Anderson Building Remodel & Pedestrian Access Improvement
uas project no: 2007-01

Conceputal Design Narrative
August 11, 2008
ACKNOWLEDGEMENTS

Owner: University of Alaska Southeast
James Malanaphy, III, Project Manager
Facilities Services Planning and Construction, Architect

Participants: UAS Anderson Building Remodel Leadership Committee
John R. Pugh, Chancellor University of Alaska Southeast
Carol Griffin, Vice Chancellor, Administrative Services
Robbie Stell, Provost
Patrick Brown, Dean of Arts & Sciences
Keith Gerken, Facilities Services Director
Joseph Mueller, Facilities Services Operations & Maintenance Manager

UAS Anderson Building Remodel User Committee
Patrick Brown, Dean of Arts & Sciences
Cathy Connor, Associate Professor; Natural Sciences Department
Lisa Hoferkamp, Assistant Professor; Natural Sciences Department
Ginny Eckert, Associate Professor of Biology; Natural Sciences Department
Erica Hill, Assistant Professor, Anthropology; Social Sciences Department
Brian Blitz, Associate Professor; Natural Sciences Department, Math Chair
Sherry Tamone, Associate Professor of Biology; Natural Sciences Department
David Tallmon, Assistant Professor of Biology; Natural Sciences Department
Beth Mathews, Assistant Professor of Biology; Natural Sciences Department

Planning Consultant Team:

Architect: ECI/Hyer, Inc.
Lab Programming & Design: NBBJ
Civil Design: R&M Engineering, Inc.
Structural Design: Reid Middleton
Mechanical Design: Murray & Associates, PC
Electrical Design: Haight & Associates
TABLE OF CONTENTS

Executive Summary ........................................................................................ 1
Project Overview ............................................................................................. 3
   Programming Phase ................................................................................... 3
Concept Design .............................................................................................. 6
   Site Components ....................................................................................... 6
   Building Design ....................................................................................... 10
   Structural Design .................................................................................... 16
   Mechanical Design .................................................................................. 19
   Electrical Design ..................................................................................... 23
Next Steps ...................................................................................................... 27
Appendix
EXECUTIVE SUMMARY

In 2006 the University of Alaska Southeast (UAS) solicited proposals for programming and design services for the renovation the Anderson Building; currently home to the one of the State’s more significant marine fisheries educational programs.

The impetus for the renovation project is the relocation of the University of Alaska Fairbanks’s School of Fisheries and Ocean Sciences to their new facility under construction at Lena Point. The move establishes the opportunity for UAS to define renewed and modernized settings within the Anderson Building.

Anderson Building Programming and Concept Design

The design team has worked with UAS during the last year to develop a facility program for the Anderson Building. The final program document was approved by UAS in May 2008. During the Project Program phase of the work, two basic program scenarios were developed allowing a range of usable space outcomes. The mix of program space types and program area sizes allowed for flexible application of the program within the constraints imposed by the existing envelope. The design team was challenged with maximizing teaching and research space while developing an efficient and coherent concept design for reuse of the Anderson Building.

A series of conceptual diagrams for reuse of the Anderson Building were developed by the design team over the last three months. These concepts were presented to the University’s committee members on July 1st with an intense discussion and working session following the presentation.

In the course of testing the space program within the existing Anderson Building, a greater understanding of how the floors play out has given rise to many changes in the program size and program mix. A better understanding of the limitations and opportunities of the Anderson building was articulated to the committee through the concept diagram process. This has resulted in a request to add new program spaces, to delete spaces, and to adjust the size of some of the spaces. The Program Space List in the Appendix records the results of these changes into the Final Concept Program.

Pedestrian Access Improvements

Parking at the Anderson Building is limited to approximately 25 spaces and many users park elsewhere on campus and walk to the building. To reach the building pedestrians must cross the Glacier Highway—the combination of high traffic volumes, vehicle speed and poor sight lines establish an unsafe crossing scenario for pedestrians moving between the Anderson Building and the main UAS campus. UAS has tasked the design team to assist with resolving this unsafe pedestrian crossing fronting the Anderson Building.

To generate a more detailed representation of the design concept options for the pedestrian access improvements we find ourselves needing more concrete input and project commitment from the State of Alaska Department of Transportation and Public Facilities (DOT&PF). At this time the State of Alaska has not committed total funding for the design or construction of the Glacier Highway upgrades outlined in the 2004 Auke Bay Corridor Reconnaissance Study (ABCOR). There have been partial funding agreements for potential further design efforts but the project has not become an active project. A significant part for the successful realization of this piece of the project lies with continued advocacy about the needed funding and prioritization by DOT&PF. The following outlines the options and more general locations for the considered solutions: on-grade crossings at identified intersections receiving traffic roundabouts combined with a new sidewalk fronting the Auke Bay side of the Glacier Highway; an elevated crossing of the Glacier Highway; or a depressed crossing of the Glacier Highway. Both of the latter options would be in the vicinity of the Anderson Building frontage to the highway.

The on-grade crossing may provide the better long term solution to improved pedestrian circulation and access for UAS. The timing for DOT&PF’s project commitment combined with the needed right-of-way acquisition will most likely result in the longest time frame for design and development and use by UAS.
If DOT&PF can establish the parameters of the new alignment for the Glacier Highway we could advance the elevated crossing concept option with more certainty. The re-alignment proposes moving the curve to the north; the least grading impact for access to an elevated crossing. The design solution would need to identify foundation points for the elevated crossing that will work with both the existing and final Glacier Highway alignment. Some significant long spans for the crossing would be anticipated.

The depressed crossing option could similarly be advanced with an established highway alignment by DOT&PF. The downside of advancing this solution is the grading associated with entry to the crossing on the north side of the highway. There is more uncertainty and challenge with anticipating the alignment and the overall length of the tunnel may need to be more extensive to solve current and future highway alignment. To resolve the current grading and future alignment may prove more costly.

**Future Steps**
The design team has obtained a significant amount of owner and user input to date. As the Anderson Building Renovation and Pedestrian Access Improvements moves into subsequent design phases, further investigation and confirmation is recommended. Additional data, in combination with more detailed coordination between UAS and the design team, will permit the design efforts to advance with a united, sound, and concrete base of information. The summarized recommendations are to:

- Obtain a complete site and topographic survey.
- Further coordinate with DOT&PF for the intended planning and design efforts associated with the Glacier Highway improvements (Auke Bay Corridor).
- Conduct a detailed hazardous materials investigation for the existing facility.
- Confirm budget prior to undertaking design efforts.
- Update the project schedule.

Following the project approval by the University of Alaska Board of Regents, we look forward to undertaking and advancing the design efforts for this worthy and significant contribution to the UAS. We know this project will enable the UAA system to provide long-term leadership with marine fisheries educational programs and we look forward to playing a role as the design team.
PROJECT OVERVIEW

In 2006 the University of Alaska Southeast solicited proposals for programming and design services for the renovation the Anderson Building. The Anderson Building is currently home to one of the State’s more significant marine fisheries educational programs which houses classroom laboratory instructional and research settings for the UAS undergraduate and the University of Alaska Fairbanks (UAF) graduate science departments.

The renovation project will ultimately relocate UAF’s School of Fisheries and Ocean Sciences to their new facility, currently under construction at Lena Point. The move by UAF establishes the opportunity for UAS to define renewed and modernized settings within the existing Anderson Building.

Additionally, parking at the Anderson Building is limited. Many building users park elsewhere on campus and walk to the building. Pedestrians must cross the Glacier Highway where traffic moves at speeds of 40 to 50 miles per hour and sight lines are obscured due to the curved highway alignment. The Anderson Building renovation project intends to resolve the unsafe pedestrian crossing and options have been included with the renovation efforts.

Building History

The Anderson Building was named in 1984 honoring Clarence L. Anderson, the first and only director of Alaska Territorial Department of Fisheries and commissioner of the Alaska Department of Fish and Game. He guided the development and management of Alaska's fisheries resources from 1949 through 1961.

The Anderson Building was originally constructed in 1977 and designed and built as a two story structure. A third floor was added shortly thereafter the original occupancy. Throughout the life of the facility numerous changes have taken place. Record documents obtained from UAS Facilities and Planning establish the following significant modifications and associated construction document dates:

- Fisheries & Resource Center laboratory design, January 1978.
- Third floor addition, March 1981.
- Seawater provisioning for the labs, July 1982.
- Walk-in cooler-freezer unit at the west end of the buildings first floor, July 1982.
- Fire sprinkler system, May 1984.
- First floor ventilation, February 1985.
- Biology classroom upgrade (room 316), June 1998.
- Covered entry and ramp, May 1999.
- Generator replacement, date uncertain.

In August 2000 UAS obtained professional services to prepare a condition survey of the Anderson Building. The report summarized specific deficiencies needing attention and addressed building and site accessibility considerations. The suggested corrective actions outlined in the report have not been fully confirmed with UAS at this point in the design. As the Anderson Building Renovation moves into subsequent design phases the issues addressed in the report will be re-reviewed and the desired corrective efforts will be prioritized with further UAS input.

Programming Phase

The design team was introduced to the project by touring existing science-oriented facilities at UAS and conducted interviews with leadership and user groups to discover the University’s needs and to establish project goals. These initial steps formed the basis for development of the Anderson Building program, which was reviewed and finalized in May 2008. The following outlines the priorities, background, and goals established.
The Arts and Sciences program at UAS has a significant leadership position in the delivery of a quality education for its students. Science programs occupy a special place in the identity of the University and there is an opportunity for it to lead with science and especially to lead with the unique marine location that is Juneau. All majors can benefit from the strength of the science curriculum. The opportunity for the participation of undergraduates in scientific research is a particular strength of the UAS program and should be further encouraged.

The remodeling of the Anderson Building into a significant modernized science facility presents an opportunity for UAS to further its strengths and core values and to fit to its vision for the future—“to speak to who we are”.

The existing running seawater system in the building, fed directly from Auke Bay, is a unique asset to marine science programs. The program for the remodeled building should make the most of this capability.

1st PRIORITY: the remodeled building is to provide facilities that will further the quality of the science teaching program and classrooms, and;

2nd PRIORITY: to provide research space that is also a venue for undergraduate research participation.

Background
The current project builds on work accomplished in the past five years that identified a goal to advance and achieve further recognition for excellence of the UAS programs in biology, marine biology, and environmental sciences.

Recent University studies have identified need to attract more students from outside of the southeast region as well as outside of the state to UAS. Given the Juneau setting and the strength of its faculty, the biological and environmental science program areas have excellent potential to attract students.

Two previous studies, in particular, provide some of the background for the current work: “The Study for an Expanded Science Facility (August 2002)” and “UAS: The Next Decade: Strategic Plan for the University of Alaska Southeast 2000-2010”.

UAS Strategic Goals
In “Strategic Plan for the UAS 2000-2010,” a set of key strategic goals were developed by the University community and approved by the Board of Regents to provide a roadmap for the continuing success and growth of the University. Several of these goals directly relate to the development of the facilities and are encompassed in the current Anderson Building project. The following are excerpts from the document that have particular relevance to the project:

“Goal Two: Faculty & Staff Strength:”
“The University will recruit, develop and retain a culturally diverse faculty and staff who bring excellence to our research, teaching, and public service through innovative and mission-focused academic programs and services.”

“Faculty Development and Research”
• Support faculty to grow in their discipline through research and scholarship, and professional engagement.
• Assist faculty to secure funded opportunities for research, especially in service to state needs.
• Promote faculty research through inter-MAU collaboration and pursuit of research grants.
• Assist faculty in integrating technology into instruction that leads to enhanced learning.”

“Goal Three: Educational Quality”
“Expand and Enhance Program Offerings”
“In an effort to increase retention and attract new students, bachelor degree programs have expanded and now include liberal arts, English, social science, mathematics, biology, marine biology, and environmental science. Each program emphasizes experiential learning and mentoring relationships with faculty to take advantage of favorable student to faculty ratio and the campus’ unique location. In addition, UAS will:
• Continue to develop viable baccalaureate majors in preparation of graduate study, with attention to the needs of Master of Arts in Teaching (MAT) candidates.
• Develop additional appropriate baccalaureate minors.
• Further develop an Outdoor Leadership program, which incorporates the liberal arts with outdoor recreational experiences.
• Enhance AA and Bachelor of Liberal Arts (BLA) distance-delivered program offerings.
• Develop meaningful assessment procedures for all undergraduate degrees.
• Determine the feasibility of developing advanced degrees in areas of faculty strength and student interest.”

“The UAS will offer the highest quality programs, from non-degree training to graduate degrees. Our campuses will provide the highest possible quality programs and services within their respective missions. UAS recognizes that the traditional liberal arts education is more important now than ever as it provides students with the critical thinking skills and the foundation necessary to be prepared to meet rapid changing work, cultural, and social environments. The liberal arts education at UAS helps students develop skills in self-examination, imagination, and citizenship.”

“Marine Biology and Environmental Science”

“The UAS campuses are located within the diverse ecosystems of Juneau, Sitka, and Ketchikan. The campuses are contained within the 17 million acre Tongass National Forest; they border the Juneau Icefield that contains 38 major glaciers covering 1,500 square miles, and a glacial fjord system containing thousands of islands. The complex waterways and 33,000 miles of coastline in Southeast Alaska yield some of the richest fish and wildlife populations in North America. This rich natural environment provides UAS students and faculty with unparalleled educational laboratories, and our science programs take advantage of those opportunities for training resource managers, conducting original research, and educating citizens to make informed choices. UAS will extend its influence in these areas by undertaking the following activities.”

“Extend current natural resource-based degrees”

“UAS focuses on Environmental Science and Marine Biology as its flagship programs in the natural sciences. Both of these programs attract students interested in careers in natural resource management, scientific research, and outdoor education. UAS students develop practical skills as well as textbook knowledge in a curriculum that integrates traditional lectures and laboratory courses with field research experiences in glaciology, hydrology, geology, chemistry, and marine biology. UAS will:

• Continue to strengthen the marine biology, biology, and environmental science programs.
• Develop masters’ degrees in science areas that take advantage of the unique environment and experience of UAS.”

“Develop an increased capacity for natural resource research”

“The research and environmental monitoring services that UAS provides to public resource agencies and the private sector aim to assist these clients and create professional growth opportunities for faculty and students. To increase these opportunities, UAS will:

• Expand on undergraduate research in environmental/marine science.
• Encourage faculty research through increased access to facilities and grant support.”

“Provide scientific leadership concerning the natural resources of Southeast Alaska”

“Balancing the needs for economic diversification and development with the need to manage the environmental effects of industrial and recreational activity in Southeast Alaska requires the acquisition and dissemination of sound scientific information. To provide leadership in this area, UAS will:

• Expand scientific collaboration with other research universities and agencies.
• Provide scientific consultation for government, industry, and non-profit agencies.
• Host scientific conferences and meetings.”

The approved project program space listing is included in the narrative Appendix.
CONCEPT DESIGN

SITE COMPONENTS

Topography: The topography of the existing site is fairly level from Glacier Highway (elevation = 70') through the Anderson Building paved parking lot to the building entrance finish floor elevation = 65.73'. Ground surfaces drop away from the Anderson Building towards the beach at slopes varying from 1.5: 1 to 2:1 (horizontal to vertical). A paved access road is surrounds the north, west, and south sides of the building, slopes on this access road vary from 4%-8%.

Drainage: There are three existing storm drain outfalls discharging to the waters of Auke Bay on this site. The first drainage system includes an 18" CMP drain pipe with an inlet located between Glacier Highway and the UAS Anderson Building parking lot. This storm drain is sloped downhill and is located between Lot 003 and Lot 004 (NOAA Lab). The pipe is approximately 140' long then discharges into an existing open ditch then into an underground storm drain system to the waters of Auke Bay. The parking lot is drained by surface sheet flow methods to an existing storm drain structure located in the sidewalk in front of the building. An 18" corrugated metal pipe discharges from the catch basin down slope to another catch basin where surface drainage is captured in a vegetated drainage swale into another underground catch basin and piped beneath the paved access road to the existing ditch described above. There are two separate storm drains outfalling to Auke Bay on the south side (rear) of the building, both are 12" CMP structures. Roof and foundation drains appear to be connected to these two storm drain lines. Storm drain outfalls may need to be upgraded to include oil/water separators to ensure storm water discharge meets regulatory requirements.

Development and Site Restrictions: The Anderson Building renovation is not anticipated to expand the current footprint and thus site restrictions are not thought to be an issue for the building renovation. Depending on what alternative is chosen for the Glacier Highway pedestrian crossing could result in site restrictions from the standpoint of maintaining accessible grades.

Environmental Regulations: A hazardous materials study searching for asbestos or lead paint has not been conducted for the Anderson Building thus far. A City and Borough of Juneau (CBJ) Building Permit and possible Conditional Use permit would be required if this is determined to be necessary. One eagle tree has been identified in the area by the U.S. Fish and Wildlife Service (tree #204). This eagle tree is located across Glacier Highway from the Anderson Building within the forested area. Review of the Juneau Wetlands Management Plan does not identify any wetlands on the Anderson Building site or on the hillside across Glacier Highway. No catalogued anadromous fish streams are located on the project site. The project site is located within the jurisdiction of the Juneau Coastal Management Plan. The area is also categorized as Auke Bay Areas Meriting Special Attention. A consistency review will need to be conducted for the project.

Utility Services: Current utilities serving the Anderson Building include CBJ public water and sanitary sewer. A 6" ductile iron water line connected to the CBJ 12" ductile iron water main provides water service to the building. Sanitary sewer is collected in a lift station within the Anderson Building mechanical room and pumped to a CBJ sanitary sewer manhole located on the south side of Glacier Highway. The force main line and pump were reconstructed in 2002. Electrical power is provided to the Anderson Building from AEL&P electrical underground service. Telephone service is provided by GCI via underground conduits. TV cable service is provided via underground conduit from ACS.

Vehicular Access, Circulation, and Parking: Vehicle access to the Anderson Building parking lot is from Glacier Highway. A common driveway for the Anderson Building and the NOAA Laboratory exists. The Anderson Building
is served by the existing on-site asphalt surfaced parking lot. Parking stalls for 25 vehicles and two accessible stalls are provided in this existing parking lot.

The Anderson Building is located on property zoned Waterfront Commercial (WC) by CBJ Zoning maps. CBJ 49.25.400 Table of Dimensional Standards states that for this zoning classification the following minimum dimensions:

- Minimum Lot Size = 2,000 square feet
- Minimum Lot Width = 20 feet
- Minimum Lot Depth = 60 feet
- Maximum Lot Coverage = None
- Maximum Height Permitted = 35 feet
- Minimum Front Yard Setback = 10 feet
- Minimum Street Side Yard Setback = 10 feet
- Minimum Rear Yard Setback = 10 feet
- Minimum Side Yard Setback = 10 feet

The CBJ Land Use Code, Title 49.40 requires one stall per every 300 SF of gross floor area for classroom and office space. The total building area is approximately 17,614 gross square feet. Using the Anderson Building gross building area and CBJ required parking requirements results in parking requirement of 58 parking stalls.

The CBJ has given a verbal indication that parking provisions can be evaluated on a campus wide basis in lieu of all spaces being in direct proximity to the building served. As the Schematic Design is initiated, we will confirm with the UAS the desired approach to resolve the final parking provisions.

**Future Expansion Potential:** The adjacent easterly Lot 002, otherwise known as the Bedford property, is a privately owned parcel developed with a single story wood structure. The property is wooded and has frontage to the tide waters of Auke Bay. This site has great future potential for development with the Anderson Building for both building and parking lot expansion. A wooden fence located on the common property line separates the two properties. Acquisition of this property would also allow development to Lot 001, the lot located immediately east of the Bedford property. Lot 001 is owned by UAS and has lot frontage to Auke Creek and the tidewaters of Auke Bay. Existing gravel trails meander through the property and no structures are known to exist on this lot.

**Outdoor Labs and Beach Access:** The shoreline of Auke Bay is located south of the Anderson Building approximately 120’. The topography is fairly steep down to the tidewater area and is covered with brush and small trees. The UAS desires the development of an access trail to the shoreline with an area for an outdoor classroom for educational purposes.

**Landscaping:** The surrounding natural landscape and the visual connection to Auke Bay makes the Anderson Building a special place. The hardscape improvements surrounding the building are in contrast to these features. As expanded parking is evaluated on adjoining parcels and trail access to the beach is explored, a sensitive approach to preservation to the greatest extent is warranted. The landscape and setting are prime motivators for students and instructors wanting to be part of the UAS.
Pedestrian Access and Circulation: The UAS sees a need to improve the connectivity between the Anderson Building and the balance of the campus. Throughout the day students, instructors, and guests walk from the Anderson Building to other main campus academic and administrative spaces and areas with developed and convenient parking. Currently, pioneer trails and improved walkways exist serving these pedestrians, however, all of these routes terminate along the main campus side of the Glacier Highway.

The Anderson Building is remotely sited from the main UAS campus; separated by the Glacier Highway which parallels the ocean frontage at Auke Bay. A significant component of the renovation project is to provide a defined pedestrian crossing of the Glacier Highway with the goal of facilitating both accessibility and interaction among the students and instructors.

The point of campus connection is along a stretch of the Highway that has limited sight lines and no pedestrian accommodations adjoining the Anderson Building side of the road. Pedestrian pathways have been created to reach the main campus side of the Glacier Highway but formalized crossings to the Anderson Building do not exist.

The UAS wishes to establish a convenient and direct path between the main campus and the Anderson Building. During interviews with university representatives, several goals for a formalized pedestrian connection were stated:

- Provide a safe pedestrian crossing option at the Glacier Highway.
- Provide convenient walkway connections between the main campus and the Anderson Building. The convenience should relate to ease of access to the walkway, the travel time, and distance to reach the end terminus, and the ability to directly enter the Anderson Building and utilize the facility’s elevator to provide an accessible route.
- Consider broader connectivity than just to the Anderson Building and main campus, such as: expanded trail systems for Fritz Cove and Auke Bay, linkage to commercial retail nodes in the vicinity of DeHarts, improve access to the student bookstore and administrative services facilities, and offer an expanded area for housing options.
- The experience of the walkway user should be reinforced by the natural setting of the UAS campus. Also the walkway should offer and support a transportation mode more in line with the environmental conscience of the student attracted to UAS.

The Glacier Highway is the major transportation route between the Mendenhall Glacier Highway, Auke Bay, and the ferry terminal. Mendenhall Loop Road (Back Loop Road) serves as an alternate route between the Mendenhall Valley and Auke Bay.

In 2002 the DOT&PF prepared initial scoping documents for potential modifications to the Glacier Highway in the area defined as the Auke Bay Corridor. The corridor exhibited a wide variety of problems that need attention. These include deteriorating pavement surfaces, inadequate pedestrian and bicycle facilities, substandard geometrics and site distance, and sparse illumination. Additionally, Fritz Cove Road, the UAS east entrance, and the Back Bay Loop Road intersections have geometry and sight distance deficiencies. The analysis investigated a by-pass to improve traffic flow serving areas either side of the UAS campus, realignment of the Glacier Highway in the vicinity of the Anderson Building to alleviate restricted sight lines inherent with the curve bordering the campus, and the construction of traffic rotaries on the Glacier Highway at the Fritz Cove and DeHarts intersections to slow the traffic speeds, and permit on-grade pedestrian crossing points.

Due to regional and statewide funding demands the State of Alaska adjusted the priority ranking of this project such that further analysis and design was placed on hold. The UAS wishes to see pedestrian safety improvements realized and, with the renovation of the Anderson Building, has charged the design team to investigate if the
DOT&PF can find ways to financially participate in advancing portions of the preferred improvement options or understand what permitting and regulatory steps are necessary for UAS to advance safety improvements associated with the Glacier Highway crossing.

The solutions being evaluated for improving the pedestrian access include:

**Auke Bay Corridor Study**

DOT&PF Preferred Engineering Alternative

---

Legend

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing Sidewalk</td>
</tr>
<tr>
<td></td>
<td>New Sidewalk</td>
</tr>
<tr>
<td></td>
<td>New Pedestrian</td>
</tr>
<tr>
<td></td>
<td>Site Access Including Left Turn Lane</td>
</tr>
<tr>
<td></td>
<td>Major Existing</td>
</tr>
<tr>
<td></td>
<td>Two Lane Road</td>
</tr>
<tr>
<td></td>
<td>New Roundabout</td>
</tr>
<tr>
<td></td>
<td>Land Impacted by Highway Realignment for Sight</td>
</tr>
<tr>
<td></td>
<td>Elevated or Depressed Pedestrain Road</td>
</tr>
<tr>
<td></td>
<td>Anderson Building</td>
</tr>
</tbody>
</table>

**On Grade Crossing:** The DOT&PF has verified that on-grade crossing of the Glacier Highway is not illegal. As the agency controlling the permitted uses and activities they would not allow a striped crossing or signalization with a striped crossing serving the main campus to Anderson Building pedestrian circulation.

DOT&PF’s preliminary analysis of improvements considered for the Glacier Highway incorporate a realignment of the curve moving the roadway closer to the main campus. DOT&PF analysis also suggests creating roundabouts at the intersection of the Glacier Highway with Fritz Cove Road and DeHarts. The introduction of roundabouts gains the support of DOT&PF to incorporate on-grade crossing of the highway. This support is due to reduced travel speeds associated with a roundabout, reduced distance to cross single lanes of traffic, and the creation of a safe zone in the center of the roundabout for the pedestrian to time their crossing. Reliance on the roundabout solution to access the Anderson Building would require the addition of sidewalk along the highway between the roundabout and the Anderson Building. The availability of right-of-way combined with step shoulder gradient along the highway increase the costs associated with this crossing option.

A project that incorporated the roadway realignment at the same time the roundabouts were built would most likely provide the needed right-of way for the necessary sidewalk.
Elevated Crossing: Provide a bridge that crosses the Glacier Highway in the vicinity of the Anderson Building. The transition from the main campus to the Anderson Building offers a grade differential that might eliminate stairs or an elevator to access the crossing on the main campus side. Overhead utility lines exist on the Anderson Building side of the highway that may require relocation to facilitate the bridge structure. The ultimate solution would be to extend the bridge walkway to the Anderson Building and utilize the elevator access in the building to transition to grade level. The issues of building security and use by other than the university population may limit this function.

Depressed Crossing: Construct a tunnel under the Glacier Highway. This option would avoid interference with overhead utility lines but may result in longer walkway distances to reach grade levels at each terminus.

Building Design

Conceptual Design Space Organization (Program Delivery)

The Conceptual Design Options Process: During the programming phase of the work two basic program scenarios were developed which allowed for a range of usable space outcomes. This mix of program space types and program area sizes for some spaces allowed for the flexible application of the program within the constraints imposed by the existing envelope. The charge to the design team was to maximize teaching and research space while developing an efficient and coherent concept for reuse of the Anderson Building. Utilizing this flexible approach to the program, a series of conceptual diagrams were developed by the design team. Three different concepts were further developed to characterize different approaches of the building. These three concepts were presented to the University’s committee members on July 1st with an intense discussion and working session following the presentation. These three concepts have various characteristics, strengths, and weaknesses and can be seen in the Appendix.
During that interaction and working session, a fourth concept was articulated and the design team subsequently produced Concept 4 and Concept 4A which was reviewed and approved by the UAS as the basis for developing the direction shown in Concept 4A into the final concept design. These concepts are also included in the Appendix.

The final concept builds on Concept 4A and incorporates solutions and improvements to the design based upon the review comments that were received from UAS. Program areas were slightly modified and the final results can be seen in the diagrams below.

**Program Development:** In the course of testing the program fit in the existing Anderson Building, a greater understanding of how the floors plan out has given rise to changes in the program sizes and program mix. A better understanding of the limitations and opportunities of the Anderson building was articulated to the committee through the concept diagram process. This has resulted in a request to add new program spaces, to delete some spaces, and to adjust the size of other spaces. The Program Space List in the Appendix records the results of these changes into the Final Concept Program.

**Notable Areas of Change:** During the course of the concept review it was decided that the Biology Undergraduate Research Labs would not have separate support labs, but would incorporate any lab support functions in the same open space as the wet lab. This is being done in order to make the largest and most flexible area available for lab use in a single space. An additional Biology Undergraduate Research Lab was added to the program during the concept review. The Biology Undergraduate Research Lab located on the third floor will be designed so that it could be converted into a second Biology Instructional Lab if it is a higher need at a later date. Specimen Storage is now a series of built-in cases along the corridor instead of a room. Both classrooms were increased in size and seating capacity to allow for future growth. Two Tenured and Research Faculty Offices were eliminated to allow for a greater size for the larger classroom.

The Necropsy/Mammalian Research Lab was eliminated from the program due to space needs and issues of odor control.

The receiving/shipping/staging area has been replaced by Departmental Shared Storage. This space is being provided to provide for a variety of storage needs (short time and long) that are not being met elsewhere in the building.

The functions of the existing freestanding self-contained outdoor freezer and outdoor cold room lab have now been addressed. The concept shows relocation and surrounding improvements to provide for better protected access and utilization of this end of the building. These are needed capabilities and they may either be relocated and renovated or replaced.

**Future Program Development:** As the project moves forward into Schematic Design and then into Design Development, the original Program Room Data Sheets will continue to be developed.

There will be future conferences with the users as layouts are developed and the opportunities and constraints are better understood. Typically, it is better to develop this fine detail at a time closer to the construction of the project in science facilities. It is the intention that this further development will be in accordance with the new program areas and types shown in the Final Concept. At this concept stage, there are still many aspects in relation to the engineering needs of renovating this building that may impact on the total area available for program net use. However, at this time, we are proceeding with the program areas taken from the concept diagrams as a goal for the areas of the final design.

**Conceptual Organization and Program Stacking:** In collaboration with the University’s committee, the Final Concept has been developed with an emphasis on science teaching and undergraduate research space.
A floor-by-floor synopsis of the design follows, with the entry floor (2nd Floor) showcased first:

**Main Entry: 2nd Floor**

The 2nd Floor is the main entry point for the building. The majority of visitors will be coming from either the parking lot or from the main campus to the north and will enter across the covered bridge entry into the Lobby.

The floor is made up of flexible, flat-floor classroom space, a faculty and administrative office suite, the Student Commons, and the primary restroom facility for the building.

The Student Commons is a multifunction interaction space with a small kitchen, lounge seating, tables and chairs and a small library. It will serve as the lunch and breakroom for everyone in the building. It is intended to provide a “home-away-from-home for students between classes for both study and collegial interaction. Its location immediately at the entry, with a glass wall to the lobby is a gesture to encourage people to see and be seen, so that friends and colleagues are prompted to interact.

The 42 Seat and 32 Seat classrooms are flat-floor flexible environments that will accommodate a variety of teaching settings from lecture to seminar. They will be equipped with the full range of audio-video support. The 32 seat room will have a lab demonstration bench at the head of the room.

The Administrative and Faculty Office suite is highly visible and located at the end of the lobby. It will act as the “concierge” for the building and will support faculty endeavors on all floors, with copy machines, files, and supplies. All of the faculty offices in the Anderson Building are clustered in this suite to strongly foster interaction between faculty members. Most offices have a stunning view out to Auke Bay. The offices are easily visited by students, while at the same time the suite concept allows for a degree of privacy.
Instructional Labs: 3rd Floor

The third floor is characterized by housing the two large undergraduate instructional laboratories. It is one floor up from the primary entry floor so there is convenient stair access as well as a small elevator. An investigation into the need to replace this elevator will be part of this project. The other major use is a large Biology Research Lab, although this lab is to be designed such that it could be converted to an instructional lab at a later date. Program uses relating to a nursing program such as anatomy are a future possibility. A shared office for the lab technicians who support the two instructional labs is centrally located. Specimen storage is provided by a large number of built-in storage cabinets that line the corridor.

The General Biology Instructional Lab is the largest space in the building. It is intended to provide an undergraduate biology classroom lab setting for 24 students at benches. The space has an enclosed lab support room for set ups and other prep activities. The room has a generous amount of window and has some of the best views in the entire building out to Auke Bay.

The Chemistry Instructional Lab provides a setting for 14 students for undergraduate chemistry classes. It is a classroom lab with students and benches with shared fume hoods. The room is supported by a separate instrument room and a stock and prep room where chemicals and apparatus are kept. The stock room is also where set-ups are prepared for demonstrations.

The Biology Undergraduate Research Lab is a large open bench wet lab setting. Its use will change over time so flexibility is the key. During the concept process it was decided to combine the lab support space that was originally contained in a separate room, so lab support functions must take place within the room. As mentioned, the space must also be able to be reconfigured into a biology instructional lab at a later date.
Research Labs: 1st Floor

The first floor is mostly comprised of research lab space. A special characteristic is the availability of a running seawater system. The main lab is the Seawater Research Lab which is a seawater tank lab with an overhead supply. Seawater is pumped from Auke Bay up the hillside to the building. There is some concern about the possible need for significant maintenance on items such as the piping out to the bay that may need to be addressed in the near future.

There is vehicle access on two sides of this floor by a drive coming down the hillside from the parking lot above. The concept seeks to reestablish a staging or “dock” area for unloading large equipment or apparatus at the west end of the building, by moving the Exterior Cold Lab and creating a paved “podium” that can facilitate entry to the floor as well as improve exiting from the stair. It is suggested that adding a canopy over part of this podium could provide some weather protection for access to the cold room. This canopy could also provide a semi-protected outdoor area that could be used for outdoor seawater tanks, for staging wet or dirty gear or acting as an informal loading dock.

The Seawater Research Lab and the associated seaweed/greenhouse/culture lab and Support Lab constitute a unique resource for running seawater based research.

The two Biology Undergraduate Research Labs have a similar purpose as the lab on the third floor. They are meant for open plan flexible wet bench biological research. Like the upper lab, lab support space has been subsumed into the main room.

A dive locker is located near the entry and could be set up for direct load-in and load-out of equipment. It will have at least one shower and will provide some storage for wet gear.
The department’s shared storage room is a flexible room that can serve a variety of both short term and long term storage needs of the researchers in the building.

Existing Construction
The Anderson Building is a three story building of approximately 17,000 gross SF of area. The existing construction consists of:

- **Foundation:** Concrete footings and foundation with a first floor slab on-grade.
- **Structural System:** Steel joists, girders and columns with steel decking and concrete topping for the upper floors.
- **Exterior walls:** 2x6 wood framed construction with a wood framed, double sloping banding surrounding the building at the floor levels.
- **Wall Insulation:** Full depth fiberglass batt insulation.
- **Exterior Siding:** Cedar lap siding for vertical surfaces with a fiber board for horizontal soffits and sloped surfaces at horizontal banding.
- **Roof Assembly:** An inverted membrane roof assembly (IRMA) consisting of metal decking, EPDM roof membrane, rigid board insulation, and concrete pavers forming the walking surface. The roof drainage is handled with internal roof drains and discharge piping.

The building design utilizes a 5-ft layout module. The module forms the basis for exterior window sizing, ceiling grid layout and lighting, and location for both fixed and demountable partitions; forming a significant portion of the interior demising walls.

Proposed New Work
The proposed concept design does not expand the existing building perimeter or the building gross area. There are two free-standing components, a walk-in freezer-cooler and cold laboratory, at the west end of the building accessed from grade. We envision slight adjustments to the placement of the units to improve the service access for the building and establish a more defined exit path from the west stair and first floor level. Our assumption is the freestanding unit(s) footprint meets the area needs for the UAS’s program but due to age and condition may need to be replaced. We will reconfirm during the Schematic Design phase.

Conference calls have been conducted with the UAS Maintenance Department. The call reviewed current operational and building system deficiencies needing correction. The minutes of the conference call are included in the narrative appendix for reference.

The program diagram layouts suggest the existing five-foot layout module would be adjusted. Interior adjustments will likely require replacement of interior wall systems, the ceiling grid and ceiling tiles. These adjustments will realize a more exacting balance of program area; building net assignable area to gross building area.

New walls, replacing the current demountable partitions, would be constructed of metal studs, acoustic batt insulation (where appropriate), and gypsum wallboard finishes.

The program diagram layouts generally reflect the accessibility considerations currently codified. The major components needing upgrades for accessibility include the passenger elevator, hallway and corridor widths, room entry configurations, and toilet room area. As the design progresses to the Schematic Design phase more detailed refinement of the accessibility provisions will be incorporated.

Building Code Requirements
The existing building was constructed in the late 1970’s. At that time the building code in effect would have been one of the International Building Code publications. The specific edition used for the original design is not included...
in the record drawing information we possess. One of the more significant renovation projects, the third floor addition, included a brief building code design summary for the existing building.

<table>
<thead>
<tr>
<th>Area</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Floor</td>
<td>5,125 sf</td>
<td></td>
</tr>
<tr>
<td>Second Floor</td>
<td>5,525 sf</td>
<td></td>
</tr>
<tr>
<td>Third Floor</td>
<td>5,525 sf</td>
<td>16,175 sf</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction Type</th>
<th>V-1 hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupancy Group</td>
<td>B-2</td>
</tr>
<tr>
<td>Fire Zone</td>
<td>3</td>
</tr>
<tr>
<td>Stories</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rated Construction, Elements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Columns &amp; Beams</td>
<td>1-hour</td>
</tr>
<tr>
<td>Suspended Acoustical Ceiling</td>
<td>1-hour</td>
</tr>
<tr>
<td>Internal Fixed Partitions</td>
<td>1-hour</td>
</tr>
<tr>
<td>Demountable Partitions</td>
<td>1-hour</td>
</tr>
<tr>
<td>Exterior Wall Construction</td>
<td>1-hour</td>
</tr>
<tr>
<td>Floor Construction</td>
<td>1-hour</td>
</tr>
<tr>
<td>Roof Construction</td>
<td>1-hour</td>
</tr>
</tbody>
</table>

The renovation of the Anderson Building will utilize the currently adopted building codes in effect at the start of design work. The current concept design and facility program does not change the building occupancy classification or increase the building area. This provides for the use of the International Code Committee's *International Existing Building Code* as well as adopted codes for new construction. Often is the case that the IEBC offers alternatives to new construction code requirements.

### Applicable Design Codes:
- 2003 International Building Code (IBC)
- 2003 International Fire Code (IFC)
- 2003 International Existing Building Code (IEBC)
- ADAAG, Americans with Disabilities Accessibility Act Guidelines.
- ASME/ANSI A17.1; Safety Code for Elevators and Escalators.

### Authority Having Jurisdiction:
The City Borough of Juneau; Title 19
19.01 Administrative Code; Adoption, fees, permits for all codes.
19.02 Appeals Code; Appeals of all Title 19 codes.
19.03 Building Code; New commercial and multi-family residential.
19.05 Existing Building Code; Remodeling of existing buildings.

### Structural Design

#### Facility Description:
The UAS Anderson Building is a three story steel frame structure. The building has plan dimensions of approximately 60 feet by 85 feet. A stairwell is constructed at the west end of the building. An approximate 20 foot x 20 foot room is constructed on the east side of the building, but only occurs at the first floor level.

The Anderson Building was originally constructed as a two story building designed to accommodate a future third level. The original design drawings are dated November 1976 and the documents for the third floor addition are dated March 1981. The original building was probably constructed in 1977 and the third level addition was probably constructed in 1981 or 1982.
Description of Existing Structural Systems: The Anderson Building is a steel frame building constructed on a conventional cast-in-place concrete foundation system. Framing consists of two equally sized bays in the north-south direction and three bays in the east-west direction.

Roof framing consists of 1.5-inch by 20 gage metal decking supported by 18-inch deep open web bar joists spaced approximately 5 feet on center. The bar joists span is approximately 30 feet to wide flange steel beams supports. The beams are supported on steel tube columns. The building has a total of 12 columns.

Framing on the 2nd and 3rd levels consists of 1.5-inch by 22 gage composite steel deck with concrete fill. The total thickness of the floor slab is 4-inches. The deck is supported on 36-inch deep open web steel bar joists spaced 5-feet on center. The joists span 30 feet and are supported at each end on 33-inch deep open web joist girders. The girders frame into 10-inch and 12-inch steel tube columns.

At the north side of the building, at the first floor, the bar joists are supported not on the joist girders but on an 8-inch thick concrete foundation (basement) wall. The concrete wall extends the full length of the north side of the building and the north half of the east and west walls of the first floor level.

The first floor consists of a 4-inch concrete slab on grade. The perimeter foundation wall consists of a 6-inch concrete wall supported on an 8-inch by 14-inch strip footing, except at the north wall and portions of the east and west walls where the 8-inch concrete basement wall was constructed.

Building columns are supported on concrete pilasters and spread footings.

Capacity of Structural System: The original building, including the addition, was designed for the following live loads.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof Snow Load:</td>
<td>40 psf</td>
</tr>
<tr>
<td>Floor Live Loads:</td>
<td>100 psf</td>
</tr>
</tbody>
</table>

Current live load requirements are:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof Snow Load:</td>
<td>50 psf; The City Borough of Juneau Amendment.</td>
</tr>
<tr>
<td>Offices:</td>
<td>50 psf +15 psf dead load allowance for partitions.</td>
</tr>
<tr>
<td>Laboratories:</td>
<td>60 psf; See note below.</td>
</tr>
<tr>
<td>Corridors above First Floor:</td>
<td>80 psf</td>
</tr>
<tr>
<td>Lobbies/1st Floor Corridors:</td>
<td>100 psf</td>
</tr>
<tr>
<td>Exit Facilities:</td>
<td>100 psf</td>
</tr>
</tbody>
</table>

The International Building Code (IBC) does not have a separate live load category for laboratories. Under the load requirements for hospitals, the IBC requires a 60 psf live load for operating rooms and laboratories.

As the existing floors were designed for a live load of 100 psf, the existing floors should be able to support the proposed floor layouts providing that the new laboratories do not require a live load greater than 100 psf.

The roof was designed for a snow load of 40 psf. The CBJ currently requires a 50 psf roof snow load. The existing roof framing is “grandfathered in;” it is not required that we upgrade the existing roof to support the higher roof snow load. The existing roof system, however, consists of an IRMA roof with 2-inch nominal pavers. Pavers typically weigh approximately 15-18 psf. If the existing roofing is removed and replaced with a new EPDM system, elimination of the pavers removes 15-18 psf of dead load from the roof, which effectively increases to the live load capacity of the roof framing to greater than 50 psf.
Applicable Code Requirements: The IEBC provides guidelines and requirements for the repair, renovation and upgrade of existing buildings.

For gravity framing systems, the IEBC states that “Additions or alteration to an existing structural shall not increase the force in any structural element by more than 5 percent (unless the increased forces on the element are still in compliance with the code for new structures), nor shall the strength of any structural element be decreased to less than that required by the International Building Code for new structures.”

Basically this section of the IEBC states that any new construction must conform to the current building codes. Modifications to an existing shall not increase the loads on existing framing or decrease the capacity of existing framing by more than 5 percent unless; 1) the member can be shown to still meet the requirements of the current building code, or 2) the member is upgraded to the requirements of the current building code. For seismic systems and forces, the “allowance” is 10 percent.

For example, the floors were designed for a total load of 155 psf (55 psf dead weight and 100 psf live load). The weight of floor finishes, ceiling finishes, or mechanical/electrical systems could be increased by 7.8 psf (5% of 155 psf) without requiring engineering verification or upgrades.

Considerations for Renovation: The floor and the roof of the Anderson Building are framed with steel open web bar joists for both the joists and girders. The use of open web bar joists creates several issues for consideration relative to renovations:

1. Open web bar joists are proprietary trusses designed for the specified loads. They typically have very little, if any, reserve capacity to support additional loads beyond what was specified on the original design drawings.
2. Open web bar joists tend to be “bouncier” than wide flange beams. This could be an issue if proposed new lab spaces have stringent limitations on floor vibrations. If vibration sensitive equipment is proposed for the facility, it would be preferable to locate the equipment on the first level unless a vibration analysis is performed on the floor framing.
3. Modifying roof or floor joists for new ductwork penetrations is more difficult than modifying floors framed with wide flange beams. Open web bar joists are trusses designed primarily for axial loads. The addition of concentrated loads on the top and bottom chords, between “panel points” on the trusses, induces flexural bending stresses not included in the original joist design. It would be preferable if any new floor or roof penetrations be designed to fit within the clear spacing between existing joists.

Seismic Design Considerations: Although not specifically required by code for the Anderson Building, the Owner may wish to consider a seismic evaluation of the building, to determine its seismic capacity relative to current code requirements.

Repairs and alterations to existing buildings may require seismic upgrades. As described above, the 2006 IEBC allows a change in the seismic base shear (dead weight of the building) without a mandatory seismic upgrade. Therefore, new floor, wall and roof finishes may be added up to 10% of the total weight of the building without requiring a seismic evaluation or upgrade.

Local modifications to the structural lateral system can be made and the modification can be dealt with on a “local” basis. For example, a brace may be moved from one bay to another to provide for a new door opening. The new brace and connections must be checked for seismic forces under the current codes, but a “global” evaluation or upgrade of the entire building is typically not required.
Mandatory global upgrades to the building’s lateral load resisting systems may be required depending on the type or magnitude of the modifications to the building. Changes that trigger a mandatory upgrade to existing buildings, none of which apply to the Anderson Building, include:

1. Change of use that places the building in a higher hazard category, e.g. changing occupancy from a Business classification to an Assembly or Educational use.
2. Designation of the building as an Essential Facility.

Some jurisdictions may require a mandatory seismic evaluation and/or upgrade based on the extent of the proposed modifications to the building, even if the modifications do not otherwise the structural framing systems. The City of Seattle, for example, requires that a seismic evaluation/upgrade be performed, as “determined by the building official,” for “remodeling or additions that substantially extend the useful physical and/or economic life of the building, other than typical tenant remodeling.”

Although a mandatory code upgrade does not appear required for the Anderson Building, the Owner may wish to consider an evaluation of the building to see how it performs under current codes. From a cost perspective, the time to perform an upgrade would be when the building was undergoing a significant remodel that removed existing finishes and exposed the structural framing.

Based on our preliminary review of the drawings for the existing facility, we have identified several aspects of the existing design/construction that although they conformed to seismic code requirements at the time of construction, are not allowed under current codes. For example:

1. The building’s primarily lateral load resisting system consists of joist girders rigidly connected to steel tube columns. This system is no longer allowed in multi-story buildings.
2. All the columns in the building that are part of the lateral force resisting system do not meet the “compactness” requirements for steel columns, i.e. the wall thickness is too thin for the size of the column.
3. The columns are used to resist lateral loads in both primary directions of the building. Under current codes, columns in moment frames can be used to resist lateral loads in one direction only.

A seismic evaluation using procedures developed by FEMA for existing buildings would determine the strengths and weaknesses of the existing framing system. This could then be used by the Owner to determine the need for a seismic upgrade.

**Mechanical Design**

**General Scope of Work:** Replace the first level ventilation and exhaust systems, upgrade other ventilation systems including major cleaning of fans and ductwork, upgrade plumbing and sanitary waste piping, upgrade gas piping, replace reverse-osmosis generation unit and storage tank, upgrade heating piping systems, upgrade the sea water distribution system, renovate the heating plant system including the existing underground oil tank, and renovate and upgrade the direct digital controls for the facility.

Suggested energy saving opportunity items for incorporation in the renovation efforts include:

- Higher efficiency heating plant with multiple boilers.
- Variable air volume ventilation.
- Variable exhaust air volume fume hood system.
- Heat recovery for ventilation/exhaust systems.
- Variable speed heating pumps.
- Controls DDC upgrade for better scheduling, trending, monitoring. Consider occupancy sensors and carbon dioxide sensors to increase energy efficiency of ventilation systems.
**Existing Mechanical System and Facility Description:** The building was originally constructed in 1977 with a third floor addition construction completed in 1984. The original air handling unit, AHU-1, located in boiler room, is the original fan unit installed in 1977. AHU-1 is a single fan system serving the second floor areas with relief air assemblies from second floor ceiling spaces to the outside. Originally AHU-1 also served the first floor areas but was disconnected in 1985. On the second floor, AHU-1 serves the ventilation air diffusers and grilles. Heating for the second floor is accomplished with perimeter fin pipe in architectural cabinets controlled by room thermostats.

Due to inadequacy of AHU-1 and the fume hoods on the first floor a new mechanical room was constructed in 1985. The room is located on the lower floor at the east end of the building and houses three new air handling units serving ventilation and make-up air needs for the lower level. During the renovation AHU-1 was disconnected from serving the first floor and AHU-4 and AHU-5 were installed to serve the first floor heating and ventilation needs from duct booster coils.

AHU-2 is a mixed air fan system located in the third floor mechanical room. The unit serves the ventilation and heating requirements for the south half of the third level. One booster coil serves the heating needs for interior areas of the third floor. AHU-3, also located in the third floor mechanical room is a full outside air unit, with a face and bypass coil. AHU-3 serves the north half of the third floor.

Numerous remodels, the significant addition of computers and associated heat gain, and the movement and addition of interior walls on the second floor has occurred. This combination resulted in several ongoing complaints about lack of air and overheating in the second floor.

In 1985 a new mechanical room was installed on the east side of the building at the first floor. Two new air handling units AHU-4 and AHU-5 were installed for the first floor ventilation needs. The lower floor ventilation system served by AHU-1 was disconnected and reconnected to the AHU-4 and AHU-5 systems. AHU-4 which serves the south half of the first floor consisting of the wet lab areas and some laboratory areas. AHU-5 serves the north half of the first floor consisting of the chemistry room areas. EF-12, located in the east side mechanical room, was installed for a general exhaust of the first floor chemistry lab on the north half of the building. A supply fan SF-1 was installed in the east side mechanical room which serves the makeup air for the fume hoods. There is also a heat pipe system put in between the SF-1 and the EF-12 exhaust air system to preheat the fume hood makeup air. The ventilation system has not been balanced since the 1984 Third Floor addition construction.

EF-1 is located above the Men's toilet room on the second floor and serves the Men's toilet room and the Women's toilet room and the adjacent Janitors room. EF-2, EF-3, and EF-4 exhaust fans, located on the roof, serve the three fume hoods on the first floor and appear to be in fair condition. EF-5, located in the 3rd floor of mechanical room, and exhausts air from adjacent men's and women's and also the mechanical room, is in fair condition. EF-6, EF-7, EF-8, EF-9, EF-10, and EF-11 are all located on the roof and appear to be in fair condition. EF-8, EF-9, EF-10 serve fume hoods on the third floor. EF-6, EF-7, and EF-11 serve general exhaust requirements of laboratories and the Chemical Storage Room.

The original boiler was replaced in 1984 when the additional heating load of the third floor was added to the building. The underground oil tank was reported to have been replaced several years ago with a double wall tank. Little information was available regarding the underground tank.

Main heating pump P-1 serves the first and second floors heating and ventilating systems and is still installed. Secondary P-2 has been removed with piping capped. The second and third floors of the facility is heated by duct heating booster coils controlled by room thermostats for internal areas and finned pipe convectors controlled by room thermostats at exterior rooms. The lower floor is heated solely by duct coils.
A 6-inch cold water (CW) main that enters the building on the NE side of first floor Process Room. From there a 3-inch tap goes to the domestic water system and a water meter. After the meter a 2-inch copper pipe serves the domestic plumbing fixtures for the toilet rooms. After this branch the cold water piping is routed to a backflow preventer with another water meter that serves the laboratory plumbing fixtures. The domestic water piping material is a mix of copper and galvanized steel. From the 6-inch CW main, a 4-inch cold water pipe is routed to a backflow preventer and then to a sprinkler header serving all areas of the building through a wet sprinkler piping system.

The original oil-fired hot water tank and heater has been removed (1995) and the domestic hot water piping generation is provided by a single immersion section in the boiler. The hot water system serving laboratory fixtures has a backflow preventer on it located in the boiler room. The original hot water recirculation pump has been removed and there is no pump there.

A recessed duplex sewage ejector is located in the Process room, replaced in 2004, and pumps the waste into the city sanitary system. A lime dilution pit is located in the Process room to dilute waste from the lab fixtures.

**Ventilation System**

**Second and Third Floor Ventilation System**: AHU-1 is over 30 years old and needs to be replaced. Consideration should also be given to replacement of AHU-2 and AHU-3 that serve the third floor. At a minimum AHU-2 and AHU-3 should be refurbished by thorough cleaning, possibly bearing replacement, and damper replacement. In addition all ductwork and heating coils needs to be cleaned. Revise the ventilation and heating systems serving the second floor and third floor to accommodate the current layout. Relocate diffusers, thermostats, and install approximately 8 additional zone valves for increased occupancy comfort.

For longer life consideration towards combining the three fans into one fan system should be done, possibly variable air volume, and located either in Mechanical 303 or on the roof to serve the second and third floors ventilation needs.

**First Floor Ventilation System**: The ventilation system serving the first floor is poorly installed with little to no access for maintenance. The system is over 20 years old and needs to be replaced. AHU-4, AHU-5, SF-1, EF-1, EF-12, and the heat recovery system should be replaced.

**First Floor Fume Hood Systems**: Even though the fume hoods appear to be operating satisfactory, the six fume hoods need to be verified and labeled for correct performance by a certified fume hood technician. The recommendation is to consider replacement of all fume hoods with a more energy efficient type and install new exhaust air ductwork with variable speed exhaust fan utilizing air pressurization controls and alarms. Connect exhaust fan system with new supply air fan for make-up air for fume hoods.

**Exhaust Fans**: Exhaust fans are approaching their life expectancy and should be replaced. Install a small exhaust fan for the Process room. Extend ventilation systems into electrical equipment rooms; an alternate would be to install a separate stand-alone cooling systems for 24 hour protection if desired.

The entire ventilation system apparently has not been balanced since 1984. The system should be checked, measured, and balanced by an experienced technician for correct air volumes from the ventilation, exhaust, and fume hoods systems.

**Heating System**

Replace the heating plant and all piping in the original boiler room. For maximum seasonal efficiency and diversity of the plant it is recommended that at least two boilers are installed. For two boilers the capacity would be 1050 MBtu's/hr each. The existing chimney, following cleaning, would be re-utilized. Upgrade the underground oil tank for
full ADEC compliance for regulated tanks with secondary containment piping, corrosion protection, spill containment devices, and a monitoring leak detection system.

**Heating System Options:** We recommend life cycle cost analysis be considered for the following.
- **Dual oil-fired boilers:** Utilize existing oil delivery system and chimney, boiler operates more efficiently, diversity.
- **Dual fuel oil and electric boilers:** Utilize existing oil delivery system and chimney, boiler operates more efficiently, diversity, take advantage of cheaper fuel seasonally, new electrical service required.
- **Electric boiler(s):** Cheaper maintenance costs, currently equivalent fuel costs with oil, new electrical service required, demo fuel tank and chimney.
- **Ground Source Heat Pumps System:** Would require water-to-water ground source heat pumps with base circulation pump from field to heat pumps.
  - Well Field Options: Vertical closed loop wells (roughly 1/2 acre of area for wells – range in size of the current parking lot). Salt water open system (upgrade salt water intake system); Salt water closed system (loops buried in tidelands or weighted down).

**Heating Piping and Units:** Upgrade heating piping system by replacing spot piping, automatic valves, and dielectric unions at heating units. Extend the heating system to first floor back dock area.

**Fuel Tank:** The underground tank does not have spill containment devices at the fill or a monitoring system for leak detection as required by ADEC and EPA for tanks that serve emergency generators. It was not evident that the oil piping has been installed in secondary containment. Because this tank serves an emergency generator it is classified as a regulated tank by ADEC and needs to be upgraded for full compliance as a regulated tank.

**Plumbing**
The plumbing water piping is approaching the end of its service life. Plumbing piping near the water service header is showing sign of corrosion. Recommend replacing all domestic water piping at water header and approximately 50 percent of the building.

The sanitary waste piping system has experienced slow drainage particularly at the first floor. Recommend replacement of all sanitary piping on the first floor, requiring extensive cutting and patching.

Emergency shower and eye wash stations need to be replaced with modern tempered water type.

**Special Piping Systems**
- The reverse-osmosis piping system and generator needs to be replaced.
- The interior sea water piping system on the first floor needs to be replaced.
- Upgrade existing salt water delivery system; consider upgrade with possible geothermal heating options.
- Modify gas piping systems for new layout and modern gas outlets.

**Existing Emergency Generator**
The exterior radiator exhibits severe corrosion and has exceeded it’s life expectancy; it needs to be replaced. The muffler assembly has been replaced about three years ago but is severely corroded. This is supposedly due to the ice melt salts that are put on the exterior stair steps. A fixed shroud above the muffler to prevent chemicals contact is recommended. The exhaust from the emergency generator, in the process room, is piped to a point approximately eight feet above air intake for the 1985 mechanical room.

**Sprinklers**
Existing sprinkler system will be modified for any room layouts. All sprinkler heads in renovated areas will be replaced.
Controls
Scope of work includes a complete removal of all pneumatic controls, automatic valves, and damper operators from the facility and removal of all older SIEMENS control panels. A new Direct Digital Control (DDC) building automation system, compatible with the existing DDC campus wide systems, will be provided for the renovated areas. We recommend a central host station with computer terminal and graphics to be installed as a user friendly interface with the building mechanical control system.

Occupancy sensors, duct flow meters, and area pressure sensors will be utilized to modulate ventilation rates for the specific occupancy loads in most areas of the building utilizing greater energy efficiency over constant volume ventilation systems.

Approximately 200 control points will be required for the facility renovation and addition area controls. All occupied areas will have “smart” thermostats that can monitor room temperatures and settings remotely.

Design Criteria
The mechanical systems will be designed and constructed in accordance with the following codes:

- 2003 International Building Code
- 2003 International Mechanical Code
- 2003 Uniform Plumbing Code
- 2003 International Fire Code
- National Fire Protection Association
- ASHRAE - American Society of Heating, Refrigeration, and Air-Conditioning Engineers
- City and Borough of Juneau Title 19 Modifications

Electrical Design
The associated design considerations for the Anderson Building for the electrical system are summarized as follows:

Power Systems
Distribution System
- Provide a new service disconnect on the exterior, or provide one interior to the building with a shunt trip operator on the exterior.
- Replace the Generator Transfer Switch. Relocate or reposition it to allow NEC required work clearances.
- Retain the existing Main Distribution Panel. Test all of the feeder circuit breakers, and replace as needed.
- Upgrade the ground system with additional ground rods. Create an isolated ground system for laboratory instrumentation and computer based equipment.
- Relocate the panels in the main electrical closet to facilitate NEC compliance to working clearances. This includes relocation of two panels, possibly to the room outside the main electrical closet.
- Retain the current feeders (including conduit and conductors) from the main distribution panel to the branch circuit panels and the elevator where the panels are not relocated. However, provide a grounding conductor with each feeder for an isolated grounding system.

Branch Circuit System
- Retain the existing Square D panel boards. Replace the General Electric panel boards which appear to be older. Provide all new branch circuit breakers in all panels.
- Provide additional panel board sections where necessary to ensure adequate circuit capacity for present and future needs.
- Provide isolated ground buses in each panel board serving classrooms and offices.
- Retain the existing branch circuits (conduit and conductors) where no change to the loads or rooms occurs.
• Provide new branch circuits using single conductors in conduit.
• Provide new branch circuiting using EMT in dry and non corrosive areas. Provide PVC and/or rigid steel conduit in areas susceptible to moisture or corrosion.
• Replace all existing convenience receptacles where the spaces remain unchanged. Provide additional receptacles as needed to yield three to five duplex receptacles per office and a duplex receptacle every ten lineal feet of classroom walls.
• Provide all new receptacles in the laboratories. Provide them with ground fault protection. Locate them to best facilitate routinely changing laboratory needs and conditions. Provide excess raceway capacity to facilitate new or relocated circuiting.
• Provide new or maintain existing circuiting for large laboratory equipment as needed.
• Provide new motor starters for the heating and ventilation system.

Alternate Power Systems
• Replace the existing 155 KW, diesel powered, standby generator. Size as needed for the anticipated loads with contingency for future loads. Provide all new ancillary equipment.
• Provide an automatic load bank sized to augment the generator load with a minimum of 50 percent of the generator capacity. This will improve maintenance and reliability.
• Provide a new UPS for the Networks & Communications system equipment.

Lighting Systems
Exterior
• Provide all new luminaires on the exterior and beneath the canopies.
• Utilize compact fluorescent lamps for all of the smaller luminaires.
• Utilize metal halide lamps with all of the larger luminaires.
• Retain the existing parking and driveway luminaires.
• Provide emergency battery packs or power supplies for luminaires illuminating exits not at grade.
• Provide new contactors and photoelectric cell for the lighting control. Integrate with the Building Automation System to allow scheduling control of some luminaires and daylight control of all.

Interior Corridors, Vestibules, Entrances, and Restrooms
• Provide all new lighting utilizing fluorescent lamps and electronic ballasts.
• Provide recessed cans with compact lamps and troffers with linear lamps in the corridors, vestibules, and entrances.
• Provide accent and decorative lighting as needed to highlight specific areas and to illuminate displays.
• Provide wall mounted linear type luminaires over the mirrors and stall partitions in the restrooms. Provide recessed cans where necessary to address small areas not illuminated by the linear fixtures. Provide occupancy sensor control.
• Configure the controls for the corridors, vestibules, and entrances to allow some luminaires to remain illuminated at all times. Configure the remainder with low voltage controls to permit schedule control by the Building Automation System.
• Provide emergency battery packs with the above mentioned luminaires to maintain compliance with the codes.

Offices
• Provide new luminaires utilizing fluorescent lamps and electronic ballasts. Provide lamps with high color rendition, with a 3500 degree K color temperature.
• Utilize T5 lamps.
• Utilize suspended linear luminaires with predominantly indirect lighting.
• Provide occupancy sensors for controls.
Classrooms
- Provide new luminaires utilizing fluorescent lamps and electronic ballasts. Provide lamps with high color rendition, with a 3500 degree K color temperature.
- Utilize T5 lamps.
- Utilize suspended linear luminaires with predominantly indirect lighting. Utilize linear directional luminaires to illuminate the instruction walls.
- Provide occupancy sensors and switches for controls.

Laboratories
- Provide new luminaires utilizing fluorescent lamps and electronic ballasts. Provide lamps with high color rendition, with a 3500 degree K color temperature.
- Utilize T5 lamps.
- Utilize recessed troffers and or ceiling surface mounted linear luminaires. Provide gaskets for all lenses to reduce moisture infiltration.
- Provide occupancy sensors and switches for controls.

Utility and Storage Rooms
- Provide new luminaires utilizing fluorescent lamps and electronic ballasts.
- Utilize T5 lamps.
- Utilize suspended industrial strips with reflectors in the utility rooms. Utilize surface mounted linear luminaires in the storage rooms.
- Provide occupancy sensors for controls.

Low Voltage Systems
Fire Alarm System
- Replace the entire fire alarm system.
- Replace the annunciator at the main entrance with a new control panel.
- Provide new smoke detectors in the corridors, at the elevator openings, in the elevator shaft & machine room, in the Network/Communications room, and in the main electrical closet.
- Relocate the manual pull stations to the code stipulated elevations.
- Reconnect the sprinkler system flow and tamper devices.
- Provide new horns and strobes in the corridors and utility rooms.
- Provide new strobes in the classrooms, laboratories, and restrooms.
- Utilize the existing raceways as much as possible. Provide new conductors and cables. Provide additional raceway where needed.

Network and Communications
- Provide all new cabling and workstation terminals.
- Provide all new cable tray and raceways as needed to allow all cables to be adequately supported. Locate the cable trays in the corridors if possible with raceways routed from the terminals to the cable tray.
- Provide new patch panels and terminals on the existing rack.
- Provide a minimum of three drops per office and classroom. Provide a minimum of two drops per hundred square feet of laboratory space.
- Provide terminals in the ceilings in strategic locations for wireless modems.
- Provide a grounding system with a bus bar mounted in the Networks/Communications closet as the focal point. Bond this ground bus to the power service ground bus. Provide a ground conductor in the cable trays with bonds to each terminal conduit and large raceway. Allow for bonding to the rack.
- Provide cable runways as needed in the Networks/Communications closet to support the raceway system to the rack.
• Provide repairs and/or modifications to the telephone service conduit as needed to eliminate water drainage from outside into the building.

Access Controls
• Provide raceways and circuiting as needed to support door access controls.

Surveillance Cameras
• Provide a surveillance camera system to monitor entrances and corridors.
• Utilize ethernet based cameras and controls.
• Standardize to currently used technology on campus.

Applicable Code Requirements
• National Electrical Code 2005 (The state has been in the process of adopting 2008. The CBJ lags in adopting codes, therefore we are relying on the state adoptions. We are utilizing 2008, but designing to the most stringent until 2008 is officially adopted).
• National Fire Codes, NFPA 72 (most recent)
• International Building Code
• International Fire Code
**NEXT STEPS**

The final concept design, based on the agreed upon program, is being submitted to the UAS for approval by the University of Alaska Board of Regents. Once the Anderson Building Renovation project has received BOR project approval the University can move into the design phase efforts. To provide a more complete information basis for design we recommend the following efforts be evaluated by UAS and the design team. An important component of undertaking these recommendations is the timing for engaging the work to allow completion inline with the overall established final delivery schedule.

**Site and Topographic Survey**

Prior to the start of Schematic Design, there should be survey effort to obtain needed site detail for the Anderson Building, the Glacier Highway, and the periphery of the UAS main campus in the vicinity of any proposed crossing. This information will permit the detailed development of the site and pedestrian access options.

**Coordination with DOT&PF**

To advance the design of the pedestrian crossing a commitment by the State to further plan and design the Glacier Highway improvements is suggested. Without a more educated or assured picture of re-alignment of the Glacier Highway any constructed work designed and paid by UAS is at risk in light of unknown future plans.

Recent Legislative appropriations with partial financial commitment support by the Governor may advance the planning and design efforts. Our most recent conversations with DOT&PF have not shed more promising news on the project being a go with DOT&PF fully engaged.

Without the financial participation by the State this would leave the crossing project to be fully designed and funded by UAS. The roundabout design option with adjoining sidewalks would require extensive property acquisition between Fritz Cove Road and DeHarts. This process could take an extensive amount of time to finalize before design could be completed and construction undertaken. This might suggest the elevated or depressed crossings would permit UAS to undertake design and see construction activity sooner. The major challenge for advancing the elevated or depressed crossing is establishing the north side of a re-aligned Highway. Once this was determined span support locations for an elevated crossing could be analyzed and grading suppositions could be made to advance the trail access alignment.

**Hazardous Materials Investigation**

A detailed investigation of the current Anderson Building should occur. This information will identify the types and extent of hazardous materials needed to prepare final design documentation and provide the detail to appropriately consider abatement costs as part of the project construction budget.

**Budget Confirmation**

Prior to the start of Schematic Design, there should be a budget validation based on the Conceptual Design study. This will serve to develop a better understanding as to the possible scope in renovating the Anderson Building. A major part of this effort will be the final establishment of the desired upgrades and modifications to the building envelop utility services, and mechanical and electrical systems. Prioritization with UAS to align with the available construction funding is the goal.

**Project Schedule**

Moving into Schematic Design the overall project delivery schedule should be reviewed and dates for completion of the design re-established. The construction schedule and phasing should be reviewed in depth. This will guide the formatting of the design documents in the later phases of design as well as identify the available facilities or the need for temporary spaces used by UAS during upcoming academic terms.
Schematic Design
After the budget is better understood, the Schematic Design phase can begin. With the Conceptual Design as the basis, a more studied approach can be made to the design, moving from diagram to architecture. The budget will dictate the extent to which the existing interiors and infrastructure will have to remain. The program will continue to be refined and more detail developed through a series of conferencing meetings with the users. Complete detail is not needed in this phase, only the higher level understanding of the science and instruction that is to occur in these spaces, as well as an idea as to the need for big ticket items like fume hoods or highly specialized equipment that may require controlled environments or otherwise have a significant cost impact on the building infrastructure.

By the end of Schematic Design, there should be a solid establishment of the scope of the project and the approach to meeting budget.
APPENDIX

Final Concept Program Space List ................................................................. A2
Final Area Comparison Summary ................................................................. A3
Concept 1: All Floors .................................................................................... A5
Concept 2: All Floors .................................................................................... A6
Concept 3: All Floors .................................................................................... A7
Concept 4: All Floors .................................................................................... A8
Concept 4A: All Floors ................................................................................. A9
Final Concept: All Floors ............................................................................. A10
Final Concept: 1st Floor .............................................................................. A11
Final Concept: 2nd Floor ............................................................................. A12
Final Concept: 3rd Floor ............................................................................. A13
Anderson Building Renovation Consideration Points
   June 19, 2008 Conference Call Summary .................................................. A14
Anderson Building Renovation Site/DOT&PF Consideration Points
   June 20, 2008 Conference Call Summary .................................................. A17
## Final Concept Program Space List - August 11, 2008

Areas shown reflect revised program areas based upon the final concept plan diagrams.

<table>
<thead>
<tr>
<th>ID</th>
<th>Name of Space</th>
<th>NASF</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS-1.1</td>
<td>Tenured &amp; Research Faculty Office #1</td>
<td>120</td>
</tr>
<tr>
<td>OS-1.2</td>
<td>Tenured &amp; Research Faculty Office #2</td>
<td>120</td>
</tr>
<tr>
<td>OS-1.3</td>
<td>Tenured &amp; Research Faculty Office #3</td>
<td>120</td>
</tr>
<tr>
<td>OS-1.4</td>
<td>Tenured &amp; Research Faculty Office #4</td>
<td>120</td>
</tr>
<tr>
<td>OS-1.5</td>
<td>Tenured &amp; Research Faculty Office #5</td>
<td>185</td>
</tr>
<tr>
<td>OS-1.6</td>
<td>Tenured &amp; Research Faculty Office #6</td>
<td>120</td>
</tr>
<tr>
<td>OS-2.1</td>
<td>Adjunct Faculty Shared Office #1</td>
<td>120</td>
</tr>
<tr>
<td>OS-4.1</td>
<td>Lab Tech Shared Office (2)</td>
<td>140</td>
</tr>
<tr>
<td>OS-5.1</td>
<td>Department Workroom / Admin. / Mail / Copy</td>
<td>400</td>
</tr>
<tr>
<td>OS-6.1</td>
<td>Student Commons / Library / Breakroom / Kitchen</td>
<td>400</td>
</tr>
<tr>
<td>OS-9.1</td>
<td>Departmental Shared Storage</td>
<td>270</td>
</tr>
<tr>
<td>OS-11.1</td>
<td>Dive Locker / Field Equipment Storage</td>
<td>340</td>
</tr>
<tr>
<td>RL-1.1</td>
<td>Biology Undergraduate Research Lab 1</td>
<td>785</td>
</tr>
<tr>
<td>RL-2.1</td>
<td>Biology Undergraduate Research Lab 2</td>
<td>685</td>
</tr>
<tr>
<td>RL-3.1</td>
<td>Biology Undergraduate Research Lab 3</td>
<td>610</td>
</tr>
<tr>
<td>RL-4.1</td>
<td>Seawater Research Lab</td>
<td>885</td>
</tr>
<tr>
<td>RL-4.2</td>
<td>Seaweed / Greenhouse / Culture Lab</td>
<td>200</td>
</tr>
<tr>
<td>RL-4.3</td>
<td>Support Lab: Seawater Labs</td>
<td>210</td>
</tr>
<tr>
<td>CL-1.1</td>
<td>General Biology Instructional Lab 1 (24 Students)</td>
<td>1220</td>
</tr>
<tr>
<td>CL-1.2</td>
<td>Support Lab: Biology 1</td>
<td>150</td>
</tr>
<tr>
<td>CL-3.1</td>
<td>Specimen Collection Storage</td>
<td>150</td>
</tr>
<tr>
<td>CL-4.1</td>
<td>Chemistry Instructional Lab “A” -14 Students</td>
<td>865</td>
</tr>
<tr>
<td>CL-4.2</td>
<td>Chemistry Stock Storage “A”</td>
<td>375</td>
</tr>
<tr>
<td>CL-4.3</td>
<td>Chemistry Prep Instrument Room</td>
<td>185</td>
</tr>
<tr>
<td>CR-2.1</td>
<td>Classroom -32 Seat</td>
<td>640</td>
</tr>
<tr>
<td>CR-3.1</td>
<td>Classroom -42 Seat</td>
<td>845</td>
</tr>
</tbody>
</table>

Total Net Assignable Area: 10,260
# Final Area Comparison Summary - August 11, 2008

<table>
<thead>
<tr>
<th>Program Space Type</th>
<th>Program Space ID Reference</th>
<th>Name of Space</th>
<th>Existing Room</th>
<th>Scenario 3 (High)</th>
<th>Scenario 5 (Low)</th>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Concept 4</th>
<th>Concept 4A</th>
<th>Final Concept Name</th>
</tr>
</thead>
</table>
| **Office & Support Space (OS)** | OS-1.1 | Tenured & Research Faculty Office #1 | 95 210A | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-1.2 | Tenured & Research Faculty Office #2 | 95 210B | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-1.3 | Tenured & Research Faculty Office #3 | 95 210D | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-1.4 | Tenured & Research Faculty Office #4 | 95 220A | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-1.5 | Tenured & Research Faculty Office #5 | 95 220B | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-1.6 | Tenured & Research Faculty Office #6 | 95 220C | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-1.7 | Tenured & Research Faculty Office #7 | 95 220D | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-1.8 | Tenured & Research Faculty Office #8 | 95 223B | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-2.1 | Adjunct Faculty Shared Office #1 | 147 210C | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-4.1 | Lab Tech Shared Office (3) | 147 210C | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-6.1 | Department Workroom / Admin. / Mail / Copy | 337 210 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-6.1 | Student Commons / Library / Breakroom / Kitchen | 382 210 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | 120 120 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-9.1 | Receiving / Shipping / Staging Area | - | 100 100 | 240 240 | 240 240 | 240 240 | 240 240 | 240 240 | 240 240 | 240 240 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-11.1 | Dive Locker / Field Equipment Storage | - | 300 300 | 300 300 | 300 300 | 300 300 | 300 300 | 300 300 | 300 300 | 300 300 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.
| | OS-12.1 | Equipment Repair Workshop | - | 200 200 | 200 200 | 200 200 | 200 200 | 200 200 | 200 200 | 200 200 | 200 200 | Concept 4: Office reduction suggested by UAS at 7/1 meeting.

**Area Totals:** 1,627 2,660 2,460 2,671 2,911 2,757 2,169 2,169 2,455

<table>
<thead>
<tr>
<th>Program Space Type</th>
<th>Program Space ID Reference</th>
<th>Name of Space</th>
<th>Existing Room</th>
<th>Scenario 3 (High)</th>
<th>Scenario 5 (Low)</th>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Concept 4</th>
<th>Concept 4A</th>
<th>Final Concept Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Labs (RL)</strong></td>
<td>RL-1.1</td>
<td>Biology Undergraduate Research Lab 1</td>
<td>590 316</td>
<td>600 600</td>
<td>590 575</td>
<td>590 575</td>
<td>622 786</td>
<td>786</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| | RL-1.2 | Support Lab: Biology Lab 1 | - | 150 150 | 139 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | Concept 4: Support Lab area included with Research Lab.
| | RL-2.1 | Biology Undergraduate Research Lab 2 | 385 316 | 400 400 | 430 602 | 590 | 590 | 932 | 932 | 932 | Concept 4: Support Lab area included with Research Lab.
| | RL-2.2 | Support Lab: Biology Lab 2 | 142 317 | 150 150 | 149 152 | 150 152 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | Concept 4: Support Lab area included with Research Lab.
| | RL-3.1/2 | Biology Undergraduate Research Lab 3 & Support | - | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| | RL-4.1 | Seawater Research Lab | 780 111 | 800 800 | 806 826 | 802 871 | 871 | 871 | 885 | 885 | 885 | Concept 4: Support Lab area included with Research Lab.
| | RL-4.2 | Seawater / Greenhouse / Culture Lab | 187 115B | 200 200 | 197 231 | 201 201 | 201 201 | 200 200 | 200 200 | 200 200 | 200 200 | 200 200 |
| | RL-4.3 | Support Lab: Seawater Labs | - | 200 200 | 196 296 | 196 296 | 212 212 | 212 212 | 210 210 | 210 210 | 210 210 | 210 210 |
| | RL-5.1 | Necropsy / Mammalian Research Lab | - | 200 200 | 0 0 | 213 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |

**Area Totals:** 2,687 2,700 2,700 2,513 2,672 2,598 3,054 3,016 3,375

**Total Area Analyses:**

- **Office & Support Space (OS):** 786 932 786
- **Research Labs (RL):** 2,687 2,700 2,700 2,513 2,672 2,598 3,054 3,016 3,375

*Final Area Name of Space is "Departmental Shared Storage".*
## Final Area Comparison Summary - August 11, 2008

### Classroom Labs (CL)

<table>
<thead>
<tr>
<th>Program Space Type</th>
<th>Program Space ID Reference</th>
<th>Name of Space</th>
<th>Existing Room #</th>
<th>Scenario 3 (High)</th>
<th>Scenario 5 (Low)</th>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Concept 4</th>
<th>Concept 4A</th>
<th>Final Concept</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL</td>
<td>CL-1.1</td>
<td>General Biology Instructional Lab 1 (24-students)</td>
<td></td>
<td>1,250</td>
<td>1,228</td>
<td>1,280</td>
<td>1,277</td>
<td>1,222</td>
<td>1,222</td>
<td>1,222</td>
<td>1,220</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Concept 4 (7-7-08) has reduced area by 55 NASF to establish Specimen Storage as a program area.</td>
</tr>
<tr>
<td>CL</td>
<td>CL-1.2</td>
<td>Support Lab: Biology 1</td>
<td>-</td>
<td>160</td>
<td>160</td>
<td>139</td>
<td>155</td>
<td>149</td>
<td>149</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Concept 3: Support Lab &amp; Specimen Collection Storage shared block.</td>
</tr>
<tr>
<td>CL</td>
<td>CL-2.1</td>
<td>Biology Instructional Lab 2 (Micro/Anat/Phys)</td>
<td>860</td>
<td>314</td>
<td>850</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Concept 3: Support Lab &amp; Specimen Collection Storage shared block.</td>
</tr>
<tr>
<td>CL</td>
<td>CL-2.2</td>
<td>Support Lab: Biology 2</td>
<td>-</td>
<td>160</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>CL-3.1</td>
<td>Specimen Collection Storage</td>
<td>-</td>
<td>180</td>
<td>180</td>
<td>139</td>
<td>180</td>
<td>0</td>
<td>91</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Concept 3: Support Lab &amp; Specimen Collection Storage shared block. Concept 4 (7-7-08) has created program area for Specimen Storage, area involves reduction to CL-1.1 &amp; RL1.1/1.2.</td>
</tr>
<tr>
<td>CL</td>
<td>CL-4.1A</td>
<td>Chemistry Instructional Lab &quot;A&quot; - 14 Students</td>
<td>858</td>
<td>309</td>
<td>860</td>
<td>865</td>
<td>865</td>
<td>865</td>
<td>865</td>
<td>865</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>CL-4.2A</td>
<td>Chemistry Stock Storage &quot;A&quot;</td>
<td>363</td>
<td>399B</td>
<td>460</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>CL-4.1B</td>
<td>Chemistry Instructional Lab &quot;B&quot; - 24 Students</td>
<td>-</td>
<td>-</td>
<td>1,400</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>CL-4.2B</td>
<td>Chemistry Stock Storage &quot;B&quot;</td>
<td>-</td>
<td>440</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>375</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>CL-4.3</td>
<td>Chemistry Instrument Room</td>
<td>68</td>
<td>309A</td>
<td>200</td>
<td>187</td>
<td>187</td>
<td>187</td>
<td>187</td>
<td>187</td>
<td>187</td>
<td></td>
</tr>
</tbody>
</table>

### Classrooms (CR)

<table>
<thead>
<tr>
<th>Program Space Type</th>
<th>Program Space ID Reference</th>
<th>Name of Space</th>
<th>Existing Room #</th>
<th>Scenario 3 (High)</th>
<th>Scenario 5 (Low)</th>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Concept 4</th>
<th>Concept 4A</th>
<th>Final Concept</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>CR-2.1</td>
<td>Classroom - 24 Seat</td>
<td>442</td>
<td>224</td>
<td>550</td>
<td>550</td>
<td>494</td>
<td>644</td>
<td>558</td>
<td>647</td>
<td>647</td>
<td>640</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Seat count varies with each Concept. Reference plans for seating capacity.</td>
</tr>
<tr>
<td>CR</td>
<td>CR-3.1A</td>
<td>Classroom - 40 Seat</td>
<td>688</td>
<td>221</td>
<td>800</td>
<td>-</td>
<td>605</td>
<td>842</td>
<td>644</td>
<td>842</td>
<td>842</td>
<td>845</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Seat count varies with each Concept. Reference plans for seating capacity.</td>
</tr>
<tr>
<td>CR</td>
<td>CR-3.1B</td>
<td>Classroom - 20 Seat</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>450</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Building Area Totals

<table>
<thead>
<tr>
<th>Program Space Type</th>
<th>Program Space ID Reference</th>
<th>Name of Space</th>
<th>Existing Room #</th>
<th>Scenario 3 (High)</th>
<th>Scenario 5 (Low)</th>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Concept 4</th>
<th>Concept 4A</th>
<th>Final Concept</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Program Areas (Scenario #3 & #5): Values reflect Net Assignable Square Footage (NASF) with a targeted high and low range for program area.

2. Concepts: Plans developed are diagrammatic and do not reflect potential NASF. Further design efforts will establish NASF once actual allowances for wall thickness and vertical distribution shafts have been determined.
Concept 1: All Floors - July 1, 2008
Concept 2: All Floors - July 1, 2008
Concept 3: All Floors - July 1, 2008
Concept 4: All Floors - July 2, 2008
Concept 4A: All Floors - July 7, 2008
Final Concept: All Floors - August 11, 2008
Final Concept: 2nd Floor - August 11, 2008
Final Concept: 3rd Floor - August 11, 2008

Chemistry Instructional Lab "A"
CL-4.1
865 sf (865)

Chemistry Stock Storage "A"
CL-4.2
375 sf (375)

Chem. Instrument
CL-4.3
185 sf (185)

Mechanical

Specimen Storage

Corridor

General Biology Instructional Lab 1
24 Students
CL-1.1
1220 sf (1220)

Office
OS-4.1
140 sf (140)

Support
Blo 1
CL-1.2
150 sf (150)

Biology Undergraduate Research Lab 1
RL-1.1
785 sf (785)
ANDERSON BUILDING RENOVATION CONSIDERATION POINTS

JUNE 19TH, 2008 CONFERENCE CALL SUMMARY

The following list was initially generated by Joe Mueller with UAS. To obtain more detail regarding the bulleted items a conference call was held on June 19, 2008 to elaborate on the specific concerns and details. The order of the original list has been altered to group discipline and like comments. The input received during the conference call is provided following the bulleted item (italicized text).

Participants in the conference call:
- Keith Gerken, UAS
- Joe Mueller, UAS
- Terry Hyer, ECI/Hyer
- Dan Dennison, NBBJ
- Mark Pusich, R&M Engineering, Inc.
- Doug Murray, Murray & Associates, PC.
- Ben Haight, Haight & Associates, Inc.

1 - Civil, Site, and Miscellaneous Outdoor Elements

Parking/circulation. Keith Gerken suggested the Bedford property and the other UAS site (east of the Bedford property) be utilized in the concepts for parking. The design team noted they would explore this future development in the Schematic Design Phase.

Building sign: UAS wishes to include a building sign in the final project. The design team will coordinate the type (monument or building and UAS Standards for illumination and materials.

Stairs/access to beach: No specific conference call notes were summarized. Assume the consideration relates to incorporating access to the beach for an expanded educational offering and setting.

Outdoor laboratory opportunities: No specific conference call notes were summarized. Assume the consideration relates to investigating site opportunities for an expanded educational offering and setting. At present there is no site/topographic survey.

2 - Architectural Elements

Exterior

Replace roof: The current inverted roof membrane assembly (IRMA) is nearing the end of its useful life cycle. UAS wishes to replace the roof with consideration for an insulation upgrade (thermal performance) and revise the assembly to a fully adhered EPDM assembly.

Windows: Improve the current R-Value and the existing operable units have hardware issues (not detailed in conference call). Consider for Design Development prioritization.

Interior

Elevator upgrade: The extent of the conference call notes refer to elevator replacement. During the next design phases the upgrade/replacement needs should be further refined; cab size, capacity, and operational features.

Cleanable, moisture/mold proof ceiling tile: No conference call notes were summarized. Assume comment relates to provisioning of new tile ceiling with described features appropriate to the environment location.

Seaweed lab upgrade: The original ‘back dock’ has been enclosed in a previous remodel. The enclosed area currently lacks ventilation and heating.

Eye wash and shower station locations: No specific conference call notes were summarized. Assume the comment relates to adequate quantities, types, and locations being identified and incorporated as the design is refined.
Excessive number of freezers and refrigerators: No specific conference call notes were summarized. Assume the comment relates to UAS and the design team confirming the program needs for freezer and refrigeration equipment supporting the instructional delivery and science research needs to ensure appropriate level of equipment is considered.

Configure storage throughout building so as to preclude conflicts with sprinkler heads: The comment is understood. As the design process progresses the locations of sprinkler heads in relationship to designated storage provisions will be coordinated.

Haz-Mat storage/ventilation requirements: No specific conference call notes were summarized. The actual inventory of storage needs to be developed for use by the designers. Perhaps UAS could take lead on the types, quantities, and locations proposed for storage and in-use systems. This information base will assist the design team in evaluating and considering provisions for storage and ventilation.

Floor drains on 3rd floor: There has been flooding events on the third floor, consider incorporation of floor drains in wet areas to mitigate future flooding.

3 - Mechanical Elements

General Building

Energy conservation: Anderson Building is the least efficient building on the UAS campus. The existing underground tank is older than 25-years.

Boiler-two smaller: Consider revising the current design from one single boiler to two smaller boilers. The current boiler room size can accommodate two smaller boilers. The current boiler was installed in 1984; exceeding its anticipated 10-year life span. The existing electrical service to the building could handle an electric boiler.

Ground source heat option? Doug Murray noted the evaluation of this option would require a more detailed, significant study. A suggestion to consider utilization of a sea water heat pump and exchanger was mentioned.

HVAC Controls: No specific conference call notes were summarized. Further discussion to establish the consideration(s) needed.

Occupancy sensors

CO2 sensing

AHU-1: Doug Murray noted there are problems associated with the boiler and AHU sharing a common environment. The suggestion was to move the AHU and locate in a separate room from the boiler.

VAV boxes: No specific conference call notes were summarized. Further discussion to establish the consideration(s) needed.

Pneumatic actuators: No specific conference call notes were summarized.

Heat/ventilation to back dock/reconfiguration of back dock including heat and ventilation: Reference “Seaweed lab upgrade” under Architectural Elements - Interiors above.

Ventilation/cooling appropriate to heating loads in equipment and transformer rooms: No specific conference call notes were summarized.

Dielectric union failures in fin tube: Replace dielectric unions in fin tube system.

Science Delivery

Compressed air requirements: No specific conference call notes were summarized. Further discussion to establish the consideration(s) needed.

Chemical drain/disposal considerations: No specific conference call notes were summarized. Further discussion to establish the consideration(s) needed.

Gas requirements for lab equipment/Bunsen burners etc: No specific conference call notes were summarized.
Further discussion to establish the consideration(s) needed.
Saltwater system upgrade: Specific conference call notes outlined the need to replace seawater lines within the building. Consideration of regulatory requirements is needed.
A-B salt water line replacement: No specific conference call notes were summarized. Further discussion to establish the consideration(s) needed. Based on above consideration assumption is the comment relates to the saltwater line feeding the Anderson Building. Previous meetings with UAS noted the permit for saltwater use will be transferred to UAS following the departure of UAF-SFOS.
Salt water settling tank requirement? No specific conference call notes were summarized. Further discussion to establish the consideration(s) needed.
RO System replacement: The penthouse currently houses the RO generation system. Ample space is available for a newer system.
Fume hood requirements/controls: Existing fume hoods are inefficient; replace with variable speed operation.

4 - Electrical Elements

General Building

Electric distribution equipment/MBC panel replacement: Upgrade original electrical panels. The ground fault protection is outdated and needs replacement.
Gen set/transfer switch replacement: The transfer switch is a problem and needs to be replaced. If the standby generator is replaced it could be located outside of the building. The existing building houses the generator set and sewage ejector in the same room.
Cable tray system for data/communications: Provide cable trays in the renovation.
Provision for head end equipment: No specific conference call notes were summarized. As the design progresses the specifics will need to be identified.
Special lighting considerations: No specific conference call notes were summarized. As the design progresses the specifics will need to be identified.
Fire alarm system replacement upgrade: The system needs to be replaced.

5 – Miscellaneous or Additional Considerations Noted

Conference call discussions not part of itemized list:
The Anderson Building needs more outlets.
Light fixtures need to be replaced.
Consider a controls system upgrade.
The existing sprinkler system is in good condition.
Gas piping was replaced in approximately 1998.
The Anderson Building exterior siding on the Auke Bay side was replaced in approximately 2002. The remainder of the cedar siding is in good shape.
UAS noted there are no real problems with the doors in the Anderson Building.
Ventilation:
- The current design presents difficulty with access to filters and dampers and controls need an upgrade.
- UAS wants a 30-year life for the renovation. Doug Murray recommend total replacement of all AHUs, fume hoods and exhaust.
Plumbing:

- Trench drains on the first floor currently discharge onto the hillside above Auke Bay. Consideration of regulatory requirements is needed.
- UAS has replaced the sewage line. No replacement date was noted in the conference call.

Asbestos abatement? UAS has not conducted a survey of existing hazardous materials within the Anderson Building. One noted reference to hazmat during the conference call was asbestos is in a lab table. The specific table location was not noted.


ANDERSON BUILDING RENOVATION SITE/ DOT&PF CONSIDERATION POINTS

JUNE 20TH, 2008 CONFERENCE CALL SUMMARY

At the end of the conference call on June 19, 2008 a similar call for June 20, 2008 was scheduled. The purpose was to review site access, DOT&PF plans for the Glacier Highway redesign, and the implications associated with the renovation project.

Participants in the conference call:

Keith Gerken, UAS
Terry Hyer, ECI/Hyer
Mark Pusich, R&M Engineering, Inc.

Keith outlined a key next step for the renovation project is to obtain ‘formal project approval’ from the University of Alaska Board of Regents (BOR). We need to tell the BOR what is going into the building.

The most recent information about the Auke Bay Corridor Study is the DOT&PF study from 2002/2004. The design work was started for the crossing of the Glacier Highway in the vicinity of UAS but the effort was dropped from DOT&PF’s priority list.

Keith wants to be able to tell the BOR what our options are and what we think we should do.

DOT&PF had some plans to develop roundabouts at the Glacier Highway intersections with Fritz Cove and Deharts/Back Loop intersection. The momentum to develop the highway from Juneau to Skagway has put these plans on hold.

Potential realignment may be under consideration; primarily to provide sidewalk and middle turning lane.

The roundabout in Douglas, AK cost approximately $10M.

Mark Pusich will contact Malcolm Menzies, DOT&PF SE Regional Commissioner to obtain his perspective. The Auke Bay Corridor project is not assigned to any DOT&PF staff.

Mark will set up a meeting with DOT&PF to discuss the plans of UAA in more detail.

End of conference call summary for June 20, 2008.