

Freight Mobility Study

June 2001



Traffic Department
Municipality of Anchorage



Anchorage
Metropolitan
Area
Transportation
Study

Freight Mobility Study for the Anchorage Metropolitan Area

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Table of Contents

EXECUTIVE SUMMARY	3
1.0 INTRODUCTION	10
1.1 Related Studies / Planning Efforts and Regulations	10
2.0 PURPOSE AND OBJECTIVES.....	11
2.1 Study Limitations.....	12
2.2 Study Methodology.....	12
2.3 General Goods Movement Planning Goals and Objectives.....	12
2.3.1 Overview of Relationship with Comp Plan and LRTP.....	13
2.3.2 General Community Planning Goals	13
2.3.3 Specific Study Objectives	14
3.0 BACKGROUND	15
3.1 Economic Overview Interrelationships.....	16
3.2 Intermodality.....	19
3.3 Port of Anchorage.....	19
3.4 Alaska Railroad.....	20
3.5 Ted Stevens Anchorage International Airport	21
3.6 Truck Transport	22
3.6.1 ITS.....	22
3.7 Truck Freight Characteristics.....	24
3.7.1 General	24
3.7.2 Anchorage Freight Characteristics.....	24
4.0 LAND USE.....	25
5.0 SPECIAL AREA CONSIDERATIONS.....	28
5.1 North Port Access	28
5.2 Ship Creek.....	28
5.3 Central Business District.....	29
5.4 East Anchorage	29
5.5 South Anchorage.....	29
5.6 Midtown.....	29
6.0 FREIGHT NODES AND ROUTES	30
6.1 Major Freight Generation and (Distribution) Consumer Nodes.....	30
6.2 Truck Routes within Anchorage – Municipal Code	33
6.2.1 General Roadways	33
6.2.2 Central Business Traffic District	33
6.2.3 Long/Combination (Doubles).....	33
6.2.4 Vehicle Size and Weight Limits Generally	36
6.2.5 State Street Routes	36
6.2.6 Permits	36
6.3 Issues.....	36
6.4 Major Freight Corridors.....	37
6.5 Projections.....	37

7.0 FORECASTING FREIGHT VOLUMES	40
7.1 Modeling	40
7.2 Truck Model Uses	40
7.3 Other Forecast Methods	40
7.3.1 Economic	40
8.0 ENVIRONMENTAL ISSUES	40
8.1 Effect of Freight Transport on CO Air Quality in Anchorage	41
8.2 Effect of Freight Transport on PM-10 Air Quality	41
9.0 FREIGHT MOBILITY – Issues and Problem Identification	41
9.1 Constrained Freight Routes	48
9.2 Facility Design/Infrastructure (Bridges)	49
9.3 Maintenance	50
9.4 Signalization	50
9.5 Local Regulations	51
9.6 Summary	52
10.0 PLANNED IMPROVEMENTS	52
11.0 RECOMMENDATIONS	53
12.0 THE FUTURE	56
13.0 REFERENCE / BIBLIOGRAPHY	58
14.0 APPENDICES <i>(not listed in this document – available upon request)</i>	

LIST OF TABLES	
#1 Truck Size and Weight Limits – Municipality of Anchorage	38
#2 Comparison of Truck Size and Weight Limitations within Anchorage	39
#3 UGMS Problem/Resolution Matrix	42
#4 Truck Survey Results	47

LIST OF FIGURES	
#1 Study Area Vicinity map	5
#2 Freight Element Relationship Graph	15
#3 Anchorage Economic Relationship	17
#4 Freight Volume History	18
#5 Commercial Truck & Trailer Registrations - Anchorage	25
#6 Freight Consumer & Generator Nodes - Anchorage	27
#7 Permitted through Routes for Trucks Greater than 11,000 (lbs.) GVW	31
#8 Drivers' Preferred Routes	32
#9 MOA Truck Route – Central Business Traffic District	34
#10 MOA Approved Routes for Reasonable Access (Double Loads)	35
#11 Freight Movement Problem Areas	45

EXECUTIVE SUMMARY

INTRODUCTION

Freight affects every individual in the community everyday and is a fundamental aspect to our high standard of living. Food, fuel, hardware, clothing, and every other item that makes our daily existence possible is provided by the retailer and wholesaler where shelves are kept full of merchandise. Construction materials for homes and offices, office supplies, passenger cars, gasoline for cars, mail and curbside refuse removals are also important segments of freight movement critical for everyday living. Everything that is consumed is conveyed from its source to the public via the freight industry.

Freight mobility has traditionally been addressed as a part of the broader transportation planning and engineering process in the Municipality of Anchorage. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st century (TEA 21) require a closer look at all aspects of transportation, whether it is trains, buses, bicycles, ferries or freight movement. This study is a direct result of that shift in policy.

The Anchorage Metropolitan Area Transportation Study (AMATS) published, but did not formally adopt, a Final Draft Urban Goods Movement Study (UGMS) in June of 1987. The UGMS addressed issues regarding truck routes, functional road classifications, regulations, permits, licensing and traffic engineering and capital improvements. It also offered recommendations for truck routing, modifications to MOA and State of Alaska (SOA) regulations and a series of physical improvements to infrastructure within the Anchorage Bowl. The UGMS study provided a significant advancement toward understanding the characteristics of local freight operations and problems. Comments from the freight industry about specific problem areas are presented in Section 9.0

AMATS seeks to update the former work and characterize the movement of freight in Anchorage. Further, this study provides insight into the physical and regulatory needs of the freight industry to promote reliable and cost effective means to circulate freight within the city and to other destinations served by the hub.

STUDY AREA

The study area includes the Municipality of Anchorage with a focus area from Potters Marsh to Eagle River. (See Figure 1)

PURPOSE

The purpose of this study is to serve as an informational resource and planning tool for preparation of the Long-Range Transportation Plan and Anchorage Comprehensive Plan updates, as well as for educating the public about the freight industry in the Anchorage area.

This study is also intended to describe the characteristics of freight mobility in Anchorage, with a particular focus on motor freight industry; identify deficiencies existing in the transportation system that impede the efficient flow of goods; and make recommendations for improvements and possible modifications in maintenance, facility design, regulations and capital projects to resolve constraints to freight mobility.

ANCHORAGE FREIGHT CHARACTERISTICS

A typical Anchorage freight movement scenario might include the roll off of a truck trailer or semitrailer, or the crane off-loading of a 45-foot container onto a truck trailer or semitrailer chassis, at the Port of Anchorage (POA) where it is then hauled to a storage area on Port premises. From the lot, the container is hauled by truck tractor to either the destination of consumption, or to a warehouse facility off Port premises where it is off-loaded and redistributed in smaller trucks or consolidated for tractor transport. The empty container is returned to the Port and parked in the container storage area on Port premises awaiting transport by ship to its point of origin. In this illustration, the POA, major freight firms, and a transfer/consolidator firm, are involved in the movement of the shipment. This scenario, one of many possible scenarios, improves our understanding of the numbers of people and equipment involved in moving only one container to the point of consumption or distribution to the public.

The movement of freight within the Anchorage Bowl is much the same as urban areas across the United States. Freight mobility occurs because of the partnership between private sector business capital and the public sector infrastructure and maintenance systems. However, several distinguishing features of Alaska and the South-central region set Anchorage apart.

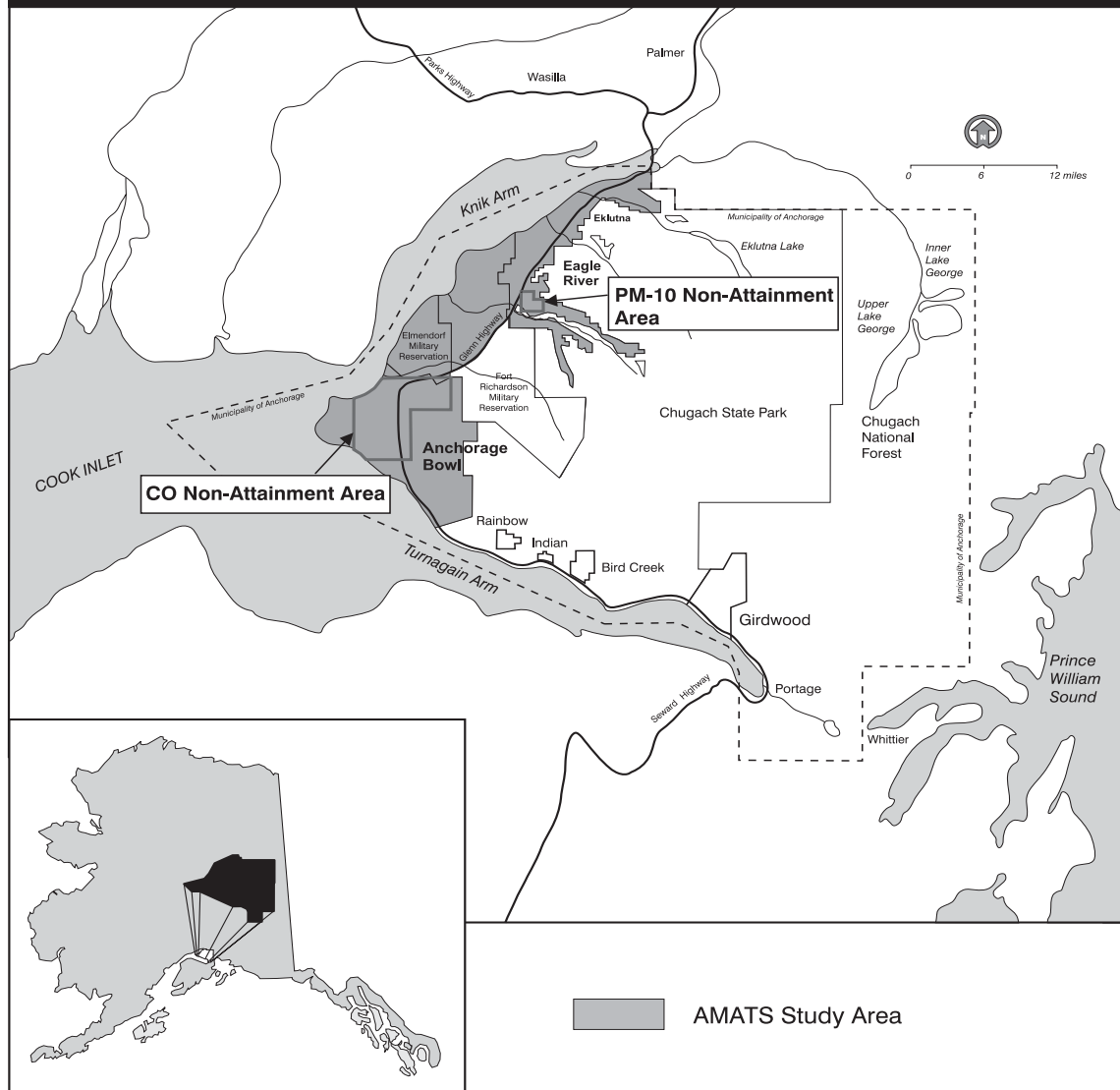
Anchorage is the major year-round marine and air hub, serving southwest, west, and northern Alaska along the railbelt. For many communities there are no alternative freight distribution centers or supply origin. The northern segment of Alaska, including much of the west, northwest and north coastlines, are icebound for a good portion of the year. Freight into and out of many of Alaska's northern communities rely on air transport for much of the year. During warmer months, barges serve the coastal and riverine communities. Due to Anchorage's location and proximity to the Orient and Russia, the Ted Stevens Anchorage International Airport has developed into the nation's major freight transshipment point. Anchorage also provides a year-round distribution system with direct connections to the Alaska Railroad and the state highway system. The highway system includes a connection to the intercontinental road system through Canada to the contiguous 48 states.

Freight in Anchorage moves in between modes through the city to destinations in other parts of the state, from across Alaska to the port and airport, and from origins outside for distribution and consumption within the city itself. Demand is a factor of freight movement and economic vitality. Residents of Anchorage and other communities clearly consume more goods when the state economy is healthy. A healthy economy expands the consumable and durable goods market requiring more goods to be moved to market.

Freight exports occur with less sensitivity to the state's economic status. Goods from Alaska are shipped to foreign and domestic destinations based on demand from national and world markets and economies. Currently, a relatively small amount of natural resources are shipped through Anchorage to the Port or airport via truck and rail. Sand, gravel, seafood products, refined petroleum products, and household goods dominate the outbound freight movement.

Much of the retail freight entering Anchorage is time sensitive. The distance from manufacturing and agricultural centers is great, and because of factors (including, but not limited to, land costs) retail outlets do not provide warehousing to any extent. For that reason, goods must be shipped for "just in time" delivery to Anchorage outlets. Most freight in Anchorage first goes to a distribution center where it is often temporarily stored in container vans until it is delivered. The "just in time" freight distribution system relies upon the ability of freight movers to transport the various commodities to market in a prescribed time. Delays caused by weather, traffic congestion and other constraints affect the efficiency of the system.

AMATS AREAS



CONSTRAINTS TO FREIGHT MOVEMENT

A common definition of constraint to freight movement is “anything that slows, or makes more costly, the process of loading, transporting and delivering freight.” Technical constraints occur at all levels of the freight industry. Constraints include registering vehicles, licensing drivers, acquiring insurance, equipment procurement and maintenance, adequate loading facilities (including public loading zones) and adequate destination circulation. Additional operational constraints include traffic congestion delays, conflicts with other freight and private passenger vehicles, conflicts with pedestrians, traffic signals and intersection geometrics.

Constraints caused by road wear and weather including potholes and generally rough roadways and intersections, snow removal priorities, traction treatment at intersections and obscured signs and signals.

RECOMMENDATIONS

Policy

Freight Mobility affects every individual in the Anchorage Metropolitan area, including residents in Eagle River, Chugiak, Peters Creek, Eklutna and Girdwood. The freight industry should continue to work with the MOA and ADOT&PF to determine future policy for freight vehicles. Pavement and road design currently include analysis of the use for freight trucks and passenger vehicles. Consideration for the freight industry, as well as public safety, will continue to be incorporated in pavement, road, and bridge design, programming of plans, studies, and funding. As construction materials technology improves and standards change, the MOA and ADOT&PF will incorporate these advancements. These practices, if needed, could reflect a greater level of consideration for freight movement in the funding of programs, plans and studies, road and bridge design, private development standards and infrastructure maintenance. The next AMATS Unified Planning Work Program, Calendar Year 2002-03, will include a task for on-going monitoring of freight movement issues.

General

The following are general recommendations as a result of this Freight Mobility Study. AMATS staff should:

- identify freight mobility monitoring as an ongoing activity in the AMATS Unified Planning Work Program, and or Traffic Engineering
- continue to work with existing forums, such as the Chamber of Commerce Transportation Committee as well as freight providers and shippers, public agencies, and local citizens for on-going coordination and oversight of freight mobility issues in the AMATS planning area
- support coordination between modes to reduce conflicts and capital improvement costs
- support increased participation in the development of Intelligent Transportation Systems/Commercial Vehicle Operations (ITS/CVO) programs and support local implementation of various ITS/CVO technologies, to the extent feasible. AMATS staff should work with ITS stakeholders to investigate establishing an ITS advisory group to advise the AMATS Technical Advisory Committee
- develop a public information campaign to educate the public about the importance of the freight industry in Anchorage and about the physical constraints related to large freight vehicles in traffic

Capital Improvements

The following are proposed ideas and methods identified during this report to assess/prioritize the need to enhance freight mobility. AMATS staff should:

- create a matrix of capital improvement concepts or projects recommended in this study by the freight industry to use as input to scoping for future capital projects
- more clearly define freight mobility as an element in the Roadway Ranking Criteria of the AMATS Transportation Improvement Program

Short Term 2000-2005

- extend C Street from Dimond Blvd to O'Malley
- improve the connection between International Airport Road and the New Seward Highway
- improve access connections between the POA and the Ship Creek warehouse district and the remainder of Anchorage
- improve roads within the Ship Creek basin that are key to movement of freight including width, surface and sight distance
- although both the State and the Municipality revise pavement designs to serve each specific project and each road's needs, we should investigate what it would take to provide an even more durable surface at intersections on major truck routes that resists rutting

Long Term 2005-2020

- improve connection and mobility between the Seward Highway and the Glenn Highway
- explore / investigate the need for a consolidated freight terminal in the Ship Creek Area in conjunction with the ARRC-Trailer on Flat Car (TOFC) facility, relocation of Whitney Avenue, and the alternative Ingraham / Gambell route

Maintenance

AMATS staff, in cooperation with the freight industry, should

- work with Municipal and State maintenance personnel to identify the level of existing maintenance on main truck routes to determine whether maintenance practices need to be changed. If economically feasible, increase the level of winter maintenance along selected freight corridors
- work with MOA and ADOT&PF to consider evaluating the effects on maintenance of the movement of oversize/overweight vehicles within city limits, including damage to signs, signals, etc.
- work with Municipal and State maintenance staff and with Municipal staff to identify locations where overhanging brush may obscure signals and street signs. Where appropriate, clear the vision area in cooperation with Municipal and State maintenance staff. Work with Municipal staff to implement zoning requirements on private property for clear vision areas

Regulatory / Enforcement

Freight mobility is a function of the private sector operating within a regulatory and physical infrastructure provided and maintained primarily by the MOA and ADOT&PF. The freight industry is highly competitive which has resulted in a high degree of operator efficiency. Overall freight mobility, however, could be improved through a variety of physical and regulatory modifications. The responsibility for improvement is shared by both private and government sectors.

- MOA Traffic Department should review and update, if necessary, Title 9 regarding key issues
 - enforcement policy for downtown loading zones both on streets and alleys
 - commercial loading zones on all new development to ensure appropriate clearances and circulation space for proposed levels and types of truck traffic and future volumes
 - changes in industry standards and practices (in particular, whether to allow 53' trailers or semi-trailers and doubles on Municipality owned roads)
 - differences between State of Alaska and Municipality of Anchorage regulations concerning vehicle weight and length restrictions and to address enforcement problems
 - hazardous materials transport, particularly within the Central Business District (CBD); and
 - outdated language, Section 9.46.410, should reflect functional classifications modified by 1985 OS&HP (currently neighborhood collectors are included by administrative interpretation)
- MOA Planning Department should review land use policies and existing zoning for opportunities to consolidate commercial and industrial development along truck routes and/or rail legs
- AMATS Staff should work with MOA Traffic Department and other agencies to analyze motor vehicle accident statistics involving trucks

Further Investigations

AMATS staff in cooperation with the freight industry, should:

- work with the MOA Project Management and Engineering Department, MOA Traffic Department, and ADOT&PF Engineering to conduct an areawide inventory and assessment of physical conditions (roadways and intersections, and points of ingress) on principal routes used by trucks and use this information as input for future improvements (ADOT&PF Traffic Engineering should review issues related to the National Highway System)
- identify gaps in truck volume / vehicle classification counts, if any
- conduct a Municipal wide truck count for base-line purposes for comparison against project specific counts
- work with appropriate agencies and firms to identify future needed freight studies, which may include the following:

- obtain better data for actual movements of longer vehicles (53' semitrailers and doubles)
- obtain better origin / destination information on freight movements, exploring the potential of using ITS technologies to gather such data, and to learn new methods of forecasting freight movements
- conduct an assessment of pros and cons of time-of-day operation of trucks versus creating larger intersections
- co-sponsor a workshop or task force of State and Municipal design engineers, as well as private design consulting engineers to look at all issues pertaining to the design vehicle
- identify and study cities of comparable size and similar style to Anchorage to study their freight mobility plans, performance measures, regulations, access to ports of entry, etc., as a benchmarking tool

1.0 INTRODUCTION

The movement of freight into, out of, and around Anchorage plays an important role in the quality of lifestyle options for the city's residents. Just as important, however, is the function of freight movement in the regional and statewide economy. Anchorage is a regional and global transportation hub with active marine port, airport and railroad operations interconnected by a truck network. Even though truck freight makes up a relatively small percentage of overall traffic volumes on Anchorage roadways, each truck trip represents the distribution of goods that has a major benefit to a great number of people. Collectively, truck freight movement within the Municipality affects all Anchorage residents every day and it also directly affects many communities within the south central and railbelt regions of the state.

Like most cities, Anchorage's distribution of goods is complex. Human activity requires the supply of goods and the removal of waste materials as well as the return of empty freight containers to their point of shipment. Although the freight stream that provides manufactured goods and groceries to Anchorage residents is quite visible, many less visible secondary streams of distribution exist that complete a network of supply and services.

Public agencies responsible for designing and maintaining transportation facilities have provided a reliable system. However, the freight industry has identified several problems for freight delivery in the area. The efficient movement of freight affects consumers, commercial and industrial firms as well as the general motorized public. Many of the problem areas can be addressed through a variety of actions by state and local transportation authorities.

1.1 Related Study/Planning Efforts and Regulations

There are numerous studies and plans that have a direct relationship with Anchorage freight. Several are recently completed or are currently underway that will affect truck freight mobility, particularly in the Port of Anchorage and Ship Creek basin area. Freight related planning documents include:

Port of Anchorage Master Plan, 1999; Port of Anchorage – VZM Transystems, Inc

Northern Access Corridor Reconnaissance Study 1999, Port of Anchorage - Tryck, Nyman & Hayes, Inc

Alaska Railroad Master Plan, (currently underway), Alaska Railroad Corporation – Land Design North

ARRC Rail Yard Study, March 2000, Alaska Railroad Corporation – Woodside Consulting Group

Anchorage Bowl Comprehensive Plan: Anchorage 2020, February 2001, Municipality of Anchorage–
Planning Department

Anchorage CBD Parking and Circulation Study, 1998, Municipality of Anchorage – Kittelson &
Associates, Inc

Ship Creek Multi-Modal Transportation Study, (anticipated completion June 2001), Municipality of
Anchorage – Planning Department – Transportation Planning Division (AMATS) – Kittelson & Associates,
Inc

Alaska Intermodal Transportation Plan, 1994, State of Alaska Department of Transportation and Public
Facilities

Alaska ITS/CVO Business Plan, 1999, State of Alaska Department of Transportation and Public Facilities.

Anchorage International Airport (AIA) Master Plan Update (currently underway), AIA, HNTB, State of

Alaska DOT&PF

Vision 2020: Alaska State Transportation Plan (Long-Range Statewide Transportation Plan), 1995, State of Alaska Department of Transportation and Public Facilities

Pertinent MOA Regulations include:

Title 9- Municipality of Anchorage Traffic Code

Title 21- Municipality of Anchorage Land Use Code

2.0 PURPOSE & OBJECTIVES

This study is intended as an informational source and planning tool for preparation of the Long-Range Transportation Plan and Anchorage Comprehensive Plan updates, as well as for educating the public about the freight industry in the Anchorage area.

The purpose of this study is to serve as an informational source describing the characteristics of the freight industry in Anchorage, with a particular focus on motor freight; identify deficiencies existing in the transportation system that impede the efficient flow of goods; and make recommendations for improvements and possible modifications in maintenance, facility design, regulations and capital projects to resolve constraints to freight mobility.

In 1991 the Intermodal Surface Transportation Act (ISTEA) provided for the inclusion of freight mobility under the jurisdiction of state and Metropolitan Planning Organization (MPO) planning at that time. Planning Factors 7 and 11 specifically address the requirement to integrate freight into the overall planning effort:

- (a) Section 134(f) of Title 23, U.S.C., and Federal Transit Act section 8(f) (49 U.S.C. app. 1607(f) list 15 factors that must be considered as part of the planning process for all metropolitan areas. The following factors shall be explicitly considered, analyzed as appropriate, and reflected in the planning process products
- (7) International border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes...and supporting technical efforts should provide an analysis of goods and services movement problem areas, as determined in cooperation with appropriate private sector involvement... and
- (11) Enhancement of efficient movement of freight

The Transportation Equity Act for the 21st Century (TEA 21) came into law June 1998, continuing the importance of freight mobility as part of a community's overall transportation system. Future freight mobility efforts will be based on any new directives continued under TEA 21.

Supporting studies have been conducted nationwide to analyze the condition of freight movement. TEA 21 contains directives, including a requirement for an "intermodal freight connectors study." The Intermodal Connectors Condition & Investment Study, a national survey conducted by the Federal Highway Administration (FHWA) in 1998, included a state inventory of roadways that connect terminals such as ports and airports via the National Highway System (NHS). Within Anchorage roadways connecting the Port and the Airport with the NHS were surveyed and include Ocean Dock Road and the

“A-C” couplet to 6th Avenue, which is part of the mainline NHS, as well as International Airport Road from Postmark Drive to Minnesota Drive, also part of the mainline NHS. Other NHS routes in Anchorage not addressed in the national survey by U.S.DOT include: 5th and 6th Avenues between Gambell Street and “L” Street, the “I/L” couplet, Minnesota Drive, Tudor Road, Muldoon Road, East Loop Road, a small portion of Boniface Parkway to the Elmendorf Air Force Base Gate, and the Seward and Glenn Highways. The surveys were conducted for a variety of issues related to freight mobility. Appendix A contains the completed surveys as well as a map of the NHS within Anchorage. Results of the inventory will be used in preparation for the next federal highway funding re-authorization bill.

2.1 Study Limitations

This study of freight mobility focuses on the inventory and analysis of the issues of motor freight and its interconnections with the Alaska Railroad, Port of Anchorage, Ted Stevens Anchorage International Airport, and points of pick-ups and delivery throughout Anchorage.

Industry comments have been included in the body and appendices. The MOA and ADOT&PF can complete further assessment in conjunction with the freight industry.

2.2 Study Methodology

A variety of methods were used to prepare this study. A literature search was performed through library resources for journal and professional citations on the topics of freight management, planning and characteristics, and freight mobility. Appropriate sections of the Anchorage Comprehensive Plan, Long Range Transportation Plan and the Official Streets and Highways Plan were integrated into the document. Contacts were made with the Idaho Department of Transportation, California Transportation Department (CalTrans), Washington Department of Transportation, and the American Trucking Association for sample studies and other model assistance. Contacts were also made with the Alaska Trucking Association, Alaska Department of Environmental Conservation (ADEC), Municipality of Anchorage Public Works, ADOT&PF Highway Safety Planning Agency, ADOT&PF Division of Measurement Standards and Commercial Vehicle Enforcement, Cambridge Freight Model Survey and Driver’s Survey for information and for review. Several freight carriers provided cost details and general perspectives on the problem areas of Anchorage’s infrastructure.

2.3 General Goods Movement Planning Goals and Objectives

The planning goals and objectives of this study are specifically directed in support of the Long-Range Transportation Plan as well as the Anchorage Bowl Comprehensive Plan. Anchorage 2020, the recently adopted Anchorage Bowl Comprehensive Plan (2001), integrates transportation and land use planning, and provides for freight with the following goals and general implementation policies:

Land Use and Transportation – Goals:

- Commercial, Industrial, Institutional, and Transportation Uses: A balanced supply of commercial, industrial, institutional, and transportation land uses which is compatible with adjacent land uses and has good access to transportation networks.
- Mobility and Access: A transportation system, based on land use, that move people and goods safely, conveniently, and economically, with minimal adverse impact on the community.
- Transportation Choices: An efficient transportation system that offers affordable, viable choices among various modes of travel that serve all parts of the community.

- General Land Use Issues: A forward-looking approach to community growth and redevelopment.

Freight specific Implementation Policy Statement: Provide safe and efficient freight routes that minimize impacts on neighborhoods.

Design and Environment

- Transportation Design and Maintenance: a safe, energy-efficient transportation system that is designed and maintained for year-round use and that respects the integrity of Anchorage's natural and built northern environment.

Freight Specific Implementation Policy Statement: Design, construct and maintain roadways/rights-of-way to accommodate pedestrians, bicycles, transit users, the disabled, automobiles, and trucks where appropriate. (Emphasis added).

In addition to these goals, seven key planning issues were chosen to focus future decisions on significant policy choices for land use planning in the Anchorage Bowl. One of these key issues is Transportation Improvements, and provides that freight movement should be facilitated throughout the community especially among the port, international airport, railroad, and industrial reserves.

2.3.1 Overview of Relationship with the Anchorage Comprehensive Plan and AMATS Long-Range Transportation Plan

The existing transportation network is based on the historical land use development patterns of Anchorage. The designation of all land uses in the Anchorage Bowl is guided by the 1982 Anchorage Bowl Comprehensive Plan. As part of that update process, long-range transportation plans approved in 1976 and 1981 were reviewed and incorporated into the 1982 Comprehensive Plan.

The AMATS Long-Range Transportation Plan (LRTP) was completely updated in 1989-91 based on 1982 approved land uses and other assumptions. The 1991 LRTP was then reviewed in 1994 for its compliance with new federal transportation planning requirements. It was updated again in 1997 and 2001 per federal regulations that require updates every three years. The 2001 LRTP update is the most recent LRTP approved for the Anchorage Bowl. The basic transportation network illustrated in the 1982 Anchorage Bowl Comprehensive Plan and the 1997 LRTP has changed little over the past 15 years.

The connection between transportation and land uses is inseparable when developing any sound plan for Anchorage. However, Anchorage has a 1997 LRTP based on the 1982 Comprehensive Plan. Consequently, the LRTP is unfortunately based on old, possibly outdated, land use information. This can distort the true picture of the relationship between land use and transportation in transportation projections. It is the intent of AMATS and the Municipality to combine land use planning and transportation planning in the implementation of the new Anchorage 2020. This update will include, as an element, the new LRTP. This is a unique opportunity to concurrently develop land uses/transportation plans, thus illustrating the affects of one land use pattern and its associated transportation implementation.

The commercial and industrial lands in the Anchorage Bowl need a distinct set of transportation qualities that will be addressed respective of their location in the Bowl. Access, corridor preservation and freight routes will be linked to respective land uses

2.3.2 General Community Planning Goals

The general planning goals (assumptions) when considering freight mobility within the Municipality of Anchorage include:

- Efficiency in freight movement- less delay
- Improved safety
- Enhanced freight movement economies- local and regional
- Improved local (shared) infrastructure
- Improved local urban structure
- Efficient matching of land uses and access corridors for freight distribution
- Improved environmental quality- air, storm runoff, noise

2.3.3. Specific Study Objectives

- Identify specific infrastructure, regulatory, informational and operational impediments to truck freight operations in the community;
- Utilize findings for the update of the AMATS Long-Range Transportation Plan, Anchorage Comprehensive Plan and other subplans;
- Determine future needs/problems;
- Use study recommendations in the preparation of the capital improvements programs;
- Use recommendations to modify operational practices, facility design logistics and infrastructure maintenance;
- Integrate recommendations into future planning and development efforts for surface, air, water and rail;
- Encourage the use of the study as an educational resource for the community, industry and governing agencies.

3.0 BACKGROUND

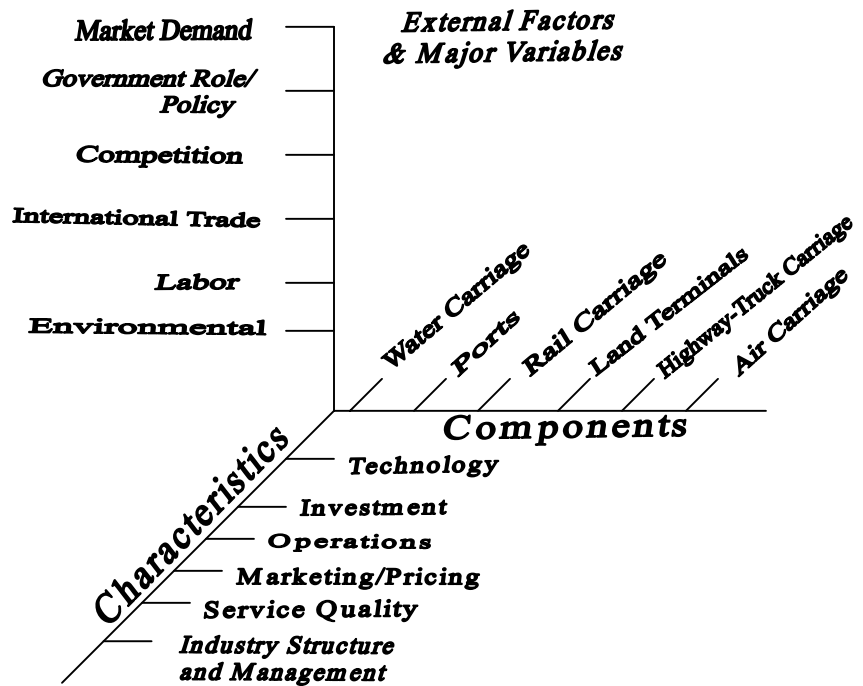
According to a study conducted by the Transportation Research Board (TRB)/ National Research Council¹, intermodal freight is described as having the following characteristics:

“Intermodal freight movement is a complex system of inter-related activities, each of which performs a portion of the movement of freight from origin to destination. Efficiencies demand that each portion of the movement have an integrated or coordinated relationship with others. Further, each of the modal components is, for reasons of its own effectiveness, likely to optimize its individual system(s)...”

The study continues to define mobility with three major elements: the physical components (rail, truck, air, marine, etc.); the functional components: (freight transportation including service quality, operations, logistics, marketing, etc.); and major variables and external factors: (capital improvements, maintenance, regulation, environmental impacts, intelligent transportation systems/commercial vehicle operations, etc.) For the sake of improved mobility, it seems essential to understand the basic elements of the process. Many of the elements are directly under the authority of the government at the levels of local, state and federal influences. This study will not discuss the theory of freight mobility; however, the study is intended to provide background and initiatives for further investigation in that area. Insight into the macro-level of freight mobility is essential for forecasting future freight trends and activities in both land use and transportation, and to determine appropriate public investments into technology and facility capital improvements.

The TRB Circular provides a meaningful figure depiction of the relationship of the three elements to freight mobility. (See Figure is presented below.)

Freight Element Relationships
Figure #2



Source: Transportation Research Circular #338, Oct. 1988 Page 12

¹ Transportation Research Center Circular, “Research Needs Related to Intermodal Freight Transportation,” Transportation Research Board / National Research Council, Number 338, Oct. 1988

The Freight Mobility Study focuses on truck transport as a component of the greater freight system.

Urban Goods Movements by K.W. Ogden describes “urban goods movement” as:

“The transportation of, and terminal activities associated with, the movement of things as opposed to people in urban areas; it includes movement of things into and out of the area, through the area, as well as within the area by all modes, including transmission of electricity to the extent it relates to the transportation of fuels, pipeline movement of petroleum, water and waste, and collection of and movement of trash and mail, service truck movements not identified with person movements, and even some person trips which involve substantial goods movements such as shopping trips.”

For purposes of this study, freight mobility is defined as how things are moved from one location to another. This includes what, if any, impediments there are to that movement. Additionally, what, if any, improvements can be made to the existing transportation system that will decrease the time and cost of the movement of goods. Finally, what, if any improvements would increase the public safety with the least environmental impacts.

This study considers the Anchorage freight characteristics and existing data and has concluded that inferences about the scope of freight movement, as well as the degree of impairment to freight mobility can be measured using several gross indicators. Those indicators are the cost per mile for freight movement, cost per hour of operations; accident statistics (number, place and cause); emissions; and the determination of the major freight consumption and generation nodes around the city. We have made the assumption that improved mobility would result in decreased cost per mile and hour of operation, fewer accidents, lower air emissions and a systematic land use development pattern that supports efficient freight movement.

3.1 Economic Overview –Interrelationships

The movement of freight into, out of, and within the Anchorage Bowl is tied to the economic well being of the region and to the quality of life for its residents. Anchorage, like every community, is dependent on the freight industry to move base industry manufactured or otherwise produced commodities to market, to service the retail demand of the public and to service individual homes and work places with refuse removal, energy delivery, household moving, parcels and mail. Community and regional economic growth is reliant on the ability of the private and public sector partnership in the community to provide economical freight distribution.

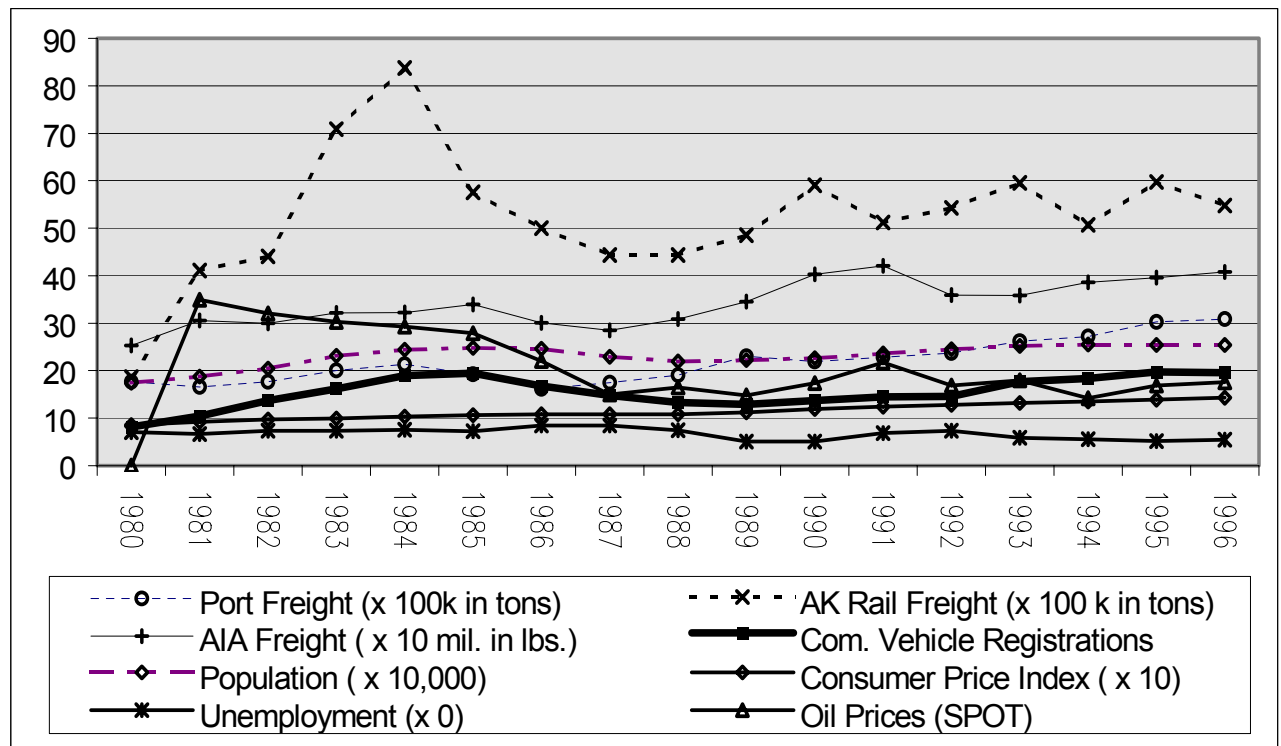
In Alaska, and more specifically Anchorage, variable oil prices, oil exploration and the “economic support network” of the oil industry are the highest factors of economic viability. Low oil prices may affect the Anchorage economy and could result in a downturn with negative effects on total freight movements. Beyond the impact of the oil economy, Anchorage plays a regional role as the major service and supply hub to South-central and northern Alaska. Regional development in construction, commercial development, tourism, mineral extraction and other natural resource development are also tightly integrated into both the Anchorage economy and the distribution of freight. Freight is an element of economic activity and an indicator of economic vitality. Clearly stated, as dollars flow into the community from all sources, more personal income is spent on goods moved to the marketplace by the local freight system. Additionally, freight moving goods to other (external) markets is another form of base industry bringing dollars into the community.

As evidenced throughout Anchorage’s history and most prominently in the last two decades Anchorage serves the large part of the remainder of the state as its support, administrative, transportation and trade center. Many workers in these industries choose to make their homes in Anchorage. Those activities that traditionally serve local populations and are assumed to be reactive are actually the reasons for growth in Anchorage. Any change in the link between Anchorage and resource industries, and residents in the rest of the state will change the patterns of growth.

Freight in Anchorage, as elsewhere, is both a means toward *achieving* economic prosperity and also a means by which to *measure* economic prosperity. The growth of the freight industry, capital investments by the private sector, and facility development by the public sector has a direct relationship to local and state economies. As base industries expand, the need for commodities grows, employment increases, and the amount of personal disposable cash increases. As disposable cash increases, so do sales of durable and consumable goods, and real estate development. In Alaska, the state's economy is often measured using the dollar value per barrel of oil. State of Alaska expenditures for programs and capital projects rise and fall with available income from taxation of oil extraction.

The figure below has been provided to illustrate the relationships of key economic and social indicators with freight volumes and commercial vehicle registrations.

Figure #3 Anchorage Economic Relationships



Source: Municipality of Anchorage, Anchorage Indicators, VOL. II, 1997

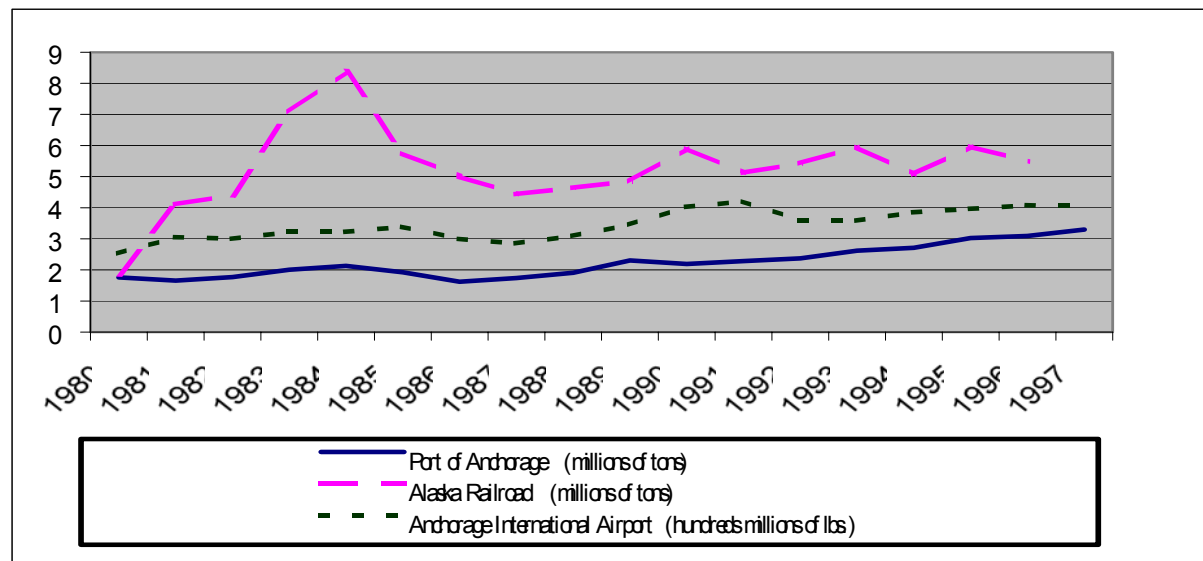
In **Figure # 3**, the ARRC (--x--) shows a major increase in freight volumes in the early 1980s. ARRC officials suggest that the “spike” during the mid-1980s is the result of gravel importation from the Mat-Su Valley to Anchorage for construction projects. The ARRC line otherwise shows a peak and valley trend. The key variable for this assessment is the volume of commercial vehicle registrations, which is a direct measure of the size and vitality of the Anchorage freight system. The most meaningful attribute of the figure is not the scale but the general upward and downward movements of the individual trends. A statistical analysis of these data would be helpful to determine if there is correlation between and amongst variables.

Since freight distribution is a function of wholesale and retail trade, it is necessary to discuss existing and potential activities in both areas. According to a study conducted by the Port of Anchorage and prepared by Tryck, Nyman and Hayes / BST Associates², Anchorage is the largest retail and wholesale trade center in Alaska with Fairbanks, the Kenai Peninsula and the Matanuska-Susitna Valley following consecutively. Using a baseline year of 1992, the consultants produced a model ratio of wholesale to retail trade. The study suggests, based on correlation of similar sized cities in the US, that the ratio of wholesale to retail trade is an important figure. As the general population grows, the need for more wholesale distribution facilities will also grow to support retail development. The net benefit of using the ratio is the ability to forecast increases in retail and wholesales activity as a factor of population growth. Increases in freight movement activity can be forecasted based on population growth using the recommended ratio and the ITE Trip Generation Manual for trucks and wholesale land uses (floor area).

The Port study forecasts the continued economic growth of Anchorage, Fairbanks and the Matanuska-Susitna Valley and thus the expansion of the retail and wholesale activities. As commercial activity increases, the number of freight units being moved to these locations will increase. The economic impact of such growth will have a ripple effect starting with Port, Alaska Railroad and Ted Stevens Anchorage International Airport with increases in freight import. Further effects will be felt in the trucking industry with increases in drivers, maintenance personnel and increased costs of capital construction projects to replace or expand facilities.

The figure below indicates the volumes of freight moved through or by the respective ports of entry over the last 17 years. All modes show a general upward trend.

Figure #4 Freight Volume History



Source: Municipality of Anchorage, Anchorage Indicators, VOL. II, 1997

As the Anchorage population grows the volume will continue to increase proportionally. The spike shown for the Alaska Railroad was caused by a tremendous increase in the import of gravel from the Mat-Su Valley to Anchorage for construction projects.

² Northern Access Corridor Reconnaissance Study (draft report) November 1998 prepared by Tryck, Nyman Hayes, Inc.

3.2 Intermodality

The Municipality of Anchorage has four primary *ports of entry* for all commodities moved into and out of the community. Those four entries consist of the link with the intercontinental highway system via the Glenn and Seward Highways, the Port of Anchorage, the Alaska Railroad and the Ted Stevens Anchorage International Airport. The Port optimizes its resources to provide the appropriate level of capital investment, maintenance, marketing and management to continue to operate within budget constraints. The Port also has its own set of special considerations including tides, equipment durability in a saltwater environment, Cook Inlet navigational issues, constraints of limited tideland and upland space, etc. Because all ports of entry operate in a competitive environment with each other using significantly diverse modes and markets, cooperative and coordinated (intermodal) arrangements are difficult to construct.

Very little operational interconnectivity exists between these ports of entry at this time. The Port and Railroad represent a conversion of modes from truck to rail and vice versa. This is the TOFC or Trailer-On-Flat-Car system of loading containers onto railroad flats for shipment to Fairbanks, Seward and Whittier.

Most of Ted Stevens Anchorage International Airport (TSAIA's) freight is redistributed at the airport and does not come into Anchorage. Fed EX, UPS, U.S. Postal Service and major local cargo air carriers have facilities that transition air and ground transportation. All the airparks have local freight that is transported to and from the airport, makes intermodal transfers, and is warehoused off the TSAIA. The fuel pipeline from Kenai and the Port transports fuel to TSAIA for uplift by the air carriers.

The common operational element to all ports of entry is the truck. The truck is the common link for access into, out of and within the community. Truck transport is the essential element that completes the intermodal system bringing goods to locations where they are consumed or distributed to the public. Landside access to all ports of entry is the most crucial component to efficient and economic distribution of goods as well as the viability of the Port.

3.3 Port of Anchorage

The Port of Anchorage (POA) is the largest freight generator in the community. Most of the consumable freight delivered to Anchorage passes through the POA facility. Not only is the Port important for receiving freight, it also is one of the major export facilities in the state of Alaska. Additionally, the Port facility is used for freight container storage, both full and empty for distribution into the community, out of town and for containers returning to Seattle. Approximately 90% of the containerized consumer goods distributed in Alaska's rail belt (80% of Alaska's population) are received over the docks at the Port of Anchorage. In 1997, the Port saw 3.3 million tons cross their facility. Of that amount, 80% was destined for Anchorage, 12% for Fairbanks and 8% for other destinations in northern, western and south-central Alaska. Of the 3.3 million tons, 813,105 tons were shipped out of the port facility, primarily refined petroleum products.

The Port facility is located directly north of the Anchorage Downtown Central Business District and is owned and managed by the Municipality of Anchorage in an "enterprise" capacity. The Port manages approximately 146 acres of uplands and an additional 1,400 acres of developable inter-tidal area. Upland development occupies about 129 acres. The port terminal facility includes 2100 feet of dock face with a 27,000 square foot warehouse directly adjacent to the dock. The terminal also includes three rail-mounted container cranes and two bulk petroleum product berths with a central distribution manifold.

The Port of Anchorage handles bulk container, bulk petroleum vessels, tour ships and other commercial marine vessels. The growth of freight movement over the POA dock has increased consistently 1.5% per year since cargo service began in 1961. POA officials believe that that rate of growth will continue or perhaps even increase to as much as 2.8% per year. The growth rate for the Port is an important indicator for the overall truck freight growth in Anchorage. Most of the incoming cargo delivered at the Port is distributed within and through Anchorage via truck.

The major access corridors connecting the Port of Anchorage with the external highway system (Glenn Highway to the north, and Seward Highway to the south) are Ocean Dock Road, the “A/C” Street Couplet, and the “I/L” Street Couplet connecting to Minnesota Drive. The Port Master Plan estimates nearly 2,500 truck movements per day (average daily truck traffic) occur along Ocean Dock Road, near the C Street ramps. There are a variety of secondary street connections. Several of these secondary streets connect the Port facility to the Alaska Railroad yard and the major warehouse district to the east of the port.

The Port Master Plan (Access Plan) cites capacity deficiencies on the primary roadways conveying Port-oriented traffic as a major concern, in particular the Whitney/Ocean Dock Road intersection, the Central Business District and the A/C viaduct ramps.

The Master Plan also calls for expansion of dockside facilities. Currently the port is investigating the development of an Intermodal Marine Facility (IMF) dock to the South of the expansion dock. The new facility is needed to address the projected growth.

3.4 Alaska Railroad

The Alaska Railroad (ARRC) was brought to Anchorage in the early 1900s by the federal government and was a primary means for shipping freight and passengers into the interior of Alaska until highways were built and improved. Anchorage grew out of the railroad stop located in Ship Creek and was a “company” town for many years.

Today the ARRC, under the ownership of the State of Alaska, operates as an independent enterprise with passenger and freight operations extending from Seward to Fairbanks. Anchorage is the headquarters for the ARRC where it maintains a large holding of real estate as well as the main track yard and maintenance shops. Much of the ARRC holding is located in the Ship Creek basin adjacent to the Port of Anchorage. The ARRC owns approximately 963 acres in Anchorage with 486 acres leased (predominantly in Ship Creek), and 376 acres in right of way and operations use.

ARRC services roughly 83 miles of track in the Anchorage Bowl excluding private track and military bases. In addition, the ARRC operates a TOFC or Trailer-On-Flat-Car facility at their main yard in the Ship Creek basin. The TOFC is used to load and unload container vans for shipment to Fairbanks and other destinations. Another service offered is the Interliner Freight system that loads rail cars onto a barge fitted with track in Seattle and Prince Rupert B.C., and then offloaded onto track at Whittier. The cars are distributed along the ARRC route, but primarily in Anchorage.

Of the freight transported by the ARRC, coal, gravel and petroleum products make up the largest volume in tons. Fish is also moved seasonally from coastal areas, near Whittier to Anchorage for processing and shipping by other modes. Finally, container vans are transported by truck a short distance from the Port of Anchorage and loaded at the Anchorage TOFC yard and moved to points north, predominantly Fairbanks and the military bases nearby.

The volume of freight carried by the ARRC has gradually increased over the last several years. An official at the ARRC has indicated that much of the gross tonnage increased is due to the transport of gravel from the Matanuska-Susitna Valley (Palmer) into Anchorage for use in construction projects and for process into construction materials. The tonnage trend of domestic goods carried has been relatively flat with little sign of growth over the last five years; forecasts to the year 2002 show little sign of growth. Moving containerized freight within the road railbelt via the ARRC is marginal in cost to truck transport. ARRC officials indicate that they can be more competitive in transport between 50 and 100 miles distant. Additionally, the ARRC is more competitive in the area of bulk commodity transport such as coal, petroleum and gravel.

The railroad expects to see about a four (4%) percent increase in overall freight volume in 1999 with a slight decrease in 2000.

The major road access to the ARRC rail yard and TOFC facility are the A/C Couplet, Post Road, Whitney Road and 4th Ave/Commercial Drive.

3.5 Ted Stevens Anchorage International Airport

Ted Stevens Anchorage International Airport (TSAIA) is the largest airport in Alaska and is the top-ranked freight hub, by weight, in the U.S. In 1998, there were 33,500 cargo landings at the TSAIA with a total freight volume (freight and mail) of over 13 billion pounds.

The TSAIA is situated on almost 5,000 acres west / southwest of downtown Anchorage. The airport has: four runways, three runways that have loading bearing capabilities suitable for 747 (wide-body) freighter operations, and two major terminals with a floor area of 1.2 million square feet. In addition, the airport provides over 1.2 million square feet of transient aircraft parking for freight operations. Currently, the primary road access to the TSAIA is International Airport Road. Postmark Drive via Northern Lights Boulevard is used as a secondary route for smaller vehicles.

Within the airport complex, there are four “airparks” substantially developed in airfreight operations such as FedEx, UPS, the U.S. Postal Service as well as air taxi operators and other air carrier-related firms.

The TSAIA serves as the primary port for express delivery freight.

The TSAIA is redeveloping its domestic terminal and making substantial changes to its aircraft parking. The new terminal will include a railroad station to serve passengers to and from the main railroad station.

Although the TSAIA is a major hub for passenger movement in local, national and international markets, its freight operations have in recent years experienced significant growth. More than 14 companies currently utilize the TSAIA for freight operations initiating an average of 454 landings per week.

The TSAIA is clearly a critical element to the Anchorage economy via direct revenues and employment but has the least direct effect on truck freight transport within the city. Much of the freight passing through the airport never leaves the confines of the airport perimeter. Jumbo jet flights land for “technical” stops for crew changes, fuel and meals and then resume their journeys without any movement of the freight on board. In other cases, some freight is off loaded one aircraft to be loaded on another with and without warehousing. Some warehousing is taking place off the airport perimeter at other locations in Anchorage. In all cases, freight movement via the TSAIA poses less direct impact on Anchorage’s city infrastructure than other freight generators and consumers such as the Port of Anchorage and the Alaska Railroad, as well as the Mid-town commercial area.

The exact nature of the freight moving in and out of the airport from Anchorage has not yet been accurately measured. An assumption was made for this study that there is a relatively minor freight stream being generated and consumed by the airport in parcels, fish and other small manufactured items as well as mail traveling between the TSAIA and the city. The TSAIA serves as a major hub for rural freight including mail and other commodities. The TSAIA Master Plan forecasts an increase in originating and destination airfreight to increase at an average annual rate of 5.6% over the next 20 years.

In recent years, the most noticeable freight operations in the area of the airport have been the movement of gravel for construction projects. Gravel has been hauled from the Mat-Su Valley and local Anchorage firms by dump trucks.

Airport officials have identified several capital improvements for access to and around the airport that will enhance future freight movements and freight terminal expansion. The improvement projects recommended by the TSAIA include Old International Airport Road Reconstruction, Point Woronzof Drive realignment, Postmark Drive and North Airpark Road construction.

3.6 Truck Transport

Truck transport is the transportation mode that ties all other modes together. Goods are most often trucked from their place of manufacture to interface with air, water or rail modes (ports of entry). Trucks are then employed to distribute goods to retail outlets and other destinations of consumption. In some cases, trucks are used for transport of goods from their place of manufacture to their place of consumption.

In Anchorage, most freight is brought to the area via containerized ship. Ships are off-loaded and containers are distributed around the community. Smaller trucks are used to take smaller loads of goods from a warehouse facility to consumer. A wide range of vehicles and equipment is used for freight transport. Line haul and full container loads are moved using tractors and semi-trailers. Long line haul, to Fairbanks for example, are more often employing double trailer configurations. Box or “bunny trucks” (less than truckload or LTL) are used to distribute goods to destinations within the metropolitan area. Couriers employ vehicles ranging from large metro vans to regular automobiles. The freight industry also uses specialized equipment such as convoy trailers for moving automobiles, oil tankers for fuel distribution, flat trailers for equipment movement and so on. Many carriers in the Anchorage area utilize state-of-the-art technologies in their daily operations and maintenance. In conjunction with this state-of-the-art technology, national, state and local governments are involved with the deployment of Intelligence Transportation Systems (ITS).

3.6.1 Intelligent Transportation System

Intelligent Transportation Systems (ITS) is a program designed to identify, analyze, test, and implement new and existing technologies and services aimed at improving safety, increasing efficiency, and cutting transportation costs in the movement of people and goods throughout the U.S. In short, “ITS” helps transportation operate more safely, efficiently, and competitively in the world economy.

The U.S. DOT identified seven user services that describe the dimensions of Intelligent Transportation Systems. From these user services a national architecture has been established and standards necessary for regional integration and national operability are being promulgated. These user services include:

- Travel and Traffic Management
- Public Transportation Management
- Electronic Payment
- Commercial Vehicle Operations (CVO)

- Emergency Management
- Advanced Vehicle Control and Safety Systems
- Information Management

3.6.1.1 Intelligent Transportation System/Commercial Vehicle Operations

Commercial Vehicle Operations (CVO) is a significant part of the “ITS” program. The ITS/CVO program is a voluntary effort involving public and private partnerships focused on improving highway safety and motor carrier productivity through the use of technology. The Federal Highway Administration (FHWA), Federal Motor Carrier Agency (FMCSA) is the lead Federal agency for the program, while the Alaska Department of Transportation, Division of Measurement Standards and Commercial Vehicle Enforcement (MSCVE) is the lead agency for the State.

ITS/CVO applications aim to streamline the commercial vehicle safety regulatory process for States and carriers. The technology applications for CVO have been categorized into CVO Users Services:

- Commercial Vehicle Electronic Clearance
- Automated Roadside Safety Inspection
- Onboard Safety Monitoring
- Commercial Vehicle Administrative Processes
- Hazardous Materials Incident Response
- Freight Mobility

The infrastructure that links the information systems related to these technologies is known as Commercial Vehicle Information Systems and Networks (CVISN). CVISN provides an electronic information framework that supports the following services:

SAFETY ASSURANCE

Programs and services designed to assure the safety of commercial vehicles, drivers and cargo. These systems include roadside safety screening, inspections, and safety information systems.

CREDENTIAL ADMINISTRATION

Programs and services designed to improve the systems and procedures to apply for and manage motor carrier credentials. These include electronic application for Oversize and Overweight Permits and web-based vehicle registration.

ELECTRONIC SCREENING

These systems and services are designed to facilitate the verification of size, weights, safety and credential information. These systems include Weigh-In-Motion (WIM) and Pre-Clearance Roadside Operating Computers (ROC). Obtaining better data every year is anticipated as new technology is installed in our roads. Freight movement monitoring will be enhanced with the installation of concrete Weigh-in-Motion pads on Ocean Dock Road and on Minnesota Drive as well as the real time data gathering capabilities at other locations around town (e.g., Tudor Road). The use of electronic screening enables commercial vehicles inspection stations to identify, weigh and check safety and credential status at highway speeds. Drivers of safe and legal trucks are electronically notified of their status and are directed past the weight station.

The benefits of ITS/CVO and CVISN will result in enhanced commercial vehicle safety and greater operating efficiencies for government agencies and motor carriers.

3.7 Truck Freight Characteristics

3.7.1. General

Over-the-road freight hauling equipment is grouped into three major categories: tractors with semitrailers and/or trailers for line and local haul and large local bulk hauling; box or “bunny” (less than truckload or LTL) trucks for local distribution; and smaller trucks, automobiles and vans for courier service and local parcel distribution.

Box or bunny trucks are used for freight broken into smaller deliverable loads from warehouse to retail store, and from retail store to warehouse to points out of town. The smaller trucks are able to negotiate local streets with little problem. Semi-tractors, conversely, often have difficulty negotiating turns on and off major routes due to small radii on street corners. Additionally, tractor drivers experience some sight distance problems due to their height off the street. Tractors are heavy vehicles that are unable to accelerate and stop like private passenger vehicles and smaller trucks. Because all vehicle traffic, including both commercial and private share the same thoroughfares, conflicts arise. In some cases, significant conflicts arise in the way of long delays due to congestion and vehicle crashes along major freight routes.

3.7.2 Anchorage Freight Characteristics

Freight arrives in Anchorage ports of entry in bulk, i.e., petroleum products and gravel, by trucking containers, train car loads and via air freight units. Freight is distributed by the vanload, partial vanload, per item and in smaller units by delivery truck. Some freight moves directly from the port of entry to the place of consumption, a portion is moved from the port to a warehouse for consolidation of redistribution.

A typical Anchorage freight movement scenario might include the roll off of a truck trailer or semitrailer, or the crane off-loading of a 45-foot container onto a truck trailer or semitrailer chassis, at the Port of Anchorage (POA) where it is then hauled to a storage area on Port premises. From the lot, the container is hauled by truck tractor to either the destination of consumption, or to a warehouse facility off Port premises where it is off-loaded and redistributed in smaller trucks or consolidated for tractor transport. The empty container is returned to the Port and parked in the container storage area on Port premises awaiting transport by ship to its point of origin. In this illustration, the POA, major freight firms, and a transfer/consolidator firm, are involved in the movement of the shipment. This scenario, one of many possible scenarios, improves our understanding of the numbers of people and equipment involved in moving only one container to the point of consumption or distribution to the public.

Freight entering Anchorage via one of the four ports of entry ranges from bulk resource items to boxed freight and perishable foodstuffs. A variety of equipment is employed to move goods to ensure its condition at the point of consumption or sale. The industry utilizes flat bed trailers, freezer or refrigerated vans, tankers, dump beds, convoy vehicle carriers and others.

Vehicles of a full range of sizes, owned and operated by private for-profit firms, compete with other firms to secure hauling contracts. According to the industry, the key to competitiveness is the ability to transport goods from one location to another for the least cost. Freight transport firms must operate within a finite network of roads where weather, congestion and other transportation factors play a role in profitability. Strategies are implemented to reduce the firm’s cost in fuel, time, risk, product damage, vehicle wear and tear and other factors managed by the firm. Conditions beyond the control of the private freight firm include traffic congestion delays, access to freight destinations, rough roadways, road maintenance and public loading zone management.

Box trucks are the backbone of local delivery services. Partial container vanloads are most often distributed to consumers via the use of smaller box trucks, step vans and the like. Box trucks and other similar vehicles make up the majority of freight delivery vehicles in the Anchorage area.

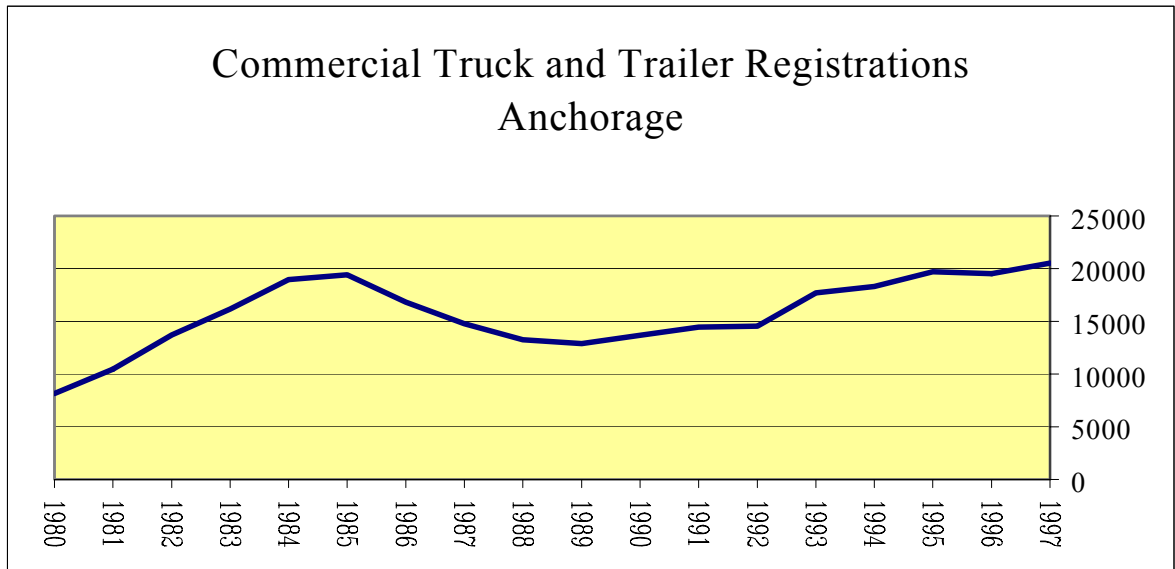


Figure # 5 Source: Alaska Division of Motor Vehicles

In the Anchorage Metropolitan Area, commercial vehicles make up about 4.4% of the total vehicle registrations. **Figure 5.** above shows the peak in the number of commercial vehicles registered experienced during the “post-pipeline boom years” followed by a drop during the Alaska recession, and finally a steady gain indicating economic growth and moderate stability since 1990.

4.0 LAND USE

Land use and freight transport have a mutual relationship since land use dictates not only where freight generators or consumers are located, but the type and frequency of freight movements to and from those locations. Every corner of the community is at one time or the other both a freight generator and consumer. Residential neighborhoods typically generate and consume far less freight than the industrial and commercial areas of the community. Residential neighborhoods, however, do experience frequent freight movement with fuel deliveries, domestic goods movement, garbage collection, and courier-type deliveries and pick-ups such as UPS FedEx, DHL services and US Postal Service. The net result is a variety of freight movements within local street networks. Commercial districts experience the highest level of freight distribution activities because of the high consumer goods transactions taking place. Industrial districts in Anchorage experience a moderate level of freight movement activity not due to major manufacturing but rather to freight consolidation and warehousing uses. Carriers working in commercial and industrial districts often use/locate adjacent the most expeditious arterials and collectors to transit the community between freight generators and consumers.

Zoning and land uses in Anchorage are a combination of commercial and industrial zoning and land uses, including islands of commercial development in otherwise residential neighborhoods. Major freight generators and consumers form a major “T”-shaped corridor starting in the north with the Port and Ship Creek area warehouse district, through the Central Business District (downtown). The corridor continues southward following a corridor adjoining the New and Old Seward Highways, to midtown (Fireweed to Tudor) where major retail commercial and light industrial nodes are located. (See Figure #6)

Another issue regarding freight mobility and land use is with regard to “just in time” freight delivery. Just in time, as the name connotes, is the delivery of freight to the shipper at a pre-determined time in order to move the goods to the shelf without warehousing. This form of delivery eliminates the need for warehouse development at the retail site. Further, it eliminates the need for central warehousing for the distribution of goods to retail sites around the community. The net benefit is less land developed as warehousing, thus permitting a higher concentration of like retail and other higher value land uses.

Freight Consumer and Generator Nodes

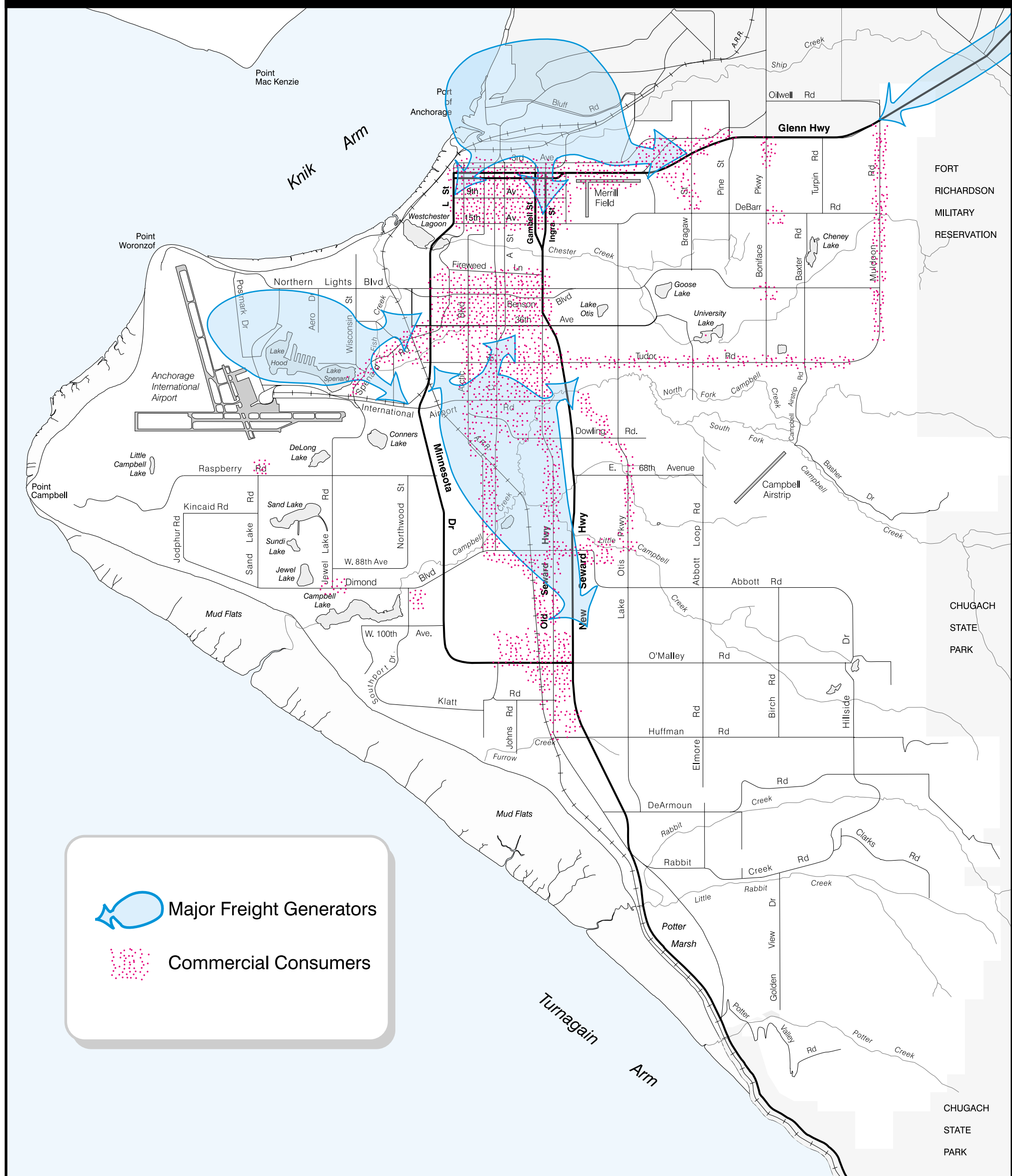


Figure 6

5.0 SPECIAL AREA CONSIDERATIONS

5.1 North Port Access

Currently, only Ocean Dock Road is available for commercial access to the Port of Anchorage. Delays and congestion along Ocean Dock Road have been significantly reduced as all major railroad crossings have been eliminated. As freight truck volumes increase, however, it is likely that Ocean Dock Road will become congested and truck traffic in and out of the port will be constricted. Additionally, if a catastrophic event were to occur and Ocean Dock Road were to close, freight mobility would be significantly impacted affecting Anchorage consumers as well as communities on the Alaska Highway system to the north.

The Port has conducted a corridor and feasibility study. The primary function of the study is to determine the best route for the corridor and make provisions to reserve the right of way through both Elmendorf Air Force Base and Fort Richardson Army Base. .

The North Port Access concept is one with a moderately long history. The current strategy is to plan for a corridor, reserve right of way, and eventually construct a highway segment north from the Port of Anchorage to connect with the Glenn Highway near Eagle River. The importance of the route is as a means to bypass a presently required circulation/access through the Ship Creek area and east downtown as well as provide another access route into and out of the port area. The proposed corridor would accommodate both freight vehicles and passenger vehicles. The proposal also includes a modification to the Alaska Railroad for an improved alignment.

5.2 Ship Creek

The Ship Creek basin is located immediately north of the Anchorage Central Business District (CBD). The basin extends from Elmendorf Air force Base to the east to tidewater on the west. Much of the basin is occupied with commercial and industrial uses including warehousing and storage yards. A significant number of trucking, transfer and consolidating firms are located in the area. Many of those firms do much of their business in coordination with the POA. Containers are offloaded at the Port and moved to Ship Creek facilities for storage, consolidation and other treatments. The Ship Creek basin must accommodate a high volume of commercial trucks and the condition and alignment of the existing thoroughfares is inadequate to serve current traffic demands.

The MOA has conducted preliminary assessments for modification of the Ingra / Gambell Streets alignment. The ultimate outcome and final disposition of the thoroughfares will affect the circulation and future development of the Ship Creek area. Other studies currently underway that affect the Ship Creek basin include the Port of Anchorage Master Plan, The ARRC Ship Creek Master Plan, ARRC Rail Yard Study, Ship Creek Intermodal Facility Study, Ship Creek Access Study and the Ship Creek Multimodal Transportation Study, which has combined all the previous plans.

Primary thoroughfares serving the Ship Creek area are Whitney Road, 1st. Ave, Ship Creek Ave, Post Road, A-C Couplet and Ingra/Gambell Streets.

5.3 Central Business District

Anchorage's Central Business District (CBD) is located in the north sector of the city. The CBD is comprised of approximately 72 square city blocks with perimeter boundary streets consisting of 3rd Ave to 9th Ave, north to south; and L Street to Cordova Street, west to east. The land use within the CBD is predominantly commercial retail including restaurants, professional governmental and private offices, and hotels. The CBD is set apart from other areas in Anchorage by the density of development and relatively restrictive circulation for freight vehicles. Much of the freight distribution occurring in the CBD is with smaller box-type delivery vehicles. The CBD has a gridwork of alleyways that are utilized for freight deliveries to a major extent. Some of the problems in the CBD with regard to freight mobility include blocked alleys, loading zones blocked by private vehicles, freight vehicle congestion, winter maintenance, parking enforcement and sight distance entering and departing alleys.

The East End of the CBD is under-developed and the future for the area has been envisioned as high-density development much the same as the West End. Freight corridors should be studied as the re-development of the eastern CBD takes place to see if they are needed to handle increased volumes of heavy vehicles to service new commercial development.

5.4 East Anchorage

East Anchorage, specifically Muldoon Road its full length, is characterized by development in commercial retail and other mixed commercial uses. Only two big box stores are currently located in the area. As a freight consumer the area is of medium importance. The residential neighborhoods in east Anchorage are substantially built out and expansion in the future will be minimal although increased density in some neighborhoods may occur over time.

Muldoon Road is of particular interest because not only does it accommodate local truck traffic, it is also a major north/south route connecting the Glenn Highway to the Seward Highway. As congestion affects other routes between the two highways, Muldoon will continue to see higher volumes of through-traffic.

5.5 South Anchorage

South Anchorage consists of an area south of Tudor Road to Huffman Road between the Seward Highway to the east and Minnesota Drive to the west. Dispersed areas of commercial and industrial development characterize the area with enclaves of residential subdivision. There is sufficient land area in South Anchorage zoned commercial and industrial to expect future growth in that area. As a new growth area, forecasting should be conducted to model freight routing and access development to assure appropriate capacity.

The single largest development and the largest retail freight destination in Anchorage are the Dimond Boulevard area, specifically Dimond Mall and other developments adjacent to Dimond Boulevard.

5.6 Midtown

Midtown consists of an area between Fireweed Lane and Tudor Road between Seward Highway to the east and Minnesota Drive to the west. Midtown is the major commercial retail center for Anchorage. This area includes the Sears Mall and general commercial retail along much of the length of Northern Lights and Benson Boulevards, Old Seward Highway, and Tudor Road where both Lowe's Hardware and The Home Depot are located.

The importance of the Midtown area is the likelihood of future expansion and in filling of commercial retail and wholesale land uses. The major arterials and collectors are already often operating at maximum volumes and traffic levels of service will be further reduced as development expands and population increases. Decreased levels of service could be reflected as further delays to both general traffic and freight vehicles.

6.0 FREIGHT NODES AND ROUTES

Freight movement is a function of two major elements: the location of freight generation and distribution sites, and where freight vehicles can travel in a physical and regulatory sense.

6.1 Major Freight Generation and (Distribution) Consumer Nodes

Anchorage freight generation nodes are fairly well defined based on the location of intermodal ports of entry and land area zoned in support of consumer and generator nodes. According to land use and zoning data, route classifications and empirical observations, the major generation node for the city is the Port of Anchorage and adjacent industrial port area. The Port generates almost all-domestic freight for use in Anchorage. Some trucking containers are transported directly to stores and other points of retail distribution where they are off-loaded and subsequently returned to the Port. Other vans are shuttled to locations in Ship Creek, predominantly, and Midtown and South Anchorage, where full loads are split or partial loads consolidated for delivery. Ship Creek basin and Midtown are the secondary distribution or generation areas. Freight is transported to these areas, warehoused and/or split for distribution often using smaller vehicles.

A much smaller segment of freight is transported into the community via intercontinental highway system. Some of these shipments contain produce. The exact nature of the freight and volume, however, is not known.

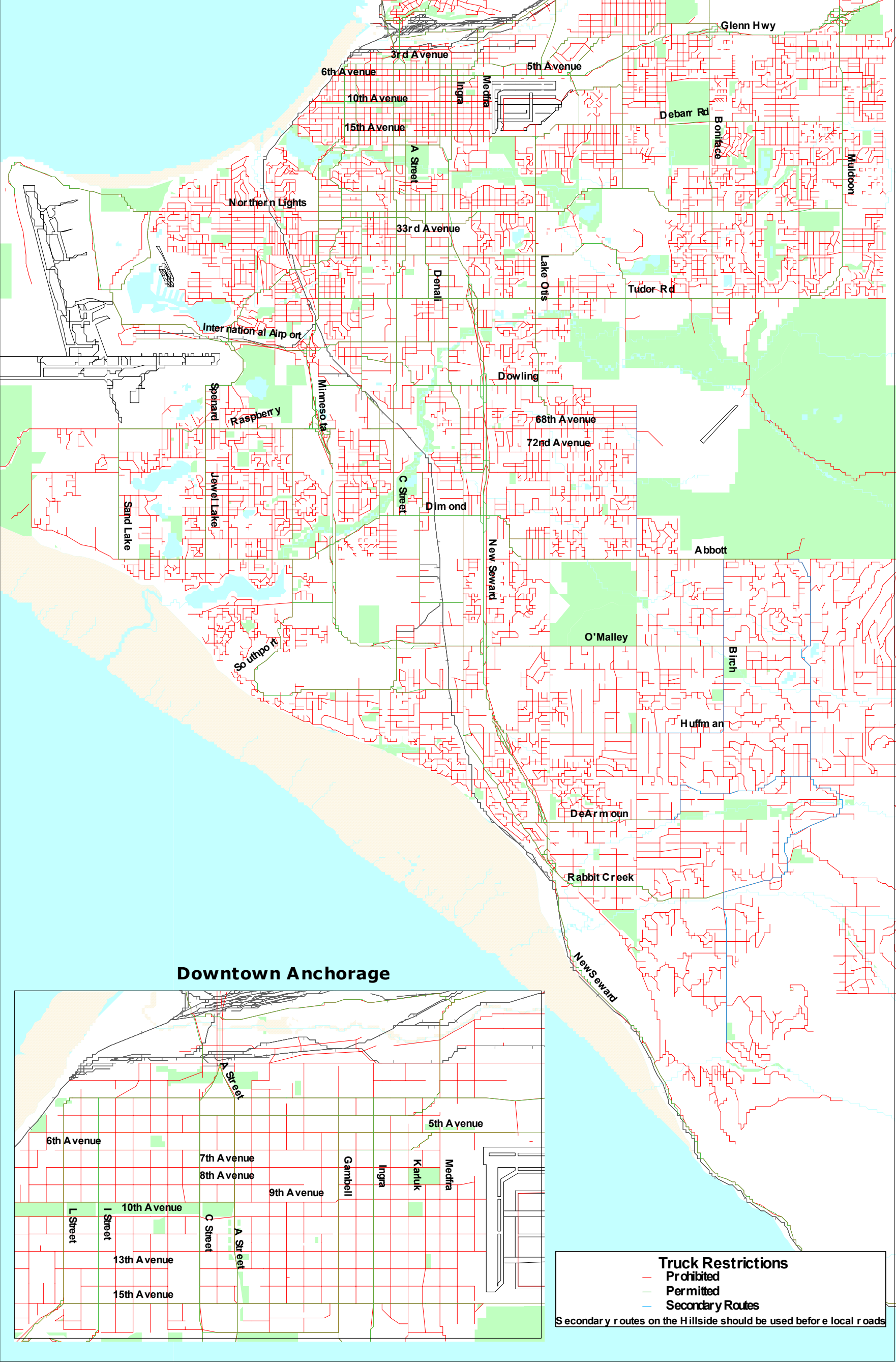
Both Ted Stevens Anchorage International Airport and Alaska Railroad Corporation contribute very small percentages of domestic freight volume for distribution in Anchorage. The Postal Service contributes the largest volume via air transport.

Freight consumption nodes are widely dispersed in the community. Commercial development is predominant along most of the major arterials and collectors. The largest consumer nodes are located in the downtown central business district and in the area known as Midtown from Fireweed to Tudor between Minnesota Drive and Seward Highway. The South Anchorage node is located along the Old Seward from Tudor Road to south of Dimond Blvd and along Dimond Blvd from the Seward Highway to Minnesota Drive. These areas are developed in separate commercial outlets, big box stores and malls. It is important to note that most of the freight received by the larger stores is in the form of container (semi-trailer) loads rather than smaller delivery units.

Figure 8 depicts both the commercial and industrial developed areas of Anchorage as well as drivers' preferred freight transport routes, discussed in Section 6.4. Those routes are identified as those most frequently used by the freight industry and are not necessarily designated as official freight routes.



Figure 7
Permitted Through Routes for Trucks
Greater Than 11,000 GVW



Drivers' Preferred Routes



Figure 8

6.2 Truck Routes Within Anchorage – Anchorage Municipal Code – Title 9

6.2.1 General Roadways – Trucks Prohibited on Certain Streets

Anchorage Municipal Code (Title 9, Chapter 46, Vehicle Size, Weight, and Load) addresses truck routes by placing size and weight limits on vehicles traveling on specified roadways within Anchorage. Section 9.46.410 of the Code prohibits through traffic for commercial vehicles with a gross vehicle weight (GVW) of 11,000 pounds or greater on local or residential collector streets as designated on the Official Streets and Highways Plan (OS&HP). (Language of Title 9 has not been updated to reflect the addition to the OS&HP of the neighborhood collector functional classification, but it is included in this restriction by administrative interpretation.) Such vehicles are permitted on local streets and residential or neighborhood collectors only as follows:

1. to provide cargo delivery or pickup, or
2. in performance of a business service for which the vehicle is required, and
3. shall be accessed by the most direct route only.

In addition, the Municipal Traffic Engineer may post various residential streets on which commercial vehicles are prohibited where it is determined such vehicles may create hazardous conditions or cause undue public inconvenience. The same exceptions for local deliveries, pickups, and business trips as described above also apply.

Commercial vehicles weighing over 11,000 pounds and meeting the general size and weight limitations described in Section 9.46.090 are permitted within Anchorage on streets designated as industrial/commercial collector and higher on the OS&HP. Figure 7 shows routes within the Municipality of Anchorage where trucks over 11,000 pounds are permitted.

6.2.2 Central Business Traffic District Truck Route

Within the Central Business Traffic District as described in Municipal Code 9.04.010, vehicles having more than 2 axles or having an overall length greater than 29 feet are required to stay on the streets designated in Section 9.46.400, except to provide local deliveries and pickups, perform local business services, and shall use the most direct route. Figure 9 shows the designated Central Business Traffic District boundaries and truck routes.

6.2.3 Long/Combination (Doubles) Truck Route

The Federal Surface Transportation Assistance Act (STAA) of 1982 mandated states to develop a National Network to permit through travel for twin trailers and long semitrailers. Within Anchorage the State limited its route selections to Alaska Route 1 (Glenn and Seward Highways). States are prohibited from denying reasonable access within 1 road mile to the National Network for vehicles authorized by the STAA between the National Network and terminals and facilities for food, fuel, repairs, and rest, and points of loading and unloading. The State allows the Municipality to designate routes for reasonable access to Alaska Route 1 within Anchorage. AMC Section 9.46.050 provides for special length limits on Alaska Route 1 and access routes (the long/double truck route). Trucks and combination vehicles that exceed the lengths stated in AMC Section 9.46.040 are required to use the designated routes shown in Figure 10.

CENTRAL BUSINESS TRAFFIC DISTRICT

BY TITLE 9 (TRAFFIC CODE) DEFINITION

9.04.010 DEFINITIONS...Central business traffic district means all streets and portions of streets within the area described as follows: all that area bounded on the south by Ninth Avenue, on the north by Third Avenue, on the west by L Street and on the east by Gambell Street.

--- TRUCK ROUTES IN CENTRAL BUSINESS
(TRAFFIC DISTRICT (AMC 9.46.400))

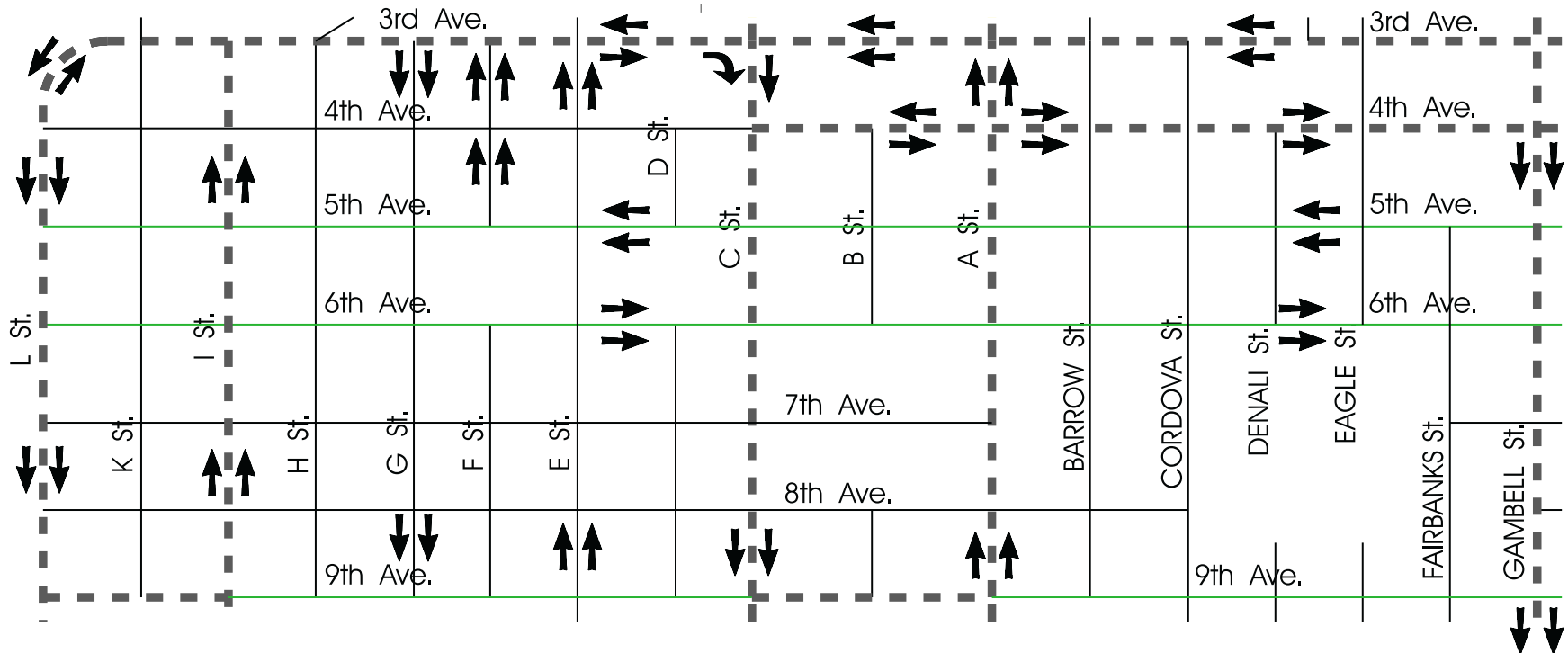


Figure 9

6.2.4 Vehicle Size and Weight Limits Generally

AMC 9.46.040 sets the allowable height and length of trucks on Municipal roads. Section 9.46.090, sets vehicle gross weight and length limits permitted on Municipal roads. Allowable gross weights are determined using a formula based on the maximum gross vehicle weight, the distance in feet between extreme axles, and the number of axles. Currently these limits differ from those for the State and Federal governments. The Municipal Traffic Department is working with the State of Alaska Division of Measurement Standards and Commercial Vehicle Enforcement to bring local and state weight limits into agreement with federal limits.

Seasonal weight restrictions occur each spring on many State and Municipal roadways. The purpose of these restrictions is to reduce damage to roads during spring breakup. The damage can occur due to vehicles exceeding certain weight limitations. Weight restrictions for legal axle loads apply to all vehicles over 10,000 GVW. The date when weight restrictions begin, as well as the duration, is dependent on weather and temperature. Generally, all paved roads are restricted to 75 percent of the legal load and gravel roads are restricted to 50 percent of the legal load. General Municipal size and weight limits are summarized in Table 1.

6.2.5 State Street Routes

Municipal Code states that any provision of Section 9.46.400 (Truck Routes in Central Business Traffic District) or 9.46.410 (Trucks Prohibited on Certain Streets; Use of Truck Routes) which affects State street routes is subject to approval of the State Department of Transportation and Public Facilities. A comparison of state and local size limits is shown in Table 2.

6.2.6 Permits

Vehicles exceeding size and weight limits or limits on specially designated highways can travel on local or State roads only by permit. The Division of Measurement Standards and Commercial Vehicle Enforcement with the Alaska Department of Transportation and Public Facilities administers the issuance of oversize and overweight permits. Title 9 of the AMC authorizes the Municipal Traffic Engineer to issue oversize, overweight, and overwidth permits. Despite differences in State and Municipal vehicle size and weight regulations, the Municipality has agreed to let the State administer a single oversize and overweight permit to reduce costs to industry and the Municipality; its use, however, is not reflected in the current Traffic Code.

In administering the permit system, State size and weight limits are followed. Where trucking companies request access along Municipal roads to the State-designated long/combination truck route system (Seward Highway/Glenn Highway) the State issues permits for access. Permits are issued using routes designated by the Municipal Traffic Engineer as a guide in designating permit routes. While trucks must use the most direct interconnecting truck route, and vehicle movement is subject to local ordinance, the State allows these trucks to travel a distance up to 5 miles from the designated routes. The State coordinates as appropriate with the Municipal Traffic Engineer and the agencies responsible for enforcement, the Anchorage Police Department and the Alaska State Troopers.

6.3 Issues

Differences in vehicle size and weight limits exist between the Municipality and the State of Alaska. Municipal Traffic Code limits semitrailer length to 48 feet on Alaska Route 1 (the long/doubles route) within the Municipality and on Municipal access routes; in administering the permit system, State size and weight limits are followed. Where trucking companies request access to the long/doubles route the State issues permits for 53-foot semitrailers on Alaska Route 1 and Municipal access routes. In addition,

the State allows triple cargo trailers between Anchorage and Fairbanks. There is no provision for triples specified in Municipal code. While trucks must use the most direct interconnecting truck route, and vehicle movement is “subject to local ordinance,” the State allows these trucks to travel a distance up to 5 miles from the designated routes, with the potential of allowing these longer trucks to travel anywhere within the Municipality. In addition, proposed changes to Alaska Administrative Code allow 53-foot semitrailers on the National Highway System, which will potentially affect more Municipal roads.

Industry-wide, the length for semitrailers is increasing. Several local firms have already made significant investments in purchasing 53-foot semitrailers and other equipment designed to accommodate these containers. It is speculated that semitrailer length may increase to 60 and 65 feet before long. While the industry can achieve greater economies with longer and multiple combination vehicles, concerns have been raised. Longer semitrailers require greater turning radii, and allowing these longer trucks to travel all around town could require redesign and reconstruction of many intersections. By increasing the turning radii, the distance which pedestrians must travel across a roadway increases. Alternatives to creating larger intersections could include restricting larger trucks to off-peak time-of-day operations on certain routes. Current discussions between Municipal and State agencies and industry representatives will hopefully yield a mutually beneficial agreement on these issues.

The use of larger trucks may or may not be a factor in truck related accidents. Current accident reporting forms used by the responsible local and State agencies do not distinguish between private pick-up and commercial trucks. An improved reporting form for accidents involving commercial vehicles will be deployed in 2002 for use by all agencies involved. Analysis of data generated from the improved reporting form, as it becomes available will be useful in assessing specific freight related issues.

6.4 Major Freight Corridors

Based on input from the truck driver and management surveys, MOA Public Works truck classifications, and other data, routes most often used by drivers of tractor trucks have been identified as the following:

From the POA, TSAIA and ARRC:

Ocean Dock Road
Whitney Avenue
A / C Couplet to and from Midtown
Ingra / Gambell Couplet to and from the Seward Highway
Glenn Highway
Seward Highway
Minnesota Drive
International Airport Road
Tudor Road.

Figure 8 shows drivers’ major and minor preferred routes.

6.5 Projections

Based on the current development strategies and foreseeable future economy, freight routes are likely to remain fairly static. Route changes may be affected by commercial in-fill development in the Midtown and south Anchorage corridor between Minnesota Drive and the Seward Highway. It is likely that new, or improved, east and west freight routes will have to be studied as development occurs.

Table 1
Truck Size and Weight Limits- Municipality of Anchorage

	I. General Roadways within Anchorage (Map - Figure 7)		II. Central Business Traffic District** (Map - Figure 9)		III. Long Comb./Vehicles (Doubles Routes) (Map - Figure 10)
	Functional Classifications: Local Streets, Neighborhood & Residential collectors*	Functional Classifications: Commercial / Industrial Collectors and higher	Truck Route	Other Streets	Municipal Access Routes to AK Route 1***
Length	(Local pickup, delivery & service vehicles only)	Single unit: 40 ft; Semitrailer: 45 ft. Tractor & Semitrailer: 70 ft. overall Tractor/Trailer Combination: 75 ft. overall		29 ft. & no more than 2 axles (except for local pickup & delivery service vehicles)	Semi-trailer 48 ft. Tractor & Semitrailer 90 ft. Trailer Combination: front of first to rear of second Semi trailer Overall length: Not Restricted
Weight	11,000 pounds GVW (Except local pickup, delivery & service vehicles)	Depends on distance between axles and number of axles. (Refer to Title 9, 46.090 to 46.1101)			
Width	8 ft. 6 in.				
Height	13 ft. 6 in.				


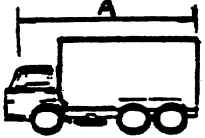
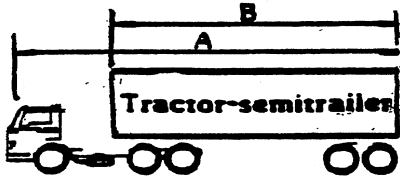
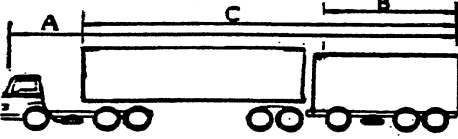
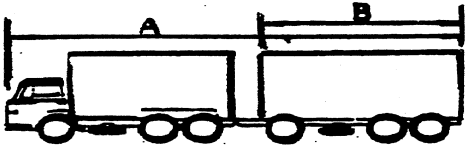
Source: Anchorage Municipal Code Title 9 (See 9.46.120-350 for oversize and overweight permits generally).

*Language in Title 9 not updated since Functional Classification was modified by 1985 OS&HP. Neighborhood collectors are included by Administrative Interpretation.

** Any provisions of this section (9.46.400) which affects state truck routes is subject to approval of the State Department of Transportation and Public Facilities. Central business Traffic District means all streets and portions of streets within the area bounded on the south by Ninth Avenue, on the north by Third Avenue, on the west by L Street, and on the east by Gambell Street. (CAC 9.04.110)

***Alaska Route 1 within Anchorage: New Seward Highway/Glenn Highway

Table 2
COMPARISON OF STATE AND MUNICIPAL
TRUCK SIZE LIMITATIONS WITHIN ANCHORAGE

Vehicle Types	General Size Limits			Specially Designated Highways Long/Combination Vehicles (Doubles Routes)	
	STATE		MUNICIPALITY	STATE	MUNICIPALITY
	Non-NHS	NHS	General roadways	AK Route 1	Municipal Access Routes
 All trucks	A 8ft. 6in. B. 15ft.	A. 8 ft. 6in. B. 15 ft.	A. 8 ft. 6in. B. 13 ft. 6in.	A. 8 ft. 6 in. B. 15 ft.	A. Not Specified B. Not Specified
 Single unit truck	A. 45 ft.	A. 45ft.	A. 40ft.	A. 45ft.	A. Not Specified
 Tractor-semitrailer	A. 75 ft. B. 48 ft.	A. None B. 53 ft.	A. 70 ft. B. 45 ft. (kingpin to rear)	A. 75 ft. B. 53 ft.	A. Not Restricted B. 48 ft.
 Combination(tractor-semitrailer-trailer)	A. 75 ft. B. 48 ft. C. 41 ft.	A. None B. Not Specified C. 41 ft.	A. 75 ft. B. Not Specified C. Not Specified	A. None B. Not Specified C. 95 ft.	A. Unrestricted B 48 ft. C 90 ft.
 Combination(truck-trailer)	A.75 ft. B. 48 ft.	A. None B. Not Specified	A. 75 ft. B. Not specified	A. None B. Not Specified	A. Unrestricted B. Not Specified

Source: State Administrative Code Draft 17AAC 25 (October 2000)

Municipal Administrative Code, Title 9, chapter 46

Note: NHS - National Highway System

AK Route 1 - Within Anchorage: Seward Highway/Glenn Highway

7.0 FORECASTING FREIGHT VOLUMES

7.1 Modeling

Freight truck volume forecasting can be a useful tool in the planning and design of roadway improvements. For this reason, AMATS incorporated a truck model element in the recently completed Anchorage transportation model. Cambridge Systematics, Inc., using the techniques outlined in the Quick Response Freight Manual (QRFM) developed the truck model element. Data inputs included employment data, transportation networks, and truck classification data.

The Anchorage truck model predicts daily (24-hour) volumes of single unit and combination commercial vehicle traffic. The truck vehicle categories correspond to those specified in the QRFM and also correspond to the standard vehicle classification as specified by FHWA. These include:

- Single unit trucks – FHWA Classes 5 to 7; and
- Combination trucks – FHWA Classes 8 to 13;

7.2 Truck Model Uses

The truck model has already been used to help evaluate alternatives for the Ship Creek Multi-Modal Transportation Study. All-or-nothing assignments were run for four Ship Creek access alternatives and produced 2023 truck volume estimates.

The development of the truck model was hindered by a lack of up-to-date truck classification counts. To aid in future improvements to the Anchorage truck model, an expanded truck classification program should be implemented.

7.3 Other Forecast Methods

7.3.1. Economic

Although untested, the use of economic indicators or economic trends for freight forecasting appears to be viable. Presently, no correlation work has been published with regard to the local relationship between economic indicators such as personal income, real estate development, and freight volumes or variations in freight vehicle numbers or land use.

According to the literature, freight activities are a factor of demand and statistical analyses and models could be used to determine future freight activities.

8.0 ENVIRONMENTAL ISSUES

Anchorage exceeds the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO). We are approaching non-attainment for particulate matter (PM-10). The EPA recently classified Anchorage as a serious nonattainment area for CO. Although the EPA has not formally classified Anchorage as a nonattainment area for PM-10, the municipality is engaged in the development of a particulate matter control plan that will eventually be included in the State Implementation Plan for air quality. Airborne concentrations of other “criteria” pollutants (ozone, sulfur dioxide, nitrogen dioxide and lead) in Anchorage currently meet NAAQS.

8.1 Effect of Freight Transport on CO Air Quality in Anchorage

The contribution from freight movement on overall CO emissions is believed to be small. Although motor vehicle emissions account for an estimated 84% of all CO emissions, the vast majority of these motor vehicle emissions come from light-duty gasoline-fueled vehicles. The number of vehicles involved in freight transport is a relatively small proportion of the total fleet in Anchorage and many of those are diesel. Diesel engines are low emitters of CO but relatively high emitters of PM-10. The CO emission rate from a heavy-duty diesel vehicle is estimated to be nearly five times lower than a light-duty gasoline fueled vehicle (the fleet-wide 1995 MOBILE5 emission rate for heavy duty diesel vehicles = 6.9 grams per mile vs. 31.4 grams per mile for light duty gasoline vehicles). Currently freight vehicles > 11,000 pounds are exempt from I/M testing in Anchorage.

8.2 Effect of Freight Transport on PM-10 Air Quality

A number of source apportionment studies have conducted in Anchorage to determine the main sources of PM-10. All of these studies have concluded that crustal dust accounts for over 90% of all emissions. The highest concentrations of PM-10 are found near major thoroughfares where turbulence and tire friction from passing traffic cause fine roadway dust (pulverized winter road sand, abraded pavement, etc.) to be entrained into the air.

A recent Anchorage study (MRI, 1998) suggests that dust re-entrainment by large vehicles may have a role in producing the elevated PM-10 concentrations observed along major roadways. Large vehicles like those involved in freight transport are believed to be responsible for significantly greater amounts of PM-10 than small vehicles because they create much greater turbulence. The MRI study measured a 14-fold increase in short-term PM-10 concentrations immediately following the passage of large, “aerodynamically blunt” vehicles such as tractor-trailers. Although these high emission intervals occur only 7% of the time, they were estimated to account for 25% of the total PM-10 loading near the roadway.

9.0 FREIGHT MOBILITY – Issues and Problem Identification

The issues of freight mobility and the recommendations presented in this study have been generated from the data acquired through (1) a review of the Urban Goods Movement Study conducted in 1986, (2) the Driver’s Survey conducted in the fall of 1998, (3) the Truck Model Carrier Survey also conducted in the fall of 1998, (4) a worksession with the Port and industry representatives to identify existing concerns on a map through a “dot exercise” to locate existing issues and problems. Data and summaries of these investigations are presented below.

The Urban Goods Movement Study (UGMS) conducted in 1986-87 and provide a starting point in which to determine specific impediments to freight mobility in Anchorage. The following is a summary of the findings highlighted in the UGMS with responses provided by MOA Public Works and AMATS staff about the status of the stated problem as well as what, if any, treatments have been implemented to alleviate the problems identified:

Table #3 1987 Urban Goods Movement Study Problem / Resolution matrix

Problem/ Problem Location Identified in 1986 Report	MOA Comments	Comments-Resolutions (December 2000)
Railroad tracks appear too close to Whitney Rd and Post Rd intersection. (tracks are 60 feet behind the stop bar)	Concur	Needs to be evaluated for improvement determination and necessary action
Port Road and A/C couplet bridge ramp interface at a sharp/blind curve	Concur	Refer to ADOT for signage
Sign in sidewalk at 8th and "A" Streets blocks the line of approaching traffic	NC	Should have been resolved with 1998 improvements
Muldoon at Glenn Hwy and Eagle River inter-change need additional ramp(s) to accommodate detours of overheight vehicles	Concur	Refer to ADOT to verify problem and study alternatives as necessary
Narrow lane width on Ingra / Gambell	Concur	Less than 12' (10.5'min.) Very costly to widen- may not be economical or practical (would require major R.O.W. acquisition)
Too much uncontrolled access on: - Tudor (Lake Otis to Baxter) - Muldoon (DeBarr to Boundary Ave.)	Possibly	High traffic volumes may require improvements of some type but probably not controlled access
Sign at Tudor eastbound to New Seward Hwy northbound obscures sight of approaching traffic	Unk. Status	Refer to ADOT
New Seward Hwy southbound egress ramp between 36th and Tudor is unsafe(right-hand lane trap)	Do not concur	Lane is properly marked for exit. ADOT is analyzing a six lane extension from 36th southward for future
Airport Heights near Glenn Hwy is not channelized properly	Concur	Identified as a Safety Improvement Project – Currently programmed in TIP
Pedestrian Conflicts		
Conflicts with pedestrians (tourists) walking from dock to downtown	Unk. Status	Ocean Dock Rd.-North C/Whitney Street project may resolve some of the pedestrian conflicts
Speed Limits		
Speed limit on Post Road is too low (speed limit is 35)	Possibly	Not likely to be increased (some complaints from local operators that the speed limit is too high for trucks entering traffic)
Muldoon / Tudor speed limit is too high	Possibly	Safety Improvement Study FY99 will evaluate Muldoon between 20th and N. Lights Blvd.
Regulations and Standards		
Low weight limit on "C" Street bridge between Whitney Road and 1St. Ave.	Will Check	
Lack of adequate truck parking and loading in downtown area	Will Study	See CBD Parking and Circulation Study 19** (Existing buildings difficult to fix)
Truck routes do not have adequate signing	Do not Concur	Official Route Map faxed to trucker's dispatch (is available through MOA -Public Works, included in this document)
Overpasses are too low: - Tudor and New Seward Hwy - Dowling and New Seward Hwy - Dimond and New Seward Hwy - Muldoon/Glenn Hwy	Unknown status	No project identified to resolve this Will be resolved as part of a currently programmed project Resolved Resolved
Traffic in Alleys		
Too much passenger car traffic in downtown alleys	Needs Study	Must determine most efficient use of alleys
Alley bounded by F and G Streets and 4th and 5th Avenues are utilized by nearby bank which conflicts with truck deliveries	Needs Study	Must determine most efficient use of alleys
Conflicts between delivery trucks in downtown alleys	Needs Study	Must determine most efficient use of alleys

Table #3Continued

Intersections		
Many downtown intersections do not have adequate turning radii	Concur	Some are being addressed with new construction
Turns are difficult at: - “I” Street northbound to 15th Street eastbound - 5th Avenue westbound to Reeve northbound	Concur	See 15th Ave Improvement project Can be analyzed with currently programmed project
Right-hand turns are difficult at: - Dowling eastbound to “C” Street southbound - “C” Street southbound to Dimond eastbound - Old Seward southbound to Dimond westbound - Old Seward southbound to Dowling westbound - Old Seward southbound to Int’l Airport westbound - Minnesota southbound to Spenard westbound - Dimond westbound to King Street northbound	Concur Do not concur Do not concur Concur Do not Concur Do not Concur Concur	May be resolved with C Street project Use two lanes on Dimond Use two lanes on Dimond May be resolved with currently programmed project Two lanes on Intl for turning Two lanes on Spenard for turning May be analyzed by future Dimond project
Costco entrances is too narrow (30-foot curb cut)	Concur	Use next entrance to the east
Raspberry and Minnesota needs interchange or longer all-red phase	Resolved	Constructed in early 90s
High accident locations at: - Ingra / 3rd Ave. - Gambell / 5th Ave. - Ingra / 6th Ave. - Old Seward / Int’l Airport Rd. - Muldoon / DeBarr - Old Seward / Tudor - Muldoon / Northern Lights	N/A	Locations are rated. Some improvements have been made to at least two of the intersections: Ingra/3rd and Old Seward at Tudor; MOA will review in Safety Improvement Study scheduled for FY 99
Enforcement		
Parking restrictions in alleys and alley/street intersections not regularly enforced	Concur	APD Enforcement Issue APD policy is to enforce upon complaint—enforcement through Warrants Division
Alley parking restrictions are based on whether or not a car may pass, not a truck	Do not concur	Title AMC states 10’ clearance
Insufficient “No Parking” signage in downtown alleys	Do not concur	Title AMC requirement of “no parking”; violations can be and are enforced without signs
Baxter / Tudor intersection unsafe due to passenger cars disobeying STOP sign on Baxter	Obsolete issue	Stop sign was replaced by a signal
Signals		
All-red phase too short at: - Muldoon and Northern Lights - Gambell and 15th - “C” Street and 15th - Boniface and Tudor	Will review all locations	N/A
Entire signal system not sequenced properly	N/A	signal system is partially sequenced and partially actuated to address specific conditions
Right-hand turns from Old Seward Hwy north-bound to Tudor eastbound require too much time	Concur	right hand turning movements should have two lanes

The UGMS also made specific major capital improvement recommendations consisting of the following items: (following each item in the table is a comment on the status of the issue / treatment)

1. Reconstruction of the lower “C” Street Bridge - *completed*
2. Providing oversize vehicle access routes at interchanges – *concur- will make determination*
3. Pedestrian amenities facilities in the port / railroad industrial area – *concur-Ocean Dock Road reconstruction in design phase, 6-foot shoulders are included*

4. Addition of one southbound lane on the New Seward Highway between 36th and Dowling – *ADOT is developing a project to analyze a 6-lane option on the Seward Highway south of 36th Avenue.*
5. Provide a median divider on Tudor / Muldoon from Bragaw to DeBarr – *under consideration*
6. Upgrade of West Northern Lights Boulevard – concur with need to upgrade; however, not as a freight route to airport
7. Reconstruction of 36th Ave.-completed between Arctic and Spenard Road

A truck drivers' survey was developed to supplement other sources of information regarding problems encountered on the Anchorage roadways. The survey was conducted in September of 1998 and contained 14 questions about routes, vehicle operations and descriptions, and an overall rating of transportation facilities in Anchorage. The survey was distributed to approximately 42 area trucking, courier, fuel oil and waste removal firms. A total of 400 surveys were distributed. Thirty-four responses were returned. The survey was not designed to produce statistical values. The following are relative trends and are subject to interpretation.

The following is a summary of the information drawn from the survey:

Of the 34 responses, 21 (61%) said they do primary commercial deliveries; 12 (35%) residential and commercial pick-up and delivery; three (9%) courier; 14 (41%) line hauls; one (2%) residential moving. Most of the respondents indicated their firms perform some combination of these services.

Under "type" of equipment, almost all firms indicated they operate at least one tractor/semitrailer with most indicating the operation of a variety of semitrailers, box trucks and other smaller vehicles.

Questions 3 and 4 were created specifically for the respondent driver to describe his/her own vehicle, which is taken in context for the remaining question responses.

Twenty-nine (85%) responses indicate the operation of equipment fueled with diesel; one (2%) response indicate the use of gasoline; 13 (38%) indicated the use of a combination of vehicles using gasoline, diesel, or LPG.

The responses for the number of axles on the respondent's vehicles indicated that operators had 2-3 axles (76%).

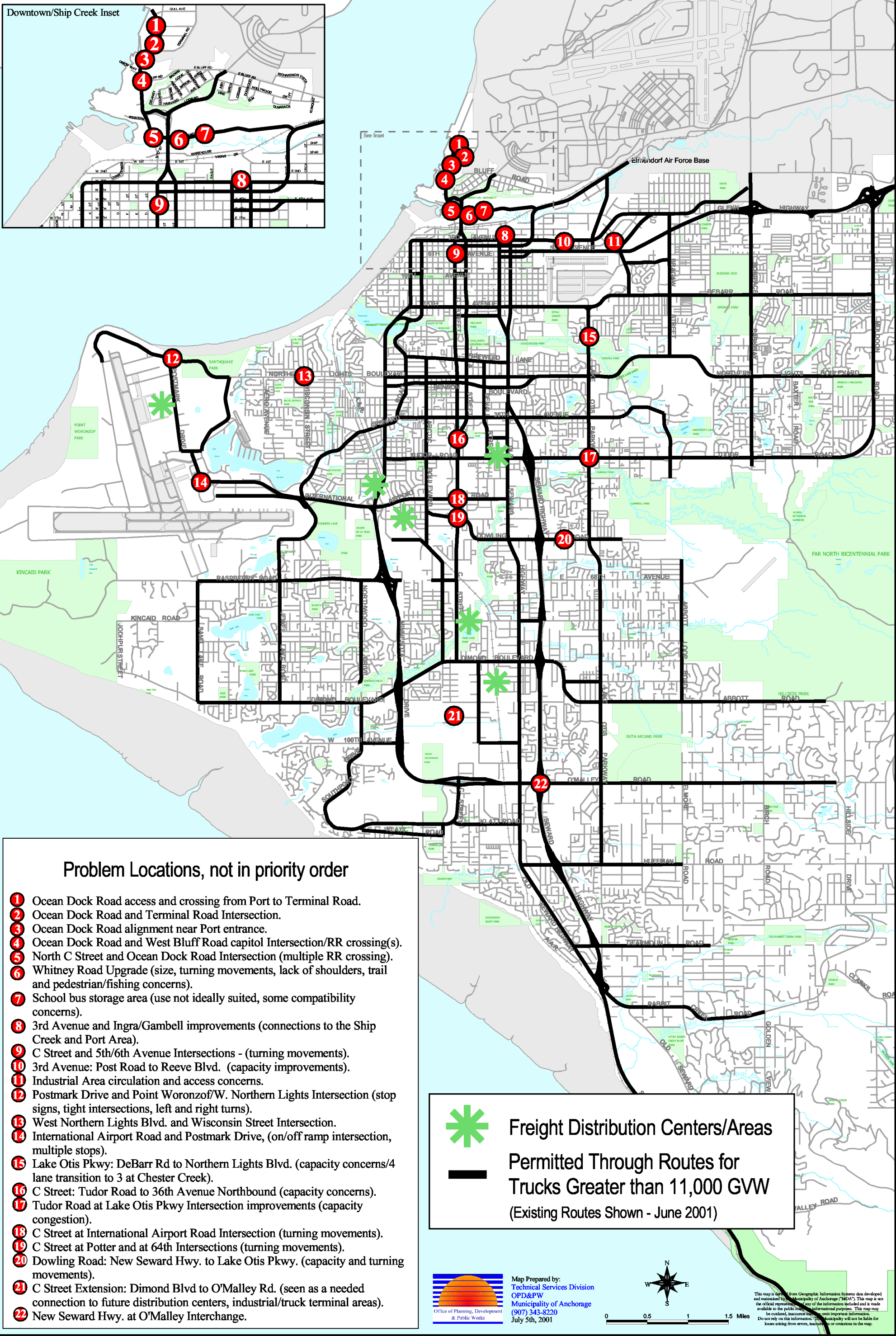
The length of truck ranged from 20 feet to over 60 feet supporting the range of services indicated by responses to question 1.

Truck weights ranged from 9,000 pounds to 130,000 pounds.

Line haul drivers tend to work longer hours and fewer days of the week, while urban delivery tends to be more consistent with a Monday-Friday 7 or 8 to 5 schedule. The daytime hours also correspond well with retail outlet hours.



Figure 11 - Freight Movement Problem Areas



The remaining survey questions relate to preferred routes, alternate routes, and comments regarding problem areas in Anchorage freight infrastructure and a rating of the area facilities:

The primary truck routes indicated by responses as preferred are listed showing the most preferred first in priority order.

1. C Street
2. Seward Highway
3. Tudor Road
4. Glenn Highway
5. Arctic Blvd
6. 3rd Ave

Alternate route preferences indicated include Northern Lights/ Benson Boulevards, International Airport Road, Minnesota Drive, Mountain View Drive, Spenard Road and Dimond Boulevard.

The survey presented the respondent with an opportunity to rate the surface transportation system in Anchorage. The rating depicts the degree to which the truck driver felt the Anchorage infrastructure meets their needs with regard to congestion, maintenance, signalization and other issues. A range of 1-5 was given where “1” is a very good rating and “5” an unacceptable rating. The following are the results:

Very good - 1.....zero (0) 0%
2.....four (4) 11%
3.....fifteen (15) 44%
4.....eight (8) 23%
Unacceptable - 5.....five (5) 15%

The survey asked respondents to describe problems and provide general comments about experiences with freight mobility in Anchorage while driving their routes. The responses are listed in appendix D.

The respondent drivers have concerns in several areas including education of the public and fellow drivers about the characteristics and limitations of heavy vehicle operations; loading zone creation and parking ordinance enforcement; modifications of roadway and thoroughfare facilities including signalization; and maintenance, both winter and summer.

The Municipal Department of Community Planning and Development, Transportation Division, concurrently conducted an operators survey to both collect data for the update of the transportation model as well as for the freight mobility study. The survey was conducted as interviews with sixteen operators representing freight movers, shippers and consignees. This survey differs from the Drivers Survey, above, in that information was to be used to develop origins and destinations matrices from the carriers perspective. Selected results of that survey are summarized in Table 4.

In the survey, a matrix of freight movement issues was created to sample the level of severity as was perceived by the respondents. A rating of (5) indicates a high level of severity, or high level of concern; a rating of (1) indicates a low level of severity. The sample size is too small to develop statistical analyses. However, the only Potential Impediment Issue that is rated severe is congestion. This suggests that the transportation system functions fairly well for trucks.

Table #4 Truck Model Data Survey Results

Potential Impediment Issues	Issue Severity Rating (1 low-5 high)
Congestion / road capacity	5 - # of Responses – 4 4 – 4 3 – 4 2 – 0 1 – 0
Transportation system reliability	5 – 0 4 – 2 3 – 3 2 – 4 1 – 2
Roadway condition	5 – 1 4 – 5 3 – 6 2 – 1 1 – 0
Loading constraints	5 – 0 4 – 1 3 – 2 2 – 0 1 – 7
Routing Constraints	5 – 2 4 – 2 3 – 1 2 – 3 1 – 3
Other	5 – 0 4 – 1(sync. lights) 3 – 0 2 – 0 1 – 0

General comments were solicited in the interviews by the question: “What are the most serious impediments to efficient freight transportation in Anchorage (anything that impacts the cost, safety, or reliability of goods movement)?” Summarized below are the main issues reported by the industry representatives. The actual comments are contained in Appendix E

The following interview comments indicate concern for traffic congestion (much of which is connected to construction delays), routing problems in the Ship Creek area, concerns about signalization, and railroad and pedestrian conflicts in Ship Creek. Overall, the element of time and delays was a repeated concern.

Some of the comments by industry representatives reflect a lack of understanding of legal truck routes contained in Title 9 of the Municipal code as well as certain limitations of the infrastructure to accommodate freight vehicles.

Figure 11 was generated as a result of a February 1998, Municipality of Anchorage freight industry work session showing problem locations.

9.1 Constrained Freight Routes

Ocean Dock Road

Currently, Ocean Dock Road has limited capacity for trucks transiting from the POA to other areas. The road is crossed six times with at-grade rail tracks, is rough and narrow, with no shoulders. However, Ocean Dock Road was reconstructed in the summer of 1999. Many of the concerns for the facility will be addressed, including relocating the rail lines to eliminate the multiple rail crossings of the road.

Whitney Road

Whitney Road is the major link between the POA and the ARRC as well as the industrial / warehouse district in the east Ship Creek basin. Whitney Road has limited capacity for the existing volume of freight transported over it. It is crossed a number of times with rail tracks, is rough and narrow with no shoulders. Additionally, Whitney Road parallels Ship Creek on its north bank where sport fishermen access the creek. Sports fishermen park their cars along Whitney Road and often cross the road without looking for opposing traffic. Whitney Road is designated as a Commercial / Industrial Collector Class IA facility in the Official Streets and Highways Plan. The Draft ARRC Master Plan recommends reconstructing Whitney Road as well as realigning it to eliminate these conflicts.

Ship Creek Avenue

Ship Creek Avenue is an intermediate route on the south side of Ship Creek. It ties North C Street to the east Ship Creek basin and industrial and warehouses in that area. The road has poor alignment, is narrow and rough. Ship Creek Avenue is undesignated in the Official Streets and Highways Plan and considered a local street.

1st Ave.

East 1st Ave is an intermediate route on the south side of Ship Creek. It ties North C Street to the east Ship Creek basin and industrial and warehouses in that area. The road has poor alignment, is narrow and rough. 1st Ave. is designated as a neighborhood collector Class IC facility west of North C Street in the Official Streets and Highways Plan

Post Road

Post Road links 4th Avenue and Ingra/Gambell Streets to the east Ship Creek basin industrial and warehouse district. The road is congested and has numerous driveways. It is posted at 35 miles per hour. The surface of Post Road is rough. Northbound traffic on Post Road turning west onto Whitney Road is difficult for a number of reasons. The sight distance may be inadequate for that turning movement. Also, large vehicles require more time to accelerate and the relatively higher speeds for traffic on Post Road cause problems. Post Road is designated as a minor arterial Class II facility in the Official Streets and Highways Plan

C Street / A Street

C Street, from its origin at the intersection with Port Access road (Ship Creek Overpass) near the POA, all the way to its southern terminus at Dimond Blvd, is the main north/south freight route for deliveries in Anchorage. Industry estimates that approximately 80% of the freight distributed in Anchorage transits this road for some part of its length. The major concern is peak hour and intermittent congestion with overall traffic volumes at points along the street's length. Additionally, some of the turns off C Street onto east /west thoroughfares is a concern for tractor-trailer traffic. C Street / A Street from 3rd Ave to O'Malley Road is a major arterial Class IIIA and IIIB for two segments in the Official Streets and Highways Plan. This facility is being reconstructed in phases. Currently, the section from Tudor Road to International Airport Road is under construction as a 6-lane section. The section from International Airport Road to Dimond Boulevard will be reconstructed as a 6-lane section in a few years and the road will be extended to O'Malley Road in the near future.

Tudor Road

Tudor Road has a high density of commercial development along most of its length. It also serves as a major 4-lane east/west freight corridor. The concern is peak time and intermittent congestion, and numerous driveways and side streets. Tudor Road is a Class IIIA, major arterial in the Official Streets and Highways Plan.

Lake Otis Parkway

Lake Otis Parkway has become a principal freight route for secondary distributions. This 4-lane road is the main north/south route east of the Seward Highway. Commercial development has begun to appear in nodes along its length. The concerns are peak time congestion at several locations, width and turning radii onto minor arterials and collector connector streets. Lake Otis Parkway between 15th Avenue and Abbott Road is designated as a major arterial Class III facility in the Official Streets and Highways Plan

15th Ave

15th Avenue is a 2 and 4-lane road that runs east / west from Minnesota (west) to DeBarr road (east). It is characterized by rolling hills. The street, east of C Street, is used as a freight route link between major commercial nodes as well as to major north / south streets. For much of its length, 15th Avenue is abutted by residential development, some of which is situated directly behind the existing sidewalk. Traffic congestion also affects mobility, particularly near the Ingra / Gambell Streets Couplet. 15th Avenue is designated as a major arterial (undivided) Class IIIB facility in the Official Streets and Highways Plan. This facility is being reconstructed to address many of these concerns.

Commercial Drive

Commercial Drive is the major freight link accessing the east Ship Creek basin and is a four-lane road. The road is characterized by moderately dense commercial and light industrial uses for much of its length. There are many driveways along Commercial Drive. The close proximity of much of the development fronting on the street creates undesirable circulation conditions, particularly for tractor vehicles. Traffic congestion also affects freight mobility especially at the east end of the facility near Mt. View Drive and Bragaw Street. Commercial Drive is designated as a minor arterial Class II facility in the Official Streets and Highways Plan

9.2 Facility Design/Infrastructure/Bridges

ADOT&PF and the MOA design the transportation facilities within the Municipality of Anchorage. Road projects in Anchorage are programmed through the Transportation Improvement Program of the Municipal Capital Improvement Program. One element of roadway design is the use of a typical section which describes the components of the road prism including embankment material and depth, the sub-base material and depth, the base course specification, and pavement design. The MOA and ADOT&PF use nationally accepted standards for road design and construction. These standards include the American Association of State Highway and Transportation Officials (AASHTO): A Policy of Geometric Design of Highways and Streets and the Manual of Uniform Traffic Control Devices (MUTCD). These standards include recommendations for accommodating freight vehicles. Design staff uses the most appropriate design specifications based on the road type and expected use. Designers use a semi-tractor trailer as the design vehicle on major roadways.

The freight industry identified the following design issues to be addressed during projected development:

- road prism structure – pavement design (particularly at intersections)
- roadway (lane) width

- intersection geometrics including turning radii, grades and orientation
- traffic calming obstructions: trees, bollards, street lights/lamps, turning radii, street blockages
- bridge structure and decks, bridge (overpass) clearance
- transit structure obstructions
- access management

Road design engineers are encouraged to review the above issues when designing roads that must carry freight.

Bridges are designed to accommodate typical loading by freight vehicles except for extreme weights. According to the freight industry, there are some bridges in the Anchorage area not suitable to carry heavier weights imposed upon them by freight vehicles.

Bridge clearances are also generally built to accepted national standards. Standards for bridge clearances, however, differ from agency to agency. The MOA uses a bridge clearance standard equal to that used for signal devices, established by the FHWA, or a range of 17.5 feet to 19 feet. The ADOT&PF standards are the same. Older bridges were designed to a different standard and there are some bridges in Anchorage that do not meet the current standard. Bridge clearances lower than 17 feet pose restrictions on the movement of irregular freight including construction machinery and oil pipeline facilities.

9.3 Maintenance

As discussed in previous sections of this report, road maintenance is an issue. The weather is also an impediment to mobility around the area for freight and passenger vehicles alike. For smaller freight vehicles, visibility and driving surface are important but pose much fewer problems than for larger semi-tractor combinations. Intersections, in particular, are problematic due to the need for all traffic to slow and stop, and accelerate. Pavement conditions become worn faster at intersections than on tangent sections, including the incidence of rutting. Ruts produce a severe ride for freight vehicles with heavy-duty suspensions.

The rate of snow removal as well as the frequency of removal is a concern expressed by the freight industry. Other issues of maintenance include the repair of potholes, particularly during the spring break-up season. The industry has complained that pothole repair takes too long from the appearance of the problem to its resolution.

The industry states that signs are often obstructed by vegetation growing both on public and private property. During winter months, signs can be obscured by snow thrown by plows on higher speed routes. Additionally, signs, signals and pedestrians can be obscured from a driver's view by signposts and utility poles standing along roadways.

9.4 Signalization

Other than traffic congestion on Anchorage streets and highways, signalization and the problems inherent in their programming, maintenance and adjustment is one of the most discussed problems for the freight industry.

The integrated system of signals throughout the community is designed and programmed to facilitate passage of the majority of the traffic volume. The numbers of signaled intersections in Anchorage is not abnormal for this type and size of urban city. Signals, however, slow the traffic. Freight vehicles take a longer time to stop and accelerate so traffic signal stops increase the amount of time it takes to deliver a load or return for more freight. Delays diminish profit. The freight industry would like to reprogram

signals on all major freight routes to maximize freight vehicle movement. Traffic signal phases are already programmed to progress traffic along major routes to reduce delay. Signal timing is a complex issue that must address the needs of all users as well as work toward improving air quality. Anchorage is designated serious for non-attainment of carbon monoxide and some of the signals have been programmed to alleviate traffic congestion that results in degraded air quality.

Several comments have been made by freight drivers that the yellow-phase timing should be lengthened for roads such as C Street. The longer yellow would permit drivers to move through intersections during the later period of a green phase and the full yellow phase without obstructing cross traffic. However, the yellow phase is based on the speed of the route and is adjusted to accommodate all traffic. The freight industry should work with Municipal and State traffic engineers to determine if all phases are maximized and signals progressed on major truck routes.

Another series of comments have been received regarding signal synchronicity. Freight drivers indicate that signal series do not permit a rhythmic flow of traffic when it takes so long for some freight vehicles to accelerate to the “window” speed necessary to take advantage of synchronized signals. On major freight routes, providing a larger acceleration window for synchronicity might actually speed overall traffic flow. The freight industry will again need to work with Municipal and State traffic engineers to determine if all phases are maximized and signals progressed on major truck routes.

In the survey completed for this report, some freight drivers expressed concern about being able to make an informed decision when approaching a traffic signal as to whether they should prepare to stop or pass through the intersection. With loads extending as much as 100 feet in length, the driver must make a quick decision about whether to pass or prepare to stop for a red light. Some drivers stated that they use pedestrian walk/don’t walk signs as a method to make a decision as to stop or go when approaching an intersection. However, this method is not a sound approach to use for any driver to decide whether to go or stop at an intersection. The relationship of pedestrian signs and yellow time of the traffic signal varies throughout the community. Pedestrian signals are designed to facilitate the safe movements of pedestrians, not cars, trucks or other vehicles.

9.5 Local Regulations

Appendix B contains the Municipality of Anchorage Title 21 regarding loading zone and parking development regulations, and Title 9 regarding truck routes. These portions of code are included in this study for informational purposes. Both portions of the code most relative to freight movement should be reviewed, updated, and modified to meet current conditions. Those sections most needing revision include commercial and industry development freight loading zones and site circulation. Currently specified site-loading zones are inadequate in size, number and orientation to accommodate the variety of freight vehicles using them. Access points onto private properties from the public thoroughfares can be a problem for freight vehicles.

Title 9 concerns were about truck routes extensions and signage on truck routes.

Other regulatory concerns center around the issue of container size. Currently the State allows the use of 53’ containers, but the Municipality restricts the length of semi-trailers and trailers on doubles to 48’. The freight industry has already invested in larger containers coming from the Port, and the longer containers are currently operating along Port access routes.

Figures 7, 9, and 10 indicate the legal truck routes for the Anchorage area.

9.6 Summary

The input collected from industry/agency meetings illustrates many of the physical constraints to freight mobility in Anchorage. The most significant constraint indicated by members of the freight industry is the lack of comprehensive planning related to resolution of freight-related problems. Heretofore, these problems have been addressed piecemeal as a by-product in the planning for and design of individual projects. To address these later concerns is one reason why this Freight Mobility Study is being conducted.

Delays caused by congestion, poor road surfaces, and design considerations increase costs for freight. There may be a cost-effective element in more comprehensive planning for freight related concerns.

The most concern over design criteria comes from semi-tractors, particularly in “doubles” configuration. These vehicles are much longer and heavier. Tractor drivers sit almost two times higher than passenger vehicles and smaller box trucks and delivery vans. Sight distance is significantly different and issues of signage, intersections and signals become important. Roadway design and maintenance, as well as, private property setback / obstructions standards should be reviewed to assure that the needs of commercial truck operations are addressed.

Much of what can be done to improve local roadways and access points to delivery destinations will also benefit private passenger vehicles. Freight vehicles have different frequency of arrivals and departures, size and weight of vehicles and the need to park the vehicle as close to the entrance of the destination as possible. Placement, number of, and enforcement for loading zones in the Central Business District need to be reviewed for possible changes in policy and implementation. Additionally, loading zones for large commercial development need to be reviewed for appropriate clearances and circulation space.

Another major issue is the overall size of vehicle in the future. The industry standard now is for both 20 and 45’ trailers. Container vans are increasing in size to 53’ and the occurrence of those size vans is increasing in Anchorage. The freight industry needs to work with the Municipality and the State to identify where such large vehicles will operate and how best to accommodate them.

10.0 PLANNED IMPROVEMENTS

Some of the special area problems identified in this report are also addressed in the 1997 AMATS Long-Range Transportation Plan (LRTP) for the Anchorage Bowl. The following are current activities that will address some of these special area considerations.

East Anchorage Circulation

ADOT&PF in cooperation with the MOA is undertaking a study to determine the multi-modal transportation needs and options in the east Anchorage area in the vicinity of Tudor Road between the Seward Highway and Muldoon Road (the East Anchorage Transportation Study). As Tudor Road and areas south of Tudor continue to grow, further commercial development will occur to become an added freight attraction. Truck traffic will increase in those areas.

North Port Access

The North Port Access is currently a concept to develop a primary east/west corridor from the Port of Anchorage to a point on the Glenn Highway near Eagle River. That route will reduce some through town truck traffic with destinations to the north.

Ship Creek Access

Ship Creek basin is a major location for light industrial manufacturing facilities, warehousing and other industrial activities. In addition, the Alaska Railroad and the Port of Anchorage are located in the area and both are significant freight generators. The access into the basin is comprised of streets that do not meet current standards for width and alignment. The Ship Creek Multi-Modal Transportation Study, recently completed, makes recommendations which include extending the Ingra/Gambell couplet to provide a new alternative truck route out of the Ship Creek basin that bypasses downtown, and to provide better access to the Alaska Railroad and the Port of Anchorage.

C Street Extension

Transportation plans dating back to the late 1970's include improvements to and extension of C Street from Tudor Road to O'Malley Road as part of the overall long-term transportation system for Anchorage. This improvement is again recommended in the Year 2001 Update to the 1997 Long-Range Transportation Plan (LRTP) for the Anchorage Bowl.

C Street, south of 36th Avenue is a limited access arterial route. Limited access means no direct driveway access is permitted onto C Street. Access to C Street will be at designated street crossings only. The C Street improvements are being completed in phases. Phase I includes improvements from 38th Avenue to International Airport Road. Phase II is from International Airport Road to Dimond Boulevard. Phase III is construction of the new road link from Dimond Boulevard south to O'Malley Road.

Phase I now completed, add a third lane northbound from Tudor to 38th Avenue. South of Tudor Road, improvements include a six-lane section (three lanes north and three south bound) to International Airport Road. C Street south of International Airport Road will transition from six lanes into a four lane divided arterial.

Phase II construction is programmed to start in 2002. One of the key issues to be addressed as part of Phase II is how and when might a grade-separated railroad crossing near 68th/Raspberry Road be completed. Phase III, Dimond Boulevard to O'Malley Road, will start construction in 2003.

Glenn / Seward Highway Improvements

The Glenn Highway Reconstruction project, scheduled for Design in 2002, ROW in 2004, and Utilities and Construction in 2006, will meet long term capacity needs.

International Airport Road at the New Seward Highway is scheduled for a grade separated intersection with Preliminary Engineering and Design in 2002, ROW in 2003, and Construction in 2004.

The Seward Highway Major Investment Study, currently underway, will identify follow on projects on the Seward Highway between Chester Creek and Huffman Road.

11.0 RECOMMENDATIONS

Policy

Freight Mobility affects every individual in the Anchorage Metropolitan area, including residents in Eagle River, Chugiak, Peters Creek, Eklutna and Girdwood. The freight industry should continue to work with the MOA and ADOT&PF to determine future policy for freight vehicles. Pavement and road design currently include analysis of the use for freight trucks and passenger vehicles. Consideration for the freight industry, as well as public safety, will continue to be incorporated in pavement, road, and bridge

design, programming of plans, studies, and funding. As construction materials technology improves and standards change, the MOA and ADOT&PF will incorporate these advancements. These practices, if needed, could reflect a greater level of consideration for freight movement in the funding of programs, plans and studies, road and bridge design, private development standards and infrastructure maintenance. The next AMATS Unified Planning Work Program, Calendar Year 2002-03, will include a task for on-going monitoring of freight movement issues.

General

The following are general recommendations as a result of this Freight Mobility Study. AMATS staff should:

- identify freight mobility monitoring as an ongoing activity in the AMATS Unified Planning Work Program, and or Traffic Engineering
- continue to work with existing forums, such as the Chamber of Commerce Transportation Committee as well as freight providers and shippers, public agencies, and local citizens for on-going coordination and oversight of freight mobility issues in the AMATS planning area
- support coordination between modes to reduce conflicts and capital improvement costs
- support increased participation in the development of Intelligent Transportation Systems/Commercial Vehicle Operations (ITS/CVO) programs and support local implementation of various ITS/CVO technologies. AMATS staff should work with ITS stakeholders to investigate establishing an ITS Advisory group to advise the AMATS Technical Advisory Committee
- develop a public information campaign to educate the public about the importance of the freight industry in Anchorage and about the physical constraints related to large freight vehicles in traffic

Capital Improvements

The following are proposed ideas and methods identified during this Draft report to assess/prioritize the need to enhance freight mobility. AMATS staff should:

- create a matrix of capital improvement concepts or projects recommended in this study by the freight industry to use as input to scoping for future capital projects
- more clearly define freight mobility as an element in the Roadway Ranking Criteria of the AMATS Transportation Improvement Program

Short Term 2000-2005

- extend C Street from Dimond Blvd to O'Malley
- improve the connection between International Airport Road and the New Seward Highway
- improve access connections between the POA and the Ship Creek warehouse district and the remainder of Anchorage
- improve roads within the Ship Creek basin that are key to movement of freight including width, surface and sight distance

- although both the State and the Municipality revise pavement designs to serve each specific project and each road's needs, we should investigate what it would take to provide an even more durable surface at intersections on major truck routes that resists rutting

Long Term 2005-2020

- improve connection and mobility between the Seward Highway and the Glenn Highway
- explore / investigate the need for a consolidated freight terminal in the Ship Creek Area in conjunction with the ARRC-Trailer on Flat Car (TOFC) facility, relocation of Whitney Avenue, and the alternative Ingra / Gambell route

Maintenance

AMATS staff, in cooperation with the freight industry, should

- work with Municipal and State maintenance personnel to identify the level of existing maintenance on main truck routes to determine whether maintenance practices need to be changed. If economically feasible, increase the level of winter maintenance along selected freight corridors.
- work with MOA and ADOT&PF to consider evaluating the effects on maintenance of the movement of oversize/overweight vehicles within city limits, including damage to signs, signals, etc.
- work with Municipal and State maintenance staff and with Municipal staff to identify locations where overhanging brush may obscure signals and street signs. Where appropriate, clear the vision area in cooperation with Municipal and State maintenance staff. Work with Municipal staff to implement zoning requirements on private property for clear vision areas.

Regulatory / Enforcement

Freight mobility is a function of the private sector operating within a regulatory and physical infrastructure provided and maintained primarily by the MOA and ADOT&PF. The freight industry is highly competitive which has resulted in a high degree of operator efficiency. Overall freight mobility, however, could be improved through a variety of physical and regulatory modifications. The responsibility for improvement is shared by both private and government sectors.

- MOA Traffic Department should review and update, if necessary, Title 9 regarding key issues
 - enforcement policy for downtown loading zones both on streets and alleys
 - commercial loading zones on all new development to ensure appropriate clearances and circulation space for proposed levels and types of truck traffic and future volumes
 - changes in industry standards and practices (in particular, whether to allow 53' trailers or semi-trailers and doubles on Municipality owned roads)
 - differences between State of Alaska and Municipality of Anchorage regulations concerning vehicle weight and length restrictions and to address enforcement problems
 - hazardous materials transport, particularly within the CBD; and

- outdated language, Section 9.46.410, should reflect functional classifications modified by 1985 OS&HP (currently neighborhood collectors are included by administrative interpretation)
- MOA Planning Department should review land use policies and existing zoning for opportunities to consolidate commercial and industrial development along truck routes and/or rail legs
- AMATS Staff should work with MOA Traffic Department and other agencies to analyze motor vehicle accident statistics involving trucks

Further Investigations

AMATS staff in cooperation with the freight industry, should:

- work with the MOA Project Management and Engineering Department, MOA Traffic Department, and ADOT&PF Engineering to conduct an areawide inventory and assessment of physical conditions (roadways and intersections, and points of ingress) on principal routes used by trucks and use this information as input for future improvements (ADOT&PF Traffic Engineering should review issues related to the National Highway System)
- identify gaps in truck volume / vehicle classification counts, if any
- conduct a Municipal wide truck count for base-line purposes for comparison against project specific counts
- work with appropriate agencies and firms to identify future needed freight studies, which may include the following:
 - obtain better data for actual movements of longer vehicles (53' semitrailers and doubles)
 - obtain better origin / destination information on freight movements, exploring the potential of using ITS technologies to gather such data, and to learn new methods of forecasting freight movements
 - conduct an assessment of pros and cons of time-of-day operation of trucks versus creating larger intersections
 - co-sponsor a workshop or task force of State and Municipal design engineers, as well as private design consulting engineers, to look at all issues pertaining to the design vehicle
 - identify and study cities of comparable size and similar style to Anchorage to study their freight mobility plans, performance measures, regulations, access to ports of entry, etc., as a benchmarking tool

12.0 THE FUTURE

The future of freight in Anchorage depends first and foremost on the State's economy and resource development. The two are not mutually exclusive with regard to freight volumes. According to studies conducted for the Port of Anchorage, freight volumes are expected to increase an average of 2.8% per year for the next several years. The Port of Anchorage plays a key role in Anchorage because most of the freight

received there is destined for distribution in Anchorage. The extent of freight volume growth, then, is subject to variability. If the state and local economy continue to be stable, freight volumes will undoubtedly continue to increase. Higher volumes of freight will mean increased truck traffic on Anchorage roads. If the economy takes a downturn, freight will continue to play a significant role in Anchorage and the region.

Freight carriers will continue to apply management and technological improvements to enable them to compete in a highly volatile market. Anchorage, as a multiple port of entry and international crossroads and state hub, will compete in the world market for intermodal freight movement business. As mentioned earlier, container units will increase in size and capacity. Trucks will most likely increase in efficiency both in fuel consumption and emissions. The freight industry will continue to meet the demand to move freight to all areas of Anchorage.

Other future considerations regarding freight mobility include:

- Larger trucking containers (53' and greater)
- Auto-free zones - exclusive areas for pick-up and delivery
- Pre-paid shipment and simplified documentation
- Improved route scheduling
- Route consolidation
- Economic incentives & disincentives - road pricing, tolls, parking fees
- Consolidation terminals
- Improved intermodal integration
- Improved urban design
- Central freight distribution centers
- Use of temporal and spatial separation for freight vehicles

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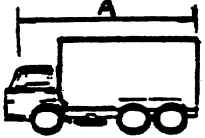
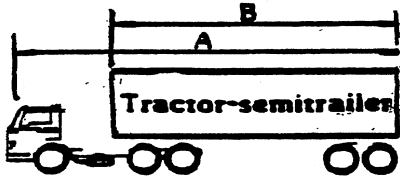
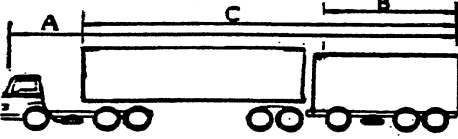
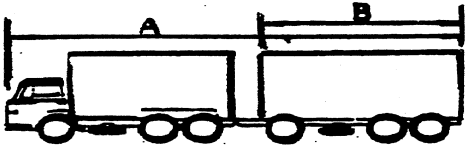
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GLOSSARY OF ACRONYMS

AADT	Annual Average Daily Traffic
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ADEC	Alaska Department of Environmental Conservation
ADOT&PF	Alaska Department of Transportation and Public Facilities
FHWA	Federal Highway Administration
AK	Alaska
AMATS	Anchorage Metropolitan Area Transportation Study
AMC	Anchorage Municipal Code
AO	Anchorage Ordinance
APD	Anchorage Police Department
ARRC	Anchorage Railroad Corporation
ASCE	American Society of Civil Engineers
CAC	City of Anchorage Code
CBD	Central Business District
CO	Carbon Dioxide
CVISN	Commercial Vehicle Information Systems Network
CVO	Commercial Vehicle Operations
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GVW	Gross Vehicle Weight
HPMS	Highway Performance Monitoring System
I/M	Inspection/Maintenance
IMF	Intermodal Marine Facility or Inter Modal Facility (depending on content)
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITS	Intelligent Transportation Systems
ITS/CVO	Intelligent Transportation Systems/Commercial Vehicle Enforcement
LPG	Liquefied Petroleum Gas
L RTP	Long Range Transportation Plan
LTL	Less Than-Truckload
Mat-Su	Matanuska-Susitna Valley
MOA	Municipality of Anchorage
MSCVE	Measurement Standards and Commercial Vehicle Enforcement
MUTCD	Manual of Uniform Traffic Control Devices
NAAQS	National Ambient Air Quality Standards
NHS	National Highway System
OS&HP	Official Streets & Highways System
POA	Port of Anchorage
QRFM	Quick Response Freight Manual
ROC	Roadside Operating Computers
ROW	Right of Way
SOA	State of Alaska

TAZ	Transportation Analysis Zone
TEA 21	Transportation Equity Act for the 21 st Century
TOFC	Trailer-On-Flat-Car
TRB	Transportation Research Board
TSAIA	Ted Stevens Anchorage International Airport
U.S. DOT	U.S. Department of Transportation
UGMS	Urban Goods Movement Study
VMT	Vehicle Miles of Travel
WIM	Weigh-In-Motion

Table 2
COMPARISON OF STATE AND MUNICIPAL
TRUCK SIZE LIMITATIONS WITHIN ANCHORAGE

Vehicle Types	General Size Limits			Specially Designated Highways Long/Combination Vehicles (Doubles Routes)	
	STATE		MUNICIPALITY	STATE	MUNICIPALITY
	Non-NHS	NHS	General roadways	AK Route 1	Municipal Access Routes
 All trucks	A 8ft. 6in. B. 15ft.	A. 8 ft. 6in. B. 15 ft.	A. 8 ft. 6in. B. 13 ft. 6in.	A. 8 ft. 6 in. B. 15 ft.	A. Not Specified B. Not Specified
 Single unit truck	A. 45 ft.	A. 45ft.	A. 40ft.	A. 45ft.	A. Not Specified
 Tractor-semitrailer	A. 75 ft. B. 48 ft.	A. None B. 53 ft.	A. 70 ft. B. 45 ft. (kingpin to rear)	A. 75 ft. B. 53 ft.	A. Not Restricted B. 48 ft.
 Combination(tractor-semitrailer-trailer)	A. 75 ft. B. 48 ft. C. 41 ft.	A. None B. Not Specified C. 41 ft.	A. 75 ft. B. Not Specified C. Not Specified	A. None B. Not Specified C. 95 ft.	A. Unrestricted B 48 ft. C 90 ft.
 Combination(truck-trailer)	A.75 ft. B. 48 ft.	A. None B. Not Specified	A. 75 ft. B. Not specified	A. None B. Not Specified	A. Unrestricted B. Not Specified

Source: State Administrative Code Draft 17AAC 25 (October 2000)

Municipal Administrative Code, Title 9, chapter 46

Note: NHS - National Highway System

AK Route 1 - Within Anchorage: Seward Highway/Glenn Highway

CENTRAL BUSINESS TRAFFIC DISTRICT

BY TITLE 9 (TRAFFIC CODE) DEFINITION

9.04.010 DEFINITIONS...Central business traffic district means all streets and portions of streets within the area described as follows: all that area bounded on the south by Ninth Avenue, on the north by Third Avenue, on the west by L Street and on the east by Gambell Street.

--- TRUCK ROUTES IN CENTRAL BUSINESS
(TRAFFIC DISTRICT (AMC 9.46.400))

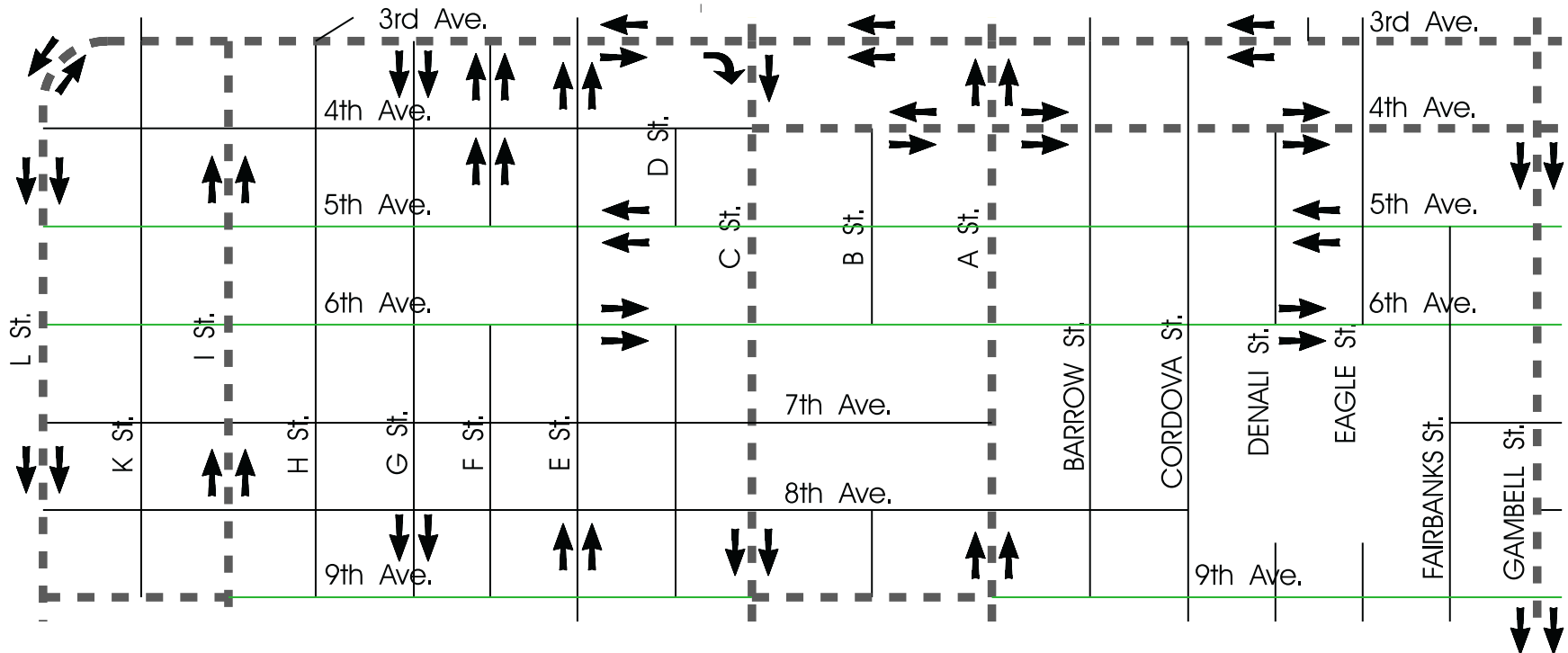


Figure 9