarm valve located at the sprinkler header. The pool, office, and locker room areas are served by a wet system extended off the adjacent school gym wet pipe system. Sprinkler heads exposed to pool area are corroded.

No easy way to drain the condensate from the dry system was evident; several drain valves are located in the system but no drum drip drain valve assemblies were installed. No recent problems were reported with the sprinkler system. Sprinkler heads are old with some corrosion evident. ***Condition of piping is fair with approximately 10 years of service life left.***

Ventilation And Exhaust Air Systems

Several deficiencies of the ventilation need to be completed immediately in order to operate the ventilation system, supply the code required ventilation air for an occupied building, and expect the equipment to last for the next few years. Within 5-10 years the ventilation system will need to be replaced entirely at which time the ventilation equipment should be increased in capacity to meet modern standards for pools and installed in a larger more accessible location to facilitate regular maintenance.

0-5 YEARS

1. Complete Scope of Work outlined in Jan. 2007 Report of refurbishing the ductwork in the Fan Area by sealing ducts, making minor repairs, installing new insulation on the ductwork, installing access doors around theehat exchanger and cleaning it, and refurbishing the unit pneumatic controls by replacing the main pneumatic controller that sequences the mixing dampers and humidity control; Currently Schmolck Mechanical is apparently in line to do the work.
Estimate of Construction Cost: $20,000.

2. Clean all three ventilation units (VU-1A, EF-1A, and VU-2A) of all dirt, dust and debris on the interior including fan wheels, fan and motor housings, interior insulation & panel coverings, heating coils, and dampers. Repair several tears in interior insulation of all three fans by filling in the insulation voids and securing it with metal foil tape and/or fasteners. Seal all ends of insulation with metal foil tape or mastic suitable for application. Lubricate all bearings and damper pivot points. Work could possibly be done by maintenance.
Estimate of Construction Cost: $9,000.

3. Clean and Service Roof Top Exhaust Fans (EF-2, EF-3) of all dirt, dust and debris on the interior including fan wheels, fan and motor housings, and interior insulation & panel coverings. Work could possibly be done by maintenance.
Estimate of Construction Cost: $9,000.

5-25 Years

Replace the Ventilation and Exhaust air systems; reuse some of the ductwork but a newer fans will be much larger and more ductwork is needed for increased air exchange to meet current code requirements. The new system would require a separate Fan Room with reasonable access for maintenance and servicing. Utilize heat recovery for major savings in energy. Cost estimate provided below assume that the new ventilation units can be located interior to existing building (i.e. lower pool equipment area, or storage rooms) with new ductwork and outlets as required.
Estimate Construction Cost: $180,000.

Heating Water
0-5 YEARS
Monitor circulating pumps and piping for failure and repair as needed. Monitor flow meter being installed in the school project to help trend heating costs.

5-25 Years
Replace majority of piping and install new heating piping to new ventilation units. Replace pumps.
Estimate of Construction Cost: $30,000.

Controls
0-5 YEARS
Complete January 2007 Scope of Work which includes the main humidity controller for VU1A system. Verify that all controls and equipment such as damper and valve actuators are functional. Have a controls technician check and calibrate all pneumatic and electric controls; perform minor repairs and provide a deficiency list.
Estimate Construction Cost for Controls Tech Visit and Minor Repairs: $8,000.

5-25 Years
Replace the entire control system with a modern direct digital control system including computer host station for monitoring, trending and manipulation of sequences and schedules. Connect new ventilation equipment into the DDC system. Route new controls to all heating units and install new thermostats.
Estimate Construction Cost: $75,000.

Domestic Water
0-5 YEARS
Continue to make minor repairs to system.

5-25 Years
Replace the domestic water piping system; cold water, hot water, hot water recirculating. Replace plumbing fixtures with water saving type and with ADA compatible fixtures where required. Cut and patch as required.
Estimate Construction Cost: $35,000.

Sprinkler
0-5 YEARS
Perform annual inspections and sprinkler system certifications. Monitor the condensate drainage required by inspecting/testing the drain valves several times during the year.

5-25 Years
Inspect and replace sections of piping where corrosion is evident. Replace all sprinkler heads with heads in pool area waxed type to prohibit corrosion. Work could be done when a major renovation to pool building is done.
Estimate Construction Cost: $30,000.

PICTURES

Figure 1; EF-1A Interior, Note Tears in Insulation, Dirty Fan Scroll.

Figure 2; VU-2A Interior, VU-1A similar

Figure 3; Fan Room Area, Note Poor Access Limiting Regular Monitoring and Maintenance

Figure 4; EF-3A on Roof, Fan is over 35 years old.

Figure 5; Outside Air Intake Hood (low), Main Exhaust Cap (high). Note damaged intake from snow.

Figure 6; Pneumatic-electric Controls for Humidity Control, Non-functioning

Figure 7; Circulating Pumps P-1A and P-3A. Note replaced parts.

Figure 8; Pool Heat Exchanger, Pump P-4A, Heating Automatic Valve for Pool Heat Exchanger

Figure 9 Tempering Valve, Piping Leaks

Figure 10; Plumbing Fixtures A, Men's Locker Room

Figure 11; Plumbing Fixtures B, Men's Locker Room

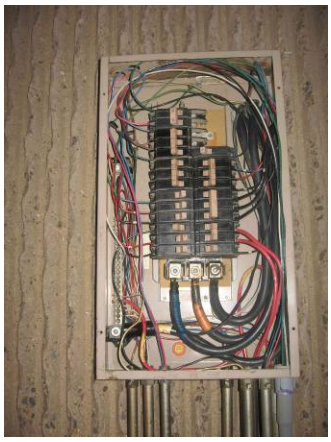
Figure 12; Plumbing Fixtures C, Pool Area Drinking Fountain

Electrical Systems Description

Power

The pool building is fed power from the existing high school. The current renovation project at the high school includes refeeding the pool building from the new main distribution panel in the High School with two 150 amp, three phase circuit breakers. Each of these feeds one panel in the pool building with existing conduit and feeder conductors. The feeders are routed through current transformers in the pool first floor storage room allowing the feeders to be metered. The two panels; A1 and A2 provide power for the pool building. The pool is used as a separate facility from the high school. It should have main disconnects for each of it's panels.

Meter with CTs



Panel A2

Panel A1

Panel A1 has 42 circuits and panel A2 has 30 circuits; both are rated at 200 amps.. Each panel has six spaces for additional circuit breakers. The pool ventilation and circulation pumps were not running during the inspection, so an accurate load measurement was not possible. However, based upon the size of the feeder conductors and the panel ratings, they are adequate for the building load with growth for future. However, due to their age, both the panels and their feeders have exceeded their service life and should be replaced. Panel A2 should be replaced with a 42 circuit panel to increase space for future loads.

The wiring is in conduit. The receptacles and switches are all original. The starters are also original. This equipment and wiring has also reached it's service life and is in need of replacement. The overload relays were checked in the starter for a circulation pump in the basement. They are sized for a 3.5 amp load, when the motor is rated at 2.4 amps. These should be changed and the remaining overload relays in the building should checked. The starters and disconnects in the mechanical room above the second floor are located behind equipment. It is very difficult to reach this equipment and the electrician will have to lay on top of the ventilation equipment to do so. This equipment should be relocated where it is accessible.

Wrong size OL relays

Starters in mech room

Starter behind piping

Several unit heaters in the building do not have their own disconnects as required by code. The pool is grounded with a no. 10 bare conductor that is bonded to the structure every 15 to 20 feet. This ground should be checked for current when the pool is filled with water and it's equipment is operating.

Unit Heater w/ no disconnect

Pool grounding

The branch circuit wiring, receptacles, and switches have reached their service life and should be replaced.

Lighting

The pool area has strip fluorescent luminaires with individual covers over each lamp. This is very poor lighting for a pool area as it creates a lot of glare on the water as well as overall glare.

The lighting in the locker rooms and offices is provided with surface fluorescent luminaries with acrylic lenses. The lenses are held on with screws and plastic fittings as their original fasteners have failed in many of the fixtures. Lenses are yellowing.

The lighting in the pool mechanical areas is provided by surface fluorescent luminaires as well. Lighting levels are low but adequate throughout the building.

Pool Area strip fluorescents

Locker room and office lighting

All of the lighting is original with magnetic ballasts. The ballasts have started to fail. With luminaires this old, the ballasts need to be replaced. The cost to relamp and ballast luminaries with energy efficient ballasts and lamps is very close to the cost of new luminaires that have less glare. This would also solve the lens attachment problem with the existing luminaires. The pool lighting should be replaced based upon the wrong type of lighting in that space alone.

The exterior lighting is barely adequate. Its lenses are yellowing and the luminaries have exceeded their service life as well. The luminaires also create quite a bit of glare. They should be replaced with luminaires that provide better lighting with lower glare.

Exterior Lighting

The building has some exit signs and some emergency lighting. There is not enough emergency lighting as required by code. Many of the emergency lighting units do not work. Some of the exit signs are not working on normal power. The exit signs are on a main battery backup system that barely lights the signs and will not last the required 90 minutes. All of the emergency lighting units should be replaced with additional added to meet code. All of the exit signs should be replaced with units that have built in battery backup or tied into the new emergency generator in the high school.

Exit Sign w/ 1 lamp out

Backup Power Unit

Emergency Lighting Unit

Signal Systems:

Fire Alarm Bell

Intercom Station

Intercom Speaker & Clock

Fire Alarm

The building has pull stations at exits and several bells. There are no strobes as required in the public spaces including the locker rooms. There are not enough bells/horns either to meet code. The fire alarm devices were connected to the fire alarm panel in the high school and will be reconnected to the new panel in the school.

The fire alarm pull stations should be replaced with addressable devices and connected to the new addressable fire alarm panel. The bells should be replaced with horn strobes with additional horn strobes added as required to meet code. Duct detectors should be added with ventilation shut down. If advanced warning is desired before sprinklers are activated, smoke detectors should be added.

Telephone System

At one time the telephone system may have been tied into the school. It isn't at this time.

Intercom & Clock System

The intercom and clock systems were tied into the school at one time. They no longer are and thus are not operational.

Video System

The video camera in the entry is no longer connected to a monitor. It is for show only.

Code Deficiencies and Costs

The fire alarm system needs horn strobes, additional pull stations, and duct detectors. ***Budget $20,000 to add these devices and connect them to the school fire alarm panel.***

New emergency lighting units are required throughout the building. ***Budget $10,000 for this work.***

New emergency exit signs are required throughout the building***. Budget $3,500 for this work.***

The two unit heaters need disconnects. ***Budget $750 for this work***.

The overload relay heaters need to be replaced in the first floor circ pump. The others should be checked and replaced if the wrong size. ***Budget $750 for this work.***

Recommended Renovations

0-5 years

The pool lighting should be replaced with direct/indirect luminaires that will provide better lighting with lower glare. ***Budget $50,000 to perform this work***.

The pool grounding should be checked with the pool operating. Additional grounding should be added as needed. Stray currents should be traced to the source and eliminated. ***Budget $2,500 for this work.***

5—15 years

The building's wiring and branch panels have exceeded their service life and should be replaced. ***Budget $250,000 to perform this work***.

The building's lighting and associated wiring have exceeded their service life and should be replaced. ***Budget $150,000 to perform this work***. ***Add another $50,000 if the pool lighting is not replaced as shown above.***

The building's clock, intercom, telephone, and computer network systems should be replaced with new or tied into the school's systems***. Budget $75,000 for this work.***

Haines Swimming Pool
Estimate of Repair and Replacement Costs

Item	Immediate Cost	Intermediate Cost	Long Term Cost
Architectual Items			
Building Code Items:			
Replace handrails/guardrails at Ramps	$25,000		
Replace handrails at Balcony stairs	$10,000		
Replace handrails/guardrails at Balcony	$1,000		
Clean storage area under the pool deck	NA		
Replace Attic Access	$1,000		
Accessibility Items:			
Replace handrails/guardrails at Ramps	in above		
Replace handrails at Balcony stairs	in above		
Wheelchair access to Showers	$10,000		
Install accessibility signage	$500		
Pipe insulation at Lavatories	$500		
Functional Improvement Items:			
Building Entry and Elevator			$500,000
Pool Lobby Improvements			$25,000
Acouustic Improvements to Pool Room			$50,000
Acoustic Improvements to Lobby and Entry			$10,000
Locker Room Ceiling Improvements		$25,000	
Ventilation Improvements		in below	
Lighting Improvements		in below	
Building Condition Items:			
Refinish and repair siding		$25,000	
Replace siding			$75,000
Replace weatherstripping and door hardware	$10,000		
Replace Exterior Doors		$8,000	
Replace Insulated Glass units	$2,500		
Replace roofing on south low roof	$5,000		
Replace sheet flooring		$75,000	
Refinish Toilet Partitions	$5,000		
Refinish Lockers	$5,000		
Replace Locker Room Ceilings		in above	
Install cover over pool/deck joint	$10,000		
Pool Systems Items:			
Replace aluminum drain and inlet piping	$25,000		
Replace valves with PVC valves	$2,000		
Install automatic chemical controller	$15,000		
Replace filter		$15,000	
Replace pump		$5,000	
Insall surge tank		$10,000	
Coat gutters with epoxy		$20,000	
Replace pool tank			$750,000

Item		Immediate Cost	Intermediate Cost	Long Term Cost
Structual Items:				
Apply biocide on fan room floor joists		$10,000		
Install blocking at pool deck joists		$5,000		
Repair/reinforce east landing roof		$5,000		
Investigate south roof deck				
Mechanical Items				
Ventilation Systems:				
Refurbish duct work (currently underway)		$20,000		
Clean ventilation units		$9,000		
Clean and service roof top exhaust fans		$9,000		
Replace Ventilation/Exhaust systems				$180,000
Heating Water System:				
Monitor circulating pumps		$5,000		
Replace heating piping and pumps				$30,000
Control Systems:				
Calibrate and repair contols		$8,000		
Replace control system				$75,000
Domestic Water System:				
Minor repairs		$5,000		
Replace water piping				$35,000
Sprinkler System:				
Perform annual maintenance		$5,000		
Replace piping as required				$30,000
Electrical Items				
Code Deficiencies:				
Additions to Fire Alarm system		$20,000		
Add emergency lighting		$10,000		
Install disconnects for unit heaters		$750		
Replace overload relays for heaters		$750		
Recommendation Renovations:				
Replace pool lighting		$50,000		
Check pool grounding		$2,500		
Replace wiring and branch panels				$250,000
Replace all lighting				$150,000
Replace clock/intercom/phone/network systems				$75,000
Subtotal		$292,500	$183,000	$2,235,000
Contractor's Overhead and Profit	25%	$73,125	$45,750	$558,750
Escalation	6% per year		$68,625	$1,676,250
Project Costs and Contingency	40%	$146,250	$118,950	$1,788,000
Total (Rounded)		**$510,000**	**$420,000**	**$6,260,000**

JENSEN YORBA LOTT, INC.
522 W. 10th St.
JUNEAU, ALASKA 99801
(907) 586-1070
FAX (907) 586-3959

JOB HAINES POOL

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE 6-21-07

CHECKED BY _____ DATE _____

SCALE DECK/POOL JOINT