SB
691

COMMITTEE REPORT

SENATE

FURTHER:

Date: _____

Mr. President:

The Committee on _____ has had _____

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING DO PASS

MEMBERS HAVING OTHER RECOMMENDATIONS:

_____

CHAIRMAN

S 60 (Rev. 12/78)

RESOLUTION 82-I

A RESOLUTION SUPPORTING THE PROPOSED EXPANSION OF THE FAIRBANKS MEMORIAL HOSPITAL.

WHEREAS, the Fairbanks Memorial Hospital serves the residents of North Pole for their health care needs, and;

WHEREAS, the City of North Pole and the entire area serviced by the Fairbanks Memorial Hospital is increasing in population, and;

WHEREAS, our Hospital offers many specialized services that are not normally offered in an area our size, and;

WHEREAS, our Hospital offers the lowest cost in the State, and;

WHEREAS, our Hospital operates at a high percentage of occupancy rate over the recent years, and;

WHEREAS, our Hospital will be requesting funding from the State Legislature.

NOW THEREFORE BE IT RESOLVED by the City Council of the City of North Pole that:

The City Council of the City of North Pole Supports an immediate capital expansion program for the Fairbanks Memorial Hospital.

PASSED AND APPROVED BY a duly constituted quorum of the City Council for the City of North Pole, Alaska this 18th day of January, 1982.

ATTEST:

Pamela Daniell

Pamela Daniell, City Clerk

James D. Blyth, Mayor

FAIRBANKS INTERNAL MEDICINE
and
DIAGNOSTIC CENTER, INC.
1919 LATHROP STREET
FAIRBANKS, ALASKA 99701

(907) 452-4769

INTERNAL MEDICINE
WILLIAM H. DOOLITTLE, M.D. F.A.C.P.
JEFFREY A. PARTNOW, M.D.

INTERNAL MEDICINE HEMATOLOGY & ONCOLOGY
J. MICHAEL CARROLL, M.D.

INTERNAL MEDICINE & AVIATION MEDICINE
DAVID S. GRAUMAN, M.D. F.A.C.P.

JAN 2 - 1982

January 19, 1982

Senator Bettye Fahrenkamp
Pouch V - MS3100
Juneau, AK 99811

Dear Senator Fahrenkamp:

As an informed senator, I am sure you are aware that the hospital needs for the Fairbanks region have expanded beyond expectation. Currently, without the predicted gas pipeline construction, Fairbanks Memorial Hospital will soon be bursting at the seams.

To continue to serve the citizens in the northern half of the state, plans are in the process for an extensive addition to the hospital. Because this is the only private hospital north of Palmer, I feel it essential that the expansion requirements be met.

Any support that you can render in assisting with state funding and/or appropriate legislation would be greatly appreciated. The end result of this will be diminished costs for the citizens of northern Alaska.

Thank you for your excellent representation for our region, and for all your hard work.

Sincerely,

J. Michael Carroll, M.D.

JMC/co
cc Tom Mingen, Administrator
Fairbanks Memorial Hospital
1650 Cowels
Fairbanks, AK 99701

JAN 2 5 1982

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Jan. 15, 1982

Senator Bettye Fahrenkamp
State Capital
Pouch V
Juneau, Ak. 99811

Dear Bettye:

As a member of the Greater Fairbanks Community Hospital Foundation and Chairman of the Local Operating Board of Fairbanks Memorial Hospital, I urge you to support the proposed expansion of Fairbanks Memorial Hospital. By advocating that state funding be made available for our hospital, residents of the Interior will be provided the additional beds needed to meet the increasing demands which Fairbanks Memorial Hospital has recently been experiencing. In addition, state funding would help to ensure the cost of health care at Fairbanks Memorial Hospital would remain low.

A project such as ours is a perpetual thing; one in which we can take a great deal of pride both now and years down the road.

I would also like to take this opportunity to thank you for meeting with hospital representatives during the last several weeks. Your interest in Fairbanks Memorial Hospital indicates your concern that the citizens who require medical services at Fairbanks Memorial Hospital receive the best possible care available.

Again, I urge your support of the expansion project.

Sincerely,

Edward K. Christiansen
President

EKC:ac

TANANA VALLEY MEDICAL-SURGICAL GROUP, INC.
(A PROFESSIONAL CORPORATION)
1001 NOBLE STREET • FAIRBANKS, ALASKA 99701 • PHONE 452-1611

January 22, 1982

Senator Bettye Fahrenkamp
4016 Evergreen
Fairbanks, AK 99701

Dear Senator Fahrenkamp:

This letter concerns the proposed expansion of Fairbanks Memorial Hospital. I am a practicing Obstetrician-Gynecologist at the Tanana Valley Clinic and I have patients who utilize the hospital virtually every day of the year. As you are probably aware, the hospital foundation board has recently reviewed a study which confirms the opinion of those of us at the hospital that an expansion of available beds is an appropriate and needed step. The support facilities at the hospital are excellent, but it frequently happens that there are ~~is~~ simply no beds available for the ill or for those that are having surgery. You may also be aware that in 1981 renovation of the labor and delivery suite and the newborn care nursery was completed. This expansion took up several available beds, which along with the slowly increasing population in the Fairbanks area, led on several occasions in 1981 to cause planned surgeries to be cancelled and indefinitely postponed. This situation will become more common until an expansion of available beds is accomplished. This may sound like a relatively minor problem at first, but as was recently pointed out in a letter to the editor in the Fairbanks Daily News-Miner, for a person to have planned surgery cancelled even by a day or two is extremely traumatic. It prolongs the inevitable anxiety which accompanies surgery and frequently causes financial problems because pre-operative evaluation may have to be repeated. It causes major disruptions in patient's leave from work and also disrupts arrangements for child care and visiting relatives.

All studies which I have read indicate a prediction of gradually increasing population in the Fairbanks area. This in itself would lead to the logical conclusion that the hospital itself must also expand. Our occupancy rate in 1981 was extremely high - considerably above the national

Official Business

Alaska State Legislature

Senate

Committee on

Health, Education & Social Services

Charlie Parr, Chairman
Terry Stimson, Vice-Chairman
Vic Fischer
Tim Kelly
Mike Colletta

Pouch V
State Capitol
Juneau, Alaska 99811

465-4907
465-4908

March 8, 1982

LETTER OF INTENT
ON
SENATE BILL 691

It is the intent of the Health, Education and Social Services Committee, in passing out SB 691, that:

the funds in this appropriation not be expended until a certificate of need is issued by the Commissioner of Health and Social Services

Senator Charles H. Parr
Chairman

r Accountants Service

IN FAIRBANKS — 655 8th Avenue

42, FAIRBANKS, ALASKA 99707

(907) 456-1211

nuary 11, 1982

Mr. Tom Mingen
Fairbanks, Memorial Hospital
Fairbanks, Alaska 99701

Dear Tom:

Your plans for expansion of the hospital as announced in the Fairbanks Daily News Miner were gratifying to see. There is a need for the program as I can testify.

During the last part of October in this year I was scheduled for surgery and the possibility of maliginancy and the need for haste were impressed upon me. After rearranging my schedule, changing my office routine, hiring replacement personnel and generally tieing up loose ends I was notified three hours prior to admission time that there were no beds available and it might be a few weeks until we oould proceed.

This naturally caused a disruption to my prepared plans, considerable emotional strain upon my family and natural consideration of Anchorage and Seattle as alternatives. Were I an isolated case it would be but of small consideration; however I understand that there were 30 such cases within a few days.

Tom, as you are aware, I served for three years on the Board of the Northern Alaska Health Resources Association. One of the worst memories is when you came in to seek our permission to spend your money for some equipment you deemed necessary to run your hospital. I am not certain that the public is aware that you must face this "Certificate of Need" process. If you are using private capital, bonding, or public subscription monies as you have in the [illegible] can not conceive of justification for this quasi-governmental review.

Please count on me for vocal support in your efforts. And if testimony before NAHRA or such is your wish, let me know.

Sincerely,

L. V. Beyer

Lew Beyer

tms
cc: Daily News Miner
Letters to the Editor

copies memorial packets

Fairbanks Memorial Hospital

1650 Cowles St.
FAIRBANKS, ALASKA 99701

OPERATED BY
LUTHERAN HOSPITALS AND HOMES SOCIETY
FARGO, NORTH DAKOTA 58102

March 3, 1982

Senator Charles Parr
Alaska State Legislature
Pouch V
Mail Stop 3100
Juneau, Alaska 99811

Dear Senator Parr:

Recently during your Committee meeting on Senate Bill 691, an act relating to an appropriation to Fairbanks Memorial Hospital, a question was asked, and I thought I had given an appropriate answer. Since that time I have returned home and found a large article in the Daily News-Miner which indicated that my answer could have been somewhat misleading in looking back upon the question asked.

I believe the question was something to the effect that "how much additional cost would the patient be responsible for paying if the hospital were to receive no state money". I indicated that between $50 and $70 per patient day would be required. In answering the question, I was assuming that the hospital would not receive any state monies either through a direct grant or through state construction/revenue sharing. Since state construction/revenue sharing would still be a possibility even if the hospital does not get a state grant, it probably should be clarified to the Committee that hospital room rates would go up approximately $20 to $30 a day. This is given the fact that the state revenue sharing/construction money would still be available to feed into any bond fund that would be created.

I apologize for any problems I may have caused the committee or yourself. Again, I felt this should be clarified since I believe I had answered a different question than what was asked.

If you need more information, please let me know.

Sincerely,

Tom Minger
Administrator

TM/mw

Position Paper
Senate Bill 691

"An act making a special appropriation for payment as a grant to the Fairbanks North Star Borough for Fairbanks Memorial Hospital expansion and improvement; and providing for an effective date."

House Bill 700 and Senate Bill 691 make special appropriations of $20,000,000 in the form of a grant to the Fairbanks North Star Borough for expansion and improvement of the Fairbanks Memorial Hospital. The Department of Health and Social Services has received an application for a certificate of need from Fairbanks Memorial Hospital (submitted 1-18-82) which proposes remodeling of portions of the existing facility and a 107,607 square foot addition at a projected cost of $20,000,087. The proposed addition is to include five floors, two of which are shelled-in space for future use. Approximately $3,000,000 of the total projected cost is attributed to the shelled-in space.

The certificate of need review, which is expected to be completed by mid-April, 1982, will address the following aspects of the proposed project which are pertinent to a consideration of state financial assistance:

- the need for additional acute care beds in the Fairbanks Memorial Hospital service area;
- the relationship of the project to other health care providers in the area;
- the anticipated impact of the project on hospital operating costs, revenues, and patient charges;
- the financial feasibility of the project;
- the cost-effectiveness of constructing shelled-in space for future use

In the certificate of need application Fairbanks Memorial Hospital has considered several alternative financing methods ranging from total State funding by means of a grant to total self-financing by means of tax-exempt bonding. The application states the facility's desired financing method as follows:

> The Hospital Foundation is currently looking towards financing the new addition by applying to the State of Alaska for a 50% grant for the cost of the new addition. This grant would exclude the third and fourth floors for future expansion. The Foundation is requesting that the State of Alaska fund the third and fourth floors or $3.1 million at 100%. The remaining 50% of the addition would be bonded through the Alaska Medical Facilities Authority using the mechanisms which are currently in place.*

---

* Fairbanks Memorial Hospital Certificate of Need Application, January 1982, page 104.

Other possible funding sources for hospital and nursing home construction are limited. Under AS 29.90 municipalities or other hospital or health facilities sponsors may receive reimbursement for up to 25% of total project costs. This partial reimbursement is available only to those facilities which have successfully secured financing and have completed a health facility construction project. Most rural facilities do not have the capacity for debt required for securing financing.

Under AS 18.26 medical facilities may apply to the Alaska Medical Facility Authority for State backing relative to the sale of tax-exempt bonds for the purpose of financing medical facility construction. One project has been financed through this program to date -- a 1978 Fairbanks Memorial Hospital expansion project in the amount of approximately $12 million. Alaska Hospital and Medical Center, Anchorage, is presently working with the Authority to determine the viability of this funding approach for refinancing that facility and the acquisition of the adjacent professional office building.

One determination which the Authority must make before bonds may be issued under this statute is that the lease or operator agreement for the medical facility being financed by that issue is at least sufficient to meet all obligations in connection with the lease or operator agreement, including all costs necessary to service the bonds. This prerequisite essentially disallows use of the program by rural facilities, most of which do not have more than a minimal capability to service bonds.

The Department is conducting an inventory and condition survey of rural Alaskan hospitals and nursing homes to determine physical condition and functional adequacy and to identify means for upgrading facilities and correcting deficiencies. The inventory was focused on rural facilities because of the Department's awareness of insufficient tax bases in the smaller communities to correct recurring problems identified through the Department's regular licensing and certification processes and architectural reviews. Fairbanks Memorial Hospital, in one of the state's more urban settings, was not included in this inventory.

Recommended by: Phoebe A. Lindsey

Phoebe A. Lindsey, Director
Division of State Health
Planning & Development

Date: 3-1-82

Approved by: Helen D. Beirne

Helen D. Beirne
Commissioner

3-1-82

THE LEGISLATURE OF THE STATE OF ALASKA
TWELFTH LEGISLATURE

I. REQUEST

Bill/Resolution No. Senate Bill 691

Title "An act making a special appropriation for payment as a grant to*

Requested by

*the Fairbanks North Star Borough..."

II. FISCAL DETAIL

Agency Affected Health and Social Services

Program Category Affected Health

BRU, Program, Or Subprogram(s) Affected

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
100 PERSONAL SERVICES	-0-	-0-	-0-	-0-	-0-	-0-
200 TRAVEL	-0-	-0-	-0-	-0-	-0-	-0-
300 CONTRACTUAL	-0-	-0-	-0-	-0-	-0-	-0-
400 COMMODITIES	-0-	-0-	-0-	-0-	-0-	-0-
500 EQUIPMENT	-0-	-0-	-0-	-0-	-0-	-0-
600 LAND & STRUCTURES	-0-	-0-	-0-	-0-	-0-	-0-
700 GRANTS, CLAIMS, ETC.	-0-	-0-	-0-	-0-	-0-	-0-
TOTAL	-0-	-0-	-0-	-0-	-0-	-0-

FUNDING (Thousands of Dollars)

GENERAL FUND	-0-	-0-	-0-	-0-	-0-	-0-
FEDERAL FUNDS	-0-	-0-	-0-	-0-	-0-	-0-
OTHER (Specify Source)	-0-	-0-	-0-	-0-	-0-	-0-
	-0-	-0-	-0-	-0-	-0-	-0-
	-0-	-0-	-0-	-0-	-0-	-0-

POSITIONS

FULL TIME	-0-	-0-	-0-	-0-	-0-	-0-
PART TIME	-0-	-0-	-0-	-0-	-0-	-0-
TEMPORARY	-0-	-0-	-0-	-0-	-0-	-0-
	-0-	-0-	-0-	-0-	-0-	-0-

III. ANALYSIS (See Fiscal Note Preparation Instruction, Section III)

This Bill does not directly impact the Division of State Health Planning and Development. The amendments proposed do not change the original fiscal note which projected a -0- impact.

IV. DATE 2/24/82

PREPARED BY Dave W. Williams

AGENCY DHSS, Division of State Health Planning and Development

PHONE 465-3015

Phoebe A Hendley

jcc

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 12/81)

's Miner

'th Daily Newspaper"

RSDAY, FEBRUARY 18, 1982 35¢ Per Copy 24 Pages

HOSPITAL HEARING—JoAnn Gal (left), the plan implementation coordinator, and hospital administrator Tom Mingen discuss the Fairbanks Memorial Hospital's application for a certificate of need during a public hearing Wednesday at the Noel Wien Library. The certificate is necessary for the hospital to proceed on its plans to expand facilities.

(Staff photos by Eric Muehling)

Hospital expansion plan could add 38 more beds

By MARGARET NELSON
Staff Writer

Formal review of Fairbanks Memorial Hospital's plans for a five-story addition has begun, but a hearing Wednesday on the hospital's application for a state "certificate of need" is only an early step in the process.

A review committee heard public testimony Wednesday from 11 a.m. to 2 p.m. in a hearing at the Noel Wien Library. Only two people testified.

That review committee is to make its recommendation on the FMH application to the full Northern Alaska Health Resources Association board next month. If approved by NAHRA, the application will be forwarded to the state Department of Health and Social Services.

Expansion plans are to construct a five-story addition to the hospital, including a basement for data processing and storage, one floor for expansion of administration and ancillary services, another floor to contain 40 beds, two floors to be shelled in for future expansion and a fifth floor for mechancial and electrical equipment.

Projected construction cost is $20,000,087. The expansion would increase total bed capacity at Fairbanks Memorial Hospital from 145 to 183.

Construction could begin this July with completion of the new tower by late 1985, but the project cannot proceed without first obtaining the state certificate of need.

Hospital officials propose that if the expansion is funded by a direct grant from the Legislature, there would be no direct additional costs to patients. If the hospital has to use other financing, such as bonding, some of the new construction cost would be charged to patients.

The addition, originally not expected to reach the planning stage until 1983, is being planned now because of the dramatic increase in the number of patients being served over the past eight months.

Daily occupancy levels at the hospital have exceeded previous averages since mid summer.

The hospital's certificate of need application and a needs assessment study prepared for the hospital by a North Dakota firm, state there now is an average shortage of 10 beds at Fairbanks Memorial Hospital. A total of 38 beds is projected to be needed by the mid-1980s.

According to hospital statistics, 20 per cent of the time during an average week there are more patients than beds available. The hospital experienced an increased patient population last fall, compared to declines in the fall of previous years. In some cases, elective surgeries were postponed because of the shortage of bed space.

Also in 1981, Fairbanks Memorial Hospital lost 10 rooms due to expanding its nursery and constructing two birthing rooms.

Statistics also show a large increase in the number of practicing physicians in Fairbanks. In 1974—prior to pipeline construction—there were 47 private physicians practicing in Fairbanks. That number rose to 77 in 1978 and to 90 in 1981.

About 38 new personnel would be needed for staffing the additional rooms. Another 20 nurses would be needed, along with seven nurses aides, three ward clerks and eight other personnel in the laboratory, X-ray, pharmacy, supply and operations departments.

CHARLES KALTENBACH
NAHRA executive director

Mike Graf, of Tanana Chiefs Mental Health and president of the Alaska Psychological Association, said in testimony before NAHRA Wednesday that he generally supports the expansion.

But Graf said he has special concerns in the area of behavioral health. Currently anyone with serious

(See HOSPITAL, page 2)

HOSPITAL . . .

(Continued from page 1)

behavioral problems in the northern region has to be sent to a facility in Anchorage, Graf said. He hopes that NAHRA and the Fairbanks Memorial Hospital will consider mental health needs in their planning.

The certificate of need process was developed by the federal government to help contain rising hospital and health care costs. Under the review conducted by state health systems agencies, such as NAHRA, plans for expansion of facilities or services must be examined and the public given an opportunity to comment. The impact on health care costs must be included in the review.

There is a time limit for agencies to review the application for a certificate of need.

In this case, Fairbanks Memorial Hospital had to submit a letter of intent 60 days prior to its application. The state must then certify the application as complete before the health system agency begins its review. The review must be completed within 60 days.

Some of the questions that NAHRA will be examining include:

- Is the hospital expansion consistent with the health plans for the state and the northern region? How does the proposal relate to the hospital's long range development plan?
- Is the need for the expansion well demonstrated?
- What are the alternatives and why was the project determined to be the best approach to meeting the need?
- What is the financial feasiblity of this expansion? What will the impact of the expansion be on costs and charges for services to the consumer of hospital care?
- Are the manpower resources available in the community to support the expansion?
- How with the expansion affect competition between health care service in the Fairbanks area in the future and will the expansion results in improvements or innovtions in financing and delivery of heatlht services which will foster competition in the community?
- Does the expansion include considerations for energy conservation?

Persons interested in seeing the hospital's application can do so at NAHRA offices, 529 Fifth Ave., Suite 8. Written or verbal comments will be accepted by NAHRA through March 4, the date the NAHRA board will hear its committee's recommendation.

WATER . . .

SB
693

COMMITTEE REPORT

SENATE

FURTHER:

Date: 4/2/82

Mr. President:

The Committee on HEALTH, EDUCATION & SOCIAL SERVICES has had SB 595

taken a special appropriation to the University of Alaska for planning for the Northern Agricultural Research Facility - at Palmer

under consideration and (a majority of the c tee) (the committee) reports it back with the following recomm ic is:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

MEMBERS HAVING
OTHER RECOMMENDATIONS:

_____ CHAIRMAN

S 60 (Rev. 12/78)

SENATE AMENDMENT

By SENATE HESS

To: _____ SENATE BILL No. 695

To: _____ HOUSE BILL No. _____

PAGE: 1 LINE: 11

to the University of Alaska, Fairbanks for planning and design of [for] the Northern engineer --

We need more UA engineers-dean

By SCOTT YATES
Staff Writer

It doesn't take a calculator for Vincent Haneman to figure out why Alaska needs more engineers. It's obvious because Alaska depends on outsiders to fill 90 per cent of its engineering work, according to the 58-year-old dean of the University of Alaska-Fairbanks' School of Engineering.

And the demand for engineers is not just high in Alaska.

All over the nation engineers are finding a field rife with opportunity. The situation is in direct contrast to the circumstances that graduates faced in the early 70's. Then, with the national space program winding down and cutbacks in military spending, the demand for engineers hit bottom.

Times have changed. Today, industry is clamoring for engineers and paying them 80 to 90 per cent more than they'd earn as professors. With so many opportunities in private industry beckoning engineering graduates, the number who continue their education toward Ph.D's has dropped. About 2,000 graduates each year complete doctoral degrees, and universities have to compete with private industry for their services.

Haneman believes that it is essential that Alaskan engineers are educated to work on Alaska projects. He believes that eventually, the nation will clamer for the resources found here and unless "we can create a climate beneficial to our interests, it will be more than worth our time and effort."

Otherwise, Haneman said, outsiders who have no feeling for the quality of life in Alaska will rape the land.

While Haneman is outspoken on the subject of increasing Alaska's share of engineers any week of the year, this week—National Engineering Week—lends itself to a special forum. Engineers across the nation are using this week to educate the public about trends within their profession.

A critical problem today is a growing undergraduate enrollment combined with a shortage of engineering professors who are lured away from campuses because of higher salaries in private industry.

VINCENT HANEMAN
"More than worth our time"

According to Haneman, the engineering department at UAF—which consists of civil, mechanical and electrical engineering—has doubled from 150 students four years ago to 302 students today. The number of faculty during the same period has grown 4 per cent to about 20 professors, a number Haneman said isn't adequate.

But he admits that qualified professors are getting harder to find and that to get them to come to Alaska, you have to pay the numbers."

The "numbers" in Alaska are in the realm of $50,000 a year for a nine-month contract.

But in addition to the salary, there's "consulting activities (at the university) unrivaled in the Lower 48," according to UA President Jay Barton. Professional engineers can supplement their income by offering their services as consultants to private industry and earn half again as much as their salary.

Barton feels the consulting opportunity plus the fact that Alaska "is where the action is," will ultimately work to the university's benefit.

Finally, Barton believes that Haneman can recruit the necessary talent. can recruit the necessary talent. "If any place can be competitive it's the University of Alaska."

Barton does not dismiss Haneman's complaints about facilities and equipment, however. Speaking generally, Barton said the direction of the university is toward the professions, specifically engineering and business. "I see us martialing the necessary forces to meet our students' needs," Barton said.

The present enrollment of students has put a strain on engineering facilities: demand for lab time has tripled; research programs are filled to the maximum; some experimental equipment has to be set up in the parking lot because of the space crunch. And Haneman said some of equipment used in teaching is antiquated.

The dean said his remarks should not be construed as playing a game against the University of Alaska-Anchorage which recently started an engineering program. Even with both Fairbanks and Anchorage programs going full steam, they could not entirely meet the state demand. Haneman wants to see a day when both UAF and UAA campuses can turn out all the engineers needed in Alaska. Fifteen hundred graduates a year might meet that demand, he said.

However, Haneman would like to see general university support for engineering translated into specifics such as a $25 million research and engineering building, $600,000 a year in new equipment and expanding the engineering school to include chemical engineering.

He doesn't expect much in the next year, though. A budget that Haneman considers woefully inadequate has already been presented to the Legislature. He would like to see planning money for his research building and the expansion of Duckering, but most of all, Haneman wants to educate the public that quick fixes aren't possible.

"I want to educate everyone so that when decisions come up again they can be made with more background," he said, adding that "the future depends on adequate engineering."

2 rigs collide on Dalton bridge

Two tractor-trailers collided Tuesday on a Dalton Highway bridge north of the Yukon River, blocking the road for 14½ about 140 miles north of the Yukon River.

Troopers said that Sig Wold truck,

Bats are the only flying mammals. The Kalong, a fruit bat, has the greatest wing span, measuring 5 feet, 7 inches, and is also the heaviest, weighing up to

VINCENT HANEMAN

UA engineering dean builds solid program

Ninety per cent of the engineers in Alaska are hired from Outside.

But according to the dean of the University of Alaska Fairbanks' School of Engineering, that could be changed if Alaska spent more money to hire engineering faculty and provide for equipment and travel.

Speaking to the Chamber of Commerce general membership luncheon Tuesday, Dean Vincent S. Haneman Jr. said Alaska faces a shortage of engineering graduates. "There are six to 10 jobs available for every engineer we turn out," he said.

Haneman was named dean in September 1980, replacing Chuck Behlke who resigned to become the state's chief pipeline inspector for the natural gas pipeline project.

Some 308 students are enrolled in civil, electrical or mechanical engineering at UAF. About 200 more students are enrolled in other engineering programs.

But Haneman said he believes the School of Engineering must attract 600 to 800 students, other engineering programs must double their enrollment, and the University of Alaska-Anchorage must begin its own engineering program before students educated in Alaska can fill all the jobs that are available.

That can't be done, he said, without spending more money on the program: "We are in desperate need of support by the Legislature."

Haneman listed these critical needs:

• More space. The university hopes the Legislature will appropriate $1.25 million to plan a 50,000-square-foot classroom and laboratory building.

• More faculty. Five to six more faculty members are needed "almost immediately," Haneman said. He hopes to see some $226,000 in next year's budget for that purpose. To teach 600 to 800 students, the present staff of 17 must be increased to 45 or 50.

• Money for travel. Technical knowledge is doubling every four years, Haneman said. Without money to travel Outside for research and education, engineering faculty members can be hopelessly out of date within 10 years.

• Technical support. The school now has only one technician to provide technical support. Two or three are needed, Haneman said.

The dean said the impact of science and engineering today is tremendous, noting that he substitutes the word "engineering" where most say "technology."

"Our biggest problem is that methods, systems, models, know-how are developed elsewhere then applied here, only to find out they don't work here."

Among projects UAF faculty members are studying are reducing ice fog, lessening pipeline corrosion, dealing with frost heave and coping with the effects of the aurora on communications and electrical transmission lines.

Haneman said the School of Engineering is able to provide quality education because of the leadership of his two predecessors, Behlke and Charles Sargent. But he said the school has grown by 50 per cent over the last two years, labs are overcrowded, equipment is outdated, and the faculty-student ratio is too high.

All those problems were cited by an accrediting team whose report is due in August.

He said financial support from industry – particularly oil companies – would be welcome. But in the past the university has had little to offer in the way of continuing education for engineers in the field to attract the interest of industry. He hopes that will change and pointed out that this year several engineering courses are being offered at Prudhoe Bay by videotape.

Corporate Leaders, Educators Ponder Engineering Faculty Shortage

In Alabama, Auburn University's engineering school—pressed for space by many years of growing enrollment—will start construction of a new electrical engineering building in March, with another building on the drawing board. It will be the first major new construction in 20 years.

At the San Diego campus of the University of California, undergraduates majoring in engineering jumped from 7 percent of the total to 20 percent.

Laboratories and classrooms were so packed last year, some students could get computer time only in the wee hours of the morning. (continued on page 4)

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BUSINESS-HIGHER ED (continued from page 1)

Technology is in fashion again. Engineering enrollments have risen by about half since 1975.

But there's a flip side to the trend, according to some leaders in industry and education.

There is a "crisis" in engineering education with a shortage of engineering faculty that may result in the deterioration of engineering education quality and limits on the number of engineers produced by U.S. schools, observers say.

Corporate leaders and educators discussed the issue during the Engineering and Manpower session of the Business-Higher Education Forum's winter meeting last month in Phoenix, Ariz.

"The expression has been used that we are eating our seed corn," said panelist Dr. William J. Perry, chairman of the American Electronics Association's Blue Ribbon Committee on Engineering Education.

"But we're doing even more than that," Perry said. "Not only are we eating the seed corn, we are taking the farmer and moving him off the farm," Perry said referring to the luring-away of academic talent by the corporate world.

"We can get away with that for a few years, but we will pay a very heavy, heavy price for that in the mid- to late-80s. And I suspect that price will be forfeiting our chance to be the leaders in future rounds of world-wide technological competition.

According to a recent ACE survey of the nation's 244 colleges and universities with accredited engineering programs:

- More than half reported a *substantial* decrease in their ability to recruit and retain engineering faculty during the past five years.
- During 1979-80, almost 400 full-time engineering faculty—2.7 percent of permanent faculty—left teaching for employment by industry.
- Between 1975 and 1980, the number of bachelor's degrees in engineering grew by more than 50 percent, while the number of doctorates granted dropped by 12 percent.

"These trends," the report concluded, "pose a serious problem for the engineering colleges. The supply of new teachers continues to decrease at the very time student enrollments are continuing to set record levels."

The problem is real, these industry and academic leaders say. And a solution to the problem will call for a partnership between U.S. industry and higher education, spokesmen told corporate and academic leaders at the meeting.

The "supply-demand balance of undergraduate engineers can be achieved through market forces *if* the engineering schools are capable of continued renewal and are healthy," Dr. Edward E. David, Jr., president of Exxon Research and Engineering Co., said at the meeting.

"However, that remains a big *if*," David warned, (continued on page 5)

AMERICAN COUNCIL ON EDUCATION

Business-Higher Education Forum—Corporate leaders and educators discussed issues and mapped strategies for common problems at the winter meeting last month of the Business-Higher Education Forum in Phoenix, Ariz. Pictured here (left to right) are James E. Olson, vice chairman, American Telephone and Telegraph Co.; J. W. Peltason, president, American Council on Education; Wesley W. Posvar, chancellor, University of Pittsburgh; Robert Anderson, chairman and chief executive officer, Rockwell International Corp., also chairman of the Business-Higher Education Forum; Rev. Theodore M. Hesburgh, C.S.C., president, University of Notre Dame.

BUSINESS-HIGHER ED (continued from page 4)

"Recent analyses of engineering education indicate that the schools of engineering are in trouble."

David, chai. man of the National Engineering Action Conference, described the core problems as:

- Retention of engineering faculty and
- Shortage of engineers pursuing doctoral degrees and entering the teaching ranks.

The National Engineering Action Conference was begun in 1981 when a group of university administrators acting through the National Association of State Universities and Land-Grant Colleges (NASULGC) decided that immediate action needed to be taken on the issue.

NASULGC in concert with the American Association of Universities (AAU) and a number of other groups, agreed on the idea of a national action conference which David agreed to chair.

David noted that some 20 or 30 universities surveyed in February 1981 by the American Society of Engineering Education had decided to limit enrollments.

"This curtailment of enrollments is directly attributable to faculty shortages, and many deans believe the faculty shortage in turn is directly related to salary scale restrictions and a poor working environment, typified by equipment shortages and outdated laboratories" David said.

He noted that a recent survey of 86 engineering schools showed that the differential between starting salaries in industry and the current average salaries paid to faculty had increased from 22 percent to 33 percent during the past four years.

A recent National Science Foundation study reported that the median age of university instrumentation is twice that of the instrumentation in large industrial laboratories—3.5 years versus 7 years, he said.

David mentioned a recent *Fortune* magazine article which quoted a University of Illinois senior as saying: "Why be a teacher—they're overworked and underpaid and there's no reward or compensation. There's much more prestige in being an engineer at Hewlett-Packard than being a faculty member at the University of Illinois."

The article, David said, also quoted a new Ph.D. who went to work at Bell Labs and said, "You don't have to hassle grants or worry about teaching loads or getting good grad students to help you. You have good technical support and there's no uncertainty about backing."

David presented samples of action steps developed by the National Engineering Action Conference that could be taken by the higher education community, government, and the educational and professional associations.

For industry, individual corporations working individually or collectively could:

- Increase support for doctoral candidates in a new way—tying support to the candidates' willingness to teach.
- Increase supplements to faculty salaries, again seeking to tie this to the willingness to remain in the teaching ranks.
- Improve the environment for graduate school by looking for ways to assist university laboratories in providing analytical and other support services.

For postsecondary institutions:

- Engineering faculty compensation needs to be raised to a more competitive level.

One way of gaining flexibility in setting differential salaries among faculties in various disciplines is to establish semi-autonomous engineering colleges such as exists in other professional disciplines such as law or medicine.

For government:

- Develop legislation to give incentive to the private sector to increase their support of engineering education through fellowships, sponsored research and equipment donation.
- Provide funds for government or private programs aimed at solving the faculty shortage problem.

For educational and professional associations:

- Continue the effort at the national level to establish a policy on engineering manpower, supported by an adequate manpower supply/demand planning model.
- Expand scholarship and fellowship aid to engineering students and make direct grants to the schools.

"In summary, I think you will agree that the problem is serious and deserves attention," David said.

The next meeting of the Business-Higher Education Forum, chaired by Rockwell International Corp. Chairman Robert Anderson, will be hosted by University of North Carolina President William Friday at Research Triangle Park in June. A report and recommendations by the Forum task force on engineering education will be presented at the meeting.

Education Crisis Report Calls for Strong Action

A strong remedy to cure the nation's ailing engineering education system was prescribed in an action plan that was two years in the making. A task committee headed by longtime active member Russel C. Jones, newly named vice president of Boston University, offered ASCE's Board of Direction its recommendations in a report dated September 1, 1981.

That report — which the Board accepted — detailed some of the problems in education that have been festering for over a decade — such as inadequate and outdated lab equipment and plummeting enrollments in engineering schools, especially at the doctorate level. Below-the-norm salaries paid to engineering faculty were blamed for not attracting more teachers to the academic ranks. Also taking its lumps in the report were poor engineering curricula at some schools that did not properly prepare graduates for professional careers.

But along with all the bad news came a hopeful solution for turning things around. A comprehensive action plan called for help from ASCE, the federal government, U.S. industry and the universities themselves. In its January 1982 issue, CE magazine will report in depth on the Jones committee plan and the crisis that spawned it.

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1982

ALASKA PROFESSIONAL DESIGN COUNCIL NEWS

Northern Engineering Research Facility — Senator Parr

SB 695, Funding for Planning
Staff analysis - Zybach
Generalized statements relating to the need for the research facility drawn from agency data:

The School of Engineering has no laboratory space dedicated to research and no support facilities such as drafting, photography, or standards and calibration.

The 1979 accreditation team of the Accreditation Board of Engineering and Technology strongly urged applied research efforts to be integrated into the School of Engineering.

Engineering education is being severely hampered by obsolete equipment, inadequate facilities and a shortage of faculty according to a 1980 presidential report on science and engineering. It is no different in Alaska and is, perhaps, more intensified.

There has been a continued increase in engineering students at UAF, 27% in 1981. There has not been a significant growth in facilities or a growth in laboratories to keep up with this growth.

The School of Engineering continues to have more requests for graduates than the number available. All students seeking employment are placed in jobs.
2/3rds of these students are still working in Alaska

The engineering department has attracted $273,175 in research funds, exclusive of research performed solely for the research institutes, however, "major areas of research already underway at UA are hampered by insufficient space, inadequate equipment and outdated facilities."

Specified need objectives:

1. To accomadate accreditation needs in the area of research

2. To accomodate demands from industry for more and better equipped graduates

3. To accomodate the increased number of students in the engineering program as well as the increased demands of students in the Mineral Industry Programs

4. To further the establishment of a quality engineering program which will be recognized nationally and internationally in the areas of Artic Engineering.

1,753 ~~1,235~~

University Planning Office revised Estimate.....~~$1,235~~ million

E

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1,955 ~~1,235~~

University Planning Office revised Estimate.....$1.235 million

E

SQUARE FEET PER FTE STUDENT

SEMESTER	FTE STUDENTS	BUILDING DESCRIPTION, YEAR OPENED, SQUARE FOOTAGE (Student housing and parking are not included)	CUMULATIVE SQUARE FEET	1981 ~~Building Add~~ Projected CONSTRUCTION COSTS (In thousands) (1.45% per month inflation factor)
ACTUAL				
Fall 1975	745	UAA, ACC, APU Library (Jan. '73) 101,244 Sq. Ft. College of Arts and Sciences (Sept. '74 - Partial) 61,986 Sq. Ft.	163,230	--
Fall 1976	977		163,230	--
Fall 1977	1,270		163,230	--
Fall 1978	1,317	Health Occupations Facility 47,670 Sq. Ft. Energy Module 4,608 Sq. Ft. UAA, ACC Physical Education Facility 142,620 Sq. Ft.	358,128	--
Fall 1979	243 1,476		358,128	--
Fall 1980	216 1,660		358,128	--
Fall 1981	210 1,897	Classroom/Office Building 41,000 Sq. Ft.	399,128	--
GOALS		New buildings and their square footages are listed according to occupancy dates. Budget dates are two years previous. Numbers refer to Proposed Six Year Development Plan, January 1982.		
Fall 1982	186 2,150		399,128	
Fall 1983	203 2,410	1 UAA, ACC Bookstore 38,000 Sq. Ft. 2 Administration/Classroom Building 52,000 Sq. Ft.	489,128	5,200. 9,180.
Fall 1984	177 2,769		489,128	
Fall 1985	183 3,229	3 Classroom Building 94,000 Sq. Ft. 5 UAA, ACC Physical Plant Building 40,000 Sq. Ft.	623,128	20,000. 10,000.
Fall 1986	186 3,556	4 Classroom Building 37,000 Sq. Ft.	660,128	8,000.
Fall 1987	235 3,788	6 Health Science Building 90,000 Sq. Ft. 7 Expansion of Classroom/Office Building 40,000 Sq. Ft. 8 Physical Education Addition 100,000 Sq. Ft.	890,128	53,000. 12,000. 33,000.
Fall 1988	252 4,056	14 Continuing Education Facility 130,000 Sq. Ft.	1,020,128	30,500.
Fall 1989	301 4,352	9 Business and Public Administration Bldg. 60,000 Sq.Ft. 15 Science Building 150,000 Sq. Ft. 16 Library Expansion 80,000 Sq. Ft.	1,310,128	14,000. 66,000. 26,000.
		18 [illegible] 50,000 Sq. Ft.	1,370,128	16,200.

January 1982

UNIVERSITY OF ALASKA, ANCHORAGE

ANCHORAGE COMMUNITY COLLEGE

PROPOSED SIX YEAR DEVELOPMENT PLAN

PREPARED BY:
UNIVERSITY OF ALASKA
DEPT. OF FACILITIES PLANNING & CONST.

L E G E N D O F F A C I L I T E S

UNIVERSITY OF ALASKA, ANCHORAGE

1 UAA/ACC Bookstore

2 UAA Administration/Classroom Building

3 Classroom/Laboratory/Office Building

4 Multipurpose Classroom (Lecture)

5 Physical Plant

6 Health Science Building

7 Expansion of COA

8 Physical Education Addition

9 Business & Public Administration

10 Student Housing

11 Infirmary

---

12 Parking Structure, 500 Cars

13 Transit Station

14 Continuing Education Facility

15 Science Building

16 Library Expansion

17 Spine Completion

18 Education Classroom Building

19 Classroom Office Building

20 Professional Building

21 Student Services

ANCHORAGE COMMUNITY COLLEGE

1 Applied Science Building

2 Aviation Complex Phase I

3 New Administration Building

4 ACC Chugiak/Eagle River Extension Center Site Acquisition

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5 Spine Completion

6 South Anchorage Satellite Campus Site

7 Applied Science Building Phase II

8 Parking Structure, 500 Cars

9 Administration/Classroom

10 Vocational/Technical Building - All South Anchorage Campus

11 Classroom/Administration Building

UNIVERSITY OF ALASKA, ANCHORAGE

ANCHORAGE COMMUNITY COLLEGE

P R O P O S E D, S I X Y E A R

D E V E L O P M E N T P L A N

UNIVERSITY OF ALASKA, ANCHORAGE

1. UAA/ACC BOOKSTORE

The University of Alaska, Anchorage will be advertising in February, for bids on a new bookstore, to be located south of the existing Campus Center.

The architectural firm selected for design of the Bookstore is Harold Wirum and Associates.

The Bookstore is a two-level structure with a mezzanine level housing support staff. The basement level will provide space for shipping and receiving and the main level will house the bookstore retail area. The Bookstore will be adjoined with the existing Campus Center by an enclosed arcade.

The building will be bermed for energy conservation. The facility is approximately 38,000 square feet.

Funds for this facility were provided by 1980 General Obligation Funds. The construction cost is projected to be approximately $3,900,000.00

The facility will serve the University of Alaska, Anchorage; Anchorage Community College and the community at large.

It is projected to be operational by September of 1983.

2. UAA ADMINISTRATION/CLASSROOM BUILDING

The University of Alaska, Anchorage will open bids January 15, 1982 for an Administrative/Office/Classroom Building located on a 19.4 acre site east of the existing UAA Library.

The architectural firm responsible for the design is a joint venture of Wellenstein Architects, Inc. (Anchorage) and Broome, Oringdulph, O'Toole, Rudolf and Associates (Portland, OR).

A small lake, existing stands of deciduous/evergreen trees and views of the Chugach Mountain Range constitute site amenities that will be preserved and enhanced over future generations of building development.

The entrance roadway to this facility is the initial element in a circulation spine to connect expanding portions of the campus.

This facility will be the first specialized building on campus.

This facility will include administration and classroom functions; reception areas; admissions and records; business, academic, campus and public affairs; educational offices and other people-oriented services.

The facility will contain approximately 52,000 gross square feet and it will be complete by June of 1983.

3. CLASSROOM/LABORATORY/OFFICE BUILDING

The proposed UAA Classroom/Laboratory/Office Building will provide an approximately 94,000 gross square foot facility for use by the UAA College of Arts and Sciences; Department of: Theater and Speech, Dance, Music, and Art. The building design will be based on a Project Program prepared by the University's Office of Facilities Planning and Construction and the anticipated building occupants.

The architect for the project is CCC, Architects and Planners (Anchorage, Alaska).

The facility will be located on the UAA Campus directly to the east of the existing library building.

The facility shall be compatible with existing campus structures, campus master planning elements, and the natural environment.

Development of required on-site parking areas, utilities, and finish landscaping will be included in the project.

Planning and Design funds of $768,000.00 were provided by the 1981 Legislature in the form of a direct appropriation.

Funds for project construction in the amount of $20,000,000.00 are being requested of the 1982 Legislature.

Construction is expected to be complete in July of 1985.

4. MULTIPURPOSE CLASSROOM (LECTURE)

The University of Alaska, Anchorage will request of the 1983 Legislature $8,000,000.00 to design and construct an approximately 37,000 gross square foot facility.

This facility will provide for large classrooms accommodating approximately 200 students each. In addition, there will be one central media area which will provide integrated audio-visual equipment for all rooms.

The total project will include all required parking, utilities, and finish landscaping.

The facility is expected to be operational in 1985.

5. PHYSICAL PLANT

The University of Alaska, Anchorage will request of the 1982 Legislature $10,000,000.00 to design and construct an approximately 40,000 square foot facility.

This facility will provide for administrative offices, shops, storage space, greenhouse, etc., the department of preventative maintenance, custodial grounds, building maintenance and energy conservation.

The facility is expected to be operational in 1985.

6. HEALTH SCIENCE BUILDING

The University of Alaska, Anchorage will request of the 1984 Legislature $27,000,000.00 to construct Phase I Health Science Building for approximately 90,000 gross square feet.

The total facility will house the School of Nursing Health Science Programs, Nursing Resource Center, Medical WAMI Program, Public Health Program and related support programs in biology and chemistry and library books required for the accreditation of the programs, related underground parking spaces as required by Code (403 spaces), and needed expansion of the Health Science Library. Phase 1 of the program will provide approximately half of the needed space.

This facility is intended to be complete in 1987.

The University of Alaska, Anchorage will request of the 1985 Legislature $26,000,000 for the Health Science Building Phase II.

7. EXPANSION OF COA

The University of Alaska, Anchorage will request of the 1984 Legislature $12,000,000.00 to construct an approximately 40,000 gross square foot addition to the existing Classroom/Office Building.

The first phase was completed for occupancy in 1981.

This facility will provide additional general classrooms and faculty offices to accommodate enrollment increases at UAA and is expected to be complete in 1987.

8. PHYSICAL EDUCATION ADDITION

The University of Alaska, Anchorage will request of the 1986 Legislature $33,000,000.00 to expand the existing Physical Education Facility.

It is expected that this facility will provide approximately 100,000 gross square feet of additional physical education classrooms and gym areas.

The facility should be complete for occupancy in 1989.

9. BUSINESS AND PUBLIC ADMINISTRATION

The University of Alaska, Anchorage will request of the 1985 Legislature $14,800,000 to construct an approximately 60,000 gross square foot facility to house the School of Business and Public Administration.

This facility will be comprised of general classrooms and faculty offices and will house many classes which are currently being taught off campus in inadequate facilities.

This facility is expected to be complete for occupancy in 1988.

10. STUDENT HOUSING

The University of Alaska, Anchorage will request of the 1984 Legislature $25,000,000.00 to construct student housing.

This project is for the construction of a student housing facility consisting of 100 four-person apartments. The facility will house 400 students and provide peripheral campus parking.

It is intended that this facility would be complete for occupancy in 1987.

11. INFIRMARY

The University of Alaska, Anchorage will request of the 1987 Legislature $14,000,000.00 to construct a 100-bed infirmary to support a health care program for residential students. The facility is expected to provide both in and out patient services.

It is intended that this facility will be complete for occupancy in 1990.

12. PARKING STRUCTURE, 500 CARS

*Not Included in Statewide Submission to Governor Request in 1983.

The University of Alaska, Anchorage will request future funds to to construct a parking garage to accommodate 500 cars for students, staff, and visitors. This will serve to satisfy the local municipal ordinance requiring parking for new buildings as well as reduce pressure on fire lanes and roads from the large commuter population at the University.

13. TRANSIT STATION
*Not Included in Statewide Submission to Governor Request in 1983.

The University of Alaska, Anchorage will request of the 1983 Legislature funds to construct a transit station to serve students, faculty, staff, and visitors coming to the UAA Campus.

It will serve as a terminus for municipal transit systems as well as any future University on-campus transit systems.

This project will be coordinated with the Municipality of Anchorage in order to serve the best interest of the community.

14. CONTINUING EDUCATION FACILITY
*Not Included in Statewide Submission to Governor Request in 1983.

The University of Alaska, Anchorage will request future funds to design and construct an approximately 130,000 square foot facility.

This facility will provide conference facilities for ongoing continuing education to serve the many non-credit programs of the Justice Center, Alcohol and Addiction Center, School of Nursing, School of Education and The School of Business and Public Administration.

This project will provide a link between the University and the business and professional community, ultimately benefiting all segments of the state.

15. SCIENCE BUILDING

*Not Included in Statewide Submission to Governor Request in 1983.

The University will request of the Legislature future funds to construct an approximately 150,000 gross square foot facility.

This facility will house general laboratories, specialized laboratories, classrooms, research facilities and faculty offices for the "hard sciences" in the College of Arts and Sciences. Such facilities are not available off campus and are required in many UAA curriculums.

16. LIBRARY EXPANSION

*Not Included in Statewide Submission to Governor Request in 1983.

The University of Alaska, Anchorage will request of the Legislature future funds to expand the existing Consortium Library.

This project will provide an additional 80,000 square feet to house the University Library which serves Anchorage Community College and Alaska Pacific University as well as the University of Alaska, Anchorage.

17. SPINE COMPLETION
*Not Included in Statewide Submission to Governor Request in FY83.

The University of Alaska, Anchorage will request of the Legislature funds to construct pedestrian circulation corridors connecting all isolated buildings.

At present, the only spine which is in place connects the Physical Education Facility/Student Center (located between and used by both UAA and ACC) and the Health Occupations Facility on the UAA campus.

This project would allow safe pedestrian movement from building to building in a covered, tempered passageway.

18. EDUCATION CLASSROOM BUILDING
*Not Included in Statewide Submission to Governor Request in 1983.

The University of Alaska, Anchorage will request of the 1986 Legislature $16,200,000.00 to construct a 60,000 gross square foot general classroom and faculty office building to house the programs taught by the College of Education.

It is intended that this facility will be complete for occupancy in 1989.

19. CLASSROOM OFFICE BUILDING
*Not Included in Statewide Submission to Governor Request in FY83.

The University of Alaska, Anchorage will request of the Legislature future funds to construct a 60,000 gross square foot facility to house general classrooms and faculty offices particulary in lower division classes.

20. ENVIRONMENTAL ARTS ARCHITECTURE/PLANNING
*Not Included in Statewide Submission to Governor Request in FY83.

The University of Alaska will request of the Legislature future funds to design and construct an approximately 60,000 square foot facility.

This facility will provide classroom, class lab and office space for environmental sciences, renewable resources, planning and architecture.

The total project will include all required parking, utilities, and finish landscaping.

21. STUDENT SERVICES
*Not Included in Statewide Submission to Governor Request in FY83.

The University of Alaska, Anchorage will request of the Legislature future funds to design and construct an approximately 45,000 gross square foot facility.

This facility will provide space for such student service activities as a counciling center and financial aid offices.

The total project will include all required parking utilities and finish landscaping.

ANCHORAGE COMMUNITY COLLEGE

1. APPLIED SCIENCE BUILDING

The Anchorage Community College will advertise for bids for a new science building to be located east of Building "A" on the ACC campus.

The architectural designer for this project is TRA/FARR of Anchorage, Alaska.

This project will provide needed classroom, laboratory, and office space, and related classroom and office furniture to accommodate enrollments in existing programs. Laboratory equipment is being requested separately through a General Fund appropriation in the amount of $429,600.00 for FY 83. The proposed facility will be occupied by the Departments of Nursing, Dental Assisting, Dental Hygiene, Medical Lab Technicians, and will also contain 7-9 general classrooms. The proposed facility will provide approximately 25,000 gross square feet with the structural capability for future expansion. All required utilities and paved parking will be provided.

It is intended that this facility will be complete in the fall of 1983.

2. AVIATION COMPLEX PHASE II

Anchorage Community College will request of the 1982 Legislature $8,000,000.00 to construct Phase II of the Aviation Complex.

Funding for this project will provide approximately 27,000 square feet of classroom, class lab, office and auditorium space for the air traffic control, aviation administration, and professional piloting divisions of the Anchorage Community Aviation Program.

The classrooms and auditorium in this facility will be available for utilization by all areas of the Community College System, Aviation Community, and general public. This will insure maximum utilization of the facility from the beginning of operation and provided needed classroom space for ACC.

The total project will include all required parking utilities and finished landscaping.

The facility is expected to be operational in 1984.

3. NEW ADMINISTRATION BUILDING

The Anchorage Community College will request of the 1983 Legislature $15,000,000.00 to construct a new Administration Building.

Request for new building to replace three temporary, relocatable structures currently housing instructional programs and support services. This building would permit centralization of administration, and student service departments. It will also provide space for instructional programs, computer labs, and conference rooms.

Buildings G, H, and I are temporary relocatable structures moved to the Anchorage Community College campus in 1970. They are wood frame, one-story buildings constructed by Modular Designed Homes. They do not have permanent foundations. The buildings do not conform to building regulations presently. In 1978, the State Fire Marshal cited code violations in Buildings G and H. The estimated cost to remedy the violations cited by the Fire Marshall is $290,000.00. The State Fire Marshal has agreed to the University's plan to install alternate life safety provisions, such as smoke detectors throughout the buildings for a limited time until a replacement building is completed. If a replacement building is not planned for the near future, we will be required to substantially renovate these temporary buildings to conform to the fire codes.

The intent is to replace the three facilities with one, to combine like functions centrally, and to adequately support functions that are currently undersupported and inefficient. The Master Plan is to combine all Student Services in a central area from counseling to registration and increase communication and efficiency.

It is intended that this facility be complete for occupancy in 1987.

4. ACC CHUGIAK/EAGLE RIVER EXTENSION CENTER SITE ACQUISITION

Anchorage Community College will request of the 1984 Legislature $7,000,000.00 for the ACC Chugiak/Eagle River satellite extension land study land purchase and improvements.

Approximately 100 acres will be needed to accommodate a projected growth of 1,500 full time equivalent students at the present Chugiak/Eagle River Extension.

The successful Chugiak, Eagle River Extension will continue to grow and expand in response to the rapidly developing Eagle River/Chugiak area. This expansion provides a convenient and accessible postsecondary educational opportunity for the residents now residing in the area. This is especially true for graduating high school students who may find the travel distance to Anchorage a financial burden.

It is intended that this land study and acquisition shall be completed by 1986.

5. SPINE COMPLETION

*Not Included in Statewide Submission to Governor Request in FY83.

The Anchorage Community College will request of the 1985 Legislature funds to construct a pedestrian spine connecting the existing Physical Education Facility/Student Center with the proposed Administration Building.

This project will provide a safe, tempered access for students, staff, and visitors; and will complete and compliment the existing and proposed spine network throughout the UAA campus.

6. SOUTH ANCHORAGE SATELLITE CAMPUS SITE
*Not Included in Statewide Submission to Governor Request in FY83.

Anchorage Community College will request of the Legislature future funds for a satellite campus land study and land purchase in the South Anchorage bowl area.

Approximately 100-150 acres will be needed to accommodate a projected growth of 2,500-3,000 students. The satellite campus would be located south of Dimond Boulevard in the growing "bedroom" area of Anchorage.

The current ACC campus propoerty does not have adequate land for for any future facilities' expansion after the addition of the following: The Applied Science Phase I, the proposed Administration/Classroom Building, Applied Science Phase II, a parking structure, and other required parking spaces by code and the allowance of some land to be preserved for its natural beauty.

A satellite campus will fulfill the mission of providing educational opportunities within commuting distance of our constituents.

7. APPLIED SCIENCE BUILDING - PHASE II

*Not Included in Statewide Submission to Governor Request in FY83.

The Anchorage Community College will request future funds to construct an approximately 30,000 square foot addition to the Applied Science Building funded in 1980 and projected for occupancy for the Fall Semester of 1983.

This project will provide needed classroom, laboratory, and office space; as well as related classroom and office furniture to accommodate existing programs and future growth.

The proposed facility will be occupied by the departments of Mathematics, Natural Sciences, Medical Office Assisting, Biology, Chemistry, Media Production, general classrooms, and administrative personnel.

8. PARKING STRUCTURE, 500 CARS

*Not Included in Statewide Submission to Governor Request in FY83.

Anchorage Community College will request of the Legislature future funds to construct a parking garage to accommodate 500 cars for students, staff, and visitors. This will serve to satisfy the local municipal ordinance requiring parking for new buildings as well as reduce pressure on fire lands and roads from the large commuter population at ACC.

9. ADMINISTRATION/CLASSROOM BUILDING SOUTH ANCHORAGE CAMPUS
*Not Included in Statewide Submission to Governor Request in FY83.

Anchorage Community College will request future funds of the Legislature to construct a 50,000 square foot Administration/Classroom Building for the South Anchorage Campus.

This facility will provide administration and support services, office space, and traditional instructional classroom space.

The total project will include all required parking, utilities and finish landscaping.

10. VOCATIONAL/TECHNICAL BUILDING - ACC SOUTH ANCHORAGE CAMPUS
*Not Included in Statewide Submission to Governor Request in FY83.

Anchorage Community College will request future funds of the Legislature to construct a 60,000 square foot Vocational/Technical facility for the ACC South Anchorage Satellite Campus.

This facility will permit ACC to transfer and consolidate various vocational programs for increased accessibility, efficiency, and effectiveness. It will provide classrooms, class laboratories, and office space required.

The total project will include all required parking, utilities, and finish landscaping.

11. CLASSROOM/ADMINISTRATION BUILDING
*Not Included in Statewide Submission to Governor Request in FY83.

Anchorage Community College will request of the Legislature future funds for an approximately 35,000 square foot facility located in Eagle River to fulfill the needs of the fast growing community. The facility will serve 1,500 full time equivalent students and will provide adequate classrooms, laboratories, and offices for faculty, students, and administration.

The successful Chugiak, Eagle River Extension will continue to grow and expand in respond to the rapidly developing Eagle River/Chugiak area. This expansion provides a convenient and accessible postsecondary educational opportunity for the residents now residing in the area. This is especially true for graduating high school students who may find the travel distance to Anchorage a financial burden.

It is intended that this land study and acquisition shall be completed by 1986.

M E M O R A N D U M

March 1, 1982

TO: Senate H.E.S.S. Committee
Senator Charles Parr, Chairman

FROM: Patrick M. Anderson
Municipality of Anchorage

RE: SB 657

The Committee requested that I provide certain information about the proposed purchase by the University of Alaska of approximately 40 acres of land presently owned by Alaska Pacific University for $11.5 million.

Presently, the land is zoned PLI, a copy of the appropriate ordinance is attached. A request has been made by APU to change the zoning from PLI to R.O. A copy of the R.O. ordinance is also attached. The R.O. was approved by the Planning and Zoning Commission on October 12, 1981 and forwarded to the Anchorage Assembly for action. At the Mayor's request, a public hearing before the Assembly on the change request has been delayed to April 23, 1982. The Municipality would like to see the land purchased by the University of Alaska and kept in the PLI zoning category.

The land is apparently suitable for high rise construction. Providence Hospital to the west of the parcel is a high rise facility and a gravel pit to the east of the parcel also indicates good solid foundation support.

At present, a joint committee of UAA, APU, and the Municipality of Anchorage is meeting regularly to discuss planning for the area's future.

Attachments

Zoning Map. The new Zoning Map may correct drafting and other errors or omissions in the prior Zoning Map, but no such correction shall have the effect of amending the original Zoning Map. Such new Zoning Map shall be marked "This Zoning Map adopted by ordinance of the Assembly on (date) supersedes the Zoning Map adopted (date) which statement shall be signed by the President of the Assembly and attested by the Clerk. Unless the prior Zoning Map is lost or has been totally destroyed, the map or significant parts thereof remaining after partial destruction shall be preserved, together with all records of the Assembly regarding its adoption and amendment.

D. The following rules for interpretation of use district boundaries on the Zoning Map shall apply:

1. district boundaries indicated as approximately following the center-lines of right-of-way lines of streets, highways, or alleys shall be construed to follow such centerlines of right-of-way lines;

2. district boundaries indicated as approximately following platted lot lines shall be construed as following such lot lines.

E. The Municipality of Anchorage is hereby divided into the following use districts:

1.	PLI	Public Lands and Institutions District.
2.	R-1	One-family Residential District.
3.	R-1A	One-family Residential District (Large Lot).
4.	R-2	Multiple-family Residential District (allowing up to eight units per lot, based on the Table in Section 21.40.040(F)(3).
5.	R-2A	Two-family Residential District (Large Lot).
6.	R-2D	Two-family Residential District.
7.	R-3	Multiple-family Residential District.
8.	R-4	Multiple-family Residential District.
9.	R-5	Rural Residential District.
10.	R-6	Suburban Residential District (Large Lot).
11.	R-7	Intermediate Rural Residential District
12.	R-8	Rural Residential District (Large Lot).
13.	R-9	Rural Residential District.
14.	R-O	Residential-Office District.
15.	D-2	Residential Development District (Two-family).
16.	D-3	Residential Development District (General).
17.	B-1	Local and Neighborhood Business District.
18.	B-2A	Central Business District Core.
19.	B-2B	Central Business District Periphery.
20.	B-2C	Central Business District.
21.	B-3	General and Strip Commercial Business District.
22.	B-4	Rural Business District.
23.	I-1	Light Industrial District.
24.	I-2	Heavy Industrial District.
25.	I-3	Rural Industrial District.
26.	W	Watershed District.
27.	U	Unrestricted District.

Each of the districts listed above may be subject to special limitations in accordance with the provisions of Chapters 21.35 through 21.55 of this Title. (Adapted from GAAB 21.05.040).

[redacted]

The following statement of intent and use regulations shall apply in the PLI district:

A. The PLI district is intended to include major open lands and major public and quasi-public institutional uses, including government office buildings and existing land reserves for public and institutional use.

B. Permitted principal uses and structures:

1. parks, parkways, greenbelts, land reserves and related facilities;

2. golf courses, playgrounds, playfields and the like;

3. zoos, museums, historic and cultural exhibits and the like;

4. water conservation and flood control installations;

5. educational institutions, including public, private or parochial academic schools, colleges and universities;

6. hospitals, sanitariums, children's homes, nursing homes, convalescent homes, homes for the aged, and the like, provided that hospitals or sanitariums for the treatment of drug addicts or alcoholic patients shall be permitted only by Conditional Use;

7. Cemeteries, subject to the standards set forth in Section 21.50.140.

8. sewer installations and water supply installations;

9. utilities installations;

10. convents, monasteries and administrative offices of religious organizations;

11. headquarters or administrative offices for such charitable or eleemosynary organizations as Red Cross, Tuberculosis Society, Cancer Society, Boy Scouts, Girl Scouts and similar quasi-public organizations of a non-commercial nature;

12. governmental office buildings.

C. Permitted accessory uses and structures:

1. crematoriums and mausoleums as accessory uses to permitted cemeteries;

2. uses and structures which are necessary or desirable adjuncts to permitted principal uses and structures, where such accessory uses and structures are under the management or control of the organization or agency responsible for the permitted principal use or structure.

D. Conditional Uses:

Subject to the requirements of the Conditional Use standards and procedures of this title, the following uses may be permitted:

1. churches and synagogues, along with the customary accessory uses, including parsonages, day care and meeting rooms;

2. natural resource extraction on tracts of not less than five acres;

3. oil and gas development, on tracts of not less than five acres;

4. commercial farming on tracts of not less than 10 acres, including the storage (at least 50 feet from any property line) of farm equipment used on the same tract;

5. radio and television transmission towers;

6. recreation uses, including commercial recreation uses for a period of time to be determined by the Planning Commission;

7. vocational schools, trade schools, manual training centers and the like;

8. correctional institutions, rehabilitation centers, reformatories and the like;

9. Planned Unit Developments;

10. governmental service shops, maintenance and repair centers and equipment storage yards.

E. Prohibited uses and structures:

Any use or structure not of a character indicated under permitted uses and structures or permitted as a Conditional Use.

F. Minimum lot requirements:

Lot width	100 ft.
Lot area	15,000 sq. ft.

G. Minimum yard requirements:

1.	Front yard:	25 feet
2.	Side yard:	10 feet
3.	Rear yard:	15 feet

H. Maximum lot coverage by all buildings: 30%.

I. Maximum height of structures: unrestricted, except that structures shall not interfere with Federal Aviation Administration Regulations on airport approaches.

J. Signs. Signs may be allowed in connection with any permitted use, subject to the supplementary district regulations and the Uniform Sign Code.

K. Parking. Adequate off-street parking shall be provided in connection with any permitted use. Parking shall conform to the minimum requirements set forth in the supplementary district regulations unless it is demonstrated to the Building Official and the Traffic Engineer that the partrons and/or employees of the land use will generate a lower parking demand than anticipated by the supplemental district regulations. The burden of proof and demonstration of the lower parking demand lies with the property owner. Information that could demonstrate the lower parking demand may include: mass transit routing, car pooling, joint parking, arrangements or other parking and transit means as set out in a written parking and transportation impact plan submitted to the Traffic Engineer for approval. Variances to Section 21.45.080 Minimum Off-Street Parking Requirements may be granted by the Building Official in this use district upon the recommendation of the Traffic Engineer. Any change in the land use to which the variance granted by the Building Official. Any variances granted shall be executed by the recording of a standard parking agreement.

L. Loading. Adequate off-street loading area shall be provided in connection with any permitted

use, the minimum of each use to be as provided in the supplementary district regulations.

M. Ground cover. All areas not devoted to buildings, structures, drives, walks, off-street parking facilities or other authorized installations shall be covered with one or more of the following: lawn grass, shrubbery, trees or other suitable ground cover materials. (Adapted from GAAB 21.05.050, AO 77-129, AO 81-1785).

21.40.030 R-1, R-1A — Single-family Residential Districts.

The following statement of intent and use regulations shall apply in the R-1 and R-1A districts:

A. These districts are intended as urban and suburban single-family residential areas with lot population densities. R-1 and R-1A use regulations are identical, but existing dimensional differences in lot width and area are intended to be preserved. Structures and uses required to serve governmental, educational, religious, noncommercial recreational, and other needs of such areas are permitted within such districts or are permissible as Conditional Uses subject to restrictions intended to preserve and protect their single-family residential character.

B. Permitted principal uses and structures:

1. single-family dwellings (only a single principal structure may be allowed on any lot or tract);
2. public, private and parochial academic elementary schools;
3. high schools with primarily academic curricula, provided that principal access to such schools shall be directly from a street of Class I or greater designation upon the Official Streets and Highways Plan;
4. parks, playgrounds and playfields, municipal buildings and uses in keeping with the character and requirements of the district;
5. public branch libraries.
6. family residential care

C. Permitted accessory uses and structures:

1. home occupation, subject to provisions of the supplementary district regulations;
2. noncommercial greenhouses, gardens, storage sheds, garden sheds and toolsheds, private barbecue pits;
3. private garages;
4. the outdoor harboring or keeping of dogs, animals and fowl in a manner consistent with the requirements of all other titles of this code. Paddocks, stables or similar structures or enclosures which are utilized for the keeping of animals other than dogs shall be at least 100 feet from any lot line;
5. family care;
6. private storage in yards of noncommercial equipment, including noncommercial trucks, boats, aircraft, campers or travel trailers in a safe and orderly manner and separated by at least five feet from any property line.

D. Conditional Uses. Subject to the requirements of the Conditional Use standards and procedures of this title, the following uses may be permitted:

1. commercial greenhouses and tree nurseries;
2. airstrips and heliports, if adequate approach and noise buffer areas are provided;
3. utilities substations;
4. nursing homes, convalescent homes and similar institutional uses subject to the provisions of the supplementary district regulations;
5. art schools, music schools, dancing schools and the like;
6. churches and synagogues along with the customary accessory uses including parsonages, day care and meeting rooms;
7. residential Planned Unit Development;
8. natural resource extraction on tracts of not less than five acres;
9. privately owned neighborhood community recreation centers in keeping with the character and requirements of the district, provided the center is oriented to a particular residential subdivision or housing project and that the uses within are delineated as conditions to approval;
10. quasi-institutional houses;
11. day care.

E. Prohibited uses and structures:

1. any use or structure not of a character indi-

R-O Residential

The following statement of intent and use regulations shall apply in the R-O district:

A. The R-O district is intended to include urban and suburban residential and professional office uses that are needed and appropriate in areas undergoing a transition, or in areas where commercial uses might be damaging to established residential neighborhoods.

The R-O district is further intended to provide a mix of low- to medium-density residential uses with certain specified business, personal and professional services that can function efficiently without generating large volumes of vehicular traffic. The regulations and restrictions in the R-O district are intended to protect, preserve and enhance the residential uses while permitting uses characterized principally by consultative services or executive, administrative or clerical procedures.

B. Permitted principal uses and structures:

1. single-family, two-family and multiple-family dwellings;
2. hotels, motels, and motor lodges on sites with a minimum of 14,000 square feet, provided that principal access to such uses shall be from streets of Class I or greater designation on the Official Streets and Highways Plan;*
3. boarding and lodging houses;
4. private clubs and lodges;*
5. parks, playgrounds and playfields, municipal buildings in keeping with the character of the district;
6. museums, historic and cultural exhibits, libraries and the like;
7. family residential care, day care and 24 hour child care facilities;
8. public, private and parochial academic schools;
9. hospitals, nursing homes, convalescent homes, homes for the aged, medical clinics, medical and dental laboratories, research centers, and the like;
10. offices of physicians, surgeons, dentists, osteopaths, chiropractors and other practitioners of the healing sciences;
11. accounting, auditing and bookkeeping services;
12. engineering, surveying and architectural services;
13. attorneys and legal services;
14. real estate service and appraisers;
15. stock and bond brokerage services;
16. insurance services;
17. photographic services;
18. funeral services, provided, however, that crematoriums are specifically prohibited;
19. banks, savings and loan associations, credit unions and similar financial institutions;
20. private employment agencies, placement services and temporary personnel services.
21. Headquarters or administrative offices for such charitable or eleemosynary organizations as Red Cross, Tuberculosis Society, Cancer Society, Heart Association, Boy Scouts, Girl Scouts and similar quasi-public organizations of a non-commercial nature.

*Uses involving the sale, dispensing or service of alcoholic beverages may be allowed by Conditional Use only.

*Uses involving the sale, dispensing or service of alcoholic beverages may be allowed by Conditional Use only.

C. Permitted accessory uses and structures:

1. accessory uses incidental to any of the principal uses above listed;
2. hotels, motels, or motor lodges having 20 or more rental units may include personal and professional service establishments and restaurants which are clearly incidental to the operation of the permitted principal use.
3. family care.

D. Conditional Uses. Subject to the requirements of the Conditional Use standards and procedures of this Title, the following uses may be permitted.

1. town houses, row houses and office buildings built to a common wall at side lot lines;
2. churches and synagogues, along with the customary accessory uses including parsonages, day care and meeting rooms;
3. utilities substations;
4. off-street parking spaces or structures;

6. privately owned neighborhood community recreation centers in keeping with the character and requirements of the district, provided the center is oriented to a particular residential subdivision or housing project and that the uses within are delineated as conditions to approval.

E. Prohibited uses and structures:

1. any use or structure not of a character indicated under permitted uses and structures or permitted as a Conditional Use;

2. storage or use of mobile homes or quonset huts;

3. any use which causes or may reasonably be expected to cause excessive noise, vibration, odor, smoke, dust or other particulate matter, toxic or noxious matter, humidity, heat or glare at or beyond any lot line of the lot on which it is located. "Excessive" is defined for these purposes as a degree exceeding that generated by uses permitted in the district in their customary manner of operation, or to a degree injurious to the public health, safety, welfare or convenience.

F. Minimum lot requirements:

Use	Lot Area (sq. ft.)	Lot Width (ft.)
1. single-family dwelling	6,000	50
2. two-family dwelling	6,000	50
3. 3-through 10-family dwelling	6,000	50

4. Apartment buildings for 11 or more families may only be constructed on sites having a minimum area of 14,000 square feet and minimum frontage of 100 feet on a Class I or greater street, and shall be limited by a floor area ratio (F.A.R.)* of 2.0, and subject to the yard requirements of this section.

*Floor area ratio is defined as the maximum gross floor area of a building on a lot or parcel, divided by the area of the lot or parcel. (F.A.R. of 2.0 provides for 28,000 gross square feet of building on a lot with an area of 14,000 square feet.)

5. all other permitted uses:

a. lot area: 6,000 sq. ft.

b. lot width: 50 ft.

G. Minimum yard requirements:

1. front yard: 10 feet, except as provided in the supplementary district regulations;

2. side yard: single-family, two-family and multiple-family dwellings: 5 feet, provided, however, that where buildings exceed 35 feet in height, minimum side yards shall be increased one foot for each five feet in height exceeding 35 feet;

all other permitted uses: none, provided, however, that if any side yard is provided, it shall not be less than five feet; the purpose being that adjoining buildings shall either directly abut or shall maintain a minimum of five feet between such buildings;

3. rear yard: 10 feet;

4. multiple-family dwellings shall provide a usable yard area of 100 sq. ft. per dwelling unit.

H. Maximum lot coverage by all buildings:

1. single-family, two-family, and multiple-family dwellings: 50%;

2. all other permitted uses: unrestricted.

I. Maximum height of structures: unrestricted, except that structures shall not interfere with Federal Aviation Administration Regulations on airport approaches.

J. Signs. Signs may be allowed in connection with any permitted use, subject to the provisions of the supplementary district regulations.

K. Parking. Adequate off-street parking shall be provided in connection with any permitted use, the minimum for each use to be:

1. residential uses: one vehicular parking space for each dwelling unit;

2. all other permitted uses: as provided in the supplementary district regulations.

L. Loading. Where applicable, off-street loading facilities shall be provided in accordance with the provisions of the supplementary district regulations.

M. Ground cover. All areas not devoted to buildings, structures, drives, walks, off-street parking facilities, or other authorized installations shall be covered with one or more of the following:

lawn, grass, shrubbery, trees or other suitable ground cover materials. (Adapted from GAAB 21.05.0501 AO 77-219).

21.40.140 B-1 — Local and Neighborhood Business District.

The following statement of intent and use regulations shall apply in the B-1 district:

A. The purpose of the B-1 district is to encourage the establishment of areas for convenience business uses which tend to meet the daily needs of local and nearby neighborhoods. The district is intended to be small and compactly designed.

B. Permitted principal uses and structures:

1. grocery stores, delicatessens and food specialty shops;
2. meat and seafood markets;
3. retail bakeries;
4. hardware stores;
5. shoe repair shops;
6. bookstores and stationery stores;
7. drugstores;
8. self-service laundry and self-service dry cleaning shops;
9. beauty shops;
10. barbershops;
11. restaurants, tearooms, cafes, and other places serving food or beverages conducted entirely within fully enclosed buildings, but specifically excluding any drive-in eating facilities;*
12. knit shops, yarn shops, dry goods, dressmaking and notions stores;
13. small appliance repair shops;
14. photography studios, art studios;
15. post offices;
16. on-premises dry cleaning establishments using a perchlorethylene process or similar nonflammable, nonaqueous solvent, provided, however, that large commercial and industrial laundry and dry cleaning plants are prohibited;
17. laundry and dry cleaning pickup stations;
18. single-family and two-family dwellings;
19. noncommercial parks, playgrounds, and government buildings in keeping with the character of the district;
20. libraries;
21. medical and dental offices and offices of attorneys, accountants, engineers and other professions regulated under state law;
22. family residential care, day care and 24 hour child care facilities.
23. insurance and real estate office.

*Uses involving the sale, dispensing or service of alcoholic beverages may be permitted by Conditional Use only.

C. Permitted principal uses and structures subject to maximum gross floor area limit:

1. department or variety stores: 4,000 sq. ft.;
2. clothing store: 3,000 sq. ft.;
3. furniture and home appliances store: 3,000 sq. ft.;
4. catalog showroom: 2,000 sq. ft.;
5. music and record store: 1,400 sq. ft.;
6. hobby store: 1,400 sq. ft.;
7. florist: 1,200 sq. ft.;
8. gift and card shop: 1,000 sq. ft.;
9. bank or similar financial activity with predominant service to local depositors and customers, not including drive-in facilities: 3,000 sq. ft.;
10. frozen food locker: 1,400 sq. ft.;
11. local administration offices for charitable and eleemosynary agencies of a non-commerical nature: 1,000 sq. ft.

D. Permitted accessory uses and structures. Accessory uses and structures customarily incidental to any permitted principal uses listed in subsections B or C hereof. In the same structure as a permitted principal use, one dwelling unit may be occupied as an accessory use.

E. Conditional Uses. Subject to the requirements of the Conditional Use standards and procedures of this Title, the following uses may be permitted:

1. gasoline service stations;

University of Alaska
Facilities Planning & Construction
3356 College Road
479-7591

January 11,1982

TO: Dr. Vincent Haneman
Dean, School of Engineering

FROM: Gerald V. Neubert GN
Assistant Director

SUBJ: Response to Request for Information on an Addition to the Duckering Building

The idea you propose of putting an addition on the ast end of the Duckering Building has some merit and some problems. Regional Architect, Jim Parkes, Fire Chief, Bill Shechter and myself have met and briefly outlined some of the advantages and disadvantages listed below.

SINGLE LOADED CORRIDOR WITH OFFICES - THREE STORIES HIGH

The advantage of this design would be that it would involve the minimum disruption to the lowest level and it would provide approximately 9 offices per floor for a total of 27 offices. The disadvantage is that it is inefficient in terms of ratio of corridor space to office space and has excess surface area for heat loss.

DOUBLE LOADED CORRIDOR BESIDE - THREE STORIES HIGH

The advantage of this design is that it has the same corridor as the option above but provides twice the number of offices, it is more efficient in terms of ratio of corridor to office and is twice as efficient for heat loss area over the single loaded corridor. The internal disruption on each floor to connect corridors thru to the existing corridors is the same in either the single loaded corridor or the double loaded corridor so that since one has to live with the disruption on each floor at least this double loaded corridor does provide twice the useable area when the project is completed.

FILLING IN THE ENTIRE KEYSTONE SHAPE SPACE

This design affords the maximum size of addition possible in Duckering but faces problems with what to do with existing windows and there replacement with internal walls. Additional ventilation would have to be provided to replace operable windows.

Summary: We feel that the best alternative is the double loaded corridor leaving the internal hole open for development of an atrium by roofing over the entire third level of the Duckering Building. The Fire Chief advises that this double loaded corridor addition will have to be sprinkled but that at the existing building can remain un-sprinkled. I am fairly certain that a new elevator must be provided in this addition because the existing Duckering elevator does not meet size requirements for handicapped access.

One further consideration is the disruption to the existing lower level during construction. We feel fairly certain that the portion underneath the three story addition must be vacated during construction because of excessive noise, dust and disruption caused by extending columns down thru the space and providing utilities and other services. In our discussions we further surmised that if the whole keystone area were filled, the most cost effective option would be to completely remove the existing first floor level of the keystone and build a new four story structure filling in that area. Of course should this project become a reality extensive studies would be done to determine the cost analysis of removing the keystone versus building up from the first floor.

This addition could be a dramatic improvement to the environment of the Duckering if the existing first floor roof could be converted into an external plaza by installing a walking surface, benches, planters, etc. It would even be more dramatic if it were roofed over at the third floor level so that it became an internal heated area for student lounging and gathering. Its interesting that this would actually decrease the external surface area of the building and make it more thermally efficient.

COSTS

The following costs are very rough and do not take into consideration any sort of a detailed take-off but are simply a projection of square footage size times a dollar amount per square foot.

A) Single Loaded Corridor

18 X 92 = 1,656 X 3 = 4,968 Sq.Ft. X $300. = $1,490,400.

B) Double Loaded Corridor

30 X 90 = 2,700 X 3 = 8,100 Sq.Ft. X $300. = 2,430,000.

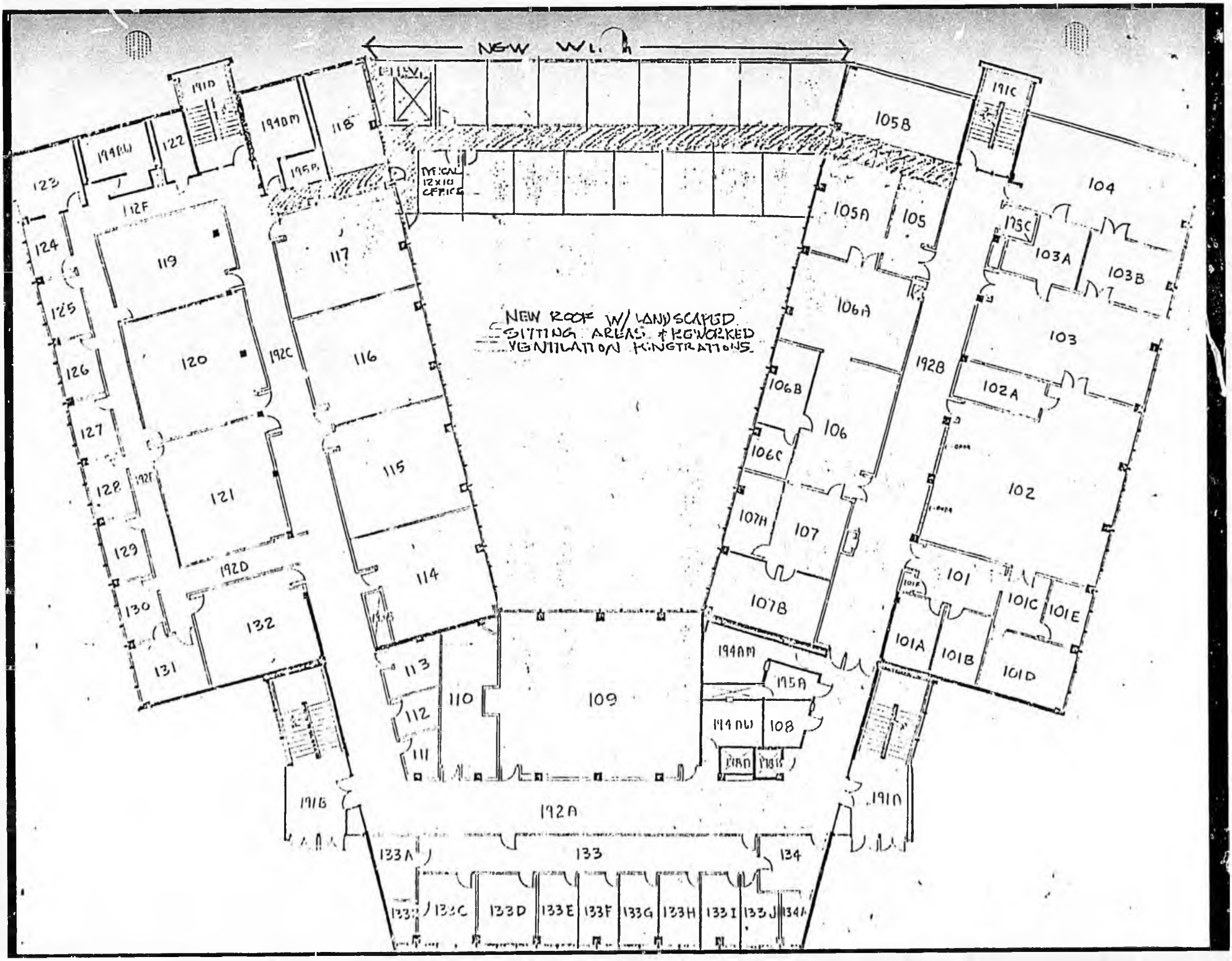
C) Entire Keystone

104 X 70 = 7,280 X 3 =21,840 Sq.Ft. X $300. = 6,552,000.

Vince, all this discussion although interesting has limited value when considering whether or not t do an addition to the Duckering Building. What is really needed is a program of space needs. Is this addition a substitute for the northern engineering research facility proposed last year, or is this addition simply a mechanism to get more office space for Duckering? When considering the merits of this addition we should also look at the overall space needs of the Fairbanks Campus. Does the campus need more office space in addition to the needs of the engineering department if so this office addition may be advisable. Should additional classroom space be programmed into an addition? An indepth analysis of space needs must proceed any hasty committments to add a wing onto the Duckering Building.

GVN:lfh

cc: Chris Ahoy
Chancellor O'Rourke


NEW WALL
TYPICAL 12X10 OFFICE
NEW ROOF W/ LANDSCAPED SITTING AREAS & REWORKED VENTILATION PENETRATIONS
191D
194BW
122
194BM
118
195B
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112F
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192C
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192E
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192D
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194AW
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195A
194AM
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133D
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133G
133H
133I
133J
134A

SECTION C

Major Areas of Research

MAJOR AREAS OF RESEARCH

I. Ice and snow engineering - properties of ice covers, ice forces on structures, ice control, ice crossings, ice fog, ice-crude oil interaction.

II. Frozen ground engineering - terrain evaluation, static and dynamic frozen ground behavior, slope stability, drainage and erosion, soil structure interaction.

III. Hydrotechnical engineering - snow melt and ground infiltration, groundwater-permafrost studies, culvert icing, icing control, hydropower icing control, interaction of streams and frozen terrain, scour and erosion in ice jams, frazil ice processes, coastal engineering effects of icing.

IV. Environmental engineering - fire equipment operation, snow accumulation, water source detection, water distribution, water treatment processes, reduction of visibility limitations due to fog and ice fog.

V. Resources and transportation - construction equipment testing, engine performance, use of indigenous materials; construction techniques.

VI. Building component performance - vapor transport infiltration, icing material compatibility; building envelopes.

VII. Communications, power and control - application of modern communications technology to the north, power distribution; improved utilization of resources through modern control methods.

VIII. Municipal facilities engineering - equipment design and testing, construction techniques, energy loss analyses, utility design techniques.

IX. General testing and simulation - low temperature properties of lubricants, wind tunnel studies; mechanical equipment testing.

X. Materials Research - Fracture mechanics, low temperature fatigue, transition temperature, freeze-thaw cycling.

XI. School of Mineral Industries - The petroleum engineering program will conduct low and high temperature experiments, use a specially designed pressure-volume-temperature apparatus and conduct a core analysis program. The geological and mineral preparation engineering programs will be provided space in a phase II addition.

XII. ADOT/PF Research - The Alaska Department of Transportation and Public Facilities (ADOT/PF) is involved in many of the above listed areas; specific space for their use will be included in a phase II addition.

ICE AND SNOW ENGINEERING

Ice and snow are major features of the northern environment. Both a detriment and a resource, they must be taken into consideration in the planning, design construction, and operation of engineering efforts. The engineer must have a good knowledge of their properties and behavior in order to reduce their detrimental effects and to make full use of their value as a natural resource.

Northern engineering experience has clearly identified problems involving snow and ice for which knowledge and capability are required. An urgent need is information on the lateral and vertical forces exerted by ice covers. An understanding of the interaction between ice and structures is necessary for the design of structures to be placed in rivers, lakes, or offshore. Also, hydroelectric development flood control measures, harbor facilities, and navigation channels require an understanding of the growth and movement of floating ice, evolution of ice covers, and factors controlling these processes.

Snow and ice can be used for the construction of roads, load supporting platforms, and pads on both land and water. More information is necessary for the design of these structures to ensure that they will perform effectively and safely. Methods of performance monitoring and maintenance should be better developed.

Snow presents a major disturbance to transportation, an

effect magnified by remoteness and exposure. It is particularly important for northern civil engineers to fully understand how to reduce the disrupting effects of snow and how to remove it as efficiently as possible. The control of snow deposition for such purposes as augmenting water supply or ameliorating the ground thermal regime should be well understood. Snow drifting and control must also be studied.

In some areas, there is a need to be able to recognize avalanche susceptible terrain in order to avoid such sites or provide suitable defense measures. Industrial and community activity can cause ice fog at low temperatures. The engineer must be able to minimize this situation or alleviate already existing problems.

SOIL MECHANICS AND FROZEN GROUND ENGINEERING

Although the rate of development in arctic to subarctic Alaska has been greatly accelerated (principally due to the exploration and production of petroleum resources) various engineering solutions to many problems related to soil mechanics and frozen ground engineering are lacking.

The upgrading of existing communities and construction of new communities; resource development including petroleum, mining, and hydroelectric works; and transportation facilities including pipelines, roads, railroads, bridges, and airstrips will all benefit from this research.

Crash programs during construction have been the norm for many engineering projects and such an approach has not contributed any significant improvement in the engineering design and construction of various northern projects. The existence of frozen, frozen-thawed and subsoils boundary conditions under extreme climatic conditions have created complex engineering problems. They have underlined the urgency of not only theoretical solutions and laboratory studies but also for full scale field testing and performance monitoring.

It is anticipated that prospective developments in the near future that will be influenced and benefitted by the results of soil mechanics and frozen ground engineering research are: Construction of new communities and upgrading of existing communities which require updated design and

construction techniques pertinent to arctic and sub-arctic conditions; transportation facilities including roads, airports, railroads, pipelines, and resource development including hydroelectric, petroleum and mining activity. One of the largest gas pipline projects in the world is currently in the planning and initial design phase. The project faces many engineering problems that are to be resolved in the coming years. Projects related to the above areas need systematic research studies to close the gap of engineering knowledge and to make the design and construction of engineering projects in northern regions more cost effective.

which can block the channel at bridges, culverts, or other river engineering structures. Little is known about the effects of aufeis on stream morphology.

Formation of ice jams is poorly understood and we are unable to predict location and associated flood stages except in very crude ways. Flow measurement techniques during periods of ice movement are difficult and limit understanding of peak flows. Instrumentation to measure ice thickness remotely (without physical penetration) are available, but are not yet generally operational. Outlet flows from lakes with ice cover and ice cover formation on rivers (downstream from lakes and reservoirs) are poorly understood.

We have limited ability to predict interference with water intakes by shore ice formations. Sea ice movement, behavior, and ice scour in the coastal zone are not well documented. The dates of ice in, ice out, and extent of the shorefast ice zone are poorly known. Techniques for extending navigation and access to harbors and connecting channels are developing but many difficulties remain.

Maintenance and repair of river and stream crossings on certain facilities have consumed large amounts of money (the Alaska Highway is a good example). There is a need for better reporting of performance and experience with actual crossings, and for identification of reasons for failures. Areas of uncertainty in design include predictions of bed

HYDROTECHNICAL ENGINEERING

Water is an important resource of the North which often influences or becomes a prime criteria for many resource development projects. The construction of roads, pipelines, municipal facilities and dams all require an understanding of northern water resources. The economics of hydropower has become an important political issue.

There is a lack of basic data needed to select sites for hydropower installations. The hydraulic problems associated with hydropower structures in cold regions are reasonably well understood. Innovative rockfill dam designs suitable to permafrost and shield terrain are required.

In the cases of culverts and other structures, the state-of-the-art could be considerably improved. So far, few hydraulic structures have been built in the continuous permafrost zone and expertise is not well established in this area. Although perhaps strictly not a research item, there is a great need for improved coverage of mapping, aerial photography and surficial geology to aid investigations of hydro sites.

The influence of permafrost and river ice on geomorphology of river channels has been examined on a sporadic basis, but there has been little systematic analysis of the differences between northern and southern rivers. Small northern streams are often subject to the formation of aufeis (ice accumulations formed by surficial accretion),

scour and bank erosion in the presence of permafrost, the effects of chilled pipeline crossings on subbed flows, and the environmental aspects of culverts.

ENVIRONMENTAL ENGINEERING

Enivronmental engineering in the north attempts to provide a healthy and aesthetic environment for all living things in an economical manner, including water source development and treatment, wastewater treatment and disposal, solid waste management, air pollution control and industrial waste management. Both natural and imposed constraints confine the routine efforts of the environmental engineer. The natural constraints are the result of the northern environmental setting including such things as low temperatures and frozen ground. Imposed constraints are the result of regulations and guidelines developed as part of national and regional programs for environmental protection. Although there are many important areas requiring research and development, the application of current technology would substantially improve the present level of sanitation and living conditions in northern communities, which are usually more primitive than in comparably-sized southern communities. The expenditure of substantial funds for construction of municipal/ environmental facilities has brought about significant improvements in the past decade, and is expected to continue to do so in the future.

Three categories of environmental engineering research are: Identifing the public health and environmental engineering effects, requirements, benefits, and costs for northern developments, identifing needed modifications in

the existing regulatory constraints, and improving the economic, aesthetic, and health impact within the existing constraints. Within these categories research is needed in the areas of water supply, groundwater protection, water and wastewater treatment, the receiving environment, solid waste management, air quality control, and industrial waste management.

BUILDING AND BUILDING COMPONENT PERFORMANCE

As the price of fuel continues to escalate all sectors of the economy in Alaska are seeing a larger percentage of their budgets going to heating/utility costs. This fact is highlighted by the current interest throughout the state in energy efficient building design. A need exists for an integrated systematic analysis of this problem to determine the most cost effective and energy effective solutions. For example, it may turn out that it is more worthwhile to improve the efficiency of a furnace 15% than to expend money for added insulation for existing buildings.

The thermal performance of building materials and building systems require testing under the extreme environmental conditions common to Alaska. Placing building materials under repeated stresses of this nature will assist us in making the proper selection during initial design to insure energy and cost efficiency over the long haul.

A laboratory facility is required to provide test chambers for testing composite wall sections, composite roof sections, doors, windows, floor sections, etc. Facilities will be capable of determining properties of insulation such as thermal R values, and air leakage rates.

RESOURCES AND TRANSPORTATION

Historically, large civil works projects in northern regions have been extremely expensive, particularly dependent on climate and time considerations, and too frequently associated with high maintenance costs. Primarily as a result of currently intense resource development the North is faced with increasing pressure for facility improvements.

To accommodate these pressures more positively than in the past requires the construction of facilities in a timely and economic manner, while still achieving cost-effective solutions. A multidisciplinary approach is needed to seek these solutions. The cross coupling of talents between the School of Engineering and the Department of Transportation and Public Facilities is essential to obtain the greatest use of the limited resources available. The research effort should encompass construction equipment testing and modification, more efficient use of indigenous construction materials, and improved construction techniques for roads and other public and private projects.

generation facilities and possible interties, and collection and coordination of data relating to power systems in rural areas.

Large scale power generation projects, such as the proposed Susitna project, tend to generate controversy. Often, sides are taken before any real data base for decision-making exists. The proposed research facility would serve as a center for simulation studies, benefit/cost studies, and other information related to larger power systems in Alaska. Close cooperation with utilities, private consulting firms, and other branches of State and Federal Government is envisioned. The research facility could serve as a coordinating center and clearing house for data relating to power generation and distribution in Alaska.

Communications in Alaska have been revolutionized by satellites. University of Alaska engineers and scientists have been recording data and tracking satellites from the evening of the launch of the very first satellite, in 1958. Alaska has one of the most sophisticated networks of earth stations in the world as a result. As satellite technology continues its rapid advance, important questions will arise concerning application of the new technology in Alaska.

The importance of a reliable, modern communications system in Alaska to diverse fields such as education, transportation, data transmission and telemetry, news, cul-

COMMUNICATIONS, POWER AND CONTROL

The Northern environment creates unusual problems in the general fields of electrical power distribution and generation, and communications. Some of these problems are "classic" in the sense that they have been around for a long time, for example, insulating material failure, poor grounding, and interference to communications by ionospheric disturbances. Some problems are new, for example, the effect of ice fog on the 36 GHz satellite frequencies. The proposed research facility would support practical, engineering research directed toward solving problems, as opposed to investigating basic physical processes.

Supplying electrical power in sufficient quantities with good reliability and at low cost remains a top priority in rural areas of Alaska. Many of the practices currently in use could be greatly improved. The tendency has been toward a piecemeal approach to solving the basic problem, resulting in astronomical power costs in some cases approaching a real cost of one dollar per kilowatt hour of generated electricity. Systematic studies of the problem have been fragmented and incomplete, resulting in the present situation.

Research is needed in the areas of grounding, protection of buried cables in frozen ground, performance of insulating materials in extreme cold, cost-effectiveness studies of various small-scale alternatives, coordination of

generation facilities and possible interties, and collection and coordination of data relating to power systems in rural areas.

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The importance of a reliable, modern communications system in Alaska to diverse fields such as education, transportation, data transmission and telemetry, news, cul-

tural exchange, and entertainment is obvious. Less obvious perhaps is the fact that new versions of "older" techniques than satellite transmission hold great promise. The Northern Engineering Research Facility should engage in applied propagation work such as propagation predictions for traditional backup systems such as HF and VHF radio, as well as predictions for new frequencies and systems. Solutions for the "thin route" communications problem (long distances and few customers) must be studied and coordinated. Again, the facility can function as clearing house and data collection center. Applied work on atmospheric ducting and attenuation, auroral and other high latitude disturbances, use of novel compander schemes for greater efficiency, and economic analyses of proposed communications systems for the State of Alaska will be done at the Center.

The absence of a standards/calibration facility on campus has hindered research efforts on all fronts. It would be appropriate to establish a secondary standards facility for time/frequency, voltage and current, radiation and power/energy, temperature, heat flux and other basic calibration needs. The facility should be made available to industry, and other laboratories and institutes at nominal cost. In addition to obvious calibration functions, environmental radiation safety standard measurements, and similar support functions could be supported. Again, close cooperation with other units, such as the Division of Com-

munications, DOTPF, the Geophysical Institute, Alascom, and others, is strongly indicated.

A separate computer for engineering/scientific functions only is needed if the Center is to function efficiently. Specifications are to appear in a subsequent report.

MUNICIPAL FACILITIES

In the past, engineering in the north has consisted mainly of taking practices from more temperate areas and applying them to the unique conditions of the north. In most cases, the application of current knowledge and resources can be used to solve northern problems. However, the development of designs and techniques geared specifically toward northern problems can result in much more efficient use of available resources. For example, although common building insulations are capable of reducing heat losses to acceptable levels, the development of new materials which are more efficient could result in lower construction costs and life cycle costs for buildings.

The development of well-insulated pipes for buried water systems has resulted in reduced operational costs, although conventional uninsulated pipes were capable of providing service with higher temperature water and continuous flow to prevent freezing. The development of new techniques and materials has historically been based upon improvements to existing technology. Although this type of research is valuable and should continue, the development of unique and original solutions to engineering problems in the north should be emphasized. A good example of this innovative type of research and design is the development of the pit-orifice in 1953, which is now universally used to prevent freezing by causing continuous circulation through

water service lines.

GENERAL TESTING AND SIMULATION

Knowledge of the lubrication properties of lubricants at low temperatues is of vital importance to engineers who must design, operate or maintain mechanical equipment in cold regions. This facility would require refrigeration equipment capable of cooling a small test chamber to -80 degrees F. Lubrication testing equipment would also be required.

Wind tunnel facilities should be available for conducting tests such as human performance and cold weather clothing performance under a wide variety of environmental conditions. Other tests which could be performed include snow fence design for harvesting snow for potable water, studies on building geometry to avoid snow drifting and elimination of ice and frost formation on structures such as intake grills on turbines or the superstructures of ships. Temperature and humidity control should be included in this facility.

A cluster of cold test rooms should include two small rooms and one large room all capable of temperatures down to -60 degrees F. The large room would be sized to house an entire vehicle for cold weather performance testing. The small rooms would be designed for testing equipment ranging from fans and pumps down to such sub-assemblies and components like belts, bearings, switches, etc. Three small wet

labs would also be included.

MATERIALS RESEARCH

Low temperature phenomena in engineering materials is of fundamental concern to the State of Alaska. Investigations in the range from 0 to -60 degrees celsius are required on fracture and fatigue properties, freeze-thaw cycling, and state transitions.

ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITY RESEARCH

The close association of the engineering departments and the Research Section of ADOT is mutually beneficial. The close proximity of the West Ridge research units and the activities associated with the Energy Center give additional justification for housing the ADOT Research activities on campus.

The Department of Transportation and Public Facilities has responsibility for the planning, construction and maintenance of the State airports and airport buildings, the marine highway system with its ports and docks, the land highway systems including bridges, most public buildings including the bush schools, and State operated communication systems. The Research Section responds to a variety of applied engineering studies related to these responsibilities. A perspective summary of the current projects appears in the next section.

From this list it can be seen that the ADOT/PF has interest in the areas of soil mechanics, highway and building materials, structures, buildings, communications, and transportation systems. This engineering research is needed to test new products, methods, and techniques, and provide a basis for rational planning for the future.

PETROLEUM ENGINEERING

Space is required for the growing program in petroleum and petrochemical engineering. Research would include fundamental principals of petroleum production systems, behavior of oil and gas reservoirs and properties of underground earth fluids. A special facility will enable study of the PVT behavior of gas-condensation and dissolved gas systems.

SECTION E

Summary of Space Requirements

SUMMARY OF RESEARCH SPACE REQUIREMENTS

A.	Research use	Space required (sq. ft.)
1.	Hydraulic, ice and sediment flume	9,600
2.	Ice model basin	6,000
3.	Frozen soils hydraulics	610
4.	Soils and frozen ground	2,000
5.	Fracture, impact and fatigue testing	400
6.	Ice testing	180
7.	Mechanical equipment testing	2,000
8.	General structural testing	2,400
9.	Computer facility and calibration and standards testing	2,400
10.	General electrical engineering	2,400
11.	Low temperature and general wind tunnels	2,500
12.	General petroleum engineering	2,700
	Sub-total A. Research use	33,190
B.	Support space	
13.	Wood, machine, welding, electronics shops and vechicle modification garage	1,800
14.	Loading-receiving area	1,250
15.	General supplies stockroom	1,000
16.	Two conference and seminar rooms	2,500
17.	Fifteen offices for technicians	

	and research staff	1,875
18.	Public lobby and display area	1,250
	Sub-total B. Support space	9,675
	Total occupied space	42,865
	Space for access, hallways, etc. (20% of total)	8,573
	TOTAL REQUIRED SPACE	51,438 sq. ft.

Facility Description:

1. A multi-purpose hydraulic flume which would accomodate water, sediment, and ice flow for both moving and stationary experiments. A traveling carriage on top would allow for instrumentation and towing of ships, piers and other structural models. A wave generating capability would be part of the apparatus. The space would be approximately 120x40 feet in two levels

2. A large deep model basin which would accomodate experiments relating to two-dimensional studies of water, sediment and ice for a variety of shore and structure configurations. Capability for slow ice, sediment and water movement and for wave action. Would have a ceiling-hung carriage system, primarily for instrumentation. Would have an approximate 50 x 80 feet working area and be able to accommodate depths up to six feet. A lower service level of 25 x 80 feet is required.

3. A frozen soils hydraulics laboratory will feature a low temperature testing area with an adjacent sample preparation

area. A variety of experiments will be performed including studies of frost heave near gas pipelines. The required space is 17 x 36 feet.

4. A soils and frozen ground laboratory will enable testing of a variety of foundation materials important to cold regions engineering. Some areas of emphasis include model testing, frost heave strength determination and thaw-consolidation studies. The required space is 40 x 50 feet.

5. A materials strength laboratory will include provisions for an impact machine, fatigue testing, and an universal testing machine, all in a low temperature environment. A 20 x 20 feet space is needed.

6. The ice testing laboratory will include space for slicing, sawing and turning ice samples. Space will be available for a variety of testing on small ice samples. The required space is 12 x 15 feet.

7. A mechanical equipment testing and lubrication laboratory will include 3 warm rooms, 2 cold rooms and one very cold room. A regions will be conducted in these laboratories. Special attention will be given to development of low temperature lubricants. A 38 x 56 feet area is required.

8. A large working area to accommodate experimental setups for structural testing, frozen ground infiltration, ice and snow trafficability tests, vehicle and equipment experiments, model waste treatment systems and other similar ex-

periments. Essentially an open area but with adequate provision for overhead services, structural support, drains, chilled water, and other provisions to permit efficient testing and change-over of experimental setups. This space would require a 60 x 40 feet open area with high head room.

9. A computer room will service the entire School of Engineering for data acquisition, analysis, and report preparation. It will include space for mainframe CPU's, disc and tape drives, tape and data storage, and a small operator work area. A calibration and standards facility will provide a variety of secondary standards for electronics equipment at the university and throughout the state. The respective required areas are 48 x 26 feet and 24 x 48 feet.

10. A general electrical engineering laboratory will provide space for a variety of experiments in electrical power, control communicates, and data handling systems. The space includes a AF and RF anechoic chamber, a circuit board darkroom and an assembly and fabrication area. The total required space is 50 x 48 feet.

11. A medium velocity/low temperature wind tunnel would have a vertical and horizontal test section. The tunnel would allow speeds up to ninety feet per second (60 mph) with temperature and humidity control. One example of research would be freezing rates of water drops in sprays for artificial ice islands. A low velocity/low temperature

wind tunnel would allow experiments with building components, structural design and related phenomena. The total required area would be 120 x 20 feet.

12. The petroleum engineering space includes areas for high and low temperature experiments, core analysis and a specialized PVT facility. The total space required is 30 x 90 feet.

13-18. A number of support areas are provided for in the facility plan. These include wood, machine, welding and electronic shops, a loading and receiving area, a general supplies stockroom, two conference and seminar rooms and fifteen offices throughout the facility for technicians and research staff. A public lobby and display area is included to explain the work in progress in the laboratory. The total support area space is 9675 sq. ft.

A remote field test site will be an intregal part of the frozen soils and electrical equipment testing portion of the facility. The site will require two 10 x 20 feet buildings and data transmission linkage to the main building. The total field area is 2 acres.

Position Paper

School of Engineering

University of Alaska - Fairbanks

I. Executive Summary

The University of Alaska-Fairbanks School of Engineering should be nationally preeminent in all facets of northern engineering, education, and engineering research. It is the only school of engineering in the United States located in an arctic climate. This unique location should be capitalized upon to a greater degree than it is today enabling the University to establish a national and international reputation in this field. The effects of the extremes of northern climes is the single most important facet of engineering education to the State of Alaska.

The School of Engineering has one overriding objective; to attain excellence in all phases of its teaching, extension, research and public service to the citizens of the State of Alaska. The support requirements to achieve excellence are outlined in this position paper for the next five years and are compared with present levels. Substantially more resources will be needed than in the past. This is caused in part by increased student enrollment projections, by the fact that engineering education is much more expensive on a per student basis than most other disciplines and by the increasing sophistication and amount of technology required to prepare an engineering professional. Larger budget projections also recognize that the School of Engineering has in the past been underfunded in number of faculty and support staff, classroom and laboratory space for teaching and research, laboratory equipment, and faculty professional development.

The School has maintained its accreditation at an absolute minimum stance in spite of previous low funding levels, but is facing reaccreditation this year. Comments from previous accreditation reports are attached, as well as the recent study by a consultant for the President of the University of Alaska.

Table I provides a School of Engineering summary of present and future resource requirements to obtain excellence during the next five years. Only existing Departments and Programs are included. Costs are based on 1981 dollars so that inflation is not factored into projections.

Laboratory space projections require that Phase I of the Northern Engineering Research Facility will be partially completed in 1983-84 and totally completed in 1984-85. Assuming that it provides 30,000 ft^2 research area plus about 20,000 ft^2 support space, approximately 11,000 ft^2 additional laboratory area will still be needed by 1985-86. Classroom area must increase from 8,700 ft^2 to 13,800 ft^2 by 1985-86.

Increased space is essential because of expected increases in student enrollment and becuase there is presently no dedicated laboratory area available for research within the School of Engineering.

Table II provides a School of Engineering summary which includes the proposed addition of a new Chemical and Bio-engineering Department (details in Appendix A). In this case, approximately 16,000 ft^2 additional laboratory space beyond that supplied by Phase I of the Northern Engineering Research Faculity and 15,800 ft^2 of classroom area beyond that presently available is required by 1985-86.

Table I. School of Engineering Summary for Existing Departments and Programs Only (Details in Appendix A)

Present and Future Resource

Requirements for Next Five Years

(in Thousands of 1981 Dollars)

Category	Year 80-81	81-82	82-83	83-84	84-85	85-86
Equipment ($)	77.7	475.3*	389.2	517.4	546.4	615.2
Services ($)	22.8	30.2	33.6	36.4	45.0	48.9
Supplies ($)	12.5	33.8	34.3	40.9	47.4	52.0
Salaries ($)	774.3	1075.5	1271.0	1351.0	1357.0	1432.0
Student Work-Study ($)	20.8	26.0	29.8	32.8	36.8	39.5
Travel ($)	34.7**	45.5	56.2	64.8	75.2	82.5
Research Seed Support ($)	0.0	60.0	152.0	166.0	172.0	180.0
Faculty (FTE)[1]	12.5	17.3	19.6	22.4	22.7	25.5
Staff (FTE)	2.8	5.0	7.3	9.2	9.9	11.1
Graduate Assistants	0.0	7.0	14.0	22.0	29.0	35.0
Lab Space (1000 ft^2)	11.4	14.4	15.9	31.7	51.2	52.3
Classrooms[2] (1000 ft^2)	8.7	9.8	9.8	12.0	12.6	13.8
No. Undergrad. Students[3]	242	305	380	445	540	645
No. Graduate Students[3]	4[illegible]	60	88	101	128	143

1. FTE=Full time equivalent (12 mo.)
2. Shared space
3. Future enrollment figures are estimated.

* Larger than 1982-83 request because of Civil Engineering and Environmental Quality Engineering laboratory modernization

** Includes special one-time allocation of $19,500

Table II. School of Engineering Summary Including Proposed Chemical and Bio-Engineering (Details in Appendix A)

Present and Future Resource

Requirements for Next Five Years

(in Thousands of 1981 Dollars)

Category	Year 80-81	81-82	82-83	83-84	84-85	85-86
Equipment ($)	77.7	575.3*	489.2	617.4	646.4	715.2
Services ($)	22.8	40.2	46.6	56.4	65.0	68.9
Supplies ($)	12.5	43.8	39.3	45.9	52.4	57.0
Salaries ($)	774.3	1220.5	1466.0	1581.0	1637.0	1752.0
Student Work-Study ($)	20.8	26.0	29.8	32.8	36.8	39.5
Travel ($)	34.7**	50.5	62.2	71.8	83.2	92.5
Research Seed Support ($)	0.0	80.0	182.0	196.0	212.0	220.0
Faculty (FTE)[1]	12.5	19.8	22.6	25.9	26.7	30.5
Staff (FTE)	2.8	6.0	8.8	10.7	11.9	13.1
Graduate Assistants	0.0	3.0	16.0	25.0	33.0	39.0
Lab Space (1000 ft^2)	11.4	15.4	16.9	36.7	56.2	57.3
Classrooms[2] (1000 ft^2)	8.7	9.8	10.8	13.0	14.6	15.8
No. Undergrad. Students[3]	242	315	400	475	580	685
No. Graduate Students[3]	44	60	93	111	138	153

1. FTE=Full time equivalent (12 mo.)
2. Shared space
3. Future enrollment figures are estimated.

* Larger then 1982-83 request becuase of Civil Engineering and Environmental Quality Eningeering laboratory modernization

** Includes special one-time allocation of $19,500

The laboratory equipment budget needed by existing programs for 1981-82 is about six times the 1980-81 level. Laboratories must be modernized to reflect rapid technological change.

A 38 percent increase in present full-time equivalent (FTE) faculty for 1981-82 is necessary in the three existing departments. These faculty are required as the programs are brought to the level of capability required to meet Alaska's needs and student enrollments increase to members justifying specialty talents. Faculty time divided between teaching and research further accentuates this need. Further efforts must be exerted to provide faculty time for professional development and maintenance of their capabilities.

The competency and currency of all faculty are of utmost importance to high School of Engineering standards. Travel support so crucial to faculty professional development should be immediately increased to about 300 percent of its original 1980-81 funding level.

A good blend of undergraduate and graduate students is necessary for healthy programs. This requires aggressive recruiting backed by tuition waiver and other scholarships and by teaching and research assistantships for promising graduate students.

The University of Alaska-Fairbanks School of Engineering budget requirements for a six year period are tabulated below. These are taken from Table II and include only equipment, services, supplies, salaries, student work-study, professional travel, graduate assistantships, and research seed support. Building costs and inflation are not included.

Engineering Schools & Science Areas Complex

Library

Add to Library

Add to Brooks

Class/Labs 9000 ft²

Brooks

Class Rooms

22,800 ft²

Duckering

Mod to Duckering

8100 ft² (3 stories)

Parking

Vertical lift machine

Research Bldg

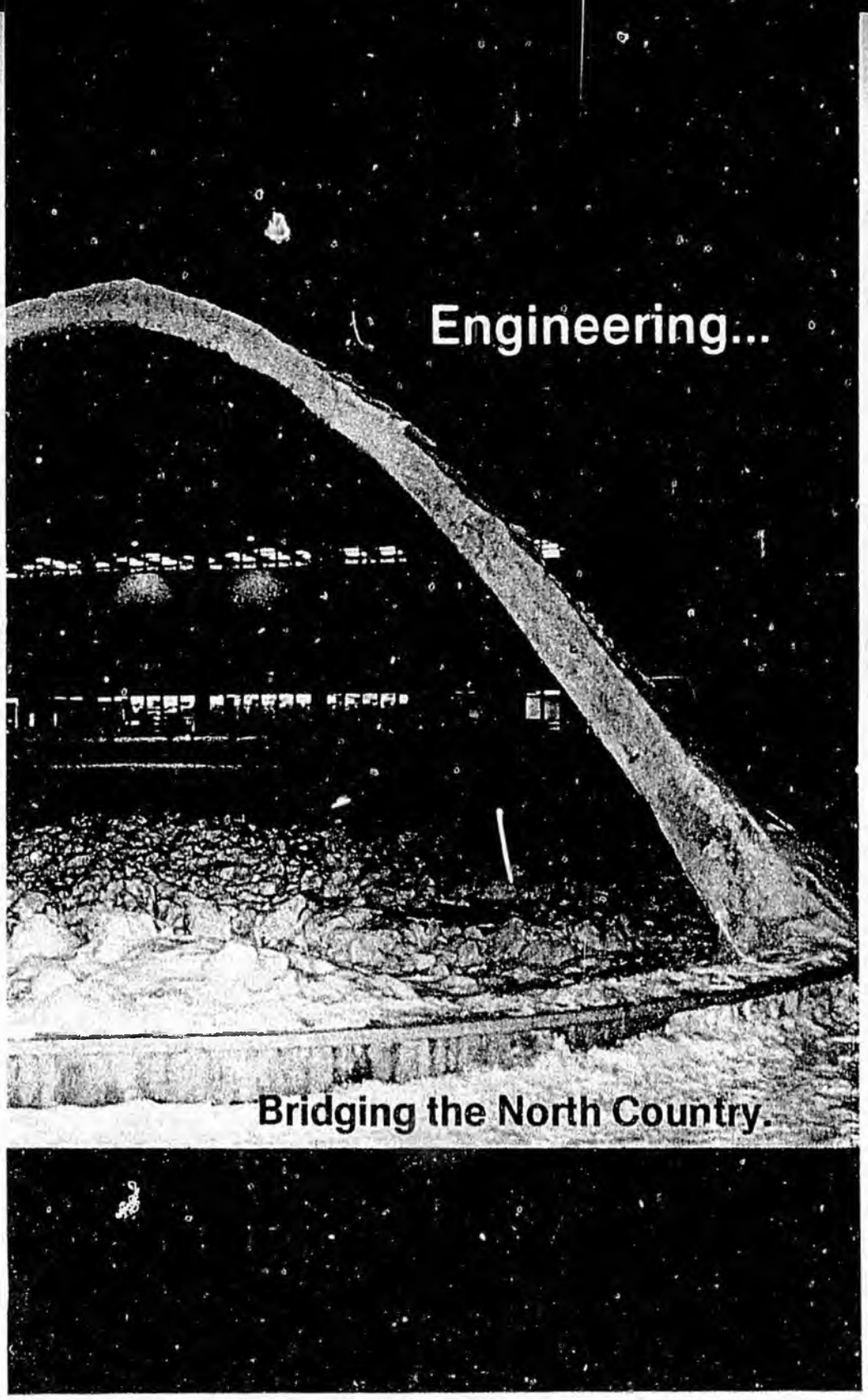
55 000 ft²

Bunnel

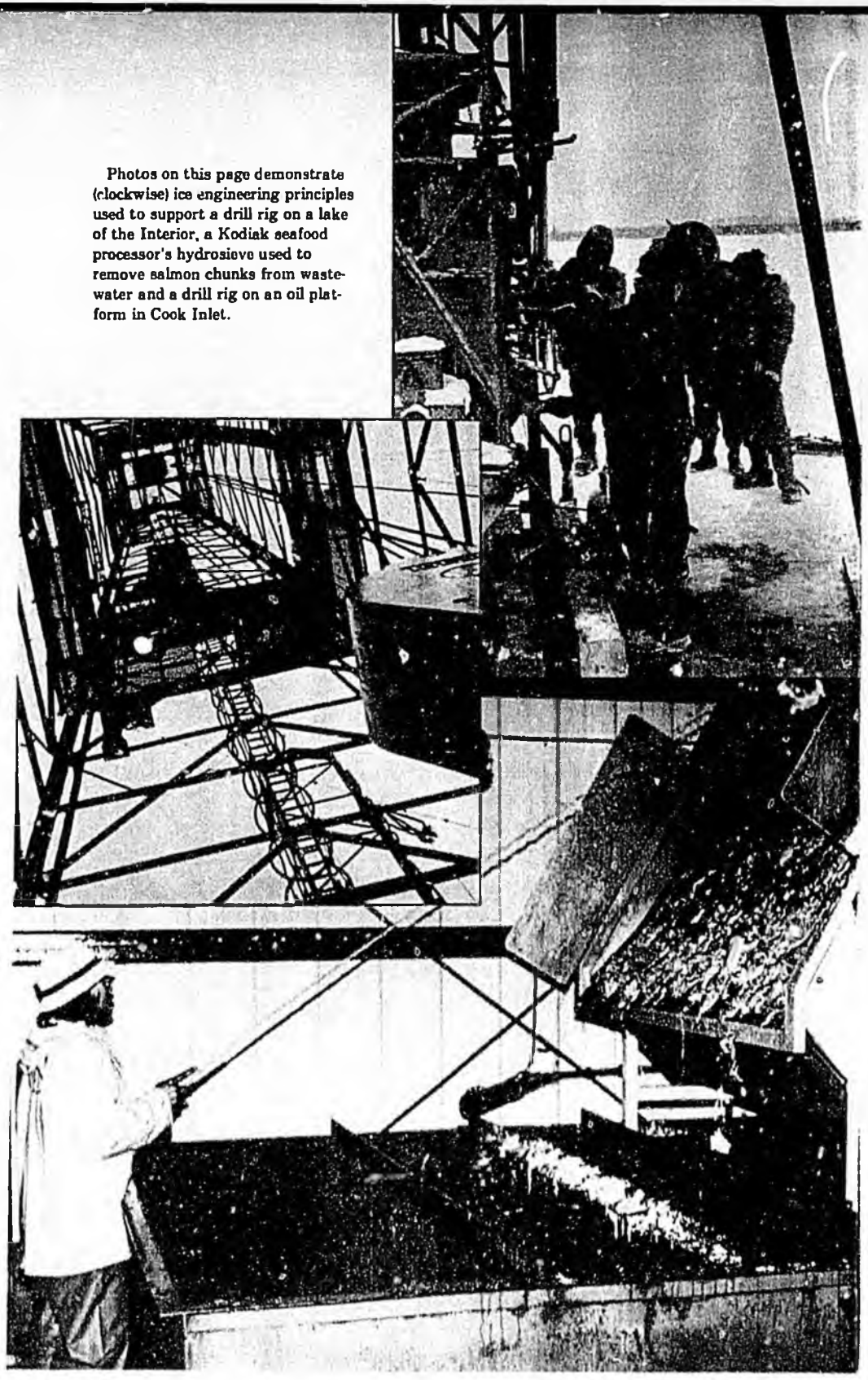
Vertical lift machine

Parts

VSH 2/27/92


Engineering...
Bridging the North Country.

Photos on this page demonstrate (clockwise) ice engineering principles used to support a drill rig on a lake of the Interior, a Kodiak seafood processor's hydrosieve used to remove salmon chunks from wastewater and a drill rig on an oil platform in Cook Inlet.



Jay Barton
President

UNIVERSITY OF ALASKA
FAIRBANKS ALASKA 99701

January 8, 1981

Fellow Alaskans:

The future of our State depends upon our ability to use modern technology to our best advantage. The ever increasing pace of development of new concepts and engineering applications demands that Alaska have an engineering education system second to none.

One of the first problems that requires immediate solution is that of space to carry on engineering research to solve problems unique to Alaska. The facility should be brought on line as rapidly as possible. The accompanying material describes the need.

To move ahead with a statewide system of engineering education it is necessary that we join together to accomplish this as the first phase of our overall program.

Sincerely,

Jay Barton

Jay Barton
President

Facing tomorrow today.

Innovators, builders, problem solvers and creators of new products – these are the engineers of the 80s. Engineers, like applied scientists, utilize scientific knowledge to develop needed products and to obtain solutions that are efficient, economical and dependable.

Throughout the North, accelerated resource development is occurring in response to world needs for energy, minerals, seafood and agricultural products. Much of the required engineering knowledge and personnel will be drawn from areas without an adequate appreciation for problems peculiar to the North. As a result many projects often incur unnecessary expense, delays and, in the end, less than optimum benefit for the investors and the citizens of the State. Nearly every project in Alaska demands special consideration of frozen ground, ice and snow, environmental impact, remote area logistics, communications, power costs and a host of building problems.

The University of Alaska is uniquely situated for northern engineering studies. The School of Engineering here capitalizes on its location by stressing northern problems and principles in its research and instructional efforts. Since 1931 UA has graduated over 600 students in the various engineering disciplines. However, the demand for engineers across the nation and in Alaska, in

particular, is growing at an insatiable rate. As a result, most organizations are forced to recruit some of their engineers from outside the State. In addition, expectations for structures suited to the North, for solutions to northern problems and for northern engineering expertise have also intensified. Yet, UA sorely lacks the facilities to accommodate more students and to be foremost in northern engineering research to meet the demands for improved living standards in Alaska.

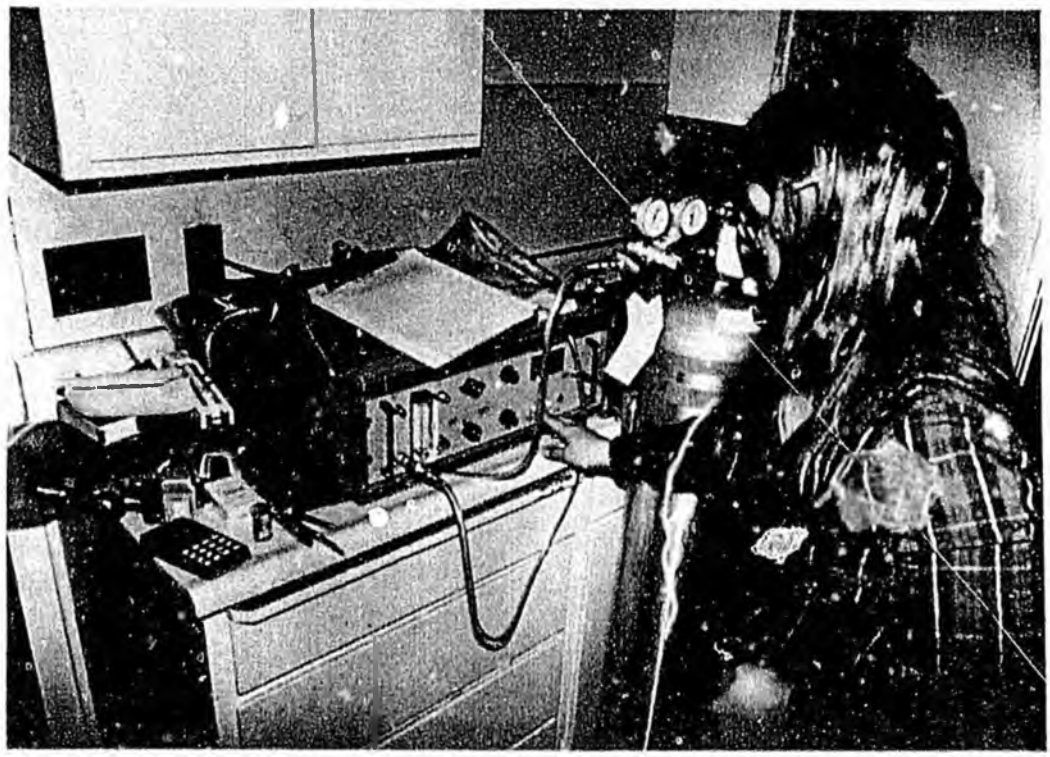
The School of Engineering of the University of Alaska is requesting a major northern engineering research facility to provide the means of solving problems of the North and transferring the information to tomorrow's generation and the State's professional community. The facility will provide a unique capability for carrying out research experiments in a controlled low-temperature environment where students, faculty and professionals can readily observe and participate. The results can be conveniently transferred to nearby problem areas in the State.

The State of Alaska would invest wisely to ensure that the University of Alaska is the leader in northern engineering research. We cannot afford to be less.

Concern for loss of the United States' technological edge has produced discussions, studies and some grim findings. A February 1980 presidential report on science and engineering education determined that "there is virtual scientific and technological illiteracy in the population at large." At the same time, the National Science Foundation estimates that "one-third of the growth in the national income during the post WWII period flowed from advances in knowledge, particularly in the sciences and the new technologies to which they give rise." Engineering education according to the President's report is being severely hampered by obsolete equipment, inadequate facilities and a shortage of faculty in universities across the country. This is happening at a time when the U.S. is looking to research for answers to tomorrow's problems today. It is no different in Alaska and is, perhaps, more intensified here. This State is moving into the coming decades at a tremendous pace – a pace that our institutions of higher learning must recognize to adequately serve the needs of the Alaskan people.

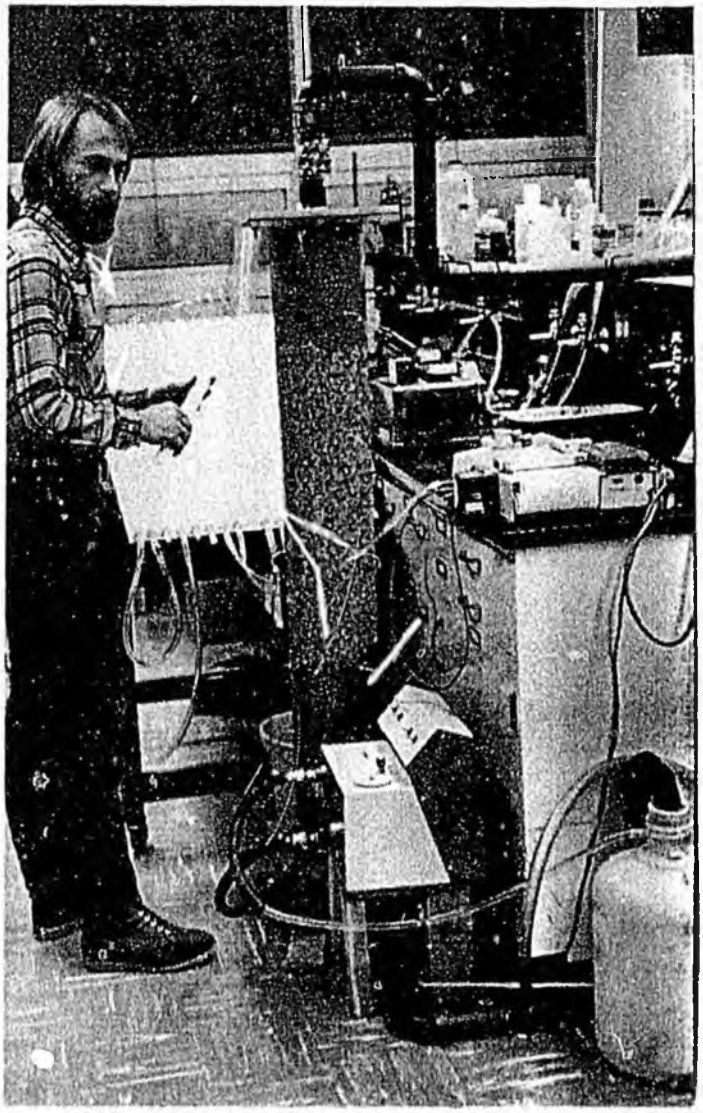
The University of Alaska should be preeminent in all facets of northern engineering. We should serve as the center for conducting and coordinating research and for disseminating the results of engineering research throughout the State of Alaska and the nation. The 1979 accreditation team of the Accreditation Board of Engineering and Technology strongly urged applied research efforts to be integrated into the School of Engineering. But major areas of research already underway at UA are hampered by insufficient space, inadequate equipment and outdated facilities. Engineering research is the direct application of science. Because the UA School of Engineering is closely allied with nationally and internationally recognized science-oriented institutes, UA engineers have the advantage and opportunity of augmenting the practical solutions to daily engineering problems with the theoretical research of the institutes. This benefits our engineering students.

In the last 20 years, the UA School of Engineering has had more requests for graduates than the available number of graduates from civil, electrical or mechanical engineering programs. In fact, the School continues to place all of its graduates who are actively seeking employment. Two-thirds of these graduates are still working in Alaska. Sensitive to the needs of rural Alaska, the School has given courses from Nome to Ketchikan to Prudhoe Bay. Special seminars are regularly held to keep the working engineer current. In FY80 the State recognized engineering research as separate from research conducted through the institutes and appropriated $220,000 to the School of Engineering. Much of the ongoing research has been developed in conjunction with the Alaska Department of Transportation and Public Facilities (DOT/PF). Such close cooperation is typical of UA's research relationship with other state and federal agencies. Many of the projects currently conducted by DOT/PF provide students with examples of some engineering solutions to everyday problems.



The proposed engineering facility will greatly enhance UA engineering research efforts as well as further our competitiveness to attract top-notch faculty and to be foremost in northern engineering.

While strengthening traditional programs, UA is moving in new directions that reflect an awareness of industry demands in this State. New engineering courses are being introduced to assist the fishing and timber industries. The future of the petroleum engineering program will rely on a quality School of Engineering.



Research to date is assisting a wide range of the State's industries. For example, the petroleum industry – the thermal design of the pipeline is clearly an engineering marvel that has met the environmental challenge. The construction industry has benefited from engineering research through equipment development, frozen soils design, river and ice crossing studies and building design. The transportation industry is highly dependent on answers to frost heave problems as pavements, bridges and airports continue to be built. Important to the fishing industry is the engineering research looking at ways to process fish waste. Efforts are being directed toward the timber industry to increase the use of native Alaska tree species for structures. Agriculture will benefit from the energy utilization and soil moisture studies being conducted. And, the ice fog suppression research is sorely needed by interior Alaskan cities.

This is only the beginning. Extensive research is required to find answers to the many unresolved questions of the North. Moreover, enrollment is on the rise. There are over 200 declared engineering majors at UA and that number is likely to increase as incoming students see an attractive future in engineering. Enrollment increases will further impede engineering research as teaching labs, now shared by research, become fully utilized for instruction displacing research.

The proposed facility is a solid commitment to engineering education in Alaska and assures Alaskans a better future. Year-round research on frozen soils, ice and low temperature performance of lubricants and equipment will be possible.

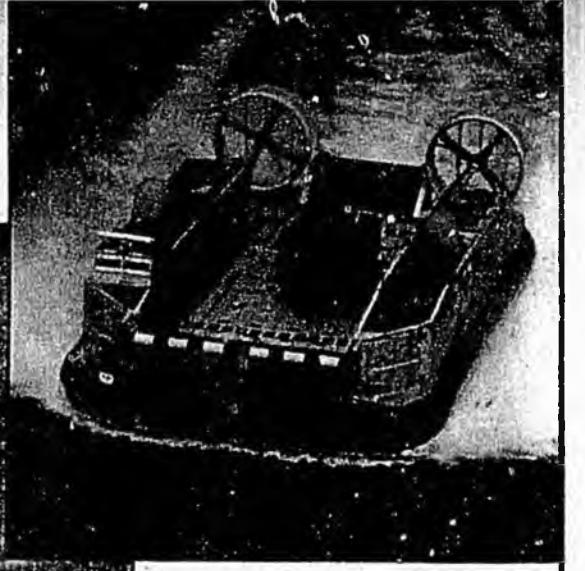
The northern engineering research facility will house a unique collection of laboratories and equipment designed to focus on problems of northern engineering. Of the total 50,000 square feet of total space over 30,000 will be allotted to research experiments. Several of the research laboratories are listed below. In nearly every case they will be one of only a few similar laboratories in the world:

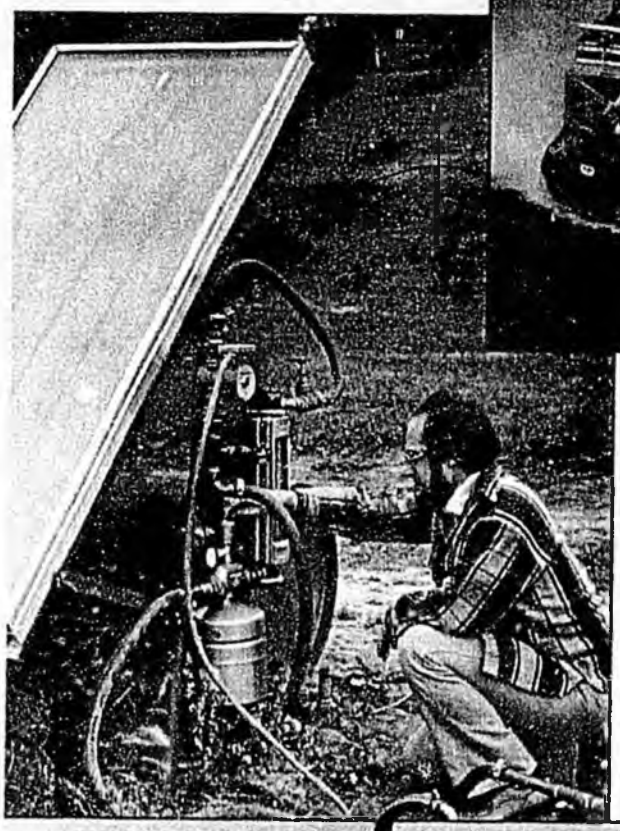
The main research areas include:

- ice-sediment hydraulic flume
- ice modeling basin
- frozen soil laboratories
- ice and engineering materials testing
- structural member testing
- communications and electrical power
- mechanical and lubrication laboratory
- electrical equipment and frozen soil field sites
- wind tunnel laboratories

The remainder of the building will be used by support facilities and required service space.

The UA School of Engineering has been responsive to the present needs of the State. This proposed facility will ensure continued responsiveness and facilitate a more economical, efficient and quality lifestyle for the people of the North country.

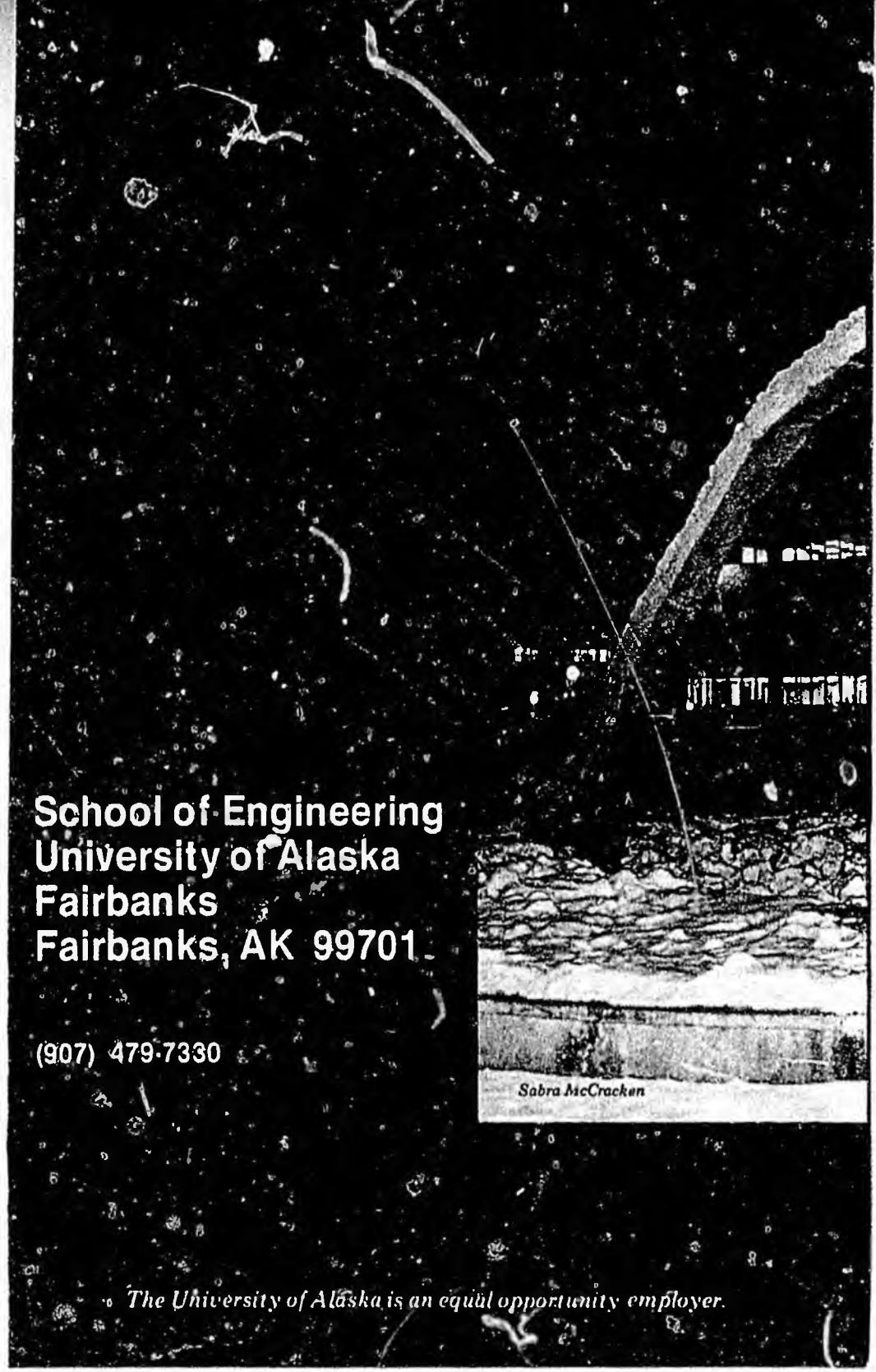




Above: DOT/PF is currently engaged in hydrofoil and air-cushioned vehicle research.

Left: Energy research at UA includes the use of solar collectors in subarctic Alaska.

Below: Erected in Sitka, this satellite ground station is one of many in communications-conscious Alaska.



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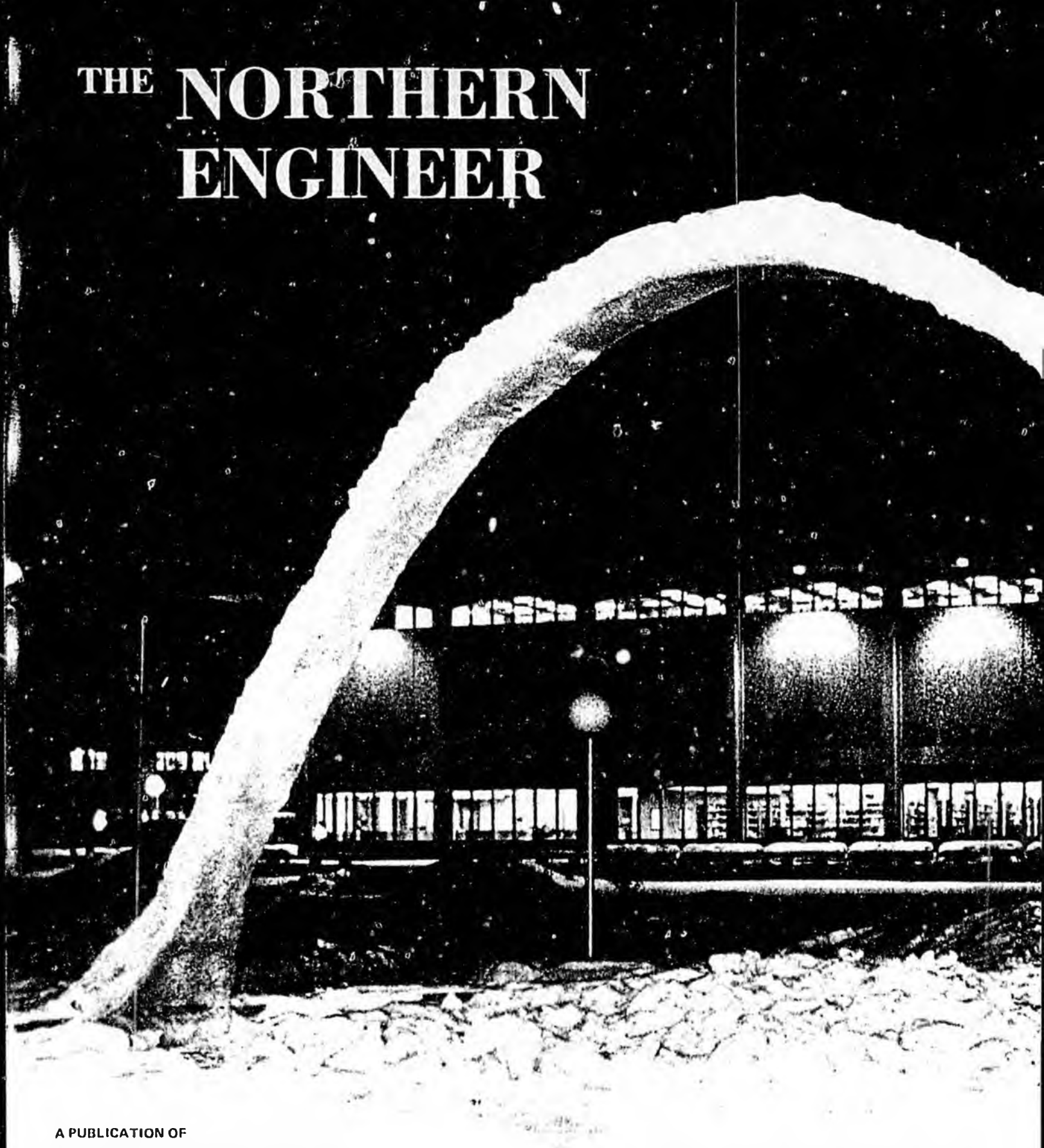
NOTE REGARDING THE FOLLOWING FRAME ON MICROFILM:

COMPLETE DOCUMENT IS AVAILABLE IN ORIGINAL FILES IN ALASKA STATE ARCHIVES. TITLE PAGE ONLY HAS BEEN FILMED.

THE NORTHERN ENGINEER



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Research at the UAF School of Engineering

applied science & technology in the north