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EXECUTIVE SUMMARY

For many years, the Pratt Museum in Homer, Alaska has delighted visitors with a glimpse into the nature, culture and history of the Kachemak Bay region. Seeds for the Pratt were first planted in 1968 when Sam and Vega Pratt founded the Homer Society of Natural History. The Pratt Museum has since grown from a small collection into a well-established, nationally respected institution.

The current Museum building was constructed in 1968, and has been expanded through multiple additions. Once again the existing Museum structure is filled beyond capacity. Compounding the shortage of space, portions of the Museum are over 50 years old. Remarkable care has been taken to preserve the building's character and maintain its aging systems. Yet many components are simply worn out or have become inefficient due to their long service life or advancements in technology.

At this stage in their growth, the Pratt Museum commissioned this Condition Survey to evaluate their current facility and assess the facility's ability to support the Museum's mission. The purpose of this survey is to assess the existing building condition in terms of its continued life, efficiency, code compliance, general safety and the safety of the collection preserved within the building. This task has been assigned to a team of three practitioners who visited the site on February 26, 2007 and spent the day carefully recording and investigating the building(s) and the site. From that visit, findings were compiled, codes and standards were researched and ultimately this condition survey was completed.

The survey revealed that the Pratt Museum building is in good condition, but is also in need of some important and expensive upgrade work to prevent damage to the collections and assure the building's present excellent condition is preserved.

Deficiencies requiring attention can be found throughout the building. Examples include the removal and relocation of a 20 year old single wall buried fuel oil tank that lies within the natural stream bed of Woodard Creek. Another site work issue is the Museum's desire to reconstruct the Woodard Creek stream bed and release the creek from its current culvert passage through the site. Architecturally the building suffers from a deteriorating building envelope including the seriously leaking roof. A lack of space is limiting the Museum's ability to function efficiently or expand services. Structurally the building lacks a consistent shear diaphragm in the roof to resist lateral loads. The mechanical and electrical major components are in reasonably good condition but do suffer from antiquated fire detection and suppression system, intrusion detection system, ineffective humidity control and a myriad of code compliance issues.

A complete list of deficiencies can be found in the Recommendations section at the end of the report. The list includes building code driven improvements, life safety improvements, upgrades that will make most sense in the context of a larger building project, and several building components that need replacement soon. If the recommended enhancements are followed, the building should serve the Museum for another 50 years.

1.0 INTRODUCTION

Scope of Work

This condition survey is a comprehensive report describing the existing Pratt Museum site and buildings. The report identifies current observable deficiencies and identifies building components that are likely to be near the end of their useful life. The findings contained within this document are fundamental core issues that will determine the future home for the Pratt Museum.

The document provides the Pratt Museum with the ground work necessary to assess the value of the existing buildings from a functional, durability and life expectancy standpoint. It also provides the Museum a prioritized list of observed deficiencies. With this list, repair or corrective measures can be further assessed and implemented in a logical sequence. The report provides a basis for budgeting building repairs and forecasting future expenditures.

The condition survey addresses the suitability of the current building for the existing program and how the program may benefit from architectural modifications. This subjective description may lead to further evaluation of potential Museum expansion options.

A concise summary of the building code is provided to assess the building's general compliance with the current (2003) International Building Code, local zoning requirements, and the American Disability Act (ADA).

A secondary goal of the condition survey is to assess how additional space could be captured, whether by means of additions or new construction. The evaluation included in the report will help the Museum Board determine if the existing structure is sound enough to warrant an addition or if it is better to abandon the existing building and construct an entirely new facility.

The investigation performed as a part of the condition survey did not include asbestos or other hazardous material investigation, geotechnical subsurface investigation or any destructive investigation that would leave the building in a damaged condition as the result of the survey. The presence of hazardous materials could significantly influence the cost of some of the identified deficiencies. To avoid health and change order risk a hazardous material survey should be conducted for the building as part of the planning exercise.

Prior to the beginning of the design process, a geotechnical investigation/report should be conducted to confirm the consistency of the site's soil. This investigation will help with the siting evaluation for new construction by exposing poor soils, high water tables or other site obstructions of one specific site over another. Later the geotechnical work will reduce the risk of unexpected cost over run and allow the foundation to be designed specifically for the soils underlying the construction.

Site Visit

On February 26, 2007 a site visit was conducted at the Pratt Museum to assess the building's current physical condition and the appropriateness of the building's size relative to its mission. The survey was conducted by three consultants who evaluated the building site, structure, architecture, and mechanical and electrical systems. The on-site investigation was followed by in-office research, evaluation and analysis.

The Pratt Museum is located in the central business district of Homer, Alaska on land donated by Sam and Vega Pratt. The original building was constructed in 1968 with subsequent additions in 1977, 1986 and 1991. The total gross area of the existing two-story wood frame Museum building is approximately 11,710 square feet. This figure includes the 930-square-foot front porch. Four other structures occupy the site. The campus includes a historic wood cabin portraying early homesteading life. A small 240-square-foot wood-frame plywood sided building serves as an unheated storage building. A 1,120-square-foot wood frame workshop is heated and serves as a shop, studio, collection storage, office and archives. The workshop's crawl space has been improved with a plywood floor deck and is currently used as collection storage for durable objects. The crawl space ceiling is approximately 5 feet above the plywood deck floor thus considered "non habitable" by the building code. Lastly a small, older, single-story occupied residence is on an adjacent lot that was acquired by the Museum. The house is rented and provides income for the Museum.

The initial donated lot has been expanded to approximately 9.3 acres which are intensively used as an outdoor gallery, interpretive trail and botanical garden. The Museum benefits from a south facing site which offers good solar access and views across the bay to the Kenai Mountains. A small stream, Woodard Creek, bisects the site and has been contained in a large steel culvert that runs under the west parking lot. Containing the stream in this manner is currently a point of contention. The creek's flow fluctuates widely and the culvert keeps the stream from flooding the building's basement; however, the Pratt Museum prides itself on environmental awareness, and containing the stream in its current manner is contrary to this mission.

Vehicle access and circulation surround the main building but do not provide adequate space for large tour vehicles (buses and motor homes). There are currently 47 parking stalls which include six 11' x 36' RV stalls, 2 accessible stalls and 39 undesignated parking stalls. Vehicle access to the site is from Bartlett Street. The extension of Spruceview Avenue is underway with construction completion expected by fall 2007. The Spruceview Avenue right-of-way aligns with the Pratt's northern property boundary. The potential exists for access to Museum property from Spruceview Avenue if Lot

17514122 is acquired by the Museum. This acquisition would help internal traffic flow and possibly break up asphalt surfacing surrounding the Museum.

The Museum's collection contains 18,200 objects, excluding the archives collection. The collection features objects from the region relative to the arts, sciences, and humanities. The collection also includes oral and film materials; there is no nitrate film in the collection. The collection is primarily held in tight fitting metal Museum cabinets and is protected from fire by a commercial style (NFPA 13) sprinkler system.

The Museum galleries provide a range of settings and experiences primarily focusing on Kachemak Bay. The galleries are located on two primary levels. A third intermediate level provides a setting for the aquaria that is coupled with the 610-square-foot marine gallery. The aquaria and marine gallery are difficult to service and currently act as stand-alone exhibits on this third level.

The building's main floor is approximately 6 feet above grade at the building entry and houses two galleries: the 1,010-square-foot special exhibits gallery and the 1,200-square-foot main gallery. The main gallery exhibits were constructed in 2004 and provide the visitor a high quality integrated study of the people and animals that inhabit the Kachemak Bay region. The exhibits feature culture, art, tools and interpretations of how the artifacts are connected with the region's inhabitants. The special exhibits gallery is immediately accessed from the building entry and displays rotating and traveling exhibits in the high ceiling open space. This gallery was constructed in 1986 as part of a large addition.

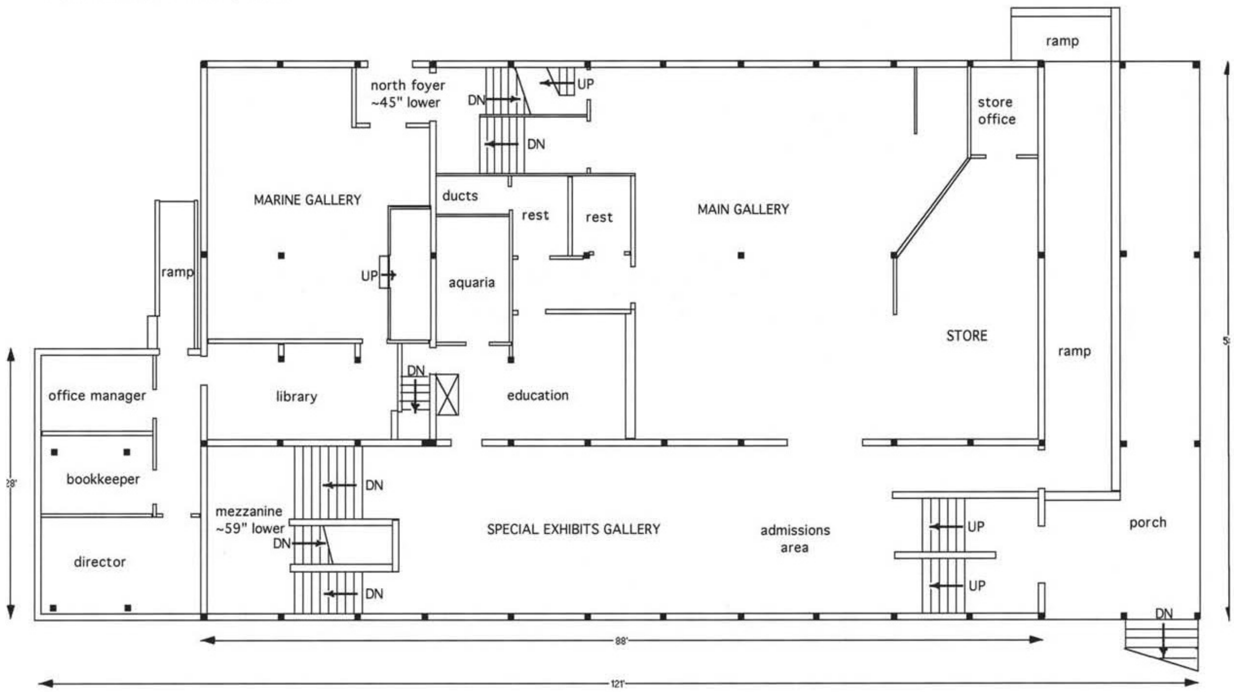
A well-stocked 360-square-foot Museum store is on the main gallery level situated just off the public entry between the special exhibits gallery and the main gallery. This building level also includes the aquaria mechanical room, two unisex public toilet rooms, mechanical chases and shared office space for the Development Director and Education Assistant/Exhibits Coordinator. Former attic space above the north foyer has been fashioned into a small office space for the Exhibits Director and Cultural Liaison.

In addition to the marine gallery and aquaria, the intermediate level contains a library and three administrative offices for the office manager, bookkeeper and director. The primary staff entry is also on the intermediate level.

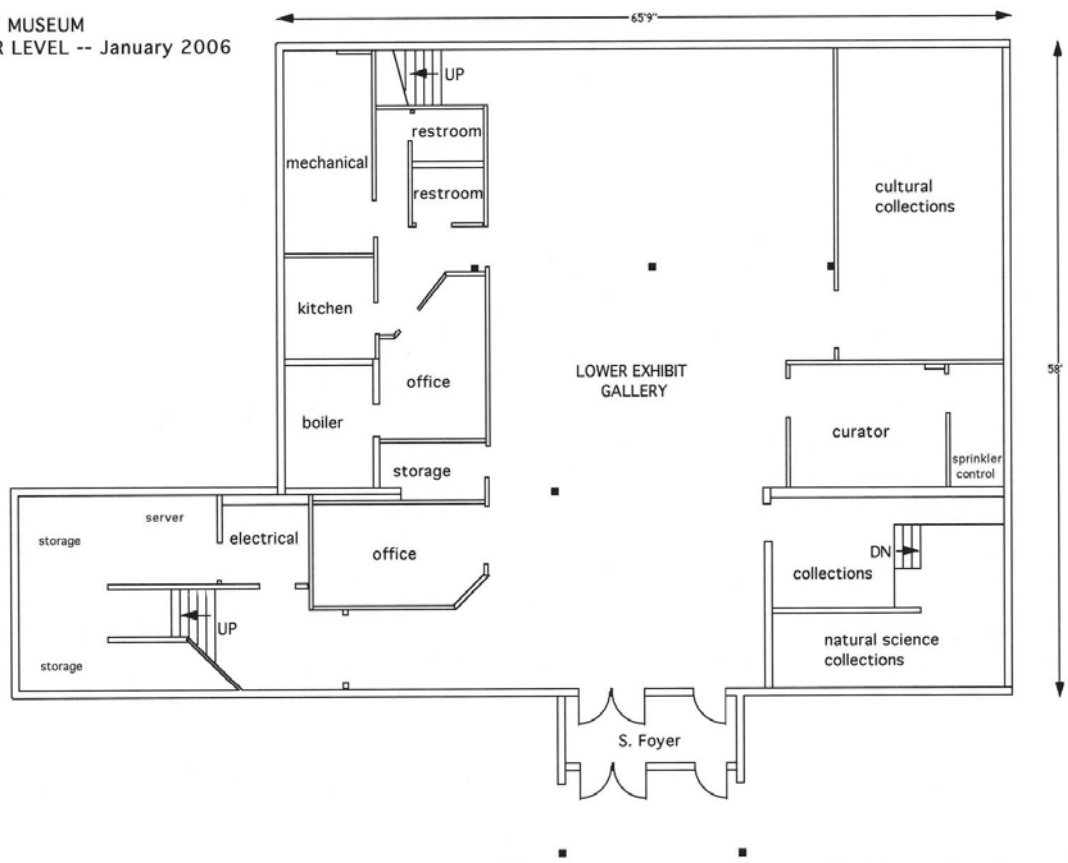
The lower level gallery is partially below grade, but does have on grade access from the adjacent surface parking lot. The lower level gallery features exhibits on Exxon Valdez oil spill, marine ecology, and a video link allowing patrons to view bears in real time at McNeil River.

Besides the previously mentioned gallery space, the lower level is home for the collections and offices for the curator, education director and the special projects coordinator, public toilet rooms, a staff break room, mechanical, electrical and server spaces, as well as some limited general building storage.

PRATT MUSEUM
UPPER LEVEL -- January 2006



PRATT MUSEUM
LOWER LEVEL -- January 2006



2.0 FINDINGS

The findings from a February 26, 2007 site investigation of the Pratt Museum are organized into categories by discipline. These include site, architecture, structural, mechanical and electrical. Each of these primary headings is supplemented with secondary topic headings. This organization is intended to catalog similar topics which may actually be provided by several members of the review team.

Campus Overview

The Pratt Museum is currently sited on 5 lots totaling 9.3 acres within the Bunnell Subdivision and Alfred Anderson Addition. The site is intensively occupied with seasonal trails, exhibits and gardens. There are also five structures on the site: an exhibit cabin, a wood frame unheated storage building, a workshop, a small occupied house, and the primary Museum building. These structures are generally grouped together in the southeast quadrant of the site.

The focus of this investigation is the main Museum building and to a lesser degree, the workshop.

Site issues pertaining to access, run off and the buildings are addressed in the civil section.

2.1 ARCHITECTURAL

EXTERIOR

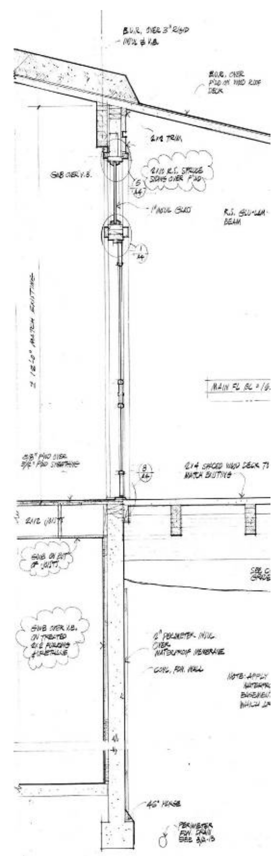
Overview

The Museum's exterior surfaces are in the worst condition of all the systems found by the review team. Failings of the envelope have been known and lived with by the Museum for several years. As time passes, these deficiencies will ultimately impact the Museum's ability to provide the current high level program. The building's lack of an air barrier on the exterior makes it difficult to maintain curatorial required temperature and humidity levels. The roof is well beyond its anticipated service life and currently leaks. These deficiencies are affecting the structure and need attention in the near future.

Envelope

The Museum building is a wood frame, two-story, three level structure comprised of three levels. The structure's wall assembly is primarily comprised of a 5/8 inch thick layer of painted gypsum board applied over a polyethylene vapor retarder, 2x6 wood studs in older portions of the building and 2x8 studs in the 1986 and 1991 additions. All stud cavities are filled with R-19 insulation. The exterior side of the wall assembly is made up from ½ inch thick painted plywood with 2x10 painted wood planks laid horizontally over the plywood with 1½ - 1¾ inch spaces between the planks. The siding's appearance is attractive but does have the adverse impact of high air infiltration, and the wall surface offers an opportunity for spirited youth to climb the wall onto the roof. The frequency of the wall climbing and problems arising from it are unknown but were mentioned by staff. Air infiltration increases heating costs while diminishing comfort and is likely partially responsible for the Museum's inability to stabilize humidity levels. The south facing walls are showing UV derogation through paint fade and some of the 2x10s are twisting.

Portions of the exterior wall area are partially below grade. In those areas the wall assembly is 5/8 inch thick gypsum board over 2x2 treated wood furring with 1 inch thick rigid insulation between furring strips and a vapor retarder in the newer portion of the building. In the original building, ¼ inch thick plywood was applied over 2x2s without a vapor retarder or insulation. In either case, this assembly is attached to the concrete foundation which, on the addition, is covered with 2 inch thick extruded polystyrene over a waterproof membrane and varying depths of soil. The insulation and waterproofing on the 1968 original building is unknown. Some areas that are enclosed in this manner were cold, and insulation has been added to the inner wall surface and again covered with painted gypsum board.



There is no observed evidence of ongoing moisture migration through the concrete walls although there are reports of some lower level leaks when water entered the building through the in-floor electrical conduits during times of exceptionally high water or flooding conditions. This is exceptional performance considering the surface water drainage patterns, nearness of the creek to the building and the age of the foundation wall and waterproof membrane. If the collection is to remain on the lower level, enhancing the walls' waterproof performance is recommended to assure the exceptional waterproofing is maintained.

In keeping with good Museum practices, there are very few exterior windows allowing unfiltered light to enter the collection area. Those windows that are provided are at the building's two primary entry points and in the 1991 administration addition. The windows in the administration area are insulating units with 1/8 inch thick glass in operable wood frames. The windows are not secure either from a strength of glass or locking ability and do present a point of potential unauthorized entry. Intrusion detection is provided on most, if not all windows. Motion detectors are provided in several offices to detect intrusion within the office spaces.

Exterior doors are limited to the visitor entry doors on the east, the staff entry on the building's western elevation, the egress on grade doors on the south, and emergency egress doors at the north foyer. Most of the doors are 1 ¾ inches thick and are constructed of wood with large glazed panels. The staff entry door and the north egress doors are made of hollow metal. With the exception of the staff entry doors, the doors appear to be in good condition. Again, security may be an issue due to the large area of glass in each door and the use of commercial grade locks. The heavily used hollow metal staff entry door is in need of reconstruction due to the seasonal building movement.

Infiltration of outdoor air and moisture present a problem for all wood structures where consistent humidity levels are desired. Infiltration becomes particularly problematic when humidification is added to the indoor environment. The most prevalent results of infiltration in South Central Alaska are cool drafty spaces, condensation within the wall cavity and the introduction of mold. In addition to the health concerns related to airborne mold spores, it is inevitable that wood rot will develop over time. Two commonly used methods to reduce air infiltration through building component joints are to install a monolithic vapor retarder on the interior face of the wall studs and to install an air barrier on the exterior face of the building sheathing. There are several newer air barrier products that allow moisture that does enter the wall cavity to escape, while prohibiting outdoor air from freely moving into the wall. The current plank style wall cladding over the building sheathing would make it very simple to add the air barrier over the partially exposed sheathing. This will require removing planks, adding the air barrier, covering the air barrier with new siding or sheathing and then replacing the existing planks. Special attention to the application of air barriers around doors, window and mechanical openings is required, and the installers need to be aware of these procedures to assure a good, tight product.

The Museum has another source of infiltration that is rather unusual; the 3x6 wood roof decking's VEE joint is exposed on the outer face of the building under the wood roof soffit. These slots to the outdoors allow free air movement every 5½ inches along the building perimeter and should be closed. One method is to force a low slump sealant such as Snonoborn NP-2 into the open joints at the wall/roof deck interface and then to cover the entire interface with a 2x2, 26 gauge sheet metal angle which would in turn be covered by the air barrier, siding and wood rake edge trim (See Figure 2 in Appendix D of this document).

Roof

The building roof currently leaks and needs attention. Areas of specific concern include the roof over the front porch where the decking is rotting, the gravel stops, and fascias along the building rake and eave edges, and the juncture between the original 1968 structure and the 1986 addition. The roof assembly is tongue-and-groove spruce wood decking covered on the outer surface by a vapor retarder with varying thickness of extruded polystyrene insulation over the special exhibits gallery, library and education office. Record drawings indicate the insulation over the administrative office is 4 inch thick polystyrene (R-20). Plywood is applied over the 3 inch thick wood deck above the 1986 addition and at the porch and eaves. The entire waterproof roof covering is a built-up emulsified roof.

The roof over the special exhibits gallery has not been replaced since installation in 1986. The balance of the roof, covering the main gallery, marine gallery and aquaria, was replaced in 1981. Multi-ply, built-up roofing is generally expected to perform well for 15 to 20 years, with few roofs extending beyond 20 years without major additional investments. While the roof on the Museum leaks, it has performed beyond its expected life. The roof currently poses a threat to the collection should broad scale failure occur. Roof leaks also provide the opportunity for moisture to enter the envelope and cause structural damage through rot and environmental damage through the development of mold.

Replacement of the existing roof is recommended. It is likely that some of the existing roof insulation could be salvaged and reinstalled. When the existing roofing is removed, the wood roof deck should be carefully inspected for rot. At that time, it is recommended to apply a ½ inch thick plywood diaphragm over the existing decking to increase the roof's lateral structural capacity. Reportedly, the roof constructed in 1986 had the ½ inch plywood installed at that time. Since the existing roof was installed, there have been significant advancements in roof coverings. Synthetic single ply membranes are very long–lived, particularly when adhered over plywood covering that is typically installed over the insulation. The insulating value of rigid insulation decreases with time. Extruded polystyrene degrades least of all normally used rigid building insulation products, but still loses some of its insulating value with time. For this reason, it is recommended additional polystyrene be applied over the roof deck to provide an insulating value of at least R-40. See Figure 1 in Appendix D for a diagram that illustrates the building components suggested for the replacement roofing. Examples of this roof assembly have been in service for nearly 30 years and are showing no sign of failure. The added insulation will increase snow retention and live load on the roof. The added weight must be addressed to assure the roof has adequate structural capacity.

While there is no question that the roof needs to be replaced, it will be important for the Museum to weigh the option of delaying replacement until any anticipated building modification is better understood. Timing replacement of the roof to coincide with new construction will result in a more watertight solution at a lower cost. Unfortunately, there is no way to forecast just how long the Museum can patch and get by with the existing roof. One point of optimism is that the Museum's maintenance staff has been able to patch and keep most of the water out of the building much longer than expected. That approach may extend the current degree of watertightness another few years until building modifications are be designed and funded.

INTERIOR

Overview

The building was constructed in four segments, all of which added space and unique character to those specific areas of construction. This compartmental feeling has been used by the Museum to separate gallery themes and other uses into a building interior characterized by themes. If the Museum decides to remodel or renovate the existing building, it is recommended that a conscious decision be made regarding the current compartmentalization. The discussion precipitating this decision should focus on the topic of whether the building's eclectic feeling supports or detracts from the collection, exhibits and program.

Public Entry/Admissions/Special Exhibits Gallery

The building's entry is from Bartlett Street, welcoming guests to a large covered wooden porch that is four to eight feet above the elevation of the city sidewalk. The entry includes wooden stairs, ramp, porch, entry doors and an admissions area that are a warm introduction to the Museum. It appears that the entry sequence is in compliance with the Americans with Disability Act (ADA) with the possible exception of nonconforming signage at the accessible drop-off area at the entry. The finishes in the admission area are in very good condition but soon will require a new application of clear finish. West of the admissions area is the special exhibits gallery which is actually a continuation of the entry space. The gallery has high ceilings with an exposed wood beam structure and clear finished (or perhaps unfinished) wood decking. The 1,010-square-foot gallery, the admissions area and the entry comprise the floor print of the 1986 addition. Some ceiling water staining is present as the result of roof leaks. West of the special exhibits gallery is a stairwell leading to the Museum's lower level. The west wall of the internal stair provides a large wall that serves as exhibit space. This high quality exhibit space is accessed by stairs from the special exhibits gallery above or the lower gallery below.

Main Gallery

North of the admissions area is the entry to the main gallery and Museum store. An original wood sculpture forming the wall's cased opening features the entry into this part of the Museum. The main gallery exhibit was installed in 2004 and is inviting in its use of three dimensional exhibits reinforced with printed material. While the space is obviously older construction, the gallery finishes are in very good condition and the overall impression is one of high quality. The gallery floors are carpeted; walls are painted gypsum board and stained wood. The ceilings are exposed wood decking supported by wood beams and columns. Analysis of the building's lateral capacity is recommended if modifications are made to this space.

Museum Store

The Museum store is near the entry of the main gallery. The store is immediately accessible from the gallery entry but may benefit from increased visibility from the Museum's main entry. The 360-square-foot store is well-stocked and seems to be of adequate size to support its role in the Museum. Finishes in the store are in good condition.

Public Restrooms

Two unisex public restrooms are situated in the alcove, west of the main gallery. The rooms appear to be ADA compliant and are furnished with wall-hung vitreous china toilets and lavatories. The toilet fixtures are reportedly prone to over flowing. The sheet vinyl floor finish is not coved on all four walls. This allows overflow water from the fixtures to leak under the door and into spaces below. The lack of cove base is a violation of IBC 1210.1 and should be corrected. There are no floor drains in the toilet rooms. The finishes in these heavily used public restrooms are showing wear, and the spaces should be scheduled for upgrade in the near future.

In Section 4, Table 4.1 of the Uniform Plumbing Code, "Minimum Plumbing Fixtures" Table identifies the minimum required number of toilet fixtures. The calculation is based on an assigned occupant load established by the International Building Code. Following these calculations, the Museum should have one male water closet, four female water closets, one male urinal, three male lavatories and three female lavatories for visitor use. Additionally, one male water closet, one female water closet, one male urinal, one male lavatory and one female lavatory are required for employee use. There is no requirement for the current building to comply with these standards that have been established for new structures, but as a point of reference, the Museum is short by three water closets, two urinals and four lavatories. This should be corrected when or if significant modification occurs.

Education Office

The education office is a shared workstation that is located on a major staff circulation path. The space is quite cramped and not conducive to office work due to the high pedestrian traffic flow. The finishes in this space are serviceable. The education office serves as the anteroom for the aquaria service. The building's intrusion electronic panel and fire control panel are located in this room.

Exhibits Office

A small exhibits office is accessed by a stair northwest of the main gallery. The office is in "found" space that was previously attic space. There are several building code related problems with this space. The stair requirements outlined in the IBC Section 1009 requires stair rises to be a maximum height of 7 inches, 4 inches minimum and a tread width of not less than 11 inches. The stair width is to be not less than 36 inches unencumbered and at no point shall the head room be less than 80 inches. Currently, the stair is too narrow, has no handrail, the treads are too narrow and the space at the bottom of the stair between the last riser and the door is 23 inches, much narrower than the minimum 36 inches allowed by the IBC. The small office does have a pleasant atmosphere and is protected with fire suppression sprinklers.

North Foyer Stair

The stairs leading from the main gallery to the north foyer do not meet the IBC requirements for minimum stair run dimensions. Also, there is a ½ inch inconsistency of stair run size that is in conflict with IBC 1009.3.1. The portion of the building located on the intermediate level does not have an accessible path from the staff entry to the balance of the building. This short coming is a conflict with the Uniform Federal Accessibility Standards (UFAS) which is the governing code for the Americans with Disabilities Act (ADA). The exposure to the Museum in this area is likely to be employee accessibility rather than guest accessibility. UFAS does make accommodation for existing noncompliant structures, but requires a remediation plan be in place for implementation within an owner's established timeframe. It is recommended that the Pratt Museum develop such a remediation plan.

North Foyer

The north foyer provides a required exit way from the main and lower galleries in compliance with building codes. The exit is through a pair of metal doors that also provides a route for bringing large objects into the main, lower and marine galleries. Unfortunately, the route is not direct and requires movement up or down a flight of stairs to reach either the main or lower galleries. Pairs of doors without center mullions are susceptible to forced entry. The fact that these doors open outward helps but does not eliminate the unauthorized entry threat.

Marine Gallery

The marine gallery is located on the Museum's intermediate level. Within its 610-square-foot area, the gallery exhibits sea bird and mammals skeletons and taxidermy in natural settings. The room also features the viewing side of the aquaria and a video link allowing patrons to view seabirds in real time on Gull Island. The gallery seems to be sized appropriately. Viewing the aquaria is done from a raised platform within the room. Access to the platform is by way of stairs that are not in compliance with accessibility requirements outline in UFAS. Finishes in this space are serviceable but not up to the standards set by the other galleries. As previously mentioned, the aquaria is not ideally suited in this location in the building.

Library

The library provides a well-stocked reference area for the Museum. The space is centrally located with good access from the administrative areas, education area and galleries. The central location of the library has one drawback—noise and foot traffic through the space. In its current location and with its current traffic pattern, the library is a book repository rather than a research area. Space within the library is currently taken up by a large copy machine and an assortment of office paper and supplies. The copy machine adds more noise to the space. Consideration of the library's mission within the Museum is recommended. If the library is to be a resource and research area, relocation is recommended. If the library is to maintain its role as a place for book storage, its current location is well-suited.

The 230-square-foot library is a little small if the space is to be used as library/research. With the 30 to 40 square feet lost to the copy machine and storage, the current library is below typical programming areas of 3 to 5% of the total gross building area.

Administrative Area

The Museum's administrative area includes three offices and a circulation corridor. The offices were constructed in 1991 by enclosing an 18x16 foot exterior deck that was built as part of the 1986 addition, and adding an additional 12-foot extension. The expanded area is 18x28 feet. The offices are occupied by the Museum office manager, bookkeeper and director. Although small by industry standards, the rooms do provide the necessary privacy and quiet environment required for these jobs. The offices are heated with perimeter hydronic convectors and ventilated by operable windows. Exposed wood columns with gypsum board infill, carpeted floors and lay-in acoustic ceiling tile make up the office finishes.

A small administrative conference room would improve efficiency and provide a flex office space for itinerant or visiting staff. The conference room should be able to accommodate 6 to 10 people. To do this comfortably the room should be approximately 200 square feet.

Staff Entry

The staff entry is actually a covered porch over the ramp and stair landing on the west side of the building. A coat rack and direct access to the administrative suite and library/central circulation are the only reasons this area has been identified in this report as the staff entry. On the day we visited, the space was often congested and a bottleneck of staff, deliveries and friends of the Museum. A larger business entry with space for staff coat racks or lockers, a circulation space and direct access to a staff break room, toilets and an office work room would benefit the Museum. The heavily used staff entry door showed signs of wear. Repair/replacement with a more secure door with an adequate walk-off area and weather chamber/vestibule inside the door would reduce carpet wear, decrease cold drafts and reduce heat loss.

South Foyer

The south foyer is on the lower level directly accessible from the parking lot. This 9-foot wide (3-door wide) opening leads into a vestibule entry that allows natural light into the lower level of the Museum, which is technically a basement. The clear finished fir doors add warmth and character to the space. Directly off the lower level parking, this entry provides level, on grade access for large objects and displays entering the lower level and lower exhibit gallery. The code required egress point is signed "emergency exit only", and it is assumed the entry/exit is seldom used by visitors. As previously mentioned, the existing doors do pose a security concern due to their large glazed openings and light commercial locks.

Lower Exhibit Gallery

The lower exhibit gallery is accessed from the main level by the stair west of the special exhibits gallery and the north foyer stair. The south foyer opens directly into the lower gallery but is not typically used as a visitor access route. The lower gallery spans the original construction and the 1986 addition, combining the two construction areas into one 1,700-square-foot space. The quality of the two spaces is similar with 8'-9" ceilings, vinyl tile flooring and gypsum board walls. The space is easily convertible into a multiuse room but to facilitate large groups the room requires dismantling some exhibit panels. The large low ceiling space works surprisingly well as a gallery. This in large part is due to the exhibit panel system that divides the large area into a number of related smaller spaces connected by generous and inviting open space. Visual detractors in the space include vinyl flooring and lay-in acoustic ceilings with lay-in 2'x4' fluorescent light tile fixtures. In spite of their dated appearance, these finishes do add flexibility to the space. The vinyl tile flooring is very durable, somewhat water resistant and extremely resistant to staining. The lay-in ceiling provides access to the interstitial ceiling space, to plumbing in the main floor and to the electrical and data cabling routed through the building. The trade-off between the utilitarian appearance of the finishes and the utility of their service should be weighed and consciously decided upon by the Museum.

Natural Science Collections

The natural science collections are held in a 340-square-foot space in the basement under the entry stair on the southeast corner of the building. Heat loss and water infiltration have been problems in the past but have been mitigated by furring and insulation added by the maintenance staff. The room reportedly maintains both temperature and humidity within a reasonable curatorial range. The bulk of the collections are approximately four feet below the basement level floor. This offset is inconvenient but does capture space under the stair that would otherwise be unusable. The collections are very well maintained, beautifully labeled and catalogued for access. The bulk of the collections are held in “Delta Design” cabinetry which provides rigid frames for drawers and shelving and tight seals on the cabinet faces.

The natural science collections are currently in a stable environment; however, best practice does suggest the material not be held in the building’s basement in an environment where water from fire suppression sprinklers or external flood water could enter the room and damage the collections.

Curator’s Office/Archives

The curator’s office and archives space is positioned immediately north of the natural science collections. The 200-square-foot space is accessed through the lower gallery. The room’s condition is very similar to that found in the natural science collections with the exception of the added hazard in this space due to the sprinkler control riser and related plumbing. Leaks from this high pressure source could have devastating effects on the archives in a matter of minutes.

Cultural Collections

The cultural collections space is the largest of the three collections areas/rooms. The 400-square-foot space is immediately north of the curator’s office and occupies the northeast corner of the basement. The collection is again very well preserved and the space is well organized to maximize use of the space.

Corner Office (Special Projects)

The special projects office is accessed from the lower gallery and provides a comfortably sized 130-square-foot internal office space. The office was constructed as part of the lower gallery in the 1986 addition and has finishes similar to those found in the southern portion of the lower gallery.

Education Director’s Office

This small office space has been created adjacent to the staff break room and is an intervening room to the boiler. The room does pose two building code concerns regarding exiting from the space. The simple problem is the door accessing the office swings into the room which is opposite the direction of travel and is an infraction of IBC 1008.1.2 and 1014.3. The greater problem is that the office is an intervening room to the boiler room which is a violation of IBC 1013.2. The current building code does not permit an office, or any other confined room, to be located in such a way to require passage through that room from the boiler room to the exit way.

Toilet Rooms

The lower level toilet rooms are small but serviceable and have been provided with grab bars and pipe protection as required by UFAS. The rooms are too small to provide adequate wheelchair turning radius and therefore are not in full compliance with the accessibility standards. The toilet rooms were moved to their current location some time after the original 1968 construction, but before the 1986 work. The room finishes are serviceable but do not meet current requirements for a monolithic floor covering or cove base. The vinyl tile flooring is suspected of containing asbestos. Wall surfaces around the water closet are required to be an impervious surface and should be changed to an impervious surface as a measure of hygiene and cleanability.

Mechanical Room

The mechanical room contains the building's air handler and the electric humidifier. The room was originally constructed to house the air handler, boiler and janitorial area. The room was modified at some point prior to the 1986 addition to contain only the air handler. The finishes in the mechanical room are consistent with the use. There were no code deficiencies observed in the space.

Break Room (Kitchen)

What is currently known as the "kitchen" is defined as a "break room" by the building code. The label "kitchen" implies a commercial style kitchen where food production takes place. The requirements associated with a kitchen are onerous and unless the Museum is planning on providing food service for patrons or visitors the requirements for a kitchen are not necessary.

The existing break room is on the western wall of the basement between the boiler room and mechanical room. The space provides a place staff can warm lunches and wash dishes. The cook top appears to be vented to the outdoors. The break room appears to be adequate although there is no seating. The break room is in the original 1968 construction, and the floor is suspected of containing asbestos. A larger break room near a designated staff area with views to the outside would be a benefit to the staff who work in the interior areas of the Museum.

Boiler Room

The boiler room contains one 763 MBH oil fired boiler (see Mechanical Description) and appears to meet the requirements of the heat generation for the building. The door into the boiler room is a rated door. It is not possible to confirm the wall fire rating without demolition; it does appear the room meets the one hour fire resistant requirements of IBC 302.1.1. As previously mentioned, the door into the Education Director's office creates an intervening room from the boiler, resulting in a noncompliant exiting path.

Electrical Room

The electrical room is in the 1986 addition near the stair to the special exhibits gallery. The 50-square-foot space adequately meets the telephone and electrical equipment needs.

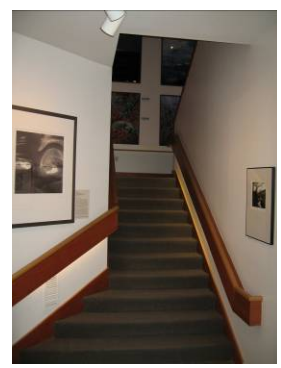
Server Room

The Museum's server is located in "found" space adjacent to the electrical room. The space is limited and does not provide clear unobstructed access or cooling/ventilation for the equipment. The server is also open to a storage area under the stair, and dust from this infrequently accessed area is also a concern. Improving the server's environment will extend the equipment's service life and result in less costly technician calls by making the equipment more accessible.

Storage (Under Stair)

Storage under stairs is generally not acceptable by the IBC, Section 1019. Some allowances by the code and the fact that the space is sprinkled do mediate the outright restriction of the space's current use. The space is difficult to access due to low ceilings and would be better suited to be left open and unused. Yet the need for additional storage within the Museum is obvious and the use of this marginal space is mandated by need. If building expansion is considered, general building storage should be programmed into the development.

Stair (Between Special Exhibits and Lower Galleries)



The monumental stair at the west end of the special exhibits gallery is well constructed and provides a visually attractive end for the special exhibits gallery. A large wall is created on the west end of the stair as the result of the stairs falling off the gallery floor level to the landing level. The 4½-foot addition to the height of the wall results in a very large display area that can be used to display a feature object or backdrop. There were no observed deficiencies in this space, however, constructing an accessible route to access the landing was suggested by staff members.

2.2 CIVIL

Topography and Site Drainage

The Pratt Museum property consists of 5 separate parcels of land totaling approximately 9.39 acres. The terrain generally slopes north to south at an average slope of 10%. Woodard Creek runs across the site from north to south. A 48"x66" Pipe Arch culvert, approximately 120 feet long has been constructed in the Museum's west parking lot, and the creek has been diverted through the culvert.

The culvert presents a potential restriction of the stream channel. In the winter the culvert free opening is reduced by ice thus compounding the spring run-off. Additionally, the inlet has experienced some blockage in past flood events due to water-borne debris. The potential for blockage of the culvert presents a risk of flooding of the parking lot and, possibly, the basement. It is suspected that the shop building's sanitary sewer runs under the culvert and the domestic water to the shop runs over the culvert. The water line to the shop is prone to winter freeze up. The risk could be minimized by removing the culvert and reconstructing a stream channel through the site. Stream reconstruction would provide an opportunity to re-establish lost riparian habitat and to restore the flood control characteristics of a natural stream channels. If the stream is reconstructed it should be routed to the west, around the parking lot and well away from the building.

Soils

The typical undeveloped soil profile for the surrounding area includes an organic soil layer of approximately 1' to 2' thickness underlain by fine grained silt and clay soils. Two test holes drilled on Spruceview Avenue, adjacent to the north side of the site, revealed the relatively soft silty soils extended to depths of 15 to 18 feet. Below these depths the silt was very hard. One test hole revealed a coal seam between the depths of 18 and 20 feet.

Typical development of parking and traffic areas consists of excavating approximately 2 feet of material to remove organic soils. Two feet of non frost susceptible classified gravel fill is then placed over geotextile separation fabric to form the structural base for paving.

In building areas, organic soils are excavated and excavation is continued to depths necessary to provide 2 feet of NFS gravel under footings. NFS gravel and sand is used as backfill against exterior foundation walls.

Water and Sewer Utilities

The site is connected to the City of Homer public water and sewer systems. The existing water service is 6" and enters the building through a basement wall located on the east side of the building. The water service is adequate to support the domestic and fire sprinkler need of the building.

The existing sewer service line is 4" and exits the building near the southeast corner. The sewer line is adequate to support the domestic wastewater requirements of the building.

Existing Parking Lots and Driveways

The plans for the 1986 addition indicate that the typical traffic area section consists of 24" of Type II Classified fill and a base leveling course driving surface. Surface grading and drainage of the developed areas of the site appears to be effective and no ponding areas were noted or discussed, although the ground and surface were frozen at the time of the site visit.

2.3 STRUCTURAL

As-built drawings for the building were reviewed to determine the type of structural systems present in the building. As-built conditions were confirmed, in part, by the field visit to the facility. Due to field conditions and architectural constraints, only portions of the structure were visible. Conclusions and recommendations included in this report are contingent upon the limited investigation of the structure.

Structural Systems

The original structure, circa 1968, and subsequent additions in 1977, 1986, and 1991 are of heavy timber post and beam construction, with wood framed stud walls at the building exterior. The roof sheathing is 3" plank double tongue and groove spruce. The plans for the 1986 addition indicate that a layer of plywood was installed over the 3" plank decking in the addition area.

Foundations consist of cast in place concrete spread footings with a concrete stem wall around the building exterior and 4'x4' square footings at interior column locations.

Structural Loads

Notes contained on the original 1966 drawings indicate the criteria used to design structural systems and are summarized as follows:

Floor Live Load:	50 psf
Design Snow Load:	40 psf
Wind Load:	30 psf
Seismic:	Zone 3

Notes contained on the drawings for the 1986 addition indicate the criteria used to design structural systems and are summarized as follows:

2^{nd} Floor Live Load:	100 psf
Design Snow Load:	50 psf
Wind Load:	1982 UBC 100MPH Exposure C
Seismic:	1982 UBC Zone 4

Snow Load: Ground snow loads have exceeded 40 psf during the life of the structure and will probably continue to reach the current Homer design snow load of 50 psf. It is likely that the roof structure has not been subjected to loads in excess of the 40 psf design due to the unventilated 'hot roof' design of the thermal envelope. Poorly insulated hot roof systems typically lose enough heat to melt snow and to prevent accumulation of deep snow pack. Increasing the thermal resistance of the roof in order to reduce future energy costs would increase the effective snow load on the structure. In the winter of 2000, snow load did cause deflection in the roof members. This observed condition was not noticeable qualified in inches of deflection, and no permanent damage is observed; however, corrective measures may be considered as a part of future projects.

Wind Load: The 30 psf wind load used for design of the original building and the 100 MPH wind, Exposure C used for the 1986 addition appear to be adequate.

Seismic Load: Seismic loads are determined as the product of the building's dead weight plus a percentage of design snow load, multiplied by the seismic coefficient. Increased building dead load that would result from the addition of roof insulation would increase seismic loads slightly.

Roof Decking/Sheathing

The 3 inch tongue and groove spruce decking is a structural sheathing that spans 8 feet between roof beams and directly supports roof dead load and snow loads. The grade of the roof decking is not shown on the as-built drawings and is not visible from inside the building; however, using the design strength for 'spruce-pine-fir', the decking would support the roof dead load plus a 50 psf snow load.

The 3 inch plank tongue and groove roof decking also serves as a diaphragm to collect and transfer lateral seismic loads to shear walls in the 1968 portion of the structure. The capacity of the decking to transfer lateral forces in this manner is relatively low and may not be adequate to transfer wind and seismic lateral loads to the building shear walls. A detailed lateral structural analysis of the building would be required to determine the adequacy of the roof diaphragm. In the 1986 addition, plywood sheathing was provided over the 3 inch plank decking in the new structure to provide sufficient diaphragm capacity.

Roof Beams

The roof beams for the original 1968 building are rough cut spruce. As with the decking, the specific grade of spruce is not noted. Using the design values for 'spruce-pine-fir', the beams would be capable of supporting the roof dead load plus 50 psf snow load.

Roof Columns and Beam Column Connections

The interior roof columns are 8x8 rough cut spruce. The columns are adequate to support the roof dead load plus 50 psf snow load. The roof beams are connected to the columns with fabricated steel brackets and ¾" diameter machine bolts. The connections are adequate.

First Floor Joists

The first floor of the 1968 structure is supported by 2x12 joists spanning 16 feet. The species and grade of the floor joists is not shown on the drawings. The floor joists are spruce. The floor joist species is not identified; however, they calculate to be slightly under capacity to carry the code required 50 psf design floor load. Conversely, assuming the joists are hem-fir no. 2, the floor joists would be adequate to support the 50 psf design snow load. In either case, the floor system has performed adequately for 40+ years and can be expected to continue to perform adequately. However, it is recommended that a maximum floor load limit of 45 psf be posted to assure that the capacity of the floor joists is not exceeded.

The floor system in the 1986 addition consists of 20" deep TJI 55 engineered wood joists spaced at 2' on center and spanning 19 feet, with ¾" plywood sheathing. The floor system is designed to support 100 psf and is adequate for continued use.

First Floor Beams

The first floor joists are supported on 7"x19½" glulam beams that span 20 feet in the 1968 structure. The species and grade of the glulam beams are noted on the drawings. The beams can support in excess of the 50 psf design floor load.

Basement Floor Slab on Grade

The slab on grade in the basement appeared to be in good shape and is adequate for the current use. There is a slight offset in the slab running north/south, approximately 6 feet west of the Cultural Collections room. The offset is well within the code identified ½ inch allowable and does not appear to be a tripping hazard.

Exterior Walls

Exterior walls in the 1968 structure consist of 2x6 studs spaced at 16" o/c with plywood sheathing. The walls are sided on the exterior with 2x10 spruce. Exterior walls in the 1986 addition consist of 2x8 studs at 16" o/c with plywood sheathing.

The wall framing is adequate and plywood sheathing provides shear wall capacity to resist lateral loads induced by wind and earthquakes.

Structural Upgrade Recommendations

Overall, the structure appears to be in good condition and structurally sound.

Some deterioration was noticed at the ends of the wood beams that cantilever from the structure around the roof perimeter. The ends of the beams should be trimmed back far enough to remove deteriorated wood and then should be sealed to prevent further decay. Some beam ends may be deteriorated to the point that no wood end is available beyond the face of the building. In these cases it will be necessary to test the integrity of the beam inside the building wall to assure there is adequate bearing capacity. In the unlikely event that there is not adequate capacity, replacement of the beam will be required. Varying degrees of restoration may be required to repair or restore the exposed beam ends; determination will need to be made on a case-by-case basis. There are several products currently manufactured that can be used to restore partially rotted wood components. These products may be needed on some beam ends to make the projections consistent. New metal beam caps will need to be provided and installed once the patching is complete.

The roof covering on the 1968 structure is old and in need of replacement. Some leaks have been reported although the decking does show minor staining and other signs of water damage when viewed from the underside of the roof; it is probable that water has penetrated the roof top insulation. When the roofing is replaced, it is recommended that the insulation be removed and the decking be inspected to verify its condition. Any deteriorated sections of the decking should be removed and replaced. After inspection, a layer of ½" plywood sheathing should be applied to the roof prior to new insulation and roofing. The plywood sheathing will increase the lateral load capacity and alleviate a potential deficiency in the roof diaphragm.

2.4 MECHANICAL

Fire Protection System

Fire Department Connection: There is an outside FDC connection adjacent to the lower level emergency exit. This connection is accessible to the fire department from the lower parking area. The FDC was covered during the site visit but appears to be in good condition.

System Type: The building is protected with a wet pipe fire suppression system, that uses fusible type pendent or sidewall sprinkler heads.

System Coverage: The installed system does not cover all required areas according to NFPA 13. For example, the porch is constructed of combustible materials, and it has no protection.

Backflow Prevention at Riser: There is a 6" water service that takes domestic water, by way of ¾ inch water line, off the service, and then the pipeline feeds the sprinkler riser. There is no double check valve or detector backflow preventor, as required by the Uniform Plumbing Code (UPC), section 603.4.18.

Mist System: A high pressure mist system may be an appropriate addition to protect certain areas, such as in the collection area, where water sprinklers may damage the sensitive objects.

Fuel System

Fuel Tank: There is a buried single wall 1,000 gallon steel fuel tank buried under the rear porch of the building. The tank was reportedly installed over 20 years ago. There have been no tank tightness tests done on the system since it was installed. The buried fuel tank should be replaced with a new double wall system, and preferably the new tank should be installed above grade to avoid environmental degradation in the event of a leak. If a new above ground tank is installed, it must be 5' from the building if the tank is sized above 660 gallons. If it is 660 gallons or less, it can be stored adjacent to the building according to NFPA 31, 7.9.2. The standard states "A tank or tanks whose capacity does not exceed 660 gallons shall be permitted to be installed outside of and adjacent to a building, provided they are separated from the nearest line of adjoining property by . . . 5 feet if 275 gallons and by 10 feet is the tank is greater than 275 gallons and not exceeding 660 gallons".

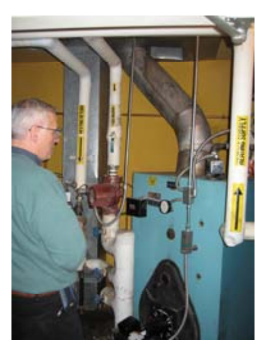
Fuel Piping: Fuel oil is drawn from the buried storage tank and returned to the tank using 3/8" soft copper tubing. The tubing is partially protected where it enters the building as it is run inside a larger (2" estimated) ABS plastic carrier pipe. The tubing is not, however, routed in a listed containment system that has detection systems for leaks. The fuel piping that is buried underground should be installed in a listed containment system, such as Envrion, which has an outer carrier that can be checked for any leaks.

Fuel Specialties: The vent for the buried fuel tank is located less than 2' horizontally, and at the same height as the electrical service disconnect, which makes the location a Class 1, Division 1 hazardous location relative to the tank vent according to NEC 500.5 B.

Roof Drains

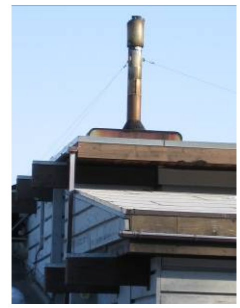
There are no internal roof drains on the project. There are several downspouts and overflow scuppers at the flat area of the roof. The rear roof drain downspout is protected with electric heat trace which is connected using an extension cord. See Electrical.

Heat Generation



The building is heated using a Burnham Model PF-504 cast iron sectional boiler that was installed in 1983. The boiler is rated to burn 5.45 GPH (763 MBH), but it is presently fitted with a 3.0 GPH nozzle (420 MBH). Neil McArthur, the maintenance supervisor, advised that the boiler never runs constantly, and it always keeps up in the coldest weather, so the 3 GHP undersized nozzle is adequate for the building. This information does suggest that the boiler is sufficiently oversized to carry another 40% of boiler capacity if an addition is built. The boiler is visually in good condition. With the 24-year-old boiler, based on visual condition, one could expect another 10 years of service from the unit. The burner has been recently replaced, so it should have another 20 years of service.

The flue system for the boiler appears to be original. The top of the flue reportedly allows flue gases to re-enter the building under certain environmental conditions. For this reason, staff installed a sheet metal flue extension to direct the flue gasses higher away from the fresh air intakes. This extension has corroded badly and needs to be replaced. We would recommend considering installation of a Bridert wind directional cap for the top of the flue to hopefully direct the flue gas away from the fresh air intake. Additionally, it is recommended that a chimney cleaner be employed to clean and inspect the condition of the chimney, in case it is from original construction.



Heat Distribution

As viewed from the boiler room, copper pipe appears to be the heat distribution medium. This is logical, since copper pipe has typically been used over the years. However, the boiler room was remodeled in 1983. Typically, if an inhibited glycol was consistently used, the piping should be in good condition. Neil McArthur, the maintenance supervisor, has significant insight regarding leaks throughout the building. When asked about leaks during the site visit, Neil felt that the system was in relatively good condition, with no leaks other than minor seepage around valve stems.

Humidity Control

There is one electric humidifier serving the building. The unit is a 5 kW Carel canister type unit, located in the mechanical room. Steam produced by the humidifier is injected into the supply air of the air handler system where it is distributed around the building. There is no zone control available for the humidity; however, so the system is not capable of precise control. Individual, self contained humidifiers could be placed in the more demanding areas if desired, or steam diffusers could be placed in specific branch ducts serving selected areas for additional humidity to critical areas. Electric humidification is operationally very expensive compared to a fuel oil fired steam generating humidifying boiler. Installation of a boiler generating humidifier would also be more maintenance intensive, as the water would have to be softened, and the boiler would require more maintenance.

Pratt staff advised that during the winter, they are not able to maintain a desired 50% RH, and can only reach 30-35% maximum humidity. The minimum can get as low as 25% which is a concern for the collections preservation. During windy days, the building becomes dryer in the winter. Part of the solution to this problem may be installation of air barrier wrap around the building if a new siding is installed. This would tighten the building, thus reducing the demand for humidity in the first place.

System Controls

The building HVAC is controlled using relatively straightforward 24 volt electric/electronic controls. There is a monitoring program that uses a main computer to observe functions like night setback, although night setback was decommissioned to avoid temperature variations that tend to damage stored artifacts.

Glycol System

The heat transfer glycol was visually inspected, and it appears to be bright and free of contaminants. The glycol is reported to be ethylene glycol, and its color confirms that type. The glycol was tested using a portable refraktometer, and the concentration was measured at 44% by volume, which provides freeze protection to -22 degrees F, which is adequate for the Homer area.

A glycol sample should be sent off to Dow Chemical who can perform a more detailed test to determine if the inhibitors need to be rejuvenated, or if any other changes need to be made to the chemical package, assuming the glycol is a Dow Ethylene Glycol product.

Domestic Hot Water Generation

Domestic hot water is generated using an electric 40 gallon low profile hot water heater, located in the mechanical room. The heater was installed in 1994 according to markings on the top of the heater, which makes it 13 years old. Water heaters can fail within that timeframe, depending on how aggressive the water is, and how much water is run through the device. Due to the excessively high electricity bills experienced by the facility, it is recommended that an indirect water heater be installed to generate domestic hot water. An indirect water heater uses heat from the boiler glycol to make hot water, which becomes far less expensive. If the boiler is shut off during the summer, then an electric water heater should be used for those periods. The boiler can be shut off in the summer; since it is a cast iron sectional type it should not leak when cool. In either event, the existing water heater should be replaced rather than risk water heater failure, which can be abrupt and disastrous considering the impact a flood would have on the building and its collections.

Combustion Air

Combustion air for the boiler is ducted down directly from above the room into the mechanical room. The duct terminates at the ceiling of the boiler room, adjacent to the flue, which shares the same shaft. The combustion air system appears to be in good condition, and adequate for the boiler it serves.

Air Handling

Air Handlers: The building is served with one air handler unit (AHU) that feeds most of the spaces. (Some spaces, such as the rear offices, have operable windows for ventilation). The air handler is a Pace Model A15-FC-SI unit, built in 1983. This brand is known for being a very high quality device, so it is expected that the AHU will last for quite a while. The system is a constant volume type that provides ventilation air only. The system currently does not provide cooling, which is accomplished by stand alone air conditioners that are mounted at the ceiling of the main exhibit area and above the entry desk. Limited expansion of the ventilation system is possible, but the extent of the proposed expansion would have to be analyzed in terms of the ability to install a larger motor, re-sheave the fan to a faster RPM, and for duct velocity. Any such expansion on the existing needs to be analyzed on a case-by-case basis to assure capacity and space exists. Heating is supplied by wall mounted baseboard located in most (8) exterior exposure space. The constant volume system cannot be responsive to different loads in different spaces, but it is a very straightforward type of system. Since there are few spaces with changing solar loads, the constant volume system can work well except for times when there is a large disparity between one space and another in terms of people that would cause one zone to be much warmer than another. The existing mechanical room space is very limited and expansion or relocation of the space may be required when the ventilation requirements of the proposed addition are known

VAV Option: If a more responsive system is desired, such that it can satisfy different and varying cooling loads to different spaces, then a medium pressure variable air volume (VAV) system should be considered. This type of system would require a more sophisticated control system, with VAV boxes for each space served that will vary the amount of cooling air to each space depending on each space need. If this type of system is desired, then a split system air conditioner system is also recommended, with the condenser or chiller located outside. A reheat coil could be placed in each zone served, and the main supply air would be kept to 55 degrees (with a cold deck reset) with the amount of cooling air varied according to demand.

Air Inlets/Outlets: Ceiling and wall mounted air inlets and outlets are used throughout the building. No problem was observed with the inlets or outlets.

Ductwork: The ductwork includes both round and rectangular types. The ductwork observed in the air handler had dust built up in the interior. For this reason, a duct cleaning is recommended. There are several mechanical contractors in Anchorage that have the equipment to provide this service.

Operation/Controls: The AHU has basic electrical controls that modulate the outside air/return air dampers. There is one carbon dioxide sensor on the second floor that can drive the outside air more open; however, the sensor cannot detect the CO_2 levels on the first floor. Also, the CO_2 sensor is reportedly out of calibration, so it most likely needs to be replaced. It is suggested that a second CO2 sensor be located in the first floor, and the two inputs be sent to the computer so the highest CO2 can control the outside air. No methane detection is needed unless the building is sited over an old landfill.

Plumbing

Lavatories: The restrooms are all equipped with china wall hung lavs that appear to be ADA compliant with the exception of one unit on the lower level which is slightly too small. No changes are recommended for the lavs, except for replacement of the one noncompliant lav and the faucets with automatic closure, motion detector activated faucets that will save water. Metered faucets are code required for occupancies serving a transient public, such as an airport, so they are not a code requirement per UPC 402.4, but rather a water saving suggestion.

Urinals: There are no urinals in the facility. Urinals are required according to the Uniform Plumbing Code (UPC) Table 4.1.

Water closets: American Standard flushometer type wall hung vitreous china water closets are used in the upstairs restrooms. Staff advises that these particular type of fixtures frequently back up and flood onto the floors of the restrooms. Staff requests a better fixture be installed. Two level flushing valves should be considered in the women's restrooms to conserve water if the fixtures get changed out.

Drinking Fountains: There is one unrefrigerated water fountain in the downstairs exhibit room. The UPC table 4.1, note 13, requires a minimum of one drinking fountain per floor in a public building.

Sinks: There is a two-compartment sink in the break room downstairs. Food that is served at special affairs is reportedly catered by outside firms, so food is not prepared on premises except for food that is reheated by employees. There is no commercial kitchen on the premises. If staff decides they want to prepare and serve food at the site, a full commercial kitchen would have to be designed and built. This would involve hand wash sinks, floor sinks, commercial range hoods, and the like. See UPC 318 for plumbing requirements, but many more mechanical requirements exist as well. Should the Museum wish to change the current practice and provide food service opportunities, further discussion will take place.

Floor Drains: There is no floor drain in the upstairs restrooms, so when the frequent backups occur, the floors flood. The UPC requires a floor drain if there are two water closets or one water closet and one urinal, and the restroom is supposed to have a urinal so if the restroom is reworked to add the urinal, then the floor drain would also be required.

Roof Drains: There are no internal roof drains. The majority of roof drainage occurs through outside rain leaders. The rain leaders apparently freeze, so electrical heat trace has been added. The heat trace does not appear to be of the self limiting type, so it may be consuming unnecessarily large amounts of power. A commercial quality electric heat trace system is recommended for the ice damming and downspout systems. There are also electrical concerns with the existing installation.

Exterior Hose Bibs: One exterior hose bib located on the upper parking area does not have a code required backflow preventor. See UPC 603.

Actual Fuel Usage Records

According to records provided by Neil McArthur, maintenance supervisor, the Museum only uses an average of 7 gallons of fuel a day since 4-29-04. The workshop only uses an average of 1.5 gallons of fuel oil a day since 4-29-04. This represents an exceptionally efficient building in both cases. This efficiency may be due in part to the heat generated by exhibit lighting and facility equipment. The seemingly high efficiency for the boiler system may be offset by heat generated by the electrical display lighting.

Shop Building

Description: The shop building is used for minor woodworking and miscellaneous other maintenance related tasks. The building has an accessible crawl space, although the crawl space is less than 7' floor to ceiling, so it is not considered habitable.

General comments: Some features of the building are listed below:

Fire Protection: The building has a small fire sprinkler system upstairs and in the crawl space, fed with ½" copper pipe run outs. The total system is fed with ¾" copper pipe. This is undersized for a standard sprinkler design, but the building is not required to have a sprinkler system, so this non-standard system is better than no sprinkler at all.

Heat Generation: There is a cast iron sectional boiler in the basement that provides heat to the building. The boiler is a Weil McLain P-368-V, 0.7 GPH boiler. The boiler appears to be in good operating condition.

Dust Collection System: The wood shop does have a small sawdust collection system attached to a stationary saw. There is also a larger wall fan that simply exhausts air from the shop room. If specific contaminants need to be exhausted, then a hood arrangement is recommended to remove contaminants from the source.

Fuel Usage: The fuel usage at the shop building indicates that it is an energy efficient facility.

2.5 ELECTRICAL

Electrical Service

Size: The electrical service was upgraded in 1986 when a general remodel was done. The upgraded service is 400 Amps, 120/240 volts, three phase. Currently, all the electrical equipment in the facility is 120 or 240 volt. The upgrade included a new main distribution panel (MDP). The electrical meter number is 73 316 683.

Type: The service is an underground service, with a step down transformer located near the outside meter in the rear of the building.

Age/Condition: The visible portion of the electrical system appears to be in good condition.

Power Distribution

Type: All power is distributed throughout the building through a main distribution panel.

Condition: Power distribution that was visible is in conduit and appears to be done professionally.

Panels: Panels serving the various sections appear to be in good condition, but the panel directories need to be updated to clearly specify the load served along with the proper location of the loads.

Wiring Types: There is reported plastic coated NM type cable in some sections, but those areas are all reported to be concealed. Staff does advise that the older wiring is grounded. With the exception of one section of exposed MC cable, the balance of the exposed power wiring was in conduit.

Electrical Devices

Exterior Outlets: Exterior outlets that were observed were GFIC type, and the receptacles were in waterproof type boxes. However, the current code requires such outlets be in covered, “while in use” boxes that permit a cord to be plugged into the receptacle and still have the box cover provide protection from the elements.

Interior Outlets: The interior outlets appeared to be in good condition, although continuity and polarity testing was not done on the outlets to confirm proper wiring.

Electric Heat Trace: Electric heat trace serving the rear roof thaw cable and downspout heat trace was fed using an extension cord stapled to the siding. The heat trace circuits were all fed from a 6 mA personnel protection receptacle. NEC requires heat trace cables to be protected with a 30 mA equipment type GFI breaker, rather than a 6 mA GFIC receptacle.

Lighting Systems

Parking Lot Lighting: Lighting for the parking lot is provided with pole lighting in addition to some building mounted lights. It is unlikely that the lighting provided meets the IES standards which require both uniformity and minimum levels. The parking lot foot-candle levels would have to be mapped during evening hours to determine where additional lighting is needed, although staff advises that additional lighting is needed near the shop.

Interior Lighting: The interior lighting is made up mostly of halogen type spot lights to accent articles of interest. The offices are lit using mostly 2x4 lay in fluorescent fixtures. All of the fluorescent lighting fixtures observed had 40 watt T-12 type lamps with magnetic ballasts. Electrical energy savings up to 50% are possible with a retrofit of all of these fixture lamps and ballasts with newer electronic ballasts, and T-8 lamps. Some T-8 lamps go down to 25 watt or 28 watts, compared to 40 watts. When coupled with the right ballasts, these lamps will perform almost as well as existing with significant energy reductions. A lighting upgrade is recommended.

Restroom Lighting: The restrooms are light with incandescent wall sconces. We recommend a retrofit to miniature fluorescent screw in lamps to immediately reduce power draw by over 60%. Also, we recommend changing wall switches to a motion detector type. Due to concerns with odor removal in the toilet rooms, the newer, higher quality motion detectors, such as the Novitas brand, can be programmed to remain on for a given time after the room is vacated to assure adequate odor removal without leaving the lights and fans on indefinitely.

Emergency Egress Lighting: We measured emergency egress lighting in several locations, and found the lighting to be inadequate in all cases. The NEC requires an average of 1.0 FC of light along the path of egress, but not less than 0.1 FC minimum. Many authorities having jurisdiction require 1.0 FC minimum along the path of egress. Also, the lighting should be powered from an unswitched leg of the local lighting circuit, so the emergency lights go on when power is lost to the local lighting. We found this to not be the case in most of the spot checks performed. Also, current codes require that emergency egress lighting in places that require two exits (this is the case here) require that the lighting continues to the outside. This means that remote emergency heads need to be installed outside each exit as well as along the egress path.

Signage

Exit Signs: There are a few exit signs, however there are not adequate numbers of exit signs throughout the facility. There needs to be an upgrade of the exit signs throughout the facility to bring it up to code. A person should be able to see two exit signs from any place he is standing, but in many cases, no exit signs are observed.

Fire Alarms

Panel Type: The fire alarm panel is a Kidde Model KDR 1000. The panel has been checked within the last year, but it is an older model that should be replaced. The newer technology system recommended would have an annunciator panel at each building entry, and each detector would be individually addressable. Using this technology, the exact location of a fire detection would be immediately known to firefighters or system troubleshooters.

Pull Stations: Pull stations are required to be located at each exit. The main entry has a pull station at the top of the stairs, but not at each exit.

Detector Locations: NFPA 72, 2002 edition requires that each ceiling section that makes a “pocket” by virtue of deep exposed beams, be individually protected with a smoke detector. Also, the detector must be located within 36” of the highest peak of the ceiling within 10’. While we did not physically measure the height, it does not appear that the detectors are within 36” of the peak of the underside of the ceiling in the main exhibit area, nor are the pockets protected. We recommend that all detectors be reviewed, and the entire system be brought up to current code guidelines.

Horn Strobes: There are no strobes, only horn/lights due to the age of the notification devices. Strobes are required to be code and ADA compliant. We recommend that a completely new fire alarm system, including all new devices, wiring, and panels, along with annunciator panels, be installed.

Plenum detectors: There is one plenum smoke detector in the common duct return duct, but current code requires a smoke detector also be placed in the supply duct.

Intrusion Alarm System

System Type: The security system is operated by a Magnum Alert 3000 series intrusion alarm system. The system includes motion detectors and door switches. There are an estimated 20 detectors monitoring the building.

System Condition: The system is an older technology, so an upgrade to current technology should be considered. This is not a code issue, but rather a serious concern for the value of the collection that the system is to protect.

3.0 CAPACITY ANALYSIS

The Museum is currently swelling beyond the physical building's capacity. Now is the time for the Museum's Board of Directors and the community to consider expanding and increasing capacity while building the future Pratt Museum legacy.

This section of the condition survey discusses the capacity of the current site, structure and systems. The basis for this discussion is a one-day site visit and is therefore not comprehensive or all inclusive. It is our intention to relay first impressions of what we found in the Pratt Museum compared to what we have found in other similar facilities or what best practice suggests. The purpose of this section is to establish a starting point from which an architectural program can be developed.

SITE

The 405,110-square-foot site is currently occupied by 9,800 square feet of building foot print and approximately 30,000 square feet of parking and surfaced area. The 365,000-square-foot balance of this site is used for a variety of outdoor exhibits, gardens, trails and other related activities; there is not a shortage of site capacity. Allowing for zoning and building code required set backs, re-establishment of the stream bed and additional decentralized parking, there is still well over 200,000 square feet of property on which the Museum could expand.

Currently, approaching the Museum site is an uneventful transition from Homer's central business district. This is unfortunate because the Pratt Museum has established an exciting and dynamic program inside the building. A more easily recognized entry to the Museum, better signage, removal or relocation of the wooden storage shed, and re-establishment of the stream are all actions that would help the Museum create a street presence. Creating an outward architectural expression that is contemporary and meets new spatial and environmental demands would undoubtedly enhance the Museum's existing attractions.

Reportedly, the existing 47 vehicle parking spaces are insufficient for peak summer visitor requirements. The City of Homer zoning code does not specifically address Museum parking requirements. Beth McKibben suggested negotiating with the City of Homer to establish a required number when the next major project arises. In any event, it appears the existing parking capacity is not sufficient and additional vehicle parking is required for efficient operations.

All site utilities, water, sewer, electrical, data and telephone are sufficient for the current structure. It appears that excess capacity exists to construct a small expansion if desired.

BUILDING

The advent of digital systems and greater control of our buildings has rendered many building systems obsolete. This is the case for the Pratt Museum, systems are for the most part antiquated and replacement or upgrade is suggested to meet current building codes, increase efficiency or because the systems are simply worn out. The list of systems suggested to be replaced can be found in the Recommendations section of this report and is not addressed in the Capacity Analysis.

The systems that are working efficiently and have capacity for some expansion include the boiler and air handling unit. These large costly components are in good condition and have a number of years of service remaining.

The spatial capacity of the building seems to be a limiting factor for the Museum. There are seasonably up to 20 full and part time employees working at the Pratt Museum. Office and work areas are currently limited and do not provide adequate office or work station space to accommodate even the permanent full time staff. It is suggested that during the programming phase of the project the additional office space be requested.

The addition of an administrative workroom would help reduce overall staff foot traffic, provide a central location for the copy, fax, printers and paper supplies. Providing layout space in the workroom would also eliminate the use of gallery space for this activity. A 120- to150-square-foot room would increase staff efficiency and keep the galleries free of administrative activities.

A conference room capable of holding 18 to 20 people is commonly found in Museums for staff meetings. A conference room to accommodate this number of people is expected to be 220 to 230 square feet.

An administrative conference room capable of holding 6 to 10 people would also be useful. It is expected an area approximately 200 square feet would serve this purpose, as well as function as itinerant or visiting staff office space.

Expanding existing galleries or adding a new gallery may be desirable considering the size of the Museum’s collection.

Increasing the existing collections area to store the materials currently in the workshop and planning for a 40% expansion beyond that area is a reasonable approach to protect the collection. Installing a compact file system will decrease the actual area required for the collection by as much as 25%. If possible, the collections area should not be below grade, should have direct access to galleries and should be near a conservation workroom. If the collections continue to be on a separate level from gallery space, an elevator should be considered.

Providing a conservator workroom will aid in maintaining and cataloguing the collection. Providing this space as a wet lab would be ideal but even a well ventilated dry work area would be beneficial.

Including a weather protected loading dock with a small receiving area and a freight sorting/holding area elevator directly accessible to the galleries would be ideal.

The education areas of the Museum are currently shared with gallery space. Providing one multipurpose classroom would enhance the education program and possibly provide space for other related activities such as films, guest speakers and possibly adult and youth studio/classes.

The Museum is significantly short of non-collections storage. The addition of a storage room for tables and chair carts, exhibit crates, display cases and the assortment of other large bulky items would enhance the Museum's efficiency and ability to host events and more traveling exhibits. 500 to 650 square feet of additional building storage is recommended.

Museums often cater events requiring food re-heat or preparation and dish washing. The existing staff break room is not equipped to provide this service and meet state health standards. Consideration of a small servery/food preparation area is appropriate if catered events are planned. If food service is considered, the preparation area will be "restaurant like". Also food, both incoming and waste, will need to be completely separate from the Museum, including the loading area.

4.0 RECOMMENDATIONS

The task of the condition survey team was to analyze the existing building for a broad range of deficiencies. The team developed a list of deficiencies and building failures (following pages). This list should not be interpreted as a long list of fatal flaws, but rather a list of improvement that will incrementally improve the Pratt facility.

The overall impression of the survey team is that the building is in very good condition and that remarkable care has been taken to preserve the building's character and maintain its aging systems. In our opinion the building is sound, and if the recommended enhancements are followed, the building should serve the Museum for another 50 years.

Some of our recommendations address immediate threats to the Museum and should be scheduled as soon as possible. One example is the 20-year-old single-wall buried fuel tank. If leaking has not yet occurred, it is imminent and removal is recommended as soon as possible.

Life safety deficiencies such as exterior heat trace should be scheduled to be in place next winter before it is once again needed. Some suggestions such as installing efficient light bulbs in the toilet room are so easily accomplished they could be done immediately.

Other recommendations would be better accomplished if they were part of a larger renovation or addition project. In these cases, the Museum would benefit most by first evaluating what areas of the program should be enhanced and then determining if those enhancements require new or expanded building area. If a new or expanded building area is pursued, then some recommendations would be best incorporated into a larger building project.

If it is determined that an addition or internal renovation is necessary to fulfill the Pratt's mission, many of the systems related deficiencies will be most easily accomplished at the time of the construction project when walls are open and finishes removed.

In any event, we suggest the Pratt Museum engage a consultant to help guide their future mission. Once the Museum knows what it would like to accomplish in the short- and long–term, we can then assess how to expand and improve the architectural environment in order to meet those goals. After planning, an architectural program can be prepared to translate programming into spatial needs and mesh these needs with repair of the deficiencies identified in this survey.

Following the decision to evaluate and assess the Museum's future, we suggest items indicated to have the highest urgency in the following matrix be budgeted for and accomplished first.

Deficiency	Life Safety or Urgent	Integrate with Larger Project	Difficulty to Accomplish	Relative Cost	Remarks
Add toilet room fixtures	C	●	●	$$$	Plumbing code requirement not required until other work takes place.
Upgrade stair to attic office	C	●	●	$$$	Could be considered life safety issue.
Provide accessible route at north foyer	C	●	●	$$$	ADA requirement.
Upgrade sprinkler system to comply with NFPA 13	C	●	●	$$$	Line extensions, some freeze protection.
Add fire pull stations, one at each exit	C	○	●	$$	Best done with other fire detection systems upgrade.
Install additional ADA compliant drinking fountain	C	○	○	$$	Plumbing code requirement when major work occurs.
Upgrade smoke detector system	C	○	○	$$	Best done with other fire detection systems upgrade.
Provide smoke detector in supply air duct	C	○	○	$	Best done with other fire detection systems upgrade.
Provide horn/strobe devices	C	○	–	$$	Best done with other fire detection systems upgrade.
Upgrade emergency egress lighting	C	–	○	$$	Code/safety issue
Replace hose bib with one that has back flow preventor	C	–	–	$	Plumbing code requirement when major work occurs.
Replace exterior electrical cover plates w/code compliance plates	C	–	–	$	Code requirement
Install additional exit signs	C	–	–	$	Code/safety issue
Add accessible access signage	C	–	–	$	Size, lettering and locations are mandated.
Replace electric heat trace with code compliance system	C	–	○	$$	Safety / Code / Energy
Relocate fuel vent away from electric service	C	–	–	$	Safety/code issue
Provide back flow preventor on water service	C	–	–	$$	Safety/code issue
Install 2 CO_2 sensors and connect to AHU control	C	–	–	$$	Safety/code issue
Remove existing 1,000 gallon fuel tank/install new tank	●	–	●	$$$	Significant exposure to Museum until removed.

<u>Key</u>
Code Requirement C
High ●
Medium ○
Low –

Deficiency	Life Safety or Urgent	Integrate with Larger Project	Difficulty to Accomplish	Relative Cost	Remarks
Install fuel containment system for fuel piping	●	–	O	$$	Significant exposure to Museum until removed.
Replace roof	●	●	●	$$$	Broad scale roof failure is likely with this age and type of roof.
Upgrade intrusion alarm system	●	●	●	$$$	Importance based on Museum's concern.
Contract asbestos & lead study	●	–	●	$$	Important before any work takes place in the building.
Repair projecting wood roof beam ends	●	–	●	$	Preservation measure
Update electrical panel directories	●	–	–	$	Code / Maintenance / Safety
Clean/inspect boiler chimney	●	–	–	$	Safety/maintenance issue
Modify/relocate store	O	●	●	?	Gain more exposure at entry/exit points.
Upgrade building humidification	O	●	O	$$$	Collection benefit
Provide mist system fire suppression in Collections	O	●	O	$$$	Enhancement
Replace fire alarm panel	O	●	O	$$$	Best done with other fire detection systems upgrade.
Replace T-12 fluorescent fixtures with T-8 fixtures	O	●	O	$$$	Energy savings
Replace windows	O	O	O	$$	Security and energy issue.
Install floor drains in toilet rooms	O	O	O	$$	Related to toilet room finish upgrade.
Upgrade toilet room finishes	O	O	O	$$$	Mitigate leaks through floor, upgrade.
Upgrade exterior lighting	O	O	–	$$	Code / Safety / Operational Benefits
Replace incandescent lamps in toilet rooms with fluorescent	O	–	–	$	Energy savings
Install Bridert type wind directional cap at flue	O	–	–	$	Repair/enhancement
Test sample glycol to assess need to rejuvenate	O	–	–	$	Maintenance issue
Replace water heater	O	–	–	$	Maintenance issue
Clean ductwork	O	–	–	$	Health benefits

Key
Code Requirement C
High ●
Medium O
Low –

Deficiency	Life Safety or Urgent	Integrate with Larger Project	Difficulty to Accomplish	Relative Cost	Remarks
Install metered faucets on lavatories	○	–	–	$	Maintenance upgrade, reduce water consumption.
Replace public entry exterior doors	○	–	–	$$	Security issue.
Replace staff entry door	○	–	–	$$	Operational issue.
Provide urinals in men's restroom	○	●	●	$$$	Plumbing code requirement when major work occurs.
Water proof foundation wall	–	●	●	$$$	Proximity to creek increases water pressure against wall.
Relocate/enclose education offices	–	●	●	?	Staffing efficiency.
Install VAV ventilation system	–	●	●	$$$	Comfort/upgrade
Install boiler generated domestic hot water system	–	●	○	$$	Energy efficiency
Add air barrier to exterior walls	–	●	–	$	The addition of an air barrier is simple in it self - requires new siding.
Provide additional vehicle parking	–	○	●	$$$	Affected by stream project.
Remove culvert; re-establish Woodard Creek	–	–	●	$$$	Museum program goal.
Replace existing wall hung toilets	–	–	–	$$	Maintenance upgrade, reduce water consumption.

Key
Code Requirement C
High ●
Medium ○
Low –