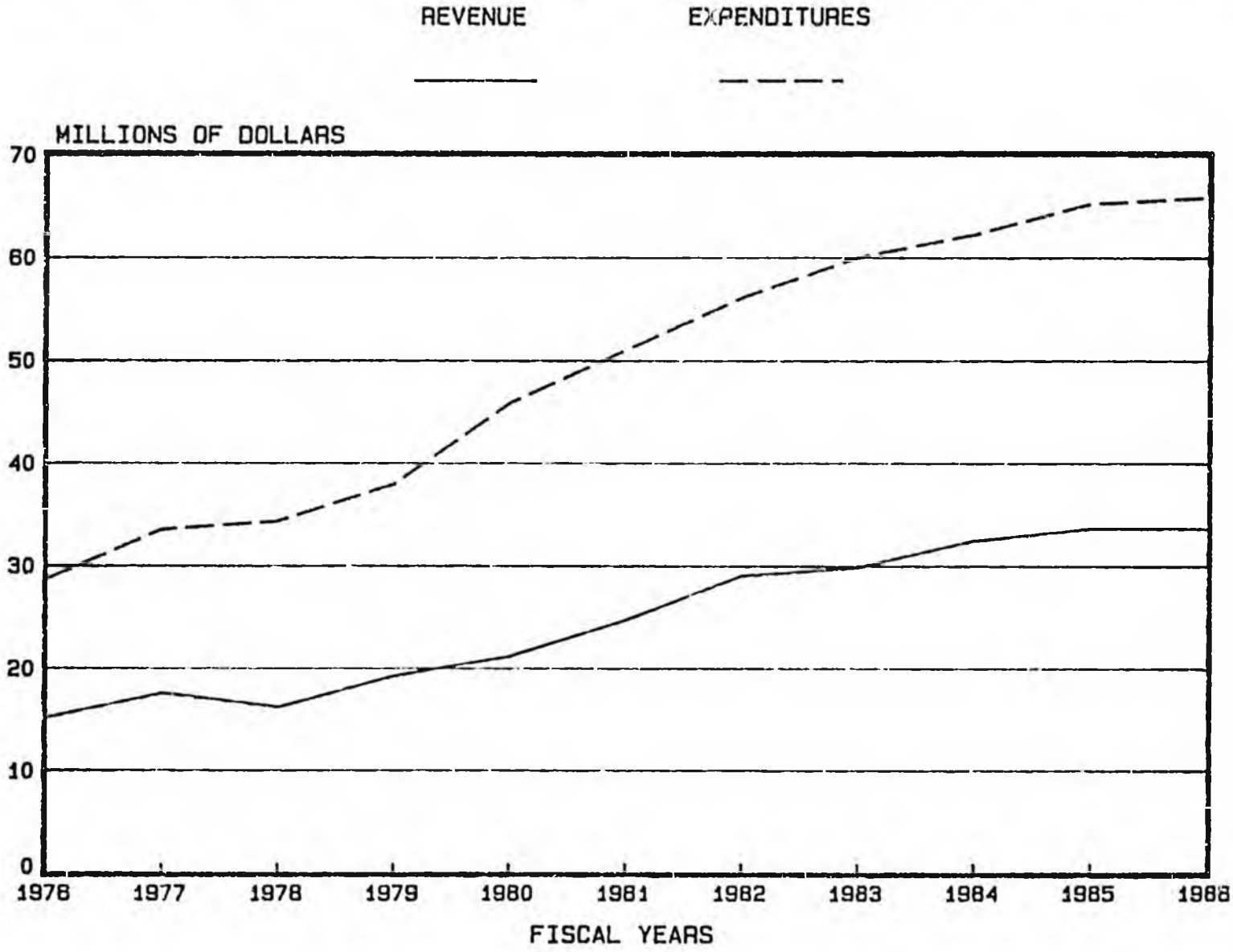
ALASKA LEGISLATURE COMMITTEE FILES 1987 - 1988 8672
5136 HTRA COMM. MTGS: CAPITAL PROJECTS CLEANUP

MARINE HIGHWAY SYSTEM FINANCIAL TRENDS



Fares Cover Over Half AMHS Costs. As shown above, passenger and vehicle fares and other en route receipts met about 55 percent of all costs in fiscal year 1986. (FY 1987 expenditures were $65 million while revenues were $33.8 million.) And this relationship between revenues and expenditures has remained approximately steady for the past 12 fiscal years.

Operations Are The Major Costs. As shown in the 1987 budget charts on the right, the costs of ship operations including necessary overhauls and improvements are 90.6 percent ($56.4 million) of all costs. The manning of shore facilitiesand overall administration costs, including the operation of the reservation system, is 9.4 percent ($7.0 million) of budgeted costs.

Personnel Costs Are Almost Two Thirds of All Costs. The 1987 budgeted complement included 879 persons, (705 permanent, 174 seasonal or part-time). To operate the ships safely and efficiently, to maintain the equipment and to serve the personal needs of passengers, AMHS personnel costs are almost two thirds (64.8 percent) of total costs.

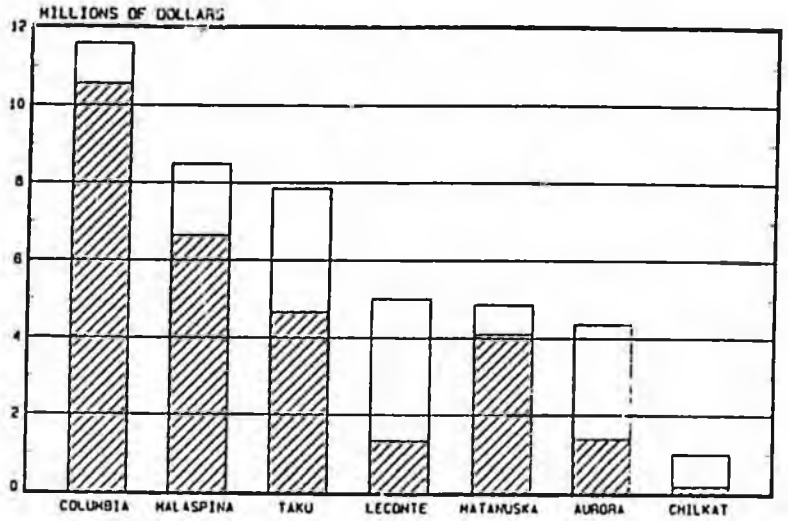
Morale Good. Despite the extensive travel, crew morale seems to be good. Management in recent years has made progress in attending to member concerns and in giving crew members a greater voice in management decisions. Periodic Director and crew meetings have proved to be successful.

Need To Budget For Ship Replacements. The ferries range in age from 10 to 24 years with the average being 18 years old. With ship replacement costs ranging from $10 million for the smaller ships to $100 million for the larger ships, it would be prudent for Alaskans to begin setting aside funds annually to meet replacement needs. As is the case for Alaska's International Airport capital assets, it is suggested that future needs be accounted for in the annual budget process. Passenger and vehicle revenue is the suggested source of depreciation funds.

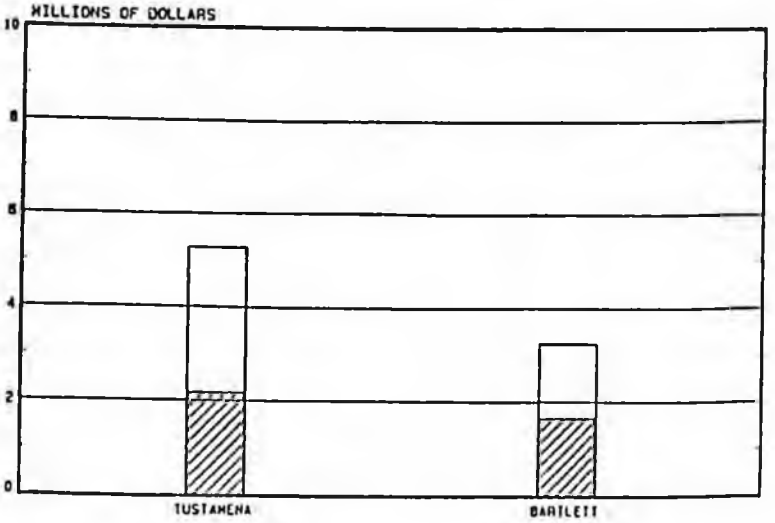
Need For Secure Funding Sources. As is the case for highway planning, ADOT&PF officials need the assurance of secure funds over a three to five year period in order to plan the most effective and efficient program of AMHS operations, maintenance and improvements. Passenger and vehicle revenue should form the base of such funds with set annual supplements from the Legislature and the communities served.

SHIP-BY-SHIP ANALYSIS

SOUTH EAST SYSTEM



SOUTH WEST SYSTEM



AIRPORTS

International

Central Region
- Anchorage International

Northern Region
- Fairbanks International

Regional Center

Central Region
- Bethel
- Cold Bay
- Dillingham
- Kodiak

Northern Region
- Barrow
- Galena
- Kotzebue
- Nome

Southeastern Region
- Juneau
- Ketchikan

District

Central Region
- Aniak
- Cordova Mile 13
- Homer
- Kenai Municipal
- King Salmon
- McGrath
- St. Marys
- Unalaska/Dutch Harbor

Northern Region
- Deadhorse
- Fort Yukon
- Gulkana
- Unalakleet

Southeastern Region
- Petersburg
- Sitka
- Wrangell

Transport

Central Region
- Flat
- Iliamna
- Merrill Field
- Platinum
- Sand Point

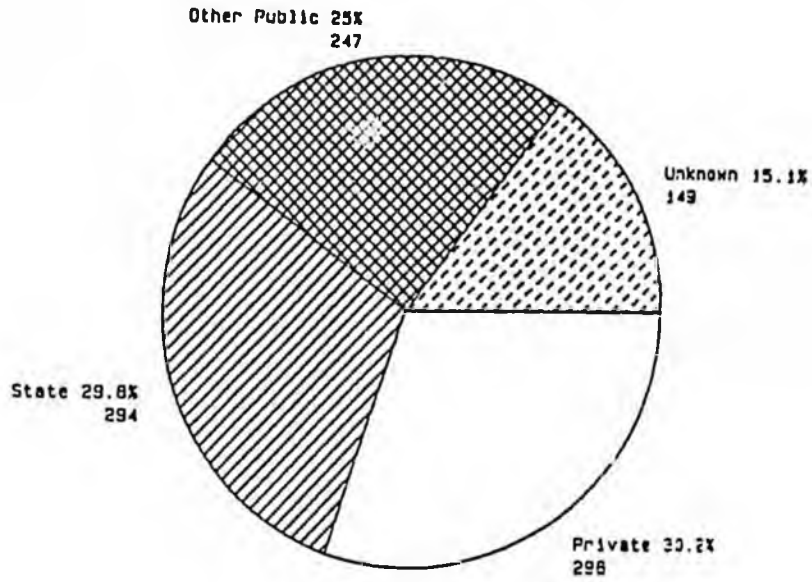
Northern Region
- Bettles
- Dahl Creek
- Prudhoe Bay
- Tok Junction
- Valdez

Southeastern Region
- Klawock
- Yakutat

There are 998 airports and bush landing strips in Alaska with 215 out of 294 state-owned facilities actually maintained by the ADOT&PF. The Anchorage and Fairbanks airports are included in the Alaska International Airport System in that they serve commercial aircraft of many nationalities. Due to their complexity, the International Airports are managed by a special division of the ADOT&PF.

AIRPORT OWNERSHIP

Total: 998

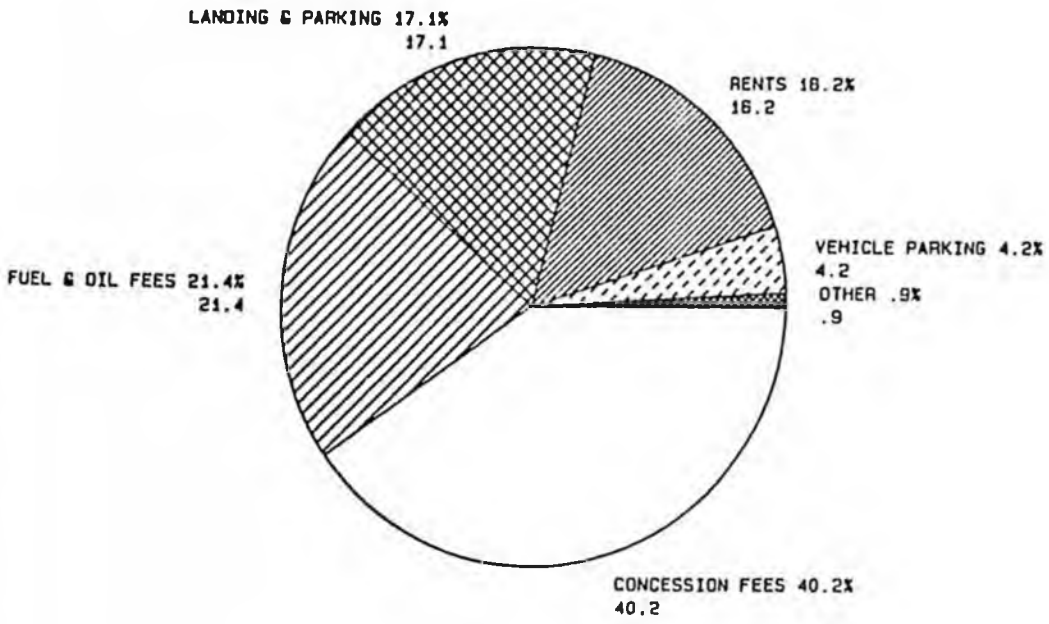


STATE AIRPORTS

FUNCTIONAL CLASSIFICATION	CENTRAL REGION	NORTHERN REGION	SOUTHEAST REGION	TOTAL
INTERNATIONAL	1	1	0	2
REGIONAL CENTER	4	4	1	9
DISTRICT	7	4	3	14
TRANSPORT	4	5	2	11
COMMUNITY	83	46	17	146
LOCAL	39	50	23	112
TOTAL:	138	110	46	294

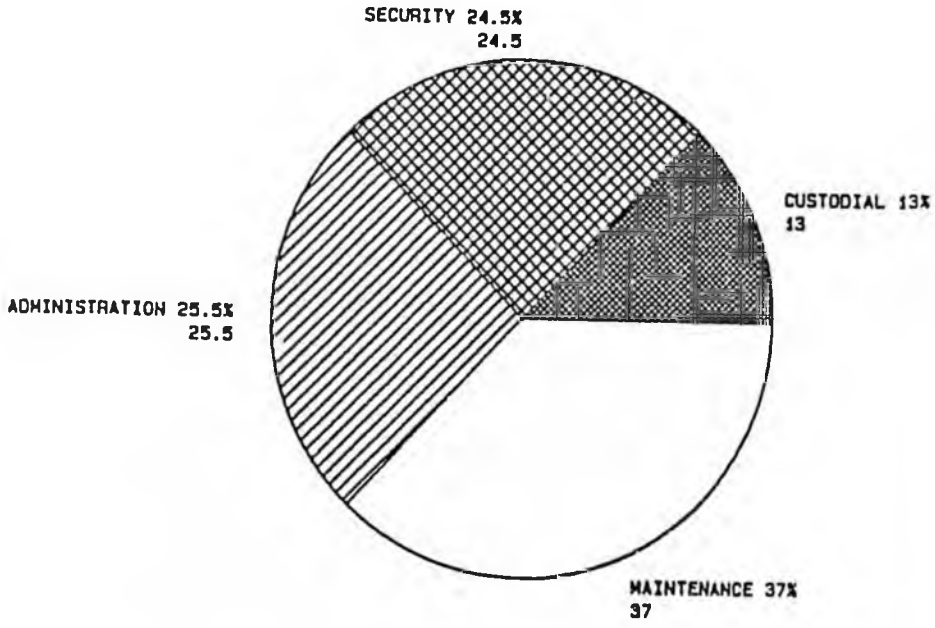
INTERNATIONAL AIRPORTS

1986 REVENUE



TOTAL: $47.9 Million

1986 OPERATING EXPENSES



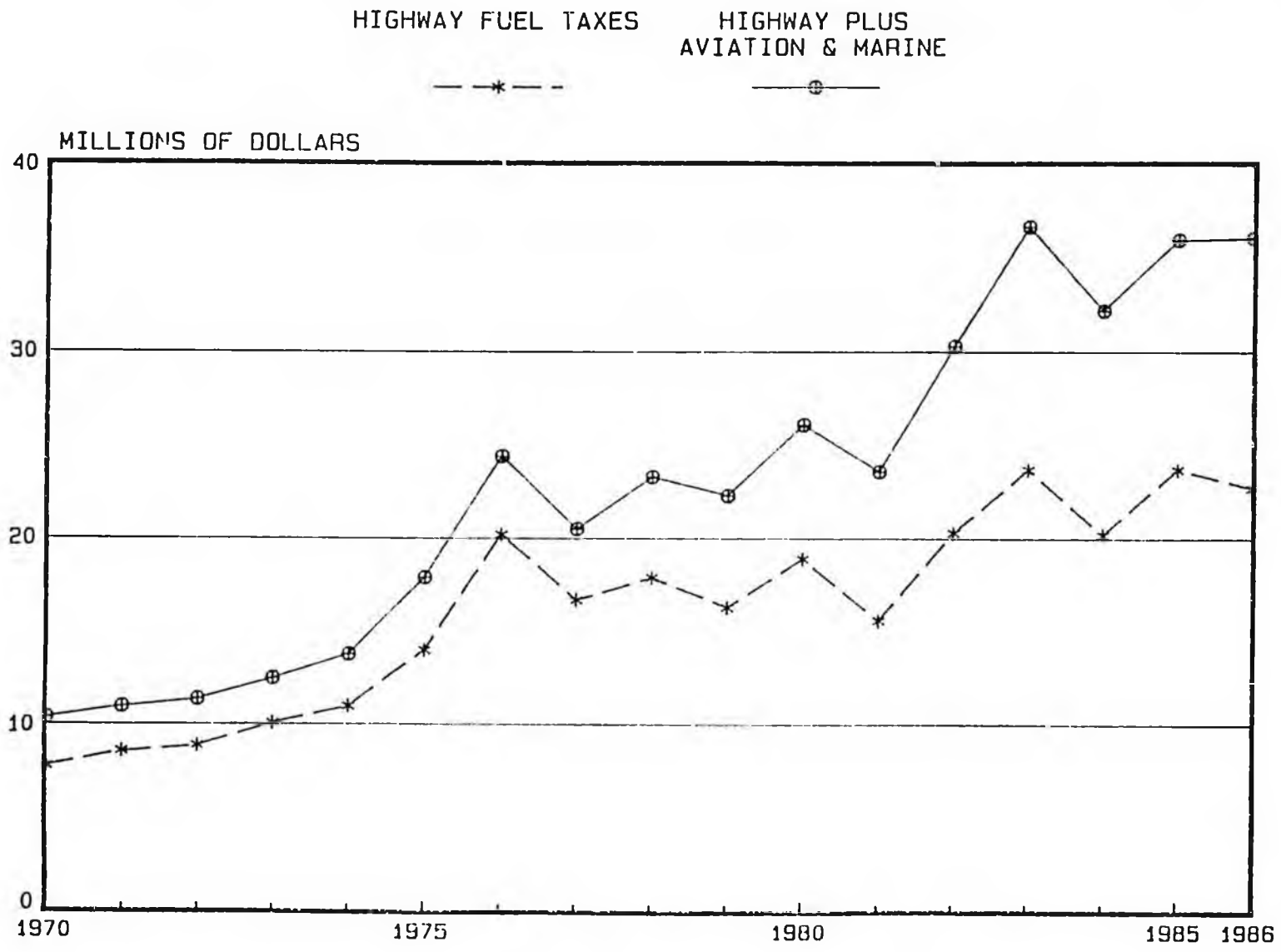
TOTAL: $25.5 Million

Because of its fast growth, extensive capital needs, self-sufficient nature and the need to guarantee the amortization of Alaska International Airport System bonds, all operating revenue generated and all expenditures are accounted for in a special Enterprise Fund. As indicated, revenues in fiscal year 1986 amounted to $47.9 million up from $42.5 million in 1985. And despite Alaska's economic downturn, revenues continued upward in 1987 to $48.9 million. As of June 30, 1986 the combined value of the two airports stood at $293 million up from $251 million a year earlier.

Bond Debt Up. At the close of fiscal year 1988 bonded indebtedness stood at $41.9 million. An additional $38.0 million of revenue bonds were issued in November 1986 for construction of the parking garage at the Anchorage International Airport.

Improvements. In fiscal year 1986 the $22.4 million in operating income together with $2.0 million in federal grants and net interest income of $0.9 million were used to make bond principal payments ($2.0 million), to increase restricted assets ($0.1 million), to increase working capital ($3.8 million) and to upgrade airport property, plant and equipment ($19.3 million).

MOTOR FUEL TAX TRENDS



Secure Funding Source Needed. One of the problems of providing a secure, predictable source of funds for Alaska's State Highway Program is that the highway user tax base does not provide enough revenue to support highway system maintenance and improvement needs. However for most other states of the nation the motor fuel taxes, the auto and truck registration fees and assorted other taxes and fees levied on motor vehicles and their use do provide the necessary funds to support the State Highway Program. The success of the nation's highway programs is largely attributable to the fact that secure and predictable highway user taxes have met the capital, operating and maintenance needs.

Low Highway User Taxes And Fees. The reason that Alaska's highway user taxes and fees do not meet highway program needs is that they are low in comparison with other states.

For heavy trucks, Alaska ranks lowest in the nation with a tax load of $1,598 per year or 2.0 cents per vehicle-mile of heavy truck travel. This compares to Washington which collects over three times as much ($4,990 per truck, and 6.2 cents per vehicle-mile of heavy truck travel). The highest taxer of heavy trucks is Arizona which collects $11,012 per truck or 13.8 cents per vehicle-mile of heavy truck travel.

For automobiles, Alaska ranks 37th among the states with a $122 tax per average automobile or 1.0 cents per vehicle-mile of travel. The highest in the nation is Rhode Island with an annual tax load of $731 per automobile or 5.9 cents per vehicle-mile of automobile travel (six times the Alaska load). The lowest is New York at $73 per year and 0.6 cents per vehicle-mile of travel. Washington's annual tax on automobiles is $310 per vehicle or 2.5 cents per vehicle-mile of auto travel.

The above facts are based on a 1987 U. S. Department of Transportation report, "Road User and Property Taxes". The taxes and fees were those in effect on January 1, 1987. Included are all highway user taxes and, where applicable, state personal property taxes. The study compared annual taxes on a 80,000 lb. gross vehicle weight truck/trailer combination driven 80,000 miles per year and a 4,200 lb. gross vehicle weight automobile driven 12,500 per year.

Raising Motor Fuel Taxes. Alaska's motor fuel tax, which has not changed since 1961, is eight cents per gallon and the revenue trend from the tax is as shown in the chart.

A comparison of the 1986 revenues with 1988 State Highway Program receipts (page I-5) shows a wide disparity. A ninefold increase in the tax on fuel used in highway travel would have been required to raise the $200.5 million per year of state funds, including debt service, motor vehicle law enforcement and highway safety programs.. Over a fivefold increase in total motor fuel tax receipts (highway plus aviation and marine fuel taxes) would have been required to raise the $200.5 million of state funds used to support the 1988 State Highway Program

However as shown on page III- 11, a doubling of the total motor fuel tax would meet the FY 1988 budget for highway and airport maintenance. As has been the experience of state highway program managers in other states, the earmarking of highway user taxes and fees (or other taxes, such as mineral severance taxes) for the state highway program or distinct parts of the program, such as highway maintenance, enables program managers to better plan for efficient and effective use of the funds.

Maintaining Balance Between Competitors. The Alaska Railroad Corporation and private truckers compete for freight movement in some important corridors. And it is important to maintain the existing balance in trucking and railroad costs when enacting highway finance initiatives. Higher highway user taxes would immediately change costs in the trucking industry to the railroads advantage -- unless the railroads costs were raised concurrently.

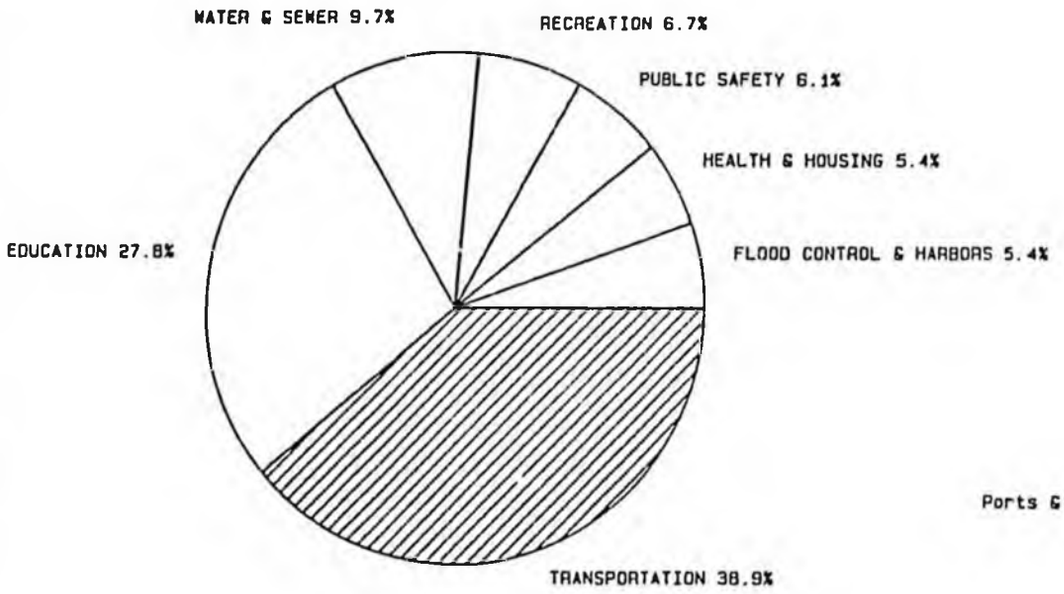
Two Possibilities That Need Further Study. One solution is enactment of legislation requiring the Alaska Railroad Corporation to pay motor fuel taxes. The Railroad is currently exempt from such taxes.

A second solution is to establish a regulation requiring the Alaska Railroad Corporation to pay monthly, quarterly or annual fees to the Alaska Treasurer in lieu of the taxes.

In either case it is suggested that at least half of the added railroad payments be used for railroad/highway grade separations. This would expand the program of constructing grade separations thereby enhancing safety and the efficiency of both rail and truck freight operations.

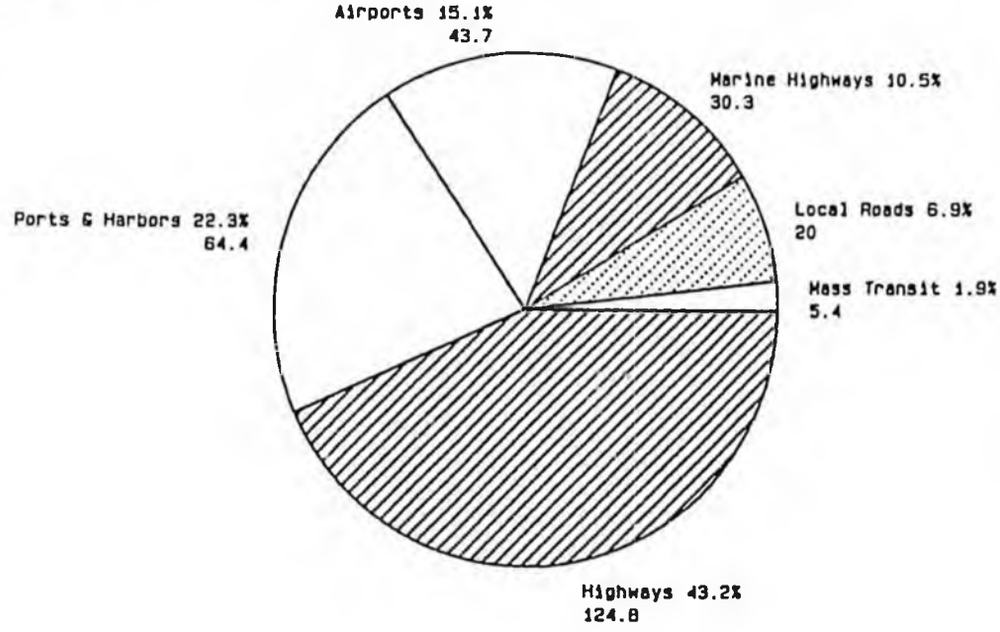
STATE BONDS

TOTAL SINCE STATEHOOD



TOTAL: $1.4 BILLION AS OF 6/30/84

TRANSPORTATION DEBT



TOTAL: $288.6 MILLION AS OF 12/31/86

Transportation Debt Being Rapidly Amortized. As shown in the right hand pie chart, the state transportation debt stood at $288.6 million as of December 31, 1986. This is down by $47.6 million from the close of the previous calendar year and $95.5 million down from two years previous. At that rate of amortization, state transportation bonds will be eliminated in six years.

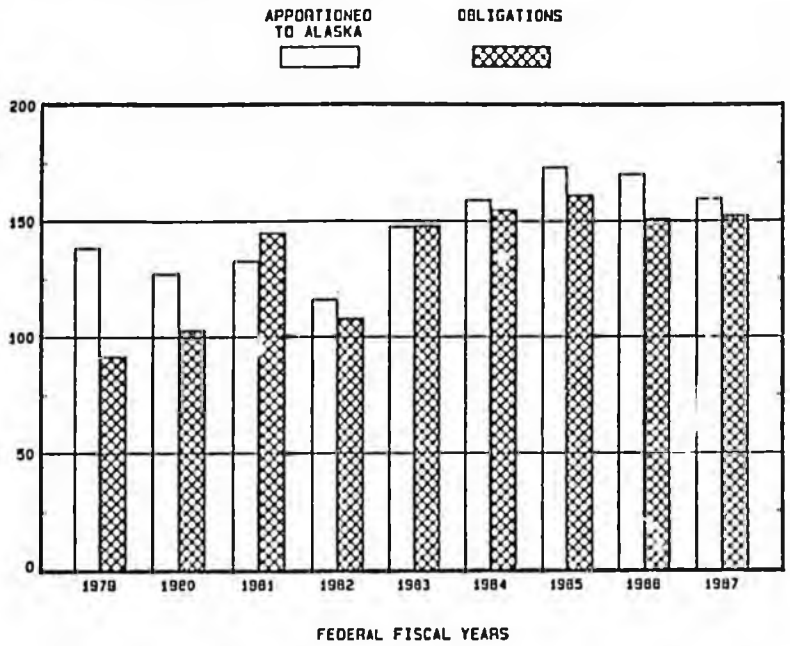
At $155.1 million, the debt for land highways and the Marine Highway System represented 53.7 percent of the December 31, 1985, transportation debt. (The revenue bonds sold by the Alaska International airport System are not included in the charts.)

Some states rely extensively on the bond market for their state highway capital improvement programs. As a nation, total state highway debt was $20 billion as of December 31, 1985,the latest year in which debt summary information is available.

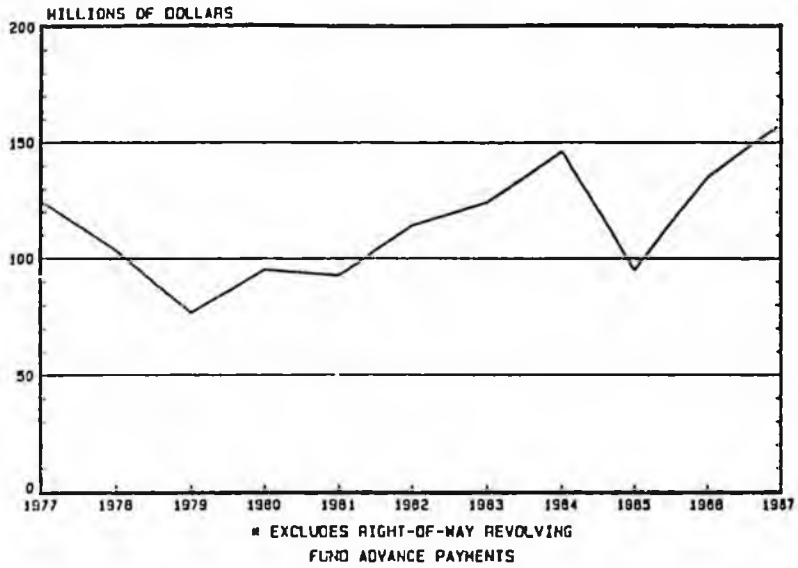
Alaska leads The Way in Public/Private Cooperation. Alaska has three outstanding examples of private funding for highway construction – 1) the 416 mile Dalton Highway built by oil interests; 2) the 50 miles of Red Dog Mine Access Road being financed by the Alaska Industrial Development Authority which will be reimbursed by private mining interests; and 3) the $1.3 million contribution by a trucking firm for the upgrading of the Klondike Highway to allow heavy-laden ore trucks to gain access from Canadian mines to the port at Skagway.

Military Involvement Also Important. The construction of the Alaska Highway in both Canada and Alaska by the U.S. Army during the early part of World War II was also a tremendous contribution to Alaska highway development.

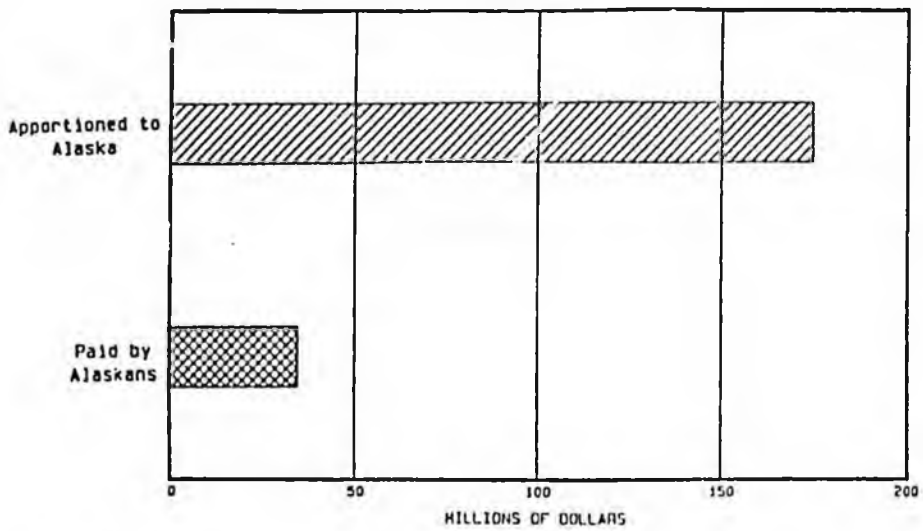
FEDERAL AID HIGHWAY PROGRAM



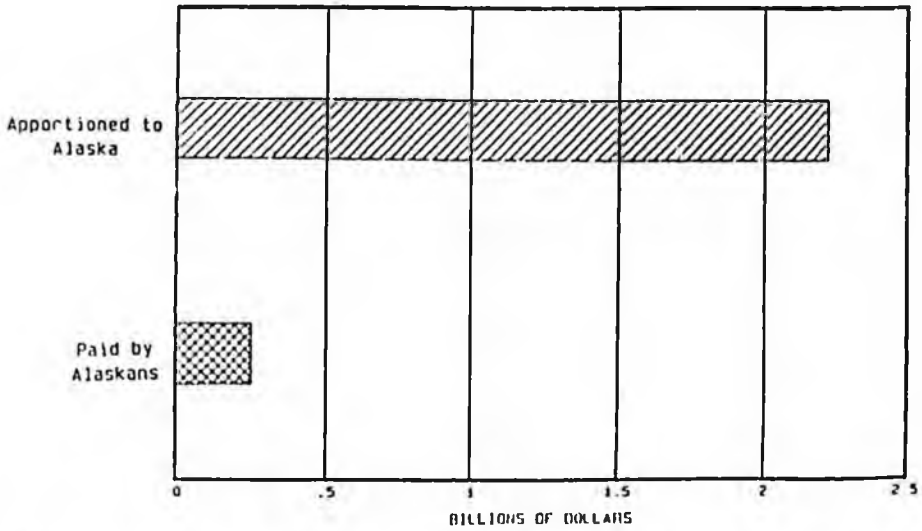
REIMBURSEMENTS



FY 1985



SINCE 1956



Federal Aid Highway Program Critically Important To Alaska. The chart on the upper left indicates the trends in the amounts of federal funds:

1) apportioned to Alaska, and 2) made available after budget limitations were applied by lawmakers and actually used (obligated for subsequent spending on Alaska road and bridge improvements). Federal aid highway funds are restricted by federal mandate for highway, ferry and ferry terminal improvements as well as planning, research and safety activities. Federal funds cannot be directed to highway maintenance activities.

1987 A Record. The upper right chart tracks actual payments to Alaska from 1977 to 1987 (federal fiscal years). Note that 1987 was Alaska's record-high year for Federal Aid Highway Program receipts. The federal funds stem largely from a nine cents per gallon tax on gasoline, a three cents per gallon tax on gasohol, a 16 cents per gallon tax on diesel and other special motor fuels, as well as a 12 percent sales tax on heavy truck and truck trailer purchases, a tax on truck tire sales and an annual use tax on heavy trucks. The federal highway user taxes are accounted for in the U.S. Treasury in a Highway Trust Fund and apportioned to each state for the modernization of major highway systems and bridges.

Federal Budget Controls Limit Spending. For the October 1, 1985 to September 30, 1986 federal fiscal year, Alaska was apportioned $165 million of authorized funds, but due to federal obligational control limitations only $151 million of the apportioned funds were actually available to Alaska. In other words $14 ($9 federal and $1 state) million worth of highway improvement projects could not be started because the obligation ceiling restricted the use of authorized and available Highway Trust Fund money.

Slowdown In Highway Improvements. The situation is far worse for fiscal year 1988 because it is controlled by the authorization levels mandated by the Surface Transportation and Uniform Relocation Assistance Act of 1987. This act reduced annual authorization levels over the 1988 to 1991 period. Furthermore, obligational control further limits fiscal year 1988 funds to about $130 million. Unless obligational controls are lifted, Alaska's highway improvement program will be sharply lower than the 1983 to 1987 experience.

Federal Incentives For Road And Bridge Modernization. The portion of the cost borne by federal highway user taxes, depends on the Federal Aid Highway System -- Interstate, Primary, Secondary, Urban classification of the road to be improved. Federal funds will participate in 94.7 percent of the cost of Interstate Highway System original construction or rehabilitation, 91.4 percent of the cost of improving the other Systems and 80 percent of bridge replacement or rehabilitation costs. Overall, every dollar of Alaska funds that are made available for highway and bridge improvements is matched by nine dollars of Federal Highway Program funds -- up to the limit of federal obligation authority. This is a great incentive for Alaska highway and bridge modernization.

Alaska Benefits The Most From The Federal Aid Highway Program. The bottom left chart indicates the amount of Federal Aid Highway Program funds apportioned to Alaska in 1985, as well as the amount of federal highway user taxes paid by Alaskans in that year. The bottom right chart summarizes both Alaska's apportionment of Federal Aid Highway Program funds and Alaskans payment of federal highway user taxes over the 1956 to 1985 period. At five and one half to one for FY 1985 and nine to one overall, Alaska leads all other states in the ratio of apportionments to taxes paid. This is due primarily to the fact that state apportionments of federal funds are related to the extent of land area in each state. Alaska, having the largest proportion of land of any state in the nation, receives disproportionally large shares of Federal Aid Highway Program funds.

Non-monetary Benefits. Besides financial assistance, there are other benefits that come with a strong Federal Aid Highway Program. First, it is required that national design standards be used and this promotes national uniformity as well as the safest possible highway environment. Second, federal officials on the scene in Alaska (the Juneau office of the Federal Highway Administration has a 12-person professional staff) provide both an oversight function as well as technical assistance to ADOT&PF officials. Lastly, the long standing spirit of cooperation that has prevailed between federal and ADOT&PF officials has been a stabilizing influence in Alaska's program of highway improvement.

CHAPTER II

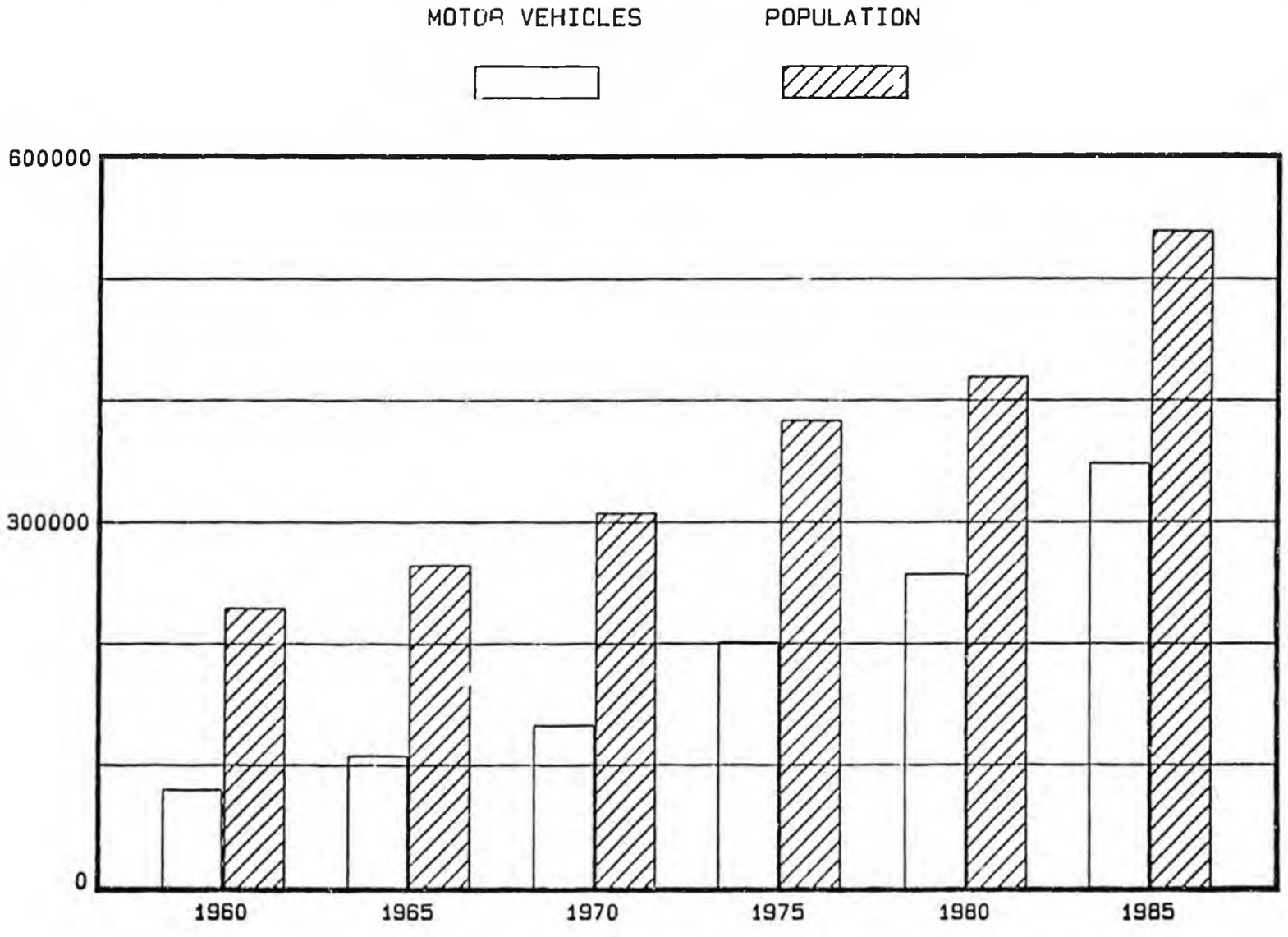
HIGHWAY PERFORMANCE AND CONDITION

CHAPTER II

Highway Performance and Conditions

Population, Registered Motor Vehicles, Motor Vehicle Travel and Traffic Safety Trends are Analyzed. The Status of Alaska's Highways and Bridges as well as the Means for Measuring the Status are Reviewed. The Trends in Passengers and Vehicles Carried by the Marine Highway System are Presented along with the Trend in Airport Use. Where applicable, Comparisons are made with National Averages.

POPULATION AND MOTOR VEHICLE TRENDS

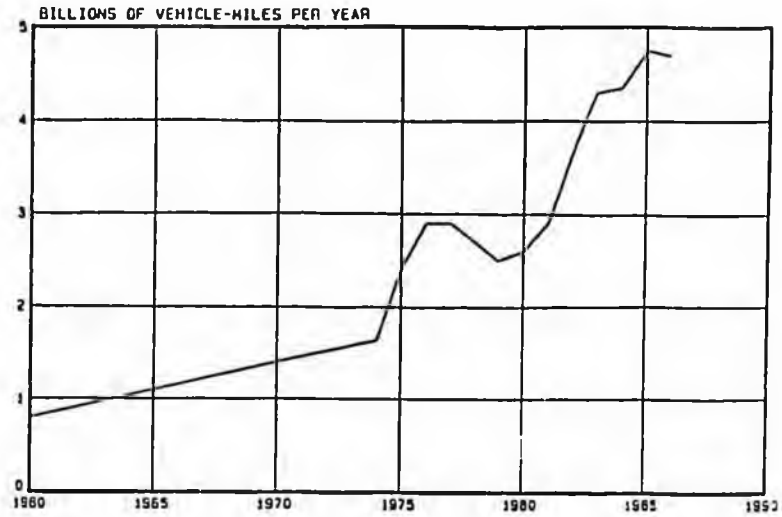


National Comparison. For the last 25 years, the total United States population increased by 30 percent while registered motor vehicles doubled and travel tripled. Significant as these statistics are, Alaska's growth far surpasses the national averages. Between 1960 and 1985 Alaska's population doubled while the number of registered motor vehicles quadrupled and the vehicle miles of motor vehicle travel increased sixfold.

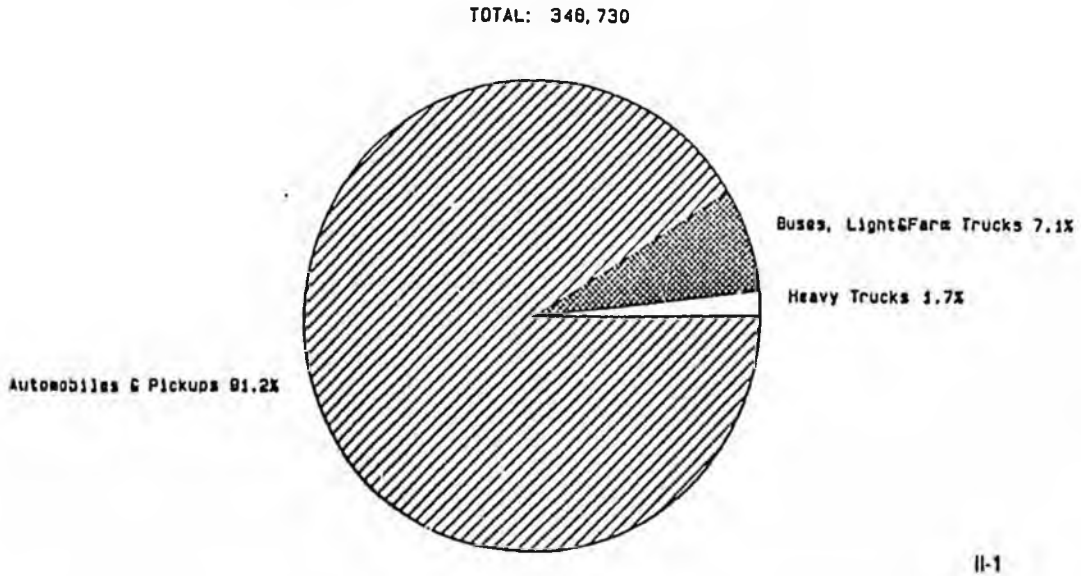
Motor Vehicles Catching Up With People. Like the rest of the nation, the number of registered motor vehicles is approaching unity with population. In 1960 there was one vehicle for every three people in Alaska. Now there are two vehicles for every three Alaska citizens.

Anchorage Important. Just under half (47 percent) of Alaska's citizens live in Anchorage and almost a third (31 percent) of the motor vehicle travel is on Anchorage urbanized area streets and state highways.

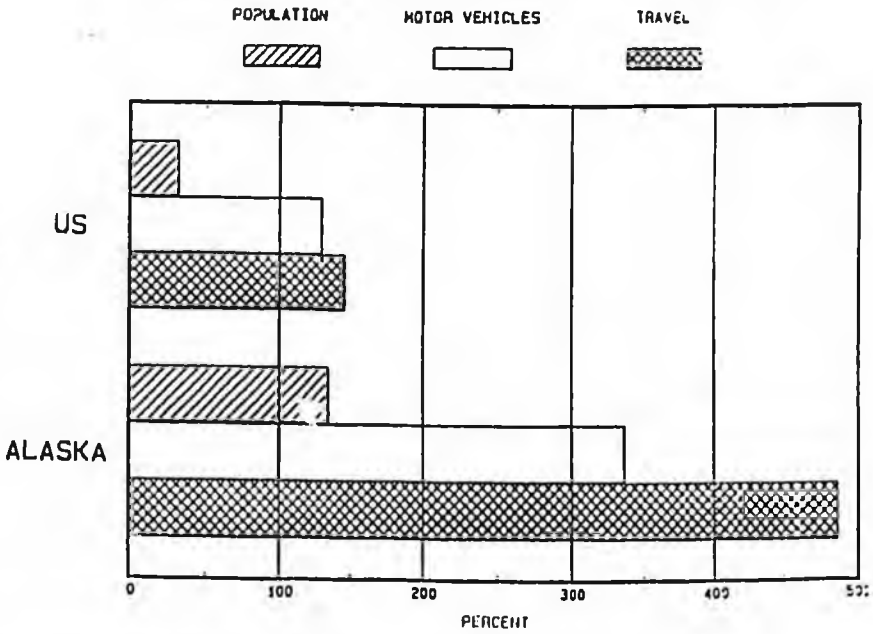
MOTOR VEHICLE TRAVEL TREND



1985 REGISTERED MOTOR VEHICLES

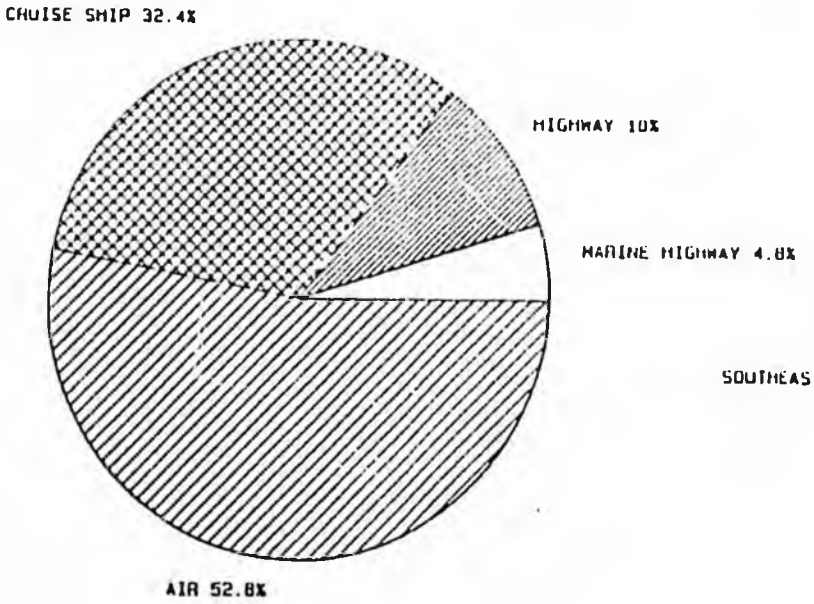


1960-1985 PERCENT INCREASES



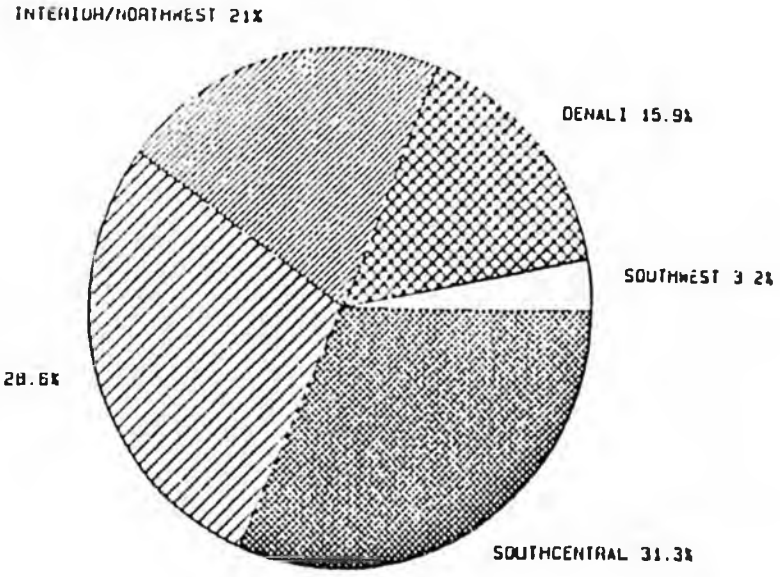
1985 VISITORS TO ALASKA

MODE OF TRANSPORTATION



431,200 ENTERING VISITORS
SUMMER 1985

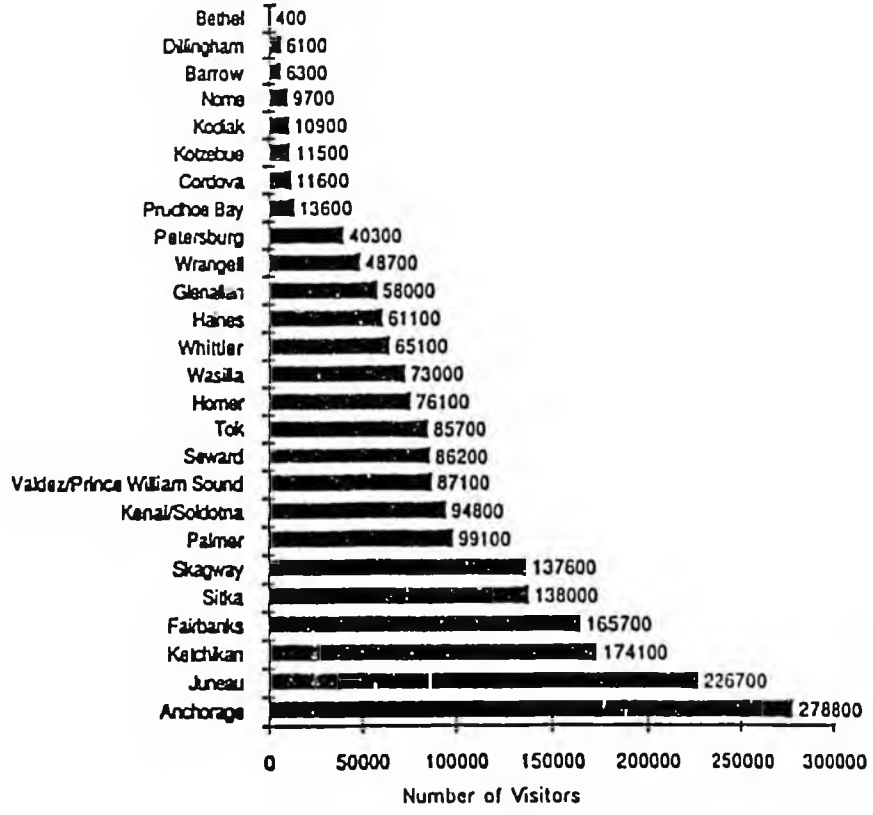
REGION VISITED



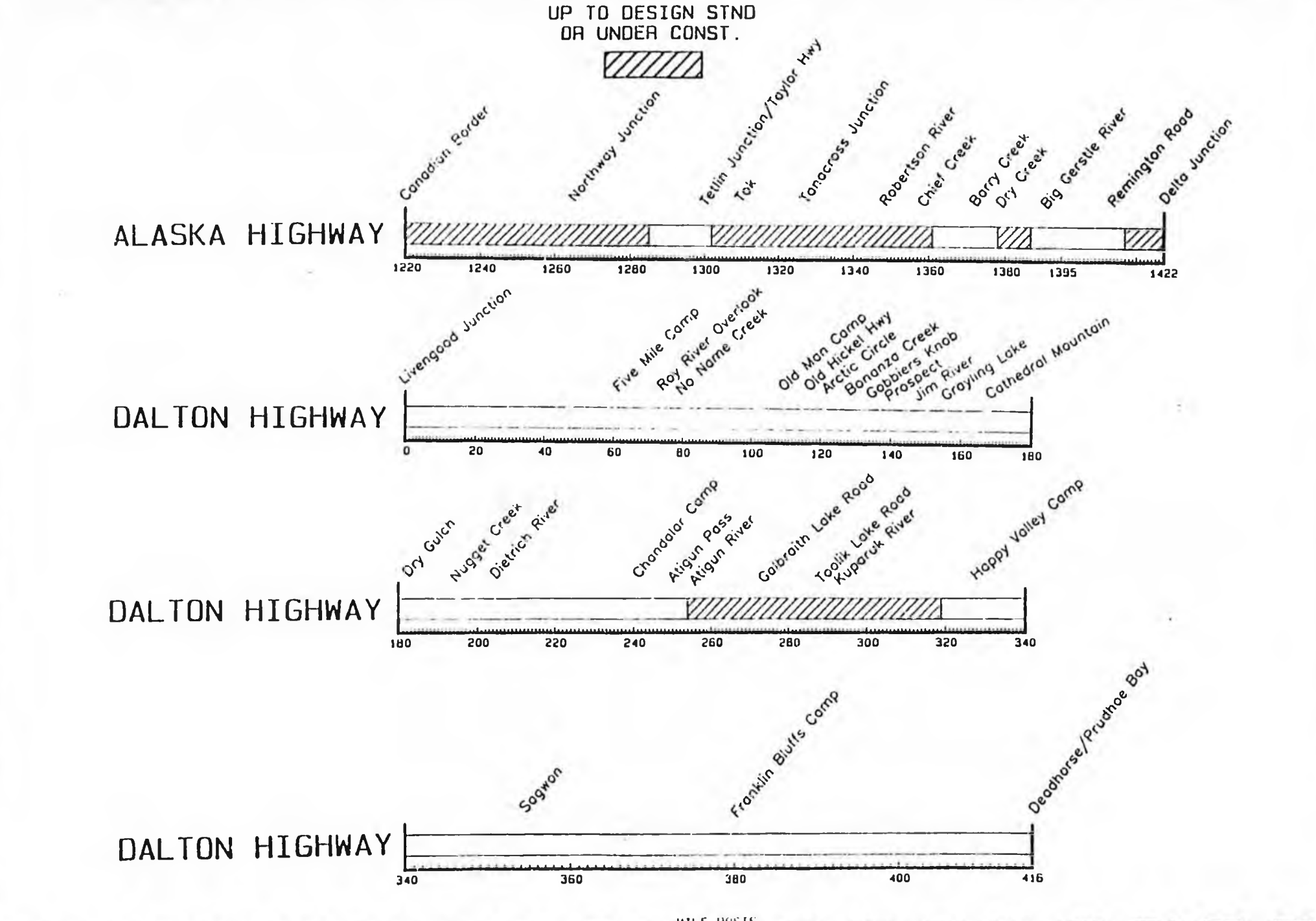
TOTAL VISITS: 904,600
SUMMER 1985

While much of Alaska's future is difficult to predict because of its heavy ties to resource development, Alaska's picturesque scenery and exceptional hunting, fishing and camping opportunities are certain to continue attracting national and international visitors. A 1985 survey of Alaska's visitors shows the significance of the travel modes and the popularity of the various regions and communities.

NUMBER OF VISITORS TO COMMUNITIES



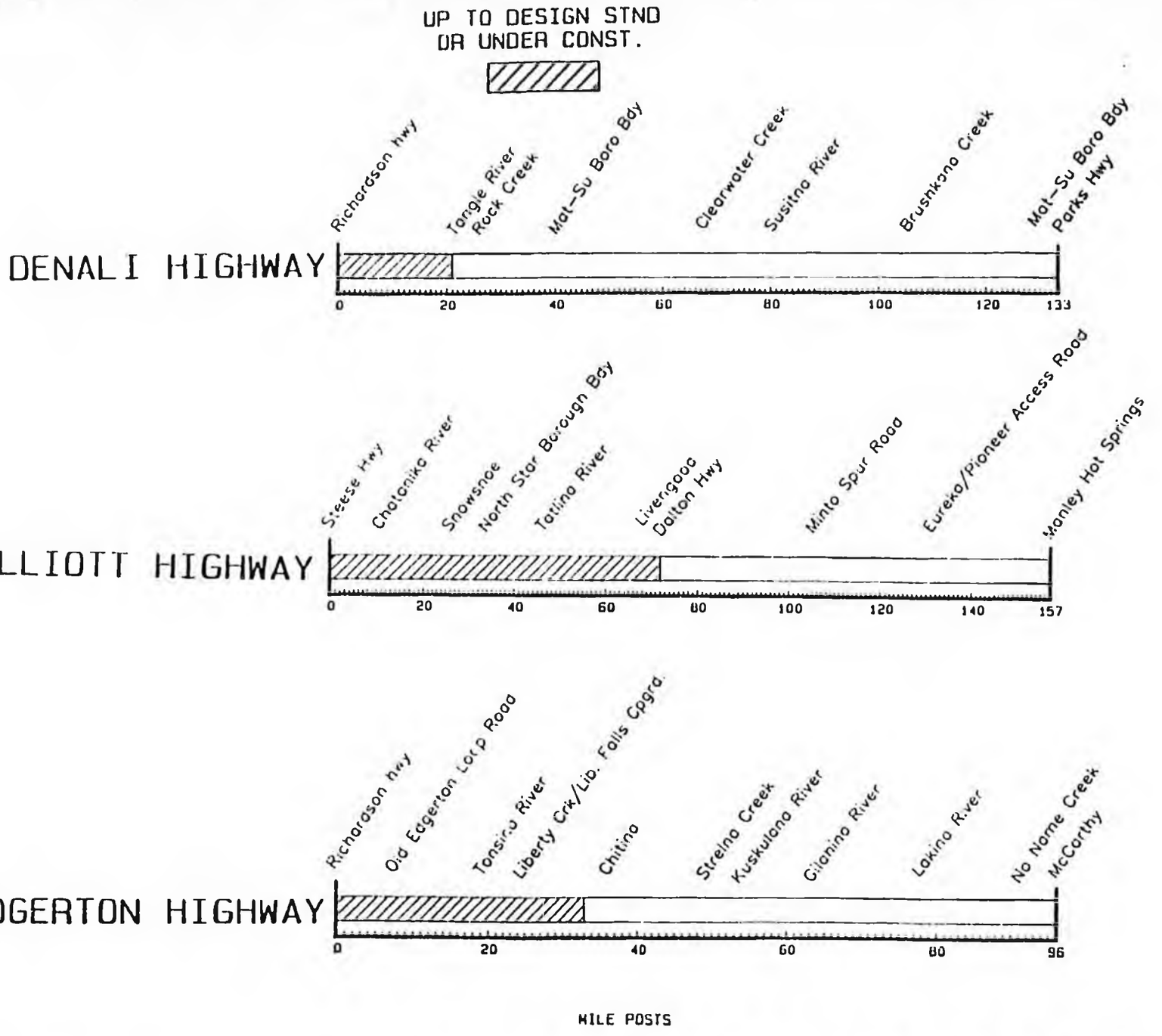
ANALYSIS OF NORTHERN REGION HIGHWAYS



The page above and the following six pages graphically show the status of Alaska's major state highways. The cross-hatched sections were being improved in 1987 or were judged by ADOT&PF planners and engineers to meet tolerable standards of design. The blank sections are judged to be intolerable in terms of surface conditions, pavement width or alignment. A cursory review shows that about half of the road miles have tolerable physical and traffic service characteristics while half have serious deficiencies that need to be corrected.

The charts are arranged by ADOT&PF Region beginning with the Northern Region which has the most extensive miles of state highway.

ANALYSIS OF NORTHERN REGION HIGHWAYS



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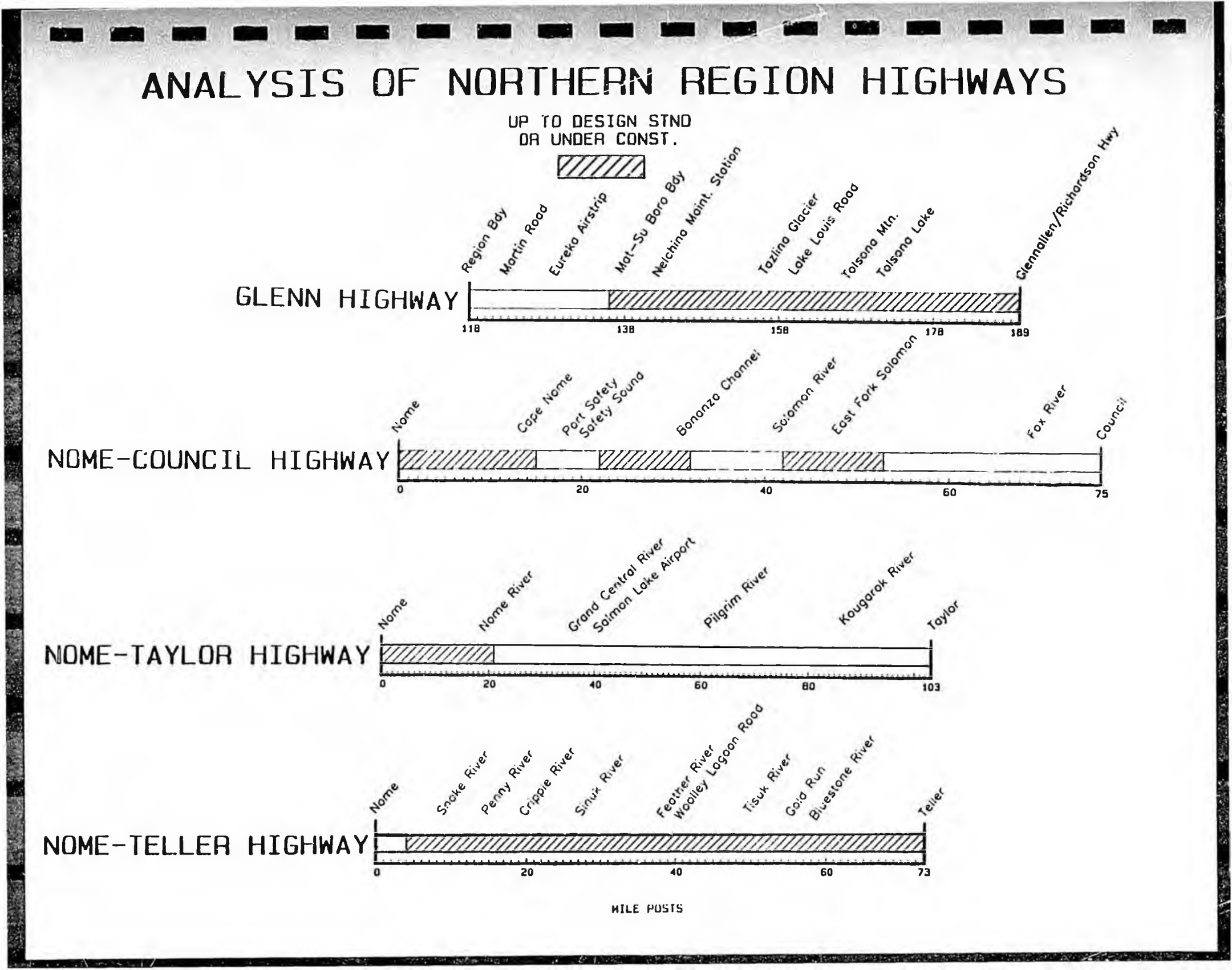

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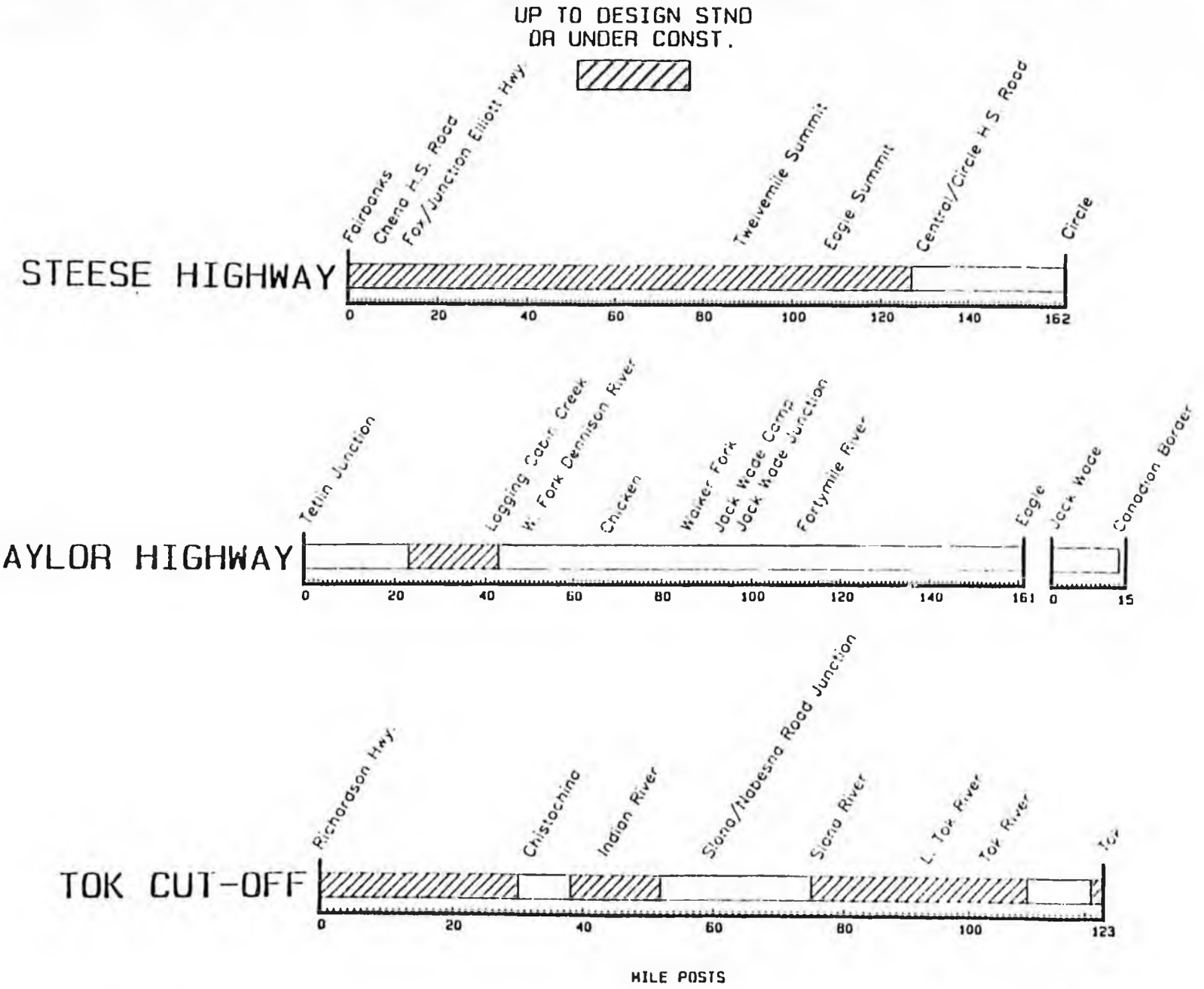
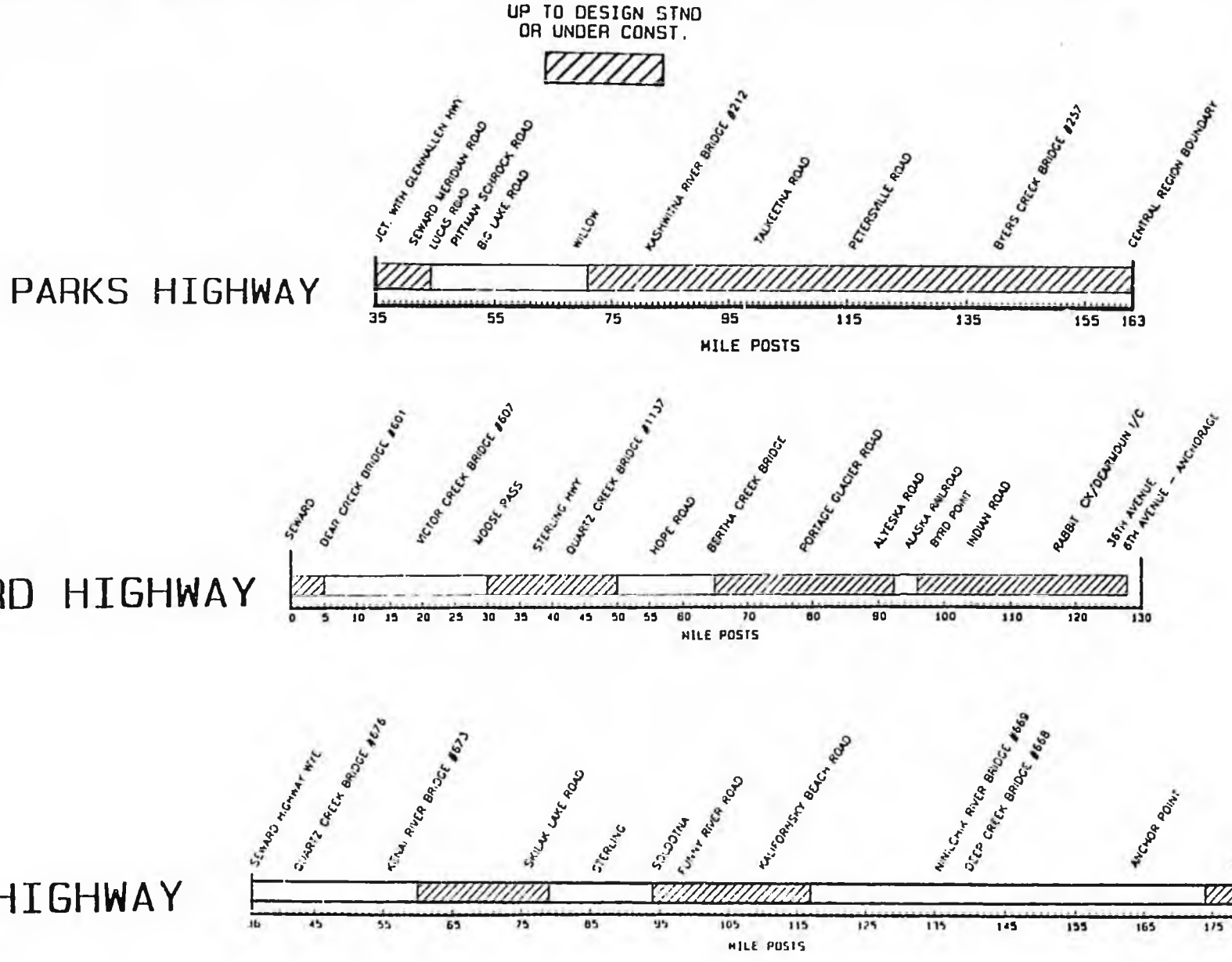


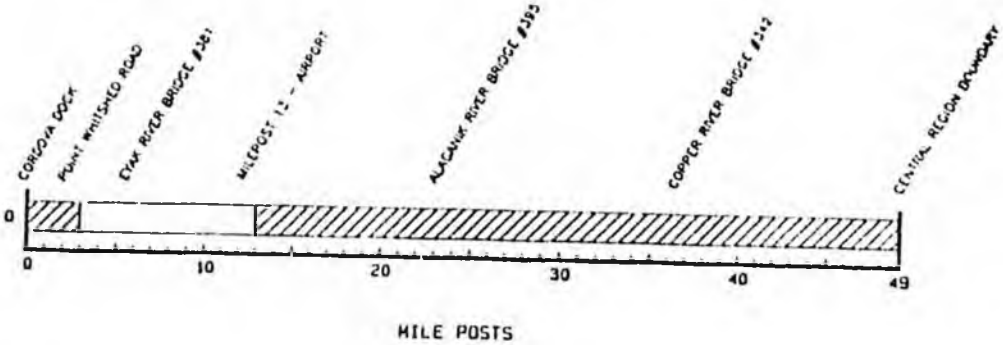
ANALYSIS OF CENTRAL REGION HIGHWAYS



ANALYSIS OF CENTRAL REGION HIGHWAYS

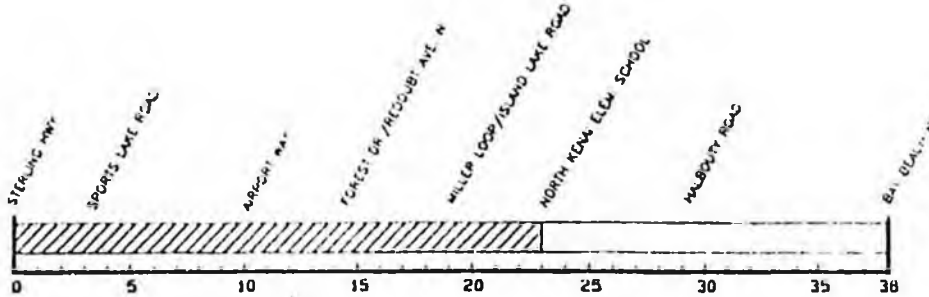
UP TO DESIGN STND
OR UNDER CONST.

COPPER RIVER HIGHWAY



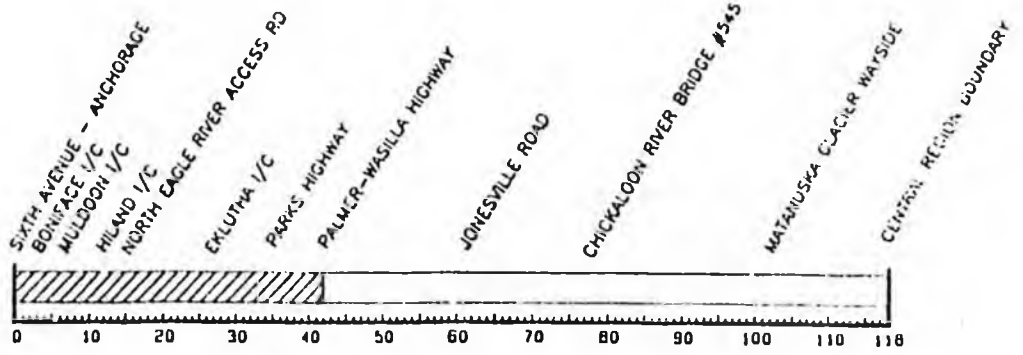
MILE POSTS

KENAI SPUR ROAD



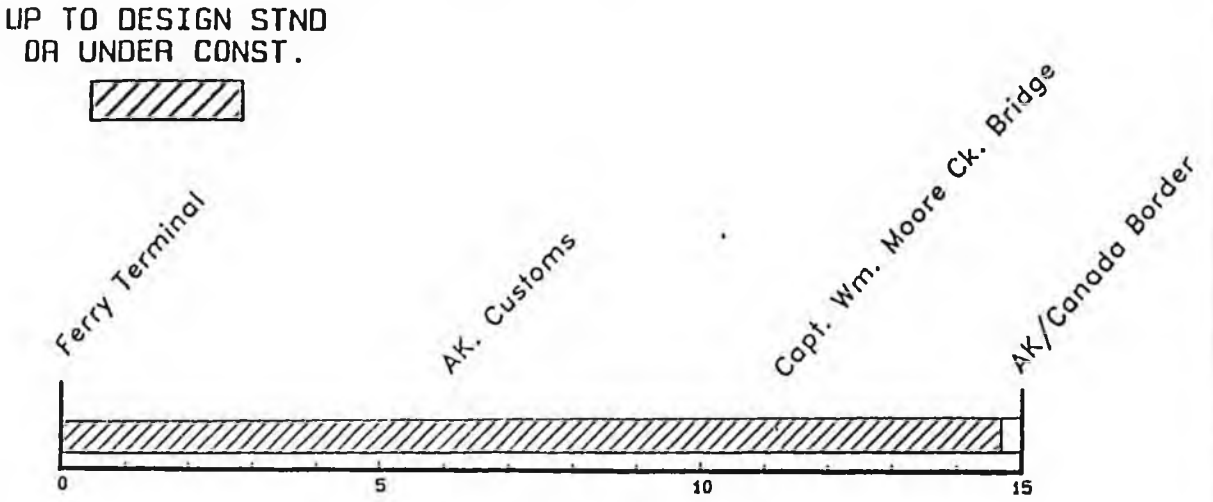
MILE POSTS

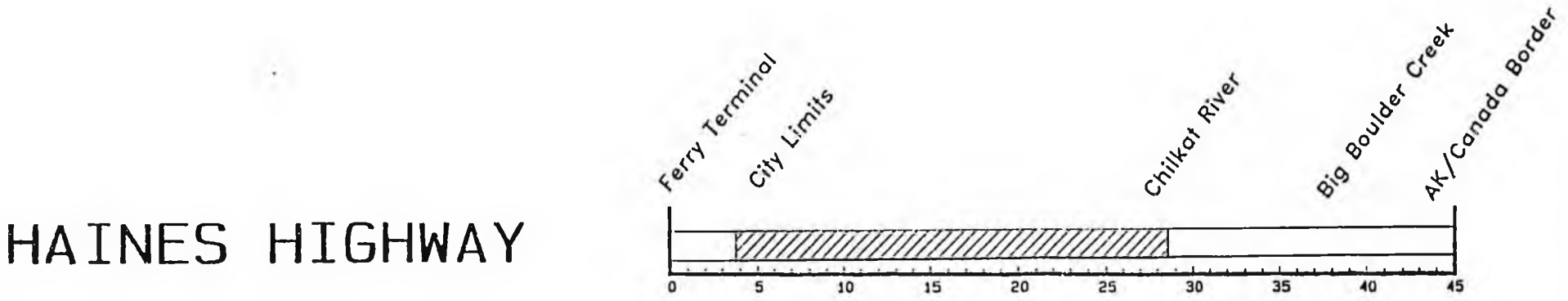
GLENN HIGHWAY



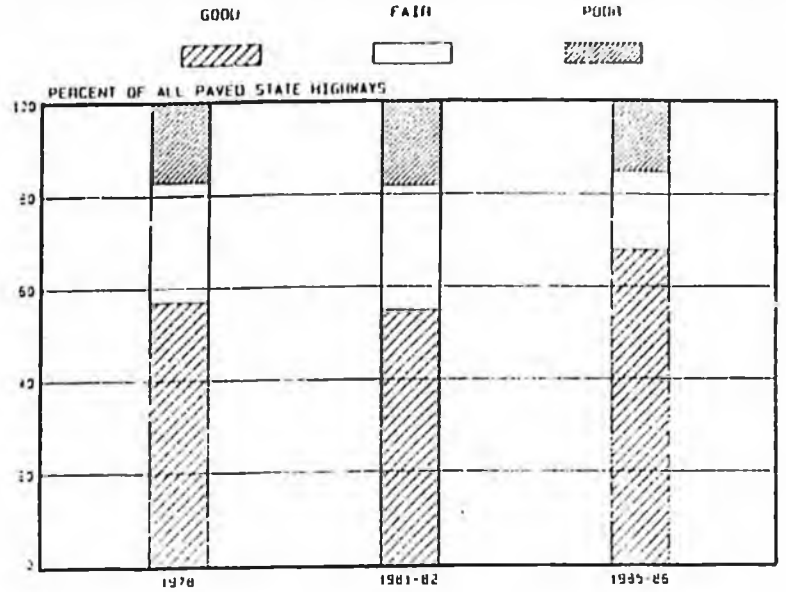
MILE POSTS

ANALYSIS OF SOUTHEAST REGION HIGHWAYS

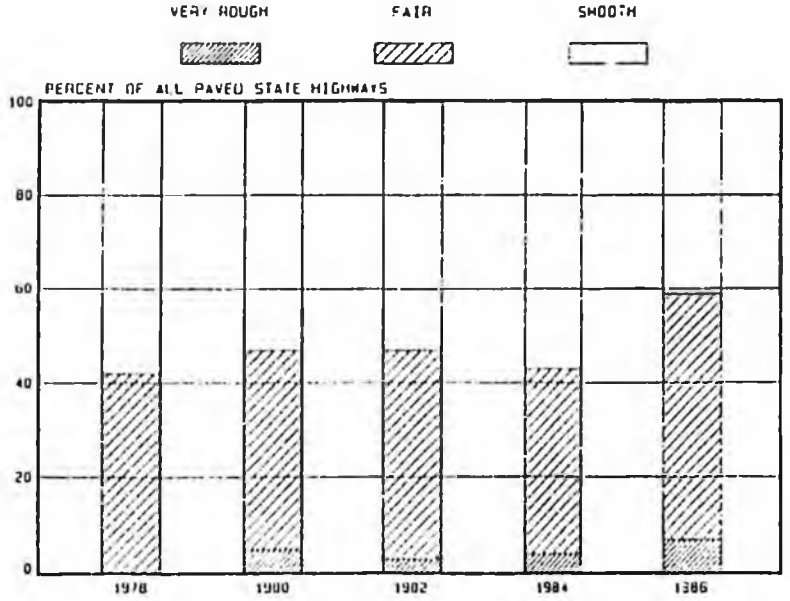




PAVEMENT STRUCTURAL CONDITION TREND



HIGHWAY RIDEABILITY TREND



Starting in 1978 the ADOT&PF's Research Section began surveying the condition of the paved sections of the state highway system. Both the structural integrity and the smoothness, or rideability, of the pavement were judged.

Structural Improvement; Deterioration in Rideability. The uppermost chart indicates the trend in the proportion of highways judged to be "good", "fair" and "poor" in terms of pavement soundness. The proportion of pavement in good structural condition has moved from 58 percent in 1978 surveys to 69 percent in 1985-1986 surveys, while over the same period of time, the proportions of paved state highway with fair and poor structural ratings decreased.

On the other hand, the lower chart shows that the proportion of very rough pavement (in terms of rideability) rose from less than one percent in 1978 to seven percent in 1986. At the same time, the proportion of state highways with smooth pavement dropped from 58 percent in 1978 to 41 percent in 1986.

National Surveys Give Low Ratings To Alaska's Highways. The ADOT&PF participates in periodic national surveys of sample sections of highways in order to provide federal officials and Congress a national overview of pavement conditions and highway performance. This information is used to judge the effectiveness of the Federal Highway Program. However according to the latest compilation of theses nationwide assessments of pavement condition, Alaska does not fair well. For example based on 1985 information, Alaska's rural Interstate Highway System was judged to be 45th among the 50 states in pavement serviceability.

Applauding Condition Rating Efforts. Alaska officials are commended for finding the resources to periodically measure the structural soundness and rideability of all state highway pavements. The information is used to not only accurately determine overall trends in pavement serviceability but also to pinpoint the most critical pavement rehabilitation needs. Not all states have identified the importance of such information to policymakers.

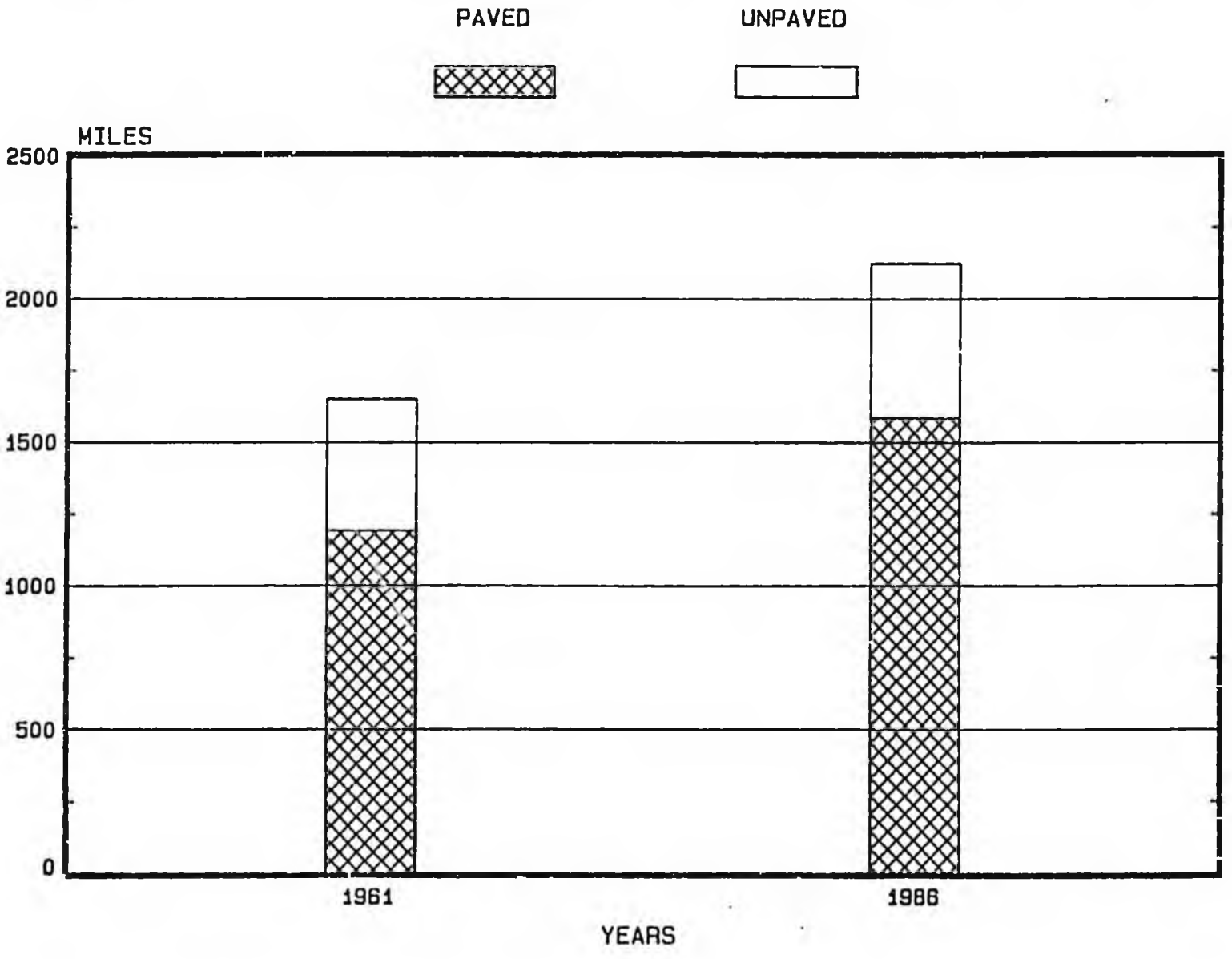
Further Efforts Needed. However other elements of the ADOT&PF physical inventory of the State Highway System need to be improved to provide up-to-date information on current physical characteristics, functions and traffic service and to provide the best possible information on trends. In general, the public and Alaska's policymakers need to be better able to answer the question, "Is the System improving, deteriorating or remaining static?"

Need For Better Information On Municipal Roads. With the exception of road miles, there is currently no central source of information on the physical and traffic service characteristics of the city streets and borough roads that are not a part of the State Highway System. But this is important information in that over $100 million in state funds are directed annually to municipal road programs (see page I-6). It is therefore recommended that the ADOT&PF – in cooperation with municipal officials – develop and keep current the physical and traffic service inventories of municipal roads, as well as state highways, and to report periodically on changes that take place.

Pavement Management System Needed. Many states have coupled their pavement rating processes with techniques for evaluating alternative improvements and estimates of the economic advantages of each. Greater pavement maintenance efforts can be compared with seal coats, various thicknesses of overlays or recycled overlays, and more complete rehabilitation of the pavement and subgrade to determine cost comparisons, both now and over the pavement life. Such information has proven to be an important aid to policymakers in making cost effective improvement program decisions.

While the ADOT&PF is making good progress toward implementing a pavement management system, it is recommenced that the ADOT&PF and the Legislature continue to give high priority to this important new tool.

INTERSTATE, PRINCIPAL & MINOR ARTERIALS



Almost 400 Miles Of Paved Highways Added To State System. The above chart is a comparison of paved and unpaved miles of the more important state highways -- Interstate, Other Principal Arterials and Minor Arterials. While the miles of paved highways has increased by 392, the amount of unpaved routes is still a significant proportion of Alaska's most important state highways.

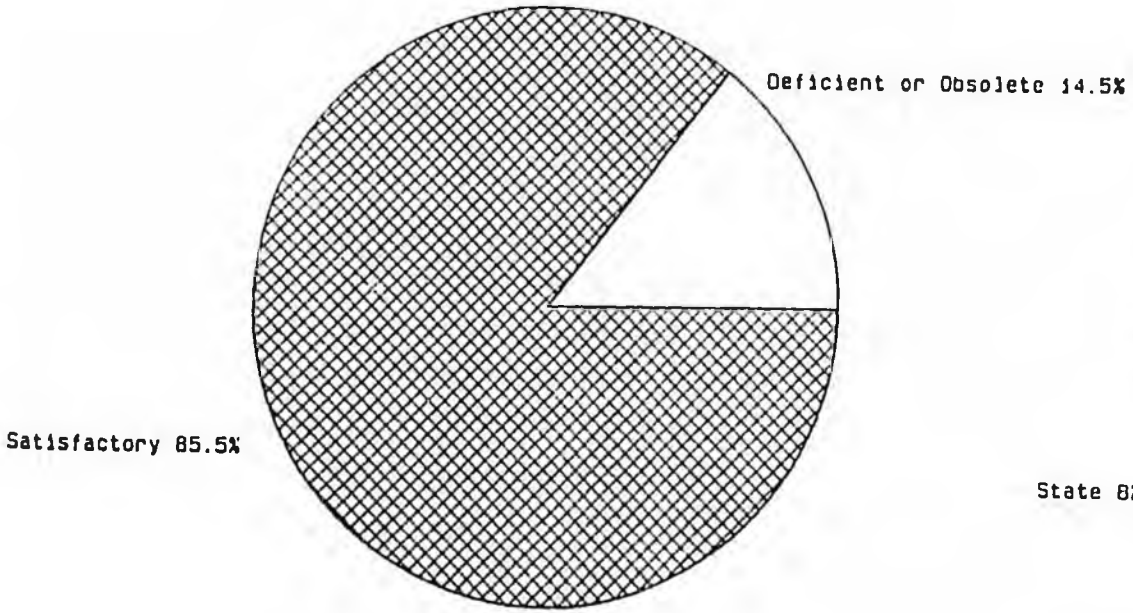
More Trend Information Needed. In order for officials and Alaska's taxpayers to determine whether or not progress is being made, more trend information is needed. As Alaska's highway inventories and highway evaluation techniques are improved, such information will become available to better judge State Highway Program effectiveness.

More Comprehensive Annual Reports Needed. The ADOT&PF, like many transportation agencies in the nation during the 1970's stopped the development and publication of periodic (annual or biennial) comprehensive reports on program progress. But now with greater public concern for the expenditure of tax resources, transportation agencies are returning to the documentation of progress or lack of progress in meeting overall objectives.

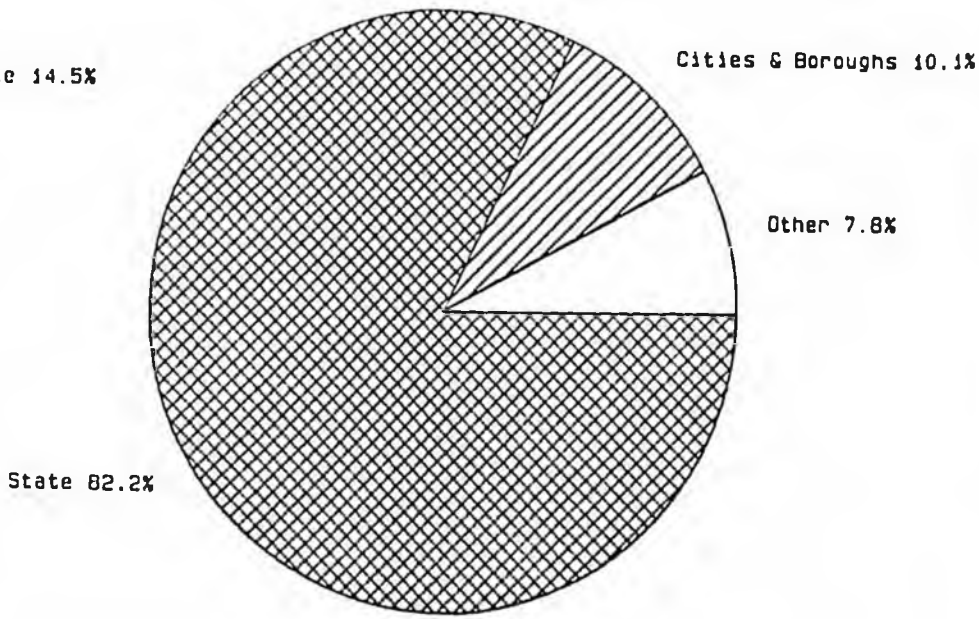
Periodic reports with emphasis on charts and maps are an excellent method of communicating the facts about complex transportation programs. The information is needed by the ADOT&PF management team and by Alaska's lawmakers to help make the best use of scarce resources.

ALASKA BRIDGES

CONDITION



RESPONSIBILITIES



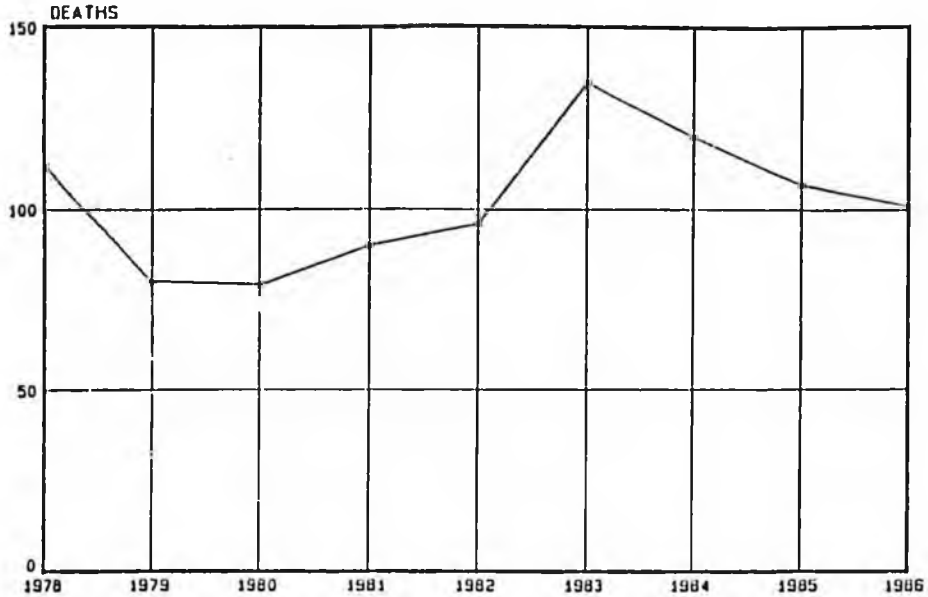
TOTAL: 825

NOTE: INCLUDES ALL BRIDGES OVER 20' SPAN

Alaska Excels In Bridges. If by national standards Alaska's highway pavement is below the average, likewise by national standards Alaska is the leader in bridge conditions. As compared with the nation as a whole where deficiencies have been found in 42 percent of the bridges, 85.5 percent of Alaska's bridges are in satisfactory condition. No other state has as high a percentage of their bridges in satisfactory condition.

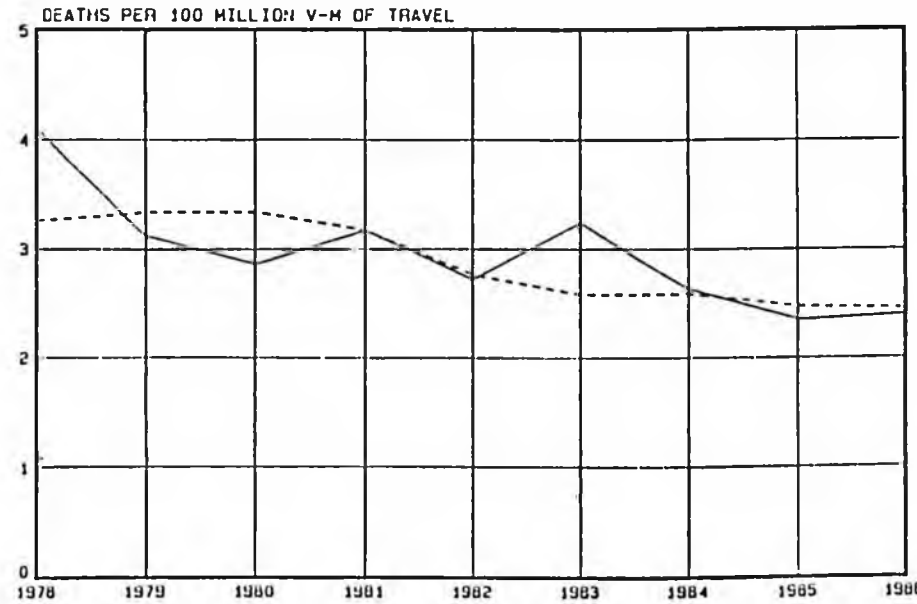
Biennial Bridge Surveys. In 1970 Congress mandated that every state inspect and report on bridge conditions on a biennial basis. The above charts and the cited statistics are as found in these national surveys and the resulting reports.

HIGHWAY SAFETY



TRAFFIC FATALITIES

ALASKA _____ U.S. - - - - - - -



FATALITY RATES

Traffic Safety Statistics Headed In Right Direction. Both the number of annual traffic fatalities and the number of annual traffic fatalities per 100 million vehicle miles of travel have been on a downward trend since 1983 . Alaska's 1986 2.4 fatality rate (traffic deaths per 100 million vehicle-miles of travel) is 41 percent below the rate just ten years ago. Furthermore, Alaska's traffic fatality rate has been below the national average for the last two years.

As shown in the table below, traffic fatalities are not the only positive accident statistics, as both the number of accidents and the number of injuries decreased from 1985 to 1986 and from the three-year, 1983-to-1985 averages to 1986.

	1985	1986	% Change from 1985	% Change from previous 3-year average
Vehicle-miles of Travel (millions)	4.8	4.7	-1.7%	+4.4%
Accidents	7,700	14,858	-19.1%	-23.8%
Fatalities	127	101	-20.5%	-25.7%
Injuries	6,165	5,525	-11.6%	-18.9%

Challenging 1988 Traffic Safety Goal. The traffic safety statistics are as reported in the Alaska Highway Safety Plan For Fiscal Year 1988, published by the Alaska Highway Safety Planning Agency. This Agency, which is responsible for the coordination of Alaska's overall traffic safety program, has established a 1988 goal of a further reduction in Alaska's traffic fatality rate to 2.0 deaths per 100 million vehicle miles driven. Judging by the preliminary estimates of 1987 traffic fatalities, which are down considerably from 1986 levels, the stated goal for 1988 may have been reached in 1987.

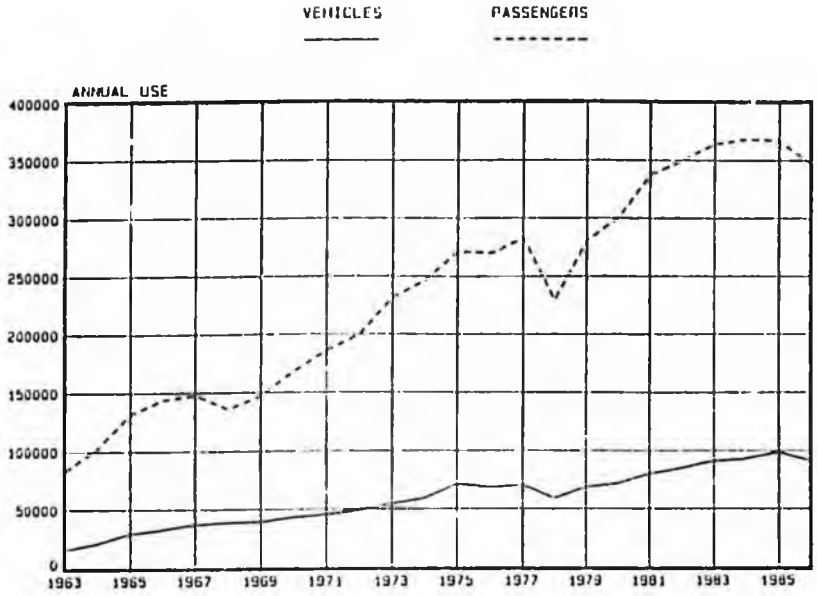
Engineered Safety Important. One of the major challenges ahead for the Alaske Highway Program is to continue the reduction of annual traffic fatalities in the face of increasing motor vehicle travel. Much of the progress to date nationally and in Alaska is due to the program of ever-improving the highway environment in terms of wider lanes, wider shoulders, separation of opposing lanes of traffic with medians, better control of intersections, increasing sight distances, improved signing and markings and all the other elements of highway modernizations. Much of the traffic safety progress of the future depends on continuing the modernization of Alaska's highways and bridges.

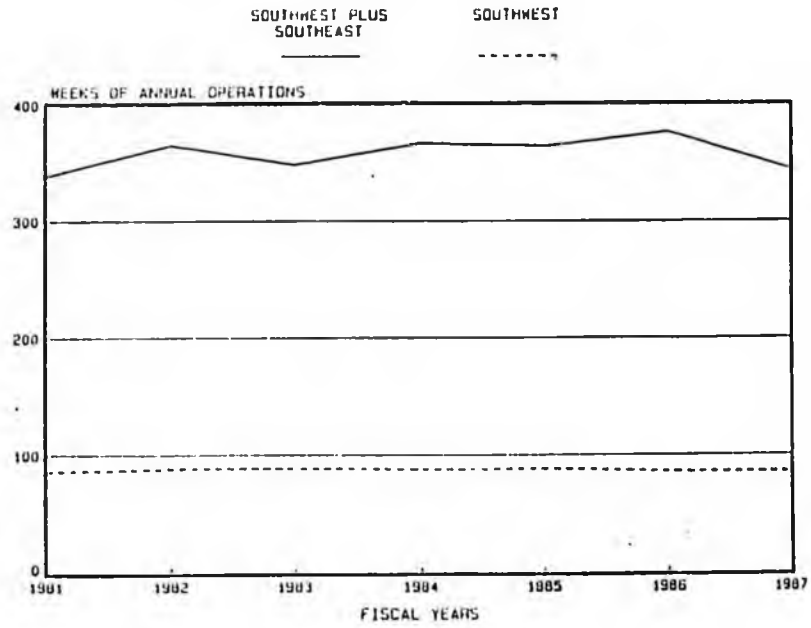
HIGHWAY ANALYSIS SYSTEM

- ROAD LOG
- ROAD AND BRIDGE CHARACTERISTICS
- FUNCTIONAL CLASS
- TRAFFIC
- SURFACE CONDITIONS
- UPGRADE HISTORY
- ACCIDENTS
- BRIDGE RATINGS
- TRUCK WEIGHTS
- GEOGRAPHIC CODE

New Integrated Data Retrieval System. The ADOT&PF in 1987 made operational a new automated system for storing and analyzing highway and bridge information. The chart indicates some of the types of data that are being stored, retrieved and analyzed in the System. The Department now has a new powerful tool. However as discussed previously, some of the highway inventory information remains to be obtained and entered into the System. Much progress has been made, but there is a formidable job ahead for the ADOT&PF before this System becomes completely useful.

MARINE HIGHWAY SYSTEM TRENDS





Outside of the strike year, 1978, the Alaska Marine Highway System has enjoyed almost constant growth in passengers and vehicles served. Based on observations and interviews with passengers, the System appears to be a popular and vital part of the economics of both Southeast and Southwest Alaska.

Recent Studies. However to deal with a number of important issues surrounding AMHS service, the ADOT&PF in 1985 commissioned a series of studies. Some of the more important issues dealt with by the consulting team are as follows:

1. The capacity of the System is taxed by the tourist demand to and from Seattle thereby causing reservation problems for Alaska citizens.

2. Likewise the capacity from Juneau northward to Haines and Skagway is sometimes overtaxed.

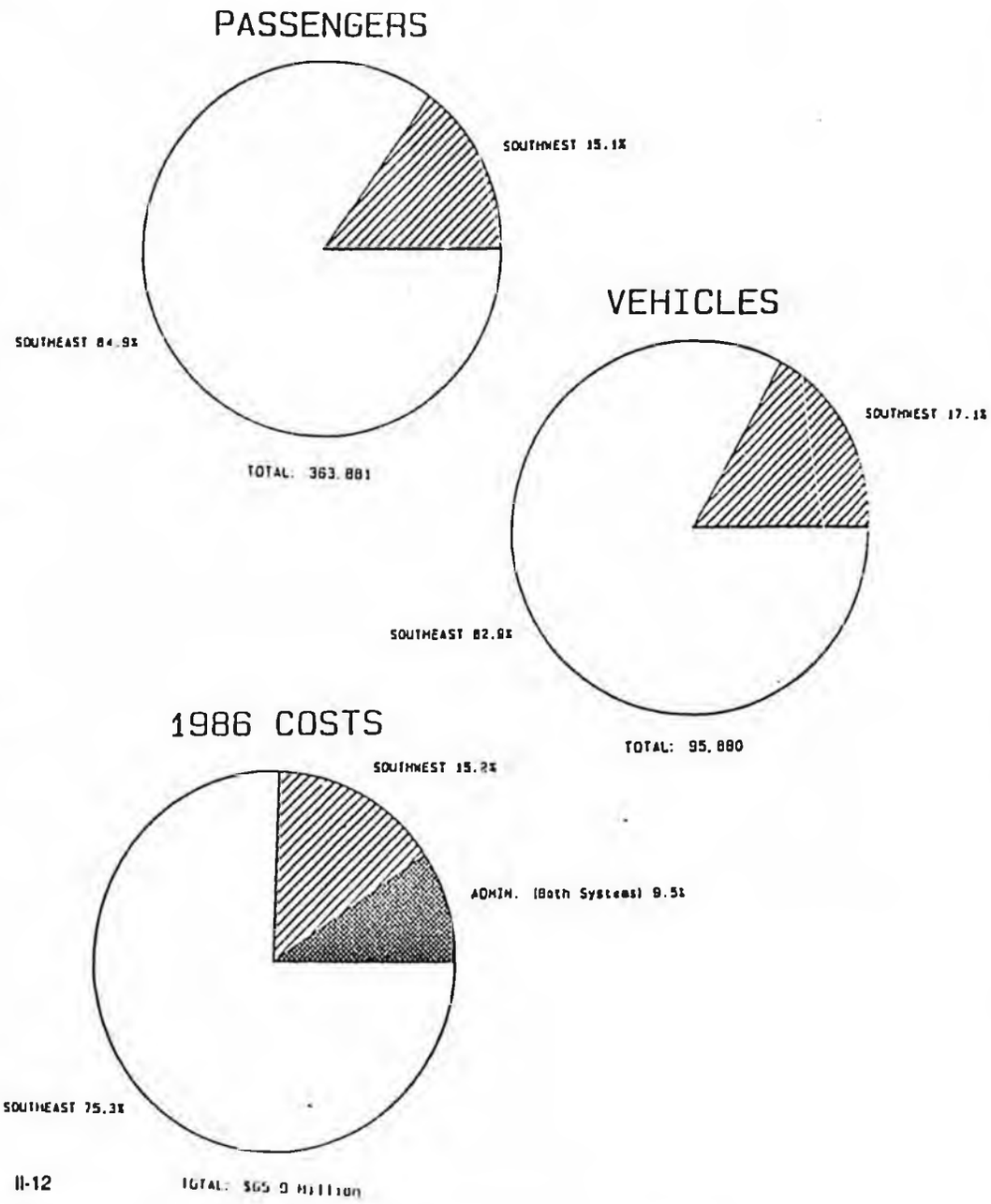
3. Providing mainline service to out-of-the-way communities causes navigational problems and adds a days time to through travellers or travellers between Juneau and all points south.

4. Building highways, new terminals and adding short ferry links to shorten some trips might relieve capacity problems and improve overall accessibility thereby generating induced travel and economic expansion.

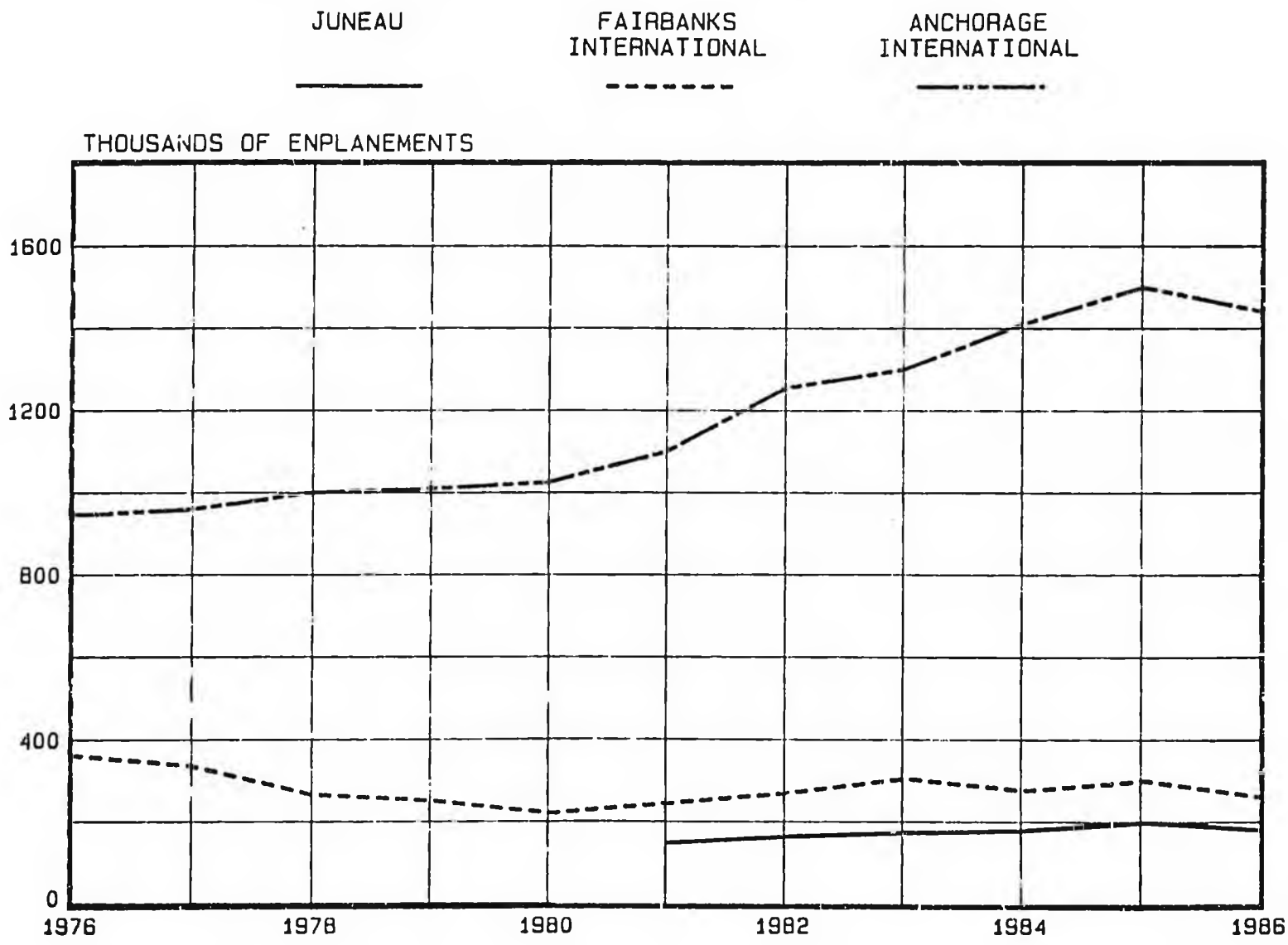
5. The addition of high speed ferries might also relieve capacity problems, allow additional service to some communities and provide basic service to other communities not now served.

While the studies did indicate much could be done, the estimated, initial capital costs for most alternatives studied were prohibitively high. The exceptions were the proposals to add new, high-speed ferries, but even these had a high budget impact.

S.E. & S.W. SYSTEMS COMPARED



USE OF MAJOR AIRPORTS



Commercial Airline Use Of Key Airports. The chart indicates the trends in commercial airline enplanements at Alaska three key airports.

Anchorage Growth Spectacular. Since 1980 the Anchorage International Airport has seen a 50 percent rise in airline deplanements and enplanements. And these figures do not include the Europe-to-Orient refueling, stopover flights that Anchorage International Airport enjoys.

Good Physical Condition. While the evaluation of Alaska's airports was beyond the scope of the Review, it was observed that each of the key airports were in good physical condition with modern terminals and good parking and road access.

Other Airports Being Improved. The other 215 airports, that are operated and maintained by the ADOT&PF, are in various stages of improvement. With the aid of Federal Airport Improvement Program funds, it appears that Alaska has made good progress in ensuring that isolated communities have reasonable airport facilities.

Private Airplanes Important To Alaskans. The Federal Aviation Administration reports that there were 9,604 licensed private aircraft belonging to Alaska citizens in 1986. Thus about five percent of Alaska families have air mobility.

CHAPTER III

HIGHWAY PROGRAM AND NEEDS

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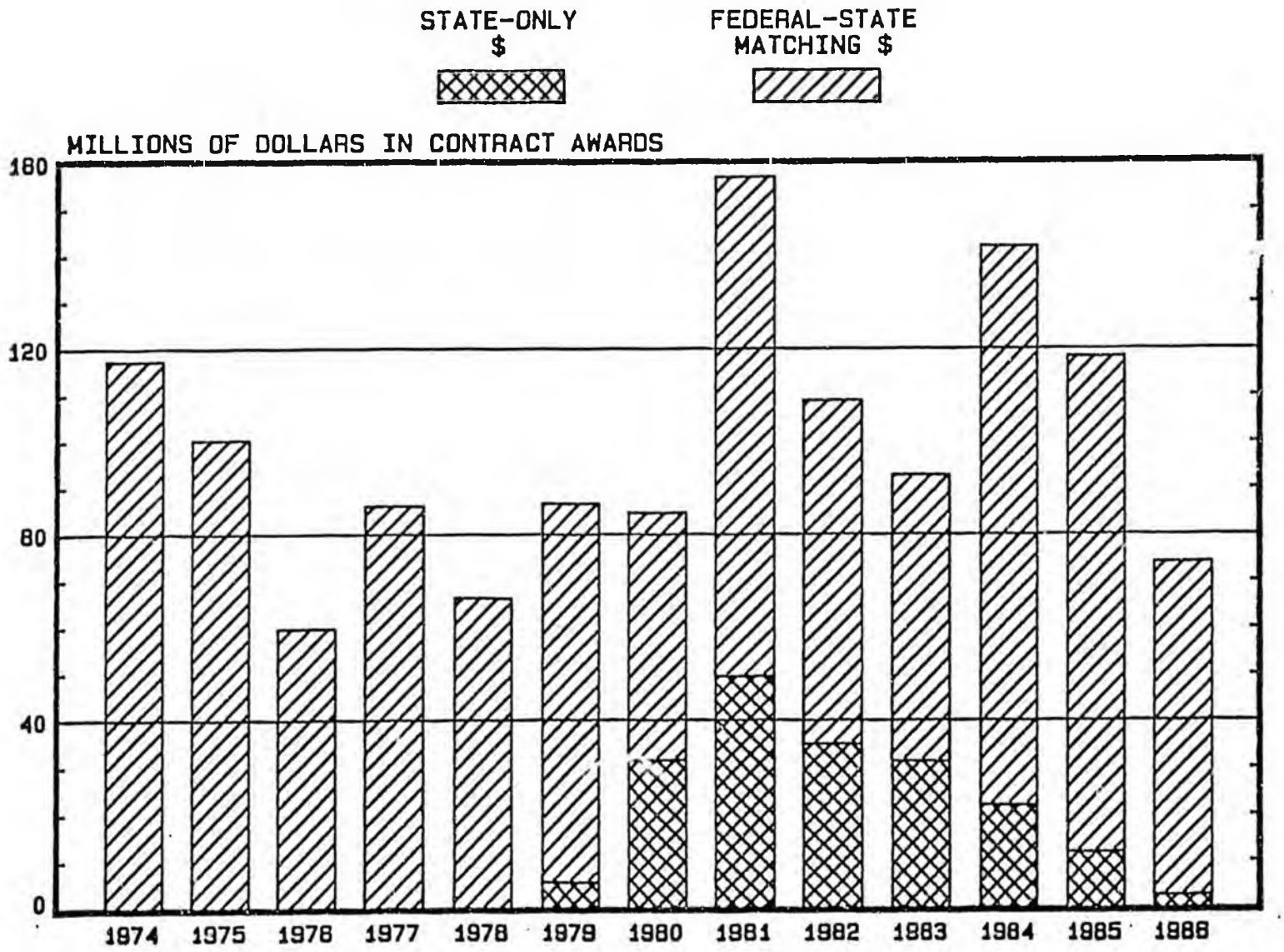
HIGHWAY PROGRAM AND NEEDS

A Review of the State Highway and Bridge Improvement (Construction) Program in terms of both Accomplishments to date and Plans for the Future. The Utility of Engineering Analyses of Highway Needs is Discussed, as is the Expansion of the State Highway System. Also reviewed is the Highway and Airport Maintenance and Operations Program as it Relates to the Physical Condition of Alaska's Highways and the Traffic Service Provided. The Accomplishments of the ADOT&PF Research Program are also Analyzed.

HIGHWAY IMPROVEMENT HISTORY



$1.3 Billion, 13 Year Program. The above chart shows that over the 1974-1986 period (calendar years), the ADOT&PF awarded $1.3 billion in contracts to both build new state highways and to reconstruct, rehabilitate or otherwise modernize existing state highways. While the sum of each year's annual contract awards ranged from $60 million in 1976 to $157 million in 1981, the average for the period was $100 million. While not shown on the chart, ADOT&PF officials indicate $108 million in highway construction awards were made in calendar year 1987.

Disappearance Of State-Only Improvements. Two types of funding were used. The first and most prevalent is the combination of Federal Aid Highway Program funds with matching state funds. The other is state-only funds. The downward trend in state-only contracts since 1981 is consistent with Alaska's downtrend in state resources.

Matching Federal Funds Important. Most state highway and transportation officials view matching federal aid funds as the first call on available resources. This is especially true in Alaska where each Alaskan dollar made available for highway construction contract awards, generates nine matched dollars from the Highway Trust Fund (the repository of federal highway user taxes and fees) -- up to the limit of obligational authority set by Congress and the National Administration.

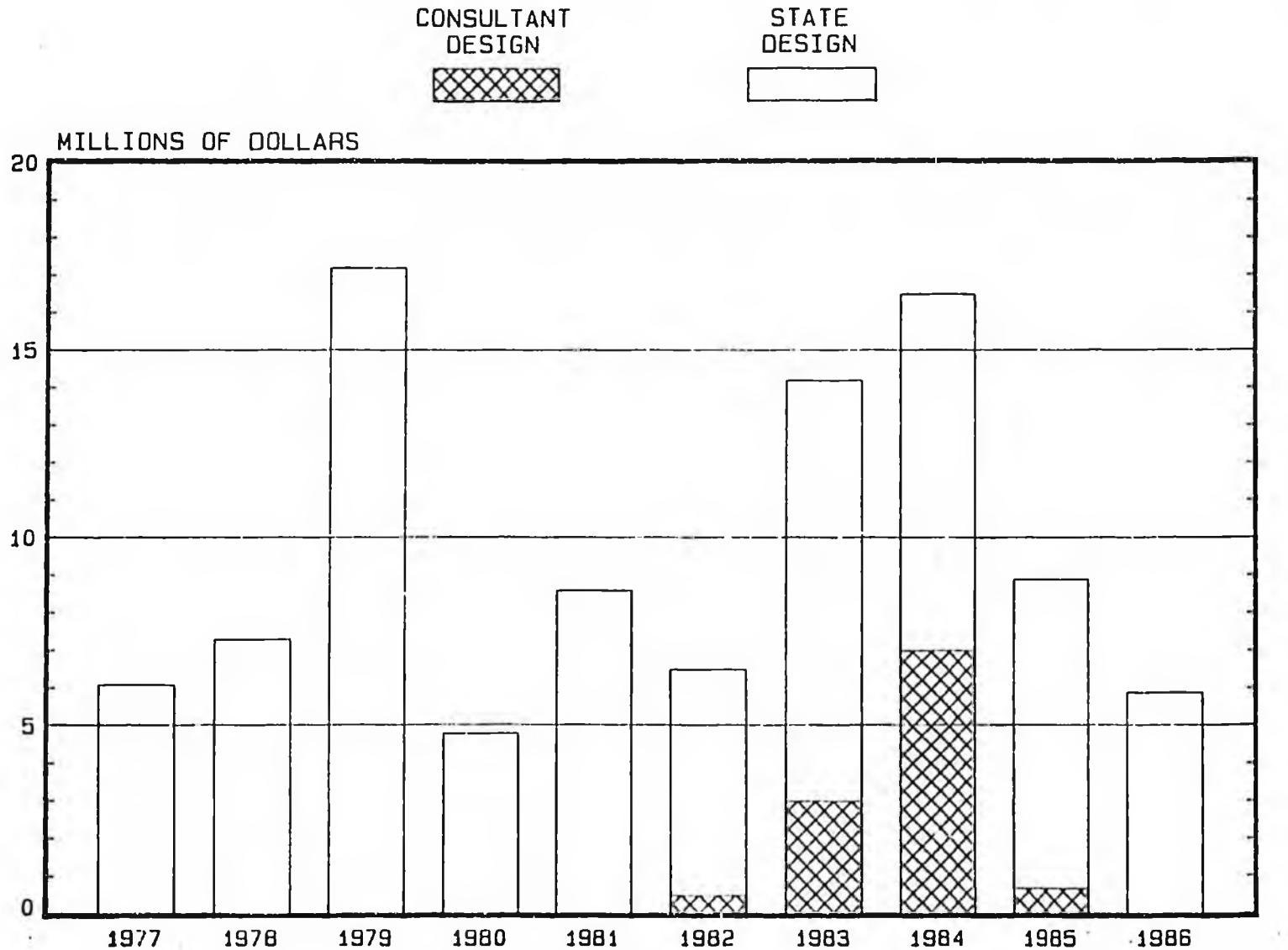
Highway Contract Awards And Federal Obligations. Note that the dollar volume of highway contract awards is consistantly less than the dollar volume of annual obligations of Federal Aid Highway Program funds (see page I-15). The apparent discrepancy is due to the fact that more than just highway improvements are committed to in the process of obligating federal aid highway funds, such as bridge rehabilitation or construction projects, construction engineering and inspection, highway planning and research activities and right of way purchases.

Up And Down Nature Of Annual Construction Awards Tough On Contracting Industry. It is important for Alaska to retain a cadre of experienced highway contracting firms in order to gain the lowest possible bid prices and the best quality improvements. However the wide deviations in annual ADOT&PF contract awards make it difficult for the contracting industry and its employees. The uncertainty about the dollar volume of ADOT&PF improvement Programs impedes the contractors' ability to plan ahead in terms of equipment, materials and manpower. Such uncertainty could force some Alaska contractors out of business (especially the small ones) or could force some contractors to relocate in other states.

Need For State-Only Program. Most states find the resources to maintain at least a small state-only highway improvement program in order to make some essential, usually low cost improvements that cannot wait for the normal federal clearances or that are not eligible for federal financing. Furthermore, some states maintain a large state-only improvement program to both accomplish many low cost improvements and to augument the larger more comprehensive federal aid program.

However when highway and transportation officials face a situation -- such as Alaska faces now -- where it is difficult to raise the funds to match federal aid highway funds, most state-only improvements are deferred. As a result, the state loses the ability to fund some types of low cost improvement, such as highway resurfacing, that do not always need to include other design improvements like alignment changes, pavement widening, guardrail installation -- but are necessary to qualify for federal funds. In other words, there are some improvements that while necessary, do not meet federal criteria for matching funds. ADOT&PF officials need the flexability of at least a $10 million state-only highway improvement program.

BRIDGE IMPROVEMENT HISTORY

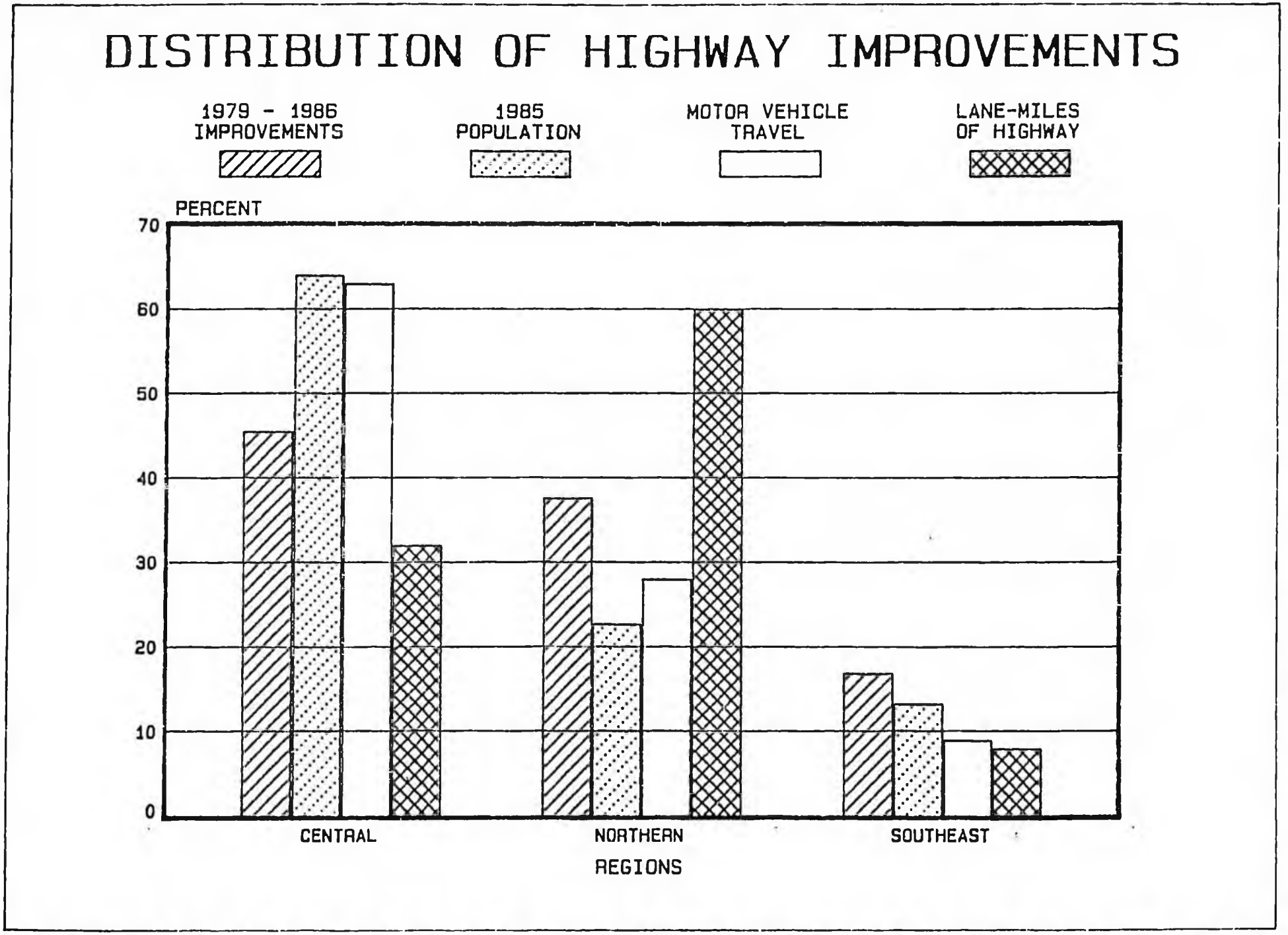


NOTE: 173 BRIDGES REPLACED OR REHABILITATED, 1977 - 1986.

$96 Million, 10 Year Bridge Program. Out of the 676 bridges that are on the State Highway System, 173 have been built, replaced or rehabilitated over the ten year, 1977-1986 period. A total of $96 million in bridge construction projects were awarded to contract -- an average of 17 per year.

Because of the specialized nature of the work, all bridge design and plan preparation, that is accomplished by ADOT&PF staff, is done in the Juneau headquarters office.

DISTRIBUTION OF HIGHWAY IMPROVEMENTS



Highways And Bridges Are Two Thirds Of Total ADOT&PF Capital Improvement Program. For the 1979 to 1986 period, the Central Region awarded the most capital improvement projects, that is for highways, bridges, harbors, ferries, ferry terminals, airports and state buildings. The highway and bridge share of the $1.5 billion in contract awards was $948 million or two thirds of the total.

The charts above show the distribution of the $1.5 billion of contract awards for the years 1979 through 1986, as well as how the distribution relates to population, motor vehicle travel and lane-miles of state highway in each Region.

Distribution of Improvements, A Hot Issue. One of the "hotest" issues in most state highway programs is the distribution of resources for capital improvements. In some states the distribution is based on formulas with factors such as population, miles of highway, lane-miles of highway, engineering appraisals of need or some combination of factors.

In some states either the legislature or the highway (or transportation) commission sets the distribution. And in some states – like Alaska – the chief executive officer of the department sets the distribution.

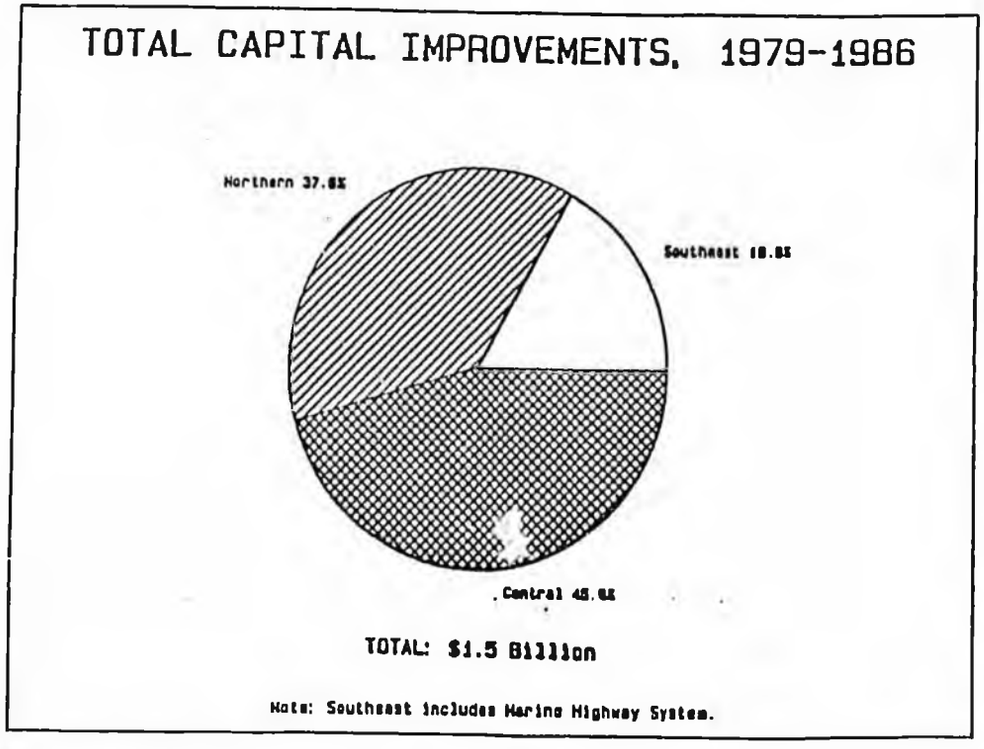
In no state is their complete agreement on who should set the formula or the factors that should be used in the formula for distributing the improvement program funds geographically. The best practice is to consider all possible factors and to make adjustments as new factors, or combinations of factors are agreed upon as more equitable bases for fund distribution.

Distribution Targets. The following are the distribution targets used by the ADOT&PF in recent years for the geographical distribution of highway improvements:

	Percent
Central Region	45.8
Northern Region	38.5
Southeast Region	9.7
Marine Highway System	6.0
	100.0

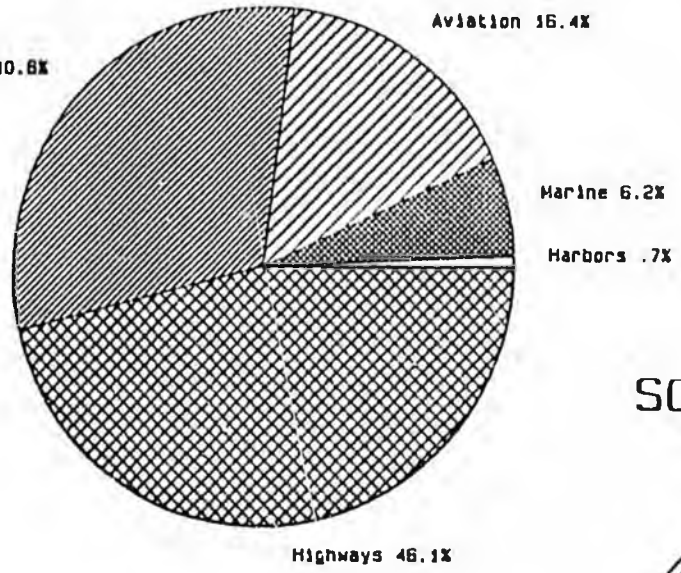
Note from the chart at right how close the total ADOT&PF capital improvement program for the 1979-1986 period has come to the highway distribution targets.

In recent years, the ADOT&PF has based the distribution of highway improvement funds on a formula that includes population, land area, paved lane-miles of highway, total lane-miles of highway and annual vehicle-miles of travel in each Region. However, the distribution process is currently under examination to ensure that it is promoting equity in the modernization or upgrading of the State Highway System.

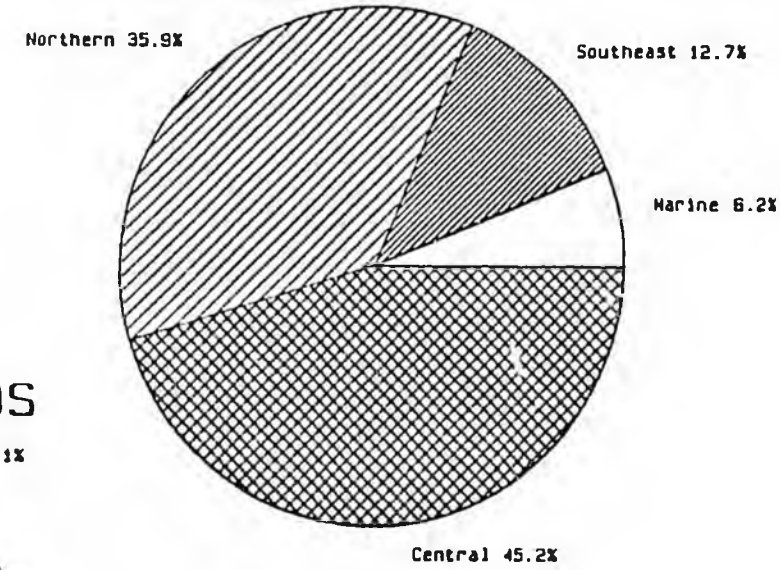


1986 CONTRACT AWARDS

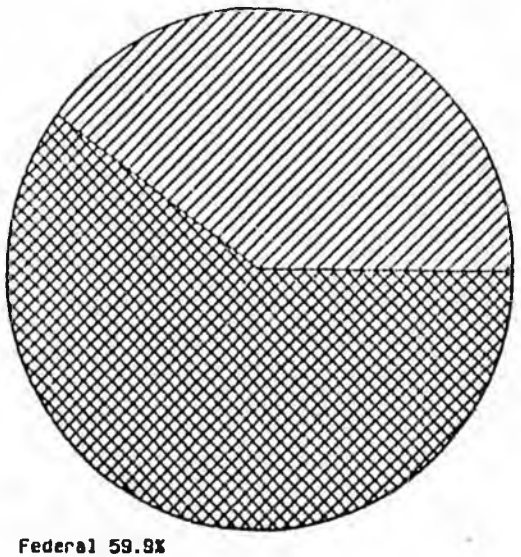
MODE



REGION



SOURCE OF FUNDS



$160.9 MILLION

In calendar year 1986 the ADOT&PF awarded $160.9 million in improvement contracts. Almost half (46.1 percent) were for highway and bridge improvements. The Central Region awarded 45.5 percent of the total projects, very close to the highway target (45.8 percent) for that Region.

Federal Participation. Six out of every ten dollars of the funds necessary to accomplish the improvements were federal dollars. In that the federal government does not ordinarily participate in building and harbor improvements, the federal participation was 87.2 percent of the $110.5 million in highway (and bridge), aviation and Marine Highway System improvements. $50.4 million of state funds were directed to buildings and harbor projects and $14.1 million directed to federal participation projects.

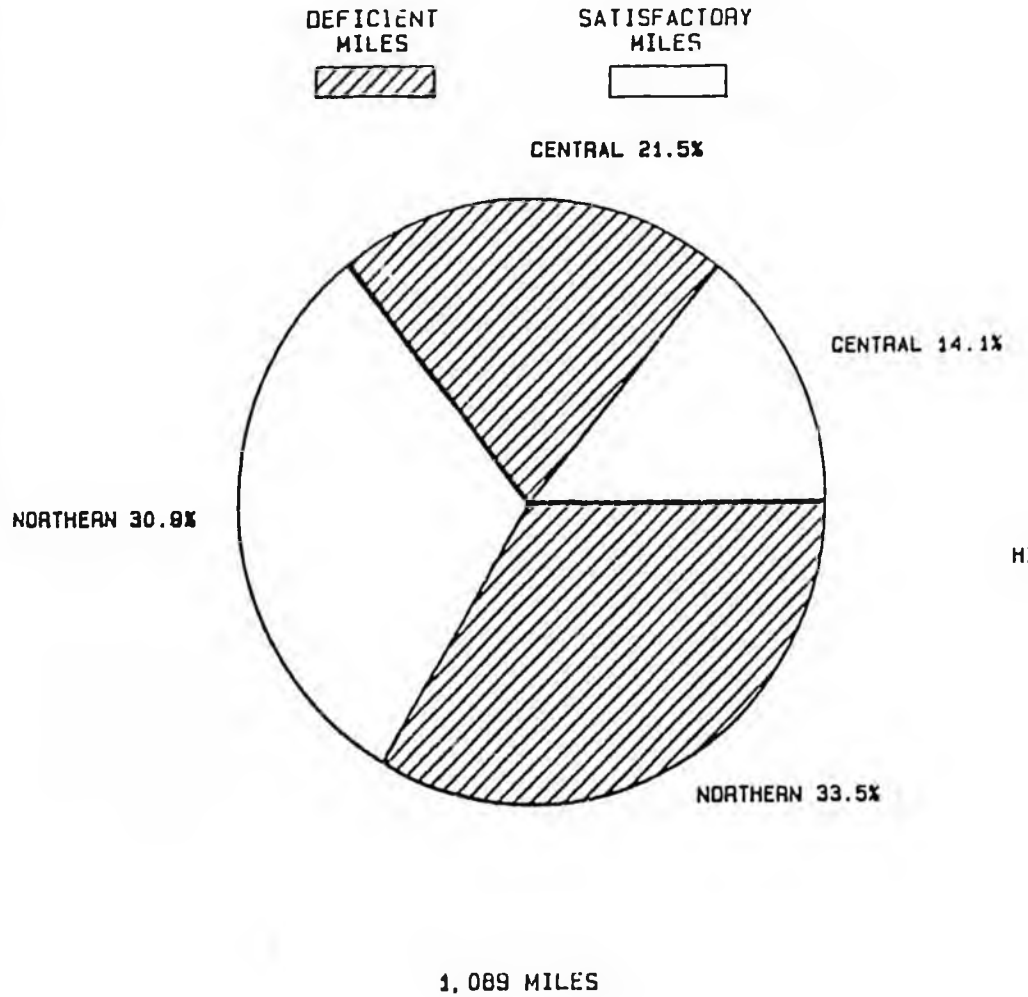
New Analytical Process Being Examined. With over $100 million of improvement projects being awarded to private contractors each year, it is important to closely monitor the contract prices being bid to both guard against possible fraud and collusion and to assist the designers in finding the most cost-effective of alternative designs. To aid the bid analysis process, the ADOT&PF is now examining a new computer-assisted procedure, sanctioned by the American Association of State Highway and Transportation Officials, that will provide faster review of construction project bids. Other states have found that the procedure has been helpful in speeding the bid analysis process and in detecting inconsistencies in the bids.

Decentralized Program Control Part Of The Problem. Alaska's decision to decentralize the management of the ADOT&PF Program in 1982 may be an inhibiting factor in gaining centralized information about many aspects of ADOT&PF Program – such as the construction contract bidding process. Without an ADOT&PF, department-wide model, each Region and Division has developed and employs their own set of processes. Analysis of all the various management techniques used by the decentralized management team is beyond the scope of this Review.

Need To Standardize Management Systems. Decentralized control of the ADOT&PF Program appears to be absolutely essential for a state as large as Alaska and with so much of its Program in remote areas. However, in order to facilitate the aggregation of essential information on how the Program is being carried out, it is recommended that the ADOT&PF's management systems be standardized. The progress being made in improving the accounting for capital expenditures (see Chapter IV) is an example of this suggested approach to improved management of the ADOT&PF Program.

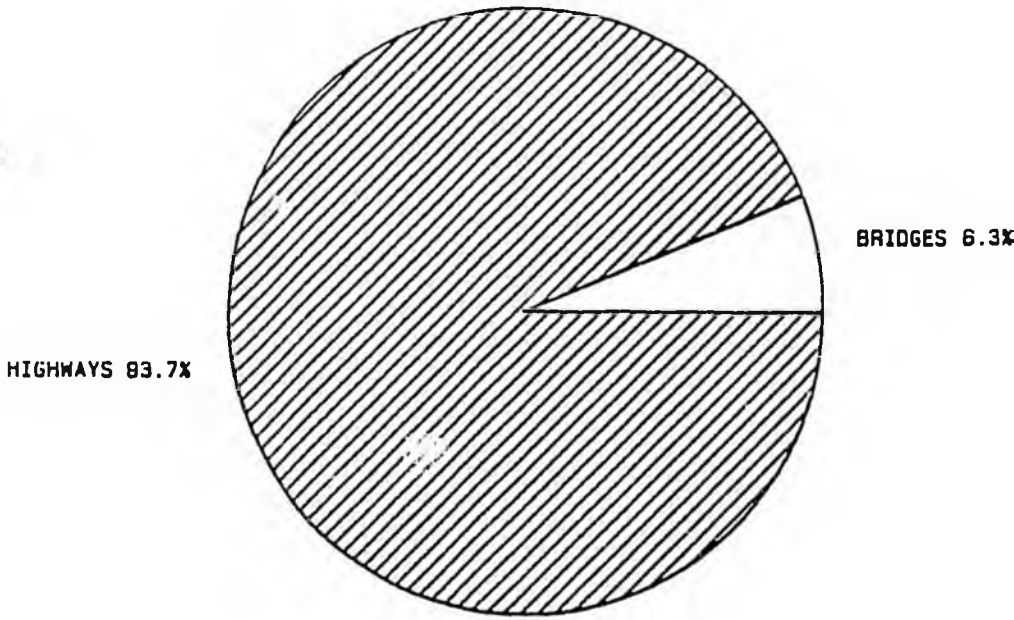
Need To Augment The Headquarters Staff. In order to develop a standard bid review process, as well as highway and airport maintenance management procedures, accounting procedures, construction practices, design standards, preconstruction and construction scheduling procedures, right of way purchase procedures, training procedures, career guidance practices, construction quality control procedures, improvement program goals and all the other systems and policies needed to effectively manage and monitor the ADOT&PF Program, it will be necessary to augment the ADOT&PF headquarters staff. The added staff should be employed to find the appropriate systems from the various techniques in use by the Regions and Divisions – or in other states, to document and test the systems and then to assist in their promulgation and application.

INTERSTATE HIGHWAY SYSTEM NEEDS



1,089 MILES

IMPROVEMENT COSTS



$976 MILLION

In 1987 the Department with the aid of a consulting firm completed a two year, $94,000, planning project to assess the needs of Alaska's 1,089 mile Interstate Highway System. The results show that 490 miles of this System currently meet reasonable standards of tolerability. However the results also show that 599 miles are deficient in one or more ways. Costs to upgrade the deficiencies were estimated to be $976 million.

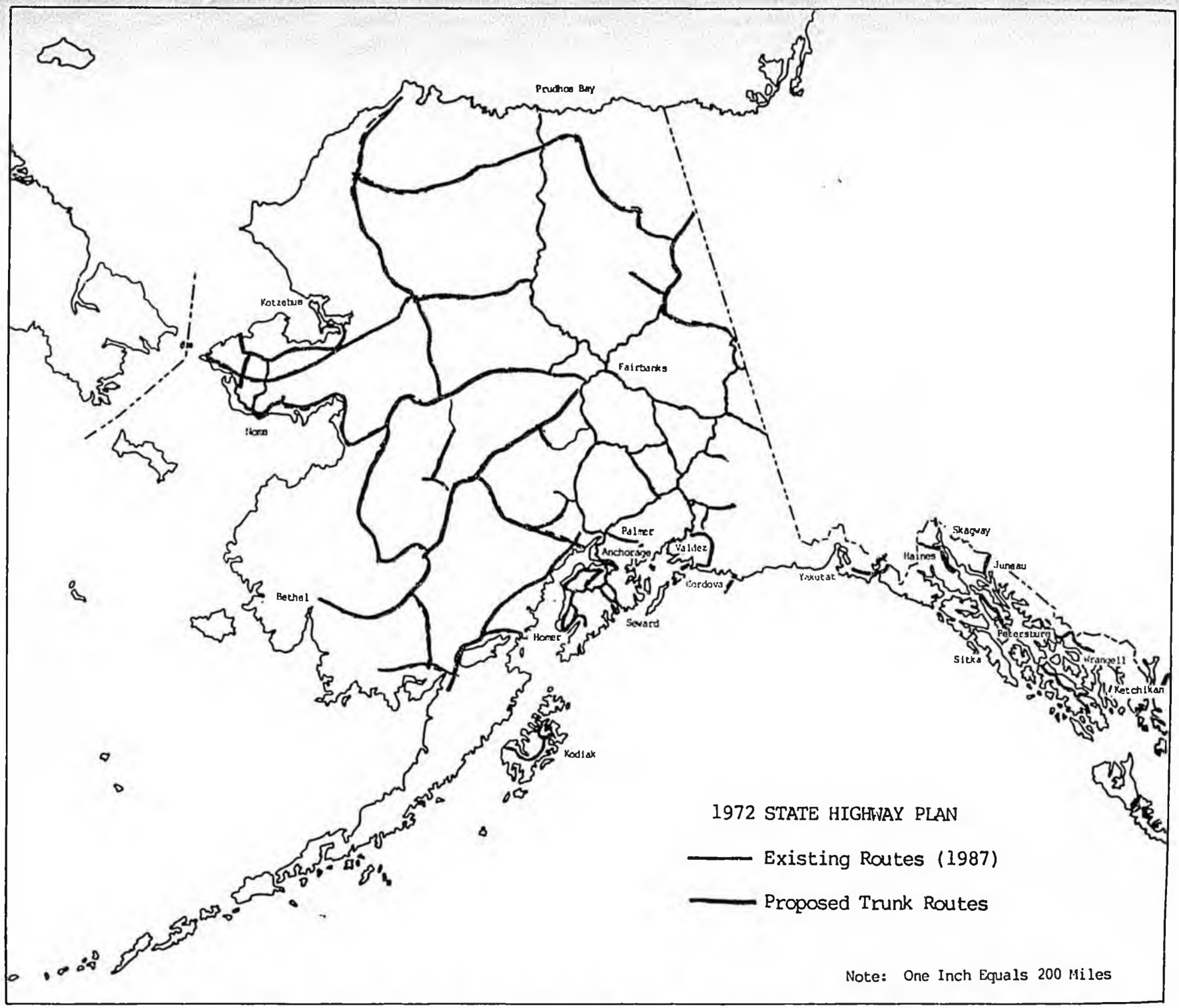
Exemplary Analysis. The team of engineers that carried out the needs analysis were made up of people with much former experience with the Washington Department of Transportation. The realistic approach to the analysis and the attention to detail prompt the note that this is a model analysis, one of the best of its kind. Great care was taken to relate pavement and bridge widths and curvatures and grades to the latest national standards of tolerability. To this was added assessments of accident experience, pavement condition and speed reductions.

Narrow Roadways A Critical Problem. Narrow roadways closely followed by poor pavement condition were the most critical elements. However 42 miles had curves and grades that were too sharp or too steep for safe, efficient driving. 40 of the 140 bridges on the system were found to be too narrow in terms of safe side clearances or not capable of carrying heavy truck loads (29 were both narrow and restrictive in load carrying capability).

Priorities Also Set. Another exemplary feature of the needs assessment is that it established a priority rating system and listed the improvement priority for each deficient section of Interstate Highway.

Recommendation: Set Goals For Interstate Upgrading. Based on the needs estimate and estimate of future availability of federal funds, it is recommended that a multi-year target be set for Interstate Highway System upgrading. If it is anticipated that Alaska will realize about $130 million each year in Federal Aid Highway Program funds, it is suggested at least half be devoted to Interstate modernization. At that rate and allowing for modest inflation, it would take 15 to 20 years to complete the effort. Other options of placing more or less resources into the Program should be investigated.

Also Recommended: Make Similar Needs Analyses Of Other Principal Arterials And Minor Arterials.


Prudhoe Bay
Kotzebue
Fairbanks
Nome
Palmer
Anchorage
Valdez
Bethel
Cordova
Yakutat
Haines
Skagway
Juneau
Seward
Homer
Petersburg
Sitka
Wrangell
Ketchikan
Kodiak
1972 STATE HIGHWAY PLAN
Existing Routes (1987)
Proposed Trunk Routes
Note: One Inch Equals 200 Miles

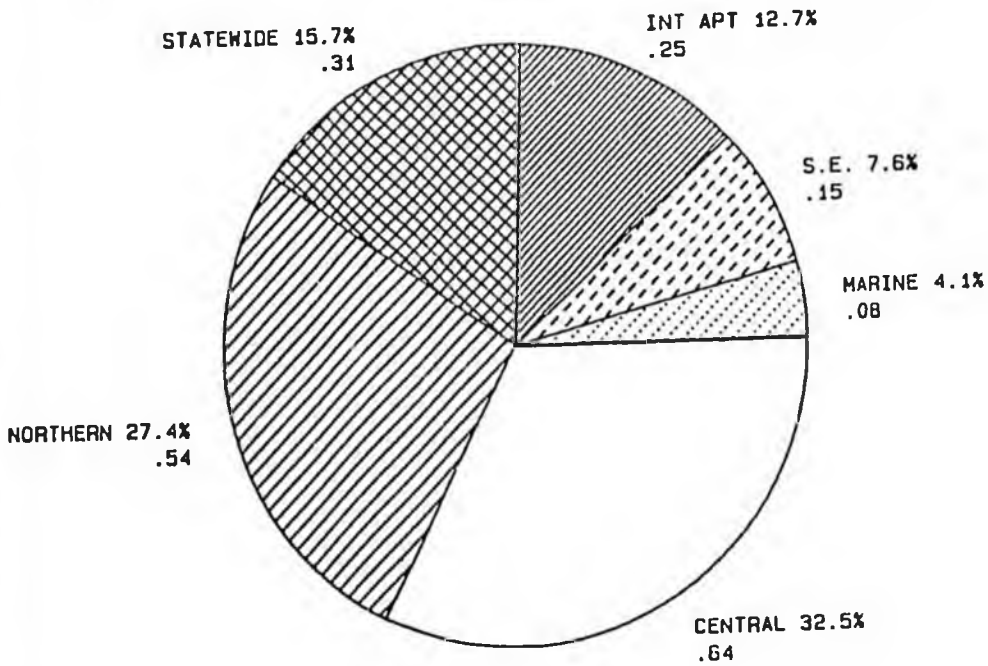
Expanding State Highway Service. The above plan for expansion of the State Highway System has no official status. It was developed in 1972 by the Alaska Department of Highways and is presented here to stimulate thinking about Alaska's future.

Many of the routes may not be feasible to build. The plan in its entirety is beyond the financial capability of Alaska. However, such routes as the Alaska Highway were probably once thought impossible. And a route to Prudhoe Bay was also beyond anyone's imagination. Is it time for Alaskans to again plan to open up more of their state by building first-phase, primitive roads? Should major communities such as Nome and Bethel be connected to the State Highway System? And should a highway be built north of Juneau to provide land access between the state capitol and Alaska's largest city? And what route or routes would be first priority?

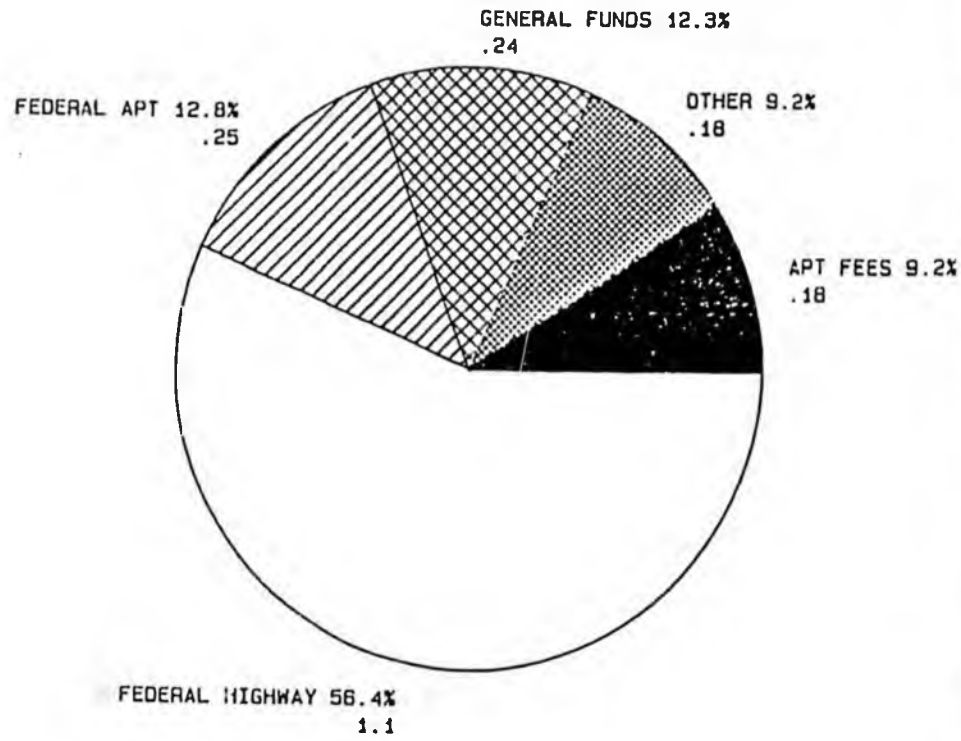
Alaska's Strategic Location. Just as the National Interstate Highway and Defense System was conceived to tie together strategic points in the United States, a basic road network for more of Alaska would also seem militarily important.

CAPITAL IMPROVEMENT PROGRAM, 1988-1993

DISTRIBUTION



$ SOURCE



TOTAL: $2.0 BILLION

Note: "Statewide" includes state matching $ for Federal Aid Highway Program Improvements and $ for state equipment fleet replacements.

Important Control Mechanism. Annually the ADOT&PF updates and publishes a six year capital improvement program. It is the source document for the scheduling of improvement projects' preconstruction engineering activities. Only those projects that are listed in the six year program can be let to contract. And only those listed projects can be advanced to the design stage. Annually the proposed improvement projects are studied and revisions made as project priorities change and year-to-year scheduling shifts are found necessary.

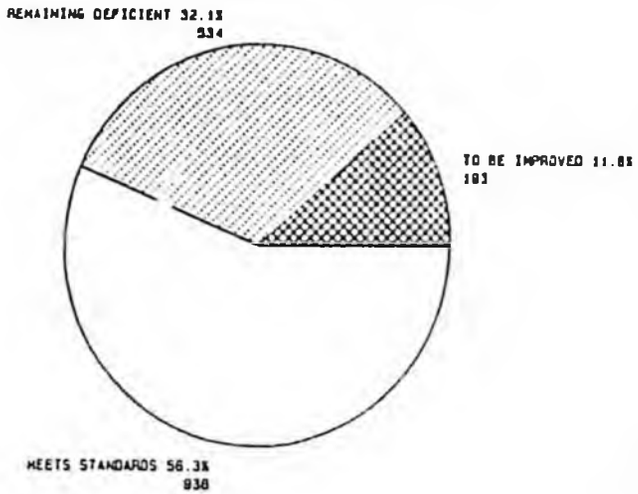
Stabilizing Influence. This master document of long range planning has been important in stabilizing the work activities of the Department. No longer is it justifiable for Region or Division officials to insert unlisted projects into their surveying, preliminary engineering or design work programs, without prior official application for a change in the capital improvement program.

Sources Of $2.0 Billion Program. The total dollar value of the projects listed in the 1988-1993 (including a seventh year, 1987, which was added due to the late date in receiving 1987 Federal Aid Highway Program funds) is $1.96 billion. The Program anticipates that 69 percent of the funds will come from federal sources, 12 percent from the State General Fund, 9 percent from the International Airport Revenue Fund and 10 percent from other sources. The other sources includes equipment lease fees accruing to the Highway Working Capital Fund for State Equipment Fleet replacements. Also in the other category are funds that will be reimbursed to the Department by other other agencies for both plan preparation and construction. Lastly the other source of funds includes International Airport Revenue bonds for Anchorage and Fairbanks airport improvements that are beyond that which can be financed by International Airport revenues.

Planned Distribution Of Funds. It is estimated that $1.2 billion or almost 60 percent of the total program of expenditure is for improvements in the Central and Northern Regions. However it should be noted that the $310 million (15.7 percent) that is listed for statewide expenditures includes all the state matches of federal funds (regarless of improvement project location), as well as planned expenses for State Equipment Fleet replacements, the funds for research and the funds for transportation planning.

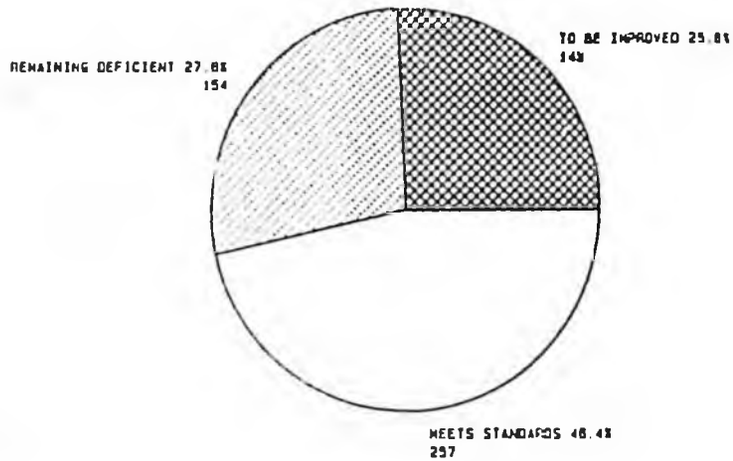
SIX YEAR PROGRAM OF HIGHWAY IMPROVEMENTS

NORTHERN REGION



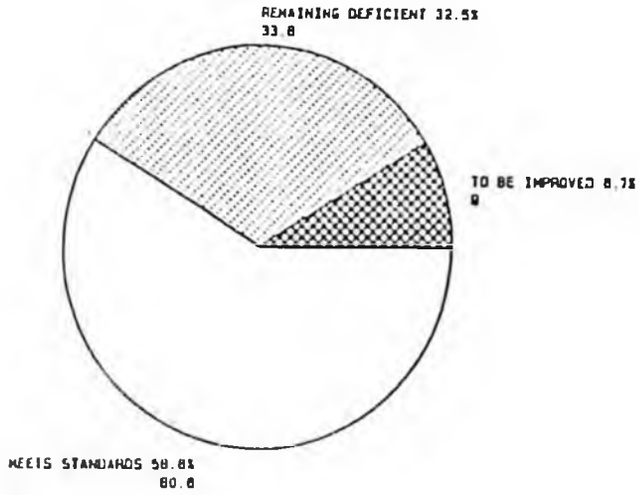
TOTAL: 1663 MILES

CENTRAL REGION



TOTAL: 554 MILES

SOUTHEAST REGION



TOTAL: 103 MILES

NOTE: IMPROVEMENTS INCLUDE UPGRADING & REHAB
FEDERAL AID INTERSTATE AND PRIMARY HIGHWAYS

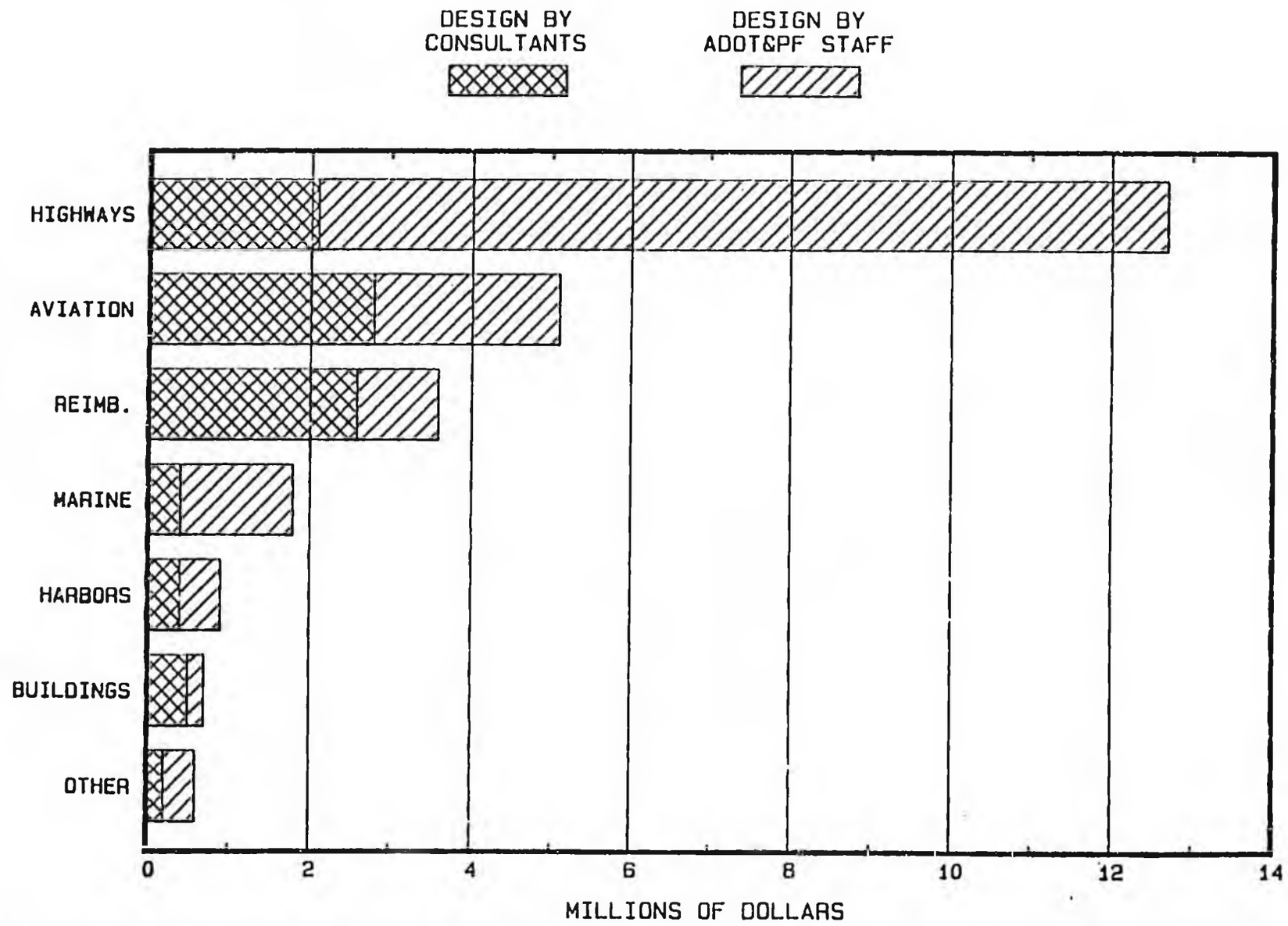
Planned Program Of Accomplishments. The charts indicate, in dark cross-hatched lines, the miles of Interstate, Other Principal and Minor Arterial improvements to be accomplished over the 1988 to 1994 period in each of the ADOT&PF Regions, that is as listed in the 1988-1994 Capital Improvement Program. Also shown are the miles of those most important highways that according to ADOT&PF officials now (1987) meet standards of tolerability as well as those highways that will remain deficient or must wait to be improved until beyond the 1988-1994 planning period.

Mileage Summary. In sum, 1,254 miles are currently performing satisfactorily or are in satisfactory condition, while 365 miles are to be awarded to contract for improvement by the end of fiscal year 1994. 722 miles will remain to be improved in ensuing years.

Impressive Goal. Assuming that these figures are correct and that 50 percent of the deficiencies on Alaska's most important highways can be corrected by 1995, Alaska will be in an enviable situation. It means that by July 1, 1994, 70 percent of Alaska's Interstate Highways, Other Principal Arterials and Minor Arterials and their urban extensions will be in satisfactory condition. Few states in the nation are in a position to indicate that state their highway improvement programs will yield such positive results.

To Be Sure Make Needs Evaluation And Implement The Pavement Management System. More accurate evaluation of the status of Other Principal and Minor Arterials is necessary to confirm the facts and figures. Furthermore since pavement is a never-ending challenge to keep in reasonably good condition, the ADOT&PF pavement management system, that is currently being developed, will be an excellent tool for accurately and continually monitoring progress or lack of progress in pavement status.

1986 DESIGN WORK BY STAFF AND CONSULTANTS

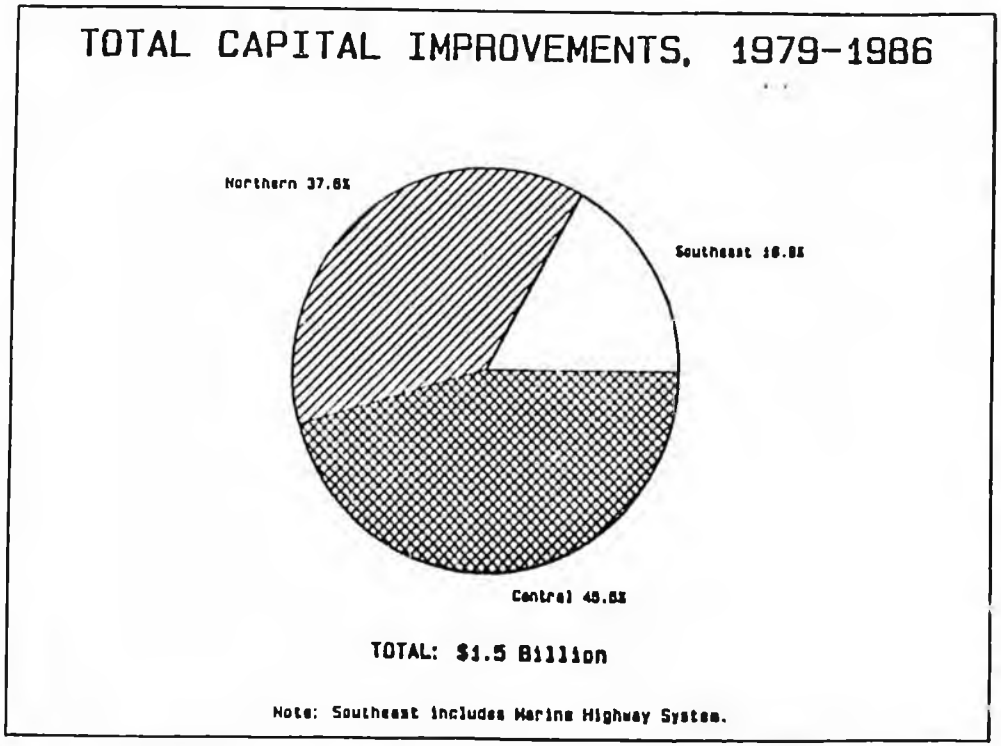


NOTE: 1986 TOTAL DESIGN COSTS WERE $25.4 MILLION; PAYMENTS TO CONSULTANTS WERE $8.9 MILLION OR 34.9%

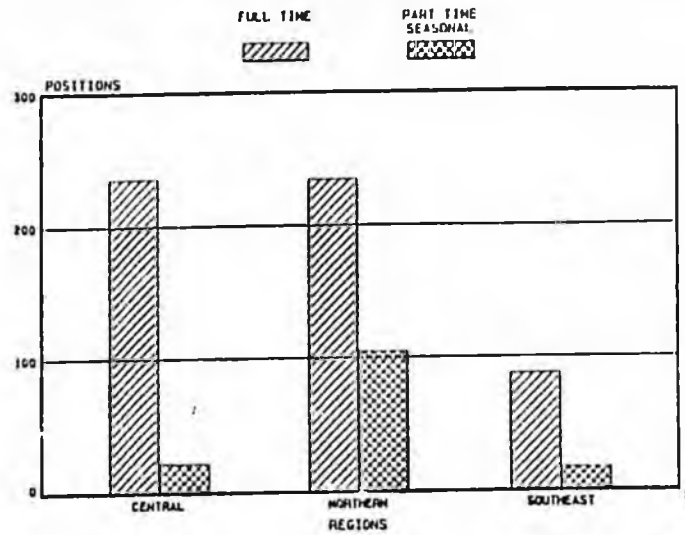
34.9 Percent Of Design Work By Private Firms. Of the $25.4 million spent on design in 1986, 34.9 percent was accomplished by private consulting engineering and architectural firms. Aviation, including the design of airports and ancillary facilities, led the way with over half (54 percent) accomplished by private enterprise. In second place was the $2.6 million in engineering analysis and design of buildings and facilities for other state and local government agencies. Only 16 percent of the combined highway and bridge designs in 1986 were accomplished by private engineering firms.

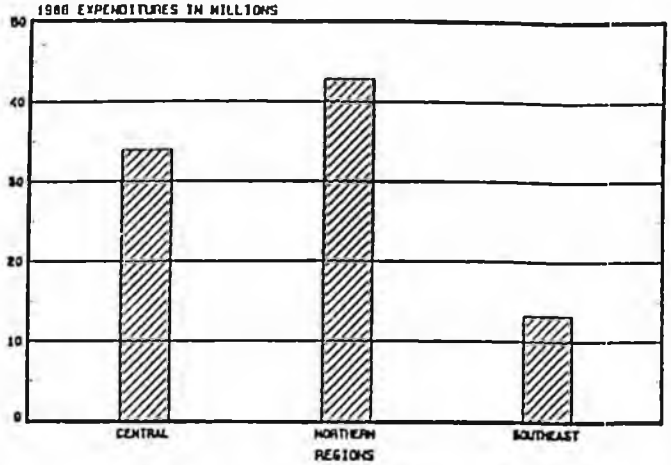
Most States Call On Outside Consultants. While some states, accomplish all design work with state staff, most states reserve some work for consulting engineering firms. In some states consultants help out with the very straight-forward designs where the chance of a communications problem between the state and the engineers is small. However most states reserve for private forces complex bridge or urban highway work, where specialized effort is required. While some states aim for a specified portion of all work to go to consultants, others reserve the "peaks" in design work load for consulting firms.

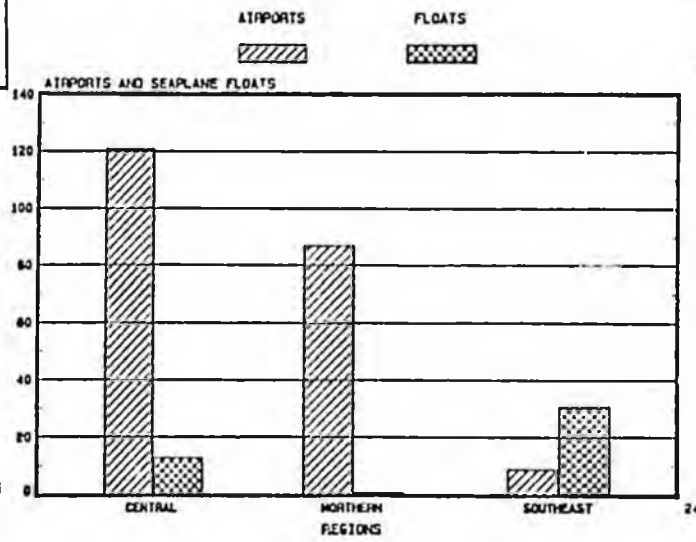
Recommendation: Set Consulting Engineering Policy. There is always the debate about which method, public or private engineering design and plan preparation, is most cost effective. Currently, the ADOT&PF lacks both the facts on public and private costs and a policy on the use of engineering firms based on such facts. It is therefore recommended that a consulting engineering policy be developed based on a cooperative effort by private and ADOT&PF engineers to find comparable, public and private design and plan preparation costs.

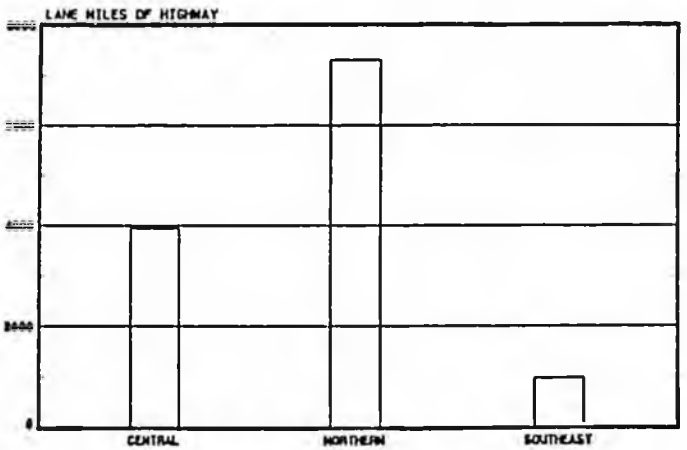


MAINTENANCE AND OPERATIONS

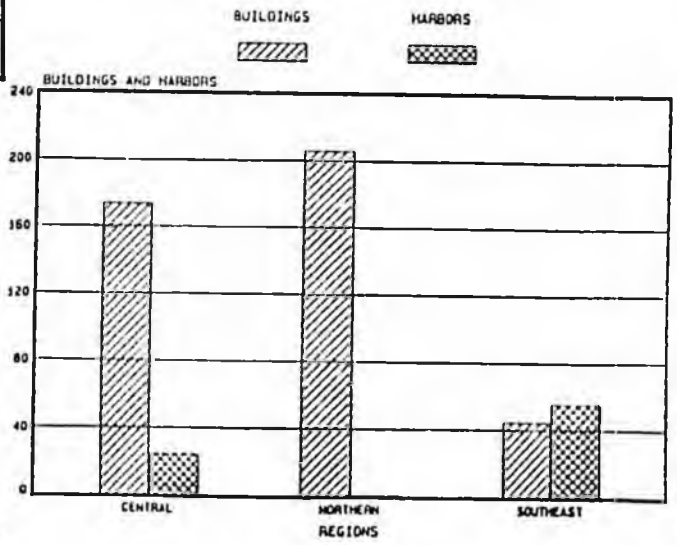








MARINE HIGHWAY AND INTERNATIONAL AIRPORTS EXCLUDED



MARINE HIGHWAY AND INTERNATIONAL AIRPORTS EXCLUDED

Maintenance And Operations. Perhaps the most unrewarding work in the highway industry is that of the people that are responsible for keeping our highways operable, safe and in as near to their as-built condition as resources allow. In fiscal year 1986 the ADOT&PF spent $91.3 million in maintenance and operation of highways, airports (excluding the International Airports and Marine Highway System maintenance and operations), harbors, ferry terminals and most state buildings.

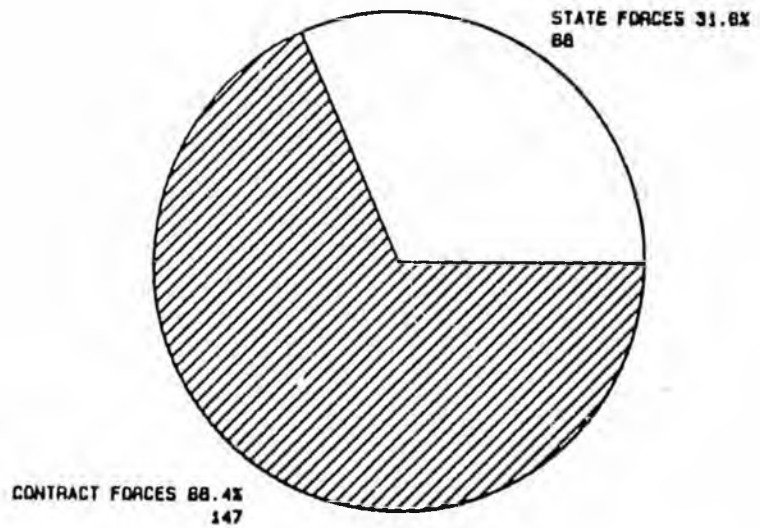
Responsibilities. The above charts indicate the relative maintenance manpower strengths of the three Regions and the split of maintenance and operations expenditures in fiscal year 1986. Also shown are the broad mix of maintenance and operations responsibilities, including lane-miles of highway, airports and seaplane floats, buildings and harbors.

Manpower. As of June 30, 1987, the Department employed 570 maintenance and operations people down from 661 people at the same point in time in 1985. Based on 1986 survey information from all state highway and transportation agencies in the nation, Alaska ranked 49th in the nation in maintenance personnel per lane-mile of state highway. Furthermore Alaska is the only state whose maintenance forces must not only maintain highways but also buildings and airports.

Major Airport Responsibility. With 215 state-owned and maintained, land airports and 45 seaplane floats, the ADOT&PF must not only ensure that the physical components of the airports are safe but also the operational equipment (landing lights, signs and wind indicators) of airports are in safe working condition. This is a major responsibility, especially where heavy snowfall may impede operations. Nevertheless, the ADOT&PF maintenance forces are responsible for advising pilots as to safe or unsafe landing conditions. To further compound the problem, most (68.4 percent) of the airport maintenance and operation function is contracted out to private individuals or corporations in remote areas where the supervision of work effort is difficult and costly.

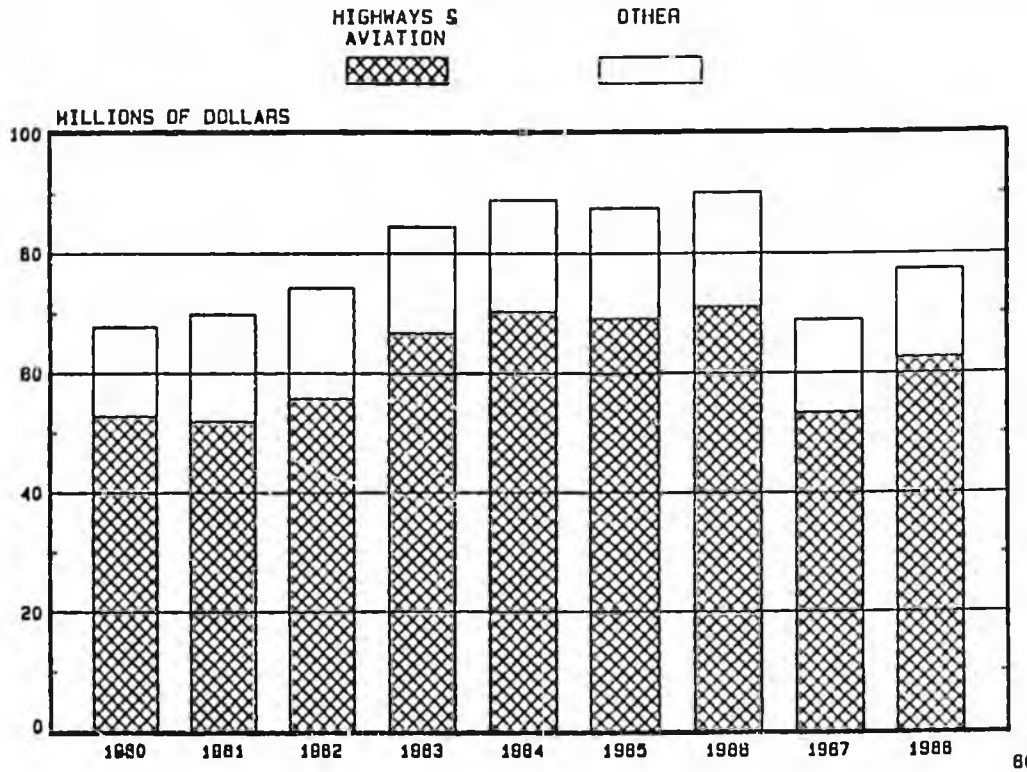
Force Spread Thin. The highway maintenance function is divided into maintenance districts. There are 85 maintenance stations, (one per area) each responsible for between 20 and 150 miles of road as well as the state airport or airports within the area. Manning has dropped to as low as two people at some maintenance stations making it difficult to schedule leave. Sickness or injuries sometimes mean snow removal operations must be stopped. Overtime is common. All leave must be scheduled in the frost-free months. Not only does the lack of flexibility hamper winter operations but summer crack sealing, mowing, brush cutting, seal coating and ditch and culvert clearance operations are affected.

MAINTENANCE OF LAND AIRPORTS



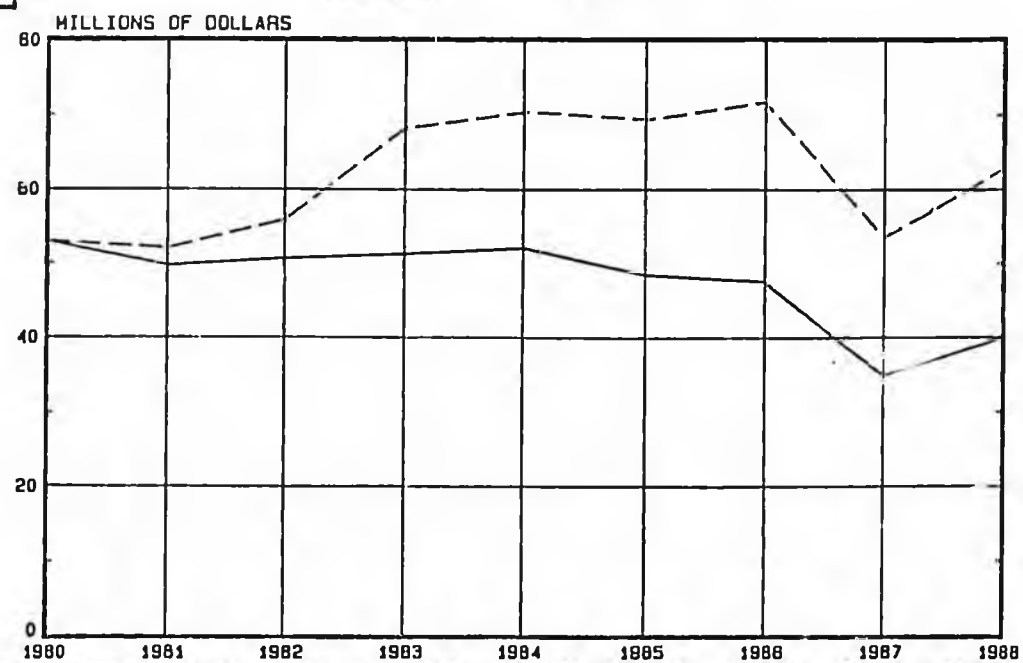
TOTAL: 215 AIRPORTS

MAINTENANCE & OPERATIONS TRENDS



Notes: 1) Actual fiscal year expenditures, 1980-1987.
2) FY 1988 is authorized expenditures.
3) Marine Highways and International Airports not included.

HIGHWAY & AVIATION M&O ONLY



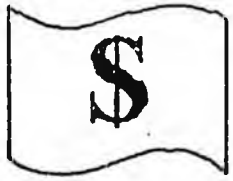
State Budget Constraints have Severely Impacted M&O. During the 1980 to 1988 period, maintenance and operations funds have varied from a low of $66.9 million in fiscal year 1980 to a high of $91.3 million in 1986. The highway and aviation portion (about 80 percent) of M&O expenditures varied from $52.0 million in 1981 to $71.2 million in 1986. Taking into account inflation and added lane-miles of highway responsibilities, fiscal year 1987 highway and aviation expenditures were 33 percent lower than seven years earlier. While fiscal year 1988 highway and aviation funds are up $8.8 million over 1987 expenditures, in terms of 1980 buying power and additional road responsibilities, 1988 budgeted funds are 25 percent less than spent in 1980.

Recommendation: Make A Highway And Aviation M&O Analysis. While Federation staff did witness highway maintenance problems in our cursory field checks, these visits and interviews were not sufficiently comprehensive to indicate the most cost-effective level of highway and aviation funding. However it is suggested that ADOT&PF staff establish a maintenance management procedure (with adequate monitoring of actual use) to henceforth gain accurate information on maintenance resource management. Furthermore it is suggested that optimal, minimum and several intermediate levels of service for all maintenance management activities be established and these service levels be used as a basis for public debate on the ADOT&PF service level to be provided. The analysis should provide estimates of the cost of each service level along with the benefits and consequences.

Maintenance Facilities Excellent. In the field evaluation of Alaska's roads it was noted that ADOT&PF maintenance stations were at least as good and in many cases better than others in the nation.

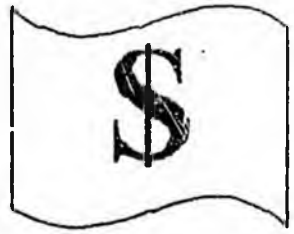
Federal Concern For Highway Maintenance. While federal aid highway funds are not available for highway maintenance, the Federal Aid Highway Act (Title 23) mandates that states adequately maintain all highways that were built or upgraded with federal aid highway funds. In fact the law stipulates a holdback of federal funds if it is found that a state highway or transportation department is not adequately maintaining such highways.

RESEARCH PAYS

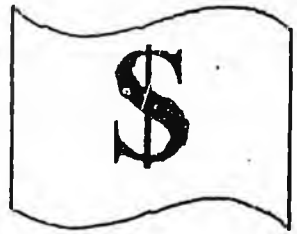


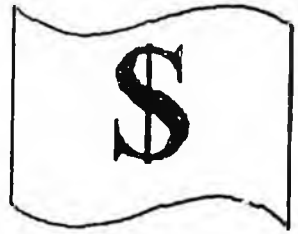
INVESTMENT

COST SAVINGS



INCREASED SAFETY





Highway Research A Must In Alaska. No where else in the nation is it as necessary as in Alaska to use materials on hand in road building. The cost to transport rock to remote places for the construction of highway subgrades is often prohibitive. Curing of bituminous pavement and concrete structures is difficult in the extreme cold of the Arctic as well as the extreme dampness of Southeast Alaska. Obtaining a stable, hard-surface highway over permafrost ice – that is subject to melting due to the heat-absorbing nature of bituminous materials – is a construction challenge. To meet these and many other problems, Alaska's highway designers must rely on research and researchers to find cost-effective solutions.

Research Program Less Than One Third Of One Percent Of 1986 ADOT&PF Program. In 1986 $1.7 million were appropriated for the ADOT&PF Research Program, or about 0.3 percent of the $525 million of ADOT&PF fiscal year 1986 expenditures. By private industry standards, the ADOT&PF research effort is extremely low.

Comparable To National Averages. Nevertheless, the proportion of transportation fund devoted to research is roughly comparable to the nationwide average. Total nationwide highway research spending in 1986 was 0.2 percent of nationwide highway spending.

Forty-four Percent Federal Funds. Two federal programs – Highway and Energy – provided 44 percent of 1986 ADOT&PF Research Program funds. The remaining 56 percent were appropriations of Alaska's General and Capital Funds.

Research Section Located At University of Alaska. The 14-person Research Section of the ADOT&PF is headquartered on the main campus of the University of Alaska in Fairbanks. Both the University's and the ADOT&PF Research Programs benefit from this association. Fourteen other states have similar joint transportation department and University research efforts.

Research Committee Sets Programs. While the Research Program is administered by the ADOT&PF Northern Region, representatives of each regional offices, the headquarters office and the Marine Highway System meet to monitor progress and to consider additional needed research.

Two Important Recent Contributions. After six years of investigation and testing by the Research Section, radioluminescent runway edge lighting has become operational. This is vitally important to Alaska's remote communities where lack of electric power has hampered safe airport operations.

The Falling Weight Deflectometer was tested by the Research Section and made available to designers in 1981. This machine simulates the impact upon pavement of a moving truck. The machine not only enhances the design of pavements and subgrade but is an important tool in assessing possible pavement damage due to heavy truck passage during spring thaw conditions.

Other Ongoing Research. As of January 1, 1988 there were 24 research projects going forward to improve: highway design, operations and maintenance; airport operations and design; building design and energy supply; harbor design; coastal navigation; ferry hull design; communication systems; and air quality measurement.

CHAPTER IV

HIGHWAY MANAGEMENT AND PRODUCTIVITY

CHAPTER IV

MANAGEMENT AND PRODUCTIVITY

A Review of the Alaska Department of Transportation and Public Facilities Organization as it Compares with other State Highway and Transportation Departments. The Size of the Staff as Compared with total State of Alaska Employees. Salary Comparisons with other Western States are shown. The Status of Capital Project Clean-up is reported, as is the Status of the Highway Equipment Working Capital Fund.

Major Milestones of Alaska Highway Program

1956: 1) Federal highway funds made available to Alaska

1959: 2) Statehood - transfer of public works (including highways) from federal to state jurisdiction.

1960: 3) Marine Highway System formed.

1962: 4) Alaska Department of Highways separated from Alaska Department of Public Works.

1964: 5) Extensive earthquake damage to roads.

1967: 6) Alaska Highway (ALCAN) completely paved (Alaska portion).

1970: 7) Federal Highway Act allows highway funds to be used for ferry upgrading.

1971: 8) Local Service Roads and Trails Program implemented.

1971: 9) Parks Highway completed.

1974: 10) Dalton Highway opened by oil companies.

1977: 11) Alaska Department of Transportation and Public Facilities formed.

1979: 12) Oil revenues generate major expansion in transportation capital expenditures.

1981: 13) High point in contract awards, $260.7 million (highways $157.2 million).

1982: 14) Regionalization of ADOT&PF.

1982: 15) Alaska Interstate Highway System designated.

1985: 16) Last appropriation for Local Service Roads and Trails Program.

1986: 17) High point in Highway and Airport Maintenance and Operations authorizations, $71.2 million.

Alaska's road program and its management has seen some dramatic changes over the past 30 years; more so than any state highway or transportation agency in the nation. From the perspective of this Review, the most significant milestones or events are shown above.

Two Important Management Decisions. The formulation of the Alaska Department of Transportation and Public Facilities in 1977 and the regionalization or decentralization of Program control in 1982 were most important changes. Bringing all state transportation agencies into one organization was certainly an important management decision from both the perspective of the Governor and the Legislative. Transferring much of the control to the Regional and Division Directors was a decision that lessened the Commissioner's and headquarters' staff roles and gave great latitude and flexibility to the Region and Division Directors.

Highway Program "Weathers The Storm". Whenever a strong program such as the State Highway Program is combined with other efforts such as Public Facilities, the weaker program is usually strengthened and the strong program loses some of its stature.

While this has been the case in some states, we conclude that the State Highway Program has not suffered in Alaska. The improvement and maintenance of highways remains as one of the most important issues for the Commissioner, the ADOT&PF headquarters' staff and the Regional staff. The responsibility for public facilities, the International Airports, other state airports, harbors and the Marine Highway System has not eclipsed the highway responsibility. The decision to combine these agencies and functions with the Highway Department and the highway functions was a good one and it should stand.

Regionalization Also Sound Decision. The decision to allow the Regions and Divisions greater control over the ADOT&PF Program and particularly the State Highway Program was also logical and beneficial.

However, as discussed in Chapter II and III, the ADOT&PF headquarter staff needs to strengthen both its role of providing policy direction to the Regions and Divisions and its role of monitoring program status and progress. To accomplish this, the ADOT&PF budget should be increased to allow additional staff in the headquarters' offices.