EXECUTIVE SUMMARY

This report presents the results of a transportation study for the City of Homer, including the surrounding area to approximately two miles north of the City Limits. The Homer Area 2001 Transportation Plan is a 20-year transportation planning tool for the City of Homer to identify needs, guide planning and aid funding efforts for roads and trails capital improvement projects. Funding for this study is from DOT/PF and the City of Homer.

Homer is situated on Kachemak Bay at the end of the Sterling Highway and is the commercial hub of the southern Kenai Peninsula. The 2004 population of the City of Homer is 5,332 and is projected to grow at about 2% annually to about 6000 in 20 years. The local economy depends largely on the commercial and sport fishing industries and tourism. Construction, retail trade and government services are also a significant part of the Homer economy.

Funding for local streets and trails projects comes from state, city and borough sources, with by far the largest portion coming from the state. DOT/PF plans transportation projects through the State Transportation Improvement Program (STIP) on a three-year cycle. Over 20 Homer area projects ($43+ million) are currently on the STIP list.

Eight issues, or assumptions, were identified that need to be addressed by goals and objectives. Issues include such diverse considerations as expected growth, traffic congestion, pedestrian needs, snow storage, multi-use dock and downtown parking. Nine goals were then drafted as broad statements to address issues, and eleven specific objectives were identified to measure progress toward desired goals.

Homer area streets fall into three categories. The only arterial is the Sterling Highway. Local streets emphasize access and may have frequent pedestrian and cyclist activity. Collectors carry traffic from local streets to other collectors, commercial areas, schools, and arterials.

The Homer street transportation modeling was done with QRS II software using 1999 traffic data and the existing network of collectors and arterial to establish a baseline model. Twenty-year projections were developed by creating centroids containing residential, business, and institutional data, and considering number of dwelling units, employment, schools and other economic data obtained during this study. The baseline model was carefully calibrated to reasonably match DOT/PF 1999 data.

Several model runs were prepared to describe present and future traffic operations of the existing street system showing traffic volumes on each segment. Level of service, a quantitative description of traffic delay, was determined for un-signaled intersections. The models shows that summer peak hour volumes for the Spit Road and the beginning of East End Road will be over capacity and should be improved to add a center turn lane, and a traffic signal is already warranted at the Sterling Highway/Lake Street intersection; other intersections could warrant signals before 20 years.

The model of the street system was then modified to include several alternatives such as adding corridors and extending existing corridors. The strategic addition/extension of corridors resulted in significant reductions of projected traffic loads on Central Business District (CBD) streets and some outlying streets. This will enhance access to existing developed areas and open opportunities for future growth.

The CBD is a commercially-zoned area bounded by Sterling Highway, Pioneer Avenue and Lake Street. Convenient transportation, parking and circulation are critical to orderly CBD development and future vitality, but are currently inadequate. The proposed East-West street through the CBD and suitable on- and off-street parking will greatly enhance accessibility and activity in the CBD.

The Kachemak Bay Multi-use Dock will generate quite a bit of additional auto, van and truck traffic both to and from the Spit and around the entire City. Adequate staging area will be required. Traffic planning and timely improvements will be necessary to avoid traffic bottlenecks.

With the increased development, hauling of snow from the CBD streets will require additional snow storage area. Identification of a new site(s) and allowance for environmental requirements should be a high priority.

Accommodation of senior citizens and people with disabilities will be important in making Homer and especially the CBD user friendly to all residents and visitors. According to the 2000 Census, 10% of the local population is 65 or older. Streets, walkways and buildings should be planned for accessibility. Seniors and people with disabilities must be considered as codes and ordinances are proposed and adopted.

1 INTRODUCTION

The Homer Area 2001 Transportation Plan was produced to be a comprehensive transportation-planning tool for the City of Homer. Additionally, the Non-Motorized Trails and Transportation Plan should be considered a companion document to the Transportation Plan, as it is the City's policy document for comprehensive long-range non-motorized transportation and trails system. This study will provide a general guide for planning and funding requests for road and trail transportation capital improvement projects for the next 20 years. This plan is not intended to identify site-specific locations of improvement.

The City of Homer (COH) obtained funding for this study from the Alaska Department of Transportation and Public Facilities (DOT/PF), and has retained Mike Tauriainen, P.E., Consulting Engineers, Inc. as the prime consultant to perform this study. Other members of the consultant planning team include Land Design North (trails element), Kinney Engineering (transportation engineering), Bechtol Planning & Development (planning), and Brooks & Associates (transit engineering).

The 2001 Draft Transportation Plan was completed but not adopted. In Fall 2003 the City of Homer Road Standards Committee began reviewing the goals, objectives, and recommendations of the 2001 Draft Transportation Plan. The Homer Advisory Planning Commission took up discussion of the Draft Transportation Plan following the Roads Standards Committee. This plan reflects the plan as recommended by the Road Standards Committee.

The Road Standard Committee and the Homer Advisory Planning Commission further recommend that where ever this plan recommends signalization that alternatives, such as roundabouts, be seriously considered.

2 BACKGROUND FOR PLANNING

2.1 Community Description

The following description is based on the community profile published on the State of Alaska Department of Community and Economic Development's (DCED) website, www.dced.state.ak.us.

The City of Homer is a first-class city located on the north shore of Kachemak Bay on the southern Kenai Peninsula. The Homer Spit is a 4.5-mile long bar of gravel, which extends from the Homer shoreline out into Kachemak Bay. Homer is about 227 road miles south of Anchorage, at the southern-most point of the Sterling Highway. It lies at approximately 59^{o} 38' N Latitude, 151^{o} 33' W Longitude, and is in the Third Judicial Homer Recording District. The City encompasses 15 sq. miles of land and 10.5 sq. miles of water. Homer is the commercial hub of the southern Kenai Peninsula. Neighboring communities include Anchor Point, Fritz Creek, Kachemak City, and Voznesenka which are accessible by road; and Seldovia, Port Graham, Nanwalek and Halibut Cove which are accessible only by air and water.

Homer has a maritime climate. During the winter, temperatures range from 14 to 27^{o} F; summer temperatures vary from 45 to 65^{o} F. Average annual precipitation is 24 inches, including 55 inches of snow.

The following paragraphs provide an overview of Homer and are copied (with edits) from the DCED Homer community profile.

The Kenaitze Indian Tribe occupied this area for thousands of years. In 1895, the U.S. Geological Survey came to Homer searching for and studying coal and gold resources. Hope and Sunrise prospectors began their land journey at the Homer Spit. The community was named for mining promoter Homer Pennock, who arrived in 1896 and built living quarters for his crew of 50 on the Homer Spit. Pennock's plans were to mine the beach sands along Cook Inlet, from Homer to Ninilchik. The Homer post office opened shortly thereafter. In 1899, Cook Inlet Coal Fields Company built a town and a dock on the Spit, started the coal mine at Homer's Bluff Point, and constructed a 7-mile-long railroad that carried the coal to the end of Homer Spit. Settlers continued to move into the area in the 1930s and 1940s to homestead. Other settlers were attracted to the canneries that processed Cook Inlet fish. As a direct result of the 1964 earthquake the City government was incorporated as a first-class city in March 1964. The Homer

Spit subsided approximately 4 to 6 feet during the 1964 earthquake, and several buildings had to be relocated.

Homer has a large community of artists. The annual Homer Halibut Jackpot Derby is hosted by the Homer Chamber of Commerce from May 1 through Labor Day. Homer calls itself the "Halibut Capital of the World." Other events include: Winter Carnival (Feb); Winter King Salmon Tournament (Mar); Kachemak Bay Shorebird Festival (May); Wooden Boat Festival (May); Summer Street Fair (July); Concert on the Lawn (Aug); and Seafood Festival (Sept)

The majority of homes are fully plumbed with water and sewer. The City of Homer owns and operates the water and sewer system. Water supplied by a dam and 35-acre reservoir at Bridge Creek, is treated, stored in tanks with a capacity of 2.5 million gallons, and piped to most the of homes in the City. Some residents use individual wells or have water delivered to home tanks. City sewage is piped to a deep shaft sewer treatment plant; capacity is 880,000 gallons per day. Refuse is collected by Peninsula Sanitation, a private firm, and hauled to the Borough-operated Homer landfill/balefill. The City also participates in recycling and hazardous waste disposal programs. Homer Electric Association (HEA) provides electrical power. HEA operates the Bradley Lake Hydroelectric Plant and is part owner of the Alaska Electric Generation & Transmission Cooperative, which operates a gas turbine plant in Soldotna. ACS, AT&T Alascom, and GCI provide phone service, and GCI provides cable service.

The City provides the following services: a police department, fire department with a large active volunteer membership, library, parks and recreation, public works department, and the port and harbor department. The State has a State Trooper Post in Homer. South Peninsula Hospital is in Homer and provides medical services for the City and surrounding communities. The South Peninsula Hospital Service Area Board is responsible for the operation of the hospital, within the Kenai Peninsula Borough umbrella. The Homer Society of Natural History sponsors the Pratt Museum. Homer Senior Citizens, Inc. provides assisted and independent living facilities, a day program, Senior Center, nutrition and transportation services. The Kenai Peninsula Independent Living Center has a facility in Homer and provides assisted living, transportation, vocational training, skills training, and rehabilitation for disabled Alaskans.

The University of Alaska, Kachemak Bay Branch has two campuses in Homer - the west and east campuses. Table I-1 summarizes Homer school information (through grade 12). The public schools in Homer are a part of the Kenai Peninsula Borough School District.

Table I-1: Homer Schools

School	Grades	Students	Staff	Students 2004
Homer Charter School	4 - 6	28	5	31
Homer Flex School	9 - 12	48	4	39
Homer High School	9 - 12	508	60	456
Homer Middle School	7 - 8	219	24	228
Paul Banks Elementary School	P - 3	229	33	222
West Homer Elementary School	3 - 6	296	32	296
Community Christian School	K - 12	92	20	

Homer is accessible by the Sterling Highway to Anchorage, Fairbanks, Canada and the lower 48 states. It is often referred to as "The End of the Road," because it lies at the terminus of the Sterling Highway, at the end of the world famous Homer Spit. The State owns and operates the Homer Airport, with a 6,700' asphalt runway and floatplane basin at Beluga Lake. The City built and operates the Homer Airport Terminal. The City is served by several scheduled and chartered aircraft services. There are four additional private landing strips in the vicinity. The Alaska Marine Highway and local ferry services provide water transportation. The deep-water dock, which was constructed in 1990, has a total berthing space on the outer (east) face of 774 feet when using dolphins and 820' when using dolphins and buoys and can accommodate 30+ foot drafts. The Pioneer Dock was completed in 2002, and has a berthing for ships up to 750' LOA. Water depth at both of these docks is minus 40 feet at mean lower low water (MLLW). The City's third dock is Fish Dock, which is located inside the small boat harbor, and includes not only docking space but eight public use cranes and an ice plant. The boat harbor has a 5-lane boat launch ramp, 920 reserved slips, plus more than 6,000 linear feet of transient tie up space and accommodates up to 1,400 boats at the seasonal peak

2.2 City of Homer Government

The following information was compiled and summarized from Homer's website (www.ci.homer.ak.us/) and the DCED community profile.

Homer has a council/manager form of government, with an elected mayor and six-member city council. A manager runs the City organization. Homer's departments/divisions are Clerk, Police, Fire, Personnel, Library, Public Works, Planning, Port and Harbor, and Finance. Boards and commissions include a Library Advisory Board, Parks and Recreation Advisory Commission, Advisory Planning Commission, Port/Harbor Advisory Commission, Road Standards Committee and the Town Center Development Committee.

Homer has a 3.5% city sales tax, and a 2% Borough sales tax. The City property tax is 5.0 mills, and the Borough property tax is 6.5 mills. Figures I-1 and I-2 present the 2001 budget expenditure and revenue information for Homer.

Figure I-1: Homer FY 2001 Expenditures (source: http://finance.ci.homer.ak.us/b2001comb.htm)

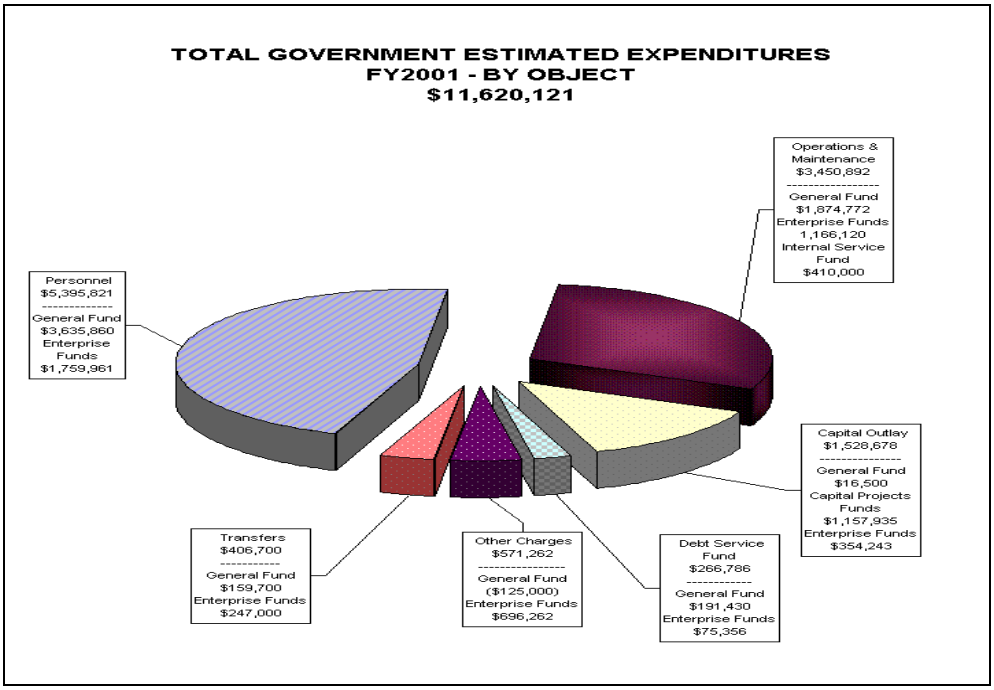


Figure I-1a: Homer FY 2004 Expenditures

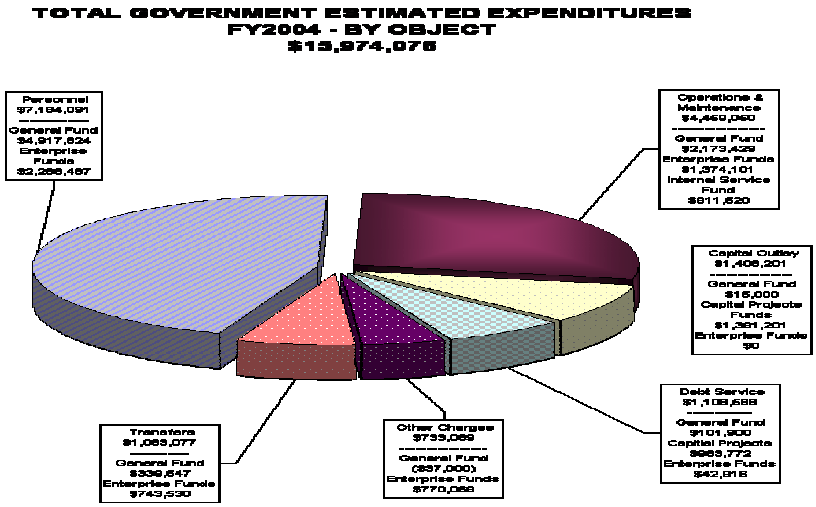


Figure I-2: Homer FY 2001 Revenues (source: http://finance.ci.homer.ak.us/b2001comb.htm)

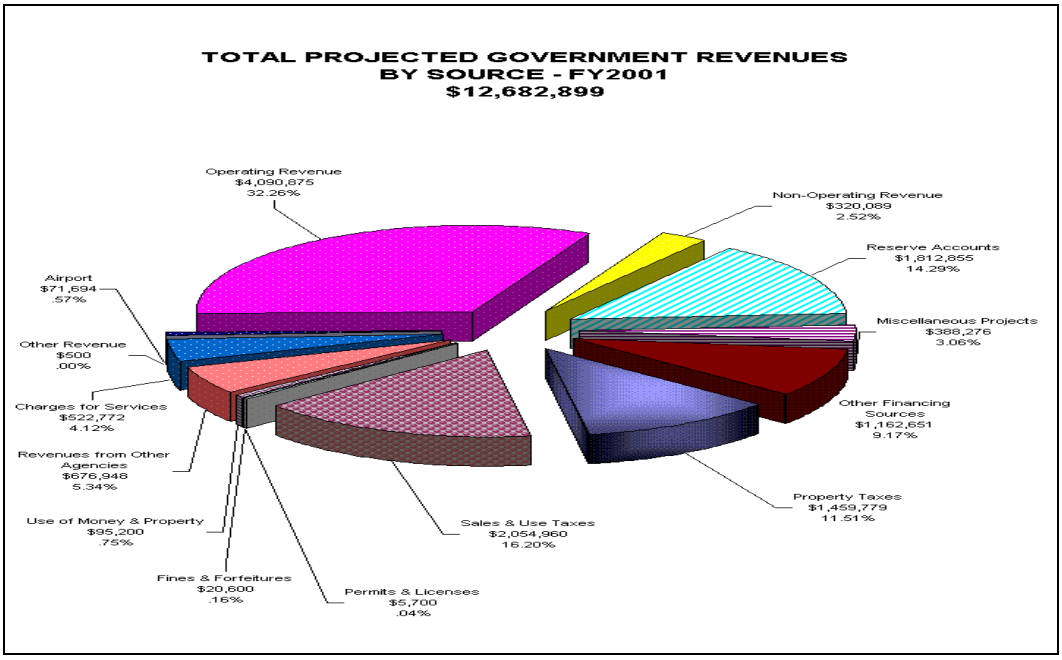
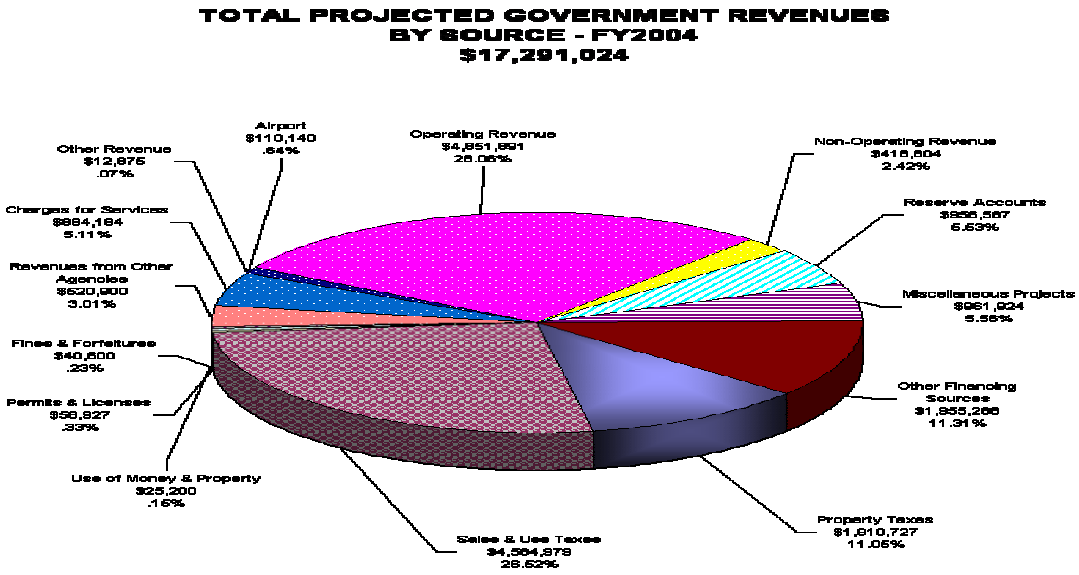


Figure I-2a: Homer FY 2001 Revenues



2.3 Population

Homer's recorded population history begins in 1940. Table I-2 presents population data for Homer between 1940 and the present, and for the Kenai Peninsula Borough between 1990 and 2000. This information was obtained from the DCED website and from the State of Alaska Department of Labor and Workforce Development (DOL), Research and Analysis Section, website which has past records and 2000 census information. DOL's website address is www.labor.state.ak.us/research/research.htm.

Table I-2: Population: Kenai Peninsula Borough, Homer, and Homer Area

Year	Kenai Peninsula Borough	Homer City	Homer Area Population[1]
1940		325	
1950		307	
1960		1,247	
1970		1,083	
1980		2,209	
1990 (Census Year)	40,802	3,660	5,451
1991	42,132	3,700	5,416
1992	43,459	3,788	5,617
1993	43,814	3,850	5,722
1994	45,059	3,940	5,925
1995	45,906	3,965	6,103
1996	46,654	4,008	6,281
1997	47,695	4,068	6,441
1998	48,532	4,128	6,525
1999	48,952	4,154	6,670
2000 (Census Year)	49,691	3,946	5,980
2003 Estimate	51,220	4,893	7,106
Computed Annual Growth Rate 1990 to 1999	2.04%	1.42%	2.27%
Computed Annual Growth Rate 1990 to 2000	1.99%	0.76%	0.93%

[1]Homer area includes Homer, Fritz Creek, and Kachemak City

The reason that the population falls off in 2000 is that the years in between census years are estimated from local addresses, including post office boxes that are rented in Homer by people living outside of Homer. The year 1990 and 2000 represent actual census information.

The annual growth rates in the table are the equivalent geometric growth rate from 1990 to 1999 and to 2000. Annual growth rates are used to model population growth as well as traffic growth. Equation I-1 is the equation for population forecasting using the annual growth rate percentage.

$$P_f = P_c * (1+i/100)^n \qquad \text{(Equation I-1)}$$

With:

P_f is the future population at year n;

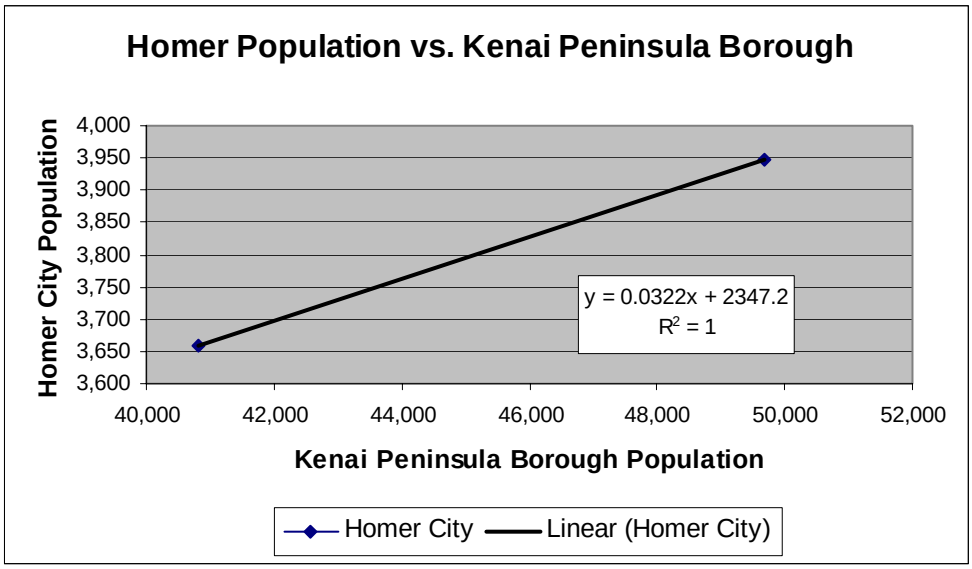
P_c is the current, or base year population;

i is the annual growth rate in percent per year; and

n is the number of years between now and the future year.

Figure I-3 prepares a graph of the Homer population as a function of the Kenai Peninsula Borough population for the data points at 1990 and 2000. Because the State of Alaska DOL has developed low, medium, and high growth rates for the Borough, another forecasting tool would be to use this relationship and input future Borough population forecasts to yield the Homer population.

Figure I-3: Homer Population vs. Kenai Peninsula Borough Population



2.4 Population Forecasts

This subsection develops future populations for Homer, and an annual growth rate that can apply to both population and to traffic forecasting. The planning horizon is 20 years and the year of concern is 2022. Our transportation model, QRS II, uses population (specifically dwelling units) as one of the planning input variables.

The Department of Labor Research and Analysis Section has prepared forecasts for the Kenai Peninsula Borough. Table I-3 presents their forecasts from 1998 to 2018 for low, medium, and high scenarios. The year 2022 forecasts (in italics) were computed with Equation I-1, and the listed 5-year growth rate for the last five-year interval.

Table I-3: Kenai Peninsula Borough Population Forecasts

Year	Low Growth		Medium Growth		High Growth	
	Pop.	5-year Growth Rate	Pop.	5-year Growth Rate	Pop.	5-year Growth Rate
1998	48815		48815		48815	
2003	52152	1.33%	52382	1.42%	53371	1.80%
2008	55387	1.21%	56110	1.38%	58247	1.76%
2013	58852	1.22%	60234	1.43%	63636	1.79%
2018	62142	1.09%	64305	1.32%	69184	1.69%
2022	*64906*		*67759*		*73969*	

Using the trend line equation from Figure I-3, y = 0.0322x + 2347, (where “x” is the KPB population and “y” is the resultant Homer population) and using the 2022 High Growth forecast scenario for the Borough of 73,969, we can compute the 2022 Homer population to be 4,800. The annual growth rate that is calculated under this method to grow the population from 2000 level to 2022 would be about 0.8% per year.

There is a consensus among planners and City Staff that 2% per year is a good growth rate for Homer because it mirrors the Borough projections, and should reflect the overall area growth and account for seasonal variations. This rate is also more in line with the economic growth discussed below. For Homer population growth, we will use a growth rate of 2% per year resulting in a population of 6000 in 2022.

2.5 Local Economy

The QRS II program uses discrete types of employment as input variables for the model. As such, we are interested in forecasting future economic growth.

According to the DCED website community profile, Homer is primarily a fishing, fish processing, trade and service center, and seasonal tourist industry. Cruise ships have visited Homer in the past, and with a new multi-purpose dock is under construction regular visits are projected. During summer months, the population increases with tourism and fishery employment. Many guide services serve halibut and salmon sport fishing clients. About 520 residents hold commercial fishing permits. The fish dock has cold storage facilities, ice manufacturing and a vacuum fish-loading system. The $13 million dollar U.S. Fish & Wildlife Visitors Center for the Alaska Maritime National Wildlife Refuge Center was opened to the public in late 2003.

The 1990 U.S. Census provides the most recent community level data available. The community level data from the 2000 Census will not be available until May 2002. Table I-4 shows occupation and industry employment and is from Homer's community profile on the DCED website.

Table I-4: Employment by Occupation and Industry in Homer (1990)

OCCUPATION		INDUSTRY	
Executive/Administrator:	239	Forestry/Fishing/Farming:	142
Professional Specialty:	236	Mining:	46
Technician:	50	Construction:	176
Sales:	122	Non-Dur. Manufacturing:	64
Administrative Support:	203	Durable Manufacturing:	75
Private Household:	7	Transportation:	92
Protective Service:	25	Communications/Utilities:	65
Other Professional Service:	252	Wholesale Trade:	34
Forestry/Fishing/Farming:	126	Retail Trade:	296
Precision Craft or Repair:	171	Fin./Insur./Real Estate:	66
Machine Operators:	73	Business& Repair Service:	37
Transportation or Materials:	103	Personal Services:	110
Handler/Equipment/Labor:	47	Entertainment/Recreation:	20
		Health Services:	136
		Education Services:	78
		Public Admin:	108
		Other Prof. Services:	109
1990 Totals	**1654**		**1654**

Table I-4a Employment by Occupation and Industry in Homer (2000)

OCCUPATION		INDUSTRY	
Management/ Professional	585	Agriculture/ Forestry/ Fishing/Mining	115
Sales & Office	327	Construction	116
Farming/ Fishing/ Forestry	55	Manufacturing	54
Construction/Extraction/ Maintenance	169	Wholesale Trade	28
Production/Transportation	234	Retail Trade	198
		Transportation/warehousing/utilities	171
		Information	35
		Finance/Insurance/Real Estate/Rental/Leasing	95
		Professional/Scientific/Management, Administration/Waste Management Services	82
		Education/Health/Social Services	411
		Arts/Recreation/Food & Lodging	256
		Other	110
		Public Administration	90
2000 Totals	**1,761**		**1,761**

The DOL maintains annual industry employment statistics for borough and census areas in the State. One of the reporting areas includes the Homer area (see http://www.labor.state.ak.us/research/region/kenai/hometbl.htm). Table I-5 presents the industry employment for the Homer Area between 1990 and 1998. The total industry employment average annual growth rate between 1990 and 1998 is about 2.4% per year.

Table I-6 presents overall unemployment and sector trends for Homer during1990 and summarizes information from the DCED website.

The annual average unemployment rate from 1990 to 2000 for the Kenai Peninsula Borough has fluctuated between a low of 9.8% in 1998, to a high of 15.5% in 1992 (reported by the State Department of Labor Research and Analysis website). In 1990, the unemployment rate for the Borough was 11.7%, almost 4% higher than the 1990 rate for Homer shown in Table I-6.

Table I-5: Homer Area Employment by Industry, 1990 to 1998

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total Industries	2,102	2,312	2,182	2,289	2,472	2,647	2,638	2,615	2,539
Mining	0	0	0	0	0	0	0	0	0
Construction	214	128	88	92	125	163	142	149	165
Manufacturing	304	414	296	261	301	242	280	190	167
Transportation	245	226	213	235	271	288	243	237	229
Trade	450	546	515	548	572	696	734	764	664
Finance	51	56	60	66	73	76	73	64	67
Services & Misc.	375	410	451	486	501	527	535	555	587
Government	463	533	558	601	630	655	631	656	660
Federal	56	63	67	68	66	66	68	74	68
State	27	102	98	93	103	103	107	111	111
Local	380	368	393	439	460	487	456	471	481

Table I-6: Unemployment and Sector Employment for Homer

Unemployment		
	1990	**2000**
Total Potential Workers (16+)	2,673	3,006
Total Employment	1,722	2,022
Armed Forces Employment	68	88
Unemployed (and seeking work)	141	173
Percent Unemployed	7.9%	5.8%
Adults Not in Labor Force	810	984
% Adults Not in Labor Force	35.60%	32.7%
Employment by Sector		
	1990	**2000**
Private Sector	1390	1125
Self Employed	241	327
Local Government	175	2000 Total Government Employees
State Government	39	
Federal Government	50	297

Employment, job diversity, and economic outlook are favorable indicators for Homer's future. Transportation planning should consider these indicators in determining needs. In addition, one sees from Table I-5 that the past economy growth (measured by employment) for the area is

about 2.4% per year. It is estimated that this positive trend will continue, and for the purposes of this transportation plan, an annual increase in employment of 2.4% per year was used.

2.6 Land Use

City of Homer and Kenai Peninsula Borough documents and mapping were researched to determine existing and future land use and zoning patterns. This information was used to describe development in the base and future QRS models.

3 TRANSPORTATION FUNDING

3.1 Local Funding

The City of Homer has created the Homer Accelerated Roads Program (HARP); the intent of which is to reconstruct local substandard city streets and/or upgrade existing city streets and rights-of-way. Improvements funded under this program reduce maintenance costs, improve access, increase property values and improve the quality of life. The program utilizes dedicated City sales tax not to exceed three quarters of one percent supplemented by assessments against benefited properties. The program provides for the sale of revenue bonds to cover the cost of the projects. Abutting property owners generally share the cost of upgrading a street to residential standards by paying $30/front foot for gravel improvements and $17/front foot for paving. There has been some discussion about revising the program to more closely meet the current needs of the community.

3.2 State of Alaska

The State of Alaska Department of Transportation and Public Facilities publishes a State Transportation Improvement Program (STIP) on a three-year cycle. For roads and highways, the STIP funds projects under 4 categories:

- National Highway System, NHS (Includes Sterling Highway);
- State Highway System, SHS (established for this current cycle, no SHS roads in Homer);
- Community Transportation and Economic Development Program, CTP (any street or road nominated by local and borough governments); and,
- Trails and Recreational Access for Alaska, TRAAK (Trails, enhancements).

The 1998 to 2000 STIP and the 2001 to 2003 STIP has identified projects for the Homer area. Figure I-4 shows approximate total Statewide STIP projects, and those within Homer as listed in the 1998-2000 and 2001 to 2002 STIPs.

Figure I-4: Statewide STIP and Funding Dedicated to Homer Area

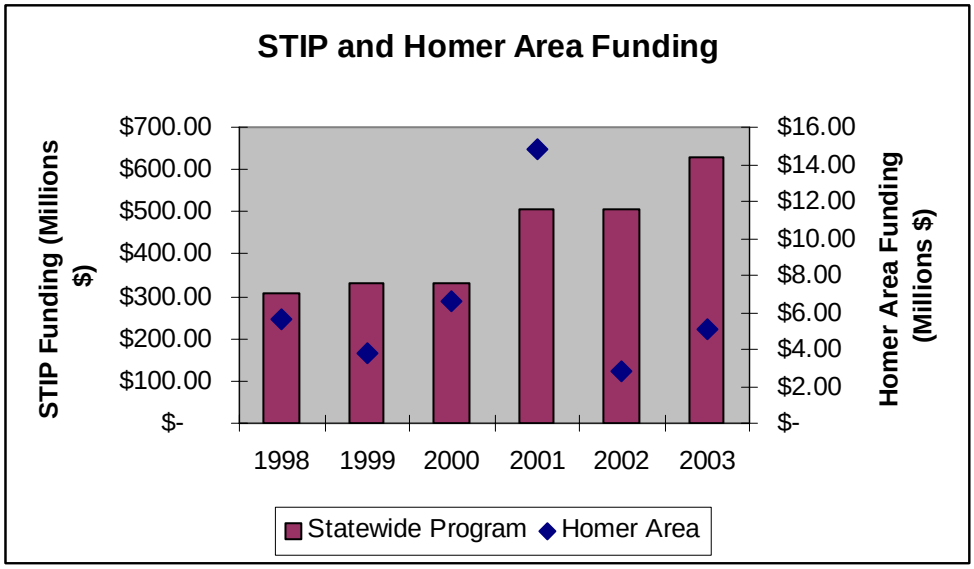


Table I-7 presents the street and roads needs for Homer, and is from the DOT/PF website (http://www.dot.state.ak.us/cgi-bin/projneeds.d/need_list).

Table I-7: State of Alaska Road and Trail STIP Needs for Homer

Name	Description	Estimate	STIP Category
Bartlett/Hohe Street	Rehab Bartlett St. from Pioneer St. to Fairview Ave. (2000'). Rehab Hohe St. from Fairview Ave. to the South Peninsula Hospital (1000'). Work on both streets includes lowering grade, minor realignments within existing ROW, widening driving lanes to current standards, water/sewer stubouts, storm drains, curb & gutter, sidewalks, and lighting at street intersections.	1,000,000	CTP
Baycrest/Homestead Ski/Trailhead Rehabilitation	Construct a year round trailhead that provides off-street parking on Rogers Loop Road.		TRAAK
Bunnell St/Olsen Lane Rehabilitation	Reconstruct and pave 1 mile of urban streets within the Homer City limits. Project scope and cost estimate are modified to include lighting and sidewalks.	1,100,000	CTP
East End Road Improvements	Rehabilitate and resurface Homer East End Road.		
East End Road Safety Trail MP 9.5 to MP 11.9	Construct a separated pedestrian/bicycle facility along East End Road from MP 9.5 to MP 11.9		TRAAK

Name	Description	Estimate	STIP Category
East End Road: MP 0.0-3.6	Rehab from Lake Street (MP 0.0) to the Kachemak Drive (MP 3.6). Reconstruct the road base, drainage, vertical and horizontal curves, pedestrian facilities and resurface. Sidewalks on both sides will be constructed to the elementary school from that point a separated trail will be constructed on the uphill side with four shoulders on both sides of the road to Kachemak Drive.	9,600,000	CTP
East End Road: MP 3.6 to 12.5	Rehabilitate from the intersection with Kachemak Drive (MP 3.6) to the McNeil Canyon School (MP 12.5). Rehabilitate the roadway; provide shoulders; improve drainage; provide pedestrian facilities; and address safety concerns as warranted. Pedestrian facilities will be considered between MP 9.5 and MP 11.8. Also includes separated path pathway from Kachemak Drive to Chelsea Street and from Huntler Road to McNeil Canyon School.	9,850,500	CTP
End of the Road Wayside Park Construction	Construct a highway wayside at the beginning of the Sterling Hwy and adjacent to the AMHS terminal and dock which consists of a rest and viewing area, toilet facilities, parking, pathway and interpretive signs.		TRAAK
Freight Dock Road	Upgrade and pave Freight Dock Road from Sterling Highway to Homer Deep Water Dock (4,000').	200,000	CTP
Homer Mooring Improvements	Replace the existing Homer ferry terminal marine structures.	3,500,000	NHS
Homer Scenic Overlook	Construct a scenic overlook adjacent AMHS deck/parking area on Homer Spit.	600,000	TRAAK
Homer: East End Road: MP 14.2 to 22.0 Rehabilitation - Phase II	Rehabilitate roadway from the McNeil Canyon School (12.5) to the vehicle parking turnaround at Vosnesenka (MP 22). The project will include widening, realignment, drainage improvements and resurfacing.	12,765,000	CTP
Kachemak Drive	Rehabilitate Kachemak Drive from the Sterling Hwy to East End Road, 3.5 miles in length. Work includes improving and raising the embankment, surfacing, widening and drainage improvements. Pedestrian facilities will be evaluated.		CTP
Kachemak Drive Pathways	Construct a pathway along Kachemak Drive from East End Road to the Sterling Highway (approximately 3.5 miles).	1,000,000	TRAAK
Kenai Peninsula Road and Trail Improvements	Rehabilitate, resurface, and pave approximately 3 miles of Skyline Drive from the end of pavement on West Hill Road to the intersection with East Hill Road in Homer. Construct a trail connection and landscaping at the intersection of Lake Street and the Sterling Highway.		
Mission Avenue	Improve drainage, replace soft areas in the road base and hard surface approximately one mile.	750,000	CTP

Name	Description	Estimate	STIP Category
Pioneer Avenue	Resurface approximately one mile of Pioneer Avenue from the Sterling Highway to its intersection of Lake Street and East End Road. Project includes drainage, curb and gutter and sidewalk reconstruction.	680,000	CTP
Skyline Drive Rehabilitation	Reconstruct Skyline Drive from Ohlson Mt. Rd. to Hudspeth Drive.	500,000	CTP
Skyline Drive/Diamond Ridge Road Rehabilitation	Reconstruct 13 miles of substandard gravel road.		CTP
Soundview Avenue Trail	Construct approximately 2000 feet of pedestrian pathway between two disconnected segments of Soundview Avenue.	250,000	TRAAK
Spit Separated Pathway Ph II	Construct a separated pathway from the Homer Fishin' Hole to the End of the Road Wayside to include interpretive sites.		TRAAK
West Hill Road	Resurface West Hill road from Diamond Ridge Road to Sterling Highway.	750,000	CTP
Woodard Creeks Erosion Control	Provide channelization and erosion control measures for drainage crossing the Sterling Highway.		TRAAK

3.3. Mitigation Funding

The City of Homer currently requires projects that may increase traffic significantly to complete a traffic impact analysis (TIA). The TIA may require mitigation projects to alleviate the impacts expected from the increased traffic. Funding from these projects can be designated to supplement or fully fund specific projects. These might include traffic calming techniques and devices, alternative access, by-pass routes or rapid transit/shuttle services. Funding for sidewalks, trails or alternative transportation opportunities may be a condition identified as a mitigation activity if a required TIA warrants.

4 Goals and Objectives

Goals and objectives provide the framework for planning. Transportation goals are broad statements of the directions that a community forms to address issues and problems. They describe what the community desires of its future transportation system. Objectives are specific and measurable statements to support the goals. Criteria are used to measure the progress towards the desired transportation system.

Urban transportation goals usually fall within two broad classifications. Service goals relate to the system service, for examples access, mobility, and connectivity, which the system should provide for the community. Impact goals often are drafted to provide a direction on how the system should be compatible with other important goals and values within the community, often to augment these other goals, or state the degree of conflict with the goals.

4.1 Issues

Through the planning process and work with the City of Homer Road Standards Committee the following issues were identified which are to be addressed by this plan's goals and objectives.

1) The City's population and economy is forecasted to grow at about 2% per year, and some areas of the city already experience congestion during certain times of the year and/or day.
2) Traffic volumes are growing at a faster rate than population and economy.
3) Seasonal traffic levels double during the summer.
4) Lack of connections between and to residential neighborhoods and schools force local traffic to major roads.
5) There are limited pedestrian facilities, and there is a lack of continuity among existing pedestrian facilities.
6) The elderly and disabled population is growing and inadequate facilities exist to serve them.
7) Homer's deep water dock, boat harbor and industrial/commercial traffic conflicts with recreational traffic.
8) Expansion of the airport.

9) Parking within the Central Business District doesn't facilitate other goals of the community such as pedestrian friendliness.

4.2 Goals

The goals identified for the plan are as follows:

1) Homer's transportation system, including, streets, trails, docks and airport, should support future community economic and population growth.
2) Homer's transportation system should provide mobility, access and circulation for the future community for pedestrian and vehicular modes.
3) Homer's street system should operate at acceptable levels of service, delay and congestion.
4) Homer's street system should be configured to encourage a hierarchal progression of trips and minimize by-pass and through trips on residential streets.
5) The expansion of the transportation system should minimize impacts to residential areas and parks.
6) The trails and paths network should provide alternative transportation modes, enhance recreational opportunities and create connectivity throughout the community.
7) Snow storage sites should be developed in locations that will expedite hauling operations and minimize impacts to water quality, and minimize potential impacts to neighboring properties.
8) The transportation plan shall include the needs and provisions for the elderly and disabled citizens.
9) The transportation plan shall minimize conflicts between commercial/industrial traffic and recreational traffic.
10) Parking in the CBD should be re-evaluated with consideration to other goals of the community.
11) The street system shall have a level of service (LOS) of C or better (as designed by the Highway Capacity Manual or Intersection Capacity Utilization Method) for all network facilities.

4.3 Objectives

The objectives identified for the plan are as follows:

1) This plan shall identify existing development and probable areas of development. Measurements of success shall be completion of this analysis and identification of likely areas of development.
2) This plan shall identify the street network system to serve the existing and future areas of development within Homer. Future networks links to the system will be evaluated, and applied to the system as appropriate.
3) This plan shall evaluate the need for new corridors throughout Homer. Evaluation and determination of feasible corridors shall be determined by considering the added service to the entire system, potential impacts to neighborhoods, and connectivity within the system.
4) This plan shall evaluate new corridors based on whether community services are enhanced.
5) This plan shall determine if there are traffic advantages for new corridors. Advantages will be measured by the change in percent volume reduction on other roadways.
6) This plan shall identify possible areas for on-street parking and/or centrally located parking areas.
7) For this planning horizon a capacity analysis stating LOS of key facilities and overall capacity review of the network is necessary. Planning level recommendations for improvements and the approximate time that the improvement must be implemented to maintain LOS C is the desired outcome.
8) This plan will recommend network links so that local streets are not used as thoroughfares, and congestion and delays on collector and arterials are avoided. New connections through residential areas shall include traffic calming techniques and pedestrian amenities.
9) Snow storage sites shall be located in areas that are compatible with Homer's snow removal equipment fleet. Site will be evaluated by their potential impact to water quality and neighboring properties.
10) Seniors, people with disabilities and others who are not able or choose not to drive need supportive roadside features and pedestrian facilities, as well as community support in securing funding for alternative means of transportation.

11) Pedestrian amenities shall be included in new road projects and reconstruction projects. The East End Road bike trail will lead to a dramatic increase in pedestrian and bicycle traffic along the north side of East End Road. Safe pedestrian and bicycle crossings will be needed to allow trail users to cross to the south side of East End Road at appropriate locations.
12) Existing rights-of-way should not be vacated unless it can be shown there are no compelling long-term reasons for the rights-of-way.
13) Criteria for street design will be developed so that "local" roads are neither over-nor under designed for their uses and community context. Local roads and their rights-of-way and radii (curb, turning, and center lane) will be no wider than necessary to meet neighborhood needs for access and safety and will be designed to calm vehicular traffic (e.g. reduce vehicles speeds to 25 mph or less). Subdivision standards for residential areas will be revisited to include traffic calming techniques such as narrower roads to encourage slower traffic movement.
14) Areas used intensively by pedestrians, such as the Homer Spit, will be considered for additional traffic calming measures.

5 EXISTING STREET CLASSIFICATION

Streets provide dual functions of access and mobility. The degree to which these functions are served determines the street classification. The primary reference for street classification is the American Association of State Highway and Transportation Officials "A Policy on Geometric Design of Highways and Streets". In this reference, AASHTO uses the broad classifications of arterials, collectors, and local streets as a hierarchical system.

Arterial Streets emphasize mobility. Although, arterial streets can provide access, the street is usually designed to carry higher volumes at higher speeds, attributes that usually conflict with safe access.

Local Streets are those streets, which emphasize access and penalize mobility. These will have frequently spaced driveways, will be designed for low speeds and low volumes, and may have a high degree of pedestrian or bicycle use, parking, on-street delivery, and other landside functions that spill into the street and street right-of-way.

Collector Streets provide an intermediate link in the hierarchy between local streets and arterials. Typically, many local streets will connect with a collector, and many collectors to an arterial. Collectors often provide a mixed function of both access and mobility.

The study area roads and streets are presented on Plate 1. Arterial and collector streets are identified. All other streets are local streets.

AASHTO further defines the demographic environment for streets and roadways as urban (population areas > 50,000 people), small urban areas (between 5,000 and 50,000 people), and rural areas (those outside of the urban areas). Street classifications are modified with the adjective of either "rural" or "urban". Based on a population of about 4,000, the streets in Homer will be rural. However, as a practical matter, the roadways serve an area population that extends far beyond the City of Homer boundaries, and this area-wide population is well above 5,000. It should be noted that the DOT/PF has categorized all of their roads in the study area as rural.

AASHTO also subdivides arterials into "principal arterials" and "minor arterials", and subdivides collectors into "major collectors" and "minor collectors". The reader is directed to AASHTO for these definitions. DOT/PF adheres to AASHTO sub-classes for their streets.

The State of Alaska DOT/PF Central Region publishes the Annual Traffic Volume Report that lists functional classifications and Annual Average Daily Traffic (AADT) for selected streets and roads. Table I-8 shows the data from the 1999 report.

Table I-8: Homer Area Roads

CDS Route	Name	Class	1999 AADT	AADT Location
110000	Sterling Highway	Rural Principal Arterial	8,300	Lake St.
110000	Homer Spit Rd. (Sterling Hwy)	Rural Principal Arterial	4009	Between End of the Spit and Kachemak Bay Drive.
110100	Pioneer Avenue	Rural Major Collector	7,300	Lake St. and East End Rd.
110150	Lake Street	Rural Major Collector	5,550	Sterling Hwy.
110200	Kachemak Bay Drive	Rural Major/Minor Collector	1,720	Sterling Hwy.
110300	East End Road	Rural Major Collector	7,700	Lake St. / Pioneer Ave.
110305	East Hill Road	Rural Minor Collector	1,800	East End Rd.
110500	Bartlett Street	Rural Minor Collector	1,270	Pioneer Rd.
110610	Bunnell Avenue	Rural Minor Collector	1,930	Olson Lane
110615	Olson Lane	Rural Minor Collector	470	Sterling Hwy.
110625	Main Street	Rural Major Collector	2,770	Sterling Hwy.
110716	Mission Road	Rural Minor Collector	125	East Hill Rd.
110800	West Hill Road	Rural Minor Collector	1,400	Sterling Hwy.
110900	Skyline Drive	Rural Minor Collector	460	East Hill Rd.
111300	Diamond Ridge Road	Rural Minor Collector	250	Sterling Hwy.

6 TRAFFIC MODELING AND FORECASTS

6.1 Methodology

This study uses the Quick Response System II (QRS II) for transportation models. The Quick Response System (QRS) was formulated in the 1970s as a set of manual techniques that could be used on planning problems too small for the computer technology of the time. These methods are documented in the National Cooperative Highway Research Program Report #187. It has evolved into the Windows-based QRS II, which is packaged with the General Network Editor (GNE), which serves as a data input module to QRS II. QRS II software employs all four steps of the modeling process and uses the inputs of development and land use, economic information, and transportation system attributes.

The existing network system of collectors and arterials was entered into a 1999 baseline model. This network system describes speeds, lanes, approach configurations, type of intersection control, and inherent delays. The year 1999 was selected because there is good roadway volume information that can be used for calibration. Only the arterials and collectors were entered into the network because the low volumes of local streets are not modeled well. In addition, it has been found that local streets are usually unaffected by area growth, and local traffic will be determined and limited by the site-specific development. Development is modeled by creating centroids that contain residential, business, and institutional data indicating location and levels of development.

QRS II's primary centroid inputs for traffic generation are dwelling units and employees. Appendix B contains information about housing, lots, schools, employment, and businesses, which were used for input into a baseline model. The baseline employment information was further adjusted using some of the data in Table I-5, above.

In addition, other land uses, such as industrial and institutional uses, require special Production/Attraction tags to describe unique trip generators. This model was built using the detailed schema. With this schema trip ends for special generators were modeled, such as post offices, schools, docks, and other facilities that require Production/Attraction tags. The ITE Trip Generation Manual as the basis of trips at special generators.

External stations are nodes that define the boundary conditions, and require information about travel patterns at the ends of the model. Types of trips were estimated (e.g. home to work, home to other, tourism) to and from the external stations.

In order to have confidence in the model, the base model was calibrated to 1999 (AADT) volumes published by DOT/PF for the Homer Area Roads shown in Table I-8. Calibration was a highly iterative process, where centroids, network attributes (e.g. delay at intersections) and external station trip types are adjusted until the model link volumes agree reasonably well with the published volumes. At the end of the calibration phase the 1999 calibrated base model was within 5% to 20% of the 1999 AADT, for most of the roadways. There were roads, most notably West Hill Road, Main Street and Bartlett Street, which did not calibrate very well with the 1999 AADT. However, Main and Bartlett are parallel streets, and together the model shows that they carry about the combined volume of the 1999 AADT. As such, the model as calibrated to the 1999 volumes was accepted (see Table I-9 in Section 6.3 and compare volumes in "1999 DOT/PF AADT" column to "1999 Base Model ADT" column).

Once the model was calibrated, it became the basis of future development and system activities. Residential dwelling units were assumed to grow at the same forecasted rate as the population. As discussed, under Subsection **2.4 Population Forecasts**, the future annual population growth rate was estimated to be about 2%, and therefore the dwelling units will increase at about 2% per year. Using Equation I-1, it was estimated that the total number of dwelling units in the study area will increase about 49 to 50 percent over the next 20 years. Economic growth was assumed grow at 2.4% annually as developed under Subsection **2.5 Local Economy**. Total economic growth, primarily stated as employees, is expected to increase about 60 percent in the next 20 years.

To model the locations of the future dwelling unit growth, future generators were place in the model consistent with current development plans and patterns. An algorithm was developed to equally assign new residences to subdivisions. It was assumed that existing unsubdivided areas would be developed to some extent in the future, with lot sizes similar to surrounding subdivisions, and that growth was included in the model. Once a subdivision was full (dwelling units equal lots), no further units were added. Future commercial development was treated in a similar manner.

The modeled 2021 transportation network included those improvements listed in Table I-7. The one improvement that seemingly would have the most effect on this system is paving Kachemak Drive. Presently, the gravel surface limits speeds. The model does not have surfacing parameters, but the travel speed was raised by 10 mph as a means of estimating the travel benefit. Once paved, the road will provide an attractive alternative to traveling through the CBD and using East End Road for the entire trip. It was found that the volumes did increase on Kachemak Drive by 10 to 15% once the road is paved. However, other street volumes, especially within the CBD, were not reduced by an appreciable amount by the paving of

Kachemak Drive. However, the volumes on Sterling Highway were increased. (It should be noted that Kachemak Drive was paved in 2002, after the model was run, but before the adoption of this plan.) In addition to Kachemak Drive pavement, the new dock facility on the spit was included in separate model runs to ascertain the impact of the dock on roadway operations.

Homer has distinct seasonal variations in traffic flow. DOT/PF maintains a permanent traffic recorder on the Homer Spit Road south of Kachemak Drive. Average summer daily traffic is about 7,800 vehicles, which is about 95% higher than the AADT. It was decided to develop models based on the summer months as well because of these huge summer increases over the average model. Most traffic engineering analysis and decision processes use the peak hour of traffic flow as the design hour, therefore summer peak hour models were developed to review measures of effectiveness.

6.2 Recent Studies

The Boutet Company (TBC) prepared a Traffic Study (Draft) for Homer (January 2, 1999). Pertinent to this plan, TBC's study recommended a street classification system, and prepared capacity analysis of key intersections during summer peak hours. Their capacity analysis showed that all intersections, except the Sterling Highway and Lake Street operated at level of service "C" or better. Sterling and Lake Street operated at level of service "D".

The State of Alaska Central Region Traffic and Safety Section performed a traffic signal warrant analysis for the Sterling Highway (By-Pass) and Lake Street intersection. They found that signalization is warranted, even in the lower volume winter season.

TBC also prepared the Kachemak Bay Multi-Purpose Dock Traffic Impact Analysis, March 7, 1999. Trip generation data from this report for this model. They found that signalization, or other means of traffic control is warranted, even in the lower volume winter season.

6.3 Results

Several model runs were prepared for this transportation plan to describe the present and future operations of the existing system (with near-term known improvements). The following models are included under Appendix C.

- 1999 Base Model- This model was the basis of further work and was calibrated to the published 1999 AADT in the Central Region Traffic Volume Report.
- 2021 Base Model- This run includes future population and economic data, and known future street improvements. It shows AADT in 2021, without the Dock
- 2021 Base Model with Dock (both daily traffic and peak hour traffic)- These models superimposed the Dock volumes on the 2021 Base Model. This represents the future system with known improvements.
- 1999 Summer Model (both daily traffic and peak hour traffic)- These models show the 1999 summer volumes that are estimated to occur now.
- 2021 Summer Model (both daily traffic and peak hour traffic)- These models show the summer volumes in 2021, without the dock.
- 2021 Summer Model with Dock (both daily traffic and peak hour traffic)- These models include dock traffic, and will show the level of future dock impacts on the system when compared to the summer models without the dock. These models represent the design condition in the future.

Each model diagram has volumes shown on links. These volumes are directional, and the total segment volume is the sum of the two volumes. Table I-9 presents 1999 actual DOT/PF AADTs for key street segments, and the model outputs for those segments under various time and development scenarios. Table I-10 presents design hour volumes (DHV) for those segments.

Table I-9: Selected Average Daily Traffic (ADT)

State System Highway / Street	Segment Location	1999 DOT/PF AADT	1999 Base Model ADT	2021 Base Model w/Dock	2021 Summer Model w/Dock
Sterling Highway	Lake Street	8,300	7,277	11,919	14,441
Homer Spit Rd. (Sterling Hwy)	Between end of the Spit and Kachemak Bay Drive	4,009	4,161	7,468	13,719
Pioneer Avenue	Lake St. and East End Rd.	7,300	6,820	10,046	13,428
Lake Street	Sterling Hwy.	5,550	4,450	6,871	8,043
State System Highway / Street	**Segment Location**	**1999 DOT/PF AADT**	**1999 Base Model ADT**	**2021 Base Model w/Dock**	**2021 Summer Model w/Dock**
Kachemak Bay Drive	Sterling Hwy.	1,720	1,936	3,666	4,665
East End Road	Lake St./Pioneer Ave.	7,700	7,704	9,856	10,505
East Hill Road	East End Rd.	1,800	2,134	3,403	3,701
Bartlett Street	Pioneer Ave.	1,270	2,234	3,205	3,683
Bunnell Avenue	Olson Lane	1,930	1,218	1,902	2,073
Olson Lane	Sterling Hwy.	470	717	1,097	1,221

Main Street	Sterling Hwy. to Pioneer Ave.	2,770	1,480	2,883	3,919
Mission Road	East Hill Rd.	125	173	300	323
West Hill Road	Sterling Hwy	1,400	2,378	3,446	3,696
Skyline Drive	East Hill Rd.	460	385	625	671
Diamond Ridge Road	Sterling Hwy.	250	826	1,220	1,422

Table I-10: Selected Design Hour Volumes (DHV)

State System Highway / Street	Segment Location	1999 Base Model DHV	2021 Base Model w/Dock	2021 Summer Model w/Dock
Sterling Highway	Lake Street	635	990	1,308
Homer Spit Rd. (Sterling Hwy)	Between end of the Spit and Kachemak Bay Drive	356	641	1,158
Pioneer Avenue	Lake St. and East End Rd.	590	902	1,147
Lake Street	Sterling Hwy.	391	633	690
Kachemak Bay Drive	Sterling Hwy.	167	332	402
East End Road	Lake St./Pioneer Ave.	573	841	857
East Hill Road	East End Rd.	196	299	326
Bartlett Street	Pioneer Ave.	195	273	300
Bunnell Avenue	Olson Lane	105	155	178
Olson Lane	Sterling Hwy.	61	85	103
Main Street	Sterling Hwy.	137	250	503
Mission Road	East Hill Rd.	15	26	28
West Hill Road	Sterling Hwy	210	305	328
Skyline Drive	East Hill Rd.	33	54	62
Diamond Ridge Road	Sterling Hwy.	71	107	121

In evaluating the performance of the existing system, QRS II reports for delay were used to estimate intersection levels of service. Level of Service (LOS) is a quantitative description of roadway facility operations. In this project, LOS analysis is considered for unsignalized intersections. Levels of Service and capacity analysis methods are developed under the Highway Capacity Manual, Transportation Research Board Special Report 209 (HCM). Unsignalized intersection LOS is defined by control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. However, the methodology only presents LOS for the minor movements of the intersection, which include the minor street approaches under sign control, or major street movements that must yield to oncoming traffic such as left-turning traffic. There is no overall unsignalized intersection LOS. Unsignalized LOS is defined in Chapter 10 of the HCM as follows:

LOS A: ≤10 seconds per vehicle

LOS B: >10 and ≤15 seconds per vehicle

LOS C: >15 and ≤25 seconds per vehicle

LOS D: >25 and ≤35 seconds per vehicle

LOS E: >35 and ≤50 seconds per vehicle

LOS F: >50 seconds per vehicle

QRS II calculates approach delay for intersections. Table I-11 presents the approach delay for the summer evening peak hours in 1999 and 2021 at the model's intersections. We have assigned LOS to these approaches based on the delay. This table presents delay with and without the multi-use dock. This enables the reader to determine the system impacts of the new facility. Those approaches that have LOS "D" or worse are shown in bold.

Table I-11: Delay and LOS for Model Intersections

Intersection	Approach	Year	LOS	Year	LOS	Year	LOS
		1999 Summer		2021 Summer		2021 Summer w/New Dock	
Diamond Ridge Road and Sterling Hwy	Southbound	1.6	A	0.6	A	0.6	A
	Westbound	13.5	B	18.3	C	18.5	C
	Northbound	0	A	0	A	0	A
Skyline Drive and East Hill Road	Westbound	5.2	A	8.6	A	8.6	A
	Eastbound	0	A	0	A	0	A
	Northbound	11.8	B	11.5	B	11.5	B
East End Road and Kachemak Drive	Westbound	9.5	A	4.8	A	4.6	A
	Eastbound	0	A	0	A	0	A
	Northbound	14.2	B	19.7	C	20.0	C
Fairview Street and Bartlett Street	Eastbound	11.0	B	11.5	B	10.9	B
	Southbound	4.5	A	4.3	A	2.7	A
	Eastbound	11.2	B	11.5	B	11.3	B
	Northbound	2.2	A	3.1	A	3.1	A
Fairview Street and Main Street	Eastbound	10.5	B	9.9	A	10.7	B
	Southbound	0	A	0	A	0	A
	Westbound	11.4	B	11.1	B	10.9	B
	Northbound	4.2	A	1.3	A	1.5	A
Svedlund Street and Fairview Street	Southbound	0	A	0	A	0	A
	Eastbound	9.4	A	10.3	B	9.6	A
	Northbound	3.1	A	6.1	A	5.7	A
Pioneer Avenue and Heath Street	Northbound	12.4	B	**56.6**	**F**	**94.8**	**F**
	Westbound	1.2	A	2.7	A	3.1	A
	Eastbound	0	A	0	A	0	A
Kachemak Way and Pioneer Avenue	Southbound	11.1	B	15.9	C	16.8	C
	Westbound	0.1	A	0	A	0	A
	Eastbound	0.5	A	1.3	A	1.0	A
	Northbound	11.1	B	13.7	B	14.3	B
Svedlund Street and Pioneer	Southbound	11.7	B	19.4	C	23.3	C

Intersection Avenue	Approach	Year	LOS	Year	LOS	Year	LOS
		1999 Summer		2021 Summer		2021 Summer w/New Dock	
	Westbound	0	A	0	A	0	A
	Eastbound	0.6	A	0.2	A	0.2	A
East Hill Road and East End Road	Southbound	12.1	B	18.0	C	18.0	C
	Westbound	0	A	0	A	0	A
	Eastbound	5.7	A	3.7	A	3.7	A
Fairview Drive and East End Road	Southbound	9.7	A	14.4	B	14.4	B
	Westbound	0	A	0	A	0	A
	Eastbound	8.4	A	1.3	A	1.4	A
Sterling Hwy and West Hill Road	Eastbound	0.4	A	0.4	A	0.4	A
	Southbound	18.0	C	**35.1**	**E**	**35.8**	**E**
	Westbound	0	A	0	A	0	A
Main Street and Pioneer Avenue	Southbound	12.8	B	**55.2**	**F**	18.1	C
	Westbound	4.2	A	4.5	A	3.6	A
	Eastbound	1.2	A	0.8	A	1.0	A
	Northbound	12.7	B	**25.9**	**D**	17.8	C
Bartlett Street and Pioneer Avenue	Southbound	10.8	B	18.0	C	18.6	C
	Westbound	0	A	0	A	0	A
	Eastbound	3.9	A	4.2	A	4.7	A
Heath Street and Sterling Hwy	Southbound	13.9	B	**99.0**	**F**	**983.9**	**F**
	Westbound	0	A	0	A	0	A
	Eastbound	3.9	A	4.2	A	4.7	A
Pioneer Avenue and Sterling Hwy	Eastbound	5.6	A	4.2	A	4.0	A
	Southbound	14.3	B	**63.1**	**F**	**48.7**	**E**
	Westbound	0	A	0	A	0	A
Ohlson Lane and Sterling Hwy.	Westbound	0	A	0	A	0	A
	Northbound	13.9	B	28.3	D	25.1	D
	Eastbound	0	A	0	A	0	A
Main Street and Sterling Hwy	Southbound	13.9	B	**53.3**	**F**	**37.4**	**E**
	Westbound	1.4	A	1.4	A	1.5	A
	Eastbound	0	A	0	A	0	A
	Northbound	11.9	B	19.8	C	17.2	C
Lake Street and Smokey Bay Way	Southbound	3.5	A	3.0	A	3.5	A
	Westbound	10.6	B	13.4	B	13.1	B
	Northbound	0	A	0	A	0	A
Timmerman Court and Lake Street	Westbound	13.7	B	15.2	C	15.2	C
	Southbound	1.3	A	1.7	A	3	A
	Northbound	0	A	0	A	0	A
Sterling Hwy and Lake Street	Eastbound	6.1	A	7.6	A	10.7	B
	Westbound	0	A	0	A	0	A
	Southbound	14.2	B	**1462.3**	**F**	**522.7**	**F**
Sterling Hwy and Kachemak Drive	Southbound	7.8	A	3.1	A	3.1	A
	Northbound	0	A	0	A	0	A
	Westbound	15.3	C	**52.8**	**F**	**71.3**	**F**
Diamond Ridge Road / West Hill Road / Westwood Drive / Skyline Drive	Eastbound	11.7	B	11.4	B	11.4	B
	Southbound	11.7	B	11.5	B	11.5	B
	Westbound	11.6	B	11.3	B	11.3	B

Intersection	Approach	Year	LOS	Year	LOS	Year	LOS
		1999 Summer		2021 Summer		2021 Summer w/New Dock	
	Northbound	11.7	B	11.4	B	11.4	B
East End Road / Pioneer Avenue / Lake Street	Westbound	10.4	B	15.7	C	17.3	C
	Eastbound	10.9	B	17.9	C	15.9	C
	Northbound	11.0	B	15.9	C	16.9	C
Ben Walters Street / Smokey Bay Way / Timmerman Court	Southbound	10.3	B	10.2	B	10.1	B
	Eastbound	10.6	B	11.1	B	11.1	B
	Northbound	10.2	B	10.9	B	10.9	B

Table I-11 shows that the following intersections will have poor LOS and undesirable delays by the planning year.

- Pioneer Avenue and Heath Street
- Sterling Hwy and West Hill Road
- Main Street and Pioneer Avenue
- Heath Street and Sterling Hwy
- Pioneer Avenue and Sterling Hwy
- Main Street and Sterling Hwy
- Sterling Hwy and Lake Street
- Sterling Hwy and Kachemak Drive

In addition, TBC's analysis shows that the Sterling Highway/Lake Street intersection already operates at an undesirable LOS, and the DOT/PF shows that a signal is warranted at this intersection. It should be noted that the 1999 summer model shows a LOS "B" for the minor movement. The RSC recommends that traffic control alternatives to signalization be considered.

The models also show that the summer peak hour volumes for the Spit Road and East End Road will increase to levels where a two-lane facility may be over capacity, especially considering the volumes of left-turning vehicles that will use the road. Through past work, the consultant has found that two lane roadways with moderate speeds (40 to 45 mph) can accommodate through volumes of around 10,000 vehicles per day, or 1,000 to 1,300 per hour, as long as there is not a substantial number of left-turn vehicles. Lower speed roads (25 to 30 mph) can accommodate higher flows, because desirable headways (time between vehicles) can be maintained at a reduced distance.

7 IMPROVEMENT ALTERNATIVES

Alternatives are developed to enable the transportation system to achieve the plan's goals and objectives in the planning year. The proposed range of alternatives include:

- Alternatives to address intersection delay,
- Corridor improvements,
- New Streets or Extension of Corridors, and
- Alternatives to address parking needs.
- Implementation of Non-Motorized Transportation and Trails Plan

Improvement alternatives are shown on Plates 1 and 2.

7.1 Intersection Alternatives

The intersections in Table I-11 with poor LOS were evaluated for signal warrants using a Cal-Trans methodology for future volumes presented in the Institute of Transportation Engineers (ITE) Manual of Traffic Signal Design, by James H. Kell and Iris J. Fullerton. The method uses estimated future AADT (EADT) as the input variables and evaluates whether the intersection will meet the Manual of Uniform Traffic Control Devices (MUTCD) signal Warrant 1, minimum vehicular volume; Warrant 2, interruption of continuous traffic; and Warrant 8, combination of warrants. All of the intersections are considered as rural in accordance with MUTCD guidelines that state a 10,000 area population is the minimum needed for an urban setting. Even at a 2% annual growth rate, the overall area population will probably not exceed 10,000 in 20 years.

Meeting warrants does not necessarily mandate signal installation because they usually increase overall delay, may increase certain accident types, and have an annual maintenance and operations burden. The AADT for the "Homer 2021 Base & Dock Model" represents conditions in 2021 with dock and programmed improvements from Table I-7. Table I-12 presents the warrant analysis results, the consultant's recommendations, and the year of need using ITE's methodology. Appendix D has model runs for the signal alternatives.

The modern roundabout should be considered as a traffic mitigating solution at any intersection where traffic flow is a concern. Many communities are turning to roundabouts as a solution to their traffic problems, and numerous studies show them to have a superior safety record and maintenance costs to intersections with signals or stop signs. The modern roundabout increases capacity and improves traffic flow, and is easily negotiated by large trucks and RV's. In addition, studies have shown that pedestrian safety increases due to increased driver awareness and

slower speeds. Homer is a perfect candidate for the modern roundabout given the seasonal fluctuation of the number of vehicles on our roads. In conclusion, there will be less wait-time, (leading to a higher level of service), more efficient fuel usage, fewer accidents, decreased costs, and better traffic flow by employing the modern roundabout. For more information, please refer to www.alaskaroundabout.com. The Homer Planning Commission recommends the modern roundabout be utilized as a replacement for signalization at any intersection where traffic flow is considered a problem. Any proposed roundabouts should accommodate the largest form of transportation traditional to the intersection.

In addition to roundabouts the Homer Planning Commission recommends that other alternatives to signalization also be considered, such as a one-way couplet. One-way couplets are designed so that traffic flow is maximized and circulates traffic as blood circulates through the body, in one-way streams. This means stops are minimized.

Table I-12: Traffic Control Warrants

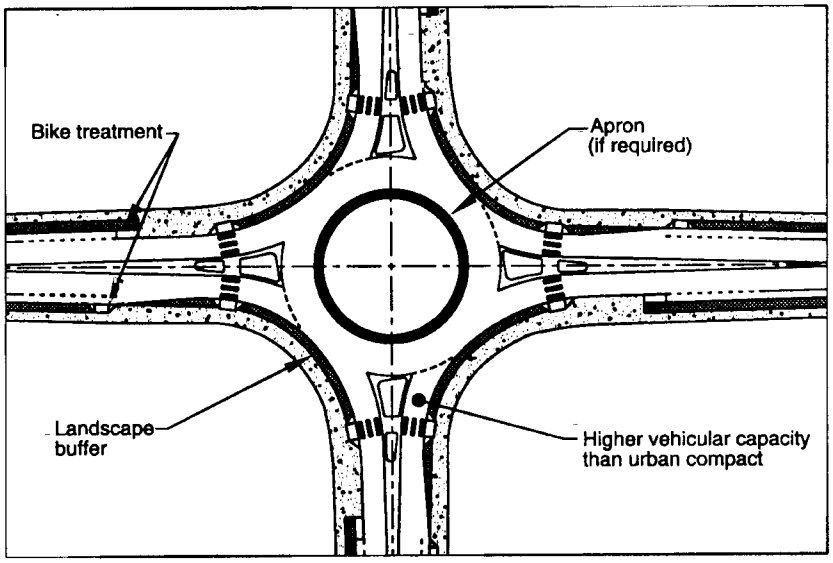
Intersection	MUTCD Warrants Satisfied? (Using EADT Future Method)			Comments
	1	2	8	
Pioneer Avenue and Heath Street	No	Yes	Yes	Consider signalization, warrant 1 is almost satisfied
Sterling Hwy and West Hill Road	Yes	No	Yes	Not recommended, warrant 1 almost not satisfied
Main Street and Pioneer Avenue	No	No	No	Not recommended
Heath Street and Sterling Hwy	Yes	Yes	Yes	Consider signalization, but not recommended if Lake signal is installed
Pioneer Avenue and Sterling Hwy	Yes	Yes	Yes	Consider signalization
Main Street and Sterling Hwy	No	Yes	No	Not recommended
Sterling Hwy and Lake Street	Yes	Yes	Yes	Consider signalization, but not recommended if Heath signal are installed
Sterling Hwy and Kachemak Bay Drive	Yes	No	Yes	Not recommended

7.2 Corridor Improvements

Based on the 2021 summer pm peak hour volumes in our models the following recommendations are made:

- Consider expanding Ocean Drive and Homer Spit Road (continuous segment) from 2 lanes to 3-lanes. The 3-lane section will consist of the outer lanes carrying traffic in opposing directions, and a center-two-way-left-turn lane (CTWLTL). This lane will allow street and property access without impeding through traffic. The 3-lane section should begin at the start of Ocean Drive and end at the intersection of Homer Spit Road and Kachemak Drive. This could be constructed in the next 5 years with considerable benefit.
- Consider expanding Homer Spit Road from 2-lanes to 3-lanes along the developed area of the spit. The 3-lane section will consist of the outer lanes carrying traffic in opposing directions, and a CTWLTL. This will become necessary upon completion of the multi-use dock and continued build-up of the area.
- Consider expanding Homer East End Road from 2-lanes to 3-lanes from Pioneer Avenue / Lake Street to East Hill Road. The 3-lane section will consist of the outer lanes carrying traffic in opposing directions, and a CTWLTL. This will likely become necessary after 2011.
- Consider implementing the recommendations of the Non-Motorized Transportation and Trails Plan, thereby reducing vehicular traffic.

Figure I-5: Typical Urban Roundabout (2-lane legs)



7.3 New Streets or Extension of Streets

Based on an evaluation of City of Homer transportation needs, and comments from City of Homer staff, a number of new streets or street extensions are presented. These alternatives are identified on Plates 1 and 2. The Road Standards Committee reviewed and revised the recommendations for new streets and street extensions. The following list has been revised to reflect the work of the Road Standards Committee.

Several new street extensions and corridors were modeled within the central business district (CBD) and surrounding areas from a list of possible projects. Some of the suggested projects were mutually exclusive, and in those cases, the consultant used engineering judgment to select the most likely candidate. Other projects either fell outside the project area, or were strictly local connections that would have no overall impact on the model. The model includes the following projects:

- Connection from Soundview Avenue at the Sterling Highway to the west end of Fairview Avenue. We chose to model this project instead of a similar connection to Soundview Avenue two blocks south for two reasons. First, Fairview is already acting as a sub-collector, providing access to the ball fields and a campground on the west end, and connecting several north-south collectors. Second, Soundview Avenue is a local residential street with dedicated right of way to Bartlett Street. Adding through traffic to Soundview would substantially and adversely impact the neighborhood.
- Whispering Meadows Avenue to Fireweed Avenue. This connection is already roughed in, and drivable in the summer.
- Heath Street Extension. The route for the proposed extension will extend Heath Street north to and then east to East Hill Road. The Planning Commission recommends that if the Heath Street extension is developed, Mountain View Drive and Elderberry Court be converted to one way east only from Kachemak Way to Heath Street. This will reduce the possibility for these streets becoming impacted with excess traffic. Alternatively, Mountain View and Elderberry could be maintained as dead end streets, the goal being to maintain the area as a quiet, pedestrian friendly neighborhood, discouraging or not allowing through traffic.
- Skyline Drive south to East End Road (Mary Jane Lane area). Again, no specific route was shown, and topography concerns may prevent actual construction of such a route, but the model gives a fair idea of the impact of such a project.
- Highland Drive to Rogers Loop.
- Poopdeck Trail reconstructed as a road. Should traffic conditions warrant the development of Poopdeck Road it will be developed with a separated pedestrian pathway.
- Waddell Way extended to Heath Street.

- Greatland Street construction. The proposed route will intersect Pioneer Avenue at Bartlett. The Planning Commission recommends that if Greatland Street is extended to Pioneer Avenue that it be a right turn only intersection, reducing the backup of traffic trying to cross Pioneer Avenue. This will keep traffic entering Pioneer Avenue separated from the Bartlett Street intersection. It should be noted this recommendation will conflict with the proposed one-way couplet.
- CBD east west-connection. The proposed route will connect Greatland to Poopdeck. The specific route has not been identified to accommodate Town Center plans.

The following new streets or street extensions are recommended by the Road Standards Committee. They have not been included in the 2001 transportation model.

- Fairview west to Fairview. The proposed extension would connect Fairview Avenue in the Harrington Heights area to Fairview Avenue in the Lillian Walli Estates Subdivision. This route will include traffic calming techniques.
- Lynn Way extended east. A specific route has not been identified. The proposed extension will provide access to currently undeveloped areas south of East End Road.
- Interconnecting street system. South of Little Fireweed and west of Kachemak Drive – as the area develops and subdivisions are created, an interconnecting street system is recommended.

The 2021 summer model with these new streets is included under Appendix D. When comparing the 2021 summer model with dock (existing conditions with Table 7 improvements, or "no-build" scenario), we find that several streets would have less volume with the above improvements. Most notably, the model shows that the following central business district streets would have substantial reductions with the new extensions.

- Pioneer Avenue would have about a 50 to 60% less summer ADT in 2021.
- Sterling Highway would have less volume in summer 2021, with about a 10% decrease in ADT near Heath.
- Main Street would have about a 50% less summer ADT in 2021.
- Lake Street would have about a 40% less summer ADT in 2021.

The proposed street extensions would reduce congestion on some of the more heavily traveled streets. They also provide connectivity and will enhance emergency services access.

As a result of these new streets, daily traffic volumes would be reduced on some of the outlying streets as well. Skyline Drive daily volumes east of East Hill Road would drop by 60% to 80%. West of East Hill to the intersection at West Hill, Skyline Drive would experience almost 50% less

ADT. East Hill and West Hill would each have about a 25% drop in ADT. These new routes in non-CBD areas will enhance access to existing developed areas for residents, as well as open other opportunities for future growth.

- In some instances, benefits to traffic, pedestrians, bicyclists, and/or emergency vehicles will warrant connecting two or more collector streets via a route that functionally transforms a local street into an actual or potential thoroughfare. (The effect of the proposed Heath Street extension on Mountain View Dr. would be an example.) Wherever a proposed connection of this type elicits concerns from potentially affected residents, the city will initiate a "neighborhood-driven design" process to evaluate the proposal. All decisions concerning the proposed connection will be made through this process.

- Once concern from affected residents has indicated the need for a "neighborhood-driven design" process, the city will initiate the following steps:
- Contact in writing all residents of affected local streets to explain the proposed connection and the "neighborhood-driven design" process.
- Schedule a meeting between city representative(s) and neighborhood representatives to begin the process of documenting all concerns (on all sides) and brainstorming ways to address these.
- Meet as appropriate to resolve concerns. Solutions may involve eliminating or re-routing the connection, designing the connection using one or more "traffic calming" approaches, one-way streets, or opening the connection only in emergencies (e.g., via locked bollards).
- Throughout the process, document discussions and post this and other useful information on the city's website.
- Notify affected residents in writing of all decisions reached.

7.4 Recommendation of Alternatives

With the extension of Heath Street and the other new streets of the area, the models show that Heath Street will become the highest volume north-south street within the downtown area. This will emphasize Heath Street as the main north-south street in the area. The need for a signal at Pioneer Avenue and Sterling Highway is also recommended by the model. Again, this intersection meets warrants and would benefit Pioneer traffic. These signals will provide more gaps for cross-street or driveway traffic to enter the main thoroughfares, as well as for pedestrians. The Road Standards Committee recommends that other intersection controls be considered at this intersection. The Planning Commission recommends that before the Heath Street extension is developed other improvements, such as but not limited to, intersection

improvements at East Hill and East End Road be considered. The Planning Commission further recommends the development of safe pedestrian/bicyclist crossings across East End Road at Paul Banks Elementary School and on the route to Jack Gist Park. In addition, a crossing should be provided near Rochelle or Sabrina Road to promote safe travel between neighborhoods south of East End Road and the bike trail to the north.

Table I-13: Delay and LOS for New Streets and Extend Streets Projects with Signals

Intersection	Approach	Year	LOS	Comments
		2021 Street Projects w/Signals		
Pioneer Avenue and Heath Street (signalized in 2021 Street Projects w/Signals)	Northbound	**14.9**	**B**	Northbound improves from LOS F to LOS B with signal.
	Westbound	13.3	B	
	Eastbound	15.4	B	
	Southbound	11.8	B	
Sterling Hwy and West Hill Road	Eastbound	0.2	A	Southbound improves from LOS E to LOS D.
	Southbound	**29.9**	**D**	
	Westbound	0	A	
Main Street and Pioneer Avenue	Southbound	12.7	B	Northbound and Southbound improve from LOS F and D to B with new streets and signals.
	Westbound	0.2	A	
	Eastbound	0.7	A	
	Northbound	13.2	B	
Heath Street and Sterling Hwy (signalized in 2021 Street Projects w/Signals)	Southbound	**15.1**	**B**	Southbound improves from LOS F to LOS B with signal.
	Westbound	18.1	B	
	Eastbound	14.5	B	
Pioneer Avenue and Sterling Hwy (signalized in 2021 Street Projects w/Signals)	Eastbound	13.7	B	Southbound improves from LOS F to LOS B with signal.
	Southbound	**14.2**	**B**	
	Westbound	17.2	B	
Main Street and Sterling Hwy	Southbound	**23.3**	**C**	Southbound improves from LOS F to LOS C.
	Westbound	2.1	A	
	Eastbound	0.6	A	
	Northbound	22.6	C	
Sterling Hwy and Lake Street	Eastbound	3.0	A	Southbound improves to LOS E from LOS F, will still be congested.
	Westbound	0	A	
	Southbound	**43.9**	**E**	
Sterling Hwy and Kachemak Drive	Southbound	3.1	A	Westbound remains at LOS F with new streets and signals.
	Northbound	0	A	
	Westbound	**60.3**	**F**	

7.3 Culverts and Bridges

Any upgrade in streets, culverts and bridges (new and old) will be designed to accommodate the 1% flood event. Any upgrades in streets, culverts and bridges will be designed to protect or minimize adverse impacts of flooding or erosion to neighboring properties or resources

8 CENTRAL BUSINESS DISTRICT (CBD)

The CBD is the area bounded by Pioneer Avenue, Sterling Highway and Lake Street. Pioneer is nearing its carrying capacity at peak times, and lack of convenient parking is a serious problem. Large areas of the CBD are currently undeveloped. Convenient transportation, parking and circulation are critical to the development of the CBD.

8.1 Circulation and Congestion Improvements

The signalization improvements recommended in Table I-10, as well as those recommended by the Road Standards Committee will benefit circulation and congestion in the downtown area. Other circulation improvements would include some of the proposed extensions. In particular, the east-west CBD corridor would reduce volumes on existing streets. A three-lane street plus on-street parking and a multi-use trail will greatly enhance circulation in the CBD. Changing Poopdeck to a roadway, with a separated path, and extension of Heath Street also provides considerable circulation benefits. The benefits of these extensions are described in Section 7.3.

8.2 Parking

As population in Homer grows, the need for adequate parking will increase at existing businesses and public places as well as future developments. The Homer CBD is compact, and many businesses can be reached on foot once a parking place is found. This makes Homer a candidate for the area-shared parking model described in the ITE Transportation Planning Handbook (2nd edition) chapter, "Parking", by Mary Smith.

An area-shared facility, whether a parking lot or a parking structure, is intended to provide parking for all uses within a reasonable walking distance. These may be constructed by public entities, such as cities, or by private business owners, or by public-private joint venture. Within the undeveloped area of the Homer CBD, as new streets are constructed, one or two parcels of land could be selected for use as public parking lots, with attractive walking paths or sidewalks accessing the business developments on the new streets, as well as the existing businesses on Pioneer.

Parking lots can accomplish two things:

- Reduce congestion on streets as people, particularly summer visitors, park their cars and walk from store to store.
- Reduce vehicle emissions and pollution.

The lot(s) selected for parking should be located to minimize walking distances within the CBD.

Another option for providing parking is on-street parking, whether metered or unmetered. On-street parking does impact traffic flow. It also cannot adequately supply the entire parking needs of any community. The City of Homer may be able to develop on-street parking on some CBD streets, as well as require sufficient right-of-way for parking on new streets built in the CBD.

9 MULTI-USE DOCK

This Pioneer Dock serves the Alaska Marine Highway System and cruise ship calls, as well as other current port users. The decision by shipping companies to use Homer Pioneer Dock as a terminal is based upon market conditions, labor agreements, schedule parameters, as well as other factors. The consultant's analysis did not evaluate the feasibility of Homer becoming a freight and container terminal. This analysis only presents a methodology and results for estimating the amount of freight that might pass through Homer based on transportation economics, and of landside area needed for a Homer container terminal and a cruise ship passenger terminal.

Section 9.1 presents trip generation results that were used in the modeling of the dock and roadway system. Section 9.2 focuses on specific freight volume and cruise ship volume (probably the two highest volume events), and the corresponding landside area. It is important to note the Pioneer Dock was not complete or in service when the model was generated.

9.1 Roadway Impacts

The Kachemak Bay Multi-Purpose Dock Traffic Impact Analysis, prepared by TBC and referenced earlier, states that the new multi-use dock will be constructed around the existing dock, which will be redeveloped as a pedestrian/bicycle oriented commercial waterfront center. The new dock will be able to accommodate one ship at a time, in addition to the U.S. Coast Guard vessel stationed in Homer. The proposed dock will be able to serve larger container ships, cruise ships, and the Alaska Marine Highway ferries.

TBC estimates the total impact to Homer Spit Road (HSR) at nearly 700 vehicle trips per day during the summer months, half of them left turners into the dock area. This volume is less than 10% of the current summer ADT on HSR, so overall impact to levels of service on HSR are minimal, as presented in Table I-9. However, this development will require a 3-lane section for Homer Spit Road near the new development.

The greatest impact will come from the additional retail/recreational development, at approximately 500 trips per day. Container ship traffic, if it develops, will generate another 166 trips per day. A significant portion of that will be truck traffic (estimated at 38% per ITE Trip Generation Manual) headed to and from the dock. The 1997 Highway Capacity Manual shows that trucks are equivalent to about 1.5 passenger vehicles on level roadways. Accordingly, for

our model, 38% of the 166 trips from container ship traffic were increased by 1.5 to represent truck traffic impact. The cruise ships will produce hundreds of pedestrian trips in a short time period, most of which will stay in the dock area, due to the distance (5+ miles) from the dock to Homer CBD. Vehicle trips will likely be limited to service vehicles, regular dock employees, and multi passenger vans and buses for Downtown tours, or road trips north. An effort was made in the various dock models to direct a percentage of dock traffic to the external station north of Diamond Ridge Road, to more closely reflect anticipated dock impact.

Model runs with the dock and without the dock were run for 2021 base and summer scenarios. The model found that the dock will increase traffic volumes on many of the roadways in Homer. The differences can be found by examining the model runs that are attached under Appendix C.

Homer Spit Road is the only access road to the port and harbor area. Due to geographical constraints, expansion of this roadway to three or more lanes along its entire length is highly unlikely. However, towards the south end of the road within developed areas with high driveway and access density, a three-lane section could be implemented for both safety and capacity benefits. The 3-lane section will consist of the outer lanes carrying traffic in opposing directions, and a CTWLTL. The CTWLTL will provide a refuge for left-turning traffic, which will not block the through traffic stream and will minimize the chance of rear-end accidents. The recently constructed bike trail along the major portion of this roadway will help maintain good traffic flow for both bikers/pedestrians and vehicles by keeping them separated.

9.2 Demand & Site Requirements

In this evaluation, the model used data from the Regional Port of Anchorage's Master Plan Final Report, September 30, 1999, by VZM-TranSystems Corporation. Also use information was used from interviews with CSX and Tote, the container shippers for Alaska, and Princess Tours, which were conducted while preparing the Design Study Report for the Port of Anchorage's Intermodal Marine Facility. Finally, the Payload Project Report Part 4- Interview Notes produced by the Engineering and Science Management Department from University of Alaska Anchorage (see http://www.engr.uaa.alaska.edu/payload/) was also used as a reference.

The uses that would generate the most trips and required the most landside staging areas would be cruise ship visits and a freight terminal.

Princess's largest ships currently have 2,200 passengers with a crew of about 900. This would likely be the design ship for Anchorage (and by inference for Homer as well), even though most ships may be smaller. Princess will be bringing 2,500-passenger ships on-line in the future.

Princess buses, which carry 44 passengers, would meet the ship, and passengers would disembark and board the buses for activities. Typically, there are passengers who do not use the buses but choose other independent tours. Therefore, total amount of ground transportation would be 40 to 50 buses (probably brought to town to meet the ship), along with taxicabs, vans, and private vehicles supporting tours. If the Homer operation follows the Anchorage model, only 10 or so buses would queue at the ship during one time. Each bus would be staged off-site and dispatched to the ship by radio when needed. As such, the landside area required for passenger transfer is significantly reduced. The Port of Anchorage's Master Plan indicates that 2 acres would be sufficient for a port of call terminal, but 5 acres may be more desirable.

Presently, most of the non-liquid commodities shipped into Alaska arrive in containers on ships that are configured for containers. As such, container ships are the freight design condition and their docking will require the highest landside area for staging, loading and unloading.

The assumptions for this analysis are as follows:

- The freight into the Kenai Peninsula Borough would be the primary container terminal market for the Homer dock.
- The majority of container freight into and out of the KPB currently passes through the Port of Anchorage
- Freight passing through Anchorage on the way to KPB will be proportionate to the population of KPB.
- Landside staging areas will be determined by the volume of containers, and will be the same proportionately as the container to area ratio in the Port of Anchorage.

CSX and Tote call in Anchorage twice weekly on Tuesdays and Sundays. Both ships dock about at the same time because of labor contract considerations. Sailings are set on timing for local retail advertisements. By using container shipping twice weekly, retail establishments minimize the amount of warehouse space that they need.

CSX has three ships that follow the rotation shown in Table I-14. Kodiak and Dutch Harbor are called every other week.

Table I-14: CSX Lines Shipping Schedules

Departing	Day
Tacoma (Ship 1)	Thursday
Anchorage	Sunday
Kodiak	Wed
Tacoma (Ship 2)	Friday
Anchorage	Tuesday
Dutch Harbor	Friday

Departing	Day
Tacoma (Ship 1 or 3)	Thursday

CSX is a load-on, load-off ship, in which containers are loaded within the hull into bins and on the deck. The above-deck containers can be 45 feet long, the below deck containers must be 40 feet long or less. The capacity of the ship is about 600 to 650 containers. Containers are loaded and unloaded with cranes that transfer containers to and from trailers pulled by hostlers (yard tractors). The containers are taken to a storage area where a road-legal truck tractor couples with the trailer and carries the load overland to the final destination.

Tote operates three ships as well. They carry about 700 roll-on, roll-off containers on trailers. Hostlers or tractors drive onto the ship and connect to the trailers. As is the case with CSX, the Tote containers are taken to a storage area where a road-legal truck tractor couples with the trailer and carries the load overland to the final destination.

According to the Port of Anchorage Master Plan, in 1998 there were 201,000 inbound Twenty-foot Equivalent Units (TEUs) into the Port, and 159,000 outbound TEUs that passed through the Port. In addition, it is estimated that the Port serves about 80% of Alaska. The 1999 population of Alaska was about 620,000, so the Port serves a population of about 496,000. The Medium Scenario Growth Rate for the Port is about 2.1%. This growth rate closely fits the projected growth rate for Homer and KPB population.

Table I-15 summarizes the 1998 Port of Anchorage activities and shows the calculated number of containers into and out of the Port. Table I-16 presents our calculated forecasted activities in 20 years using the Port Plan's Medium Growth Scenario.

Table I-15: 1998 Port of Anchorage TEUs and Calculated Container Volumes

	1998 Port of Anchorage TEUs	Approximate Number of Containers (based on 40-foot)	Containers Per Week	Average Per Ship Day (2 days per week)	Average Per Ship (2 ships/day)
Inbound	201,000	100,500	1,933	966	483
Outbound	158,000	79,000	1,519	760	380
Total	359,000	179,500	3,452	1,726	863

Table I-16: 20 year Port of Anchorage TEUs and Calculated Container Volumes

	2018 Port of Anchorage TEUs (2.1% Growth Rate)	Approximate Number of Containers (based on 40-foot)	Containers Per Week	Average Per Ship Day (2 days per week)	Average Per Ship (2 ships/day)
Inbound	305,000	152,500	2,933	1,466	733
Outbound	239,000	119,500	2,298	1,149	575
Total	544,000	272,000	5,231	2,615	1,308

Tote has about 29.1 acres that they use for staging inbound and outbound container trailers. CSX has about 29.2 acres for their containers. Total staging area for the cargo in Table I-13 is 58 acres. By dividing 1726 containers (average per ship day) by 58 acres, it is found that one acre is needed for 30 inbound and outbound containers.

Since the population of the KPB is about 49,000, and the Port of Anchorage serves about 496,000 Alaskans, it is reasonable to assume that about 10% (49,000 divided by 496,000) of the containers passing through the Port are KPB inbound or outbound. The main market for the Homer Dock would be the KPB, of which all communities except for the Coopers Landing and Seward population centers, are closer to Homer than to Anchorage. If the dock is developed with a supporting infrastructure in place, and other market, schedule and labor factors are satisfied, KPB freight may be shipped through Homer instead of Anchorage.

Table I-17 presents estimated container volumes in the near term (0 to 5 years) if a container terminal was located at the dock. If we use the same ratio of land to containers as in the Port of Anchorage (30 containers per acre), we can calculate the near-term land use as about 10 to 12 acres. Assuming the that container volume growth in Homer would be the same as forecast for Anchorage under the Medium Growth Scenario, the landside area need in 20 years would be about 15 to 20 acres.

Table I-17: Near-term Freight Volumes for Homer Container Terminal

	Annual KPB Market Share (TEU) 10% of Port of Anchorage	Approximate Number of Containers (40-foot)	Per week (assuming weekly delivery)

Inbound	20,000	10,000	192
Outbound	16,000	8,000	154
Total	36,000	18,000	346

10 SNOW STORAGE

The primary need for snow storage is to serve the Central Business District (CBD). Until recently the City of Homer snow storage consisted of a two-acre vacant lot near the CBD. The size and location of that lot met city needs even during the recent record snow fall, however, the lot is no longer available for snow storage. Evaluation of future site(s) will require consideration of location, size, treatment potential, permitting requirements, costs and aesthetics.

City snow removal now occurs primarily within the Pioneer Street ROW (approximately one mile) in the CBD where businesses are generally close to the sidewalk and plowing snow to the sides of the ROW is not feasible. Not hauling snow away would be unacceptable to businesses and the public. As the business district grows, additional streets will need snow hauling which will require a larger disposal area than the current one.

Since most snow will be removed from the CBD, a site(s) should be selected that is fairly close to allow economical and rapid snow removal of the area. A travel distance of a mile or less would be desirable. A site of two acres is more than adequate to accommodate the current snow volumes hauled from streets. Based on the projected increase of streets with hauled snow, a single site of at least three acres should be adequate. If the existing storm water system is not available near the dumpsite, we recommend the site be increased by at least 20% to accommodate a treatment area.

The City of Soldotna hauls snow from approximately 17 miles of streets and its disposal site is 15 acres which is reportedly too small for some heavy snow years. For the City of Soldotna, about 1-2 acres per mile of street is adequate. The City of Kenai hauls snow later in the winter from congested areas only, and its two-acre site is sufficient.

Snowmelt from the storage pile is classified as non-domestic wastewater by EPA and therefore needs to meet the State of Alaska water quality standards. Ideally, the runoff from the storage area will enter into city's existing storm water system, where it may be covered by the existing EPA and/or ADEC permits. The ADEC, however, may require a Best Management Practice Plan (BMPP) demonstrating that runoff from the site(s) will not negatively impact the storm water system, or violate existing permits. ADEC will consider various innovations for the BMPP including sedimentation ponds, wetlands, grassy swales, hay bales, floating booms or some combination of these. ADEC is most concerned with reduction of the sand loading/turbidity and introduction of other foreign materials into the existing storm water system.

According to Greg Drzewieski with ADEC, the EPA requires permits on snow storage areas of five acres or larger. By March 10, 2003 the EPA plans to promulgate regulations that require permits for sites one acre or larger; however, sites of less than five acres in use prior to the regulation change will be grand-fathered in so they will not require EPA permitting.

Site improvements will vary substantially depending on the location, conditions, and requirements of a new site(s). Costs could range from $10,000 to $100,000.

It is recommended that the City of Homer obtain a snow storage site near the Central Business District.

11 SENIORS AND PEOPLE WITH DISABILITIES

The purpose of this section of the Homer Transportation Plan is to describe existing transportation services and facilities provided for seniors and persons with disabilities within the community of Homer. Additionally this section will describe seniors and persons with disabilities--who are they, how this group is expected to change within the timeframe of the transportation plan, what their transportation needs are and what we recommend be included in this transportation plan. We also asked several similar size cities (Sitka, Seward and Kenai) what they require businesses to provide for handicapped parking, ramps or other transportation facilities.

11.1 Who Are Seniors and People With Disabilities?

Seniors are generally defined as adults 65 years of age or older. *Persons with disabilities* are individuals of any age experiencing physical or mental disabilities. The public Rights-of-Way Access Advisory Committee notes that the "Americans with Disabilities Act (ADA) covers a wide range of disability, from physical conditions affecting mobility, stamina, sight, hearing, and speech to conditions such as emotional illness and learning disorders." For more clarification the Alaska Mental Health Trust Authority (AMHTA), a funding source for programs for Alaska's mentally ill, describes their beneficiaries as Alaskans who are experiencing one or more of the following: mental illness; mental retardation or similar disability; Alzheimer's disease or related dementia; and chronic alcoholism with psychosis.

11.2 Expected Change During Next 20 Years

People with Disabilities. Statistics on the numbers of people with disabilities are difficult to come by but health care providers state that the number of people with disabilities increase in proportion to population increases. The State of Alaska has made a strong commitment to serve people with disabilities in their home community rather than in an institutional setting. This commitment alone has increased the numbers of people with disabilities in communities statewide.

Seniors. Statistics show an increase in the senior population in Alaska. The increase in elderly population in Alaska is apparent in a 1998 study of the *Health Status in Alaska* conducted by the Alaska Department of Health and Social Services that noted:

> "Although the population in Alaska is younger than the national average, the median age has been steadily increasing. The 1997 estimate of persons aged 65 years and older is 31,398, comprising 5.1% of the population. The estimate represents a 39.8% increase in persons aged 65 years and older since 1990."

The Homer Senior Center confirmed an increase in Homer's senior population. They felt the increase was due in part to more Alaskans retiring in Homer and more Alaskan's bring their aging parents to Alaska from elsewhere. According to the 2000 U.S. Census, the City of Homer population of people age 65 or over is 398, or 10% of the total population. For the greater Homer area, including the communities of Kachemak City and Fritz Creek, the population of people age 65 or over is 541, or 9% of the total population, according to the 2000 U.S. Census.

11.3 Transportation Needs of Seniors and People With Disabilities

Seniors and people with disabilities need access to employment, medical treatment, rehabilitation programs, shopping and social activities. Studies show that their ability to participate in a wide range of activities is key to their overall sense of well being. AMHTA conducted a research study to better understand the current situation of Trust beneficiaries (Alaska Mental Health Trust Authority, *The Beneficiary survey Project: A Management Summary Report*, prepared by Craciun Research for AMHTA dated May 30, 1999). In the study discussions with focus groups statewide regarding the lack of transportation the dialog confirmed that a lack of transportation services—

- Enhances a feeling of isolation
- Limits beneficiaries ability to work
- Limits beneficiaries feeling of independence

Twenty-nine percent of all respondents to the AMHTA's telephone survey indicated that transportation is a big problem. If the people with disabilities had a caregiver, the transportation problem wasn't as great as for those not dependent on a caregiver. Forty-eight percent of those not dependent on caregivers stated that transportation is a problem for them. When the AMHTA trust beneficiaries were asked what help they need, transportation ranked 7th followed by "getting around by wheelchair". The survey showed that many AMHTA beneficiaries use wheelchairs. The largest groups of wheelchair users are people with dementia (26% use wheelchairs) and people with mental illness required lower use of wheelchairs (3 to 4%).

11.4 Existing Services

For the purposes of developing this section of the Homer Transportation Plan, the Homer Senior Center (HSC), Kenai Peninsula Independent Living Center (ILC), the Friendship Center (FC), and two programs at the Community Mental Health Center (CMHC) were surveyed by telephone. Survey respondents were asked what transportation services were currently provided by the agency and what could be included in this transportation plan to enhance transportation services for the agency's' clients.

The City of Homer does not provide any specific services for seniors and people with disabilities. They provide some funding to the agencies to help with programs but this funding is not specifically earmarked for transportation. All the agencies interviewed were either non-profits (HSC) or funded by state and federal government (CMHC). The City does not provide any type of public transportation.

Currently, transportation services for seniors are provided by Homer Senior Center, a non-profit entity with the two vans they own. HSC provides housing in rental apartments and assisted living rental apartments for people over 60. Only 4 or 5 of the individuals in the assisted living facility drive their own cars and almost all in the regular rental apartments own and drive their own vehicles. HSC provides transportation for citizens over 60 years of age allowing them to access shopping, medical appointments, post office, pharmacy, etc. They occasionally provide trips outside Homer. They also transport seniors to the center for a hot mid-day meal Monday through Friday. The transportation services they provide can range from the Homestead Restaurant on the east end to Anchor Point to the north, however; generally they provide service within a 10-mile radius of the Homer Senior Center. They noted that they would provide service further out of town if they had the drivers and money.

The other entities in Homer such as the Independent Living Center and the Community Mental Health Center provide transportation using owned vehicles and via vouchers for transportation with the local cab company. The vouchers are purchased by clients at a low cost; the remainder of the cost is reimbursed by the ILC or CMHC through grant funding. The ILC secured a grant from the State of Alaska through the AMHTA for purchase of a vehicle that was then leased to the cab company. The CMHC owns two vans, one of which is wheelchair lift equipped.

11.5 Recommendations for Seniors and People With Disabilities

Seniors and people with disabilities require few basic transportation considerations to get around:

- Supportive roadside features—curb ramps, benches, handicapped parking close to businesses, sidewalks clear of obstructions, walking pathways, winter snow removal, etc.

- Community support to secure vehicle funding from state and federal program.
- Supportive building features to access businesses, housing, etc

Supportive Roadside Features. Streets, sidewalks and trails constructed within the public rights-of-way must be constructed to meet the requirements of the 1990 Americans with Disabilities Act (ADA). This civil rights act prohibits discrimination against people with disabilities—discrimination occurs when designing or constructing facilities for public use that are not usable by people who have disabilities. (U.S. Architectural & Transportation Barriers Compliance Board, *Building a True Community, Final Report* by the Public Rights-of-Way Access Advisory Committee (PROWAAC), January 10, 2001. *pp 2*)

According to the PROWAAC report, "The ADA covers a wide range of disability from physical conditions affecting mobility, stamina, sight, hearing and speech to conditions such as emotional illness and learning disorders. Such disabilities may or may not be evident to others." The report further states that the percentage of the population with disabilities is expected to increase in the coming decades mostly due to the growing number of elderly.

Community Support. Currently state and federal capital funding is available for vehicles and facilities used by entities providing transportation services to the public. All the agencies interviewed in Homer could qualify for this funding. Grant applications are strengthened when accompanied by a resolution or letter showing support of local government for the grant request. This support could also include local match for funding request.

The *Alaska Public Transportation Management System (APTMS) Statewide Asset Inventory and Implementation Plan, 2000 to 2006*, was prepared by the Alaska Department of Transportation and Public Facilities to inventory and assess public transportation capital funding needs identified funding needs for two agencies in Homer—the Homer Senior Citizens Center, Inc., and the Independent Living Center in Homer. Agencies apply directly to the State of Alaska, Department of Transportation for grant funding. Local matching funds may strengthen the application and could be provided in total or partially by the City of Homer. Information on the capital grant application process for seniors and people with disabilities can be found on the World Wide Web at http://www.dot.state.ak.us/external/state_wide/planning/5310.html. The need identified in the APTMS is noted below:

Agency	Year	Dollars
Homer Senior Citizens Center, Inc.	2004	$66,000
Independent Living Center, Homer	2004	$45.200

Reference: Alaska Public Transportation Management System, Table 6-4, Human Service Needs Lists (Includes vehicle and facility needs)

At this time, the consultants recommend the City of Homer coordinate with these local providers to confirm the needs and support these entities in providing services to seniors and people with disabilities.

Supportive Building Features. Public and private entities constructing new buildings in Homer should be encouraged to comply with the Uniform Building Code ADA requirements. Local and borough ordinances should be reviewed to identify where changes may be desirable. To understand how "Homer size" communities were handling this, an email survey was done. The following documents what are other cities doing.

Soldotna (2000 population=3759). The City of Soldotna requires that all new construction be built to the Uniform Building Code (UBC). Within the UBC, Chapter 11 requires that new construction and facilities provide for disabled access and that multi-family buildings provide disabled units. However the City of Soldotna does not enforce Chapter 11. The building inspector also related that the State Fire Code specifically exempts Chapter 11, because the state does not enforce the federal ADA. Soldotna is in the process of reviewing their practices in regards to the UBC and may decide to start enforcing Chapter 11 in the future. The building inspector related that the Independent Living Center is active in Soldotna and have encouraged many businesses into compliance. The zoning code requires handicap parking spaces.

Kenai (2000 population=6942). The City of Kenai requires that all new construction be built to the UBC. However, they do not enforce Chapter 11 of the UBC. They are going to address this issue in the upcoming comprehensive plan update. No ADA requirements are contained in the zoning code.

Seward (2000 population=2830). The City of Seward requires that all new construction be built to the UBC. However, they do not enforce Chapter 11 of the UBC. They do require handicapped parking spaces in the zoning code based on ADA requirements.

Sitka (2000 population=8835). The City of Sitka does not require anything but exempts handicapped ramps from the zoning code setback provisions.

Kenai Peninsula Borough (2000 population=49,691). Kenai Peninsula Borough's Subdivision Code does not address ADA requirements or provisions for people with disabilities. The Borough has retained final plat approval on all subdivision within the borough. The cities have preliminary plat approval only.

The current City of Homer codes were reviewed regarding new construction and it was found that the City of Homer (2000 population=3946) does not require that new construction be built to the UBC. Homer does not have any provisions in the zoning code for seniors or people with disabilities, and as part of the Kenai Peninsula Borough, does not require provisions in the subdivision code.

The current practice is that the City alerts the public to the ADA federal law and is available to assist with the requirements by means of a manual that is provided for review. The Independent Living Center has been effective in encouraging many businesses to comply with the ADA.

The City has no near term plans to require that construction meet the UBC and does not have a building inspector. From time to time the issue of a building inspector has been discussed but has always failed at the council level.

The following are possible Amendments to the City of Homer Codes that would strengthen and support construction of local facilities providing features to aid seniors and people with disabilities. Amendments could also address providing incentives for compliance, limiting requirements to the Central Business District and how to handle requirements in areas of Homer with excessive grades.

1. Homer City Code (HCC) Title 22, Subdivisions, HCC22.10.050, Improvement requirements. This is the section of the city code that could be revised to require that subdivision improvements provide for people with disabilities. HCC Title 11 (Streets) and the Design Criteria Manual are referenced in this section and both would have to have corresponding revisions. For example, an amendment that requires that sidewalks be constructed to comply with ADA requirements.

2. HCC Title 7.12, Parking. This section of the city code (which is separate from the zoning code) could be amended to promote parking spaces for people with disabilities based on ADA requirements.

3. HCC Title 21, Zoning. The zoning code could be amended to promote ADA requirements. For example, multi-family residences could be encouraged to provide units for people with disabilities, based on the federal ADA.

4. HCC, Title 12, Building. The building permit title could be amended to require that new construction be built to the standards of the UBC, which references the ADA in Chapter 11.

Public comment at the July 30, 2001 meeting included interest in a transit system operating from the Homer Spit to the Central Business District (CBD). This idea has merit, however evaluation is beyond the scope of this study. It is recommended that the City explore the idea in the future. Implementation of the service could benefit the community through reductions in vehicle traffic on the spit and in the CBD, economic gains in new jobs, and provide a service to local residents and seasonal visitors.

2005 HOMER AREA TRANSPORTATION PLAN

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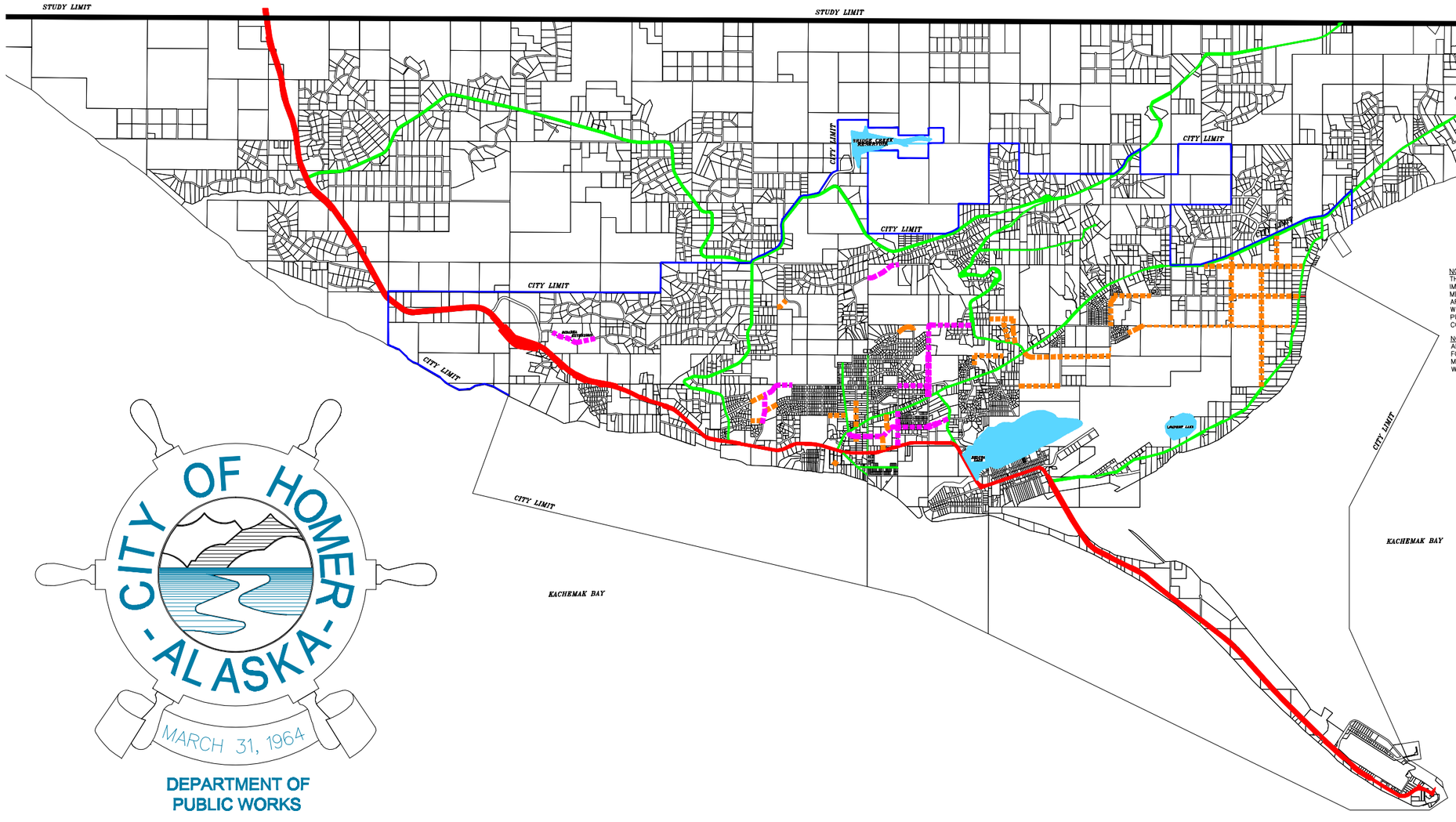
PLATE 1

2005 HOMER AREA TRANSPORTATION PLAN

STUDY AREA STREET MAP



NOTE:
THE ALIGNMENT OF THE PROPOSED ROAD IMPROVEMENTS SHOWN ON THIS MAP ARE MEANT TO BE APPROXIMATE IN NATURE AND ARE NOT DEFINITIVE. FINAL ROAD ALIGNMENTS WILL BE DETERMINED ONLY THROUGH A PUBLIC DESIGN PROCESS THAT WILL INCLUDE COMMUNITY INVOLVEMENT.

NOTE:
ALL PROPOSED ROADS HAVE BEEN WIDENED FOR GRAPHICAL PROPOSES ONLY, AND THEY MAY EXCEED THE PLATTED RIGHT OF WAY WHERE APPLICABLE.

0 5000
GRAPHIC SCALE

LEGEND

ARTERIAL
COLLECTOR
MODELED EXTENSION *
LOCAL IMPROVEMENT

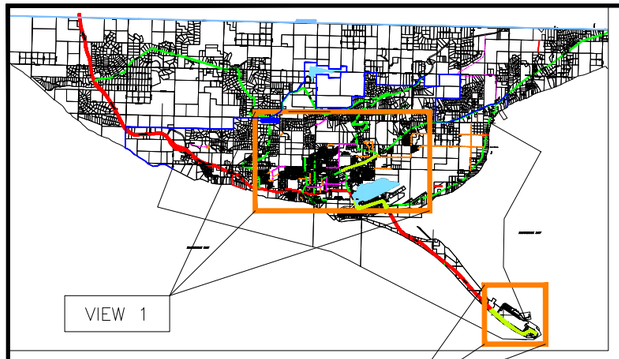
* ONLY BIDARKA EXTENSION AND SKYLINE EAST END ROAD EXTENSION IDENTIFIED ON PLATE 1. SEE PLATE 2 FOR OTHERS

CITY OF HOMER -ALASKA- MARCH 31, 1964

DEPARTMENT OF PUBLIC WORKS

Mike Tauriainen, P.E.
CONSULTING ENGINEERS, INC.
IN ASSOCIATION WITH
TRANSPORTATION ENGINEER
KINNEY ENGINEERING
TRANSIT ENGINEER
BROOKS & ASSOCIATES
TRAILS CONSULTANT
LAND DESIGN NORTH
PLANNING CONSULTANT
BECHTOL PLANNING & DEVELOPMENT

DATE JULY 2005
SCALE AS SHOWN
DESIGNED BY MT
DRAWN BY MT
CHECKED BY MT
APPROVED BY -



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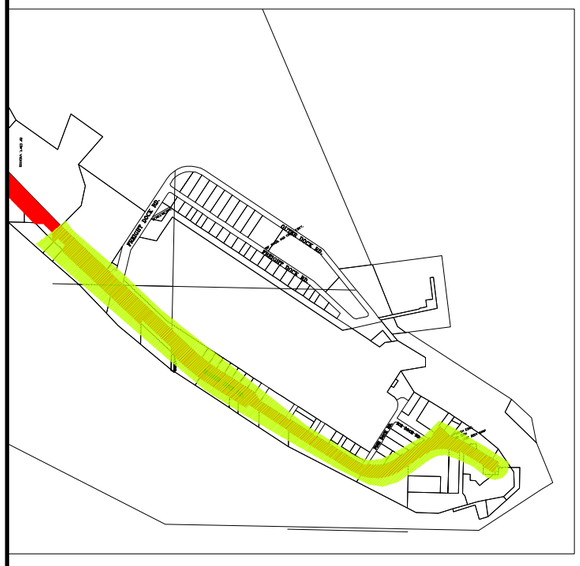

VIEW 2

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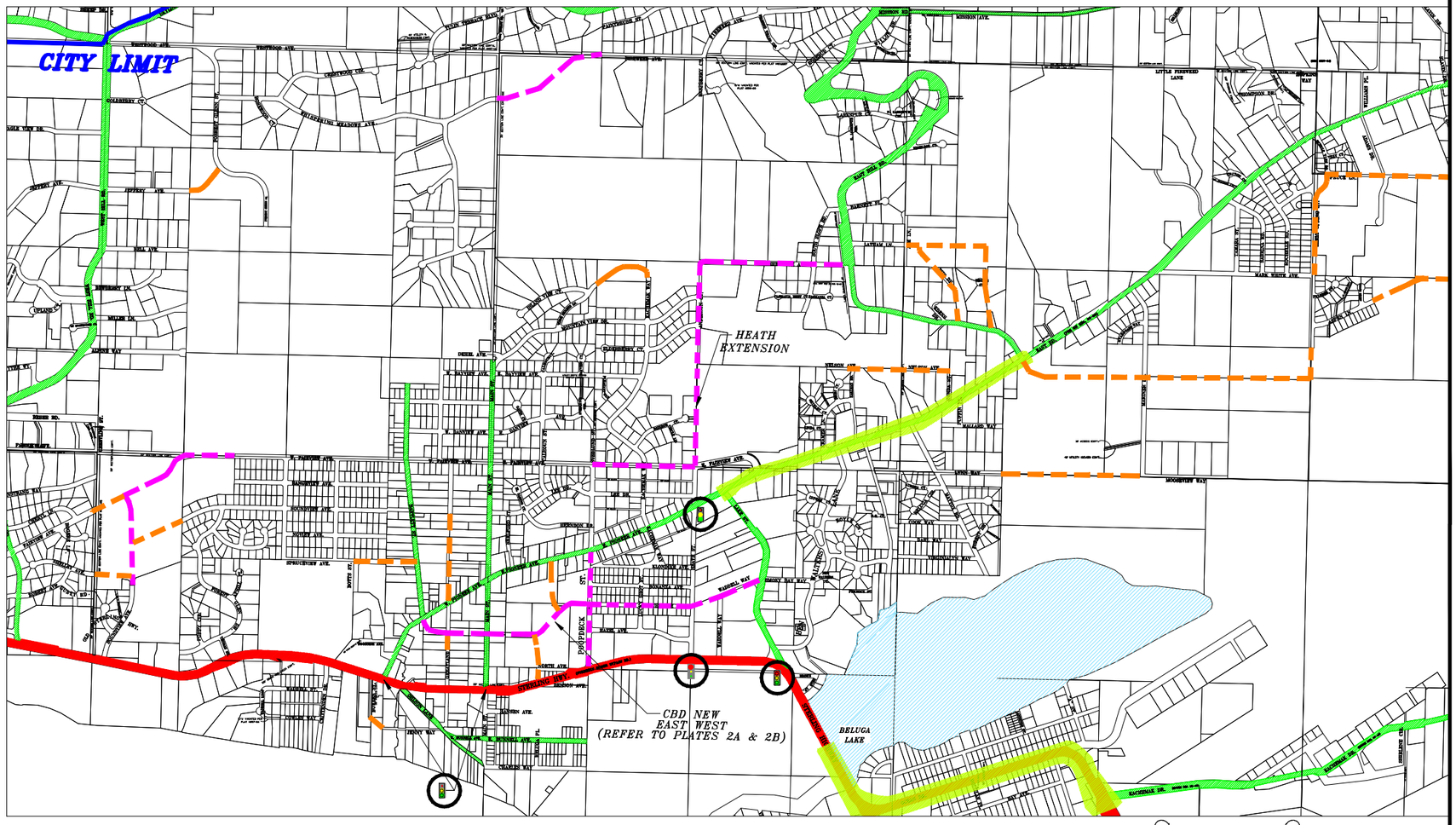

VIEW 1

GRAPHIC 750 0 750 1500 SCALE

LEGEND

EXPAND TO 3 LANES

MODELED EXTENSION

LOCAL IMPROVEMENT

TRAFFIC SIGNAL OR ROUNDABOUT

NOTE:
BIDARKA EXTENSION AND SKYLINE–EAST END ROAD EXTENSION AND SOME LOCAL IMPROVEMENTS SHOWN ON PLATE 1

NOTE:
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CITY OF HOMER - ALASKA - MARCH 31, 1964
DEPARTMENT OF PUBLIC WORKS

DATE	JULY 2001
SCALE	AS SHOWN
DESIGNED BY	MT
DRAWN BY	RS
CHECKED BY	MT
APPROVED BY	–

35186 SPUR HWY. SOLDOTNA, ALASKA CONSULTING ENGINEERS, INC. (907) 262-4624
Mike Tauriainen, P.E.
IN ASSOCIATION WITH
TRANSPORTATION ENGINEER
KINNEY ENGINEERING
TRANSIT ENGINEER
BROOKS & ASSOCIATES
TRAILS CONSULTANT
LAND DESIGN NORTH
PLANNING CONSULTANT
BECHTOL PLANNING & DEVELOPMENT

CITY OF HOMER - ALASKA - MARCH 31, 1964
DEPARTMENT OF PUBLIC WORKS

2005 HOMER AREA TRANSPORTATION PLAN

STREET IMPROVEMENT ALTERNATIVES

PLATE 2

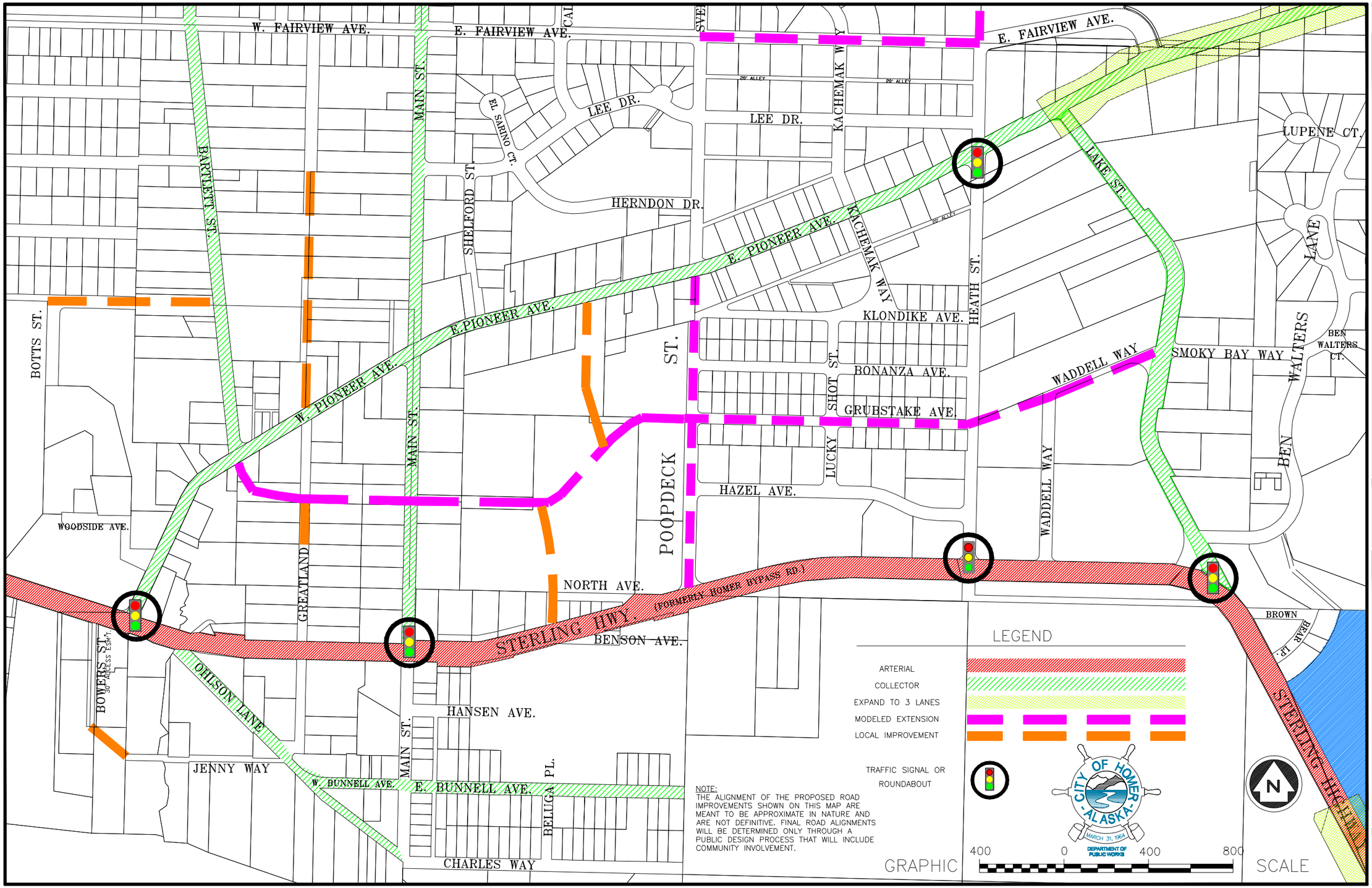

PLATE 2A

2005 HOMER AREA TRANSPORTATION PLAN

CENTRAL BUSINESS DISTRICT, ALTERNATE A

Mike Tauriainen, P.E.
TRANSPORTATION ENGINEER
HOMER, ALASKA
IN ASSOCIATION WITH
CONSULTING ENGINEERS, INC.
TRAILS CONSULTANT
LAND SURVEYING
PLANNING CONSULTANT
BECHTOL PLANNING & DEVELOPMENT
TRANSPORTATION ENGINEER
BROOKS & ASSOCIATES

DATE JULY 2001
SCALE AS SHOWN
DESIGNED BY MT
DRAWN BY RS
CHECKED BY MT
APPROVED BY —

PLATE 2B

2005 HOMER AREA TRANSPORTATION PLAN

CENTRAL BUSINESS DISTRICT, ALTERNATE B

E.

E.

E.

BOTTS ST.

BARTLETT ST.

MAIN

EL SARINO CT.

LEE DR.

LEE DR.

KACHEM

SHELFORD ST

HERNDON DR.

E. PIONEER AVE.

KACHEMAK WAY

HEATH ST.

LAKE ST.

LAKE

KLONDIKE AVE.

SMOKY BAY WAY

WADDELL WAY

W. PIONEER AVE.

E. PIONEER AVE.

MAIN ST.

ST.

LUCKY SHOT ST.

BONANZA AVE.

GRUBSTAKE AVE.

HAZEL AVE.

WADDELL WAY

WALTERS

BEN

WOODSIDE AVE.

GREATLAND ST.

POOPDECK

NORTH AVE.

STERLING HWY. (FORMERLY HOMER BYPASS RD.)

BROWN

BEAR TR.

BOWERS ST.

OHLSON LANE

BENSON AVE.

HANSEN AVE.

MAIN ST.

BELUGA LAKE

STERLING HWY.

JENNY WAY

W. BUNNELL AVE.

E. BUNNELL AVE.

BELUGA PL.

CHARLES WAY

LEGEND

ARTERIAL

COLLECTOR

EXPAND TO 3 LANES

EXTENSION

LOCAL IMPROVEMENT

TRAFFIC SIGNAL OR ROUNDABOUT

NOTE:
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CITY OF HOMER -ALASKA- MARCH 31, 1964
DEPARTMENT OF PUBLIC WORKS

GRAPHIC SCALE 400 0 400 800

Mike Taurianen, P.E.
CONSULTING ENGINEERS, INC.
IN ASSOCIATION WITH
TRAILS CONSULTANT
LAND USE CONSULTANT
PLANNING CONSULTANT
BECHTOL PLANNING & DEVELOPMENT
TRANSPORTATION ENGINEER
KRAUSE ENGINEERING
TRANSIT ENGINEERING
BROOKS & ASSOCIATES

DATE JULY 2001
SCALE AS SHOWN
DESIGNED BY MT
DRAWN BY RS
CHECKED BY MT
APPROVED BY _