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THE CROSSING QUESTION

Anchorage simply was built in the wrong place—there is no place for the city to expand but straight up or straight across. Since up has its limitations, the preferable way to grow would be across—either across Turnagain Arm or Knik Arm. One—or both—of the proposed crossings will be needed in the near future. Here is the full report, compiled by Associate Editor Robert G. Knox. (For a look at Cook Inlet's historical development, see page 42.)

DINE some evening at the Crow's Nest restaurant atop the Captain Cook Hotel in downtown Anchorage and you will get a splendid view of Cook Inlet and Mount Susitna on the opposite shore. Just below your window is the end of busy Fourth Avenue. A bit beyond are the narrow waters of Knik Arm and Point MacKenzie on the opposite shore. Above that lies the sleeping lady in all her serene beauty. It all seems close enough to touch.

This deceptive bit of scenery makes up one of the biggest stumbling blocks in Anchorage's economic development. That tiny stretch of water—it looks like you could almost hop across from ice cake to ice cake in winter—has been cussed and discussed ever since Anchorage was a tent town. If there was just some way to bridge that little stretch of water then all of the vast Susitna Valley would immediately become available for expansion.

Such room for expansion has become a must for future growth for just one main reason: Anchorage was built in the wrong spot. Just as Juneau was built on a practically vertical hillside for no reason other than the nearby gold—and Fairbanks was built in the muddy, flooding bend of the Chena slough for similar economic reasons—Anchorage grew up at the mouth of Ship Creek because of the railroad's construction. There was certainly no other reason for a town at this particular place.

Look at the disadvantages. Leave out all of those clay cliffs that sluffed off in the 1964 earthquake, and all those acres of swamp that have had to be filled (and are still forever plagued with a water table practically to the surface). Just look at the mountains that hem the city in on three sides and the inlet completing the fence along the fourth. Of course there is one narrow exit. But that is completely plugged with Elmendorf Air Force Base and Fort Richardson.

There is no way to go but up or across. Up the homes have been going until now they are building practically atop the Chugach peaks. The only other practical solution is to reach the far far shore. But how to get there?

Even the builders of the Alaska Railroad considered that question. They gave some thought to the possibility of a causeway which would take the tracks across right at Anchorage rather than having to go all the way up and around Knik Arm before they head inland to Fairbanks. But in that day and age a crossing could not be justified economically. Can it now? That is one of the two big twin questions facing planners of the state Department of Highways right now.

The other—which is due to be answered even sooner—can best be illustrated this way: Rent a car in Anchorage and drive to Kenai. By the time

you drive past Potter you have put a dozen miles on the odometer but you have many, many more than that to go on down the side of Turnagain Arm, across the end. and up over the mountains, before you actually start heading for Kenai. But here at Potter you can actually see the far shore of the arm and it looks even closer than the 3.5 miles it measures. A bridge in this area would cut the Anchorage-Kenai trip mileage from 154 miles to 94. But the saving in time—with a direct, low-level route rather than one of winding roads and mountain passes—would be even more than that suggests.

Part of the question about the Turnagain crossing has already been answered: It *is* economically feasible, provided it is feasible from an engineering standpoint. That second part of the question is to be answered in the year to come.

A just-completed study, conducted by a consulting engineer firm—Porter, Armstrong, Ripa & Associates — has placed the Turnagain project on a timetable for engineering investigation and a final decision on construction. The engineers estimated it would be possible to actually advertise the construction job early in 1971 and complete the work by October of 1974. Since then Governor Walter Hickel has asked the Highway Department to give the work priority and shave a year off this timetable.

If a bridge across Turnagain Arm should actually be open to traffic in 1973 or 1974 it would mark the completion of some thirty years of consideration. investigation and study because such a crossing was first considered in the early years of World War II.

THE IDEA of a possible crossing of Knik Arm, of course, far predates that period by going back to the early days of the Alaska Railroad. The projected Knik Arm Causeway also came to public light in its present form several years before the project to span Turnagain Arm.

The date was mid-1954. The individual who gets credit for awakening interest in the Knik Arm crossing is Ken Hinchey. Long active in the construction supply business in Alaska (as well as a variety of other enterprises) Hinchey was then chairman of the Anchorage Chamber of Commerce's Port Committee. A man never to back away from a fight, Hinchey was to go on to serve as mayor of the city for a brief period (before resigning in the midst of a controversy over city contracts) and always remain active in pushing the plan for a Knik Arm crossing.

His first presentation of the idea came July 19, 1954 and actually put forth the crossing as only the means to an end—a dam to provide calm waters and less silting and ice problems for navigation. His real aim was to turn Anchorage into a seaport and ironically, the port would come to be built and prosper long before the Knik Arm question was finally settled. But to Hinchey at the time it seemed a causeway provided the solution to problems of getting an Anchorage port started.

"It has been proposed by several engineers that it would be possible to control the severe currents in Knik Arm, thereby alleviating much of the silting and icing problems which are now nearly unsurmountable," Hinchey said. "The construction of a causeway between Point Cairn and the north bank of Knik Arm seems feasible."

He did envision other advantages to be brought about by construction of such a dike-causeway: "That a shorter rail route to the Fairbanks area be made practical" and "that an immense area north of Knik Arm be opened for development of any nature most practical."

But basically he saw the causeway-dam as an aid to navigation in upper Cook Inlet and to growth of Anchorage as a seaport city. He continued to expand on the idea in remarks before the Anchorage Chamber of Commerce meetings on November 1, 1954, and again on May 23, 1955, by which time

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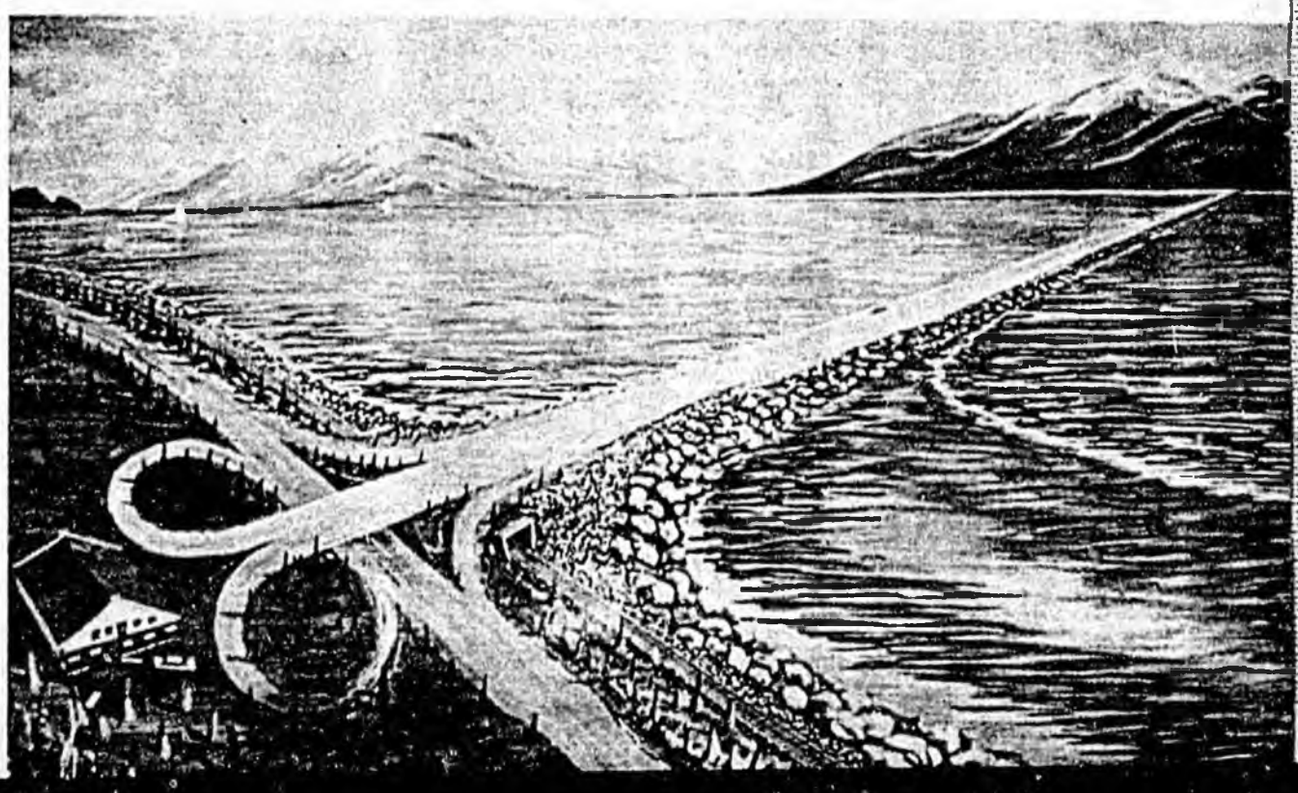
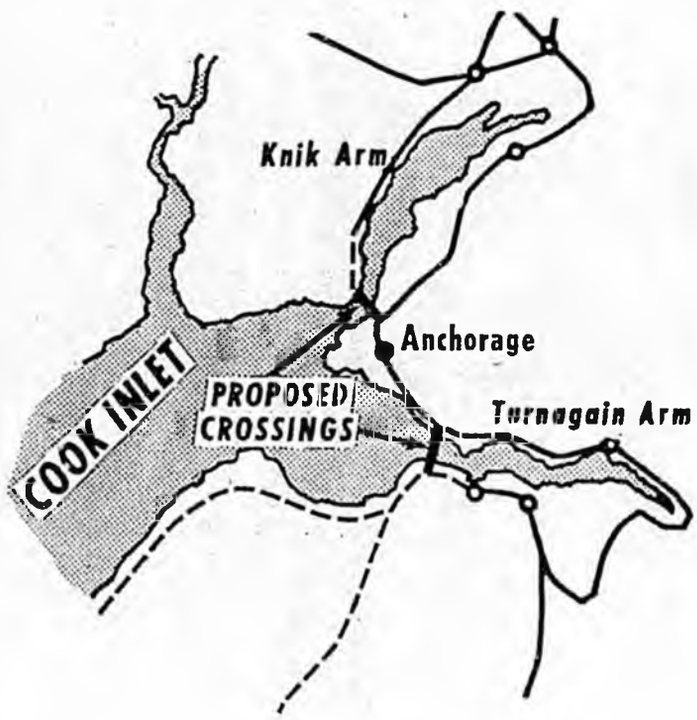
This artist's conception shows the causeway across Turnagain Arm which was proposed in 1959 by engineer Floyd Harmon. At the time he estimated the structure would cost $8 million and carry a roadway as well as power lines and a natural gas pipeline. In more recent studies a bridge structure has been favored rather than the impervious rockfill causeway as proposed originally by Harmon.





The Crossing Question
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he was chairman of a "Causeway Committee" formed by the chamber.

The idea started to gain support, too. On May 25, 1955, the Anchorage Times carried the first of what would become a series of editorials extending across the years in support of the causeway idea. In that initial editorial, The Times said:

"Building a causeway across Knik Arm from Anchorage is a dreamy sort of proposal. It would cost millions of dollars. It would involve engineering problems of great magnitude. It would require cooperation of many agencies and immediate interest among them seems to be approximately nil.

"But the project is the type of dream that has been a dominating factor in the development of Anchorage . . . The size or cost of a project has not deterred the people of Anchorage in their efforts to get things done. They have seen many of their dreams blossom into reality. They have created interest where none existed when they started . . .

"The causeway project, even though it looks financially impossible now, fits squarely into the picture . . ."

Hinchey's dream picked up other support, also. The Chamber organized a $100 club to seek a fund of $5,000 to help pay for a preliminary feasibility study. Such a study was actually made, dated December, 1955, by Ivan Block and Associates. In later years an Army Corps of Engineers study of Knik Arm would be authorized but stagnate due to lack of funding.

A lack of funds has continued to plague progress of the Knik Arm project over the years, as it has had to take a back seat to other projects and developments time and again. (This is a situation true even today with the Legislature hesitating to approve even $100,000 for a feasibility study.)

Despite that initial burst of enthusiasm and support back in 1954 and 1955 the project soon began to lag. In fact, it almost seemed to disappear from the scene and by mid-1961 the Times was questioning in an editorial:

"What has become of the proposal to build a causeway across Knik Arm?"

The editorial seemed to answer its own question when it went on to say:

"Another causeway proposal is getting attention. It is the Turnagain Arm project, south of Anchorage . . ."

The Turnagain project had come on the scene in 1959. At that time Chugach Electric Association was considering a possible crossing of Turnaagin Arm to bring its Cooper Lake power into the Anchorage area. Anchorage Natural Gas Corporation was also considering a crossing of Turnagain to bring its Kenai natural gas into Anchorage. But the man who really should receive the credit for sparking public interest in the crossing was connected with neither organization. He was a civil engineer working then for Federal Electric Corporation by the name of Floyd Harmon. The Turnagain crossing was just as much a personal project to Harmon as the Knik Arm crossing was to Hinchey.

BACK in the early 1940s a crossing of Turnagain Arm had been given some consideration but as a highway bridge. Harmon was thinking rather of a fill-type causeway and that was the way the idea was presented in 1959.

The presentation was made in November at meetings of two chamber of commerce groups. It is interesting to note that the chamber of commerce director leading the discussion was Walter J. Hickel. He described the project as having a "lot of economic merit" and said he felt the project would not be a difficult one. "It could be done with conveyor belts, bulldozers and dynamite," Hickel said at the time.

As Harmon envisioned the causeway, it would stretch across Turnagain Arm starting from Mile 97 on the Alaska Railroad (near Potter) some 3.5 miles to Gull Rock. It would be 75 feet wide on top which would allow ample room for a standard-width roadway plus parking strips and walkways on each side. He estimated cost, at that time, for construction of the rock-fill impervious causeway at about $8 million.

Harmon noted that the causeway would make the then-new oil and gas fields of the Kenai closer to Anchorage and open up new country on the peninsula. A side benefit would be creation of a new recreational area as the causeway dam would create a 25-mile-long lake in what had previously been the main body of Turnagain Arm.

The causeway idea got no real support from Chugach Electric or Anchorage Natural Gas. CEA was to decide shortly to carry its transmission line around the head of Turnagain Arm. Later, Anchorage Natural would lay its pipeline under Turnagain Arm rather than on a bridge or causeway. But the causeway was adopted by the

Chamber of Commerce and it started a vigorous campaign of support.

The name of another Anchorage resident who has long been associated with the campaigns for the two crossings came into the story at this point. He was Jack White, real estate developer and businessman, who has been serving the chamber for many years as a leader in its highway development program.

On January 29, 1960 he was writing a letter to Richard Downing, then state commissioner of public works (and at that time responsible for the highway program). The letter noted:

'During the past several months considerable interest has developed locally concerning the economic and engineering feasibility of building a causeway or bridge across Turnagain Arm in order to shorten the distance between Greater Anchorage and the communities of the Kenai Peninsula . . ."

White went on to tell the results of an open meeting held with representatives of interested agencies and to list the advantages which it appeared would accrue from construction of such a span. He closed by urging the state to act favorably and "order the necessary study."

At this point the wheels of government seemed to spin at an amazingly fast speed. On March 1, Downing was replying:

"My opinion is that this project is worthy of investigation." He added that it appeared the Alaska Division of Highways, which was then under his control, would be able to provide funds for the study.

In less than two months, H. M. Pentecost, then planning director of the Division of Highways, completed a document titled: "Preliminary Report, Proposed Crossing, Turnagain Arm."

While the action was speedy, the results were far from what the Turnagain Arm boosters might have hoped. In his recommendations, Pentecost turned thumbs down on further study:

"A thorough feasibility study of a Turnagain Crossing might cost from $50,000 to $300,000 depending on the extent of borings and other foundations investigations. Such an expenditure would hardly seem justified unless the Highway Division is definitely prepared to program a minimum of 18 million dollars for construction of a crossing if its feasibility is conclusively demonstrated. If the programming of this amount is not considered to be a possibility, then no further study should be undertaken at this time . . ."

And, just before he had given *his* opinion of programming that amount:

". . . However, an initial investment of about 18.5 million dollars would be necessary before any benefits could be enjoyed. This would represent approximately 40 per cent of the total annual highway construction funds available at present, and the wisdom of such an expenditure in Alaska's present circumstances might be questioned by the general public, the state government, and the U.S. Bureau of Public Roads . . ."

The reasons and reasoning behind the speedy report and its unfavorable recommendations can only be guessed. Pentecost was apparently a sincere critic of the project. Five years later, when the project was again in the limelight, he would write a letter to the editor of the Anchorage Times defending his report. He said in part:

" . . . In Alaska there are many potential highway and bridge projects which would produce annual benefits 5 to 10 times their annual costs. A Turnagain crossing will not do that well, even if the earthquake damage has greatly changed the cost factors in favor of its feasibility."

In the letter—written from Santiago, Chile where he was then employed—Pentecost concluded this way:

"Cautious planning reports deserve just as much consideration by the public, and by the press, as those which are highly favorable. In both cases they are a sincere attempt to estimate how the people will be served by a proposed improvement. Chambers of commerce and public figures play an im-

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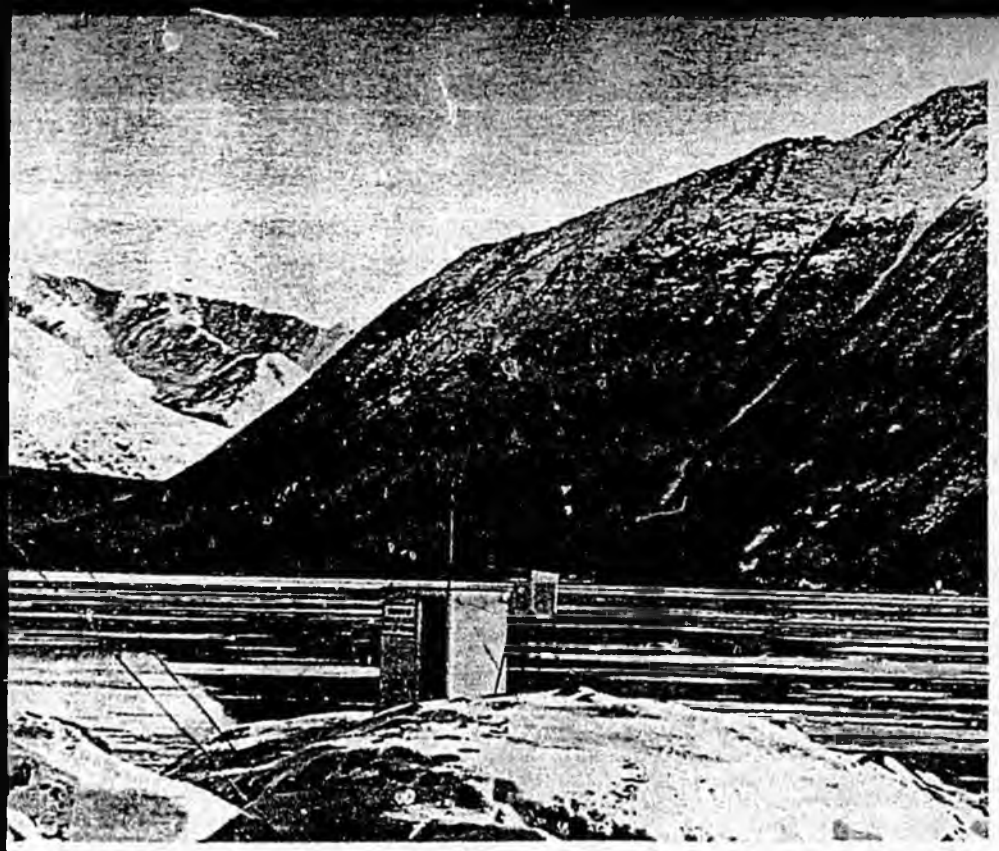
The fast-growing city of Anchorage is hemmed in by the Chugach Mountains that rise right at the end of its main streets and encircle it on three sides. Crossing of the two arms of Cook Inlet could provide the needed room for future expansion.



This is the proposed site for the Turnagain Arm bridge crossing looking from the Anchorage side. In foreground is weather equipment station erected in mid-channel beyond this point. Mountains in background are on far shore of Turnagain Arm, 3.5 miles away.

The Crossing Question

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portant part in the U.S. drive for constant improvement, but the feasibility of large engineering projects should not be decided by civic programs and pressures alone."

There could be little arguing with that thought but it did appear that in this particular case there might have been some pressures from the other side to dispose of the Turnagain Arm crossing idea with as much speed as possible. It did seem the report was issued with more than usual speed (according to some sources Pentecost received exactly one week to write the report) and there was no denying that it was effective in at least delaying the project. The crossing plan was to take on some of the aspects of a political football in the still-continuing game of sectional politics in Alaska before it advanced its next step.

It would get to the point in fact where two state senators—from Nome and Sitka—would enter a bill providing an election on the question of a sal of $10 million in bonds to build a causeway across Turnagain Arm.

To the Anchorage Times this appeared only an effort to "cloud the issue" and damage chances for approval of another then-pending bill to provide $300,000 for serious engineering studies of the project.

Whatever the motives of the sponsors, the bond-issue bill quietly disappeared and the funds were approved for the first full-scale engineering study of the proposed project.

The state invited proposals in July, 1962 and signed a contract on September 28 after looking over some 22 proposals. Selected to make the study was a joint venture of two engineering firms: Porter, O'Brien & Armstrong of Sacramento, California and Tryck, Nyman and Associates of Anchorage. The contract covered a study to be conducted in four phases—but all of them were not to be completed.

FIRST phase consisted mainly of research of existing data and it was completed and a report submitted on March 8, 1963. On April 1 the order was issued to go ahead with Phase II—consisting primarily of alternate crossing studies—and this report was submitted in January, 1964. By this time some estimates were beginning to be made:

- Construction costs were estimated in a range from about $14.1 million to $95.3 million depending on the location and type of structure used.
- Of the three possible crossings studied, it appeared the most feasible was Cape to Isle which would be 18,500 feet long. This would leave the Seward Highway four miles south of Potter and connect with the Kenai Peninsula near Gull Rock.
- At this location, costs were estimated to range from $27.8 million for a bridge to $93.7 for a fill-type crossing with three-foot shoulders; and $95.3 million for a fill with 10-foot shoulders.

These were only general estimates and there were no specific recommendations made as traffic data for the various crossing locations were yet to be developed and evaluated under later studies. The preliminary cost estimates presented were also based on very meager foundation and ice-load data. The detailed foundation studies were to be made in the following phase—which was never ordered.

However, some general shapes of the project were beginning to emerge. For instance, engineer Harmon's original plan for an impervious-fill causeway-type of crossing was fading further and further into the background. Too, the Isle-Cape crossing site seemed to be the obvious choice of locations for what apparently would be a bridge-type crossing.

While the Phase II report was still under study in the offices of the Department of Highways the March, 1964 earthquake struck. This changed the whole situation.

The then-existing highway around Turnagain Arm was a shambles. Nearly every one of the numerous bridges across creeks and rivers flowing into the arm had been destroyed. In many spots the highway itself was now under water of the arm at high tide due to the sinking of the land level in the quake. It appeared quite likely it might be more feasible now to build the arm crossing rather than rebuild the highway.

With this in mind, the state did not order Phase II of the study but instead started on a route study to determine which would be most feasible: Build a crossing of the arm at one of four possible locations or rebuild the existing highway around the arm. (Of course, if a crossing was selected it would still be necessary to rebuild the existing road but not to first-class standards. It would then become a secondary road and department officials sai it probably would not be maintained during the winter months.)

This route study took the remainder of 1964 and meanwhile the existing

highway around the arm was being patched up so that it was at least marginal for traffic. That was the only possible description as the road often closed—during high tide periods—and traffic between Anchorage and the Kenai Peninsula was a mere trickle that summer.

Early in January, 1965 the state announced its recommendation and it appeared the causeway boosters had won at least a partial victory.

The state recommended construction of a bridge crossing of Turnagain Arm at the Isle-Cape site. It estimated the cost of the bridge crossing and the connecting roads (a short road connection to Hope and a completely new road west of the Kenai Mountains to the Sterling Highway) in excess of $60 million. The recommendation did torpedo the original causeway plan but at least it recommended a crossing of the arm rather than rebuilding the existing highway around the arm. Also, it came out for the Isle-Cape crossing, the most westerly of the possible crossings and the one long sought by the Anchorage boosters.

But while the state recommendation was at least a partial victory it was far from the end of the war. Because it was only that: a recommendation.

If the crossing was to be built—at least at this time—it would have to be done with federal emergency aid. The idea in the route study was to see if emergency earthquake aid could be obtained for building the crossing by substituting it in effect for rebuilding of the highway lost in the quake. Unfortunately, for the crossing backers, the federal government did not see fit to go along with the state recommendation.

The federal refusal was known by spring, but the announcement did not come officially until June. Then Rex M. Whitton, federal highway administrator, said the crossing plan had been rejected in favor of rebuilding the quake-damaged portions of the highway. He gave two reasons: The crossing was beyond the scope of the emergency repair program and the negative decision was also prompted by the recently-completed U.S. Department of Commerce Alaska highway needs study.

With that plan shot down in flames the crossing backers had to regroup. Jack White suggested a closer look at paying for the crossing with tolls:

"I suggest charging a reasonable toll —say $3 per car," White said. "At the rate of 2,000 cars a day this would raise enough money to finance the whole bridge without cost to taxpayers . . ."

OPENING of the next session of the Legislature, in January 1966, saw a bill tossed into the hopper to build the crossing. Four state senators, Howard Pollock, Brad Phillips and Nick Begich, all of Anchorage, and Yule Kilcher of Homer, introduced SB210 which called for a $28 million general obligation bond issue to finance the project.

The session passed several other bond issues but not the one for the crossing. In fact, that was the last heard of the crossing until after the fall elecions that year. When the elections were over the man who had made the first presentation of the causeway plan back in 1959 was in the governor's mansion in Juneau. Not surprisingly, the Turnagain crossing was soon back in the headlines. On March 1, 1967 the main story on the front page of the Anchorage Times started out like this:

"Gov. Walter J. Hickel today said he is 'completely confident' a vehicular causeway and bridge across the Turnagain Arm of Cook Inlet near Anchorage will be operational within five years."

By the middle of May the state was announcing it had signed a contract with the Newark, New Jersey engineering firm of Porter, Armstrong, Ripa and Associates for a financing study of the crossing. The contract called for a review and analysis of all methods which might be used to finance the proposed crossing and the study was also to include a review of available traffic data for the area. The study was to determine first if the project was feasible from a financial standpoint and, if so, how best it could be financed.

Results of that study were announced early this year and they came in the form of seven chief findings:

"1. The Turnagain Arm Crossing is an economically justified project.

"2. The average saving per passenger car using the crossing would be $8.43 and would be $28.71 per truck.

"3. On the basis of present data and assumptions, the estimated cost of the crossing is $47 million.

"4. The crossing could be financed with a bond issue supported by tolls of $3 for passenger cars and $15 for trucks, on the basis of assumptions made in this report. Extensive foundation and ice investigation studies will be required before decision to proceed.

"5. Utilizing Federal Aid to assist with the financing of the project can be accomplished in several ways. Determination of the best method will require evaluation at the time decision is made to proceed with constructing the project, in view of the overall highway financing situation at that time.

"6. The state is justified in proceeding with detailed foundation and

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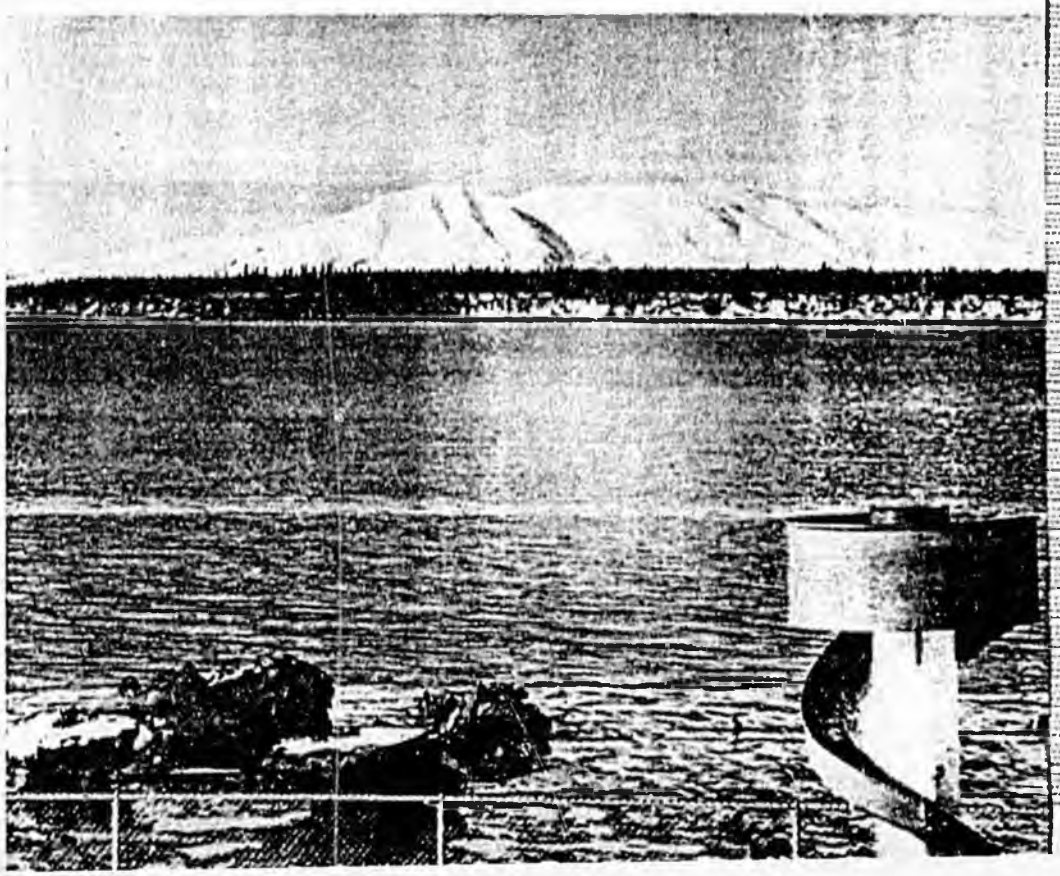
The children's slide is in a park in downtown Anchorage. The narrow unbridged stretch of water is Knik Arm. Rising above the far shore of Point MacKenzie is the sleeping lady — Mount Susitna.



Crossing Knik Arm can be done speedily now by airplane. This bush plane—landing on a strip on Point MacKenzie—brings supplies to homesteaders in that area who live just four miles from Anchorage but are hours and hours away by land.

The Crossing Question
—Continued

ice pressure investigations necessary to establish the engineering feasibility and firm up the estimated project cost. The major portion of this work can be financed with Federal Aid one and one-half per cent planning funds.

"7. The time required to complete the investigations, engineering and construction would be about six years."

The study continues the recommendation of earlier reports for a continuous plate girder structure with spans of about 130 feet, supported by eight-food diameter, concrete filled caissons. "The most economical solution appears to be a pier design using two eight-foot diameter caissons, 20 feet on centers, tied together by a six-foot thick concrete cap," the study noted. The wall thickness of the caisson steel is one inch and the piers were estimated at 150 feet in length, with an average of 80 to 90 feet embedded in the foundation. The study also noted:

Special provisions will be made in the design to provide integrated movement of the structure so that earthquake action will not result in sections battering against each other. On the basis of the assumptions made, it is believed the proposed design will withstand severe earthquake stresses satisfactorily."

Problems involving the ice movement in the arm were also checked. One special problem was researched and the report noted it will require further detailed study as design plans are firmed up. This involves the abrasion of the steel caisson shells by ice floes. "The ice in Cook Inlet and Turnagain Arm contains many particles of sand and silt," the report noted. "As the ice floes pass by the caissons, a sandpapering effect occurs on the steel shell with a consequent loss of section estimated at 0.3 mills per year."

Epoxy coatings were considered for stopping the erosion but were not considered durable enough. A stainless steel wrapper, applied within the ice-abrasion reach is suggested as a solution and is to be investigated further.

The problems caused by the extremely strong winds that sweep through the arm, and winter snow conditions, were also noted:

"In order to reduce wind resistance and to facilitate snow removal, solid curbs and parapets have been replaced by a standard guard rail system. This treatment will need further evaluation at the time of design. The protection supplied by a solid parapet to vehicles against strong winds needs further consideration."

The report also noted that some superstructure revisions had been made as a result of experience during the 1964 earthquake. "The precast composite concrete deck has been modified to a cast-in-place deck which is effectively tied to the girders with shear connectors to provide integrated action. Special stay-in-place bridge deck forms can be effectively utilized."

Due to the estimated increased cost of the proposed bridge structure, the report said further studies were made of the possibility of building an embankment across the arm—but the studies were not encouraging:

"Further detailed study was given to the method of effecting closure. This involves some tremendous problems and great difficulties with any method of closure which could be devised. Increasingly high velocities will result as closure progresses. This is the most difficult problem, as evidenced by the great difficulties encountered elsewhere in making similar closures . . .

"In view of these difficulties, it does not appear economically feasible to construct an embankment crossing as compared to a bridge structure. However, detailed foundation investigations may suggest additional consideration."

The report also noted that studies were made of a possible crossing which would utilize part fill and part bridge. It said that hydraulic calculations showed that any appreciable length of fill would increase tidal velocities and consequent scour at the bridge piers and at the ends of the fill.

"The economics of mass production or repetitive construction methods would be reduced because in Turnagain Arm mobilization for either type of operation is a major item. For the minimum height of fill the cost per lineal foot will be nearly the same as for a bridge.

"Thus, a combination type crossing does not offer economical advantages."

IN ADDITION to discussing its findings, and making its recommendations, the study pointed the way toward the next necessary steps. It noted that before studies can proceed to definitely establish the design and cost of the structure, extensive foundation investigations must be made to establish characteristics of the foundation material. "The density of the material in place at the various depths, along with its other characteristics need definition," it noted.

It was also suggested that a part of this investigation should include construction of a prototype pier with extensive instrumentation to provide data on ice pressures, including size and direction of travel of ice floes, for use in the final design. Information concerning the wind velocities at the actual location of the structure can also be obtained from this prototype test pier.

A short time after the report was made public in March, Governor Hickel announced that he had given the crossing priority engineering and testing status with the aim of being able to start construction a year earlier than proposed in the study.

Under the new timetable announced by the governor, the actual construction job would begin in May 1970 and be completed in October of 1973.

At the same time Charles S. Matlock, Anchorage area district engineer for the Highway Department, said that the observation and test pier was currently being designed and would be placed in the inlet this summer to collect wind and ice data next winter. He said the test pier would contain various weather data gathering instruments and would be equipped with a small helicopter landing pad on top to allow for servicing and checking of the pier.

Hickel noted that the next step planned by the Highway Department was to carry out extensive drilling in Turnagain Arm at the proposed crossing site to determine soil types and conditions and the bearing capacity of the underlying materials.

"If we can produce this material and get the data into final form a year

ahead of schedule, we will have crossed a major hurdle toward final completion of a Turnagain Arm crossing," Hickel said.

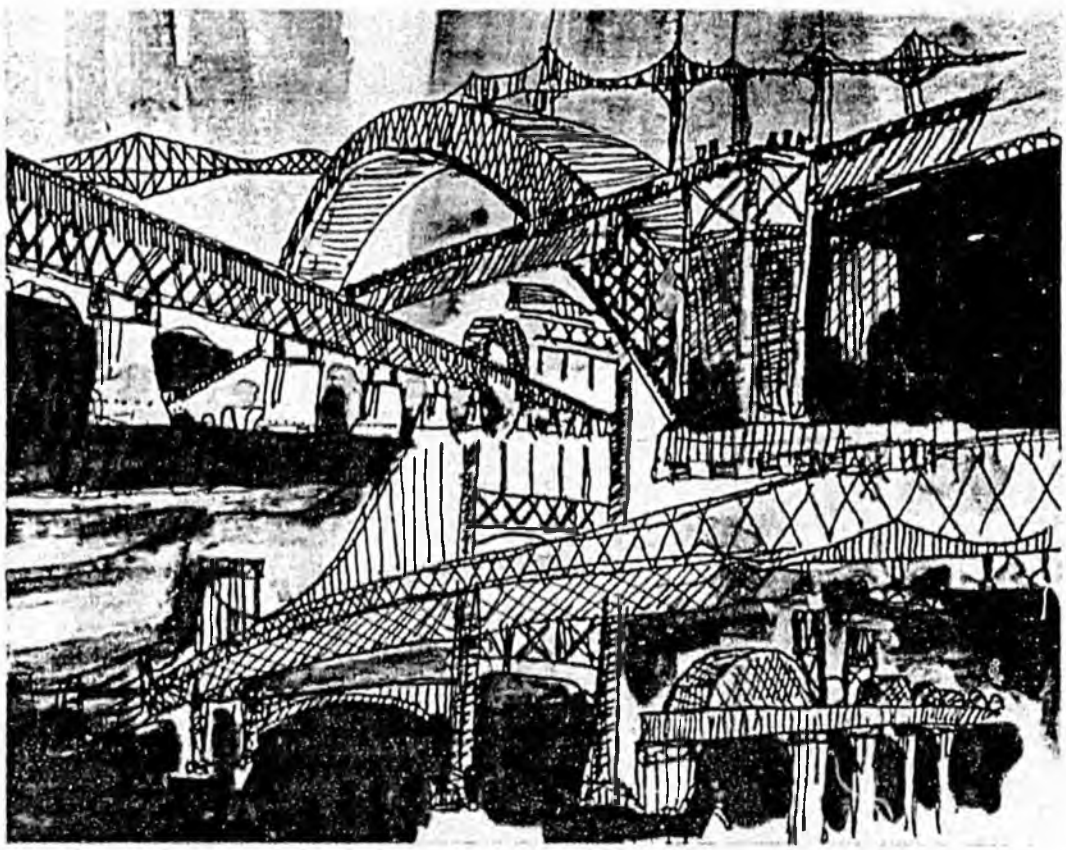
Thus it appears the crossing is on a timetable which will lead to an early engineering decision—the crossing will prove feasible and move on toward an actual letting of a construction contract or it may be necessary to modify the project or perhaps even drop it if it appears too costly to be feasible. But at the least now a real and final decision seems assured.

As yet no such definite answer is in sight for the other crossing question—the question about Knik Arm. At the start of the 1968 Legislature session a bill was introduced to appropriate funds for a new study but legislators were reluctant to give their approval. The thinking—even of supporters of the crossing—was that with Turnagain so close to getting final approval it would only confuse the issue and perhaps hinder the cause if Knik Arm was also pushed at this time.

But the Knik Arm project certainly has not been abandoned. The Highway Department is continuing to make some informal studies as time and funds permit and the civic campaign is still very much in existence. It appears it is only a matter of time until it will be vitally necessary to secure the answer to this second crossing question. At the present rate of growth of Anchorage the time remaining is not too long—if that growth rate speeds up as is very possible—the time remaining will disappear in a hurry.

It is more than just possible that the contractor who some day gears up to build a bridge—or other crossing—of Turnagain Army will be figuring bids on a second crossing, of Knik Arm, before he is finished with the first job.

(Cook Inlet—1998?)



Resource Development Council for Alaska, Inc.

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Testimony:
Knik Arm Crossing
May 2, 1981

My name is Joyce Munson. I am Deputy Director of the Resource Development Council for Alaska, Inc..

The Council was organized in 1975 and is the largest citizens group in Alaska with a membership of nearly 10,000. Members are individuals, companies, labor and other organizations and municipalities.

Our objectives are to create a broadbased, diversified economy, long-term, stable employment, industrial growth and improved living standards for Alaskans, while at the same time assuring reasonable protection for the environment Alaskans cherish.

The Resource Development Council strongly supports the Knik Arm Crossing, which is in the best interests of Alaska. In developing our resources, the state needs a transportation infrastructure for the exportation and importation of goods at a reasonable cost. Long range planning is required for this to happen. We view the construction of the Knik Arm Crossing as a valuable part of the infrastructure and the long range plan.

The linking of Point MacKenzie to Anchorage, an already established hub in the transportation system, is a logical step in the right direction. The economic advantages can only be measured in time

but the potential is already noted. The need for the extraction of coal and other mineral resources as well as the development of agriculture depends on marketing, marketing depends on getting the product to the market. Without a port at Point MacKenzie the crossing is an absolute necessity. If a port is established the connection as a link is advantageous to both ports.

The social impact is even greater. At present, Anchorage has almost outgrown the available land not only for development but housing. The competition for scarce and highly desirable suburban land continues to intensify at an alarming rate. Anchorage has long experienced this growth and unless we visualize the city becoming a sprawling metropolis there must be development in other areas of the state but without proper access this will not happen. People will continue to come and development will not cease as long as Alaskans strive to improve their lifestyles. Growth is healthy for any community and it's the State's responsibility to coordinate progress with long range planning. Furthermore, the Mat-Su Borough is seeking a stable and stronger tax base not just serving as a bedroom community for Anchorage. We believe the Knik Crossing will promote a partnership between Anchorage and the Valley. The Mat-Su Borough has the land and the resources while Anchorage has the financial-business community to promote these developments. In a time of increasing energy conservation, the need for shorter transportation distances becomes imperative.

The Resource Development Council recommends a three-phase funding program. First year funding should pertain to preliminary engineering, soil testing, right o of way acquisition, securing permits, environmental impact statements etc, as well as a time line for completion. The next phase would be the funding of design and the final for construction. Funding for the entire project should not be made all at once because of inflation.

The Council does support the inclusion of tidal hydorelectric power.

Many feasibility studies have been completed over the last twenty years, the information is there whether it be a bridge or causeway. We've studied it, now lets build it.

I would like to thank the Committee Chairman, Rep. Cato for this opportunity to testify in Anchorage and the committee for its time.

3:30 PM 58 People

Knik Arm hearing 5-2-81
Wasilla

Dr. Jack - Kopetz

Edgar Johnson

Bob Risley - get on with it!
Ralph Foster - .. ..
Chuck Smith - .. ..
Bill Heim - Mt. McKinley Development
Jim Lafflin -
Bill Devine
Else O'Brian
John Rusgrow -
Paul Hubbart
Bob Risley - no give away money
Eleanor Mat-Sponges
John Mystrom -
Mary Sue Foster -
Don Snider

Knik Arm Crossing 5-2-81 Anchorage -
HB's 368/369

cable stayed bridge new concept
not considered '71

Keith Norberg -
Riley Small

Orsin Smith (Corps Engineers) March '66 study
Knik AT
6 mi creek.

Mr. Nickoli (Mathews) Chalistia - new study
To determine crossing employ 600 people
7% come from Palmer Wasilla area

Hank Seiler - Pres. Alaska Hoover craft
inexpensive - 10 Mph 7 mi Travel
operator requirements -
super 4 100 cars - 3/4 full
classification of hoover craft under USCG

Dorothy Jones - Mat-Su Borough support
M Rodell - chamber of Commerce of Anch
update of '72 survey
design cap (30 yrs concern)
Tidal power
economic access - ?

Gordd Hood - Terrystem 959 support jobs / travel / etc -
written testimony

Warren Mythel - Pennsylvania company
hoover craft

Jack Spaeth - Transportation for Alaska

Obie Wetts - Chief engineer of RR
in support -

Knik Arm Test. (Anch) 5/2/81

Peter Eckland - self desireable but not essential - incremental approach hoover craft approach - 5-10 yrs - Toll road - economic feasible -

Howard Long - (Material Science UofA) Pro -

Emil Pearshall - anti

hold off for more studies

Bob Penny - Chem. of Com -

Mike Calohan — hang in Limbo till population warrants the need -

Joyce Munsen R.D.C.

Marsh / Anchorage Mun. Assembly + Adm -

Robert Shenken -

Mrs. Green writter -

Dan Marvin self - professional student anti

Lydia Salcrig - Anch. Mun. Assembly but

Testifying as self

Harold
~~Bond~~ Pomeroy - self - pro -

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STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

DEPUTY COMMISSIONER – DESIGN AND CONSTRUCTION

POUCH Z
JUNEAU, ALASKA 99811

(907) 465-3900

200H-3076

Re: Knik Arm Crossing

The Honorable Joe Hayes
Alaska State House
of Representatives
Pouch V
Juneau, Alaska 99811

Dear Representative Hayes:

Attached is a memo and attachments from our Highway Design and Construction Division which gives the information you requested on the estimated costs of route location and design studies (not including final design plans or right-of-way acquisition) which was discussed in your letter from the Chamber of Commerce.

If you have any further questions, please let me know.

Sincerely,

R. D. Shumway, P.E.
Deputy Commissioner

Attachments

25A-T4LH

MEMORANDUM State of Alaska

TO: R. D. Shumway
Deputy Commissioner
Design and Construction

DATE: April 24, 1981

FILE NO: 240H-3076

TELEPHONE NO: (907) 364-2121 Ext. 111

FROM Charles S. Matlock
Director
Highway Design and Construction

SUBJECT: Knik Arm Crossing

As requested, following is our best estimate of the work and funding which would be necessary to carry this project to the design study stage. That is, basic location and configuration would be established and a reasonably good cost estimate prepared based on an assumed time-table of development. It would not include final roadway or structure design and would not cover any right-of-way costs other than for information needed for preliminary location studies.

Also, this is based on a location at or very near to Crossing IV in the original consultant's study. It would not include other studies (e.g. tidal hydroelectric generation, etc.) or other locations.

CSM/kgm

Attachments

cc: R. D. Redick
Don Halsted

Knik Arm Crossing

Estimated costs in 1981 dollars to develop an approximate location and basic design criteria and estimated right-of-way and construction cost for a Knik Arm Crossing and connections to the Parks and Glenn Highways. This does not include final design and plan preparation or right-of-way acquisition.

A.	Structure (Crossing IV)	
1.	Foundation exploration and soil testing	$ 1,005,000
2.	Model testing and/or test structure	1,275,000
3.	Evaluate span lengths, bridge types and update structure estimates. (Does not include final design.)	750,000
	Subtotal	$ 3,030,000
B.	Access Routes	
1.	South access to connect to Glenn Highway in the vicinity of Elmendorf Air Force Base: Location route studies, traffic, environmental and right-of-way studies and determination of design criteria, preliminary right-of-way and construction estimates.	$ 1,000,000
2.	North access route on new alignment to connect with the Parks Highway in the Wasilla to Willow area: Location route studies, traffic, environmental, and right-of-way studies and determination of design criteria, preliminary right-of-way and construction estimates.	1,500,000
	Subtotal	$ 2,500,000
	Total cost exclusive of final design and right-of-way acquisition	$ 5,530,000
	or, rounded,	$ 5,500,000
		(1981 Dollars)

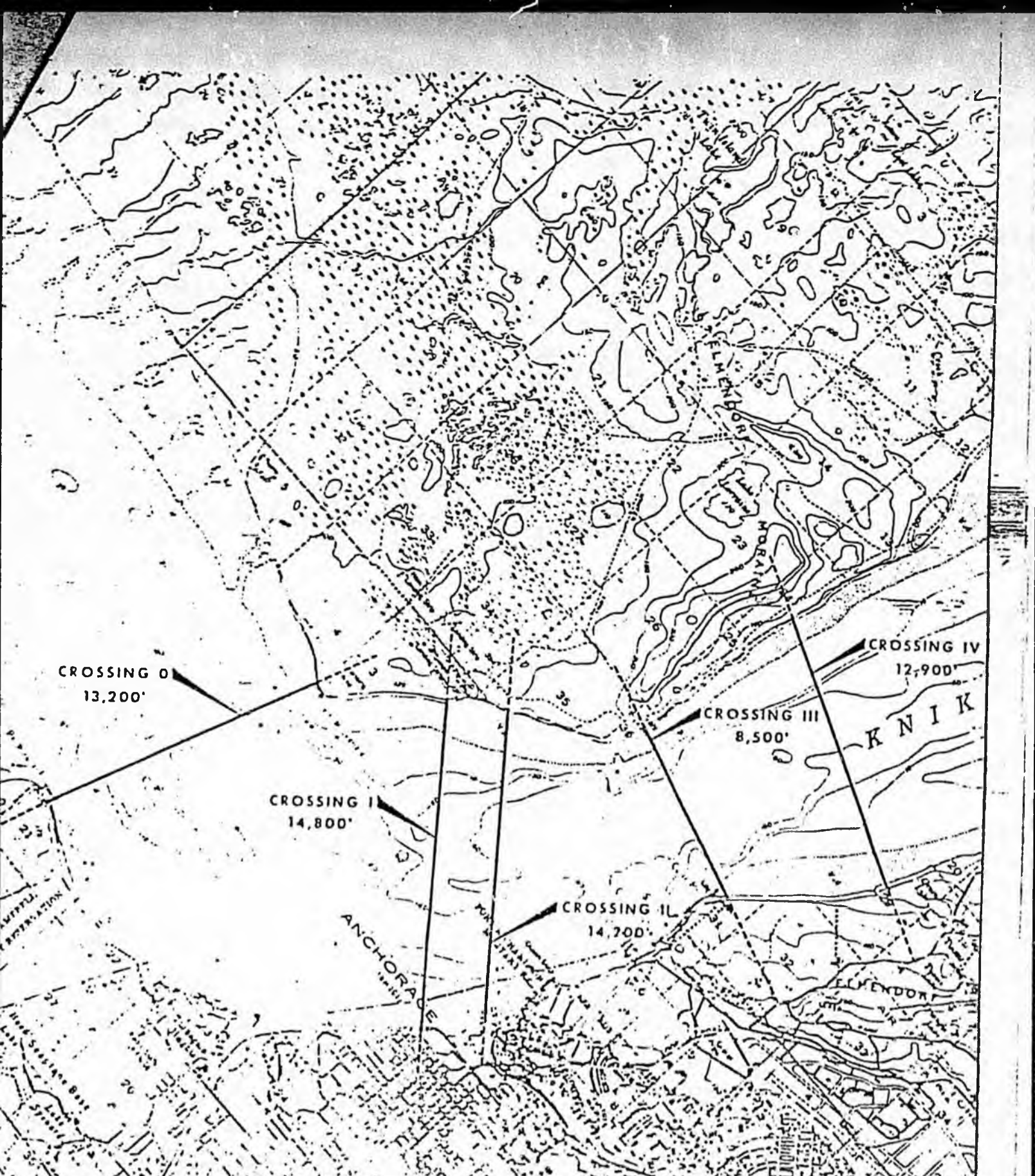

Figure II-1

TERNATIVE LOCATIONS OF CROSSING

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

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STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

DEPUTY COMMISSIONER – PLANNING AND RESEARCH

(907) 465-3900

POUCH Z
JUNEAU, ALASKA 99811

February 4, 1981

Honorable Joe Hayes
Alaska State Representative
Pouch V
Juneau, AK 99811

Dear Representative Hayes:

The following is in response to an information request by Red Swanson of your office concerning the road system associated with the proposed Knik Arm Crossing:

Access to Port McKenzie will require construction of 20 miles of highway, connecting to the Wasilla-Goose Bay route at Mile 19, as shown on the attached map. The port route terminates about 0.5 miles below the proposed Knik Crossing on Alternate IV.

At present, the Matanuska-Susitna Borough has the first 12 miles from Goose Bay Road under construction, using funds from state grants totalling $4.5 million. We anticipate that the first and second phase, to gravel surface, will be complete this summer.

The design is basically complete for the remaining 8 miles in phase III, to the port, and could be advertised if funds were made available. The cost is estimated at $7.2 million. The Department of Transportation and Public Facilities has recommended a following base and pavement project for FY 1983 for $4.0 million to bring the entire route up to paved primary standards.

The Agricultural Project Access Road System, comprised of 16 miles of 24 foot gravel road is complete except for finishing touches. The Matanuska-Susitna Borough also managed that $1.0 million project. As shown on the map, access by automobile is possible to the north-west corner of the Agriculture Project, and southerly past the middle entrance to the Agriculture Project.

CLH

To complete the connection to the Parks Highway near Houston, it would require 2.0 miles along the Tyonek Route and about 18 miles on the Little Susitna alignment. As a matter of interest, our application for the right-of-way was for a 600-foot wide corridor so that all modes of transportation, including the railroad, may be accommodated.

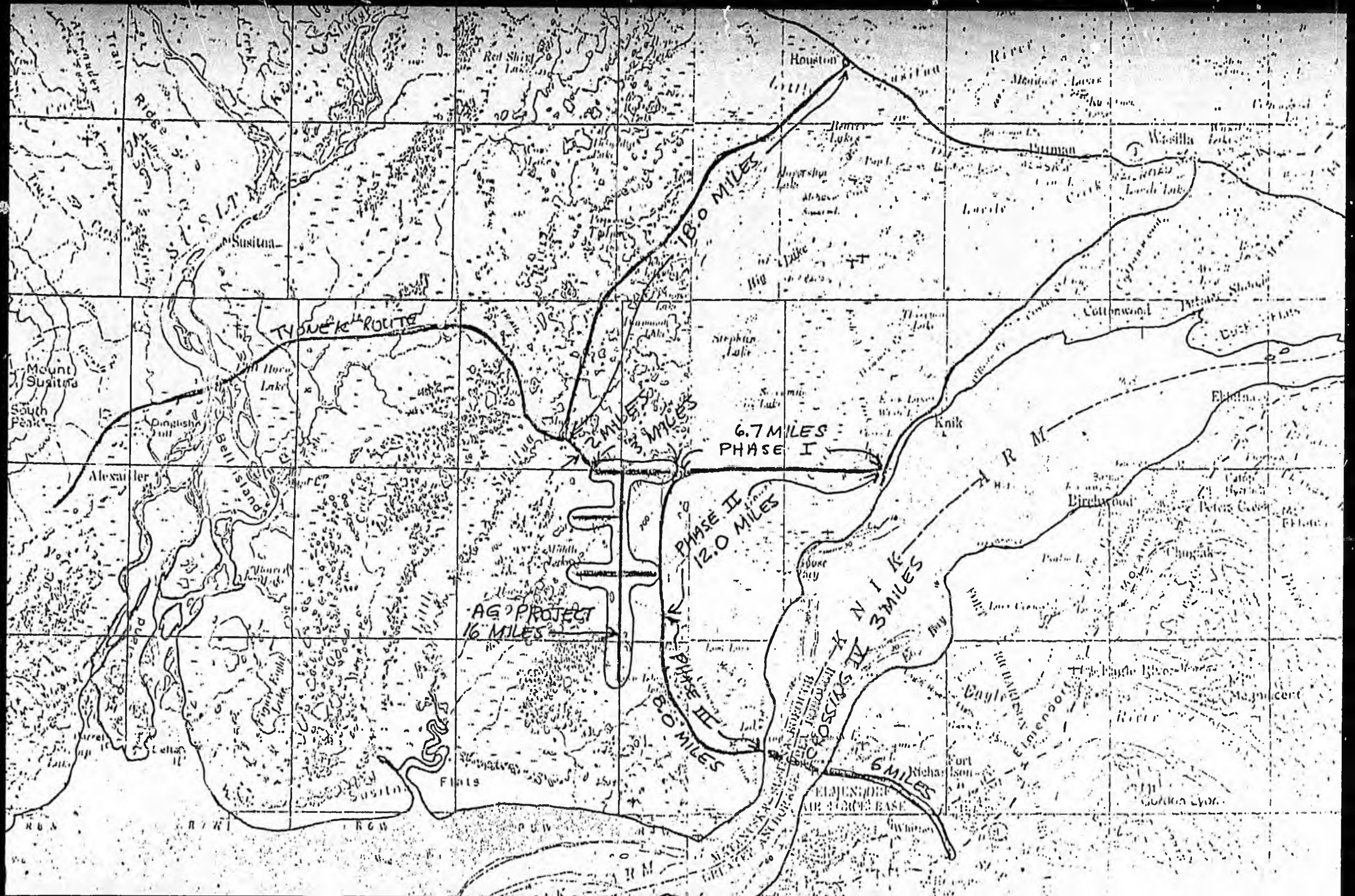
The Houston connection will take several years to develop because of the obvious problems associated with a new route. As of this date, we do not have an estimate of what road or railroad construction would cost.

If you have further questions, please feel free to contact my office or the office of Kit Duke, Director, Central Division Planning and Programming, Pouch 6900, Anchorage, AK 99502, telephone number 266-1462.

Sincerely,

John Bates
Deputy Commissioner

Attachment


TYONEK ROUTE
18.0 MILES
2 MILES
3 MILES
6.7 MILES
PHASE I
PHASE II
12.0 MILES
AG PROJECT
16 MILES
PHASE III
8.0 MILES
3 MILES
6 MILES
Houston
Susitna
Mount Susitna
South Peak
Alexander
Bell Island
Knik
Birchwood
Eagle River
Elmendorf
Fort Richardson
ELMENDORF AIR FORCE BASE
Wasilla
Palmer
Cottonwood
Flats

ROAD CONSTRUCTION BETWEEN bridge CROSSING AND parks HIGHWAY, MATANUSKA-SUSITNA Borough = 26 miles (PHASE III & 18 miles to HOUSTON ON ATTACHED MAP) AT A COST of $30 million.

SINCE PHASE III (8 miles) IS SIMILAR TERRAIN AS the 18 miles to HOUSTON, WE CAN USE the $7.2 million AS OUR cost estimate BASE for every 8 miles of construction NOTED ON the Feb 4 letter to Rep. HAYES. So the total cost of gravel top for 26 miles is $23,400,600. IT COSTS AN ADDITIONAL $4,264,000 for black topping 26 miles AT $164,000 per mile for a 34 ft width road. THIS ALLOWS for $2 million plus for contingencies when one subtracts total from the 30 million appropriation. ALSO, $1.5 million is estimated for land and right of way acquisition. Cost breakdown is as follows:

— ROAD CONSTRUCTION BETWEEN KNIK RIVER bridge CROSSING AND parks highway, MATANUSKA-SUSITNA Borough:

gravel top	= $23,400,000	$30 MILLION APP.
black top	= 4,264,000	- 27,964,000
[illegible]	= [illegible]	$2,036,000 CONTINGENCY
	$27,964,000 *	

LAND AND RIGHT OF WAY ACQUISITION = $1.5 million

[illegible]

[illegible]

* Figures supplied by Dept of D.O.T via Pat Stanton.

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

DEPUTY COMMISSIONER – DESIGN AND CONSTRUCTION

POUCH Z
JUNEAU, ALASKA 99811

(907) 465-3900

January 14, 1981

200H-

RE: Surface Transportation
Route Estimates
(1) Juneau-Haines-Skagway,
(2) Knik Arm Crossing,
(3) Railroad Route Study
Nenana to Nome

Representative Joe Hayes
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Attn: Red Swanson

In accordance with Mr. Red Swanson's request through the office of Representative Joe Hayes, I am attaching preliminary estimates for the following projects as prepared by our Highway Design & Construction Section.

(1) Juneau-Haines-Skagway Route

A highway conforming to minimum federal-aid standards connecting Juneau with Skagway with route as follows:

A highway with bridge and ferry crossings, connecting Juneau North of Berners Bay, and the West shore of Lynn Canal and Sullivan Island, with Haines and Skagway.

(2) Knik Arm Crossing, connecting Glenn Highway to Parks Highway.

(3) Railroad Route Study, Nenana to Kobuk to Nome with Spur to Allakaket to Bettles.

It must be emphasized that these estimates are very preliminary and must be expanded from the 1981 costs at approximately 10% per year depending on year of construction.

Sincerely,

R. D. Shumway, P.E.
Deputy Commissioner

Attachments

cc: Robert W. Ward
Commissioner, DOT/PF

John Bates
Deputy Commissioner
Planning & Programming, DOT/PF

Charles S. Matlock
Director
Highway Design & Construction, DOT/PF

RDS/sh

COST ESTIMATE

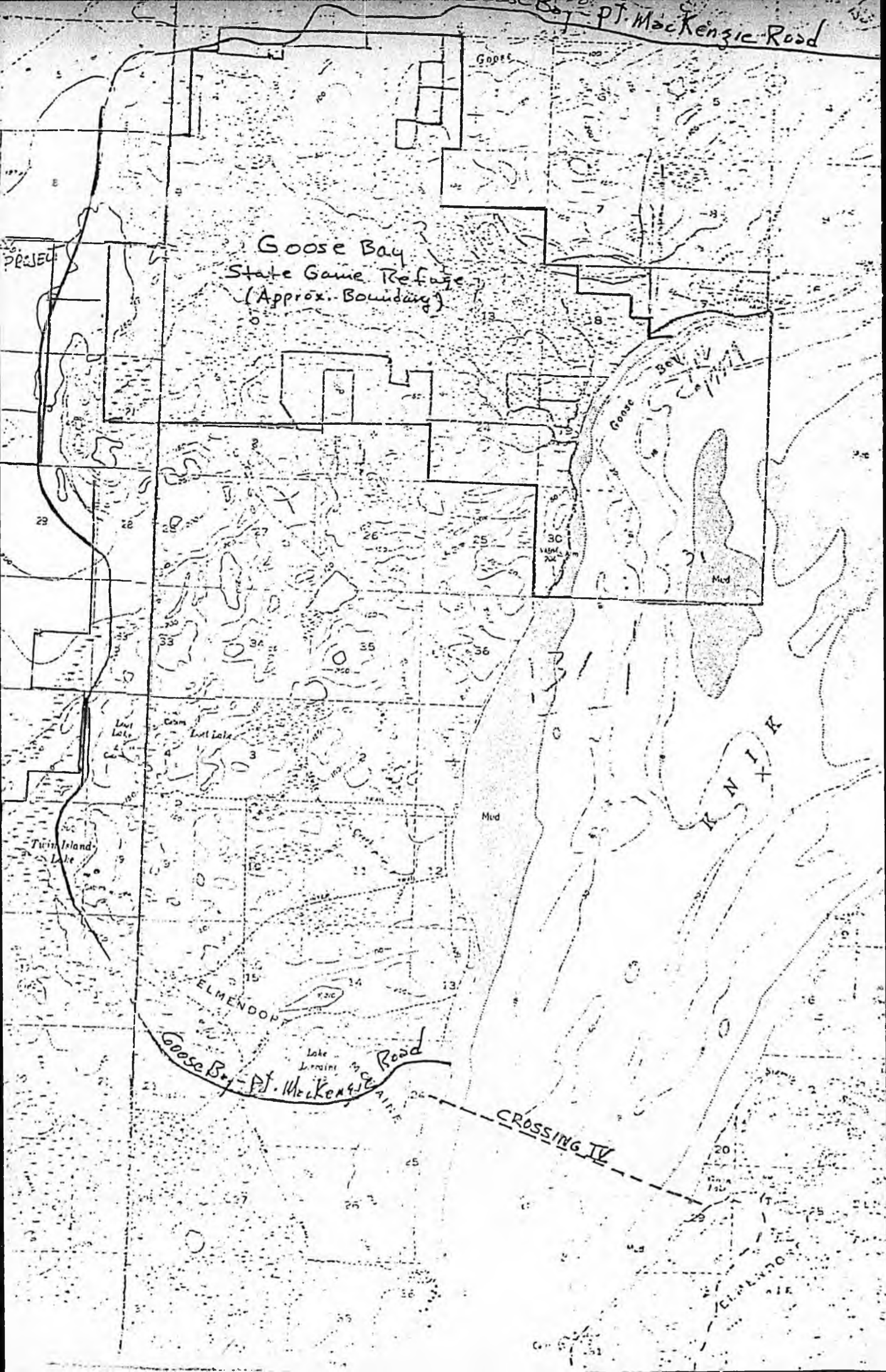
KNIK ARM CROSSING

	1971 Estimate		1981 Estimate	
	BRIDGE CROSSING IV	CAUSEWAY DAM CROSSING V	BRIDGE CROSSING IV	CAUSEWAY DAM CROSSING V
Total for Crossing	$114,938,200	$189,590,600	$281,598,600	$464,497,000
Contingencies and Variations (10%)	11,061,800	19,409,400	27,101,400	47,553,000
Estimated Construction Cost	* $126,000,000	* $209,000,000	308,700,000	512,050,000
Borings and Soil Testing	** 410,000	** 837,000	** 1,004,500	** 2,050,600
Hydrographic and Land Surveys (0.75%)	945,000	1,567,500	2,315,200	3,840,400
Model Testing and/or Test Structure	520,000	225,000	1,274,000	551,300
Engineering and Administration				
Basic Design (4.0%)	5,040,000	8,360,000	12,348,000	20,482,000
Construction Supervision (4.0%)	5,040,000	8,360,000	12,348,000	20,482,000
Administration (1.5%)	1,890,000	3,135,000	4,630,500	7,680,800
Estimated Crossing Cost	$140,000,000	$231,000,000	$343,000,000	$567,000,000
Estimated Approach Cost			88,000,000	84,000,000
Total Project Cost			$431,000,000	$651,000,000

(Based on January 1981 Dollars)

* Based on 1971 start and 1975 finish

** Includes Geophysical Surveys


Goose Bay - Pt. MacKenzie Road
Goose Bay
State Game Refuge
(Approx. Boundary)
Goose Bay
Mud
Mud
Twin Island Lake
Lost Lake
Lost Lake
ELMENDORF
Lake
Goose Bay - Pt. MacKenzie Road
CROSSING IV

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