

APPENDIX A

FREIGHT MASTER PLAN STRATEGIC FRAMEWORK MEMORANDUM

MEMORANDUM

Date:	January 31, 2014 updated March 9, 2015	TG:	13152.00
To:	Tony Mazzella, SDOT		
From:	Project Team – Freight Access Project		
cc:	Ian Macek and Ron Borowski, SDOT		
Subject:	Freight Master Plan Strategic Framework		

This memorandum explores several issues and opportunities that have been raised as part of the Freight Access Project, but should be further evaluated within the context of the citywide Freight Master Plan (FMP). The specific topics that have been identified by the project team include:

1. Developing approaches to evaluate and communicate the economic significance of freight and our investments in freight infrastructure, and how freight relates to the regional economy, jobs, and ultimately consumers
2. Evaluating the freight transportation linkages between the Greater Duwamish and Ballard-Interbay Northend Manufacturing and Industrial Centers (MICs) and other major freight generators outside of the City
3. The need to re-evaluate the local street system in the context of freight to identify the criteria and methodology by which to determine a hierarchy of truck streets and associated design guidelines
4. Other policies, guidelines, processes, or standards that should be further evaluated or updated to address potential inconsistencies

Our review of each topic includes a discussion about the issue, and then presents an approach the City could consider to address the issue as part of the FMP.

Background Discussion about the Importance of a Freight Master Plan

Seattle’s industrial and commercial areas are in transition, with heavy industry and distribution functions moving to outlying locations and being replaced by smaller businesses and service providers. The freight transportation needs are changing in parallel, and the system that served an earlier era, needs to adapt as well.

While the Freight Access Project is analyzing access to the MICs and planning for a local truck street system in those areas, it should ultimately be conducted within the context of an FMP. The FMP would help focus and prioritize efforts, and provide solid policy basis for specific projects or programs that might be identified as part of the Freight Access Project effort.

An FMP would typically address the following areas:

- Explain the role that freight movement now plays, and will play, in Seattle’s economic growth and quality of life
- Identify the assets and systems that together make up Seattle’s freight movement network, and plan for their development and maintenance
- Link freight transportation needs and plans to Seattle’s land use planning
- Address the critical need for co-existence of freight with other transportation modes
- Identify and prioritize projects, initiatives, and other actions to provide the goods movement capability Seattle needs, while mitigating adverse impacts on the environment and the community.

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The essential nature of freight transportation guarantees that the goods Seattle needs will be shipped and delivered. Freight carriers and customers will adapt to changing circumstances, but without a coherent plan, that adaptation will become increasingly difficult for participants and increasingly disruptive to the community.

Regional and municipal freight and goods movement plans have been completed by many planning agencies around the nation, and Seattle can draw on those efforts to facilitate development and implementation of the FMP. The discussion below has focused on several key topics that would be better explored as part of the FMP. The potential approaches that are summarized are based upon elements of FMPs, or equivalent plans, from Portland, Sacramento, San Francisco, Chicago, and other jurisdictions.

Topic 1: The Economic Significance of Freight

Definition of the Issue

The Freight Access Project will begin to investigate the potential economic significance of freight by better quantifying the impacts of delay on the street network and the costs of infrastructure improvements to maintain good access into and out of, and between, the Greater Duwamish and Ballard-Interbay Northend MICs. However, the broader question should explore the economic significance of freight and our investments in freight infrastructure in the City, and how those investments relate to the regional economy, jobs, and ultimately consumers.

Possible Approach to the FMP

Many cities, regions, and states around the country have begun to develop a process of understanding and communicating the significance of freight in the regional economy that starts with the identification of “goods movement-dependent industries.” These industries are defined as those that generate the largest share of demand for freight transportation services and that spend the most on these services. Typically, industries such as manufacturing, construction, warehousing and distribution, and retail and wholesale trade are identified as the goods movement-dependent industries. These industries can then be analyzed to determine the share of Gross Domestic Product (GDP) and employment they contribute to the economy. By analyzing the economic data further, it is possible to get a better understanding of the type of manufacturing and trade-oriented businesses that comprise this portion of the regional economy and to help elected officials and the general public better understand the range of business activities that drive goods movement demand.

Understanding the types of economic activities that drive goods movement demand in the city also allows for determination of the logistics and supply chain patterns that support the industries and determine freight transportation system performance requirements. By examining how the economy is likely to evolve and understanding critical trends in logistics and supply chains for the goods movement-dependent industries, the City will be better able to plan for a goods movement system that meets the needs of users and will be able to communicate to the general public what the economic value of the goods movement system is in real dollars.

Another aspect of examining the economic significance of the freight system is to understand the types of jobs that are provided in the goods movement sector. A number of cities and regions have looked beyond the aggregate employment numbers for goods movement service providers (motor carriers, logistics service providers, warehouse operators, rail carriers, marine terminal operators, etc.) to better understand the types of jobs they provide, the educational requirements for these jobs, and the pay scales. The Metropolitan Transportation Commission (MTC) of the San Francisco Bay Area was one of the first regional agencies to do this type of analysis and similar

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analyses have been conducted by the Southern California Association of Governments (SCAG). What these agencies were able to determine was that goods movement service providers are a source of job diversity in an urban economy, providing jobs that require relatively high pay for relatively low levels of education as compared to other jobs in the service sectors. Conducting this type of analysis as part of the FMP can help support investment in freight system improvements by demonstrating economic value.

Topic 2: Evaluating City Freight Linkages to Regional Demand

Definition of the Issue

The City of Seattle, like many cities around the country, is experiencing continued development pressure around industrial areas. While efforts will continue to be made to ensure the long-term health and viability of Seattle's MICs, the ability to expand industrial activity within the City is limited. This means that growth in manufacturing and especially in distribution centers and warehousing, is likely to occur outside of the city. A prime example is the continuing growth of the Kent Valley MIC, where much of the distribution to Seattle residents and businesses is centered.

While the Freight Access Project will examine current origin-destination patterns, changes in the intensity and type of freight uses could impact future linkages that are needed between the study area and other industrial areas within the region and state. The FMP can provide an opportunity to examine those regional linkages to promote the efficient delivery of goods to other areas outside of the City, that impact the industrial and manufacturing areas, and other economic centers within the City.

The 2014 Washington State Freight Mobility Plan illustrates the supply chain with relevant commodities including aerospace, milk, potatoes and wheat, as shown below:

Grain Shipment Intermodal Facilities Located on Washington State Economic Rail and Waterway Corridors



As noted in the image above, the wheat industry in Washington State relies on highway, port and rail facilities. Congestion and inefficiency in these facilities impacts the productivity and profitability of this industry. The FAP will identify facilities within the MICs and between the MICs but as noted in most of the key supply chains in the WSDOT Freight Mobility Plan, many facilities important to the supply chain extend beyond the MICs.

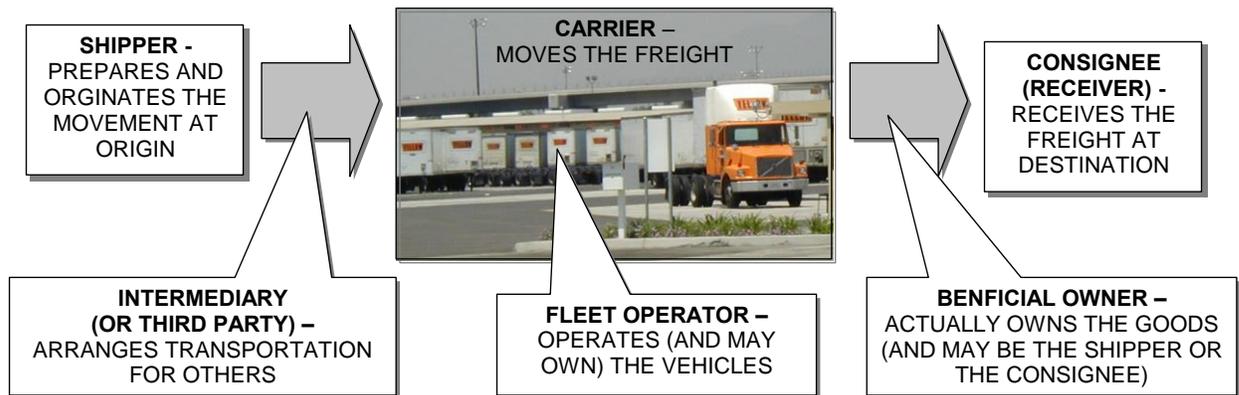
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Possible Approach to the FMP

In order to address this issue, the FMP could examine the major intercity origin-destination (O-D) patterns that need to be supported to connect with the Greater Duwamish and Ballard-Interbay Northend MICs. This could be based on some analysis of supply chains for major industries likely to grow in the area taking into consideration major O-D trends.

Exhibit 1 provides an illustration of the major participants in the supply chain of freight transportation that should be considered and explored on a citywide and regional level.

Exhibit 1: Freight Transportation Participants



- **Shippers** (typically manufacturers or other producers and distributors) prepare freight for transport and originate the movement.
- **Consignees** or **receivers** (typically customers of the shippers) receive the freight at the destination.
- The shipper or receiver may or may not actually own the goods. The party who owns the goods being shipped is the **beneficial owner**.
- **Carriers** (transportation service providers) are firms that move freight by one or more mode. The direct customer of a freight carrier may be a shipper, a consignee, a beneficial owner, an intermediary, or even another carrier.
- **Fleet operators** operate (and may also own and maintain) the vehicles used to move freight. Fleet operators include both **for-hire carriers** (that transport freight for customers as the primary business) and **private operators** (that transport their own freight, usually for final delivery to customers).
- **Intermediaries** or **third parties** (including freight forwarders, shipper's agents, third party logistics managers, and brokers) arrange transportation on behalf of shippers or receivers.

While the most obvious examples of freight transportation are the large trucks, trains, airplanes, and ships that move to, from, and through the region, the freight transportation supply chain is actually far more complex, an integral part of almost everything Seattle residents and businesses do on a daily basis.

Some of the supply chain information including intermodal connectors will be developed in the Freight Access Project and can feed directly into planning at a system level during the FMP. The FMP should address major inter-city corridors of movement linking the MICs in Seattle with those areas with a large concentration of freight providers outside of the City. The corridors should include connectivity between the Greater Duwamish and Ballard-Interbay Northend MICs, regional highway systems to facilitate the movement of freight to regional and far-away destinations, key

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freeway links and links that provide connectivity to external distribution centers via major arterial corridors.

Topic 3: Better Defining a Local Truck Street System

Definition of the Issue

While all arterial streets in the City are considered truck routes, the 2005 Transportation Strategic Plan designated a network of Major Truck Streets to serve as primary truck routes. The Major Truck Street designation implies the roadway is an arterial street that accommodates significant freight movement through the City and to and from major freight generators. The designation is important in helping guide decision making regarding street design, traffic management, and maintenance activities to accommodate freight transportation needs.

The current designation needs to be revisited to also include local streets that serve as important freight connections, such as those streets that connect directly to inter-modal facilities or serve as alternative routes to heavily congested parallel facilities. In addition, a hierarchy of truck streets should be explored recognizing that different streets and corridors serve various freight purposes and different levels of freight demand. In other words, not all truck streets should be treated equal, especially due to the increase in modal conflicts as users compete for the limited amount of public right-of-way that is available. For example, the City of Portland Freight Master Plan describes how a hierarchy of truck streets helps in distinguishing where trucks need to be “designed for,” rather than just be “accommodated.”

The Freight Access Project is exploring improvements to the local street system within and between the MICs, and those corridors connecting to the regional highway system. Working from a more defined truck street system, that includes all classes of roadways, categorizes various freight functions and demands, and provides for improved design guidance, will assist in identifying and prioritizing projects and balancing the demand of various modes. However, a revised truck street system is a significant policy decision and needs to consider the entire city, which would be more appropriate as part of the FMP.

Possible Approach to the FMP

One approach to better define the truck street system would be to determine a truck street hierarchy. Such a concept should not be limited by just those roadways designated as Major Truck Streets today, but start by re-evaluating the entire local street system within the City. The basic idea would be to develop different levels of truck street designations with higher levels giving greater priority to truck uses (and in some cases, may involve significant restrictions on non-truck uses) and lower levels providing greater restrictions to truck operations in order to allow for greater levels of use by autos, transit, bicycles, and pedestrians. The types of considerations that would be built into the truck street hierarchy would include:

- Access management and geometrics
- Weight and height restrictions
- Signalization
- Time of day operating restrictions
- On and off-street loading management
- Local and through operations
- Connectivity to freight activity centers, intermodal hubs and terminals, and freeways
- Existing or planned modal facilities (bike lanes, transit only-lanes, etc.)

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The designation of a truck street hierarchy would also help guide investments in the goods movement system to the areas of greatest need and greatest payoff. This approach would be more consistent with the idea of road typologies that jurisdictions have been developing as part of their approach to implementing Complete Streets policies.

In order to develop a truck street hierarchy, a set of criteria should be established to define different levels of operating restrictions. Some of these criteria could be quantitative while most would be qualitative. Criteria can be grouped into three broad categories:

- **Function** - These criteria would consider the various functions that truck streets need to play in a comprehensive goods movement system and ensure that the hierarchy adequately addresses all functional needs.
- **Form** – These criteria would consider the street characteristics to ensure that truck streets have necessary physical characteristics to accommodate truck operations.
- **Conflict Management** – These criteria would examine the degree to which other users may need access to truck streets and to ensure that conflicts are effectively managed in the designation of truck streets.

It is assumed that many of these criteria are already incorporated into the existing truck street designations. However, by examining these criteria more explicitly, a hierarchy could be created for better allocation of scarce street right-of-way while still meeting freight user needs.

Examples of each of the categories of criteria are described below. Quantitative and qualitative criteria can be developed for each criterion.

Function Criteria

- **Primary System:** Major corridors in the MICs that provide access to freight centers that are lined by industrial users or corridors that provide connectivity to the interstate and state highway system, between MICs, or to other freight hubs and intermodal terminals
- **Secondary System:** Corridors that provide access to industrial areas, but where other non-industrial uses are present
- **Delivery Network:** Corridors providing access to local retail and commercial centers
- **Specialized Uses:** Streets for over-dimensional, heavy-haul, and hazardous materials

Form Criteria

- Does the roadway have horizontal and vertical clearance constraints that limit certain types of truck access?
- Are there bridge weight restrictions?
- Are lane widths sufficient to accommodate heaviest trucks?
- Turning radii or other geometric constraints to access the street or access destinations along the street.
- Signal spacing and potential impacts on truck operations.
- Availability of both on and off-street loading areas.
- Sensitive receptors for hazardous materials exposure (for haz mat route designation)

Conflict Management Criteria

- Potential points of conflict at modal access locations – e.g., is there sufficient space to separate users during turning movements
- Can conflicts in use be managed through time-of-use restrictions – e.g., do users have different time-of-use patterns
- Are there alternative routing options for users that still provide connectivity to an overall network

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As part of the development of the FMP, the City can establish a refined set of criteria and conduct a detailed review of the local street system using the criteria to determine if there are multiple levels of truck streets that could be designated in a connected network. Potentially two or more levels of truck street designations could be incorporated in a re-designed truck street system.

Topic 4: Other Policies and Standards

There are a range of other policies, standards, and processes that may need to be evaluated and addressed as part of the FMP to identify and correct inconsistencies. Below are a few specific items raised by the project team members during the course of the project to date.

Right-of-Way Improvements Manual

Streets in the Greater Duwamish and Ballard-Interbay Northend MICs, as well as the corridors connecting to the regional highway system, need to fully accommodate truck movements without impeding their mobility or compromising safety of other users. The City's Right-of-Way (ROW) Improvements Manual is a resource to guide the design of improvements within the public street right-of-way while considering the access and mobility needs of all users, including freight. While it does acknowledge Major Truck Streets and the need to accommodate the movement of trucks along those corridors, it often presents conflicting guidelines and does not provide for a clear way for officials to make decisions regarding the amenities provided with the ROW. The manual will need to be evaluated and updated to identify and correct any inconsistencies.

Consistency with Other Model Plans / Complete Streets Process

The City has undertaken and completed a number of model plans over the past several years, such as the Pedestrian Master Plan, Bicycle Master Plan, and Transit Master Plan. Each plan has identified important corridors for each respective mode. While the Freight Access Project will identify needed investments in freight infrastructure within and between the Greater Duwamish and Ballard-Interbay Northend MICs, and the potential conflicts with other modal plans or projects, it will not be able to fully resolve the conflict without a more complete policy basis for Seattle's freight strategy, which the FMP will help develop. This will help inform and update the City's existing Complete Streets Review Process and framework for making decisions regarding the design of facilities within the public right-of-way.

APPENDIX B

NATIONAL HIGHWAY SYSTEM (NHS) ROUTES IN SEATTLE

NHS Routes in the City of Seattle

County	City	NHS Route Description	From	To
King	Seattle	Olson Pl SW	SW Roxbury St	Olson/Myers Park-N-Ride
King	Seattle	Olson Pl SW	Olson/Myers Park-N-Ride	1st Ave S / Myers Way S
King	Seattle	Myers Way S	Seattle CL (0.17mi N Of S 101st St)	Olson Myers P&R
King	Seattle	1st Ave S / Myers Way S	Olson Myers Park-N-Ride Entrance/Exit	Olson Pl SW
King	Seattle	1st Ave S	Olson Pl SW	S Cloverdale St
King	Seattle	S Cloverdale St	SR 509 (North Bound Off Ramp)	SR 509 (South Bound Lanes)
King	Seattle	S Albro Pl	Corgiat Dr S	Stanley Ave S
King	Seattle	S Albro Pl	Stanley Ave S	Hardy St
King	Seattle	S Albro Pl	Hardy St	Ellis Ave S
King	Seattle	Ellis Ave S	S Albro Pl	E Marginal Way
King	Seattle	Corson Ave S	S Michigan St	Airport Way S
King	Seattle	East Marginal Way S	Seattle South C/L (0.26mi S/O 16th Ave S)	16th Ave S
King	Seattle	East Marginal Way S	16th Ave S	14th Ave S
King	Seattle	East Marginal Way S	14th Ave S	Carleton Ave S
King	Seattle	East Marginal Way S	Carleton Ave	S Michigan Ave
King	Seattle	East Marginal Way S	S Michigan Ave	1st Ave S (Bridge)
King	Seattle	Seattle Blvd S	4th Ave S	S Dearborn St
King	Seattle	Airport Way S	S Dearborn St	S Royal Brougham Way
King	Seattle	Airport Way S (SB)	S Royal Brougham Way	I-5 (Airport South bound Off Ramp)
King	Seattle	Airport Way S	I-5 (Airport SB Off Ramp)	S Holgate S St
King	Seattle	Airport Way S	S Holgate S St	S Lander N St
King	Seattle	Airport Way S	S Lander N St	S Spokane St
King	Seattle	Airport Way S	S Spokane St	S Alaska St
King	Seattle	Airport Way S	S Alaska St	S Lucile St
King	Seattle	Airport Way S	S Lucile St	13th Ave S
King	Seattle	Airport Way S	13th Ave S	S Hardy St
King	Seattle	Airport Way S	S Hardy St	Military Rd S Connection / S Rose St
King	Seattle	Airport Way S	Military Rd S Connection / S Rose St	Seattle South C/L (0.4mi S Of S Norfolk St)
King	Seattle	Airport Way S	Tukwila E C/L (2.13mi S Of S Hardy St)	Seattle South C/L (0.26mi S Of S Norfolk St)
King	Seattle	Airport Way S (NB)	I5 Airport Nb Off	Airport Way S
King	Seattle	11th Ave SW	16th Ave SW	SW Spokane St
King	Seattle	SW Roxbury St	Olson Pl SW	14th Ave SW
King	Seattle	SW Roxbury St	14th Ave SW	35th Ave SW
King	Seattle	Duwamish Ave S	S Spokane SR St	E Marginal Way S
King	Seattle	S Dawson St	4th Ave S	Truck/Rail Facility Entrance
King	Seattle	S Alaska St	M L King Jr Way S	S Columbian Way
King	Seattle	S Columbian Way (South Leg)	S Alaska St	15th Ave S
King	Seattle	15th Ave S	S Columbian Way (South Leg)	S Nevada St
King	Seattle	15th Ave S	S Nevada St	S Columbian Way (North Leg)
King	Seattle	S Columbian Way (North Leg)	15th Ave S	14th Ave
King	Seattle	West Seattle Freeway	14th Ave	I-5 NB Ramp(Center of Overpass)
King	Seattle	West Seattle Freeway	I-5 NB Ramp(Center of Overpass)	Alaskan Way / East Marginal Way S Xings
King	Seattle	West Seattle Freeway (Bridge)	Alaskan Way / East Marginal Way S Xings	Delridge Rmps
King	Seattle	West Seattle Freeway (Bridge)	Delridge Ramps	35th Ave SW
King	Seattle	Fauntleroy Way SW	35th Ave SW	SW Avalon Way
King	Seattle	Fauntleroy Way SW	SW Avalon Way	SW Alaska St
King	Seattle	Fauntleroy Way SW	SW Alaska St	SW Edmunds St
King	Seattle	Fauntleroy Way SW	SW Edmunds St	SW Findlay St
King	Seattle	Fauntleroy Way SW	SW Findlay St	SW Graham St
King	Seattle	Fauntleroy Way SW	SW Graham St	California Ave SW
King	Seattle	Seattle Fwy E (East Bound)	Diverge W Seattle Fwy East Bnd Ex S Columbian Way	S Columbian Way at 14th Ave
King	Seattle	SW Morgan St	Fauntleroy Way SW	35th Ave SW
King	Seattle	Highland Park Way SW	West Marginal Way SW	SR 99 / W Marginal Way S
King	Seattle	S Michigan St	E Marginal Way	Corson Ave S
King	Seattle	Stanley Ave S	S Hardy St	S Albro Pl
King	Seattle	S Hardy St	Stanley Ave S	Airport Way S
King	Seattle	35th Ave SW	Fauntleroy Way SW	Avalon Way SW
King	Seattle	35th Ave SW	Avalon Way SW	SW Alaska St
King	Seattle	35th Ave SW	SW Alaska St	SW Brandon St
King	Seattle	35th Ave SW	SW Brandon St	SW Morgan St
King	Seattle	35th Ave SW	SW Morgan St	SW Myrtle St
King	Seattle	35th Ave SW	SW Myrtle St	SW Holden S St
King	Seattle	35th Ave SW	SW Holden St	SW Thistle St

NHS Routes in the City of Seattle

County	City	NHS Route Description	From	To
King	Seattle	35th Ave SW	SW Thistle St	SW Roxbury St
King	Seattle	S Hanford St	E Marginal Way S	1st Ave S
King	Seattle	Royal Brougham Way S	4th Ave S	Airport Way S
King	Seattle	Delridge Way SW	W Marginal Way SW	SW Andover St
King	Seattle	Delridge Way SW	SW Andover St	SW Dakota St
King	Seattle	Delridge Way SW	SW Dakota St	SW Juneau St
King	Seattle	Delridge Way SW	SW Juneau St	Sylvan Way SW
King	Seattle	Delridge Way SW	Sylvan Way SW	SW Thistle St
King	Seattle	Delridge Way SW	SW Thistle St	SW Barton St
King	Seattle	Delridge Way SW	SW Barton St	17th Ave SW
King	Seattle	17th Ave SW	Delridge Way SW	SW Roxbury St
King	Seattle	SW Admiral Way	Calif Ave SW	SW Avalon Way / SW Spokane Wb
King	Seattle	West Marginal Way SW	Marginal Pl W	SW Edmunds St
King	Seattle	West Marginal Way SW	SW Edmunds St	Highland Park Way SW
King	Seattle	SW Spokane St	W Marginal Way SW	11th Ave SW
King	Seattle	SW Spokane St	11th Ave SW	S Spokane St
King	Seattle	S Spokane (N Route & S Route) St	SW Spokane St	E Marginal Way S
King	Seattle	SW Florida St	13th Ave SW	16th Ave SW
King	Seattle	16th Ave SW / Klickitat Ave SW	SW Florida St	SW Spokane St
King	Seattle	16th Ave SW / Klickitat Ave SW	11th Ave SW	13th Ave SW
King	Seattle	11th Ave SW	SW Spokane St	Klickitat Ave SW
King	Seattle	14th Ave S	C/L Seattle/S Director St	Dallas Ave S / 16th Ave S
King	Seattle	16TH Ave S (Temporarily Closed)	Tukwila-Seattle C/L	E Marginal Way
King	Seattle	4th Ave S	S Royal Brougham Way	Airport Way S
King	Seattle	4th Ave S	Airport Way S	Yesler Way
King	Seattle	4th Ave / 4th Ave S	Yesler Way	Madison St
King	Seattle	4th Ave	Madison St	Seneca St
King	Seattle	4th Ave	Seneca St	Union St
King	Seattle	4th Ave	Union St	Battery St
King	Seattle	Duwamish Ave S	Alaskan Way NB Ramp	E Marginal Way S
King	Seattle	East Marginal Way S	Duwamish Ave S	S Spokane St (East Bound)
King	Seattle	East Marginal Way S	S Spokane St (East Bound)	S Hinds St
King	Seattle	S Henderson St	Martin Luther King Jr Way S	Renton Ave S
King	Seattle	S Henderson St	Renton Ave S	Rainier Ave S
King	Seattle	S Plum St	Rainier Ave S	23rd Ave S
King	Seattle	Swift Ave S	S Albro Pl	S Eddy St
King	Seattle	S Myrtle St / Swift Ave S	S Eddy St	32nd Ave S
King	Seattle	S Othello St / S Myrtle Pl	32nd Ave S	Martin Luther King Jr Way
King	Seattle	8th Ave	Facility	Stewart St
King	Seattle	9th Ave N	Westlake Ave N	Mercer St
King	Seattle	9th Ave N / 9th Ave	Mercer St	Westlake Ave
King	Seattle	9th Ave	Stewart St	Facility
King	Seattle	W Nickerson St	15th Ave W	13th Ave W
King	Seattle	W Nickerson St	13th Ave W	12th Ave W
King	Seattle	W Nickerson St	12th Ave W	3rd Ave W
King	Seattle	W Nickerson St	3rd Ave W	Queen Anne Ave N
King	Seattle	Nickerson St	Queen Anne Ave N	Westlake Ave N / SR 99
King	Seattle	Westlake Ave N	SR 99	Newton St
King	Seattle	Westlake Ave N	Newton St	9th Ave N
King	Seattle	Westlake Ave N	9th Ave N	Harrison St
King	Seattle	Westlake Ave N	Harrison St	Denny Way
King	Seattle	Westlake Ave	Denny Way	Stewart St
King	Seattle	Westlake Ave	Stewart St	Olive Way
King	Seattle	S Walker St	23rd Ave S	Rainier Ave S
King	Seattle	S Dearborn St	Seattle Blvd S	7th Ave S
King	Seattle	S Dearborn St	7th Ave S	Rainier Ave S
King	Seattle	2nd Ave	Wall St	Stewart St
King	Seattle	2nd Ave	Stewart St	Pine St
King	Seattle	2nd Ave	Pine St	Pike St
King	Seattle	2nd Ave	Pike St	Marion St
King	Seattle	2nd Ave	Marion St	Yesler Way
King	Seattle	2nd Ave Ext S	Yesler Way	S Jackson St
King	Seattle	2nd Ave Extension S	S Jackson St	4th Ave S

NHS Routes in the City of Seattle

County	City	NHS Route Description	From	To
King	Seattle	S Jackson St	Alaskan Way S	1st Ave S
King	Seattle	S Jackson St	1st Ave S	2nd Ave S
King	Seattle	S Jackson St	2nd Ave S	2nd Avenue Extended S
King	Seattle	S Jackson St	2nd Avenue Extended S	5th Ave S
King	Seattle	S Jackson St	5th Ave S	14th Ave S
King	Seattle	Harrison St	5th Ave N	Broad St
King	Seattle	W Galer Flyover	16th Ave W / BN-Interbay Yard	Elliott Ave W
King	Seattle	Queen Anne Ave N	W Roy St	Mercer St
King	Seattle	James St	2nd Ave	4th Ave
King	Seattle	James St	4th Ave	7th Ave
King	Seattle	James St	7th Ave	Boren Ave
King	Seattle	Martin Luther King Way S	Rainier Ave S	S Alaska St
King	Seattle	Martin Luther King Way S	S Alaska St	S Othello St
King	Seattle	Martin Luther King Way S	S Othello St	Seattle South C/L (0.13mi N Of Boeing Access Rd)
King	Seattle	23rd Ave S	Rainier Ave S	S Jackson St
King	Seattle	23rd Ave S	S Jackson St	S Yesler Way
King	Seattle	24th Ave E / 23rd Ave E / 23rd Ave	E Yesler Way	Boyer Ave E
King	Seattle	East Montlake Pl E / 24 Ave E	Boyer Ave E	E Lake Washington Blvd
King	Seattle	Columbia St	2nd Ave	1st Ave
King	Seattle	Leary Ave NW	NW Market St	17th Ave NW
King	Seattle	NW Leary Way	17th Ave NW	Leary Way NW
King	Seattle	Leary Way NW	NW Leary Way	8th Ave NW
King	Seattle	Leary Way NW	8th Ave NW	NW 36th St
King	Seattle	N 36th St	Leary Way NW	Fremont Ave N
King	Seattle	Fremont Ave N	N 35th St	N 34th St
King	Seattle	Fremont Ave N	N 34th St	Nickerson St
King	Seattle	Marion St	2nd Ave	6th Ave
King	Seattle	Madison St	2nd Ave	4th Ave
King	Seattle	Madison St	4th Ave	6th Ave
King	Seattle	Madison St	6th Ave	7th Ave
King	Seattle	Madison St	7th Ave	9th Ave
King	Seattle	Madison St	9th Ave	Broadway
King	Seattle	E Madison St	Broadway	20th Ave
King	Seattle	E Madison St	20th Ave	23rd Ave
King	Seattle	Alaskan Way	Yesler Way	Madison Way
King	Seattle	Alaskan Way	Madison St	Broad St
King	Seattle	Broad St	Alaskan Way	Elliott Ave
King	Seattle	Elliott Ave	Broad St	Denny Way
King	Seattle	Elliott Ave W	Denny Way	Western Ave W
King	Seattle	Elliott Ave W	Western Ave W	W Mercer Pl
King	Seattle	Elliott Ave W	W Mercer Pl	W Galer St
King	Seattle	15th Ave W	W Galer St	W Dravus St
King	Seattle	15th Ave W	W Armour St	W Bertona St
King	Seattle	15th Ave W	W Dravus St	W Emerson St
King	Seattle	15th Ave NW (Ballard Br)	W Emerson St	NW 50 St
King	Seattle	15th Ave NW	NW 50th St	NW Market St
King	Seattle	15th Ave NW	NW Market St	NW 85th St
King	Seattle	15th Ave NW	NW 85th St	NW 87th St
King	Seattle	Holman Rd NW	NW 87th St	Greenwood Ave N / N 105th St
King	Seattle	N Northgate Way / N 105th St	Greenwood Ave N	Meridian Ave N
King	Seattle	N Northgate Way	Meridian Ave N	Corliss Ave N
King	Seattle	N Northgate Way	Corliss Ave N	1st Ave NE
King	Seattle	NE Northgate Way	1st Ave NE	3rd Ave NE
King	Seattle	NE Northgate Way	3rd Ave NE	Roosevelt Way NE
King	Seattle	NE Northgate Way	Roosevelt Way NE	15th Ave NE
King	Seattle	NE Northgate Way	15th Ave NE	Lake City Way N
King	Seattle	Seneca St	1st Ave	2nd Ave
King	Seattle	Seneca St	2nd Ave	4th Ave
King	Seattle	Elliott Ave	Broad St	Elliot Ramp To SR 99
King	Seattle	Western Ave	Bell St / SR-99 Off Ramp	Broad St
King	Seattle	Western Ave	Broad St	W Denny Way
King	Seattle	W Western Ave	W Denny Way	Elliott Ave W
King	Seattle	Union St	5th Ave	4th Ave

NHS Routes in the City of Seattle

County	City	NHS Route Description	From	To
King	Seattle	1st Ave S	1 Ave (South Ramps)	S Royal Brougham Way
King	Seattle	1st Ave S	Edgar Martinez Dr S	S Spokane St
King	Seattle	1st Ave S	S Spokane St	E Marginal Way S
King	Seattle	Pike St	2nd Av	4th Ave
King	Seattle	Pike St	4th Ave	9th Ave
King	Seattle	Pike St	9th Ave	Boren Ave
King	Seattle	Battery St	4th Ave	6th Ave
King	Seattle	Aurora Ave	6th Ave	Denny Way
King	Seattle	Pine St	Boren Ave	9th Av
King	Seattle	Pine St	9th Ave	5th Ave
King	Seattle	Pine St	5th Ave	2nd Ave
King	Seattle	4th Ave S	E Marginal Way	S Dawson St
King	Seattle	4th Ave S	S Dawson St	Costco Ent
King	Seattle	4th Ave S	Costco Ent	S Spokane St
King	Seattle	4th Ave S	S Spokane St	S Horton St
King	Seattle	4th Ave S	S Horton St	S Lander St
King	Seattle	4th Ave S	S Lander St	S Royal Brougham Way
King	Seattle	Olive Way	Stewart ST	Westlake Ave / 5th Ave
King	Seattle	Olive Way	5th Ave	7th Ave
King	Seattle	Olive Way	7th Ave	Terry Ave
King	Seattle	Olive Way	Terry Ave	Minor Ave
King	Seattle	Olive Way	Minor Ave	I-5 / Olive (North Bound On Ramp)
King	Seattle	E Olive Way	I-5 Olive NB On	Bellevue Ave
King	Seattle	E Olive Way	Bellevue Ave	E Denny Way
King	Seattle	E Olive Way	E Denny Way	Belmont Ave E
King	Seattle	E Olive Way	Belmont Ave E	Broadway E
King	Seattle	5th Ave N	Roy St	Harrison St
King	Seattle	5th Ave N	Harrison St	Broad St
King	Seattle	5th Ave N	Broad St	Denny Way
King	Seattle	5th Ave	Pine St	Union St
King	Seattle	Eastlake Ave E	Fairview Ave N	E Aloha St
King	Seattle	Eastlake Ave E	Aloha St	Roy St
King	Seattle	Eastlake Ave E	Roy St	Mercer St
King	Seattle	Eastlake Ave E	Mercer St	Stewart St
King	Seattle	Stewart St	Eastlake Ave E	Boren Ave
King	Seattle	Stewart St	Boren Ave	9th Ave
King	Seattle	Stewart St	9th Ave	8th Ave
King	Seattle	Stewart St	8th Ave	7th Ave
King	Seattle	Stewart St	7th Ave	Westlake Ave
King	Seattle	Stewart St	Westlake Ave	5th Ave
King	Seattle	Stewart St	5th Ave	2nd Ave
King	Seattle	6th Ave	Madison St	Marion St
King	Seattle	Fairview Ave N	Denny Way	Mercer St
King	Seattle	Fairview Ave N	Mercer St	Valley St
King	Seattle	7th Ave	Stewart St	Olive Way
King	Seattle	Wall St	Denny Way	5th Ave
King	Seattle	Wall St	5th Ave	2nd Ave
King	Seattle	Broad St	Elliott Ave	Western Ave
King	Seattle	Broad St	Western Ave	1st Ave
King	Seattle	Broad St	1 Ave	Denny Way
King	Seattle	Broad St	Denny Way	Harrison St
King	Seattle	Broad St	Harrison St	Westlake Ave N
King	Seattle	Denny Way	Western Ave W	2nd Ave
King	Seattle	Denny Way	2nd Ave	4th Ave
King	Seattle	Denny Way	4th Ave	Westlake Ave
King	Seattle	Denny Way	Westlake Ave	Terry Ave
King	Seattle	Denny Way	Terry Ave	Fairview Ave
King	Seattle	Denny Way	Fairview Ave	Stewart St
King	Seattle	Denny Way	Stewart St	Melrose Ave
King	Seattle	E Denny Way	Melrose Ave	Bellevue Ave
King	Seattle	E Denny Way	Bellevue Ave	E Olive Way
King	Seattle	2nd Ave S	S King St	S Jackson St
King	Seattle	Bellevue Ave E	E Denny Way	Olive Way

NHS Routes in the City of Seattle

County	City	NHS Route Description	From	To
King	Seattle	15th Ave NE	NE 145th St	NE 140th St
King	Seattle	15th Ave NE	NE 140th St	Pinehurst Way N
King	Seattle	Pinehurst Way NE / Roosevelt Way NE	15th Ave NE	NE Northgate Way
King	Seattle	Roosevelt Way NE	NE Northgate W	NE 92nd St
King	Seattle	Roosevelt Way NE	NE 92nd St	NE 85th St
King	Seattle	Roosevelt Way NE	NE 85th St	NE 75th St
King	Seattle	Roosevelt Way NE	NE 75th St	NE 73rd St
King	Seattle	Roosevelt Way NE	NE 73th St	NE 65th St
King	Seattle	Roosevelt Way NE	NE 65th St	NE 45th St
King	Seattle	Roosevelt Way NE	NE 45th St	Eastlake Ave NE (NE 41st St)
King	Seattle	Valley St	Westlake Ave N	Fairview Ave N
King	Seattle	Fairview Ave N	Valley St St	East Lake Ave E
King	Seattle	Eastlake Ave E	Fairview Ave N	E Boston St
King	Seattle	Eastlake Ave E	E Boston St	E Hamlin St
King	Seattle	Eastlake Ave E	E Hamlin St	Fuhrman Ave E
King	Seattle	Eastlake Ave E (University Br)	Fuhrman Ave E	NE 40th St
King	Seattle	Eastlake Ave NE	NE 40th St	NE 41st St
King	Seattle	11th Ave NE	Eastlake Ave NE	NE 45th St
King	Seattle	11th Ave NE	NE 45th St	NE 50th St
King	Seattle	11th Ave NE / 12th Ave NE	NE 50th St	NE 75th St
King	Seattle	12th Ave NE	NE 75th St	SR 522 / Lake City Way N
King	Seattle	W Mercer St / W Mercer Pl	Elliott Ave W	1st Ave N
King	Seattle	Mercer St / W Mercer St	1st Ave N	Dexter Ave N
King	Seattle	Mercer St	Dexter Ave N	9 Ave N
King	Seattle	Mercer St	9th Ave N	Westlake Ave N
King	Seattle	Mercer St	Westlake Ave N	Fairview Ave N
King	Seattle	Rainier Ave S	Seattle C/L (0.50mi N Of S Lakeridge Dr)	S Henderson St
King	Seattle	Rainier Ave S	S Henderson St	Martin Luther King Way S
King	Seattle	Rainier Ave S	Martin Luther King Way	I-90 (East Bound Lanes)
King	Seattle	Rainier Ave S	I-90 (East Bound Lanes)	S Jackson St
King	Seattle	Boren Ave S	S Jackson St	E Yesler Way
King	Seattle	Boren Ave	E Yesler Way	Olive Way
King	Seattle	Boren Ave	Olive Way	Howell St
King	Seattle	Boren Ave	Howell St	Stewart St
King	Seattle	Boren Ave	Stewart St	Virginia St
King	Seattle	Boren Ave	Virginia St	Denny Way
King	Seattle	Roy St	5th Ave N	2nd Ave N
King	Seattle	Roy St	2nd Ave N	Queen Anne Ave
King	Seattle	Howell St	8th Ave / Olive Way	Terry Ave
King	Seattle	Howell St	Terry Ave	Yale Ave
King	Seattle	Eastlake Ave	Yale Ave	Denny Way
King	Seattle	Eastlake Ave	Denny Way	Stewart St
King	Seattle	NW Market St	15th Ave NW	9th Ave NW
King	Seattle	NW Market St	9th Ave NW	Greenwood Ave N
King	Seattle	N 46th St	Greenwood Ave N	Green Lake Way N
King	Seattle	N 34th St	Fremont Ave N	N Pacific St / Meridian Ave N
King	Seattle	N Pacific St	Meridian Ave N	NE 40th St
King	Seattle	NE Pacific Pl	NE Pacific St	Montlake Blvd NE
King	Seattle	NE 80th St	Corliss Way N	Banner Way NE
King	Seattle	Greenwood Ave N	N 145th St	N 130th St
King	Seattle	Greenwood Ave N	N 130th St	N 105th St / Holman Rd NW
King	Seattle	Green Lake Way N	N 50th St	Aurora Ave N
King	Seattle	NE Pacific St	15th Ave NE	NE Pacific Pl
King	Seattle	NE Pacific St	NE Pacific Pl	Montlake Blvd NE
King	Seattle	NE 41st St	Roosevelt Way N	Eastlake Ave NE
King	Seattle	NE 42nd St	7th Ave NE	Roosevelt Way N
King	Seattle	N 50th St	Green Lake Way N	Meridian Ave N
King	Seattle	NE 50th St / N 50th St	Meridian Ave N	Latona E Ave NE
King	Seattle	NE 50th St	Latona E Ave NE	5th Ave NE
King	Seattle	NE 50th St	5th Ave NE	7th Ave NE
King	Seattle	NE 50th St	7th Ave NE	Roosevelt Av
King	Seattle	NE 50th St	Roosevelt Ave	Brooklyn Ave
King	Seattle	NE 50th St	Brooklyn Ave NE	15th Ave NE

NHS Routes in the City of Seattle

County	City	NHS Route Description	From	To
King	Seattle	NE 103rd St	1st Ave NE	0.05 Mi E Of 1st Ave (Facility Ent)
King	Seattle	NE 103rd St	0.05 Mi E Of 1st Ave (Facility Ent)	5th Ave NE
King	Seattle	N 45th St	5th Ave NE	Roosevelt Way N
King	Seattle	NE 45th St	Roosevelt Way N	11th Ave
King	Seattle	NE 45th St	11th Ave	Brooklyn Ave
King	Seattle	NE 45th St	Brooklyn Ave NE	Montlake Blvd
King	Seattle	NE Ravenna Blvd	NE 65th St	8th Ave NE
King	Seattle	1st Ave NE	NE 103rd St	NE Northgate Way
King	Seattle	5th Ave NE	Northgate Park-N-Ride (0.12mi N Of Northgate)	NE 103rd St
King	Seattle	Roosevelt Way NE	NE 130 N St	NE 125th St
King	Seattle	Lake City Way NE	12th Ave NE	Roosevelt Way N
King	Seattle	Corliss Way N	N 85th St	2nd Ave NE
King	Seattle	N 85th St / NW 85th St	15th Ave NW	Fremont Ave N
King	Seattle	N 85th St	Fremont Ave N	Wallingford Ave N
King	Seattle	N 85th St	Wallingford Ave N	I-5 On Ramp
King	Seattle	Banner Way NE	I-5 (North Bound On-Ramp)	NE 80th St
King	Seattle	Banner Way NE	NE 80th St	5th Ave NE
King	Seattle	Banner Way NE	5th Ave NE	NE 75th St
King	Seattle	NE 75th St	Banner Way NE	Roosevelt Way N
King	Seattle	NE 75th St	Roosevelt Way N	20th Ave NE
King	Seattle	NE 75th St	20th Ave NE	25th Ave NE
King	Seattle	8th Ave NE	NE 65th St	NE Ravenna Blvd
King	Seattle	15th Ave NE	NE 50th St	NE 41st St
King	Seattle	15th Ave NE	NE 41st St	NE Campus Wb P
King	Seattle	15th Ave NE	NE Campus Eb P	NE Pacific St
King	Seattle	N 145th St	Greenwood Ave N	Aurora Ave N
King	Seattle	N 130th St	Greenwood Ave N	Aurora Ave N
King	Seattle	NE 130th St	Aurora Ave N	5th Ave NE
King	Seattle	44th St NE / Pend Oreille Rd	25th Ave NE	Montlake Blvd NE
King	Seattle	NE 125th St	Roosevelt Way NE	28th Ave NE
King	Seattle	NE 125th St	28th Ave NE	33rd Ave NE
King	Seattle	NE 125th St	33rd Ave NE	35th Ave NE
King	Seattle	Ravenna Ave NE	SR 522 / NE 92nd St	NE 85th St
King	Seattle	Ravenna Ave NE	NE 85th St	25th Ave NE
King	Seattle	25th Ave NE	Ravenna S Ave N	NE 70th St
King	Seattle	25th Ave NE	NE 70th St	Montlake Blvd NE
King	Seattle	24th Ave NE	NE Northgate Way	Lake City Way
King	Seattle	13th Ave SW	SW Florida St	Port Facilities (SW Massachusetts St)
King	Seattle	Corgiat Dr S	S Albro Pl	18th Ave S
King	Seattle	S Hardy St	Stanley Ave S	S Albro Pl
King	Seattle	S King St	2nd Ave S	Amtrack Station
King	Seattle	SR 519	Yesler Way	4th Avenue S
King	Seattle	Interstate 90	6th Ave On Ramp	City Limits
King	Seattle	Interstate 5	South City Limits	Northern City Limits
King	Seattle	SR 520	Interstate 5	Eastern City Limits
King	Seattle	SR 99	South City Limits	Northern City Limits
King	Seattle	SR 513	SR 520	Magnuson Park
King	Seattle	SR 509	South City Limits	SR 99
King	Seattle	SR 522	Interstate 5	Northern City Limits

APPENDIX C

PROJECT PRIORITIZATION METHODOLOGY FRAMEWORK

Project Prioritization Framework

The project list developed as part of the Freight Access Project (FAP) includes a prioritization process that will rank projects into a priority tier system.

Prioritization Criteria and Weighting

The following table highlights the possible list of prioritization criteria and the relative weighting on a scale of 0 to 100 points.

Criteria	Description	Maximum Points
Freight Conditions Score	Existing and future conditions composite score of Safety, Mobility, and Connectivity	50
Roadway Designation	Location on Major Truck Street, Heavy Haul Route, or First/Last Mile Connection	15
Pavement Conditions	Pavement condition index	15
Environmental	Qualitative assessment of congestion relief and drainage improvements	10
Reliability	Existing conditions buffer index based on travel times	10
Total		100

Planning-level project cost estimates, funding opportunities, and the approximate timing of the project need will be considered in the overall context of the priorities and factored into the prioritization process after the quantitative scoring has been completed.

Priority Tier Scale

Each criterion would be evaluated on a project-by-project basis to determine the overall project priority on a tiered scale. Projects in the Tier I category would be summarized in a more detailed project cut-sheet to assist with grant funding proposals and/or CIP planning.

Tier	Approximate Point Range
I	Top quartile
II	2 nd and 3 rd quartile
III	Bottom quartile

Details of the scoring process are summarized on the following page.

Scoring Methodology

Freight Conditions Score (50 points)

This criterion is a normalization of the average existing and future conditions composite score of Safety, Mobility, and Connectivity. The project with the highest freight conditions score would receive the maximum 50 points, and the remaining scores would receive fewer points based on a normalized scale from 0 to 50.

Roadway Designation (15 points)

This criterion benefits projects on Major Truck Streets, Heavy Haul Routes, or First/Last Mile Connections. Projects that are on one of these routes would receive 10 points. Projects on roadways with two or more of these roadway designations would receive the full 15 points.

Pavement Conditions (15 points)

This criterion is based on an average evaluation of pavement conditions over length of the project. The average is based on the six categories of pavement condition multiplied by the number of lane miles for each category. The best rated pavement categories (Good and Satisfactory) would receive 0 points, while the worst rated categories (Very Poor and Serious/Failed) would receive a full 15 points. Roadways falling into the middle categories would receive 5 (Fair) and 10 (Poor) points.

Environmental (10 points)

This criterion is a qualitative assessment of congestion relief and drainage improvements that would have some environmental benefit. The maximum number of points a project could receive is 10.

Reliability (10 points)

This criterion evaluates the reliability of the average travel time under existing conditions. Where available, the buffer index would be normalized on a 0 to 10 point scale for roadways with proposed projects. For projects without an existing conditions buffer index, these points would be omitted from the final score.

Other Factors

Financial Feasibility

This criterion would consider the planning-level cost estimates (where available), funding opportunities, or general cost ranges to help determine priority.

Timing

This criterion considers the timing of the need for the project improvement based on future travel demand and infrastructure investments.

APPENDIX D

SAFETY, MOBILITY AND CONNECTIVITY SCORING MAPS



Components

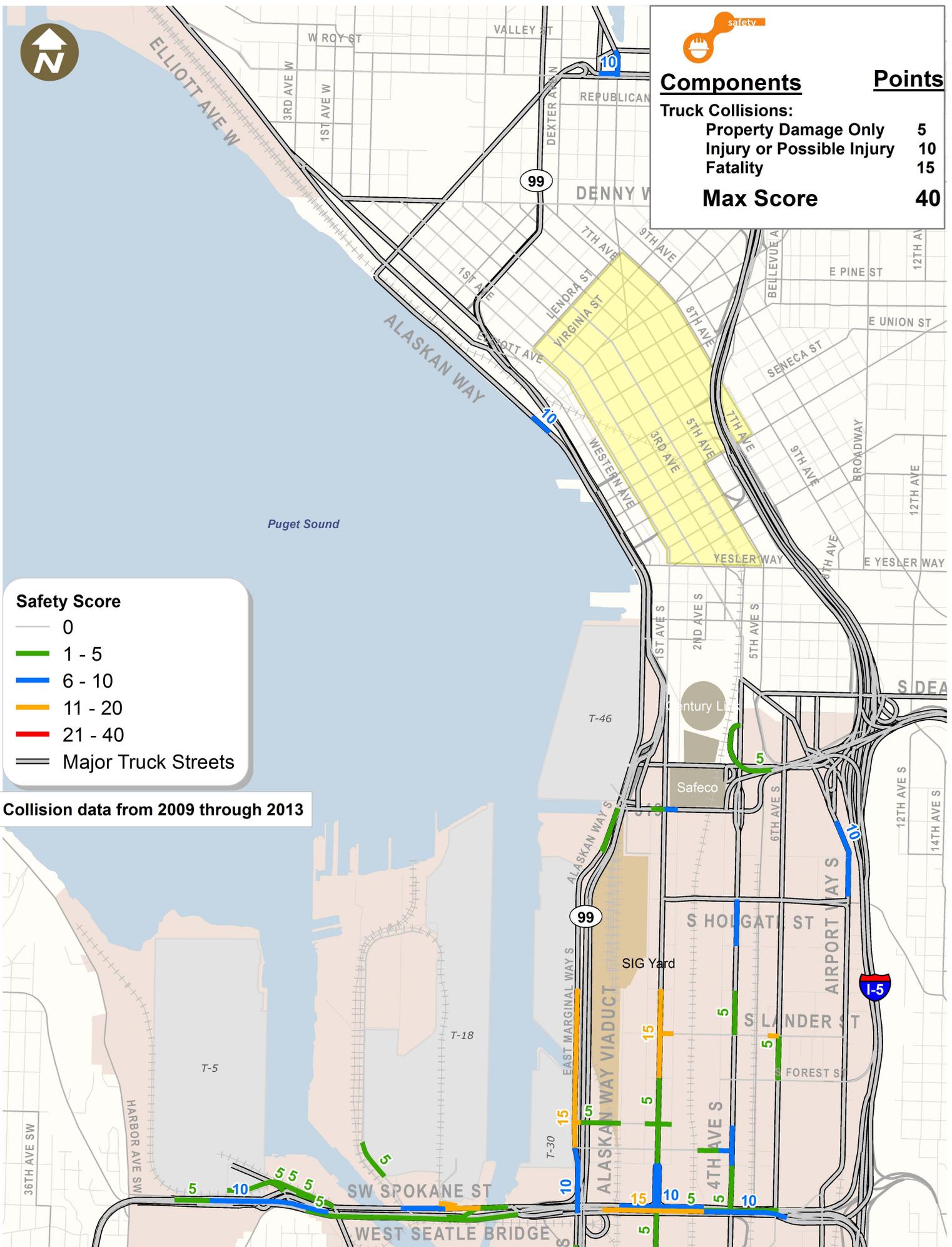
Points

Truck Collisions:	
Property Damage Only	5
Injury or Possible Injury	10
Fatality	15
Max Score	40

Safety Score

- 0
- 1 - 5
- 6 - 10
- 11 - 20
- 21 - 40
- Major Truck Streets

Collision data from 2009 through 2013



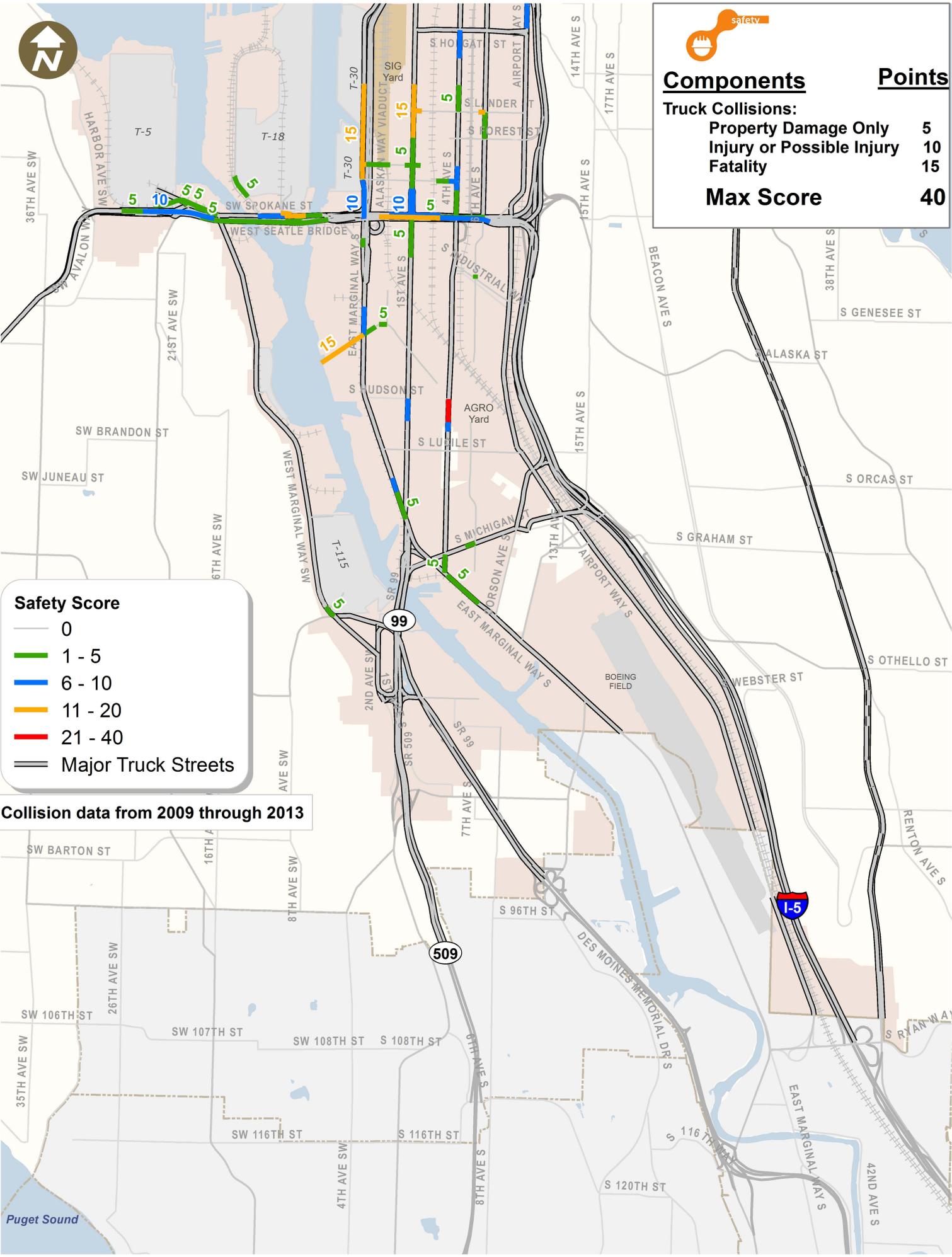


Components	Points
Truck Collisions:	
Property Damage Only	5
Injury or Possible Injury	10
Fatality	15
Max Score	40

Safety Score

- 0
- 1 - 5
- 6 - 10
- 11 - 20
- 21 - 40
- Major Truck Streets

Collision data from 2009 through 2013



Puget Sound



Puget Sound



Components

Points

Travel Speed
 (all peak periods highly congested) - 25 pts
 (most peak periods highly congested) - 20 pts
 (most peak periods congested) - 15 pts
 (some peak periods mildly congested) - 10 pts
 (one period mildly congested) - 5 pts
 (> 8 % trucks = 5 pts) scaled

Truck Percentage
 (> 2,000 trucks / day = 5 pts) scaled

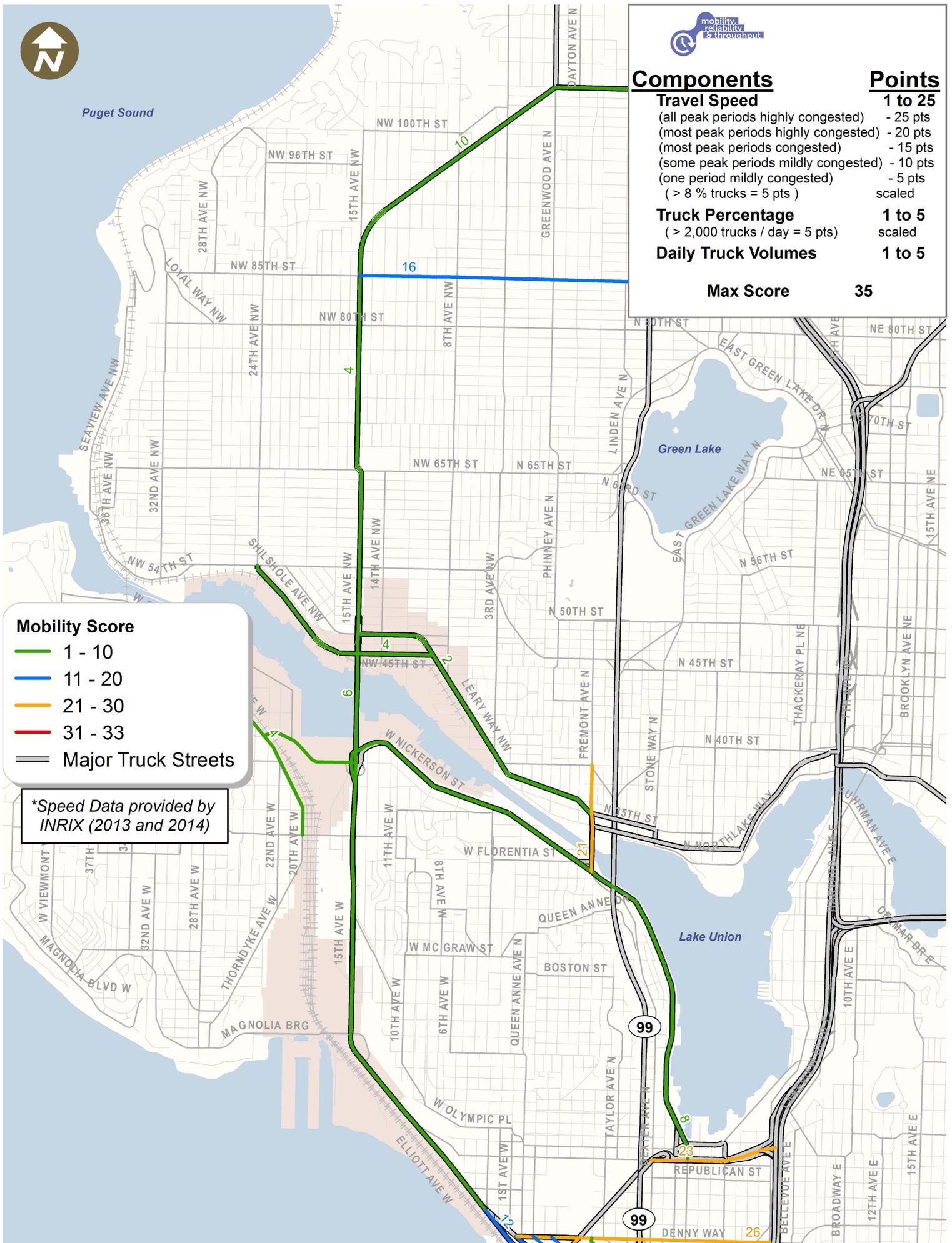
Daily Truck Volumes 1 to 5

Max Score 35

Mobility Score

- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 33
- Major Truck Streets

**Speed Data provided by INRIX (2013 and 2014)*





Components

Points

Travel Speed **1 to 25**
 (all peak periods highly congested) - 25 pts
 (most peak periods highly congested) - 20 pts
 (most peak periods congested) - 15 pts
 (some peak periods mildly congested) - 10 pts
 (one period mildly congested) - 5 pts
 (> 8 % trucks = 5 pts) scaled

Truck Percentage **1 to 5**
 (> 2,000 trucks / day = 5 pts) scaled

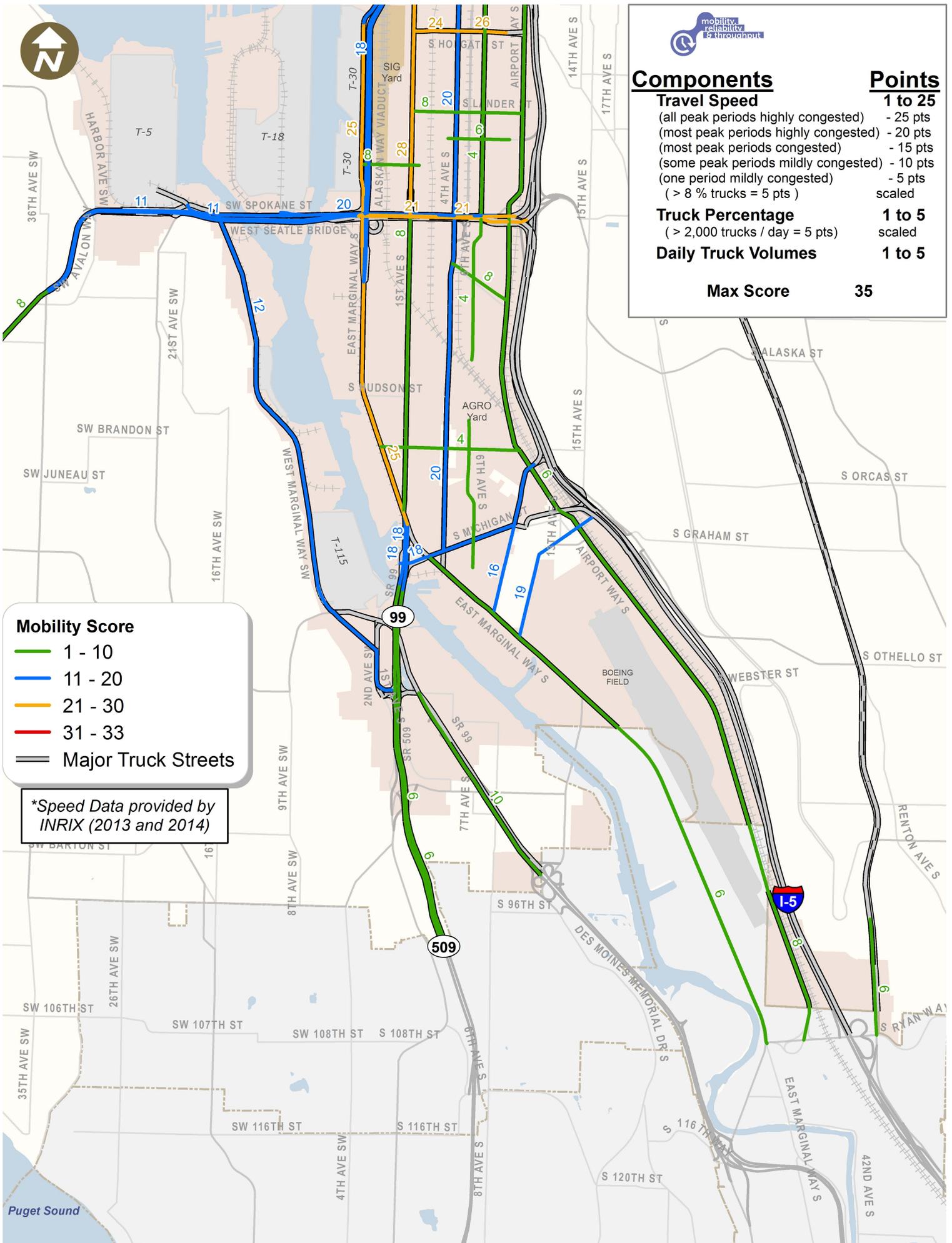
Daily Truck Volumes **1 to 5**

Max Score 35

Mobility Score

- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 33
- Major Truck Streets

**Speed Data provided by INRIX (2013 and 2014)*





Components Points

Railroad Crossing:	
Mainline	15
Tail Track	10
Spur Track / Other	2

Intersection Operations and Geometrics	10
-----------------------------------------------	----

Infrastructure Limitations (Weight, Height, Bridge)	5
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Max Score	25
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Connectivity Score

- 1 - 5
- 5 - 10
- 10 - 20
- > 20
- Major Truck Streets



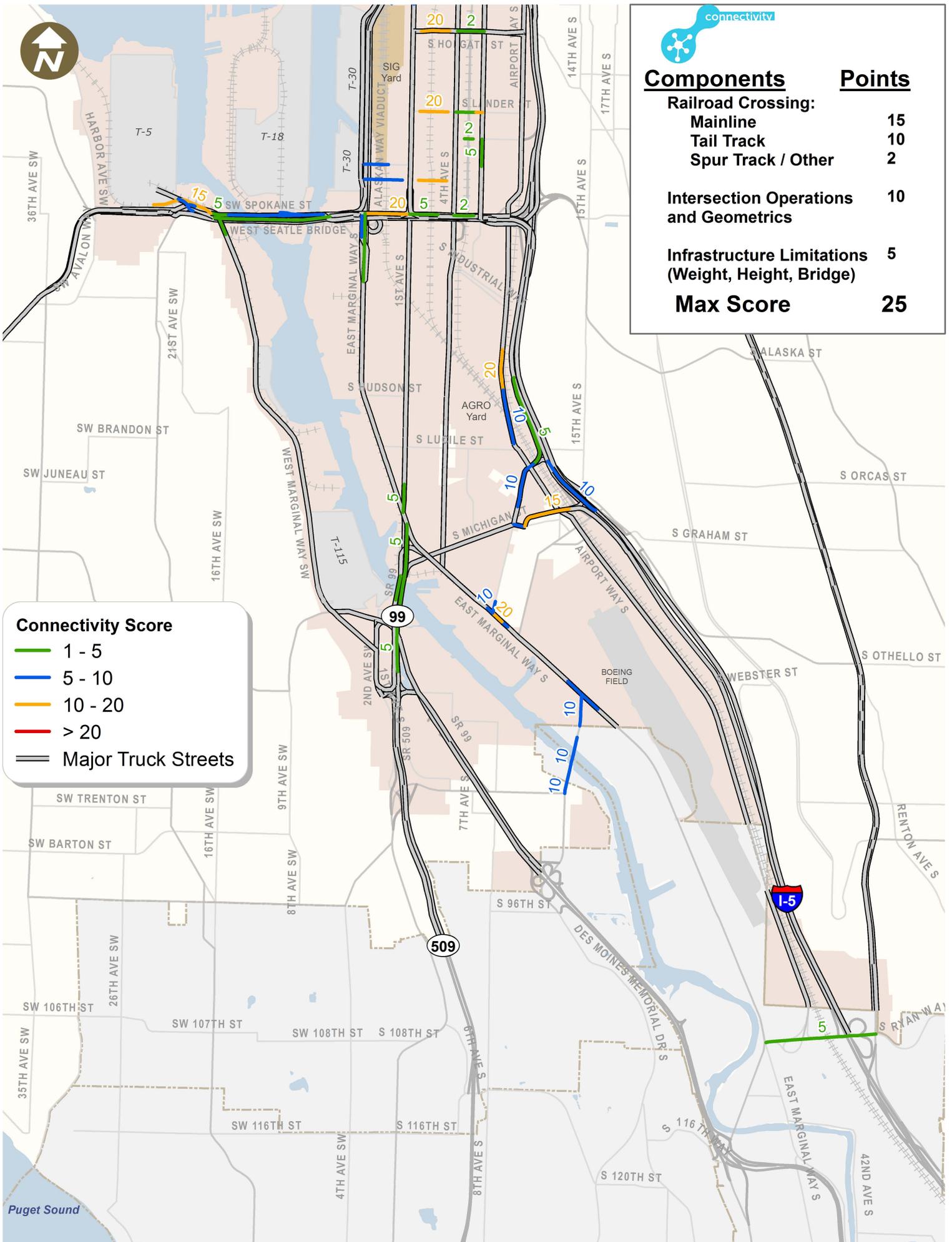


Components Points

Railroad Crossing:	
Mainline	15
Tail Track	10
Spur Track / Other	2
Intersection Operations and Geometrics	10
Infrastructure Limitations (Weight, Height, Bridge)	5
Max Score	25

Connectivity Score

- 1 - 5
- 5 - 10
- 10 - 20
- > 20
- Major Truck Streets



APPENDIX E

COMPLETE FREIGHT PROJECT LIST AND SCORING

Seattle Industrial Areas Freight Access Project

Project List and Priority Scoring

Tier	Project No.	Project Name	Project Extents	Project Description	Project Type	Area	Priority Score Components					Priority Score
							Freight Conditions Score	Roadway Designation	Pavement Conditions	Environmental	Reliability	
Tier I	24	Lower Spokane Street Freight Only Lanes Pilot	Harbor Island to Airport Way South	Pilot project to design, implement, and evaluate freight-only lanes on the corridor. The first phase of the project would determine project limits; identify design options and new infrastructure needed to implement the pilot. The second phase would implement the modifications to roadway channelization for truck-only lanes, install signal and signage upgrades, and provide ITS equipment such as variable message signs and detection equipment. The project would evaluate time-of-day operations, while providing a contingency for allowing all traffic to use the lanes in the event of an incident on the upper bridge.	Intersection Operations; ITS Application	N of Spokane	50	15	6	10	6	87
Tier I	23	South Holgate Street Rail Crossing Improvements	Occidental Avenue to 4th Avenue South	Rebuild the pavement to Heavy Haul route requirements, improve channelization and signage, add new curb/gutter, and provide sidewalks along the south side outside the immediate crossing areas.	Capital Investment	N of Spokane	47	15	11	10	2	85
Tier I	37B	South Atlantic Street Corridor Improvements	Alaskan Way to 4th Avenue South	As the SR 99 bored tunnel is completed, SDOT will regularly monitor travel conditions to evaluate potential changes in corridor operations. This project would implement signal, channelization, and ITS improvements based on the results of the monitoring program.	ITS Application; Intersection Operations	N of Spokane	48	15	10	5	6	84
Tier I	5B	E Marginal Way / S Hanford Street Intersection Improvements	Intersection	Upgrade the signal, lengthen the northbound right-turn lane, improve the railroad crossing pavement, and evaluate the need for railroad crossing gates at the Whatcom track crossings. The project also includes rebuilding the intersection and its approaches to Heavy Haul route requirements. This project will also more clearly delineate parking on the southeast corner of the intersection.	Intersection Operations; Maintenance & Repair; Capital Investment	N of Spokane	48	15	13	5	2	83
Tier I	25	South Spokane Street ITS Upgrades	Chelan Avenue to Airport Way	Install ITS equipment along the corridor to collect and provide real-time travel time information for trucks and the general public. The specific equipment would include Bluetooth readers and dynamic message signs installed along the corridor to collect and disseminate travel time information between Airport Way and Chelan Avenue, including access to Port Terminal 5. An additional project component, which has not yet been evaluated for cost, may be to improve the signal system at the intersection of Chelan Avenue at the western terminus of the corridor.	ITS Application	S of Spokane	48	15	10	5	4	82
Tier I	37A	1st Avenue S / Atlantic Street Intersection Improvements	Intersection	Enhance signal operations and lighting at the intersection by installing new LED street lighting and right-turn overlap signal phases on the east and west approaches. The project would also improve the turn radius for trucks at the southeast corner of the intersection by widening the northbound right-turn lane. Pavement marking improvements are included to enhance the visibility and durability of the lane lines and crosswalks.	Geometric Improvement; Intersection Operations	N of Spokane	48	15	10	0	6	79
Tier I	17	Study and Implementation of Mainline Grade Separations in Mid-SODO Area	Mainline between S Atlantic Street to S Spokane Street	Identify alternatives for an additional (to S Lander Street) grade separated crossing of the BNSF mainline railroad tracks between S Atlantic Street and S Spokane Street, and will include a value engineering evaluation of the South Lander Street Grade Separation (#16) to identify potential cost savings. This project could also identify other technology investments, including adaptive signal timing, to maintain reliable east/west street movement for motor vehicles, including trucks, and non-motorized traffic.	Capital Investment; ITS Application	N of Spokane	47	15	2	10	2	76
Tier I	28	Railroad Crossing Delay Warning System	Crossings at Holgate, Lander, and Horton Streets	Install ITS equipment to monitor and inform the public of road closures due to train activity, and provides alternative routing options via of dynamic message signs that display real-time information to drivers at key locations.	ITS Application	N of Spokane	47	15	4	5	2	73

Seattle Industrial Areas Freight Access Project

Project List and Priority Scoring

Tier	Project No.	Project Name	Project Extents	Project Description	Project Type	Area	Priority Score Components					Priority Score
							Freight Conditions Score	Roadway Designation	Pavement Conditions	Environmental	Reliability	
Tier I	5A	East Marginal Way South Roadway Rehabilitation	S Dakota Street (SR 99 ramps) to S Massachusetts Street	Rebuild the roadway to Heavy Haul route standards, upgrades signal hardware, and adds CCTV cameras and dynamic message signs to improve truck travel conditions.	Maintenance & Repair; Capital Investment; ITS Application	N of Spokane	48	15	8	0	2	73
Tier I	20	4th Avenue South Viaduct Replacement	Grade crossing over Union Pacific Railroad Argo Yard	Replace the viaduct structure spanning the Union Pacific Railroad (UPRR) yard at the conclusion of its service life, which is expected to occur within the 20-year planning timeframe (by 2035). The new structure will increase vertical clearance above the railroad tracks to improve safety and rail operations. Columns and pier walls will be removed to increase and optimize rail yard functionality and operations.	Capital Investment; Maintenance & Repair	S of Spokane	45	10	4	10	3	72
Tier I	52	BINMIC Truck Route Improvements	Area bounded by Dravus Street, Nickerson Street, Market Street, and Fremont Avenue	The first phase of the project will be to evaluate truck freight movements to identify specific projects to address geometric and operating challenges for trucks. The projects will be focused on readily feasible improvements with primary consideration given to safety and freight connectivity. They may include signal timing adjustments, additional signage or wayfinding, larger intersection turn radii, lane width adjustments, and joint use of bus lanes. <ul style="list-style-type: none"> Phase I: Collect data on needs through a detailed assessment of truck volumes, truck sizes, and over-dimensional truck activity. Build from the forecasts developed in the FAP and work with stakeholders to identify and prioritize specific truck route projects. Phase II: Implement top priority projects given funding availability and opportunities. Develop long term budget and funding strategy to implement remaining projects. 	Geometric Improvement; Intersection Operations	BINMIC	34	15	7	10	6	72
Tier I	16	South Lander Street Grade Separation	1st Avenue S to 4th Avenue S	Construct a grade separated bridge over the mainline BNSF railroad tracks between approximately 1st Avenue S and 4th Avenue S.	Capital Investment	N of Spokane	37	10	8	10	2	67
Tier I	22	15th Avenue West Spot Improvements at West Dravus Street and W Wmerson Street	Intersection	This project addresses turn radii issues for trucks through small-scale geometric and intersection operational improvements along 15th Avenue W. Trucks of all sizes experience challenges traveling on the elevated structures at W Emerson Street and W Dravus Street. 15th Avenue W, W Emerson Street, and W Dravus Street are vital connections for freight traveling to and from the Ballard/Interbay Northend Manufacturing and Industrial Center (BINMIC). This project includes two components to implement changes at these locations. <ul style="list-style-type: none"> The W Emerson Street ramp over 15th Avenue W serves trucks going to and from W Nickerson Street. This component includes moving the centerline on the ramp to provide a greater turning radius for trucks and making adjustments to the stop bars at the intersection on the west side of the ramp. W Dravus Street is used by trucks of all sizes, including overlegal vehicles unable to pass underneath the bridge on 15th Avenue W. Northbound trucks have particular difficulty turning left onto W Dravus Street from the off-ramp. This component of the project includes upgrading signal timing and hardware at the ramp terminals to ensure vehicle queues on the bridge clear to allow trucks adequate space to turn at the intersection. 	Geometric Improvement; Intersection Operations	BINMIC	30	15	7	10	5	67
Tier I	15	Hanford & Main SIG Access Improvements	Intersection	Improve access to the Main SIG Yard. Initially, it examines the feasibility of installing a traffic signal and other potential changes to facilitate traffic flow in the area. If or when warranted, a traffic signal at the Main SIG entrance could alleviate congestion and allow for improved truck access to the yard. This project also rebuilds the segment of Hanford Street between the E Marginal Way S and 1st Avenue S to Heavy Haul route standards, including new pavement at railroad crossings. It may include rail crossing gates or other devices, if needed.	Capital Investment; Intersection Operations	N of Spokane	27	15	10	10	-	62

Seattle Industrial Areas Freight Access Project

Project List and Priority Scoring

							Priority Score Components					
Tier	Project No.	Project Name	Project Extents	Project Description	Project Type	Area	Freight Conditions Score	Roadway Designation	Pavement Conditions	Environmental	Reliability	Priority Score
Tier II	35	S Michigan St ITS Improvements	E. Marginal Way S to Corson Ave S	Update signal timing, vehicle detection, CCTV cameras, dynamic message signs and fiber communications to improve traffic flow and provide enhanced traveler information along S Michigan St ITS Improvements.	ITS Application	S of Spokane	31	15	8	5	-	59
Tier II	41	E Marginal Way	1st Avenue S to 4th Avenue S	Study bottlenecks and congestion in the vicinity of the 1st Avenue S Bridge and identify intersection and operational improvements.	Intersection Operations	S of Spokane	24	15	3	5	10	57
Tier II	44	W Marginal Way / Chelan Street Intersection Improvement	Intersection	Intersection signal operational improvements for freight. There is another study underway to improve access for cyclists, but that project is currently unfunded.	Geometric Improvement	S of Spokane	24	15	13	0	2	54
Tier II	34	1st Avenue S Bridge ITS	1st Avenue S Bridge	Provide information and advance warnings about bridge openings during peak travel times for freight based on historical statistics and real-time information	ITS Application	S of Spokane	22	10	15	5	-	52
Tier II	30	Denny Way ITS	I-5 to Western Ave	Update signal timing, vehicle detection, CCTV cameras, dynamic message signs and fiber communications to improve traffic flow and provide enhanced traveler information along Denny Way from I-5 to Western Ave.	ITS Application	Central	27	10	7	5	-	49
Tier II	48	E Marginal Way S railroad track removal	Diagonal Street to 1st Avenue Bridge (or W Marginal Way)	Improve pavement and remove unused rail lines.	Geometric Improvement	S of Spokane	24	15	7	0	3	49
Tier II	9	15th Avenue / Elliott Avenue Rebuild	Mercer Place to Holman Road NW	Rebuild and make operational/ITS improvements to 15th Avenue/Elliott Avenue.	Maintenance & Repair	BINMIC	25	10	7	0	5	47
Tier II	8	S Hanford Street Rebuild	E Marginal Way to Occidental Street	Rebuild and make operational/ITS improvements to S Hanford Street.	Maintenance & Repair	N of Spokane	27	10	8	0	-	45
Tier II	38	Airport Way S / Edmunds Street	Intersection	Monitor and evaluate for future signal warrants and address geometric issues.	Intersection Operations	S of Spokane	25	15	0	5	-	45
Tier II	45	15th Avenue NW / NW Market Street Intersection Improvement	Intersection	Improve southeast corner curb radius, which would impact existing signal equipment.	Geometric Improvement	BINMIC	15	15	7	0	6	43
Tier II	47	E Marginal Way S and Corson Street Intersection Improvement	Intersection	Improve curb radius.	Geometric Improvement	S of Spokane	25	15	0	0	3	43
Tier II	19	1st Avenue South Viaduct over UPRR Yard	Grade crossing over Union Pacific Railroad Argo Yard	Replace the existing viaduct structure spanning the Union Pacific rail yard at the end of its useful life span.	Capital Investment	S of Spokane	17	15	0	10	-	42
Tier II	36	NW Leary Way at 46th Street or 45th Street	Intersection	Intersection operations should be evaluated and treatments considered to improve access to/from 46th Street or 45th Street. Type of improvements to be coordinated with outcomes of the BINMIC Truck Route Improvements (#52).	Intersection Operations	BINMIC	16	10	9	5	2	42
Tier II	51	Elliott Avenue	Broad Street to SR 99 ramps	Study and implement freight only lanes for southbound truck traffic.	Geometric Improvement	Central	19	10	8	0	5	42
Tier II	21	West Emerson Street / 21st Avenue West / West Commodore Way	Intersection and structures	Rebuild the existing structures.	Capital Investment	BINMIC	10	15	5	10	-	40
Tier II	6	NW Market Street / Leary Way / N 36th Street Rebuild	46th Street to Shilshole Avenue	Rebuild and make operational/ITS improvements to Leary Way corridor to facilitate freight movement. This project would coordinate specific truck operational improvements with the BINMIC Truck Route Improvements (#52).	Maintenance & Repair	BINMIC	16	10	11	0	2	39
Tier II	42	S Bailey Street Channelization and Operational Improvements	S Michigan Street to Carleton Avenue S	Improvements for the eastbound left-turn movement to access the I-5 ramps, including a review of signal operations and channelization changes.	Intersection Operations	S of Spokane	10	15	6	5	-	36

Seattle Industrial Areas Freight Access Project

Project List and Priority Scoring

							Priority Score Components					
Tier	Project No.	Project Name	Project Extents	Project Description	Project Type	Area	Freight Conditions Score	Roadway Designation	Pavement Conditions	Environmental	Reliability	Priority Score
Tier III	10	Holman Road NW Rebuild	15th Avenue NW to Greenwood Avenue N	Rebuild and make operational/ITS improvements.	Maintenance & Repair	N Seattle	10	10	9	5	-	34
Tier III	43	16th Avenue S and E Marginal Way S Intersection Improvement	Intersection	Improve northbound right-turn curb radius.	Geometric Improvement	S of Spokane	15	10	5	0	3	33
Tier III	11	N 105th Street / Northgate Way	Greenwood Avenue N to I-5	Rebuild and make operational/ITS improvements.	Maintenance & Repair	N Seattle	8	10	13	0	-	31
Tier III	50	Holman Road / 13th Avenue Intersection Improvement	Intersection	Remove height limitation from existing pedestrian overpass and install half signal.	Geometric Improvement	N Seattle	10	10	9	0	-	29
Tier III	12	S Lucile Street Rebuild	Airport Way to SR 99	Rebuild and make operational/ITS improvements.	Maintenance & Repair	S of Spokane	4	10	4	0	-	18
Tier III	13	Massachusetts Street (access road) Rebuild	Colorado Avenue to 1st Avenue S	Rebuild Massachusetts Street to improve safety and access to North SIG Yard, while maintaining two-way operations. Roadway would be segregated for GP and truck traffic. Provide improved truck access/operations at the 1st Avenue S / S Massachusetts Street intersection.	Maintenance & Repair	N of Spokane	-	15	-	0	-	15
Tier III	14	Diagonal Avenue S / S Oregon Street / Denver Avenue S Rebuild	East Marginal Way (SR 99) to Union Pacific Argo Yard	Rebuild existing drayage route facility.	Maintenance & Repair	S of Spokane	-	15	-	0	-	15
Tier III	49	S Dallas Avenue / 16th Avenue S Intersection Improvement	Intersection	Improve curb radius for northbound and westbound turning movement	Geometric Improvement	S of Spokane	10	0	-	0	-	10
Tier III	26	Next Generation ITS Improvements	Citywide	Project will implement ITS system upgrades to Traffic Management Center.	ITS Application	Citywide	-	0	-	5	-	5
Tier III	27	City Center Dynamic Signal Timing	Downtown Core	Dynamic signal timing installation downtown to help adjust to fluctuating traffic patterns during construction phases.	ITS Application	Central	-	0	-	5	-	5
Tier III	32	SODO Phase 1 ITS	--	This will provide advanced warning for railroad closures to minimize queuing as well as improve traffic monitoring capabilities for major haul routes in the SODO area.	ITS Application	N of Spokane	-	0	-	5	-	5
Tier III	33	I-5 Connector ITS	--	Installation of CCTV cameras along streets that provide CBD access to I-5/I-90 to provide congestion monitoring of traffic interchanging with the freeway.	ITS Application	Citywide	-	0	-	5	-	5

APPENDIX F

FREIGHT PRIORITY PROJECTS COST ESTIMATES

Seattle Industrial Areas Freight Access Project Concept Level Cost Estimates

ID	Name	Contractor Cost (Hard Cost)			Construction Admin. (Soft Cost)		Design (Soft Cost)		Acquisition Cost		Total (rounded)
		Engineer's Estimate ¹	EE Allowance ²	Contingency ³	Base ⁴	Contingency ³	Base ⁵	Contingency ³	Estimated Acquisition Cost ⁶	Contingency ³	
22	15th Ave W Spot Improvements at Dravus St and Emerson St	\$ 257,000	\$ 102,800	\$ 53,970	\$ 125,930	\$ 18,890	\$ 79,156	\$ 23,747	\$ -	\$ -	\$ 700,000
5	East Marginal Way South Roadway Rehabilitation	\$ 19,045,000	\$ 7,618,000	\$ 3,999,450	\$ 9,598,680	\$ 1,439,802	\$ 4,799,340	\$ 1,439,802	\$ -	\$ -	\$ 48,000,000
15	Hanford & Main SIG Access Improvements	\$ 2,171,000	\$ 868,400	\$ 455,910	\$ 1,063,790	\$ 159,569	\$ 668,668	\$ 200,600	\$ -	\$ -	\$ 5,600,000
20	4th Avenue S Viaduct Replacement	\$ 36,528,000	\$ 14,611,200	\$ 7,670,880	\$ 17,898,720	\$ 2,684,808	\$ 11,250,624	\$ 3,375,187	\$ 300,000	\$ 90,000	\$ 94,500,000
23	South Holgate Street Rail Crossing Improvements	\$ 2,156,000	\$ 862,400	\$ 452,760	\$ 1,056,440	\$ 158,466	\$ 664,048	\$ 199,214	\$ -	\$ -	\$ 5,600,000
24	Lower Spokane Street Freight Only Lanes Pilot Project	\$ 834,000	\$ 333,600	\$ 175,140	\$ 1,552,908	\$ 232,936	\$ 758,940	\$ 227,682	\$ -	\$ -	\$ 4,200,000
37A	1st Ave S / Atlantic St Intersection Improvements	\$ 200,000	\$ 80,000	\$ 42,000	\$ 98,000	\$ 14,700	\$ 61,600	\$ 18,480	\$ -	\$ -	\$ 600,000
40	E Marginal Way / Hanford St Improvements	\$ 2,708,000	\$ 1,084,000	\$ 569,100	\$ 1,327,900	\$ 199,185	\$ 834,680	\$ 250,404	\$ 17,500	\$ 5,250	\$ 7,000,000

1. Baseline Engineer's Estimate; developed by Transpo Group

2. Engineer's Estimate Allowance is based on the level of design to account for expected buy unknown costs; developed by SDOT Top-Down Cost Estimating Tool

3. Contingency costs; developed by SDOT Top-Down Cost Estimating Tool

4. Baseline construction administration costs; developed by SDOT Top-Down Cost Estimating Tool

5. Baseline design costs; developed by SDOT Top-Down Cost Estimating Tool

6. Cost for acquisition of real property required for the project; developed by SDOT Top-Down Cost Estimating Tool

Project Name: **15th Ave W at Dravus and Emerso**
 Prepared by: **Transpo Group**

Project Number: **22**
 Date: **Feb. 2015**
 Milestone: **10%**

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate: **\$ 257,000**
 Estimated Acquisition Cost: **\$ 0**

Escalation Schedule

	Year	Rate
Current	2015	-
Design Midpoint	2015	0.0%
Acquisition Midpoint	2015	0.0%
Construction Midpoint	2015	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	35%
Design Soft Cost Ratio	22%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	257,000				
EE Allowance (40%)	102,800				
Estimated Contractor Cost (ECC)	359,800	53,970	413,770	0	413,770
Construction Admin. (Soft Cost)					
35% of \$.4M ECC	125,930	18,890	144,820	0	144,820
Design (Soft Cost)					
22% of \$.4M ECC	79,156	23,747	102,903	0	102,903
Acquisition Cost					
Estimated Acquisition Cost	0	0	0	0	0
Estimated Total Project Cost	\$ 564,886	\$ 96,606	\$ 661,492	\$ 0	\$ 661,492

Build-Up Notes

1. The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
2. Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

15th Avenue W Spot Improvements at W Dravus St and Emerson St

Project ID: 22
 Length (ft): 250

Right-of-Way Costs		
Administration	\$	-
Structures	\$	-
Land	\$	-
Est. Acq. Cost	\$	-

Notes: 0

Road Costs			
Base roadway	\$	188,410	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$	8,225	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$	196,635	

Notes: Assume 15th Ave northbound to W Nickerson St onramp is widened for 250' by 4' to accommodate off tracking. Assume poor condition of existing lane requires replacement.

Intersection Costs			
Widening	\$	-	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$	1,704	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$	1,704	

Notes: 0

Other Costs			
Other	\$	15,000	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$	-	
Subtotal	\$	15,000	

Notes: Assume 1 fire hydrant requires relocation and minor storm drainage modifications

Summary			
Construction	\$	213,339	Road costs + intersection costs + other costs
Mob. and Demob.	\$	19,200.50	9% of Construction Cost
Traffic Control	\$	23,467.28	11% of Construction Cost
Eng. Estimate	\$	257,000	

Project Name: **E Marginal Way S Roadway Rehabi**
 Prepared by: **Transpo Group**

Project Number: **5**
 Date: **Dec. 2014**
 Milestone: **10%**

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate: **\$ 19,045,000**
 Estimated Acquisition Cost: **\$ 0**

Escalation Schedule

	Year	Rate
Current	2014	-
Design Midpoint	2014	0.0%
Acquisition Midpoint	2014	0.0%
Construction Midpoint	2014	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	36%
Design Soft Cost Ratio	18%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	19,045,000				
EE Allowance (40%)	7,618,000				
Estimated Contractor Cost (ECC)	26,663,000	3,999,450	30,662,450	0	30,662,450
Construction Admin. (Soft Cost)					
36% of \$26.7M ECC	9,598,680	1,439,802	11,038,482	0	11,038,482
Design (Soft Cost)					
18% of \$26.7M ECC	4,799,340	1,439,802	6,239,142	0	6,239,142
Acquisition Cost					
Estimated Acquisition Cost	0	0	0	0	0
Estimated Total Project Cost	\$ 41,061,020	\$ 6,879,054	\$ 47,940,074	\$ 0	\$ 47,940,074

Build-Up Notes

- The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
- Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

E Marginal Way

Project ID: 5

Length (ft): 8,750

Right-of-Way Costs		
Administration	\$	-
Structures	\$	-
Land	\$	-
Est. Acq. Cost	\$	-

Notes: 0

Road Costs		
Base roadway	\$ 15,172,500	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$ 472,500	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$ 15,645,000	

Notes: Excludes the ramp from West Seattle Bridge to SW Klickitat Way

Intersection Costs		
Widening	\$ -	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$ 142,780	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$ 142,780	

Notes: 0

Other Costs		
Other	\$ 82,575	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$ -	
Subtotal	\$ 82,575	

Notes: 0

Summary		
Construction	\$ 15,870,355	Road costs + intersection costs + other costs
Mob. and Demob.	\$ 1,428,331.95	9% of Construction Cost
Traffic Control	\$ 1,745,739.05	11% of Construction Cost
Eng. Estimate	\$ 19,045,000	

Project Name Hanford & Main SIG Access Improv
 Prepared by Transpo Group

Project Number 15
 Date Dec. 2014
 Milestone 10%

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate \$ 2,171,000
 Estimated Acquisition Cost \$ 0

Escalation Schedule

	Year	Rate
Current	2014	-
Design Midpoint	2014	0.0%
Acquisition Midpoint	2014	0.0%
Construction Midpoint	2014	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	35%
Design Soft Cost Ratio	22%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	2,171,000				
EE Allowance (40%)	868,400				
Estimated Contractor Cost (ECC)	3,039,400	455,910	3,495,310	0	3,495,310
Construction Admin. (Soft Cost)					
35% of \$3.M ECC	1,063,790	159,569	1,223,359	0	1,223,359
Design (Soft Cost)					
22% of \$3.M ECC	668,668	200,600	869,268	0	869,268
Acquisition Cost					
Estimated Acquisition Cost	0	0	0	0	0
Estimated Total Project Cost	\$ 4,771,858	\$ 816,079	\$ 5,587,937	\$ 0	\$ 5,587,937

Build-Up Notes

1. The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
2. Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

Hanford & Main SIG Access Improvements

Project ID: 15
 Length (ft): 550

Right-of-Way Costs		
Administration	\$	-
Structures	\$	-
Land	\$	-
Est. Acq. Cost	\$	-

Notes: 0

Road Costs			
Base roadway	\$	679,511	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$	103,400	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$	782,911	

Notes: 0

Intersection Costs			
Widening	\$	-	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$	100,566	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$	100,566	

Notes: 0

Other Costs			
Other	\$	925,000	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$	-	
Subtotal	\$	925,000	

Notes: 0

Summary			
Construction	\$	1,808,477	Road costs + intersection costs + other costs
Mob. and Demob.	\$	162,762.95	9% of Construction Cost
Traffic Control	\$	198,932.50	11% of Construction Cost
Eng. Estimate	\$	2,171,000	

Project Name: **4th Ave S Viaduct Replacement**
 Prepared by: **Transpo Group**

Project Number: **20**
 Date: **Dec. 2014**
 Milestone: **10%**

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate: **\$ 36,528,000**
 Estimated Acquisition Cost: **\$ 300,000**

Escalation Schedule

	Year	Rate
Current	2014	-
Design Midpoint	2014	0.0%
Acquisition Midpoint	2014	0.0%
Construction Midpoint	2014	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	35%
Design Soft Cost Ratio	22%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	36,528,000				
EE Allowance (40%)	14,611,200				
Estimated Contractor Cost (ECC)	51,139,200	7,670,880	58,810,080	0	58,810,080
Construction Admin. (Soft Cost)					
35% of \$51.1M ECC	17,898,720	2,684,808	20,583,528	0	20,583,528
Design (Soft Cost)					
22% of \$51.1M ECC	11,250,624	3,375,187	14,625,811	0	14,625,811
Acquisition Cost					
Estimated Acquisition Cost	300,000	90,000	390,000	0	390,000
Estimated Total Project Cost	\$ 80,588,544	\$ 13,820,875	\$ 94,409,419	\$ 0	\$ 94,409,419

Build-Up Notes

- The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
- Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

4th Avenue South Viaduct Replacement

Project ID: 20

Length (ft): 2,500

Right-of-Way Costs		
Administration	\$	7,500
Structures	\$	-
Land	\$	300,000
Est. Acq. Cost	\$	307,500

Notes: 0

Road Costs			
Base roadway	\$	-	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$	200,000	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$	200,000	

Notes: Assume new bridge cross section is 2' bridge rail, 10' sidewalk, 2' pedestrian rail, four 12' lanes, 2' bridge rail.

Intersection Costs			
Widening	\$	-	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$	-	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$	-	

Notes: 0

Other Costs			
Other	\$	-	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$	30,240,000	
Subtotal	\$	30,240,000	

Notes: Assume new bridge cross section is 2' bridge rail, 10' sidewalk, 2' pedestrian rail, four 12' lanes, 2' bridge rail.

Summary			
Construction	\$	30,440,000	Road costs + intersection costs + other costs
Mob. and Demob.	\$	2,739,600.00	9% of Construction Cost
Traffic Control	\$	3,348,400.00	11% of Construction Cost
Eng. Estimate	\$	36,528,000	

Project Name: **South Holgate Street Improvement**
 Prepared by: **Transpo Group**

Project Number: **23**
 Date: **Dec. 2014**
 Milestone: **10%**

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate: **\$ 2,156,000**
 Estimated Acquisition Cost: **\$ 0**

Escalation Schedule

	Year	Rate
Current	2014	-
Design Midpoint	2014	0.0%
Acquisition Midpoint	2014	0.0%
Construction Midpoint	2014	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	35%
Design Soft Cost Ratio	22%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	2,156,000				
EE Allowance (40%)	862,400				
Estimated Contractor Cost (ECC)	3,018,400	452,760	3,471,160	0	3,471,160
Construction Admin. (Soft Cost)					
35% of \$3.M ECC	1,056,440	158,466	1,214,906	0	1,214,906
Design (Soft Cost)					
22% of \$3.M ECC	664,048	199,214	863,262	0	863,262
Acquisition Cost					
Estimated Acquisition Cost	0	0	0	0	0
Estimated Total Project Cost	\$ 4,738,888	\$ 810,440	\$ 5,549,328	\$ 0	\$ 5,549,328

Build-Up Notes

- The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
- Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

South Holgate Street Rail Crossing Improvements

Project ID: 23

Length (ft): 850

Right-of-Way Costs		
Administration	\$	-
Structures	\$	-
Land	\$	-
Est. Acq. Cost	\$	-

Notes: 0

Road Costs			
Base roadway	\$	1,750,256	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$	45,900	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$	1,796,156	

Notes: 0

Intersection Costs			
Widening	\$	-	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$	-	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$	-	

Notes: 0

Other Costs			
Other	\$	-	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$	-	
Subtotal	\$	-	

Notes: 0

Summary			
Construction	\$	1,796,156	Road costs + intersection costs + other costs
Mob. and Demob.	\$	161,654.06	9% of Construction Cost
Traffic Control	\$	197,577.19	11% of Construction Cost
Eng. Estimate	\$	2,156,000	

Project Name: **Lower Spokane St Freight Only Lan**
 Prepared by: **Transpo Group**

Project Number: **24**
 Date: **Dec. 2014**
 Milestone: **10%**

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate: **\$ 834,000**
 Estimated Acquisition Cost: **\$ 0**

Escalation Schedule

	Year	Rate
Current	2014	-
Design Midpoint	2014	0.0%
Acquisition Midpoint	2014	0.0%
Construction Midpoint	2014	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	133%
Design Soft Cost Ratio	65%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	834,000				
EE Allowance (40%)	333,600				
Estimated Contractor Cost (ECC)	1,167,600	175,140	1,342,740	0	1,342,740
Construction Admin. (Soft Cost)					
133% of \$1.2M ECC	1,552,908	232,936	1,785,844	0	1,785,844
Design (Soft Cost)					
65% of \$1.2M ECC	758,940	227,682	986,622	0	986,622
Acquisition Cost					
Estimated Acquisition Cost	0	0	0	0	0
Estimated Total Project Cost	\$ 3,479,448	\$ 635,758	\$ 4,115,206	\$ 0	\$ 4,115,206

Build-Up Notes

- The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
- Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

Lower Spokane Street Freight Only Lanes Pilot Project

Project ID: 24

Length (ft): 7,500

Right-of-Way Costs		
Administration	\$	-
Structures	\$	-
Land	\$	-
Est. Acq. Cost	\$	-

Notes: 0

Road Costs			
Base roadway	\$	-	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$	-	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$	-	

Notes: 0

Intersection Costs			
Widening	\$	-	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$	695,000	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$	695,000	

Notes: 0

Other Costs			
Other	\$	-	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$	-	
Subtotal	\$	-	

Notes: 0

Summary			
Construction	\$	695,000	Road costs + intersection costs + other costs
Mob. and Demob.	\$	62,550.00	9% of Construction Cost
Traffic Control	\$	76,450.00	11% of Construction Cost
Eng. Estimate	\$	834,000	

Project Name: **1st Ave S / Atlantic St Intersection**
 Prepared by: **Transpo Group**

Project Number: **37A**
 Date: **Dec. 2014**
 Milestone: **10%**

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate: **\$ 200,000**
 Estimated Acquisition Cost: **\$ 0**

Escalation Schedule

	Year	Rate
Current	2014	-
Design Midpoint	2014	0.0%
Acquisition Midpoint	2014	0.0%
Construction Midpoint	2014	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	35%
Design Soft Cost Ratio	22%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	200,000				
EE Allowance (40%)	80,000				
Estimated Contractor Cost (ECC)	280,000	42,000	322,000	0	322,000
Construction Admin. (Soft Cost)					
35% of \$.3M ECC	98,000	14,700	112,700	0	112,700
Design (Soft Cost)					
22% of \$.3M ECC	61,600	18,480	80,080	0	80,080
Acquisition Cost					
Estimated Acquisition Cost	0	0	0	0	0
Estimated Total Project Cost	\$ 439,600	\$ 75,180	\$ 514,780	\$ 0	\$ 514,780

Build-Up Notes

- The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
- Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

1st Ave S / Atlantic St Intersection Improvements

Project ID: 37A

Length (ft): 300

Right-of-Way Costs		
Administration	\$	-
Structures	\$	-
Land	\$	-
Est. Acq. Cost	\$	-

Notes: 0

Road Costs			
Base roadway	\$	71,535	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$	28,200	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$	99,735	

Notes: 0

Intersection Costs			
Widening	\$	-	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$	66,704	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$	66,704	

Notes: 0

Other Costs			
Other	\$	-	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$	-	
Subtotal	\$	-	

Notes: 0

Summary			
Construction	\$	166,439	Road costs + intersection costs + other costs
Mob. and Demob.	\$	14,979.51	9% of Construction Cost
Traffic Control	\$	18,308.29	11% of Construction Cost
Eng. Estimate	\$	200,000	

Project Name: **E Marginal Way / Hanford St Impr**
 Prepared by: **Transpo Group**

Project Number: **40**
 Date: **Dec. 2014**
 Milestone: **10%**

BUILD-UP ASSUMPTIONS

Baseline

Engineer's Estimate: **\$ 2,710,000**
 Estimated Acquisition Cost: **\$ 17,500**

Escalation Schedule

	Year	Rate
Current	2014	-
Design Midpoint	2014	0.0%
Acquisition Midpoint	2014	0.0%
Construction Midpoint	2014	0.0%

Build-Up Rates

Construction Contingency	15%
Engineer's Est. Allowance	40%
Design Contingency	30%
Acquisition Contingency	30%
Construction Soft Cost Ratio	35%
Design Soft Cost Ratio	22%

BUILD-UP SUMMARY

	A	B	C = A + B	D	E = C + D
	Base Estimate	Contingency	Current-Year Cost	Midpoint Escalation	TOTAL
Contractor Cost (Hard Cost)					
Engineer's Estimate (EE)	2,710,000				
EE Allowance (40%)	1,084,000				
Estimated Contractor Cost (ECC)	3,794,000	569,100	4,363,100	0	4,363,100
Construction Admin. (Soft Cost)					
35% of \$3.8M ECC	1,327,900	199,185	1,527,085	0	1,527,085
Design (Soft Cost)					
22% of \$3.8M ECC	834,680	250,404	1,085,084	0	1,085,084
Acquisition Cost					
Estimated Acquisition Cost	17,500	5,250	22,750	0	22,750
Estimated Total Project Cost	\$ 5,974,080	\$ 1,023,939	\$ 6,998,019	\$ 0	\$ 6,998,019

Build-Up Notes

- The Engineer's Estimate Allowance, Design Contingency, and Acquisition Contingency are determined by the selected level of design completion (Milestone).
- Escalation rates are based on IHS Global Insight indices.

Planning-Level Project Cost Details

E Marginal Way / Hanford Street Intersection Improvements

Project ID: 40

Length (ft): 1,000

Right-of-Way Costs		
Administration	\$	7,500
Structures	\$	-
Land	\$	10,000
Est. Acq. Cost	\$	17,500

Notes: 0

Road Costs			
Base roadway	\$	1,647,300	Pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Select roadway	\$	114,000	Curbing, gutter, sidewalk, street lighting, and multi-use paths
Subtotal	\$	1,761,300	

Notes: 0

Intersection Costs			
Widening	\$	-	Turn lanes/pockets or other roadway widened sections - pavement structural section, utility adjustments, landscaping, striping and signing, clearing & grubbing, etc.
Other	\$	125,000	New/upgrade traffic signals, roundabouts, ADA curb ramps, etc.
Subtotal	\$	125,000	

Notes: 0

Other Costs			
Other	\$	370,000	Driveways, at-grade railroad crossings, guardrail, pedestrian signals, traffic calming, etc.
Bridge	\$	-	
Subtotal	\$	370,000	

Notes: 0

Summary			
Construction	\$	2,256,300	Road costs + intersection costs + other costs
Mob. and Demob.	\$	203,067.00	9% of Construction Cost
Traffic Control	\$	248,193.00	11% of Construction Cost
Eng. Estimate	\$	2,708,000	