

CHAPTER 4: SEATTLE'S FREIGHT NETWORK

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An expanded Seattle Freight Network is proposed to meet Seattle's needs today and into the future.

A defined freight network helps guide roadway design, operations and maintenance, and it can direct freight improvements and investments.

Freight transportation facilities provide access for local, regional, national, and international distributors, wholesalers, manufacturers, and retailers to get their goods to and from markets. A reliable freight network is vital to:

- Serve the public by safely and dependably delivering goods
- Inspire confidence in existing business and industry sectors
- Encourage diverse businesses to locate in Seattle
- Generate additional jobs, businesses, and tax revenue

Designating a freight network helps guide freight-related traffic management, roadway design, and maintenance requirements; direct freight improvements and investments; and ensure freight projects can compete effectively for project development and construction funding. A street designated as part of the freight network will need to accommodate goods movement, but not necessarily see a change in its overall function, design, or character.

If an essential freight corridor is not formally designated as such, then it is difficult to identify the freight function of the roadway, or prioritize the type of infrastructure investments needed to safely accommodate the movement of goods now and into the future.

This chapter describes the process used to develop a more comprehensive freight network, which is critical to Seattle's economy, business environment, and the public as a whole.

EXISTING FREIGHT CORRIDORS

While trucks are allowed on all arterial streets, many of Seattle's freight corridors have had formalized designations. The existing Major Truck Streets (MTS) network was officially adopted via the 2005 Transportation Strategic Plan (TSP).¹ The MTS network focused on critical connections for freight movement through the city and to/from major freight traffic generators, including Port of Seattle (Port) terminals, inter-modal rail facilities, and the regional freeway network.²

In addition to the designated MTS network, the 2005 TSP also highlighted existing routes that acted as either seaport highway connectors or seaport intermodal connectors.³ While not officially designated, these routes are on arterial streets, have a high frequency of use by freight, provide two-way travel and direct access between Port facilities, and provide road access to marine facilities and the regional interstate system. The seaport highway connectors, shown in Figure 4-1, are routes that provide safe, reliable, efficient, and direct access between a Port marine facility and the state highway or interstate system. Seaport intermodal connectors, shown in Figure 4-2, are routes that provide safe, reliable, efficient, and direct access between a Port terminal and a railroad intermodal facility located in Seattle or other area in King County.

The City also has 2 regulatory networks related to freight – the Heavy Haul network (HHN) and the over-legal routes. Both systems are mapped and described in detail in Chapter 2.

¹SDOT. Transportation Strategic Plan (TSP). Adopted October 21, 2005. www.seattle.gov/transportation/tsp_2005.htm.

²SDOT. June 27, 2005. Freight Mobility Strategic Action Plan (FMSAP). Page 10.

³SDOT. TSP. Adopted October 21, 2005. Page 33, 39.

FIGURE 4-1: SEAPORT HIGHWAY CONNECTORS

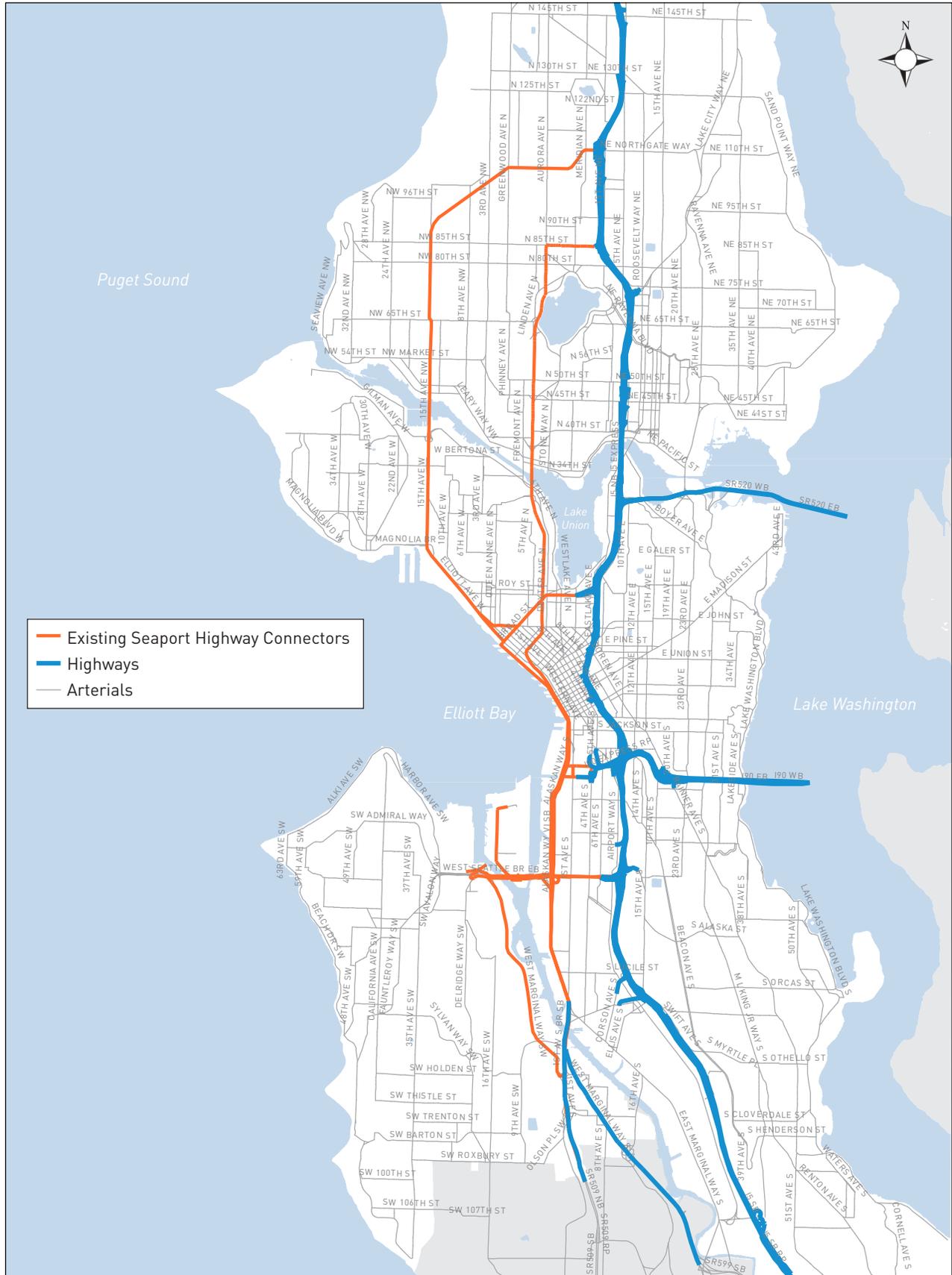
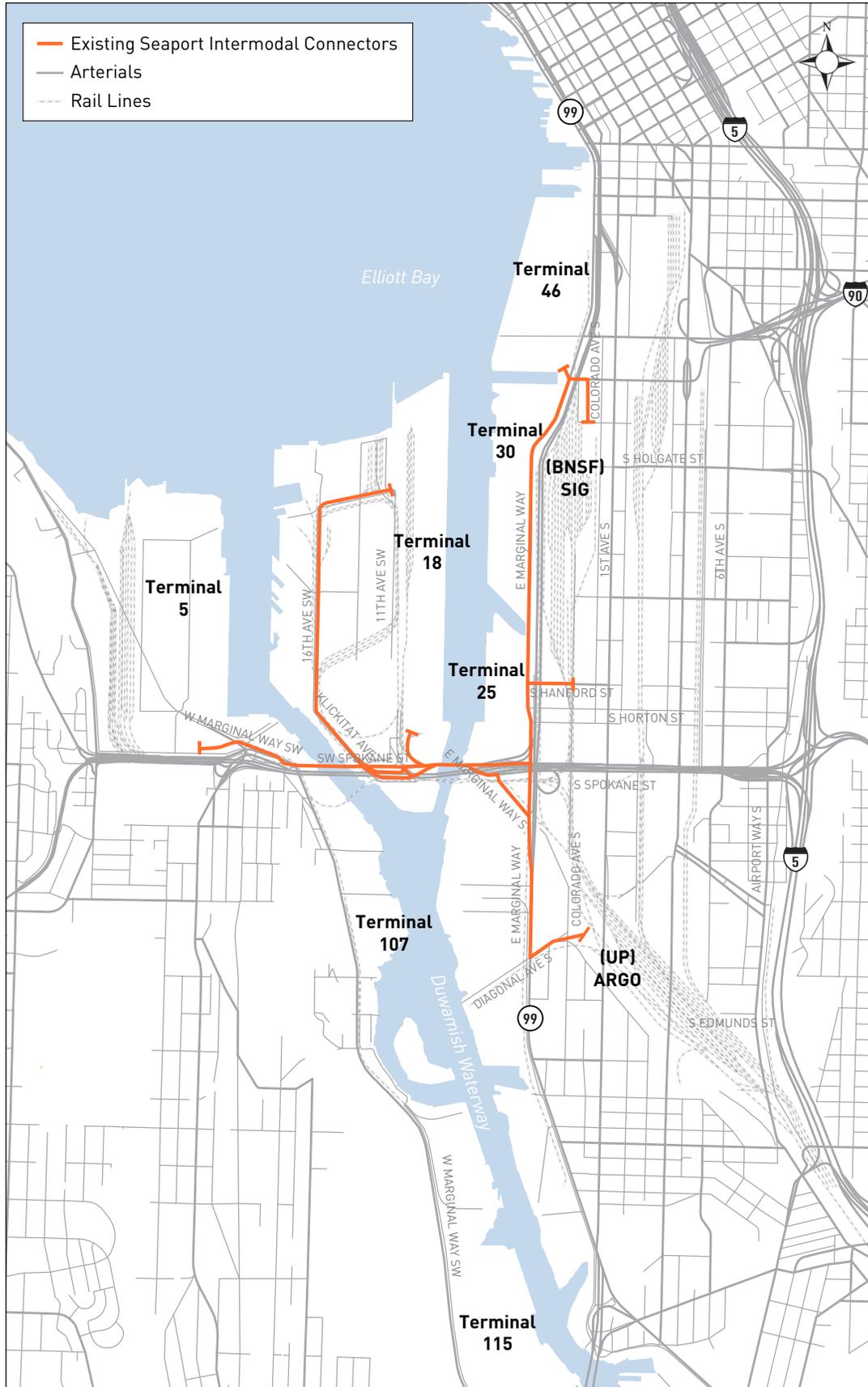


FIGURE 4-2: SEAPORT INTERMODAL CONNECTORS

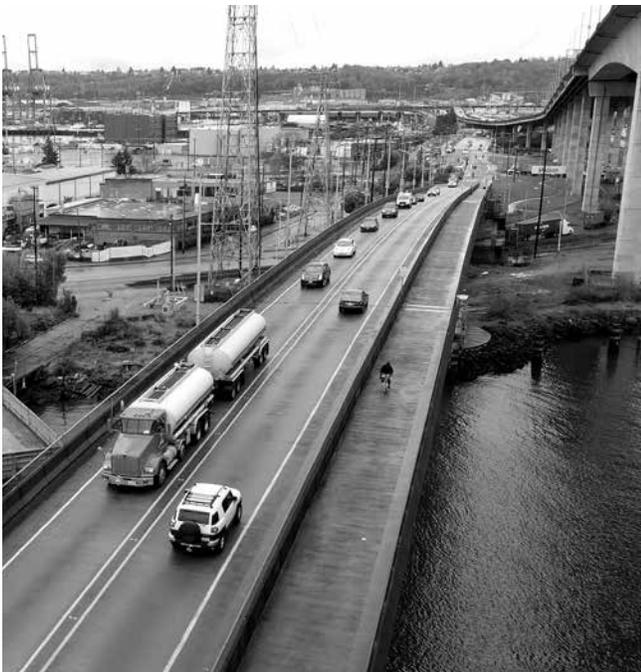


Most of the HHN and the majority of over-legal routes overlap with the recommended freight network. Those segments that aren't on the network did not meet the criteria outlined in this chapter. However, they still play an important role in moving loads via permit throughout the city. While the over-legal routes are mapped, flexibility is required to choose appropriate routes depending on vehicle dimensions and local conditions.

DEVELOPING A COMPREHENSIVE FREIGHT NETWORK

Due to Seattle's rapid population growth and changing economy, there are differences between where and how goods currently move throughout the city, and the 2005 MTS network. Analysis conducted for the FMP identified several streets outside of the MTS network that have high truck volumes, as well as other segments in the 2005 MTS network where truck volumes are lower. Additionally, the MTS network designation does not recognize local freight movements to and from commercial centers, or provide alternate routes in some cases.

With logistics trends moving to smaller and more disbursed warehouse and distribution centers, as well as smaller and more efficient delivery



vehicles, a multifaceted freight network with multiple designations was determined to better meet the city's freight mobility needs.

Based on freight planning best practices, and input from stakeholders and regional and national experts, the following 4 designations for Seattle's freight network were developed:

- **Limited Access Facility** – Limited access facilities support through movements and/or long-distance trips. These facilities include interstate and state highways, such as Interstate 5 (I-5) and State Route 99 (SR 99).
- **Major Truck Street** – This designation is now one of several elements in the overall freight network. As defined previously, a major truck street is an arterial street serving connections to the regional network, between and through industrial land uses (manufacturing/industrial centers and intermodal terminals), commercial districts, and urban centers.
- **Minor Truck Street** – Minor truck streets make connections for goods delivery to urban villages and neighborhood commercial districts. They also provide secondary connections to the major truck street network, thereby creating system redundancy and resiliency.
- **First/Last Mile Connector** – These are defined as locations where short truck movements are required for access to/from key freight activity centers, such as Port facilities and intermodal terminals. These connections are all within the designated manufacturing/ industrial centers (MICs).

As noted earlier, designating a street as part of the freight network will not necessarily change its overall function, design, or character. Rather, the designation underscores the importance of ensuring that goods movement can be accommodated on that street in a safe manner. Figure 4-3 shows the 4 network designations and the criteria for each.

FIGURE 4-3: SEATTLE'S FREIGHT NETWORK DESIGNATIONS AND CRITERIA

<p style="text-align: center;">LIMITED ACCESS</p> <p>Purpose: Long distance trips Land use: Connections between the city and the rest of the region Roadway classification: Highway Truck volumes: All</p>	<p style="text-align: center;">MAJOR TRUCK STREET</p> <p>Purpose: Through trips Land use: Connections to MICs, intermodal facilities, Urban Centers, and the regional system Roadway classification: Minor arterial or higher Truck volumes: 500+ trucks per day</p>
<p style="text-align: center;">MINOR TRUCK STREET</p> <p>Purpose: To/from trips Land use: Connections to and from urban villages and commercial districts; provides secondary through routes for network resiliency Roadway classification: Collector arterial or higher Truck volumes: 500+ trucks per day</p>	<p style="text-align: center;">FIRST/LAST MILE CONNECTORS</p> <p>Purpose: Industrial trips Land use: Connections within the Manufacturing and Industrial Centers (MICs) Roadway classification: Minor arterial or lower, including non-arterial streets Truck volumes: 250+ trucks per day</p>

IDENTIFYING THE RECOMMENDED FREIGHT NETWORK

A series of network analyses and reviews were conducted to assign the 4 facility types to roadways. The following steps were used in the process:

- Evaluate current and future truck volumes
- Establish land use connections
- Provide connectivity within the network
- Review roadway classifications
- Assess resiliency of the network
- Incorporate public input
- Consider other modal priorities

Evaluate truck volumes

The daily volume and type of trucks on any given roadway is a good indicator of the role that street plays in the freight distribution system. Existing truck volumes were collected throughout

Seattle and projected to volumes for year 2035.⁴ A minimum weekday level of truck volumes appropriate with each of the 4 truck network designations was developed, as shown in Table 4-1. Freight Network Minimum Daily Truck Volumes. The thresholds are based on freight planning practices and reflect Seattle's truck volume conditions.⁵

Both the major truck street and minor truck street designations have the same minimum threshold for truck volumes. These designations were differentiated by using the other criteria in the process.

While the minimum threshold for first/last mile connectors is 250 trucks, these segments often see the highest truck volumes in the city.

⁴The data from these analyses are detailed in Chapter 2, which includes sections on existing truck freight trends and future freight flows and anticipated trends.

⁵SDOT and WSP | Parsons Brinckerhoff analysis. August 2015. SFMP Existing and Future Truck Mobility and Access.

TABLE 4-1: FREIGHT NETWORK MINIMUM DAILY TRUCK VOLUMES

Freight Network Designation	Truck Volume
Limited Access Facility	All volumes
Major Truck Street	500+ trucks per day
Minor Truck Street	500+ trucks per day
First/Last Mile Connectors	250+ trucks per day

Establish land use connections

An important consideration in differentiating the various types of truck street designations is how a roadway provides access to surrounding land uses. Table 4-2. Freight Network Land Use Connection describes the considerations given to roadways based on the types of land uses they serve.

TABLE 4-2: FREIGHT NETWORK LAND USE CONNECTION

Freight Network Designation	Supports Freight-Generating Land Uses
Limited Access Facility	All types of freight through the region and to/from manufacturing/industrial centers and urban centers
Major Truck Street	All types of freight to/from and through MICs, intermodal terminals, and urban centers
Minor Truck Street	Primarily goods and service delivery to/from urban villages, and neighborhood commercial districts
First/Last Mile Connectors	Primarily heavy freight to/from industrial locations within manufacturing/industrial centers

Provide connectivity within the network

Our freight street system serves many purposes, from long-distance freight trips traveling through the city to local deliveries going to/from neighborhood commercial districts. Freight relies on both through and local access. Each freight network designation was identified by the primary nature of trips they are intended to serve, as shown in Table 4-3. Freight Network Functional Purpose Designation.

TABLE 4-3: FREIGHT NETWORK FUNCTIONAL PURPOSE DESIGNATION

Freight Network Designation	Functional Purpose
Limited Access Facility	Long-distance trips
Major Truck Street	Through trips
Minor Truck Street	To/from trips
First/Last Mile Connectors	Short trips to/from key industrial locations

Review roadway classifications

Seattle's roads are classified according to different levels of emphasis on traffic movement according to the following hierarchy:⁶

- Interstate/state route
- Principal arterial
- Minor arterial
- Collector arterial
- Non-arterial

⁶SDOT. July 2015. Seattle Comprehensive Plan, Transportation Appendix.

While trucks are allowed on all arterials in the city, roadway classifications were reviewed to ensure the appropriate level was being used for each freight network category. This criterion established the minimum (or maximum) level of functional classification for each designation, as shown in Table 4-4. Freight Network Roadway Classification.

Almost all of the freight network is designated on arterial streets. The only non-arterial segments on the freight network are first/last mile connectors that are within the MICs. They often connect to places where trips are starting or ending. While these roads may not have high enough traffic volumes to be classified as arterials, the percentage of trucks they carry and their access to the Port and industrial lands make them important to the overall freight network.

TABLE 4-4: FREIGHT NETWORK ROADWAY CLASSIFICATION

Freight Network Designation	Roadway Classification
Limited Access Facility	Interstate Freeways
Major Truck Street	Minor arterial or higher
Minor Truck Street	Collector arterial or higher
First/Last Mile Connectors	Minor arterial or lower

Assess redundancy and resiliency of the network

An effective freight network requires redundancy in order to mitigate the risk of everyday unplanned or temporary disruptions (such as traffic incidents or roadway construction) that can affect freight delivery performance. A redundant system reduces the risk that deliveries will fail to meet scheduled deadlines by providing a network that is comprehensive enough to

provide alternative routes as needed. Providing adequate network redundancy is an overarching consideration in developing the recommended freight network.

In addition to creating redundancy for everyday freight movements, another key consideration is to provide a network that will be resilient under more severe circumstances. It is critical to identify facilities that provide alternative routes to navigate the city during major events, such as natural catastrophes like a flood or earthquake, in order to ensure a rapid economic recovery.

During this step, the network was reviewed to provide sufficient alternative routes both north/south and east/west connecting the city. In many cases, the major truck streets provide this function for the limited access roadways, and the minor truck streets serve as alternatives for the major truck streets.

Public Review

The project Advisory Committee provided initial input into the development and application of the freight network category designations. Comments from a series of public meetings with neighborhood and business organizations and 2 public open houses in the fall of 2015 resulted in further refinements to the draft network.

THE RECOMMENDED FREIGHT NETWORK

The recommended freight network map is shown in Figure 4-4. The freight network designations are shown in different colors to easily illustrate how the network functions as a whole. In general, limited access facilities are accessed by major truck streets and, to a lesser degree, by minor truck streets. First/last mile connectors are primarily accessed by major and minor truck streets and are located within the MICs.

FIGURE 4-4: RECOMMENDED FREIGHT NETWORK

