JUANITA DRIVE Corridor Study

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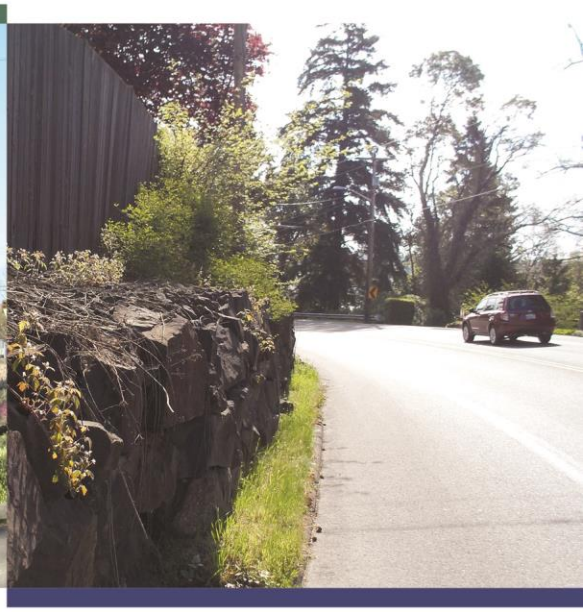

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JUANITA DRIVE Corridor Study
SUMMARY

ABOUT THE STUDY

The City of Kirkland has developed a plan for future improvements to the Juanita Drive Corridor between Juanita Village and the northern City limits in Finn Hill. A key route around the northern end of Lake Washington between Kirkland and Kenmore, Juanita Drive serves over 10,000 vehicles per day and traverses steep topography with many twists, turns, and hills. The existing roadway geometry, multiple driveway access points, and limited sight distance complicate overall safety conditions along the corridor.

The Juanita Drive Corridor Study evaluates existing conditions, relies on input from stakeholders and users, and analyzes potential safety improvements for drivers, bicyclists and pedestrians. The study identifies key improvements that may be included for future construction in the Capital Improvement Program.

GUIDING PRINCIPLES

The vision for the future of the Juanita Drive Corridor will adhere to the following guiding principles:

- Address safety needs for all travel modes.
- Maintain the corridor's unique identity, diversity of roadway character, and natural landscape.
- Respect neighborhood values and engage the community in a shared vision for future improvements.
- Protect the extraordinary natural environment and encourage low impact design approaches.
- Provide a financially feasible, strategic, and realistic set of community priorities for the corridor.

These were developed after consulting with stakeholders.

COMMUNITY OUTREACH

The City identified key target audiences to engage:

- Businesses and residents along the project corridor and within the City of Kirkland
- Users of the project corridor; local and regional
- Management and users of parks and public spaces
- Local agencies, such as Lake Washington School District and King County Metro Transit
- Community groups and organizations
- City of Kirkland staff, including public safety officials
- Elected officials

JUANITA DRIVE Corridor Study
SUMMARY

THE PROPOSED PLAN

Working with a Citizen Advisory Committee, the Kirkland Transportation Commission, and by conducting extensive public outreach, the City used the guiding principles to identify and prioritize the corridor recommendations. The Transportation Commission reviewed the draft recommendations and approved them for consideration by the City Council.

The Juanita Drive Corridor Plan contains a variety of projects that meet the study's guiding principles and that can be phased in over the next several years. While the needs vary throughout the corridor, the plan contains several corridor-wide features, including the following:

- A basic roadway cross-section that contains a travel lane in each direction, buffered bicycle lanes, and a walkway on at least one side of the roadway. In some sections, an off-road multipurpose path is an option.
- Pedestrian crosswalks with flashing beacons.
- Street lighting upgrades.
- Drainage improvements.
- Intersection treatments, such as turn pockets and better sight distance.
- Traffic calming treatments to reduce speeds.
- Removal of on-street parking.

The plan does not envision the addition of travel lanes to accommodate more traffic, but the intersection treatments will improve overall traffic flow and safety.

The plan consists of 32 projects grouped into logical packages along Juanita Drive. The total cost of the plan ranges from $19 to $26 million, depending on the design options. About half of the cost ($10 million) is to provide the basic cross-section through the corridor. Building the wider multipurpose trails through the parks would add around $3.3 million in project costs. Intersection treatments, including turn pockets, crossing treatments and lighting would cost an additional $5 to $6 million, while various other nonmotorized, Intelligent Transportation Systems (ITS), safety and lighting treatments would add around $3 to $4 million in cost. Recognizing that because of their cost they will take several years to fund and implement, the plan sets priorities and identifies 'quick win' projects with a total cost of $1.0 to $1.5 million and which could potentially start in the near future as funding becomes available.

Projects	Basic Cost	Additional Costs for Option
Basic Cross-section	$10.4M	$3.3M (Multipurpose Trails)
Intersections	$5.3M	$1.2M (Roundabouts)
Uphill Bicycle Lane throughout Corridor	$0.6M	
Other Pedestrian/Bike Safety Treatments	$1.5M	
Intelligent Transportation Systems (ITS)	$1.1M	$1.2M (undergrounding utilities)
Other Safety Projects	$0.2M	
Total Projects	**$19.1 Million**	**$5.7 Million**

Note: Projects not in priority order

JUANITA DRIVE Corridor Study
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MATCHING THE RECOMMENDATIONS TO THE COMMUNITY VISION

What we Heard from the Community	What the Proposed Master Plan Recommends
Improving safety in the corridor is important; especially for bicycles and pedestrians	Separated walkway and bicycle lanes with buffer strips; intersection channelization; active pedestrian crossings
There are too many vehicle collisions	Intersection turn lanes to reduce rear end collisions; center line rumble strips to reduce head-on collisions
Traveling the corridor during rush hour is difficult, but minimal interest in widening the corridor for more automobile lanes	No new auto lanes, but some intersection turn lanes and traffic signal improvements
There aren't enough connections between neighborhoods and parks, including safe routes to local schools	Several new 'flashing' pedestrian crossings and links to neighborhoods, schools and parks
Provide as much separation as possible for pedestrians and bikes	Bike lanes with buffer strips and walkway on one side of road; option for multipurpose trail in Woodland and Big Finn Hill parks.
Mixed reactions to roundabouts; some people wanted them, some did not.	Options for a roundabout at NE 122nd St/Holmes Point Dr and at NE 138th Pl.
Don't impact the parks along the corridor	Two options in parks- basic cross section or wider section with multipurpose trail. Sensitivity to roadway width and right-of-way
Get something done soon!	Several 'quick win' projects that could be implemented soon as funding is available

Stay Involved!

Visit **www.kirklandwa.gov** (search "Juanita Drive") to:

- Find up-to-date news on the study
- Provide feedback on the City's interactive map
- Sign up for emails from the project's list serve

For additional information, please reach out to:

- **Christian Knight, Neighborhood Services Outreach Coordinator:** cknight@kirklandwa.gov, (425) 587-3831
- **Rod Steitzer, Project Engineer:** rsteitzer@kirklandwa.gov, (425) 587-3825

STUDY PURPOSE AND METHODOLOGY

PROJECT OVERVIEW

Juanita Drive is located in the City of Kirkland's Juanita and Finn Hill neighborhoods, as shown in **Figure 1**. The Juanita Drive corridor serves as a minor arterial connecting residential neighborhoods, as well as a key north/south route between the cities of Kirkland and Kenmore. Juanita Drive serves over 10,000 vehicles per day and traverses steep topography with many twists and turns. The existing roadway geometry, multiple driveway access points, use of the shoulder for residential services (e.g. mail, deliveries, trash containers), and limited sight distance complicate overall safety conditions along the corridor.

The Juanita Drive Corridor Study evaluates existing conditions, relies on input from stakeholders and users, and analyzes potential safety improvements for drivers, bicyclists and pedestrians. The study identifies key improvements that may be included for future consideration in the Capital Improvement Program.

GUIDING PRINCIPLES

After consulting with stakeholders, a corridor vision was developed that is based on the following guiding principles:

- Address safety needs for all travel modes
- Maintain the corridor's unique identity, diversity of roadway character, and natural landscape
- Respect neighborhood values and engage the community in a shared vision for future improvements
- Protect the extraordinary natural environment and encourage low impact design approaches
- Provide a financially feasible, strategic and realistic set of community priorities for the corridor

Working with a Citizen Advisory Committee and conducting extensive public outreach, the City used these principles to identify and prioritize the corridor recommendations outlined in this report.

FIGURE 1: STUDY AREA LOCATION

COMMUNITY OUTREACH

The City identified key target audiences to engage:

- Businesses and residents along the project corridor and within the City of Kirkland
- Users of the project corridor; local and regional
- Management and users of parks and public spaces
- Local agencies, such as Lake Washington School District and King County Metro Transit
- Community groups and organizations
- City of Kirkland staff, including public safety officials
- Elected officials

COMMUNITY OUTREACH

Community involvement was key in developing and implementing a successful corridor plan for Juanita Drive. To prepare a common vision for future improvements to the corridor, the City gathered input from the community at public workshops, briefings with neighborhood groups, and informational booths at local events. A community-based advisory committee was also formed to serve as a forum for additional dialogue and information sharing among community members and city staff. The project team developed an overall communication and public involvement strategy, conducted stakeholder interviews, created informational materials and website content, and facilitated a project advisory group.

Insights from the community outreach program are highlighted throughout the report. A detailed description of the outreach activities is provided in **Appendix A**.

CORRIDOR PROFILE

This section characterizes existing and future conditions on Juanita Drive in the City of Kirkland. The following sections describe the corridor in terms of historical context, character, land, use, physical conditions, and transportation operations.

HISTORICAL CONTEXT

Juanita Drive was the first major north-south roadway built connecting Kenmore and Kirkland. The southern portion of the corridor was originally developed in the 1920s when the Juanita Beach Resort was established. Lake Washington Boulevard, also known as state highway 2-A, was built through Juanita. Residents decided to became a part of the city of Kirkland in July 1967.

Most of Juanita Drive remained in unincorporated King County, which built the current roadway alignment. Juanita Drive was designed with more rural design standards, such as banked curves that accommodate higher speeds.

The City of Kenmore inherited the north end of the corridor in 1998 after incorporation. The southern section was annexed to Kirkland in 2011.

JUANITA DRIVE FUNCTIONAL CLASSIFICATION

Juanita Drive is the main north-south movement corridor for the Inglewood and Finn Hill neighborhoods in northwest Kirkland. The City of Kirkland classifies most of Juanita Drive as a minor arterial and a portion in the vicinity of Juanita Village as a principal arterial. Definitions of classifications are as follows:

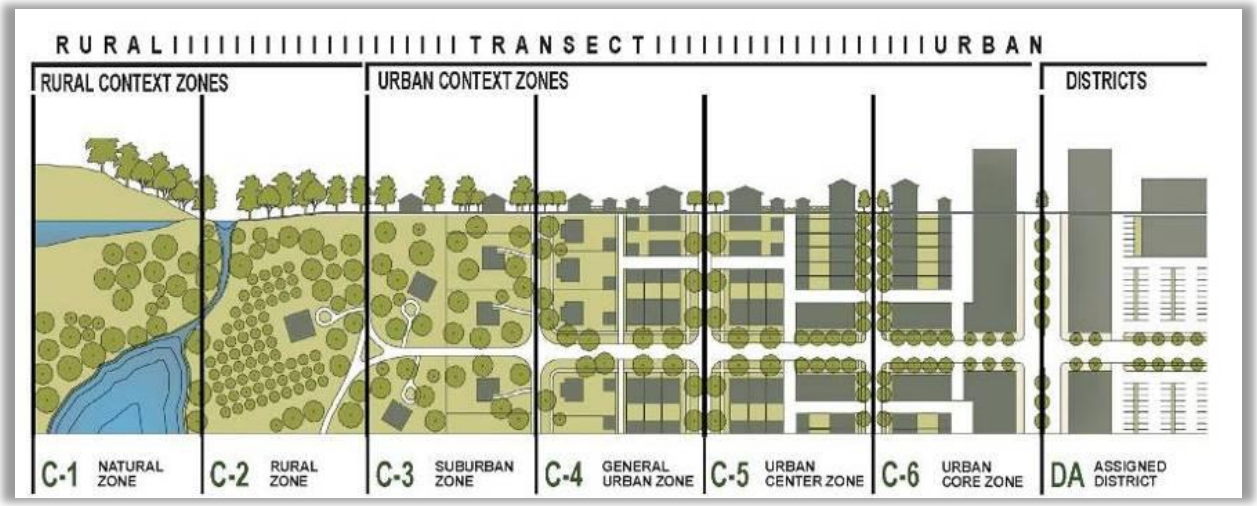
- **Principal Arterials** – connect Kirkland with other regional locations such as Bellevue and Redmond.
- **Minor Arterials** – provide connections between principal arterials and serve as key circulation routes within Kirkland.

To the east of 93rd Avenue NE in the vicinity of Juanita Village, Juanita Drive is classified as a principal arterial and connects to two other principal arterials – the north/south running 98th Avenue NE and the east/west running NE 116th Street. To the west and north of 93rd Avenue NE, Juanita Drive is a minor arterial and provides access to multiple collector streets, including Holmes Point Drive, NE 123rd Street, NE 132nd Street, and NE 141st Street.

CHARACTER

The three-mile section of Juanita Drive changes character several times, from a town center environment near Juanita Beach Park, to neighborhood zones with frequent property access, to a more rural atmosphere passing through Woodland and Big Finn Hill parks. The changing character means that a single roadway design may not be appropriate along the entire corridor. This approach is exemplified in **Figure 2**, which illustrates how a single roadway can transition from rural to urban with different roadway design requirements[1]. Juanita Drive best exemplifies the C-2 through C-4 zones.

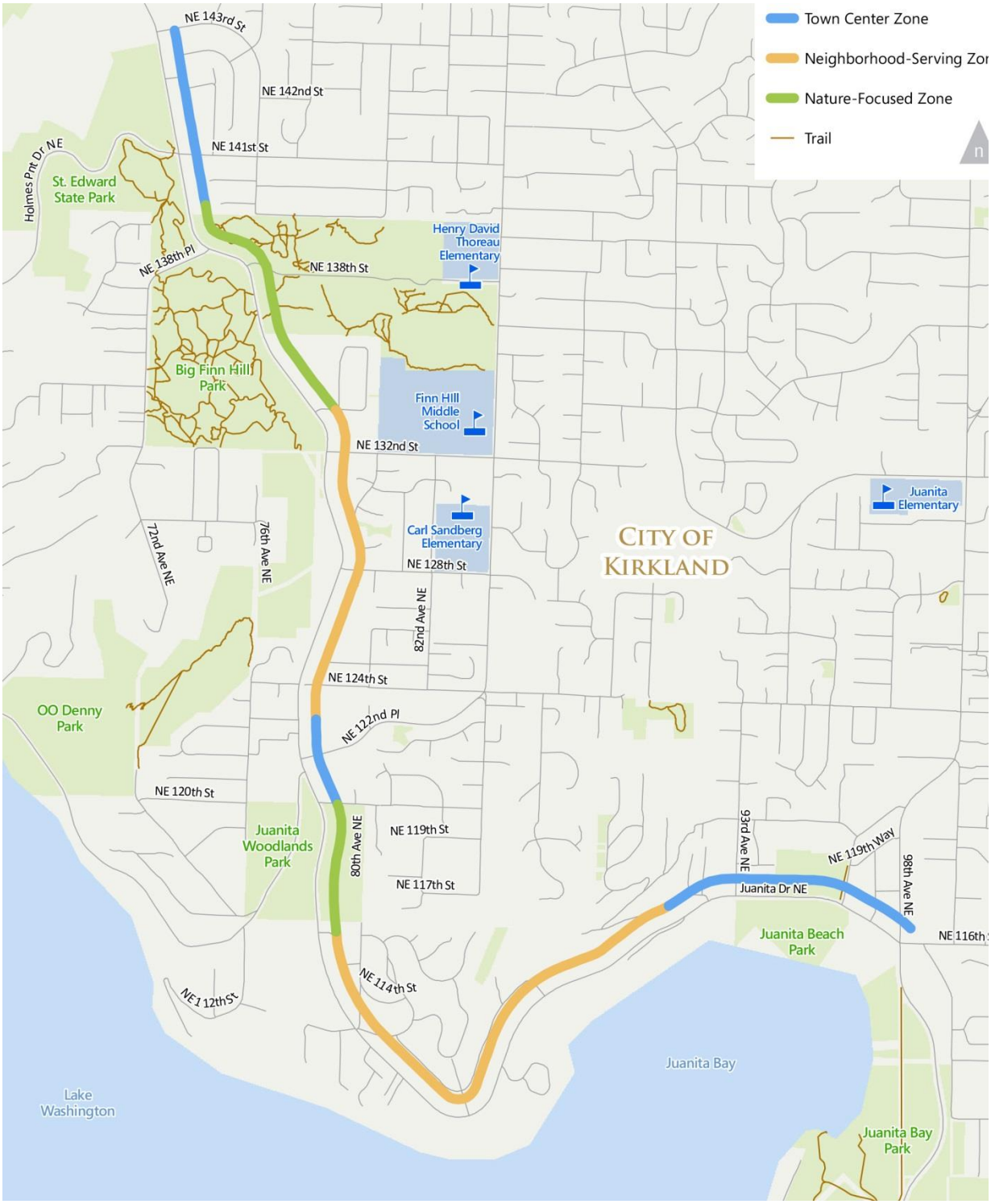
FIGURE 2: CHANGING ROADWAY CHARACTER



Juanita Drive can be thought of as having three primary 'zones', as shown in **Figure 3**. The project recommendations were tailored to best meet the needs of the surrounding land uses and roadway function as shown in these zones.

[1] Institute of Transportation Engineers. *Designing Walkable Urban Thoroughfares—A Context Sensitive Approach*. Washington, DC, ITE, 2010.

FIGURE 3: CORRIDOR CONTEXT



Town Center Zone

Town center zone segments serve all modes and trip types, but are focused on signaling the entry into a higher-density commercial or residential zone. Town center zone segments accommodate business access and transit stops, emphasizing multimodal interaction and gateway elements.

Features:

- Character: town center main street
- Serves residents, employees, and visitors arriving by all modes
- High visibility pedestrian crossing treatments

Example Location:

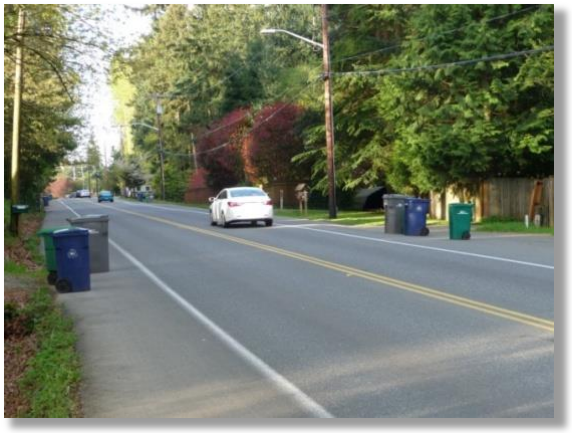
- Juanita Drive adjacent to Juanita Beach

Neighborhood-Serving Zones

Neighborhood-serving zone segments serve all trip types but focus on balancing access needs from side streets and driveways with safety for bike, pedestrian and auto trips. Neighborhood-serving zone segments may feature high-visibility mid-block pedestrian crossings and safe walking and biking options.

Features:

- Character: frequent neighborhood access
- Serves through bike, pedestrian, auto, as well as side-street access
- Pedestrian crossing treatments may include mid-block crossings, high visibility or raised crosswalks, and curb extensions



Example Location:

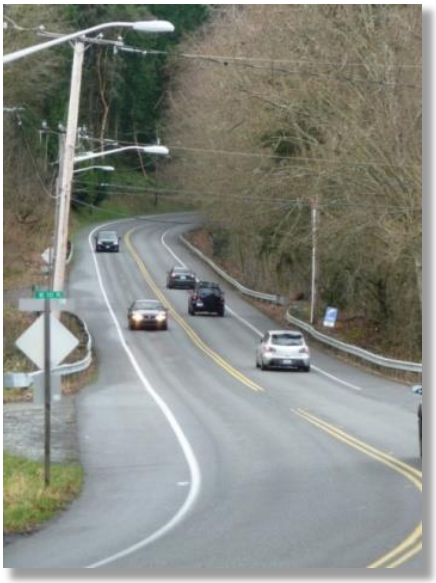
- Juanita Drive between NE 124th Street and NE 132nd Street

Nature-Focus Zones

Nature-focus zone segments serve all trip types and modes, but because of their location traveling through parks and open space, primarily focus on serving through bicycle and vehicular travel. These segments accommodate a mix of travel modes while maintaining a rural character.

Features:

- Character: rural roadway traversing scenic and wooded areas
- Serves all trip types, but focuses on through bicycle and vehicular travel
- Pedestrians and bicyclists can use wide shoulders or trail



Example Location:

- Juanita Drive adjacent to Big Finn Hill Park

LAND USE

Land use in the vicinity of Juanita Drive consists largely of single family home and recreation/conservation land. At major intersections, there are pockets of multifamily residential and commercial developments, with the highest densities located in the Juanita Village area at the southern end of the corridor. Bastyr University, located outside of Kirkland at the northwest corner of the study area adjacent to St. Edwards State Park, has an enrollment of approximately 1,000 students. To the west of Juanita Drive are two elementary schools and one middle school.

Table 1 summarizes existing land use and the amount of growth expected to occur by 2030 in the vicinity of Juanita Drive (south of NE 141st Street and west of 100th Avenue NE) and citywide in Kirkland.

TABLE 1: EXISTING AND FUTURE LAND USE

Area	Existing		2030		Total Growth		Percentage Growth	
	HH	EMP	HH	EMP	HH	EMP	HH	EMP
Corridor Study Area	8,000	1,120	8,700	1,500	700	380	9%	34%
Kirkland Citywide	39,780	41,170	45,790	51,870	6,010	10,700	15%	26%

Notes: HH = Households; EMP = Employment
Sources: City of Kirkland

By 2030, the number of households in the vicinity of Juanita Drive is expected to increase from 8,000 to 8,700, representing a total increase of 9%. The household growth will be spread throughout the greater Finn Hill area. Employment is expected to increase by a total of 34%, from 1,120 in 2013 to 1,500 in 2030. Most of this employment growth will be concentrated along 100th Avenue NE rather than Juanita Drive. This growth is consistent with city policy.

PHYSICAL CONDITIONS

The guiding principles emphasize addressing safety needs for all travel modes, while maintaining the corridor's identity and natural environment. This section describes the physical conditions that frame many of the corridor's needs. Many of the safety concerns along Juanita Drive relate to the physical conditions along the corridor. The following section describes:

- Roadway cross-section
- Topography
- Sight Distance
- Drainage
- Illumination

Details regarding the corridor inventory are provided in **Appendix C**.

ROADWAY CROSS-SECTION

Juanita Drive is characterized as a two-lane roadway for most of its length. **Figure 4** shows typical sections for the existing roadway. At one extreme, the Juanita Village area has a full urban roadway section with bicycle lanes, turn lanes, curb and gutter, planter strip, and sidewalks. However, most of the corridor has one travel lane in each directions and a variable-width shoulder on each side of the roadway. The total pavement width in these sections varies from 34 to 38 feet, with some short distances having wider width for parking. There are a few areas where a three-lane section provides turn lanes and shoulders or sidewalks on one or both sides.

The existing shoulders provide multiple functions: vehicle breakdown areas, places for trash containers, mail deliveries, walkways, and bicycling areas. The shoulders vary in width and do not provide a consistent or safe environment for walking or biking, although they are used for both.

Most of the corridor has a right-of-way width of 60 feet. However, the right-of-way is not readily usable for transportations due to steep slopes, vegetation, and other impediments, including numerous steep driveways.

WHAT WE HEARD FROM THE COMMUNITY

- Improving safety in the corridor is very important; especially for bicycles and pedestrians
- Concerned about safety for all modes of traffic, including pedestrians and bicyclists
- Limited sight distances throughout the corridor are a concern
- Desire for quick implementation of improvements, if possible
- Any improvements should be context sensitive of the blend between rural areas, neighborhoods and business centers
- Lack of neighborhood and park connectivity, including safe routes to local schools
- Traveling the corridor during rush hour is difficult, but there is minimal interest in widening the corridor for more automobile lanes. Some intersection fixes are fine
- Concerns about vehicle collisions
- Excitement about the City looking into improving the corridor

FIGURE 4: ROADWAY CROSS-SECTIONS

TOPOGRAPHY AND ROADWAY GEOMETRICS

The Juanita Drive Corridor is characterized by areas of steep topography and curving road segments with poor sight distance. **Figures 5 (a, b, c)** show the corridor in three segments (south, central, and north), along with information on slopes and sight distance.

Slopes

Portions of the corridor have slopes exceeding 33% adjacent to the roadway. In the southern segment, **(Figure 5a)**, the steep slopes coincide with closely spaced driveways that have steep grades approaching Juanita Drive. The steep slopes also create several drainage issues (see next section). The central segment **(Figure 5b)** is generally flatter to the south of NE 128th Street. Continuing north **(Figure 5c)**, there are several steep sections along Big Finn Hill Park.

Sight Distance

Motorists need adequate sigh distance or visibility for turning to and from Juanita Drive. The combination of steep driveway and side street approaches to Juanita Drive, along with tight roadway curves, creates several areas with challenging or severely limited sight distance. **Figure 5** shows those areas with sight distance issues for side streets/driveways (i.e. drivers wanting to turn onto Juanita Drive) and for Juanita Drive itself (i.e. drivers wanting to turn left from Juanita Drive into a side street or driveway). These locations of limited sight distance are highly correlated with the locations of collisions, as described in a later section.

DRAINAGE

Due to the topography along Juanita Drive, drainage is a problem that affects both property owners and users of Juanita Drive. As shown in **Figure 6**, there are several locations where groundwater or runoff crosses Juanita Drive, resulting in slippery conditions during rain events. Groundwater seepage on the roadway is a continual problem, particularly along the southern portion of the corridor because of the steep side-slopes.

In the areas between NE 124th and NE 132nd Streets, there is considerable runoff crossing Juanita Drive from east to west, because of limited storm drainage collection systems to direct the flow away from driveways that slope downward from Juanita Drive. The lack of storm drainage systems is evident throughout the corridor.

FIGURE 5A: SLOPE AND SIGHT DISTANCE – SOUTH

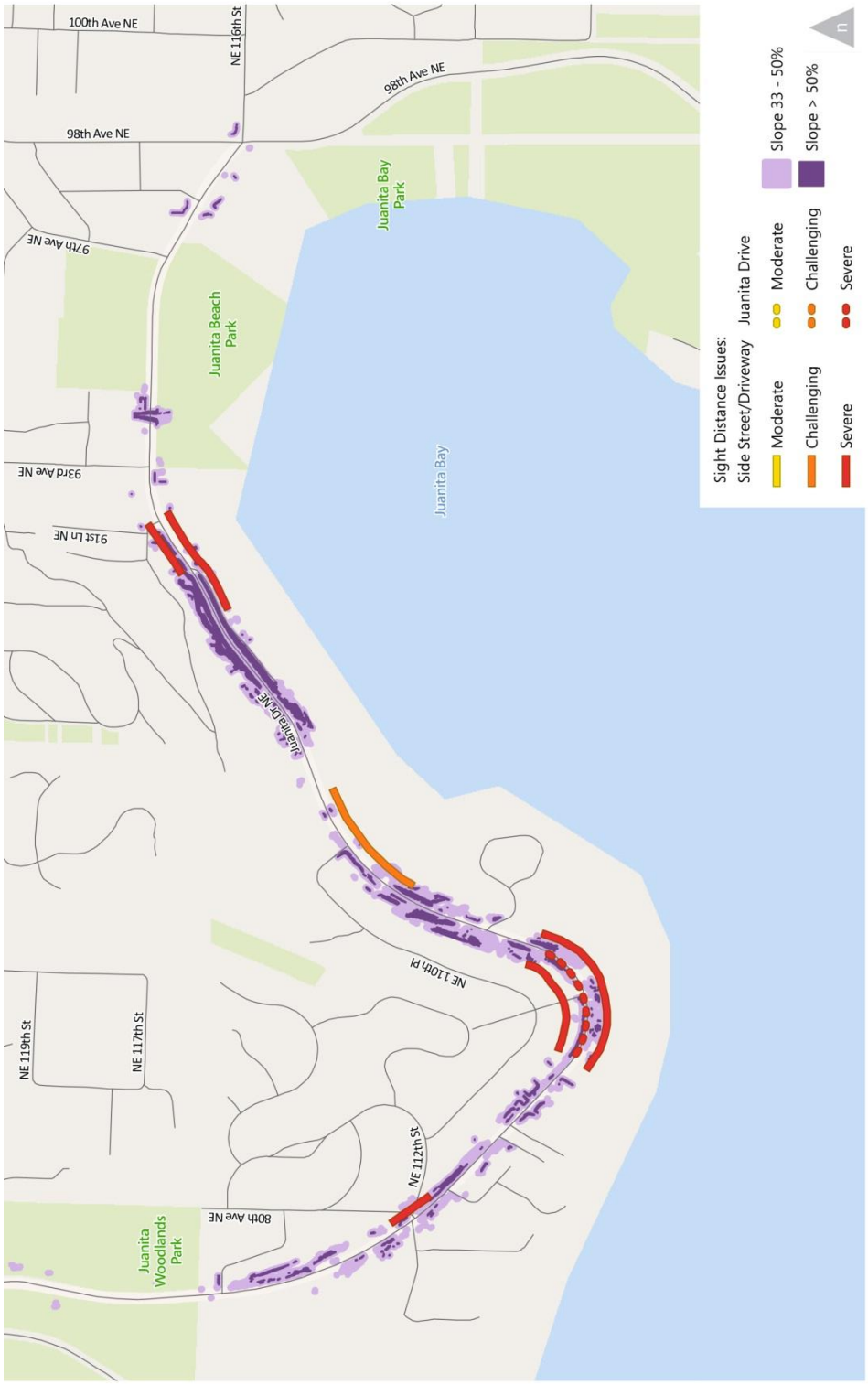


FIGURE 5B: SLOPE AND SIGHT DISTANCE – CENTRAL

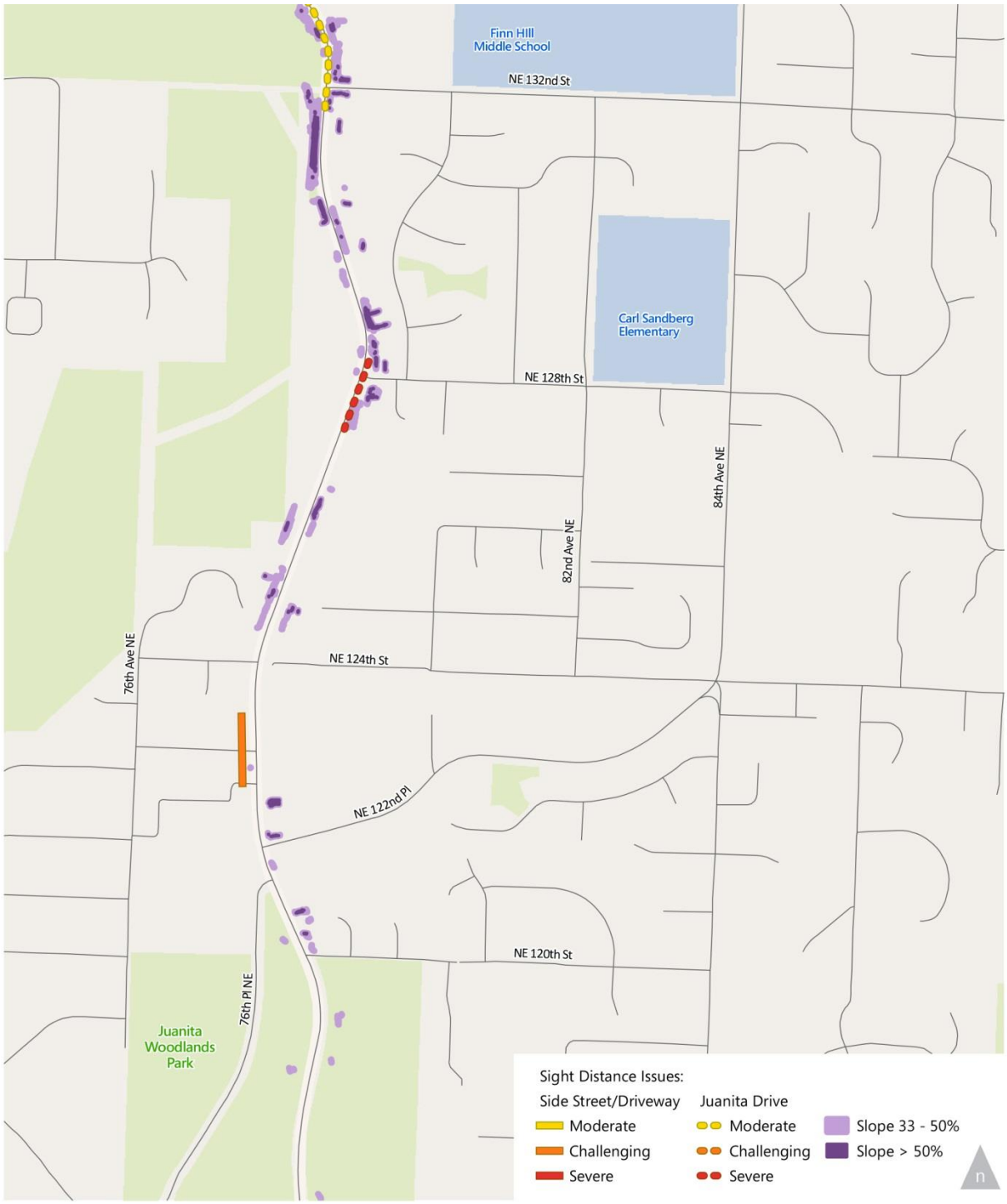


FIGURE 5C: SLOPE AND SIGHT DISTANCE – NORTH

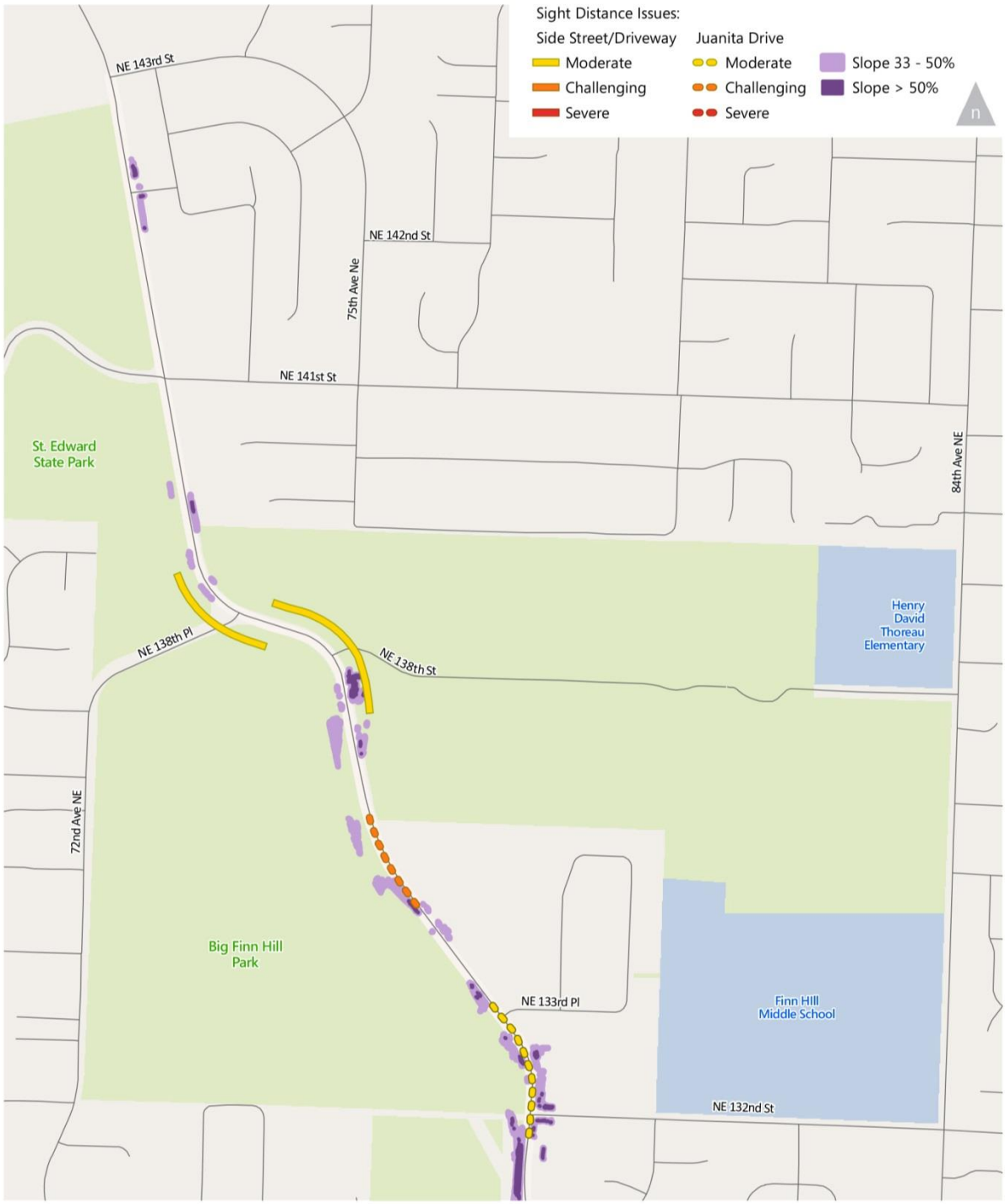
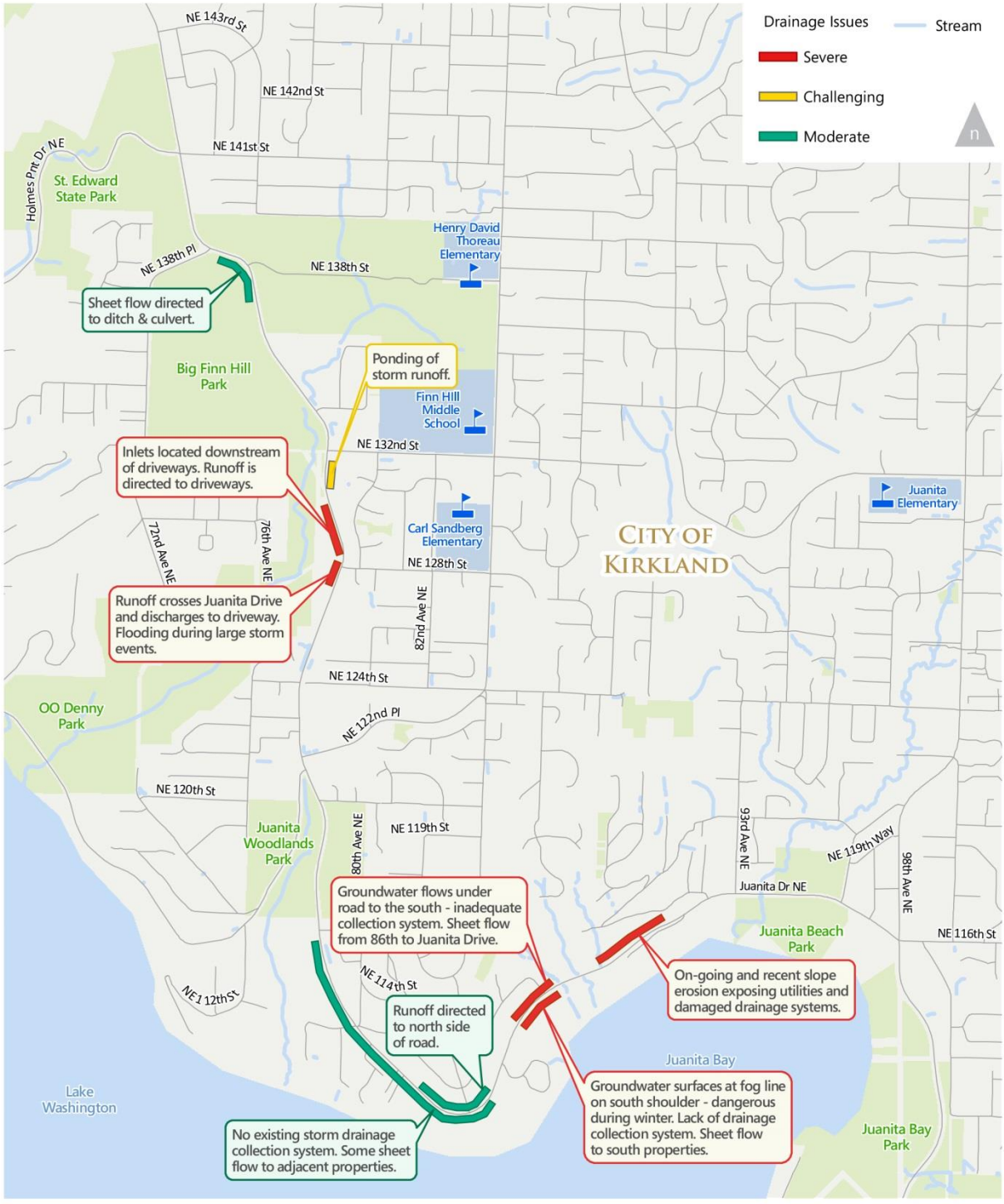


FIGURE 6: DRAINING ISSUES AND CONCERNS



LIGHTING

The existing lighting system on Juanita Drive consists of street lights mounted on timber and aluminum poles. Most of the street light poles are on the west side of the roadway with a mounting height of approximately 25 feet, with the exception of the north and south portions of the project where the poles are aluminum and staggered on both sides of the roadway. Spacing of the street lights varies along the corridor, which affects the lighting quality. On the north end from NE 143rd Street to NE 120th Street spacing varies from 100 feet to 400 feet. South of NE 120th Street spacing is approximately at 100 feet.

Existing light levels were determined using lighting analysis that examined *average light levels* (i.e. average light visible per square foot on the roadway) and what is called the *uniformity ratio*, the average light level to the darkest areas on the roadway.

The existing light levels along the north end of the project (from NE 143rd Street to NE 120th Street) are variable with several dark sections of roadway. In the south portion of the project (from NE 120th Street to 98th Avenue NE) the average light level is reasonably good.

While the overall average light levels in the corridor generally exceed the minimum standards, there are several sections of poor lighting within the areas listed below:

- South of NE 141st Street for approximately 600 feet
- South of NE 138th Street for approximately 800 feet
- North of NE 133rd Place for approximately 600 feet
- South of Holmes Point Drive for approximately 800 feet
- NE 141st St south to NE 132nd Street

In addition, there are two intersections with poor lighting: NE 141st Street and NE 122nd Place/Holmes Point Drive.

TRANSPORTATION OPERATIONS

The guiding principles emphasize safety for all modes. Understanding the transportation operations is important to the safety issues. This section describes existing transportation operations along Juanita Drive for each supported transportation mode: automobile, bicycle, pedestrians, and transit. Traffic flow, corridor safety, speed, and parking are discussed as they relate to these four modes of travel.

TRAFFIC FLOW

Peak hour and average weekday daily traffic (AWDT) counts were collected at five locations along Juanita Drive in 2012 **(Figure 7)**. Counts were performed for a 24-hour period on Tuesday, Wednesday, and Thursday, days which represent the most typical weekday traffic conditions. Daily traffic totals for the three days were averaged to obtain the final AWDT values.

Results show that the southern portion of the corridor experiences the highest traffic demand, with 17,700 AWDT in the vicinity of Juanita Village. Continuing north, demand decreases to 11,100 AWDT in the vicinity of Big Finn Hill Park before increasing to 12,700 AWDT near the shopping center at NE 141st Street.

SR 520 TOLLING – TRAFFIC EFFECTS

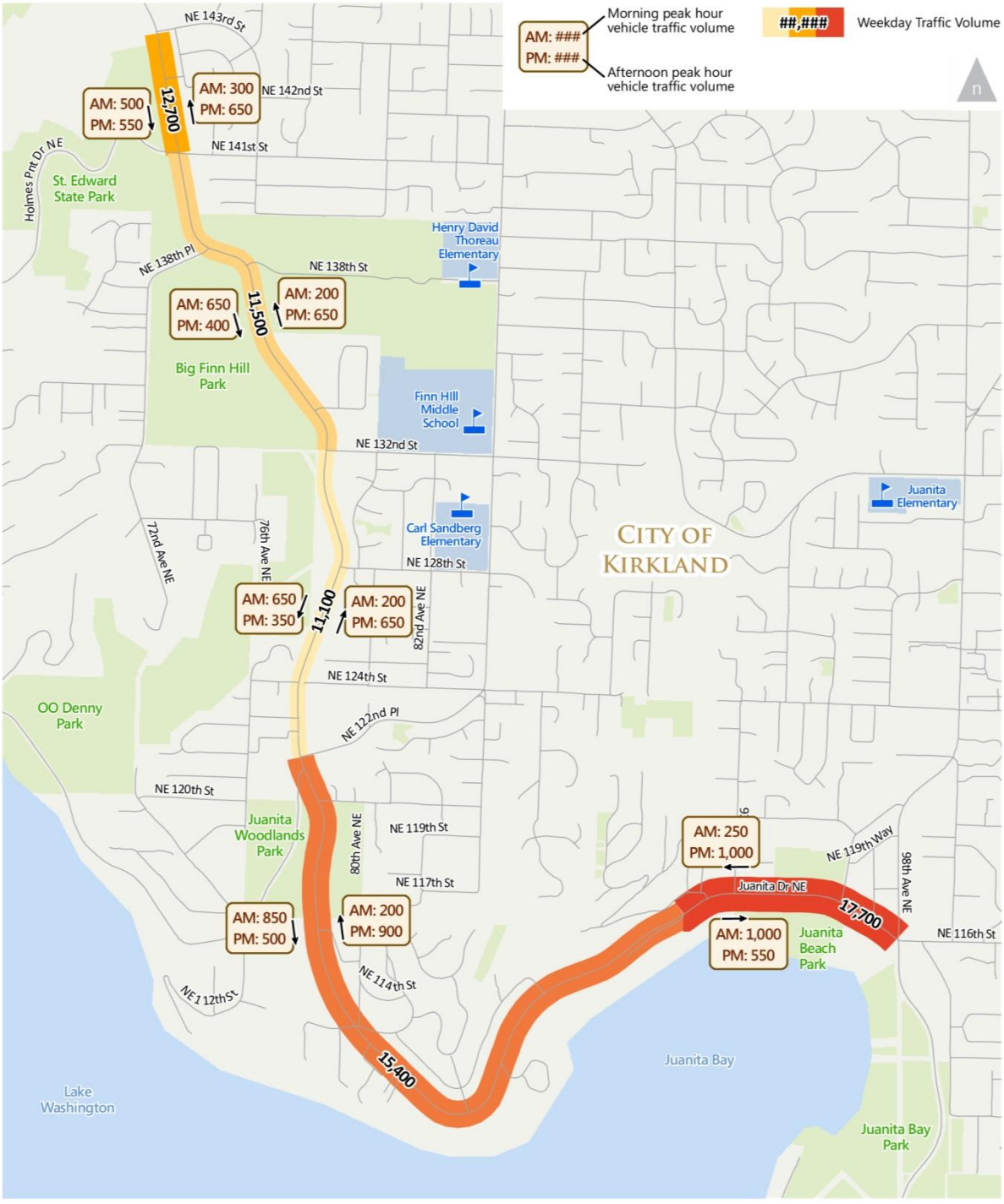
In December 2011, WSDOT implemented a toll for all drivers crossing Lake Washington on the SR 520 bridge. When tolling began, peak period volumes increased on Juanita Drive. On 100th Avenue NE, a parallel north/south Kirkland corridor, volume increases were larger. As of 2013, volumes were down to 2011 levels on Juanita Drive but remained higher on 100th Avenue.

Peak hour traffic counts show that morning commute traffic on Juanita Drive is heaviest in the southbound direction. Comparable demand occurs northbound during the PM peak hour. As with with the daily counts, AM and PM peak hour demand is heaviest near Juanita Village.

To better understand how peak hour travel patterns impact corridor traffic conditions, additional traffic counts were collected at eight intersections along Juanita Drive:

- NE 141st Street / Holmes Point Drive NE
- NE 132nd Street
- NE 128th Street
- NE 122nd Street
- 76th Place NE / Holmes Point Drive NE
- NE 112th Street/80th Avenue NE
- 97th Avenue NE
- 98th Avenue NE

FIGURE 7: EXISTING TRAFFIC VOLUME



The intersection counts indicate high levels of congestion near Juanita Village. During the AM peak hour, traffic congestion occurs at 98th Avenue NE and 97th Avenue NE. During the PM peak hour, the 98th Avenue NE intersection is also heavily congested All other intersections operate at reasonable congestion levels during the AM and PM peak hours, although slow moving, rolling traffic queues are commonly encountered heading southbound towards Juanita Village in the AM peak period and northbound towards the traffic signal at 76th Place NE / Holmes Point Drive NE during the PM peak period.

Based on the expected land use growth discussed previously, traffic demand along Juanita Drive could grow by 15 to 20 percent during the peak commute period by 2030. However, peak hour traffic growth along the central portion of the corridor will be constrained by the traffic throughput capacity at the southern and northern ends of the corridor. Because traffic demand is constrained, entering Juanita Drive at the 98th Avenue NE intersection at the southern end of the corridor and at Simonds Road NE (in the City of Kenmore) at the northern end, total peak period traffic demand on most portions of the corridor would likely increase by only 5 to 10 percent.

In 2030, the signalized intersections at 98th Avenue NE and 97th Avenue NE are expected to remain congested. Congestion at the 76th Place NE / Holmes Point Drive NE intersection would increase during the PM commute peak, resulting in longer traffic queues approaching the signal, but generally acceptable congestion levels compared to the city's standards.

An explanation of the intersection congestion calculation method and a table summarizing the specific intersection results are provided in **Appendix C**.

SAFETY

Along Juanita Drive, the existing roadway geometry, multiple driveway access points, and limited sight distance present safety concerns. Collision data for vehicles, bicycles, and pedestrians were collected to determine where these design concerns translate into safety deficiencies.

Collision data were obtained from the City of Kirkland for the Juanita Drive corridor. Collision data over a period of four years (January 2009 – December 2012) indicate a total of 142 collisions, an average of 36 collisions per year. Reports provide details about individual collisions, including type, probable cause, severity, time of day, weather conditions (summarized in the text box on the following page).

While the total number of collisions is not atypical of other Kirkland roadways, the severity of the collisions is higher than the City average. Thirty percent of the collisions resulted in injuries and there were

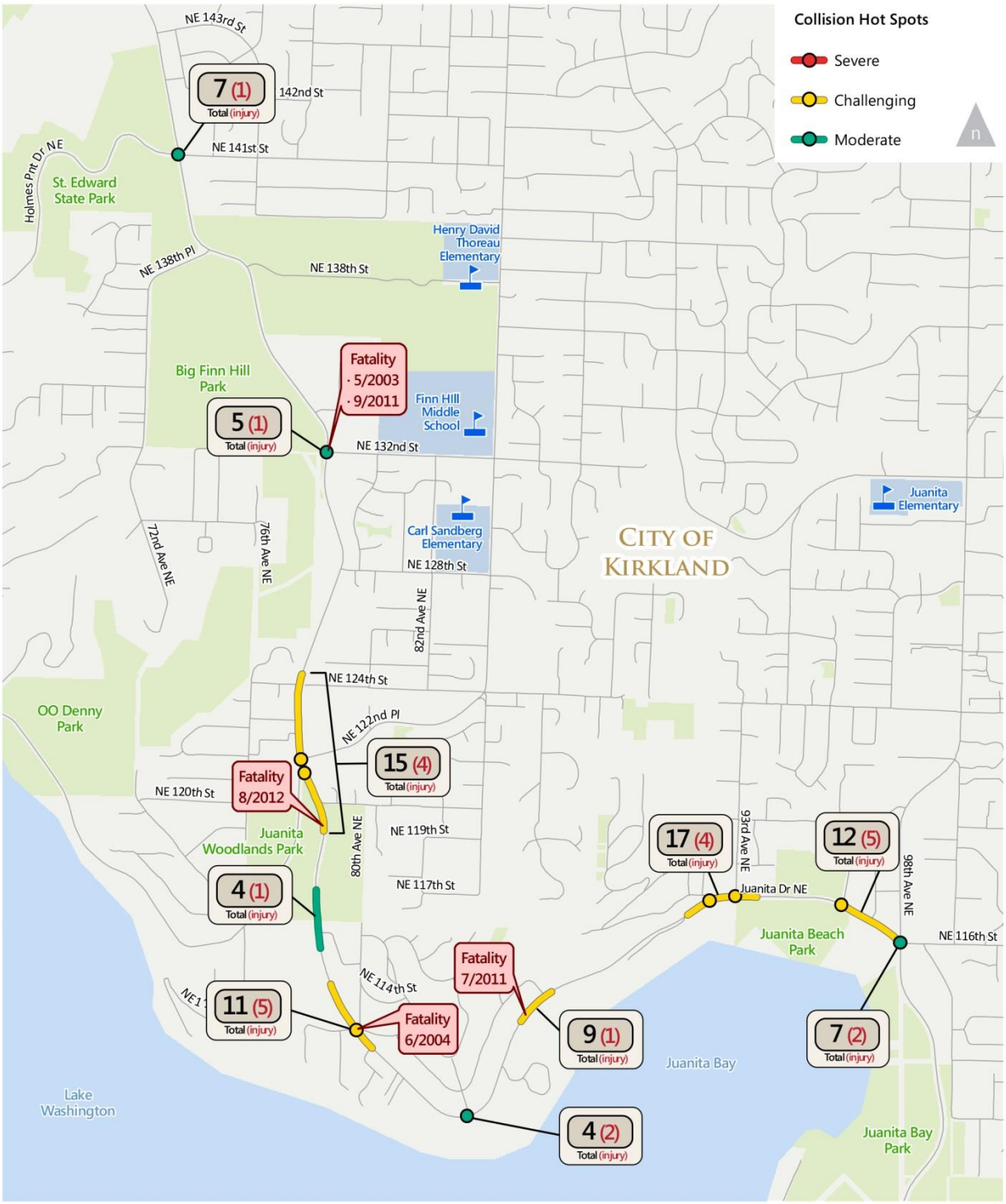
three fatalities, two involving a bicyclist. Exposure is high for bicyclists and pedestrians due to the limited sight distances, speeds, and lack of separation from motor vehicles.

Roadway segments and intersections with at least four collision events over the four year data period, representing the higher levels of collisions, are shown in **Figure 8**. Most of the rear-end collisions occurred at major cross streets where vehicles on Juanita Drive were stopped, waiting to turn left. Examples include the NE 132nd Street and NE 112th Street intersections. Angle collisions occur throughout the corridor often where drivers attempt to turn out of side streets or driveways onto Juanita Drive, facing high speed traffic and limited sight distance. Single vehicle and head-on collisions often occurred along segments where speeds exceed safe conditions (see next section). One example location is along the Juanita Woodlands Park.

COLLISION STATISTICS (JANUARY 2009 – DECEMBER 2012)

- Probable Cause and Type
  - Rear end was the most common type of collision, comprising 44% of the total.
  - 26% of all collisions were attributed to a driver exceeding reasonably safe speeds, based on police records.
  - Collisions attributed to DUI comprised 6% of the total, and about half of those were single vehicle collisions.
  - Single-vehicle collisions were 28% of the total.
- Conditions
  - 23% of all collisions occurred at night.
  - Weather conditions were wet or icy for 32% of all collisions.
- Severity
  - 30% of all collisions resulted in at least one injury.
  - Three collisions resulted in a fatality.
- Bicyclist and Pedestrians
  - Collisions involving a bicyclist were 5% of the total.
  - Two collisions resulted in a bicyclist fatality.
  - There was one collision involving a pedestrian over the 4-year period.

FIGURE 8: COLLISION HOT SPOTS



SPEED

Speed is an important factor in the safety and perception of comfort along Juanita Drive. Speed studies were conducted at three locations along Juanita Drive in both the northbound and southbound directions. In general northbound travel in uphill and southbound is downhill. **Table 2** summarizes the posted speed limit and observed speed levels at these locations. Two speed values are shown:

- **50th Percentile Speed** – half of motorists travel below this speed, and half of motorists exceed this speed.
- **85th Percentile** Speed – 85 percent of motorists travel below this speed, and 15 percent of motorists exceed this speed. Typically, the 85th percentile speed is used to establish posted speed limits.

Results show that the majority of drivers exceed the posted speed limit throughout the study area. Speeding is particularly prevalent in the north and central areas of the corridor, where over 70 percent of drivers exceed the posted speed. Over 10 percent of drivers travel at extreme speeds (10 mph or more over the posted speed) northbound near Big Finn Hill Park and southbound (downhill) in the vicinity of Juanita Woodlands Park. Time of day data associated with the observations indicate that most extreme speeding occurs at night.

All of the horizontal curves meet the safety standards of the established 35 mph posted speed, but several curves do not meet the standards for 40 mph travel. This creates potentially unsafe conditions for motorists and other users, particularly at night and during inclement weather.

TABLE 2: OBSERVED CORRIDOR SPEEDS

Location on Juanita Drive	Posted Speed Limit (mph)	50th Percentile Speed (mph)		85th Percentile Speed (mph)	
		Southbound	Northbound	Southbound	Northbound
North[1]	35	37	41	40	45
Central[2]	35	39	38	44	41
South / Juanita Village[3]	25	25	27	29	31

[1] Recorded directly north of NE 138th Street
[2] Recorded directly north of NE 112th Street / 80th Avenue NE
[3] Recorded directly west of NE 93rd Street
Source: Fehr & Peers, 2013.

PEDESTRIANS AND BICYCLISTS

Pedestrian and bicycle facilities in the Juanita Drive study area are depicted in **Figure 9.**

Pedestrians

Pedestrian facilities include sidewalks and crosswalks. To the east of NE 116th Place near Juanita Village and Juanita Beach Park, sidewalks are provided on both sides of the street, buffered from the roadway by landscaping strips and tree planter boxes. Pedestrian push buttons are located at the signalized intersections at 97th Avenue NE and 98th Avenue NE. Further west, there is a midblock crosswalk with warning beacons to connect Juanita Beach Park across Juanita Drive. At the 93rd Avenue crosswalk (pictured next page), crossing flags are provided.

Marked crosswalks are provided at the following locations:

- NE 141st Street (signalized intersection)
- 76th Place NE / Holmes Point Drive NE (signalized intersection)
- NE 122nd Street (signalized intersection)
- 86th Avenue NE (unsignalized intersection)

The 86th Avenue NE crosswalk presents safety concerns due to sight distance issues from both directions of travel on Juanita Drive.

For much of the corridor outside Juanita Village, sidewalks are not present on either side of the street. Sidewalks are typically provided only near commercial retail centers and at a few transit stops. Combined

with the lack of continuous sidewalks between neighborhood centers, the limited provision of safe and comfortable crosswalks limits pedestrian mobility along the full-length of the corridor.

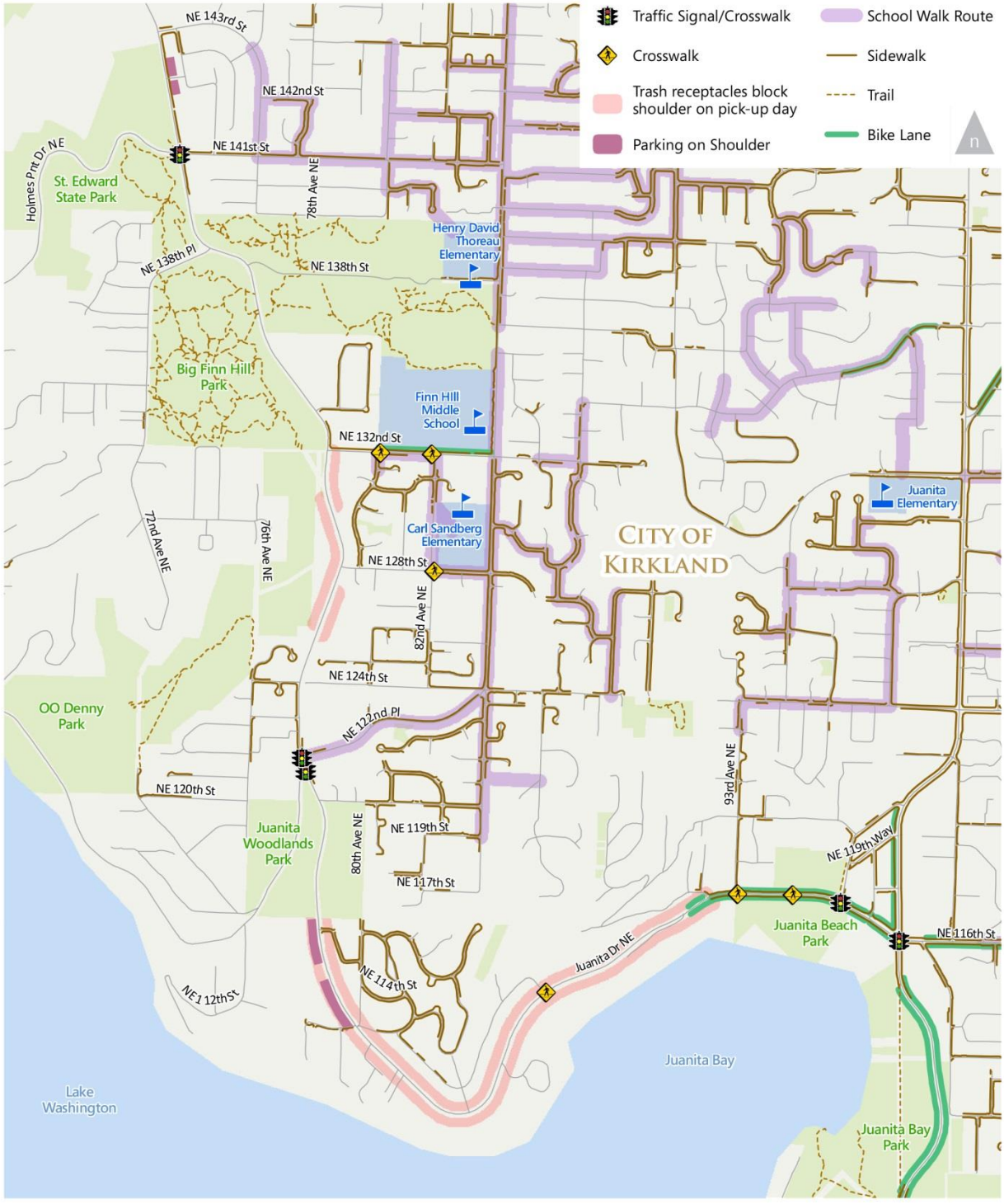
Bicycles

Formal bicycle facilities are limited to the Juanita Village area (see Figure 9). Between 98th Avenue and NE 116th Place, five-foot wide bike lanes are provided on both sides of the roadway. Bike lanes continue to the east along NE 116th Street and connect to bicycle facilities along 98th and 100th Avenue NE. West of NE 116th Place, Juanita Drive does not have marked bike lanes but the shoulders are often used by bicyclists.

Near neighborhood retail centers the roadway has curb, gutter, sidewalk, and about five feet of striped shoulder space. Outside of the neighborhood retail centers, bicyclists commonly ride in the shoulders on either side of the roadway (pictured right). The striped shoulders function like bike lanes but do not include standard bike lane markings. While the shoulders work reasonably well for bicycles, there are many other formal and informal uses of the shoulder that interfere with bicycle use, including trash receptacle placement and pickup, mail delivery, vehicle breakdowns, parking, and delivery truck pull-off.

Despite the lack of formal bicycle facilities on much of the corridor, Juanita Drive is a popular north-south route for commuter and recreational bicyclists. Counts collected by WSDOT and the Cascade Bicycle Club at the intersection of Juanita Drive and NE 143rd Street in September 2012 indicate 28 bicyclists pass through during the AM peak travel period (7 – 9 AM) and 32 during the PM peak (4 – 6 PM). Outside of commute hours, a moderate number of recreational bicyclists travel the corridor. Bicycle volumes are typically higher during weekends.

FIGURE 9: PEDESTRIAN AND BICYCLE FACILITIES



TRANSIT

King County Metro Transit (Metro) provides public transit service along Juanita Drive, offering two bus routes along the study corridor. Details of these passenger bus line routes, as of December 2013, are described below:

- **Route 260** – Route 260 connects Inglewood/Finn Hill with Downtown Seattle. It makes a clockwise loop of the Inglewood neighborhood, traveling south on 84th Avenue NE, west on NE 123rd Street/NE 122nd Place, north on Juanita Drive, and East on NE 141st Street before going south again onto 84th Avenue NE and heading east on NE 134th Street. Service includes three buses to Downtown Seattle during the AM commute period and three buses to Inglewood/Finn Hill during the PM peak period. There are three Route 260 stops that serve the Juanita Drive Corridor between NE 122nd Place and NE 141st Street.
- **Route 935** –Route 935 operates as Dial-a-Ride Transit (DART); passengers may wait at any of the route's stops for regularly scheduled service or may place a reservation for pick-up at an off-route location within the defined service area. Route 935 connects Totem Lake to Kenmore via Juanita Drive and 84th Avenue NE. The AM commute period service (5 – 9 AM) includes five vans to Totem Lake and six to Kenmore. Between 3 – 6 PM, seven vans connect to Totem Lake and six to Kenmore. There are nine scheduled northbound and southbound Route 935 stops that serve the Juanita Drive Corridor between Juanita Village and the Kirkland city limits.

PARKING

Vehicle parking is not permitted in the shoulder on most portions of the corridor. In practice, on-street parking commonly occurs at certain locations, including the west shoulder between Juanita Woodlands Park and the NE 112th Street / 80th Avenue NE and the east shoulder near NE 142nd Street. These locations are indicated in Figure 9 with the pedestrian and bicyclist facilities.

Use of shoulder space for on-street parking can create can create a variety of conflicts with the other functions of the shoulder (e.g., bicycle and pedestrian movement, trash receptacle placement and pickup, delivery pull-off space, vehicle breakdown space). For example, when vehicles are parked in the east shoulder near 142nd Street, northbound bicyclists are forced to merge from the shoulder into the travel lane (pictured right). This situation occurs throughout the corridor.

RECOMMENDED PLAN

The Juanita Drive Corridor Plan contains a variety of projects that meet the study's guiding principles, which can be phased in over the next several years. The plan recognizes that Juanita Drive passes through a wide variety of land use contexts, topography, and natural settings. This variety dictates the unique treatments that are applied to address specific safety, access, and mobility needs. However, the plan contains several features that are important to the overall upgrade of the corridor. These common features include the following:

- Basic roadway cross-section that contains a travel lane in each direction, buffered bicycle lanes, and a walkway on at least one side of the roadway. In some sections, an off-road multipurpose path is an option.
- Pedestrian crosswalks with flashing beacons.
- Street lighting upgrades.
- Drainage improvements.
- Intersection treatments, such as turn pockets and better sight distance.
- Traffic calming treatments to reduce speeds.
- Prohibition of on-street parking

The corridor plan does not recommend the addition of travel lanes to accommodate more traffic, but the intersection treatments will improve overall traffic flow and safety. Recognizing that many of these projects are expensive and will take several years to fund and implement, the plan sets priorities and identifies some 'quick win' projects that could be funded in the near future as funding becomes available.

The following sections describe the corridor plan recommendations in further detail.

PROPOSED ROADWAY CROSS-SECTION

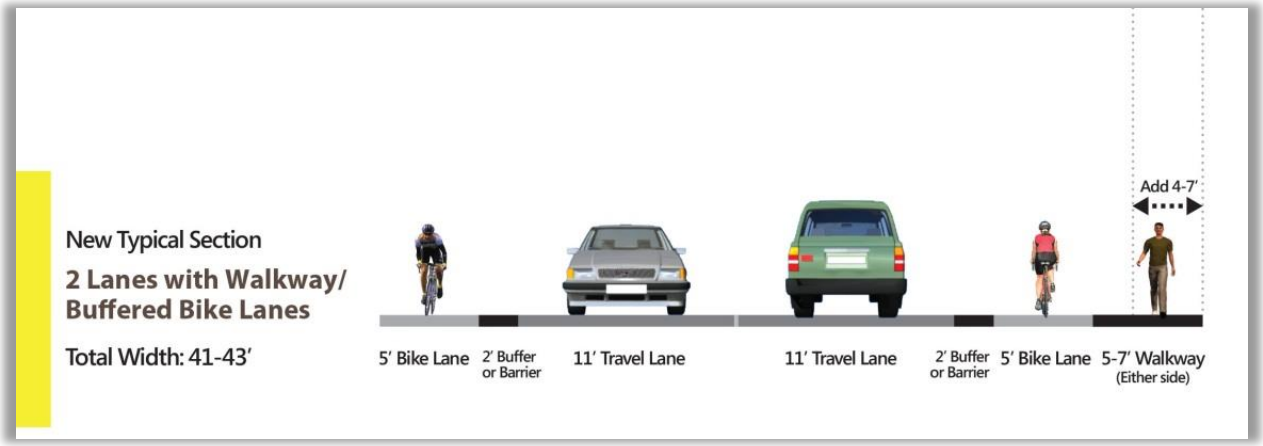
BASIC CROSS-SECTION

The recommended basic roadway cross-section consists of the following (see **Figure 10)**:

- One 11-foot travel lane in each direction.
- Bicycle lanes in each direction, with a two-foot buffer separating the bicycle lane from the travel lane.
- A walkway (5-7 feet) on one side.

This cross-section (41-43 feet) fits within the existing roadway right-of-way (60 feet) but recognizes that much of the right-of-way is difficult to use given the hilly terrain and steep slopes. The cross-section would require adding from 4 to 7 feet of pavement width throughout the corridor. This design reflects the trade-offs needed to provide for safe conditions while respecting the natural environment and character of Juanita Drive.

FIGURE 10: BASIC CROSS-SECTION



The buffered bicycle lane would provide a safer environment for bicyclists throughout the corridor. The buffer is envisioned as a two-foot specially-painted area along most roadway sections. The buffer would provide visual cues to drivers while still allowing bicyclists access for passing or other maneuvers. The buffered bike lane would also be accessible for occasional use by waste management trucks, postal services, and emergency/maintenance vehicles. In some short areas, such as around curves, "green" bike

lanes could be painted, or the buffer could contain physical treatments such as rumble strips, plastic candles, or low curbing.

The Study involved close coordination with the bicycle community and found that the cycling community was not interested in having physical barriers throughout the corridor. Continuous physical separation of the bicycle lanes is not envisioned due to frequent driveway and intersection spacings, special vehicle access needs described above, and bicycle maneuverability. The Study team was also mindful of maintenance considerations and determined that the project design process will consider physical barriers, garbage/recycling pads, and maintenance of the bike lane area.

The walkway could be designed either as an asphalt surface flush with the bicycle lane (with paint separation), a textured or colored pavement, gravel pathway or as a raised sidewalk. These decisions could vary throughout the corridor and would be made with community input during the design process. The walkway could be on either side of the roadway in the south section of the corridor, with the eastern side being most likely in the central and northern sections.

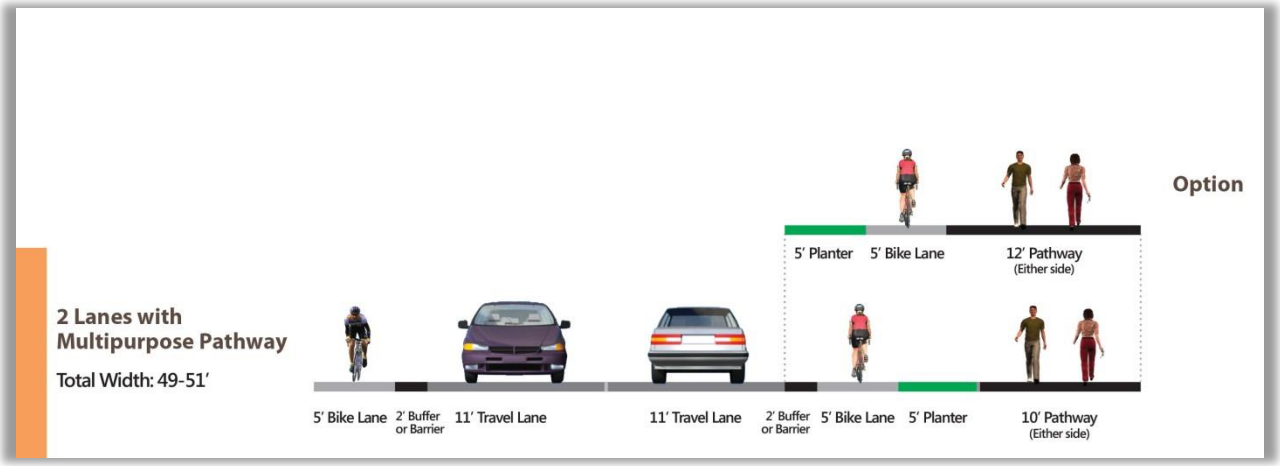
The basic cross-section assumes that on-street parking would be prohibited, which is the current condition throughout most of the corridor. Some of the informal parking that currently exists along the roadway shoulders would be eliminated due to the designation of the bicycle lane and walkway.

MULTIPURPOSE TRAIL CROSS-SECTION

Several members of the community favored the construction of a multipurpose trail along the corridor with separation from motor vehicles. This design was not practical in many sections due to topography, frequency of driveways, and cost. However, a multipurpose trail could be constructed through the park sections of the corridor to provide a more pleasant and safer environment for all nonmotorized users. **Figure 11** shows this cross-section, which would be about 10 feet wider than the basic cross-section. The multipurpose trail would be separated from the roadway by a planter strip, with the bicycle lane either adjacent to the travel lanes or next to the trail.

The multipurpose trail would need to be designed in harmony with the park setting, taking into consideration the likely need for additional right-of-way and tree impacts. The section through Big Finn Hill Park would lend itself most logically to this design treatment. The roadway section through Juanita Woodlands Park could also be considered, but it is shorter in length and the steep slopes would require expensive construction. In that section, a separated narrower trail could be an option.

FIGURE 11: CROSS-SECTION WITH MULTIPURPOSE TRAIL



TOWN CENTER AREA CROSS-SECTIONS

In the portions of the corridor that run through town centers there would be limited changes to the existing cross-sections; they would include three lane designs, sidewalks, and planter strips.

PROJECT RECOMMENDATIONS

The corridor plan consists of 32 projects grouped into logical packages as shown in **Appendix B**. The total cost of the plan ranges from $19 to $26 million, depending on the design options, as summarized in **Table 3**. About half of the cost ($10 million) is to provide the basic cross-section through the corridor. Building the wider multipurpose trails through the parks would add around $4.6 million. Intersection treatments including turn pockets, crossing treatments and lighting would require an additional $5 to $6 Million, while various other nonmotorized, Intelligent Transportation Systems (ITS), safety and lighting treatments would add around $3 to $4 million.

TABLE 3: SUMMARY OF RECOMMENDED PROJECTS

Projects	Basic Cost	Additional Costs for Option
Basic Cross-section	$10.6M	$3.3M (Multipurpose Trails)
Intersections	$5.3M	$1.2M (Roundabouts)
Uphill Bicycle Lane throughout Corridor	$0.6M	
Other Pedestrian/Bike Safety Treatments	$1.5M	
Intelligent Transportation Systems (ITS)	$1.1M	$1.2M (undergrounding utilities)
Other Safety Projects	$0.2M	
Total Projects	**$19.3 Million**	**$5.7 Million**

Note: Not in priority order

Table 4 lists the individual projects, shown in **Figure 12 (a,b,c).** The costs are considered to be conservatively high with large contingencies applied (generally 30% depending on project complexity). The basic costs in the table include the basic cross-section (see Figure 10). The option costs add the multipurpose trails, two roundabouts at NE 122nd Place and NE 138th Street, and undergrounding of utilities for the ITS project.

The projects in Table 4 are shown as high, medium, and lower priority based on rating them against the guiding principles of the study. The highest rated projects are marked with an asterisk (*). **Appendix B** shows the prioritization criteria and the rating results. All of the projects scored fairly well across the criteria, since they were developed with the guiding principles in mind. The biggest areas of difference in the priorities related to the degree to which the projects addressed known safety problems, how many travel modes they addressed, their cost, their ability to be phased, and degree of public support received

TABLE 4: RECOMMENDED PROJECTS

Project ID	Rating	Project Location	Project Description	Basic Cost[1]	Options Cost
I1	L	97th Ave NE/ 98th Ave NE Intersections	Retime signals	105	
I2	L	NE 116th Pl Intersection	Rechannelize	125	
I3	H*	112th Ave NE Intersection	Rechannelize Intersection/ Pedestrian Crossing	1,894	
I4	M	76th Pl NE/ NE 122nd Pl Dual Intersections	Rechannelize/ combine intersections with signal (L) or roundabout (H)	1,184	193(R)
I5	H*	NE 128th St Intersection	Left turn pocket/ pedestrian crossing	1,082	
I6	H*	NE 132nd St Intersection to NE 133rd Place	Left turn pocket/ pedestrian crossing/ walkway	878	
I7	H*	NE 138th Pl Intersection	Roundabout Option (Add to cost of Project R8)		1,012(R)
I8	L	NE 141st St Intersection	Add left turn signals	55	
NM1	M	98th Ave NE Intersection	Pedestrian/ Bicycle enhancements	83	
NM2	M	93rd Ave NE Intersection	Pedestrian Crossing	90	
NM3	M	86th Ave NE Intersection	Pedestrian Crossing/Drainage	525	
NM4	H	NE 124th St Intersection	Pedestrian Crossing/ walkway to NE 123rd St	143	
NM5	M	NE 132nd St- Juanita Drive to 72nd Ave NE	Pedestrian/Bicycle Corridor treatment	316	
NM6	H*	Big Finn Hill Park	Pedestrian crossing/ trail connection	203	
NM7	L	NE 143rd St Intersection	Pedestrian Crossing	90	
NM8	H*	Corridor	Bicycle safety treatments	129	
NM9	H	Corridor	Create northbound bicycle lane	377	
NM10	H	Corridor	Bicycle Signs for northbound bicycle lane	187	
R1	M	NE 116th Pl to 86th Ave NE	Cross-section/ Drainage Improvements/ Gateway median	4,994	
R2	M	86th Ave NE to NE 112th St	Cross-section/ close 83rd Ave NE	972	
R3	L	NE 112th St to 79th Way NE	Cross-section	1,051	
R4	L	79th Way NE to NE 120th St	Cross-section	550	980(MP)
R5	H*	NE 120th St to NE 122nd Lane	Extend 3rd lane/ walkway on east side	309	
R6	M	NE 124th St to NE 132nd St	Cross-section	985	
R7	H*	NE 133rd Pl to south of NE 138st St	Cross-section	781	901(MP)
R8	H	NE 138th St to North of NE 138th Pl intersection	Cross-section/ Intersection Channelization at NE 138th Pl and NE 138th St	497	806(MP)
R9	L	NE 138th Pl to NE 141st St	Cross-section/ Gateway Median	449	575(MP)
R10	L	NE 141st St to NE 143rd St	Cross-section	63	
V1	H*	NE 122nd Pl	Lighting Upgrade	50	
V2	H	Corridor- selected locations	Center line Rumble Strips	38	
V3	M	NE 138th Pl Intersection	Left turn refuge for EB to NB movement	41	
V4	L	Corridor	ITS Integration- Signals	1,050	1,200(ITS)
V5	L	Corridor	Gateway Signs- North and South End	40	
			Total	**19,336**	**5,667**

[1] in 1,000s
Rating: L=Lower; M=Medium; H=High
* Highest Rated

(R) Roundabout Options	1,205
(MP) Widen for Multipurpose Options	3,262
(ITS) ITS Undergrounding	1,200

during the community outreach events.

The summary ratings and costs are as follows:

Rating	Cost	Percent of Cost
High	$6.6M	(34%)
Medium	$9.2M	(48%)
Lower	$3.5M	(18%)
Total	$19.3M	(100%)

Over 80 percent of the project rate as high or medium priority. The prioritization process will be helpful to the city seeking grant funds or packaging project elements along the corridor.

Table 5 summarizes what we heard from the community and how the proposed corridor plan addresses the community needs.

TABLE 5: COMMUNITY INPUT ON THE RECOMMENDATIONS

What we Heard from the Community	What the Proposed Corridor Plan Recommends
Improving safety in the corridor is important; especially for bicycles and pedestrians	Separated walkway and bicycle lanes with buffer strips; intersection channelization; active pedestrian crossings
There are too many vehicle collisions	Intersection turn lanes to reduce rear end collisions; center line rumble strips to reduce head-on collisions
Traveling the corridor during rush hour is difficult, but minimal interest in widening the corridor for more automobile lanes	No new auto lanes, but some intersection turn lanes and traffic signal improvements
There aren't enough connections between neighborhoods and parks, including safe routes to local schools	Several new 'flashing' pedestrian crossings and links to neighborhoods, schools and parks
Provide as much separation as possible for pedestrians and bikes	Bike lanes with buffer strips and walkway on one side of road; option for multipurpose trail in Woodland and Big Finn Hill parks.
Mixed reactions to roundabouts; some people wanted them, some did not.	Options for a roundabout at NE 122nd St/Holmes Point Dr and at NE 138th Pl.
Don't impact the parks along the corridor	Two options in parks- basic cross section or wider section with multipurpose trail. Sensitivity to roadway width and right-of-way
Get something done soon!	Several 'quick win' projects that could be implemented soon as funding is available

FIGURE 12A: RECOMMENDED PROJECTS - SOUTH

FIGURE 12B: RECOMMENDED PROJECTS - CENTRAL

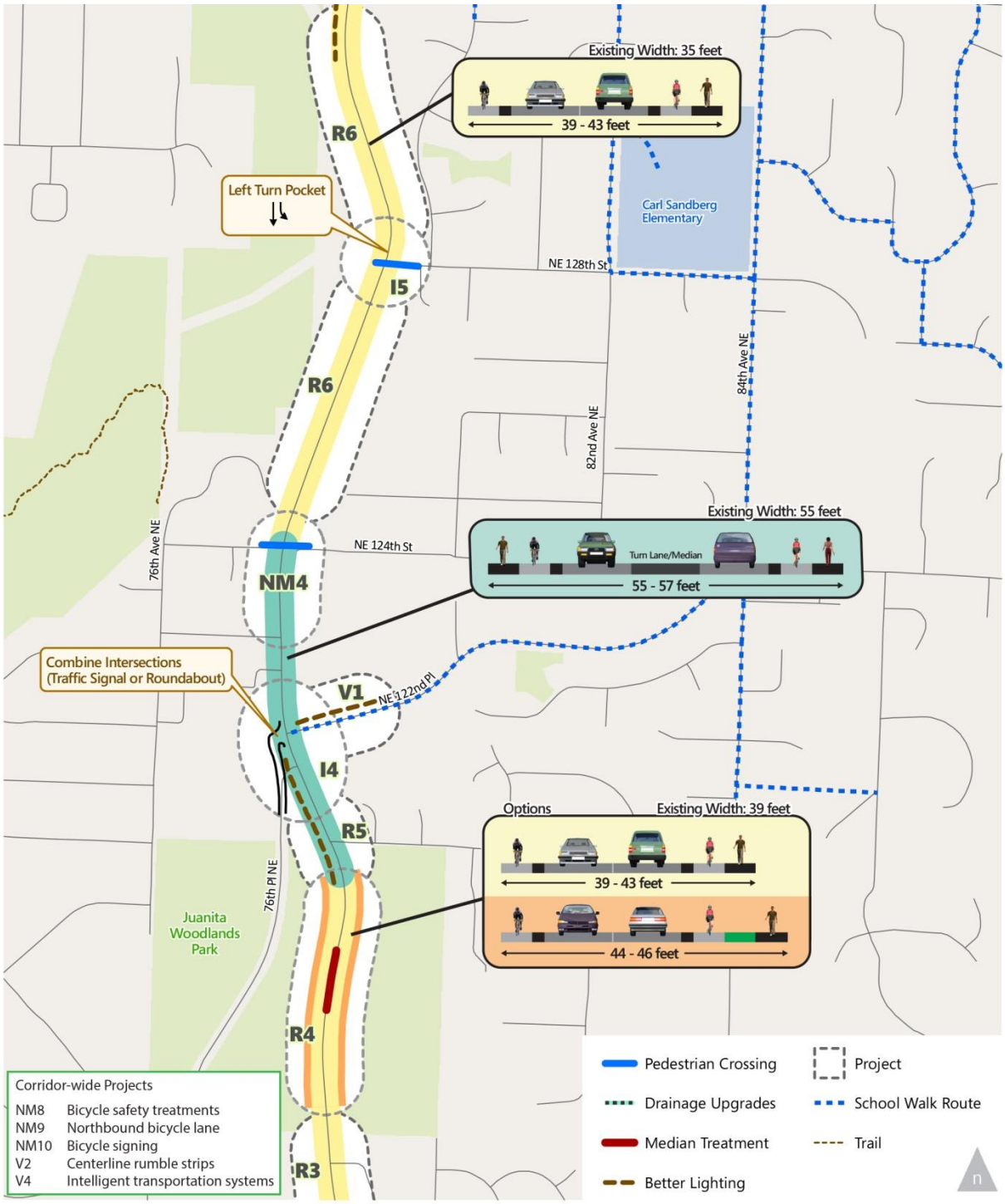
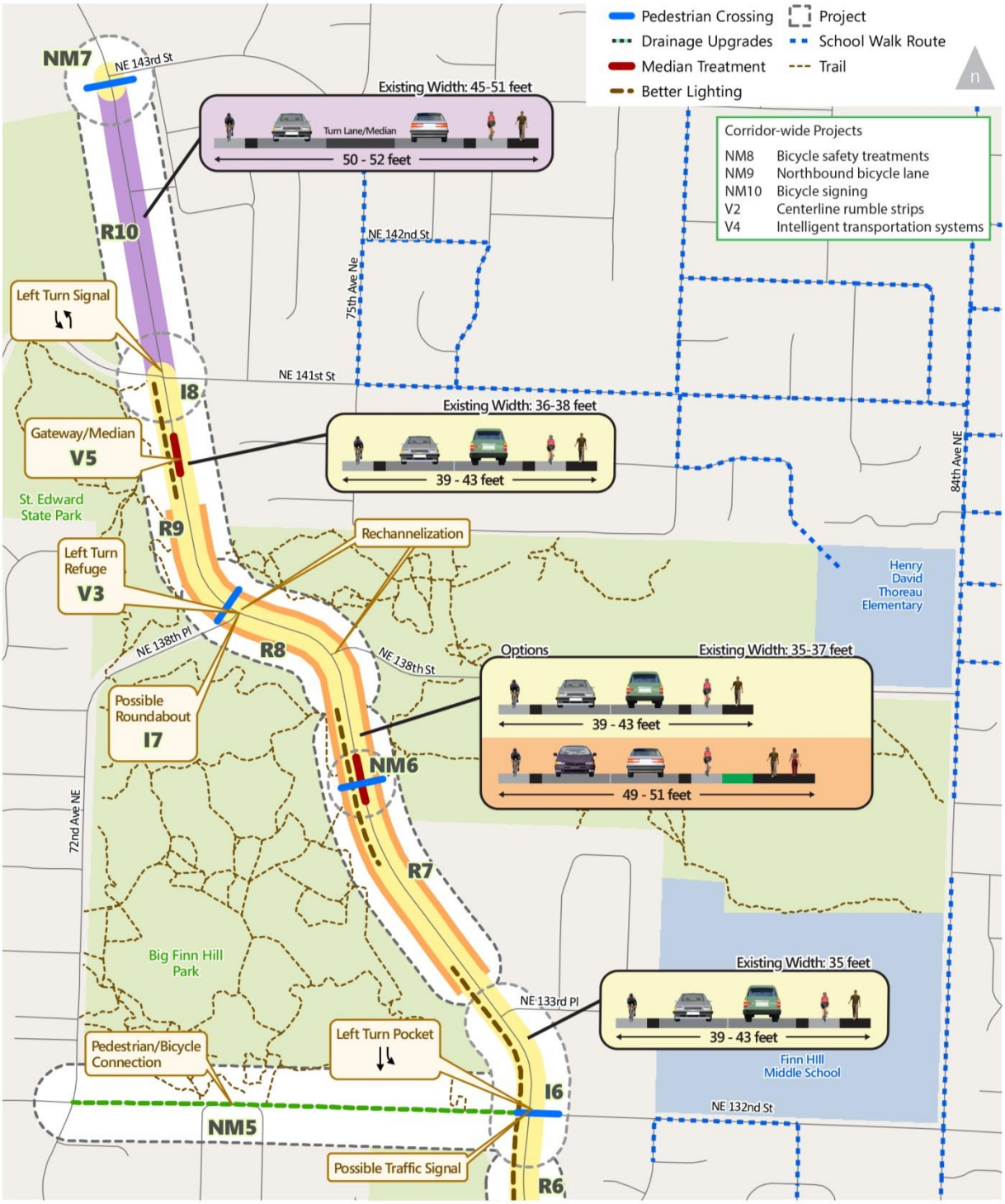


FIGURE 12C: RECOMMENDED PROJECTS - NORTH



'QUICK WIN' PROJECTS

Realizing the high implementation cost of the entire plan, the team identified several relatively low-cost actions that could produce immediate benefits. **Table 6** lists these quick win projects, which are depicted in **Figure 13** and listed based on their priority rating (i.e., H, M, L).

TABLE 6: QUICK WIN PROJECTS

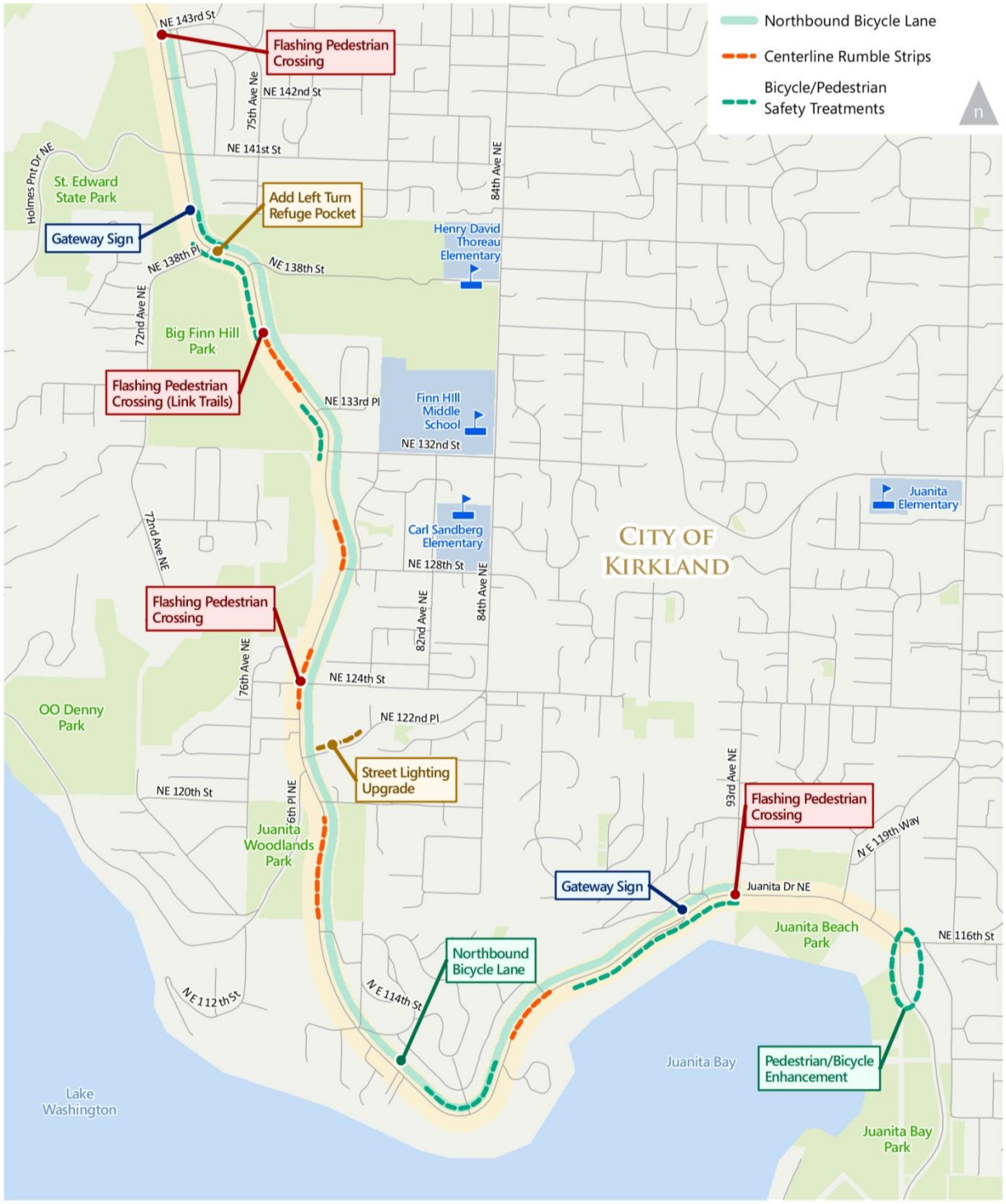
ID	Project Description	Estimated Cost ($000)	Priority Rating (Table 4)
NM6	Flashing Pedestrian Crossing at Big Finn Hill Park	$210	H
NM8	Interim Pedestrian/Bicycle Safety Treatments	$130	H
NM9	Northbound Bicycle Lane Throughout Corridor	$380	H
NM10	Bicycle Signs for Northbound Bicycle Lane	$190	H
V1	Lighting Upgrade (NE 122nd Place)	$50	H
V2	Centerline Rumble Strips	$40	H
NM1	98th Avenue Bicycle/Pedestrian Enhancements	$90	M
NM2	Flashing Pedestrian Crossing at 93rd Avenue NE	$90	M
V3	Left turn refuge pocket-NE 138th Place	$40	M
NM7	Flashing Pedestrian Crossing at NE 143rd Street	$90	L
V5	Gateway Signs (north and south ends of corridor)	$40	L
	TOTAL	**$1.35M**	

The summary ratings and costs of the quick win projects are as follows:

Rating	Cost	Percent of Cost
High	$1.00M	(74%)
Medium	$0.22M	(16%)
Lower	$.013M	(10%)
Total	$1.35M	(100%)

Ninety (90) percent of the quick win projects rate as high or medium priority.

FIGURE 13: QUICK WIN PROJECTS



Several of these projects could be included within the City's near-term transportation Capital Improvement Program. Others may require specific funding allocations from grants or other dedicated funds. One project merits specific discussion in the following section.

UPHILL BICYCLE LANE

Given the high cost of providing the basic cross-section throughout the corridor, it is likely to be built in phases. This would lead to discontinuous nonmotorized treatments along the corridor until the plan is finished. Particularly for bicycles, there is a need to provide a safe, continuous treatment along the full corridor. Otherwise, bicycles need to travel into and out of a designated bicycle lane. To address this concern, Project NM9 would construct a northbound buffered bicycle lane throughout the corridor. The result would be a five-foot bike lane with a 1-2 foot buffer in the uphill direction where bicyclists are slowest.

This project would be created with limited or no widening in most sections. The buffer would be delineated with painted edge stripes and some use of guide posts or other physical treatments around tight corners. Permanent bicycle lane signing (project NM10) would also be included. It is estimated that much of the work performed in this project could be incorporated into the permanent cross-section design, including the permanent bicycle signing. As individual projects are funded, the design process would replace the 'quick win' bicycle lane with pavement markings and signage that fit within each road section. The final cross-section would be one buffered bicycle lane in each direction on Juanita Drive plus the walkway on one side of the roadway.

PROJECT PACKAGING

To assist the city in developing data for its Capital Improvement Program and grant applications, the plan includes nine fact sheets that describe packages of projects that serve similar geographic or functional areas. **Appendix B** contains the fact sheets, which are one-page summaries followed by the detailed cost breakouts for each project in the group. The project groups are listed in **Table 6.**

TABLE 7: JUANITA DRIVE PROJECT GROUPS

ID	Project Group Description	Projects Included	Cost	Upgrade
1	Corridor Pedestrian Treatments	NM1 NM2 NM6 NM7	$466,000	
2	Neighborhood Access Points- 86th Avenue NE; NE 112th Street/80th Avenue NE	NM3 I3	$2,419,000	
3	South Corridor - Juanita Lane to NE 120th Street	R1 R2 R3 R4 I2	$7,692,000	$980,000
4	Holmes Point Drive / NE 122nd Place Intersection	R5 I4 V1	$1,543,000	$193,000
5	Central Corridor- NE 124th Street to NE 133rd Street	R6 I5 I6 NM5 NM6	$3,464,000	
6	North Corridor- Big Finn Hill Park to NE 140th Street	R7 R8 R9 I7 V3 V5	$1,808,000	$3,294,000
7	North Corridor- NE 141st Street to NE 143rd St	I8 R10 NM7	$208,000	
8	Corridor Interim Bike and Safety Treatments	NM8 NM9 NM10 V2	$731,000	
9	Corridor ITS Integration	V4 I1	$1,155,000	$1,200,000

APPENDIX A: COMMUNITY OUTREACH SUMMARY

Overview

The City of Kirkland developed a corridor plan for future transportation improvements to the Juanita Drive Corridor between Juanita Village and the northern City limits in Finn Hill. To better understand community concerns related to this corridor and to develop solutions to improve safety and mobility in the future, the City of Kirkland initiated an extensive public involvement effort.

The project team developed an overall communication and public involvement strategy, conducted stakeholder interviews, created project informational materials and website content, conducted and participated in community events and facilitated a project advisory group.

The City identified key target audiences to engage:

- Businesses and residents along the project corridor and within the City of Kirkland
- Users of the project corridor; local and regional
- Management and users of the parks and public spaces
- Local agencies, such as Lake Washington School District and Metro
- Community groups and organizations
- City of Kirkland staff, such as emergency response
- Elected officials

Community involvement was key in developing and implementing a successful corridor plan for Juanita Drive. To prepare a common vision for future improvements to the corridor, the City gathered input from the community at public workshops, briefings with neighborhood groups, and informational booths at local events. A community-based advisory committee was also formed to serve as a forum for additional dialogue and information sharing among community members and city staff.

Stakeholder Interviews

Interviews were conducted in Spring 2013 to inform key stakeholders about the project, identify key issues that should be addressed and better understand how stakeholders felt their organization, as well as the public, could influence the project moving forward. Interviewees included community leaders, business representatives, agency staff and emergency response providers.

What we heard from the community:

- Improving safety in the corridor is important; especially for bicycles and pedestrians
- Traffic congestion during peak travel periods is a concern
- Limited sight distances throughout the corridor are a concern, especially for large vehicles
- Desire for quick implementation of improvements, if possible
- Any improvements should be context sensitive of the blend between rural areas, neighborhoods and business centers

Events (2013)

- May 8 – Kirkland Alliance of Neighborhoods, Heritage Hall
- May 13 – Juanita Neighborhoods Association, Juanita Elementary
- May 14 – Kirkland Business Roundtable, Eastside Tennis Center
- May 29 – Finn Hill Neighborhood Alliance, Finn Hill Middle School
- June 5 – Kirkland Wednesday Market, Marina Park
- June 7 – Juanita Friday Market, Juanita Beach Park, Walk & Roll Safety Fair
- June 8 – City Planning Day, Kirkland City Hall
- June 12 – Corridor Study Community Workshop, Finn Hill Middle School
- Sept. 8 – DennyFest, O.O. Denny Park
- Sept. 9 – Juanita Neighborhood Association, Juanita Elementary
- Oct. 7 – Juanita Corridor Study Community Open House, Finn Hill Middle School
- Oct. 19 – City Planning Day, Peter Kirk Community Center
- Nov. 6 – Finn Hill Neighborhood Alliance, Finn Hill Middle School

Advisory Committee Meetings

The purpose of the advisory committee was to provide a forum for dialogue and two-way information sharing between key stakeholders and the City. The City kept the committee informed and involved throughout the corridor study, including seeking their input on identifying issues to be addressed, developing alternatives, establishing criteria for evaluating alternatives and establishing a common vision for future improvements. The Committee also assisted with the broader public outreach process by providing input on tradeoffs and community priorities.

The committee was advisory in nature and met four times, at key milestones throughout the Corridor Plan process.

- May 23, 2013
- July 31, 2013
- Sept. 10, 2013
- Oct. 29, 2013

Advisory committee members were:

- Mike Haschak – Kirkland Fire
- Bryan McNaghten – Kirkland Police
- Lisa Broulette – Kirkland Police
- Jon Pascal – Finn Hill Neighborhood Alliance
- Pierre Geurts – Finn Hill Neighborhood, At Large
- Norm Storme – Juanita Neighborhoods Association
- Scott Emry – Lake Washington School District
- Janice Gerrish – King County Parks Trail Board
- Sharon Clausson – King County Parks Staff
- Lance Carter – Juanita Businesses
- Nima Salestani – Finn Hill Businesses
- Daniel Weise – Cascade Bicycle Club
- Daniel Clark – Bastyr University
- Tedd McCagg – Finn Hill Neighborhood Alliance

Fairs and Festivals

Outreach at fairs and festivals in 2013 provided the project an opportunity to engage a new subset of the community at events that attract a wider, and potentially new, audience. The project identified several local events within or near the corridor to share information about the process and solicit feedback at various stages of corridor plan development:

- June 5 – Kirkland Wednesday Market, Marina Park
- June 7 – Juanita Friday Market, Juanita Beach Park
- June 8 – City Planning Day, Kirkland City Hall
- Sept. 8 – DennyFest, O.O. Denny Park
- Oct. 19 – City Planning Day, Peter Kirk Community Center

What we heard:

- Concerns about safety for all modes of traffic, including pedestrians and bicyclists
- Concerns about lack of proper sidewalks
- Lack of neighborhood and park connectivity, including safe routes to local schools
- Traveling the corridor during rush hour is difficult
- No interest in widening the corridor for more automobile lanes
- Concerns about vehicle collisions in certain areas of the corridor
- Excitement about the City looking into improving the corridor
- Approval of proposed draft alternatives for various segments of the corridor

Presentations to Neighborhood Groups

Attending and presenting at neighborhood association meetings in 2013 allowed the project to share information about the Corridor Plan process and goals, and to solicit community input on the key corridor issues and potential solutions to consider. Presentations were given to several neighborhood and community organizations within the project corridor:

- May 8 – Kirkland Alliance of Neighborhoods, Heritage Hall
- May 13 – Juanita Neighborhoods Association, Juanita Elementary
- May 14 – Kirkland Business Roundtable, Eastside Tennis Center
- May 29 – Finn Hill Neighborhood Alliance, Finn Hill Middle School
- Sept. 9 – Juanita Neighborhood Association, Juanita Elementary
- Nov. 6 – Finn Hill Neighborhood Alliance, Finn Hill Middle School

Community Workshop – June 12, 2013

The community was invited to engage in a hands-on workshop with City and project staff to initiate a conversation about key issues related to the Juanita Drive Corridor. At the workshop, community members were asked to point out areas of concern on large maps of the corridor, propose solutions and provide general feedback about how the project should progress. Project staff gave a brief presentation and was available to answer questions. Comments received were then used to develop a suite of proposed alternatives.

To advertise the community workshop, staff distributed posters to community centers and businesses along the corridor, postcards were mailed to nearby neighborhoods within the project area, brief articles were provided to schools to include in their newsletters and the City sent a press release. In the end, more than 80 people participated at the event.

The team also conducted an informal, post-event survey to get feedback on how well the event went, how attendees heard about the event, what neighborhood or organization they represent, and potential opportunities for improvement.

What we heard:

- "This was great. The best, most informative Kirkland neighborhood event I've attended. Thanks."
- "Really impressed - great work - fun giving feedback/ideas."
- "Appreciate the introduction to the information and website for further information."
- "Great work. Good guiding principles!"
- "The present road markings are a dull yellow. Very hard to see at night especially in the rain."
- "Table events were great! Keep it up! Thanks for the opportunity to provide feedback."
- "Concerned about road widening north of NE 128th St. on east side of Juanita Drive and potential tree removal."
- Improving safety is a top interest, for all modes of traffic.
- Concerns about lack of light on the roadway when dark.
- Concerns about roadway drainage.
- Interest in community connectivity.
- Interest in improvements to bicycle safety and routes.

<u>Open House – October 7, 2013</u>

Before the project team finalized the proposed improvements in the final report, the team sought out feedback from the community. At the open house, participants were encouraged to review draft alternatives for each segment of the corridor, ask staff questions and then note on a map their favorite alternative by placing a sticker next to it. General feedback and comments were also encouraged. Staff then used this input to further refine the alternatives.

To advertise the open house, staff distributed fact sheets, postcards were mailed to addresses within the project area and the City sent a press release.

The team also conducted an informal, post-event survey to get feedback on how well the event went, how attendees heard about the event, what neighborhood or organization they represent, and potential opportunities for improvement.

What we heard about the draft recommendations:

- "Center turn lanes are very important."
- "Communication has been excellent!"
- "Very much in favor of crosswalks connecting east and west sides of Big Finn Hill Park."
- "Biggest concern is walking on Juanita Drive."
- "Roundabouts would greatly improve the flow on Juanita."
- "Great to have knowledgeable professionals to discuss details and possibilities. Good work!"
- "Juanita Drive needs turn lanes!"
- Mixed reactions to roundabouts; some wanted them, some did not.
- General agreement on various proposed alternatives.
- Excitement over dedicated bike lanes and pedestrian paths.

APPENDIX B

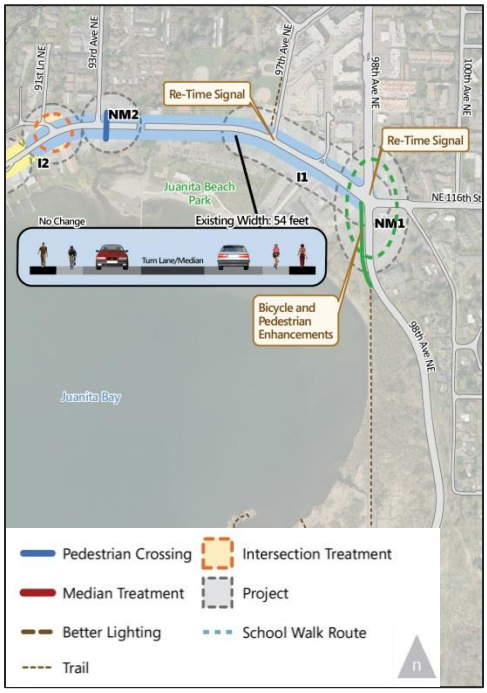
PROJECT FACT SHEETS

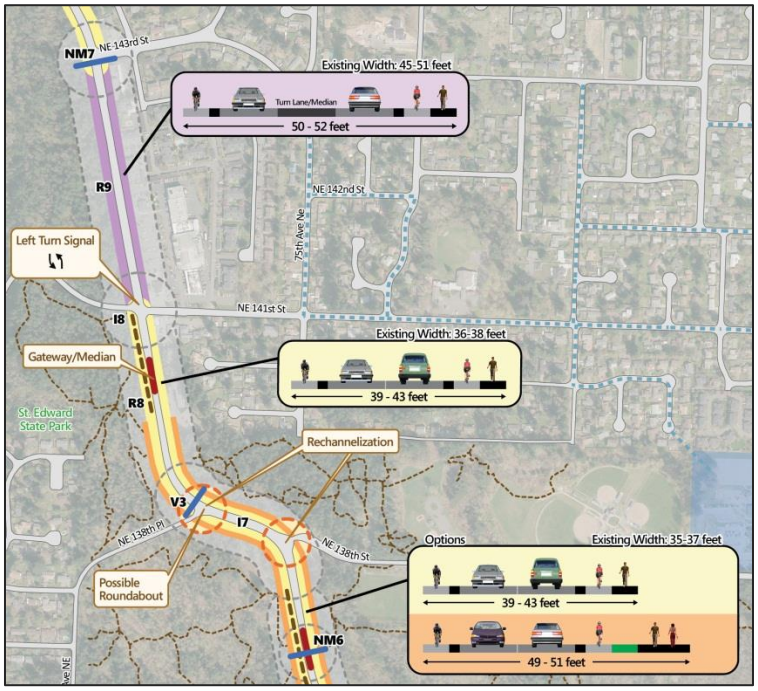
PRIORITIZATION RESULTS

COST ESTIMATES

Project Group 1 – Corridor Pedestrian Treatments – This project group includes crosswalk and other pedestrian infrastructure improvements.

ID	Location	Description/Justification
NM1	Juanita Drive / 98th Avenue NE intersection	Pedestrian and bicycle enhancements. Widen sidewalk connection with Old Market Street Trail to the south. Add bike box on south intersection approach.
NM2	Juanita Drive / 93rd Avenue NE intersection	Add flashing crosswalk to existing crosswalk.
NM6	Juanita Drive, approximately 600 feet south of NE 138th Street	Construct mid-block Flashing crosswalk to connect Big Finn Hill Park trails on the east and west sides of Juanita Drive.
NM7	Juanita Drive / NE 143rd Street intersection	Construct flashing crosswalk at intersection to connect residential neighborhood on the east side of the street with St. Edward State Park on the west.





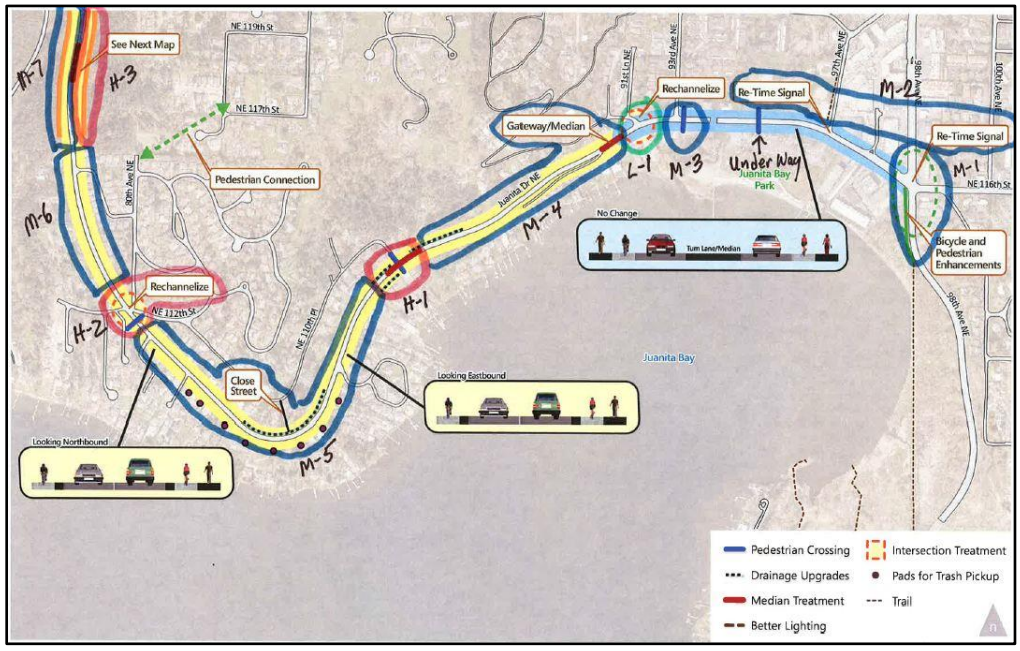
ID	Capital Cost (in 1,000s) Basic	Options	Priority [a]	Challenges to be resolved
NM1	$83	--	M	No width on south approach for bike lane; widened sidewalk may require right-of-way.
NM2	$90	--	M	Minimal
NM6	$203	--	H	Integrate with full cross-section treatment, which may come later.
NM7	$90	--	L	Minimal
Total	$466	--		

[a] H = high ; M = medium ; L = low

Project Group 2 – Neighborhood Access Points – This project group includes improvements to 86th Avenue NE and NE 112th Street / 80th Avenue NE, principal access points to the Surfmere and Hermosa Vista neighborhoods.

ID	Location	Description/Justification
NM3	Juanita Drive / 86th Avenue NE intersection	Construct Rectangular Rapid Flashing Beacon[1] crosswalk at intersection to connect residential neighborhoods on north side of street with transit stop on south side. Improve drainage on both sides of street.
I3	Juanita Drive / NE 112th Street / 80th Avenue NE intersection	Re-channelize as 4-legged intersection. Realign 80th Avenue NE to intersect NE 112th Street approximately 60 feet east of Juanita Drive. Construct Rectangular Rapid Flashing Beacon[1] crosswalk at intersection to connect residential neighborhoods on east and west side of street.

[1] Rectangular Rapid Flashing Beacon can enhance safety by reducing crashes between vehicles and pedestrians at unsignalized intersections and mid-block pedestrian crossings by increasing driver awareness of potential pedestrian conflicts. Other flashing signals may be substituted in the future as technology changes.



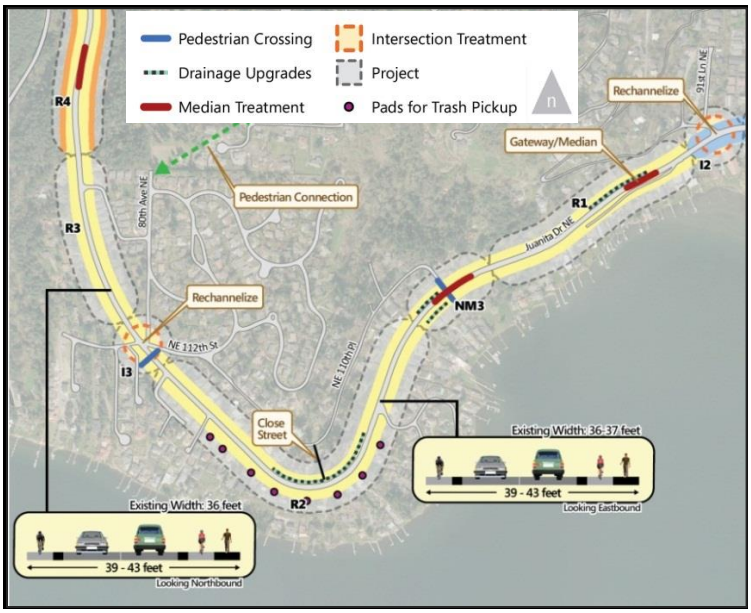
ID	Capital Cost (in 1,000s) Basic	Options	Priority [a]	Challenges to be resolved
NM3	$525	--	M	Drainage concerns, sufficient advance crosswalk signing needed
I3	$1,894	--	H	Slopes, right-of-way in Hermosa Vista to consolidate intersections, integrate crosswalk with turn pockets
Total	$2,419	--		

[a] H = high ; M = medium ; L = low

Project Group 3 – South Corridor: Juanita Lane to NE 120th Street – This project group includes cross-section improvements to the south corridor of Juanita Drive from Juanita Lane to NE 120th Street.

ID	Location	Description/Justification
R1	NE 116th Place to 86th Avenue NE	Widen and reconfigure cross-section to include buffered bike lanes on both sides of street and walkway on north side of street. Improve downhill drainage.
R2	86th Avenue NE to NE 112th Street	Widen and reconfigure cross-section to include buffered bike lanes on both sides of street and walkway on north side of street. Close 83rd Avenue NE intersection to vehicle traffic. Improve inside curve for bicycle and pedestrian passage. Create pads for trash pickups.
R3	NE 112th Street to 79th Way NE	Widen and reconfigure cross-section to include buffered bike lanes on both sides of street and walkway on east side of street.
R4	79th Way NE to NE 120th Street	Widen and reconfigure cross-section to include buffered bike lanes on both sides of street and walkway on east side of street. [1]
I2	Juanita Drive / NE 116th Place intersection	Restripe intersection to improve vehicle sight distance and enhance safety for bicyclists and pedestrians.

[1] option to add separated pathway on east side through park



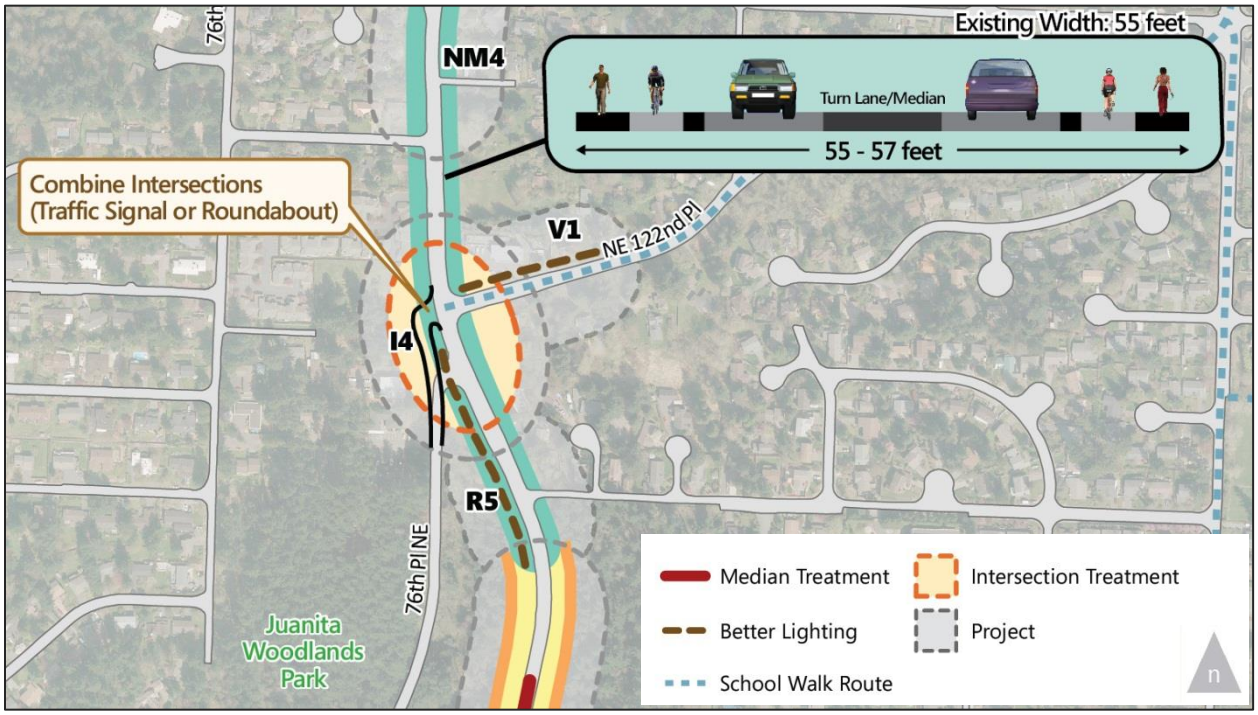
ID	Capital Cost (in 1,000s) Basic	Options	Priority [a]	Challenges to be resolved
R1	$4,994 [b]	--	M	Steep slopes, sloughing, proximity of Juanita Lane, drainage
R2	$972 [c]	--	M	Steep slopes, drainage, frequent driveways, trash cans in shoulder
R3	$1,051	--	L	Moderately steep slopes
R4	$550	$980 [d]	L	Steep slopes limits widening options without high costs
I2	$125	--	L	Minimal
Total	$7,692	$980		

[a] H = high ; M = medium ; L = low
[b] drainage portion of cost is approximately $98,000
[c] drainage portion of cost is approximately $98,000
[c] adds multi-purpose trail

Project Group 4 – Holmes Point Drive / NE 122nd Place Intersection – This project group includes intersection improvements and other upgrades in the vicinity of the Holmes Point Drive / NE 122nd Place intersection.

ID	Location	Description/Justification
R5	NE 120th Street to NE 122nd Lane	Widen and reconfigure cross-section to include center turn lane, bike lanes and walkway on east side of street.
I4	76th Place NE and NE 122nd Street intersections with Juanita Drive	Realign offset intersection to create single signalized intersection or roundabout.[1]
V1	NE 122nd Place	Upgrade street-lighting in the vicinity of Juanita Drive

[1] roundabout an option to traffic signal



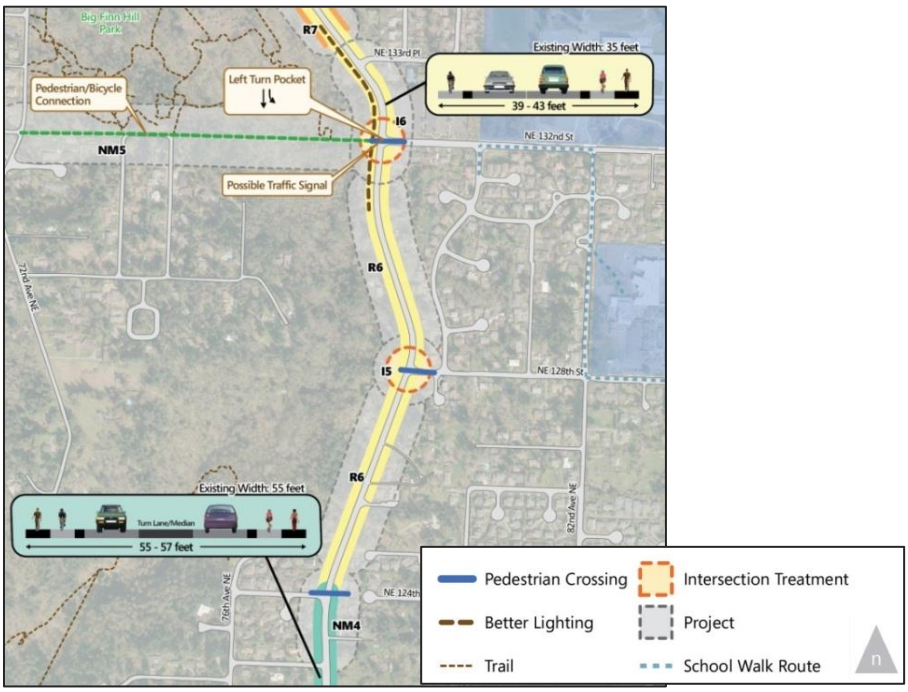
ID	Capital Cost (in 1,000s) Basic	Options	Priority [a]	Challenges to be resolved
R5	$309	--	H	Minimal
I4	$1,184 [b]	$193 [b]	M	Difficult configuration if fire station stays at this location
V1	$50	--	H	Minimal
Total	$1,543	$193		

[a] H = high ; M = medium ; L = low
[b] basic = signal; option = additional for roundabout

Project Group 5 – Central Corridor: NE 124th Street to NE 133rd Street – This project group includes cross-section improvements to the central portion of Juanita Drive from NE 124th Street to NE 133rd Street.

ID	Location	Description/Justification
R6	NE 124th Street to NE 132nd Street	Widen cross section to include buffered bike lanes on both sides of street and walkway on east side of street.
I5	Juanita Dr / NE 128th Street intersection	Widen southbound approach of Juanita Drive to include left turn lane. Construct flashing crosswalk at intersection.
I6	NE 132nd Street to NE 133rd Place	Widen southbound approach to NE 128th Street to include left turn lane. Construct walkway to east side of street and pedestrian bridge west of Juanita Drive across [ravine]. Construct flashing crosswalk at intersection.
NM4	Juanita Drive / NE 124th Street intersection	Construct flashing crosswalk at intersection. Improve walkway on west side of street from NE 124th Street to NE 123rd Street.
NM5	NE 132nd Street to 72nd Avenue NE	Construct pedestrian/bicycle pathway along existing easement. Build a nonmotorized bridge across Denny Creek.

[1] roundabout an option to traffic signal



ID	Capital Cost (in 1,000s) Basic	Options	Priority [a]	Challenges to be resolved
R6	$985	--	M	Some slopes
I5	$1,082 [b]	--	H	Drainage on west side
I6	$878	--	H	Lighting; link to nonmotorized path (NM5)
NM4	$143	--	H	Tie to NE 124th Street cul-de-sac
NM5	$316	--	M	Bridge construction; interface with existing streets
Total	$3,404	--		

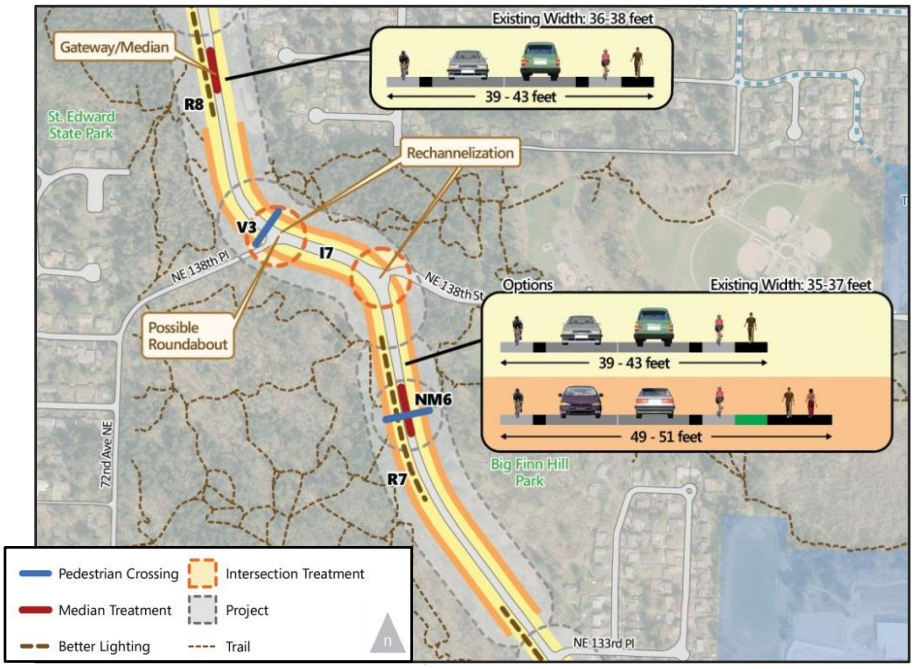
[a] H = high ; M = medium ; L = low

[b] drainage portion of cost is approximately $98,000

Project Group 6 – North Corridor: Big Finn Hill Park to NE 140th Street – This project group includes cross-section improvements to the north corridor of Juanita Drive from Big Finn Hill Park to NE 140th Street.

ID	Location	Description/Justification
R7	NE 133rd Place to south of NE 138th Street	Widen cross section to include buffered bike lanes on both sides of street and walkway on east side of street[1].
R8	NE 138th Street to north of NE 138th Place	Widen cross section to include buffered bike lanes on both sides of street, rechannelize both NE 138th intersections and construct walkway on east side of street[1].
I7	NE 138th Place	Construct roundabout (option)
R9	NE 138th Place to south of NE 141st Street	Widen cross section and construct gateway median south of NE 141st Street[2].
V3	Juanita Drive / NE 138th Place Intersection	Reconfigure cross section directly north of intersection to include a refuge/merge lane for traffic turning left onto Juanita Drive from NE 138th Place. (Interim treatment)

[1] option to construct separated multi-purpose trail through park section
[2] refer to Project V5 for Gateway sign project

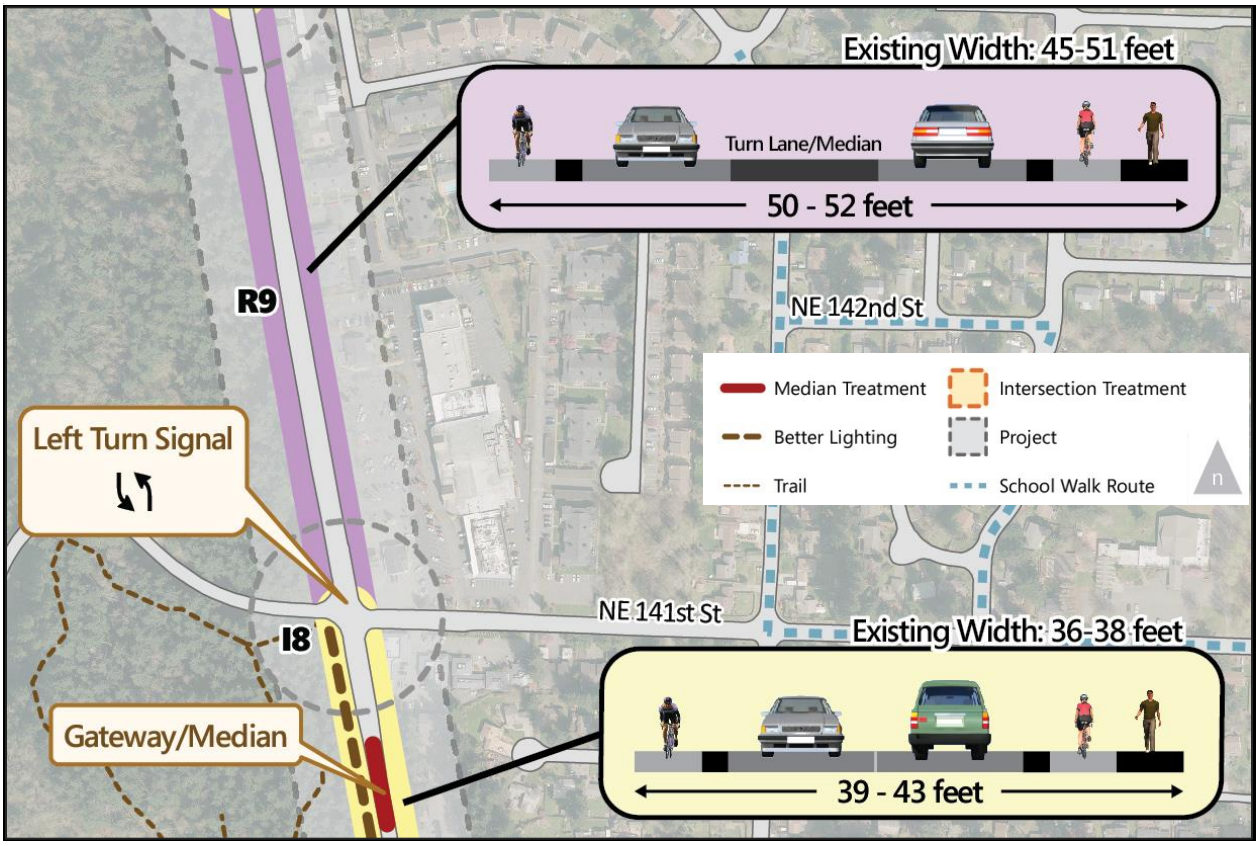


ID	Capital Cost (in 1,000s) Basic	Options	Priority [a]	Challenges to be resolved
R7	$781	$901[b]	H	Steep slopes; park right-of-way and trees
R8	$497	$806[b]	H	Steep slopes; park right-of-way and trees.
I7	--	$1012[c]	H	Slopes; regrading
R9	$449	$575[b]	M	Steep slopes; park right-of-way and trees
V3	$41	$41	M	Minimal
Total	$1,768	$4,613		

[a] H = high ; M = medium ; L = low
[b] adds multi-purpose trail
[c] roundabout incremental cost

Project Group 7 – North Corridor: NE 140th Street to NE 143rd Street – This project group includes cross-section improvements to the north corridor of Juanita Drive from NE 140th Street to NE 143rd Street.

ID	Location	Description/Justification
I8	Juanita Drive / NE 141st Street Intersection	Modify signal head to accommodate protected northbound and southbound left turns.
R10	NE 141st Street to NE 143rd Street	Reconfigure cross section to include bike lanes on both sides of street.
NM7	NE 143rd Street	Provide flashing crosswalk



ID	Capital Cost (in 1,000s) Basic	Options	Priority [a]	Challenges to be resolved
I8	$55	--	L	Minimal
R10	$63	--	L	Could affect parking on east side south of NE 143rd Street
NM7	$90	--	L	
Total	$208	--		

[a] H = high ; M = medium ; L = low

Project Group 8 – Corridor Bicycle Lane and Safety Treatments – This project group includes short-term corridor treatments to improve comfort and safety for bicyclists and motorists.

ID	Location	Description/Justification
NM8	Selected locations along corridor[1]	Construct interim "bicycle safety treatments" at pinch-points along corridor. Could include restriping, signing, barriers (e.g. candles, rumble strips)
NM9	Corridor	Rechannelize existing roadway to include northbound buffered bike lane.
NM10	Corridor	Add bicycle signs for northbound bike lane
V2	Selected locations along corridor[1]	Add center line rumble strips to help prevent drivers from veering out of travel lane

[1] to be determined during design

ID	Capital Cost (in 1,000s)		Priority [a]	Challenges to be resolved
	Basic	Options		
NM8	$129	--	H	Identify key locations
NM9	$377 [b]	--	H	Determine minimal cross section to achieve buffered bike lane. Interim treatment.
NM10	$187	--	H	
V2	$50	--	H	Identify key locations
Total	$743	--		

[a] H = high ; M = medium ; L = low

[b] portion of this project could be included in full cross section design

Project Group 9 – Corridor ITS Integration – This project group includes intelligent transportation systems (ITS) upgrades for the Juanita Drive corridor and traffic signal timing.

ID	Location	Description/Justification
V4	Corridor – Signalized intersection from 98th Avenue NE to NE 141st Street	Integrate intersection signals with intelligent transportation systems (ITS) technology.
I1	98th Avenue NE and 97th Avenue NE intersections with Juanita Drive	Retime traffic signals to improve traffic operations at east end of corridor[1].

ID	Capital Cost (in 1,000s)		Priority [a]	Challenges to be resolved
	Basic	Options		
V4	$1,050	$1,200 [b]	L	Determine overhead or underground design
I1	$105 [c]	--	L	Minimal
Total	$1,155	$1,200		

[a] H = high ; M = medium ; L = low
[b] underground utilities
[c] tie to city's traffic signal and safety project underway in 2013/14

Prioritization Criteria

Use to prioritize corridor projects
Combination of quantitative and qualitative criteria
Build from Guiding Principles

GUIDING PRINCIPLES

- Address safety needs for all travel modes.
- Maintain corridor unique identity and natural landscape.
- Engage community in shared vision for future improvements.
- Protect the extraordinary natural environment.
- Provide financially feasible, strategic and realistic priorities for the corridor.

Criterion	Description	Weight*	Rating		
			Low	***Medium***	***High***
Safety	Addresses existing corridor safety problem	3	*Limited or no effect*	*Direct safety benefit*	*Improves High collision location*
Accessibility	Provides access to activities within the corridor	2	*Limited or no effect*	*Improves single mode*	*Improves multiple modes*
Identity	Consistency with corridor identity and surrounding land uses	3	*Diminishes identity*	*Neutral effect*	*Enhances identity*
Environment	Protection of natural environment	2	*Degrades environment*	*Neutral effect*	*Enhances environment*
Financial	Cost	2	*High (>$1.5 M)*	*Medium ($500K-$1.5M)*	*Low (<$500K)*
Fundable	Available funding sources	3	*Low likelihood of funding*	*Likely to compete for city funds*	*Good potential for grant/ other funding*
Phasing	Ability to phase project	2	*Minimal ability to phase*	*Some phasing potential*	*High ability to phase; interim options available*
Plan Consistency	Consistency with plans adopted by city and other jurisdictions	1	*Not consistent*	*Generally consistent*	*Highly consistent*
Public Support	Identified public support	2	*Limited support*	*Good support*	*Strong support*

*Weighting based on perceived importance of criterion matched to guiding principle

	Juanita Drive Transportation Improvements											
Project ID[1]	Project Location	Project Description	Safety	Accessibility	Identity	Environment	Financial	Fundable	Phasing	Plan Consiste	Public Support	Total Priority Rating	Rating
			Criteria Weight										
			3	2	3	2	2	3	2	1	2		
I1	97th Ave NE/ 98th Ave NE Intersections	Retime signals	1	2	2	2	3	3	3	3	1	**43**	L
I2	NE 116th Pl Intersecton	Rechannelize	2	1	2	2	3	2	2	3	2	**41**	L
I3	112th Ave NE Intersection	Rechannelize Intersection/ Pedestrian	3	3	3	2	1	3	2	3	3	**52**	H
I4	76th Pl NE/ NE 122nd Pl Dual Intersections	Rechannelize/ combine intersections with signal (L) or roundabout (H)	2	3	2.5	2	2	2	2	3	3	**46.5**	M
I5	NE 128th St Intersection	Left turn pocket/ pedestrian crossing	3	3	3	2	2	3	2	3	3	**54**	H
I6	NE 132nd St Intersection to NE 133rd Place	Left turn pocket/ pedestrian crossing/	3	3	3	2	2	3	3	3	3	**56**	H
R8	NE 138th to South of NE 141st Pl intersection	Cross Section/ Intersection Channelization at NE 138th Pl and NE 138th St											
I7	NE 138th Pl Intersection	Roundabout Option (Add to cost of Project R8)	2	3	3	2	2	2	3	3	3	**50**	H
I8	NE 141st St Intersection	Add left turn signals	1	2	2	2	3	3	2	3	2	**43**	L
NM1	98th Ave NE Intersection	Pedestrian/ Bicycle enhancements	2	2	2	2	3	3	2	3	1	**44**	M
NM2	93rd Ave NE Intersection	Pedestrian Crossing	2	2	2	2	3	3	2	3	2	**46**	M
NM3	86th Ave NE Intersection	Pedestrian Crossing/Drainage	2	2	2	2	2	3	3	3	3	**48**	M
NM4	NE 124th St Intersection	Pedestrian Crossing/ walkway to NE 123rd St	2	2	3	2	3	3	2	3	2	**49**	H
NM5	NE 132nd St- Juanita Drive to 72nd Ave NE	Pedestrian/Bicycle Corridor treatment	2	2	3	2	3	3	1	3	2	**47**	M
NM6	Big Finn Hill Park	Pedestrian crossing/ trail connection	2	2	3	3	3	3	2	3	2	**51**	H
NM7	NE 143rd St Intersection	Pedestrian Crossing	2	1	2	2	3	3	2	2	2	**43**	L
NM8	Corridor	Bicycle safety treatments	3	2	3	2	3	3	3	3	3	**56**	H
NM9	Corridor	Create northbound bicycle lane	3	2	3	2	2	2	2	3	3	**49**	H
NM10	Corridor	Bicycle Signs for northbound bicycle lane											
R1	NE 116th Pl to 86th Ave NE	Cross Section/ Drainage Improvements/ Gateway median	2	3	3	2	1	2	2	3	3	**46**	M
R2	86th Ave NE to NE 112th St	Cross Section/ close 83rd Ave NE	2	3	3	2	2	2	2	3	2	**46**	M
R3	NE 112th St to 79th Way NE	Cross Section	2	3	2	2	2	2	1	2	1.5	**39**	L
R4	79th Way NE to NE 120th St	Cross Section	2	3	3	2	1	2	1	3	2	**42**	L
R5	NE 120th St to NE 122nd Lane	Extend 3rd lane/ walkway on east side	3	3	3	2	3	2	2	3	2	**51**	H
R6	NE 124th St to NE 132nd St	Cross section	1	3	3	2	3	2	2	3	2	**45**	M
R7	NE 133rd Pl to south of NE 138st St	Cross section	2	3	3	1.5	2	3	2	3	3	**50**	H
R9	NE 138th Pl to NE 141st St	Cross section/ Gateway Median	2	2	2	2	3	3	1	3	2	**44**	M
R10	NE 141st St to NE 143rd St	Cross Section	1.5	2	2	2	3	3	1	3	2	**42.5**	L
V1	NE 122nd Pl	Lighting Upgrade	2	3	3	2	3	3	2	3	2	**51**	H
V2	Corridor- selected locations	Center line Rumble Strips	3	1	2	2	3	3	3	3	2	**49**	H
V3	NE 138th Pl Intersection	Left turn refuge for EB to NB movement	2	2	2	2	3	3	2	2	2	**45**	M
v4	Corridor	ITS Integration- Signals	2	1	2	2	2	3	2	2	2	**41**	L
	Notes: Low = 1 ; Medium = 2 ; High = 3												

Juanita Drive Transportation Improvements

Project ID	Rating	Project Location	Project Description	Total Cost Basic Section (in 1000s)	Addt'l Cost for Options (in 1000s)	Option Description
I1	L	97th Ave NE/ 98th Ave NE Intersections	Retime signals	105		
I2	L	NE 116th Pl IntersectIon	Rechannelize	125		
I3	H	112th Ave NE Intersection	Rechannelize Intersection/ Pedestrian Crossing	1,894		
I4	M	76th Pl NE/ NE 122nd Pl Dual Intersections	Rechannelize/ combine intersections with signal (L) or roundabout (H)	1,184	193	Roundabout
I5	H	NE 128th St Intersection	Left turn pocket/ pedestrian crossing	1,082		
I6	H	NE 132nd St Intersection to NE 133rd Place	Left turn pocket/ pedestrian crossing/ walkway	878		
I7	H	NE 138th Pl Intersection	Roundabout Option (Add to cost of Project R8)		1,012	Roundabout
I8	L	NE 141st St Intersection	Add left turn signals	55		
NM1	M	98th Ave NE Intersection	Pedestrian/ Bicycle enhancements	83		
NM2	M	93rd Ave NE Intersection	Pedestrian Crossing	90		
NM3	M	86th Ave NE Intersection	Pedestrian Crossing/Drainage	525		
NM4	H	NE 124th St Intersection	Pedestrian Crossing/ walkway to NE 123rd St	143		
NM5	M	NE 132nd St- Juanita Drive to 72nd Ave NE	Pedestrian/Bicycle Corridor treatment	316		
NM6	H	Big Finn Hill Park	Pedestrian crossing/ trail connection	203		
NM7	L	NE 143rd St Intersection	Pedestrian Crossing	90		
NM8	H	Corridor	Bicycle safety treatments	129		
NM9	H	Corridor	Create northbound bicycle lane	377		
NM10	H	Corridor	Bicycle Signs for northbound bicycle lane	187		
R1	M	NE 116th Pl to 86th Ave NE	Cross Section/ Drainage Improvements/ Gateway median	4,994		
R2	M	86th Ave NE to NE 112th St	Cross Section/ close 83rd Ave NE	972		
R3	L	NE 112th St to 79th Way NE	Cross Section	1,051		
R4	L	79th Way NE to NE 120th St	Cross Section	550	980	Widen for Multipurpose Trail
R5	H	NE 120th St to NE 122nd Lane	Extend 3rd lane/ walkway on east side	309		
R6	M	NE 124th St to NE 132nd St	Cross section	985		
R7	H	NE 133rd Pl to south of NE 138st St	Cross section	781	901	Widen for Multipurpose Trail
R8	H	NE 138th to South of NE 141st Pl intersection	Cross Section/ Intersection Channelization at NE 138th Pl and NE 138th St	497	806	Widen for Multipurpose Trail
R9	L	NE 138th Pl to NE 141st St	Cross section/ Gateway Median	449	575	Widen for Multipurpose Trail
R10	L	NE 141st St to NE 143rd St	Cross Section	63		
V1	H	NE 122nd Pl	Lighting Upgrade	50		
V2	H	Corridor- selected locations	Center line Rumble Strips	38		
V3	M	NE 138th Pl Intersection	Left turn refuge for EB to NB movement	41		
V4	L	Corridor	ITS Integration- Signals	1,050	1,200	Undergrounding of ITS Utilities
V5	L	Corridor	Gateway Signs- North and South End	40		
				19,336	**5,667**	

Notes: Low = 1 ; Medium = 2 ; High = 3

Roundabout Option	1,205
Widen for Multipurpose Trail	3,262
ITS Undergrounding	1,200

Preliminary Level Opinion of Cost							
City of Kirkland: Juanita Dr. Corridor Study							
13-Dec-13							
Perteet Project # 20110185							
ITEM	UNITS	UNIT PRICE	PROJECT NM1 - QUANTITY	PROJECT NM1 - AMOUNT	PROJECT I1 - QUANTITY	PROJECT I1 - AMOUNT
PREPARATION						
Mobilization (10%)	LS	$ 1	4,000	$ 4,000	5,000	$ 5,000
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000		$ -
Structure Surveying (5%)	LS	$ 1		$ -		$ -
Removal of Structures & Obstructions (1%)	LS	$ 1	1,000	$ 1,000		$ -
Clearing and Grubbing	AC	$ 7,000	0.04	$ 300		$ -
GRADING						
Roadway Excavation Incl. Haul	CY	$ 15	100	$ 1,500		$ -
Gravel Borrow Incl. Haul	TON	$ 16	130	$ 2,100		$ -
STORM SEWER						
Drainage Systems	LS	$ 1		$ -		$ -
SURFACING						
Portland Cement Concrete Sidewalk	SY	$ 20	560	$ 11,200		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -		$ -
Crushed Surfacing Base Course	TON	$ 35	130	$ 4,600		$ -
EROSION CONTROL AND PLANTING						
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	2,000	$ 2,000		$ -
TRAFFIC						
Project Traffic Control	EST	$ 1	3,000	$ 3,000		$ -
Traffic Signal Systems	EST	$ 1		$ -	50,000	$ 50,000
Cement Conc Curb and Gutter	LF	$ 15		$ -		$ -
Cement Conc Curb Ramps	EA	$ 1,500	2	$ 3,000		$ -
Illumination System	EST	$ 1		$ -		$ -
Striping	LF	$ 3	3,000	$ 9,000		$ -
OTHER						
Retaining Walls	SF	$ 60		$ -		$ -
CONSTRUCTION SUB TOTAL				**$ 43,000**		**$ 55,000**
Construction Contingencies (30%)				$ 20,000		$ 20,000
CONSTRUCTION TOTAL				**$ 63,000**		**$ 75,000**
ENGINEERING SERVICES						
Preliminary Engineering (15%)				$ 10,000		$ 20,000
Construction Engineering (12%)				$ 10,000		$ 10,000
Total Preliminary Opinion of Cost				**$ 83,000**		**$ 105,000**

Project Details	Location	Project Description
Project NM1	98th Ave NE Intersection	Bicycle and Pedestrian enhancements beginning at the SW corner of the Juanita Dr & Ne 98th Ave NE intersection and continuing south along the west side of 98th Ave NE for ~500 LF. Additional striping will be done to creat a bike box at the NB LT lane of 98th Ave NE to Juanita Dr.
Project I1	97th Ave NE/98th Ave NE Intersections	Retiming of esisting signal systems at the intersection of Juanita Dr & 97th Ave NE and the intersection of Juanita Dr & 98th Ave NE

Preliminary Level Opinion of Cost							
City of Kirkland: Juanita Dr. Corridor Study							
13-Dec-13							
Perteet Project # 20110185							
ITEM	UNITS	UNIT PRICE	PROJECT NM2 - QUANTITY	PROJECT NM2 - AMOUNT	PROJECT I2 - QUANTITY	PROJECT I2 - AMOUNT
PREPARATION						
Mobilization (10%)	LS	$ 1	7,000	$ 7,000	5,000	$ 5,000
Roadway Surveying (2%)	LS	$ 1	2,000	$ 2,000	1,000	$ 1,000
Structure Surveying (5%)	LS	$ 1		$ -	2,000	$ 2,000
Removal of Structures & Obstructions (1%)	LS	$ 1	1,000	$ 1,000	1,000	$ 1,000
Clearing and Grubbing	AC	$ 10,000	0.03	$ 300	0.03	$ 300
GRADING						
Roadway Excavation Incl. Haul	CY	$ 15		$ -	60	$ 900
Gravel Borrow Incl. Haul	TON	$ 16		$ -		$ -
STORM SEWER						
Drainage Systems	LS	$ 1		$ -	2,000	$ 2,000
SURFACING						
Portland Cement Concrete Sidewalk	SY	$ 20		$ -		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 90		$ -		$ -
Crushed Surfacing Base Course	TON	$ 25		$ -		$ -
EROSION CONTROL AND PLANTING						
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	4,000	$ 4,000	3,000	$ 3,000
TRAFFIC						
Project Traffic Control (10%)	EST	$ 1	7,000	$ 7,000	5,000	$ 5,000
Traffic Signal Systems	EST	$ 1		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -		$ -
Cement Conc Curb Ramps	EA	$ 1,500	2	$ 3,000	1	$ 1,500
Illumination System	EST	$ 1		$ -	5,000	$ 5,000
Striping	LF	$ 3	500	$ 1,500	500	$ 1,500
OTHER						
Retaining Walls (SEW)	SF	$ 60		$ -	600	$ 36,000
Utility Coordination	EST	$ 1		$ -		$ -
Enhanced Pedestrian Crossing	EST	$ 1	60,000	$ 60,000		$ -
CONSTRUCTION SUB TOTAL				**$ 86,000**		**$ 65,000**
Construction Contingencies (30%)				$ 30,000		$ 20,000
CONSTRUCTION TOTAL				**$ 116,000**		**$ 85,000**
ENGINEERING SERVICES						
Preliminary Engineering (15%)				$ 20,000		$ 20,000
Construction Engineering (12%)				$ 20,000		$ 20,000
Total Preliminary Opinion of Cost				**$ 156,000**		**$ 125,000**
Cost reduced by packaging with other crossings				$ 90,000		

Project Details	Location	Project Description
Project NM2	93rd Ave NE Intersection	Restriping of 93rd Ave NE & Juanita Dr intersection. Improving pedestrian and bicycle safety. Installation of enhanced pedestrian crossing just to the east of 93rd Ave NE
Project I2	NE 116th Pl Intersection	Restriping of NE 116th Pl & Juanita Dr intersection. Improving sight distances and pedestrian/bicycle safety.

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ITEM	UNITS	UNIT PRICE	PROJECT R2 - QUANTITY	PROJECT R2 - AMOUNT	PROJECT NM3 - QUANTITY	PROJECT NM3 - AMOUNT	PROJECT I3 - QUANTITY	PROJECT I3 - AMOUNT
PREPARATION								
Mobilization (10%)	LS	$ 1	43,000	$ 43,000	23,000	$ 23,000	82,000	$ 82,000
Roadway Surveying (2%)	LS	$ 1	9,000	$ 9,000	5,000	$ 5,000	17,000	$ 17,000
Structure Surveying (5%)	LS	$ 1	22,000	$ 22,000	12,000	$ 12,000	41,000	$ 41,000
Removal of Structures & Obstructions (1%)	LS	$ 1	5,000	$ 5,000	3,000	$ 3,000	9,000	$ 9,000
Clearing and Grubbing	AC	$ 10,000	0.17	$ 1,700	0.02	$ 200	0.3	$ 2,800
GRADING								
Roadway Excavation Incl. Haul	CY	$ 15	1,000	$ 15,000	200	$ 3,000	1,600	$ 24,000
Gravel Borrow Incl. Haul	TON	$ 16	660	$ 10,600	320	$ 5,200	6,100	$ 97,600
STORM SEWER								
Drainage Systems	LS	$ 1	26,500	$ 26,500	20,000	$ 20,000	45,000	$ 45,000
SURFACING								
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	93,000	$ 93,000	48,600	$ 48,600		$ -
Portland Cement Concrete Sidewalk	SY	$ 35		$ -		$ -	520	$ 18,200
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -		$ -	1,351	$ 135,100
Crushed Surfacing Base Course	TON	$ 25		$ -		$ -	1,554	$ 38,900
EROSION CONTROL AND PLANTING								
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	26,000	$ 26,000	14,000	$ 14,000	49,000	$ 49,000
TRAFFIC								
Project Traffic Control (10%)	EST	$ 1	43,000	$ 43,000	23,000	$ 23,000	82,000	$ 82,000
Traffic Signal Systems	EST	$ 1		$ -		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15	1,200	$ 18,000	200	$ 3,000	750	$ 11,300
Cement Conc Curb Ramps	EA	$ 1,500		$ -	2	$ 3,000	8	$ 12,000
Illumination System	EST	$ 1	20,000	$ 20,000	5,000	$ 5,000	20,000	$ 20,000
Striping	LF	$ 3	2,100	$ 6,300	600	$ 1,800	2,700	$ 8,100
OTHER								
Retaining Walls (SEW/Gravity)	SF	$ 60	3,850	$ 231,000	1,200	$ 72,000	1,950	$ 117,000
Retaining Walls (Soilder Pile)	SF	$ 90		$ -		$ -	2,480	$ 223,200
Trash Can Pad	SY	$ 40	45	$ 1,800		$ -		
Enhanced Pedestrian Crossing	EA	$ 60,000		$ -	1	$ 60,000	1	$ 60,000
Gateway Island	LS	$ 1		$ -	2,500	$ 2,500		$ -
CONSTRUCTION SUB TOTAL				**$ 572,000**		**$ 305,000**		**$ 1,094,000**
Construction Contingencies (30%)				$ 180,000		$ 100,000		$ 330,000
CONSTRUCTION TOTAL				**$ 752,000**		**$ 405,000**		**$ 1,424,000**
ENGINEERING SERVICES								
Preliminary Engineering (15%)				$ 120,000		$ 70,000		$ 220,000
Construction Engineering (12%)				$ 100,000		$ 50,000		$ 180,000
Total Preliminary Opinion of Cost				**$ 972,000**		**$ 525,000**		**$ 1,824,000**

Project Details	Location	Project Description
Project R2	86th Ave NE to NE 112th St	This project involves widening the existing roadway section to accommodate through lanes, bicycle lanes in both directions, and sidewalk facilities. Sidewalks will be installed along the south side of the roadway from 86th to 112th St. Drainage upgrades will be made along the north side of the roadway around the curve adjacent to 83rd Ave NE. New pads for trash pickup will be installed along the south side of the roadway. There will be no access to 86th.
Project NM3	86th Ave NE Intersection	This project will install drainage improvements aimed at the existing groundwater issues just to the west of 86th Ave NE. An enhanced pedestrian crossing will be installed at 86th Ave NE on Juanita Dr. Project Limits are Sta 144+00 to Sta 146+00 Length 200 LF
Project V3	112th Ave NE Intersection	This project will widen Juanita Dr through the intersection of 112th Ave NE & Juanita Dr. The widening will allow for a new two way left turn lane on Juanita Dr., bicycle lanes, and new striping for NE 112th St and 80th Ave NE. Sidewalks will be installed on both sides on Juanita Dr. to allow for the installation of an enhanced pedestrian crossing to the south of the intersection. Project Length = 600 LF Sta 176+00 to Sta 182+00 80th Ave NE will be regraded Retaining Walls will be required on all four corners of the intersection due to the roadway grade and steep side slopes.

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ITEM	UNITS	UNIT PRICE	PROJECT NM3 - QUANTITY	PROJECT NM3 - AMOUNT
PREPARATION				
Mobilization (10%)	LS	$ 1	5,000	$ 5,000
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000
Removal of Structures & Obstructions (1%)	LS	$ 1	1,000	$ 1,000
STORM SEWER				
Drainage Systems	LS	$ 1	20,000	$ 20,000
SURFACING				
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	24,300	$ 24,300
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	3,000	$ 3,000
TRAFFIC				
Project Traffic Control (10%)	EST	$ 1	5,000	$ 5,000
CONSTRUCTION SUB TOTAL				**$ 60,000**
Construction Contingencies (30%)				$ 20,000
CONSTRUCTION TOTAL				**$ 80,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 20,000
Construction Engineering (12%)				$ 10,000
Total Preliminary Opinion of Cost				**$ 110,000**

Project Details	Location	Project Description
Project NM3	86th Ave NE Intersection	This project will install drainage improvements aimed at the existing groundwater issues just to the west of 86th Ave NE. at 86th Ave NE on Juanita Dr. Project Limits are Sta 144+00 to Sta 146+00 Length 200 LF

This estimate reflects Drainage related items only! Assumptions include that the roadway structure will be replaced as part of the drainage work. Groundwater seepage in this area has caused damage to the existing pavement structure. Therefore 50% of the roadway widening cost for the whole NM3 project will be part of the drainage item schedule.

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ITEM	UNITS	UNIT PRICE	PROJECT I4(L) - QUANTITY	PROJECT I4(L) - AMOUNT	PROJECT I4(H) - QUANTITY	PROJECT I4(H) - AMOUNT	PROJECT V1 - QUANTITY	PROJECT V1 - AMOUNT
PREPARATION								
Mobilization (10%)	LS	$ 1	42,000	$ 42,000	42,000	$ 42,000	2,000	$ 2,000
Roadway Surveying (2%)	LS	$ 1	9,000	$ 9,000	9,000	$ 9,000		$ -
Structure Surveying (5%)	LS	$ 1	18,000	$ 18,000	5,000	$ 5,000		$ -
Removal of Structures & Obstructions (1%)	LS	$ 1	9,000	$ 9,000	50,000	$ 50,000	1,000	$ 1,000
Clearing and Grubbing	AC	$ 10,000	0.69	$ 6,900	0.9	$ 9,200		$ -
GRADING								
Roadway Excavation Incl. Haul	CY	$ 15	820	$ 12,300	1,570	$ 23,600		$ -
Gravel Borrow Incl. Haul	TON	$ 16	410	$ 6,600	820	$ 13,200		$ -
STORM SEWER								
Drainage Systems	LS	$ 1	35,000	$ 35,000	43,000	$ 43,000		$ -
SURFACING								
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	39,900	$ 39,900				
Portland Cement Concrete Sidewalk	SY	$ 20	600	$ 12,000	1,070	$ 21,400		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 90	370	$ 33,300	1,073	$ 96,600		$ -
Crushed Surfacing Base Course	TON	$ 25	592	$ 14,800	1,443	$ 36,100		$ -
EROSION CONTROL AND PLANTING								
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	26,000	$ 26,000	25,000	$ 25,000		$ -
TRAFFIC								
Project Traffic Control	EST	$ 1	42,000	$ 42,000	83,000	$ 83,000	2,000	$ 2,000
Traffic Signal Systems	EST	$ 1	200,000	$ 200,000		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15	1,300	$ 19,500	2,500	$ 37,500		$ -
Cement Conc Curb Ramps	EA	$ 1,500	5	$ 7,500	8	$ 12,000		$ -
Illumination System	EST	$ 1	20,000	$ 20,000	20,000	$ 20,000	15,000	$ 15,000
Striping	LF	$ 3	3,200	$ 9,600	3,200	$ 9,600		$ -
OTHER								
Retaining Walls (SEW)	SF	$ 60		$ -	1,500	$ 90,000		$ -
ROW Acquisition	SF	$ 20	7,000	$ 140,000	10,000	$ 200,000		0
CONSTRUCTION SUB TOTAL				**$ 704,000**		**$ 827,000**		**$ 20,000**
Construction Contingencies (30%)				$ 220,000		$ 250,000		$ 10,000
CONSTRUCTION TOTAL				**$ 924,000**		**$ 1,077,000**		**$ 30,000**
ENGINEERING SERVICES								
Preliminary Engineering (15%)				$ 140,000		$ 170,000		$ 10,000
Construction Engineering (12%)				$ 120,000		$ 130,000		$ 10,000
Total Preliminary Opinion of Cost				**$ 1,184,000**		**$ 1,377,000**		**$ 50,000**

Project Details	Location	Project Description
Project I4(L)	76th Pl NE/ NE 122nd Pl Dual Intersections	This project realigns 76th Pl NE in order to create a single signalized intersection with NE 122nd Pl.
Project I4(H)	76th Pl NE/ NE 122nd Pl Dual Intersections	This project realigns 76th Pl NE in order to create a roundabout intersection with NE 122nd Pl. and Juanita Dr.
Project V1	NE 122nd Pl	Improving existing lighting levels along the north side of NE 122nd Pl. beginning at Juanita Dr. and extending east approximately 600 LF.

Preliminary Level Opinion of Cost						
City of Kirkland: Juanita Dr. Corridor Study						
13-Dec-13						
Perteet Project # 20110185						
ITEM	**UNITS**	**UNIT PRICE**	**PROJECT I6 - QUANTITY**	**PROJECT I6 - AMOUNT**	**PROJECT I5 - QUANTITY**	**PROJECT I5 - AMOUNT**
PREPARATION						
Mobilization (10%)	LS	$ 1	39,000	$ 39,000	48,000	$ 48,000
Roadway Surveying (2%)	LS	$ 1	8,000	$ 8,000	10,000	$ 10,000
Structure Surveying (5%)	LS	$ 1	20,000	$ 20,000	24,000	$ 24,000
Removal of Structures & Obstructions (1%)	LS	$ 1	4,000	$ 4,000	5,000	$ 5,000
Clearing and Grubbing	AC	$ 10,000	0.11	$ 1,100	0.4	$ 3,700
GRADING						
Roadway Excavation Incl. Haul	CY	$ 15	710	$ 10,700	1,280	$ 19,200
Gravel Borrow Incl. Haul	TON	$ 16	290	$ 4,700	1,830	$ 29,300
STORM SEWER						
Drainage Systems	LS	$ 1	37,500	$ 37,500	30,000	$ 30,000
SURFACING						
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	127,600	$ 127,600	136,400	$ 136,400
Portland Cement Concrete Sidewalk	SY	$ 35		$ -		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -		$ -
Crushed Surfacing Base Course	TON	$ 25		$ -		$ -
EROSION CONTROL AND PLANTING						
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	24,000	$ 24,000	29,000	$ 29,000
TRAFFIC						
Project Traffic Control (10%)	EST	$ 1	39,000	$ 39,000	48,000	$ 48,000
Traffic Signal Systems	EST	$ 1		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15	3,600	$ 54,000	800	$ 12,000
Cement Conc Extruded Curb	LF	$ 15		$ -	300	$ 4,500
Cement Conc Curb Ramps	EA	$ 1,500	3	$ 4,500	3	$ 4,500
Illumination System	EST	$ 1	25,000	$ 25,000		$ -
Striping	LF	$ 3	3,600	$ 10,800	3,200	$ 9,600
OTHER						
Retaining Walls (SEW)	SF	$ 60	1,800	$ 108,000	3,800	$ 228,000
CONSTRUCTION SUB TOTAL				**$ 518,000**		**$ 642,000**
Construction Contingencies (30%)				$ 160,000		$ 200,000
CONSTRUCTION TOTAL				**$ 678,000**		**$ 842,000**
ENGINEERING SERVICES						
Preliminary Engineering (15%)				$ 110,000		$ 130,000
Construction Engineering (12%)				$ 90,000		$ 110,000
Total Preliminary Opinion of Cost				**$ 878,000**		**$ 1,082,000**

Project Details	Location	Project Description
Project I6	NE 132nd St Intersection to NE 133rd Place	This project involves the construction of a new intersection at Juanita Dr. & NE 132nd St. This intersection will widen the existing roadway section to include two through lanes, a SB LT lane to NE 132nd St., bicycle lanes, and pedestrian facilities. NE 132nd St. will be restriped to accomodate new movements. Roadway lighting will be improved in the intersection and approach areas.
Project I5	NE 128th St Intersection	This project involves the construction of a intersection at Juanita Dr. a& NE 128th St. The existing roadway section will be widened to accommodate two through lanes, a SB LT lane to NE 128th St., bicycle lanes, and sidewalks on the east side of Juanita Dr. Roadway lighting will be improved in the intersection and approach areas.

Preliminary Level Opinion of Cost				
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ITEM	**UNITS**	**UNIT PRICE**	**PROJECT I5 - QUANTITY**	**PROJECT I5 - AMOUNT**
PREPARATION				
Mobilization (10%)	LS	$ 1	4,000	$ 4,000
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000
Removal of Structures & Obstructions (1%)	LS	$ 1	1,000	$ 1,000
STORM SEWER				
Drainage Systems	LS	$ 1	30,000	$ 30,000
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	3,000	$ 3,000
TRAFFIC				
Project Traffic Control (10%)	EST	$ 1	4,000	$ 4,000
Cement Conc Extruded Curb	LF	$ 15	300	$ 4,500
CONSTRUCTION SUB TOTAL				**$ 48,000**
Construction Contingencies (30%)				$ 20,000
CONSTRUCTION TOTAL				**$ 68,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 20,000
Construction Engineering (12%)				$ 10,000
Total Preliminary Opinion of Cost				**$ 98,000**

Project Details	Location	Project Description
Project I5	NE 128th St Intersection	This project involves the construction of a intersection at Juanita Dr. a& NE 128th St. The existing roadway section will be widened to accommodate two through lanes, a SB LT lane to NE 128th St., bicycle lanes, and sidewalks on the east side of Juanita Dr. Roadway lighting will be improved in the intersection and approach areas. This estimate contains only Drainage Items

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ITEM	UNITS	UNIT PRICE	PROJECT R8 - QUANTITY	PROJECT R8 - AMOUNT	PROJECT R8B - QUANTITY	PROJECT R8B - AMOUNT	PROJECT R8B + I7 QUANTITY	PROJECT R8B + I7 AMOUNT
PREPARATION								
Mobilization (10%)	LS	$ 1	23,000	$ 23,000	60,000	$ 60,000	108,000	$ 108,000
Roadway Surveying (2%)	LS	$ 1	5,000	$ 5,000	6,000	$ 6,000	11,000	$ 11,000
Structure Surveying (5%)	LS	$ 1	0	$ -	13,000	$ 13,000	20,000	$ 20,000
Removal of Structures & Obstructions (1%)	LS	$ 1	3,000	$ 3,000	6,000	$ 6,000	11,000	$ 11,000
Clearing and Grubbing	AC	$ 10,000	0.12	$ 1,200	0.44	$ 4,400	0.30	$ 3,000
GRADING								
Roadway Excavation Incl. Haul	CY	$ 15	540	$ 8,100	990	$ 14,900	2,040	$ 30,600
Gravel Borrow Incl. Haul	TON	$ 16	180	$ 2,900	830	$ 13,300	4,350	$ 69,600
STORM SEWER								
Drainage Systems	LS	$ 1	12,000	$ 12,000	12,000	$ 12,000	27,500	$ 27,500
SURFACING								
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	106,200	$ 106,200	87,600	$ 87,600	53,100	$ 53,100
Portland Cement Concrete Sidewalk	SY	$ 20	70	$ 1,400		$ -	340	$ 6,800
HMA CL 1/2 IN. PG 64-22	TON	$ 90		$ -	280	$ 25,200	722	$ 65,000
Crushed Surfacing Base Course	TON	$ 25	19	$ 500	204	$ 5,100	777	$ 19,500
EROSION CONTROL AND PLANTING								
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	14,000	$ 14,000	36,000	$ 36,000	65,000	$ 65,000
TRAFFIC								
Project Traffic Control (10%)	EST	$ 1	23,000	$ 23,000	60,000	$ 60,000	108,000	$ 108,000
Traffic Signal Systems	EST	$ 1		$ -	0	$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15	800	$ 12,000	800	$ 12,000	2,500	$ 37,500
Cement Conc Curb Ramps	EA	$ 1,500		$ -	0	$ -	8	$ 12,000
Illumination System	EST	$ 1	15,000	$ 15,000	15,000	$ 15,000	15,000	$ 15,000
Striping	LF	$ 3	3,200	$ 9,600	3,200	$ 9,600	5,700	$ 17,100
OTHER								
Retaining Walls	SF	$ 60		$ -	4,200	$ 252,000	6,450	$ 387,000
Enhanced Pedestrian Crossing	LS	$ 60,000	1	60,000	1	$ 60,000		
ROW Acquisition	SF	$ 20			4,000	$ 80,000	16,400	$ 328,000
CONSTRUCTION SUB TOTAL				**$ 297,000**		**$ 773,000**		**$ 1,395,000**
Construction Contingencies (30%)				$ 90,000		$ 240,000		$ 420,000
CONSTRUCTION TOTAL				**$ 387,000**		**$ 1,013,000**		**$ 1,815,000**
ENGINEERING SERVICES								
Preliminary Engineering (15%)				$ 60,000		$ 160,000		$ 280,000
Construction Engineering (12%)				$ 50,000		$ 130,000		$ 220,000
Total Preliminary Opinion of Cost				**$ 497,000**		**$ 1,303,000**		**$ 2,315,000**

Project Details	Location	Project Description
Project R8	NE 138th St to north of 138th Pl	This project involves the restriping of the NE 138th Pl & Juanita Dr. intersection. Striping will be done to improve sight distance for drivers turning onto Juanita Dr. from NE 138th Pl and will also provide a protected area on Juanita Dr. allowing drivers to join traffic safetly. Roadway will be widened to accomodate a new sidewalk along the north side of Juanita Dr. An enhanced pedestrian crossing will be added iust north of the 138th Pl intersection.
Project R8B **Widen for Multipurpose Trail**	NE 138th St to north of 138th Pl	This project involves the restriping of the NE 138th Pl & Juanita Dr. intersection. Striping will be done to improve sight distance for drivers turning onto Juanita Dr. from NE 138th Pl and will also provide a protected area on Juanita Dr. allowing drivers to join traffic safetly. Roadway will be widened to accomodate typical roadway section including bike lanes in both directions, through lanes, and a two way left turn lane. A 10' separated pathway will be added along the north side of Juanita Dr. from Finn Hill park to the north project limit. This project will involve ROW acquisition due to the separated pathway on the north side. An enhanced pedestrian crossing will be added just north of the 138th Pl intersection.
Project R8B + I7	NE 138th St to north of 138th Pl	This project involves the construction of a single lane roundabout at the Juanita Dr. & NE 138th Pl intersection. The roundabout will incorporate bicycle lanes as well as sidewalks and crossings at all legs. This project will involve ROW acquisition due to the large roundabout footprint. Along with the roundabout the project will also install a 10' separated pedestrian walkway along the north side of Juanita Dr. from the entrance of Big Finn Hill Park to north of NE 138th Pl.

Preliminary Level Opinion of Cost							
City of Kirkland: Juanita Dr. Corridor Study							
13-Dec-13							
Perteet Project # 20110185							
ITEM	**UNITS**	**UNIT PRICE**	**PROJECT I8 - QUANTITY**	**PROJECT I8 - AMOUNT**	**PROJECT NM7 - QUANTITY**	**PROJECT NM7 - AMOUNT**	
PREPARATION							
Mobilization (10%)	LS	$ 1	2,000	$ 2,000	7,000	$ 7,000	
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000	2,000	$ 2,000	
Structure Surveying (5%)	LS	$ 1		$ -		$ -	
Removal of Structures & Obstructions (1%)	LS	$ 1	1,000	$ 1,000	1,000	$ 1,000	
Clearing and Grubbing	AC	$ 10,000		$ -		$ -	
GRADING							
Roadway Excavation Incl. Haul	CY	$ 15	30	$ 500		$ -	
Gravel Borrow Incl. Haul	TON	$ 16		$ -		$ -	
STORM SEWER							
Drainage Systems	LS	$ 1	5,500	$ 5,500		$ -	
SURFACING							
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1					
Portland Cement Concrete Sidewalk	SY	$ 35	70	$ 2,500		$ -	
HMA CL 1/2 IN. PG 64-22	TON	$ 100	20	$ 2,000		$ -	
Crushed Surfacing Base Course	TON	$ 25	56	$ 1,400		$ -	
EROSION CONTROL AND PLANTING							
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	1,000	$ 1,000		$ -	
TRAFFIC							
Project Traffic Control (10%)	EST	$ 1	3,000	$ 3,000	7,000	$ 7,000	
Traffic Signal Systems	EST	$ 1		$ -		$ -	
Cement Conc Curb and Gutter	LF	$ 15	100	$ 1,500		$ -	
Cement Conc Curb Ramps	EA	$ 1,500	2	$ 3,000		$ -	
Illumination System	EST	$ 1		$ -		$ -	
Striping	LF	$ 3		$ -	100	$ 300	
OTHER							
Retaining Walls (SEW)	SF	$ 60		$ -		$ -	
Gateway Island	LS	$ 1				$ -	
Enhanced Pedestrian Crossing	LS	$ 60,000			1	$ 60,000	
CONSTRUCTION SUB TOTAL				**$ 25,000**		**$ 78,000**	
Construction Contingencies (30%)				$ 10,000		$ 30,000	
CONSTRUCTION TOTAL				**$ 35,000**		**$ 108,000**	
ENGINEERING SERVICES							
Preliminary Engineering (15%)				$ 10,000		$ 20,000	
Construction Engineering (12%)				$ 10,000		$ 20,000	
Total Preliminary Opinion of Cost				**$ 55,000**		**$ 148,000**	
Cost reduction by packaging crosswalk projects						$ 90,000	

Project Details	Location	Project Description
Project I8	NE 141st St Intersection	This project involves improving the Juanita Dr. & NE 141st St. intersection. Changes to the existing signal system include the addition of a dedicated SB LT phase onto NE 141st St. Existing curb ramp and sidewalk facilities at the SE and NE corners will be improved to meet
Project NM7	NE 143rd St Intersection	This project will add an enhanced pedestrian crossing across Juanita Dr. at NE 143rd St.

Preliminary Level Opinion of Cost				
City of Kirkland: Juanita Dr. Corridor Study				
13-Dec-13				
Perteet Project # 20110185				
ITEM	**UNITS**	**UNIT PRICE**	**PROJECT NM1 - QUANTITY**	**PROJECT NM1 - AMOUNT**
PREPARATION				
Mobilization (10%)	LS	$ 1	4,000	$ 4,000
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000
Structure Surveying (5%)	LS	$ 1		$ -
Removal of Structures & Obstructions (1%)	LS	$ 1	1,000	$ 1,000
Clearing and Grubbing	AC	$ 7,000	0.04	$ 300
GRADING				
Roadway Excavation Incl. Haul	CY	$ 15	100	$ 1,500
Gravel Borrow Incl. Haul	TON	$ 16	130	$ 2,100
STORM SEWER				
Drainage Systems	LS	$ 1		$ -
SURFACING				
Portland Cement Concrete Sidewalk	SY	$ 20	560	$ 11,200
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -
Crushed Surfacing Base Course	TON	$ 35	130	$ 4,600
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	2,000	$ 2,000
TRAFFIC				
Project Traffic Control	EST	$ 1	3,000	$ 3,000
Traffic Signal Systems	EST	$ 1		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -
Cement Conc Curb Ramps	EA	$ 1,500	2	$ 3,000
Illumination System	EST	$ 1		$ -
Striping	LF	$ 3	3,000	$ 9,000
OTHER				
Retaining Walls	SF	$ 60		$ -
CONSTRUCTION SUB TOTAL				**$ 43,000**
Construction Contingencies (30%)				$ 20,000
CONSTRUCTION TOTAL				**$ 63,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 10,000
Construction Engineering (12%)				$ 10,000
Total Preliminary Opinion of Cost				**$ 83,000**

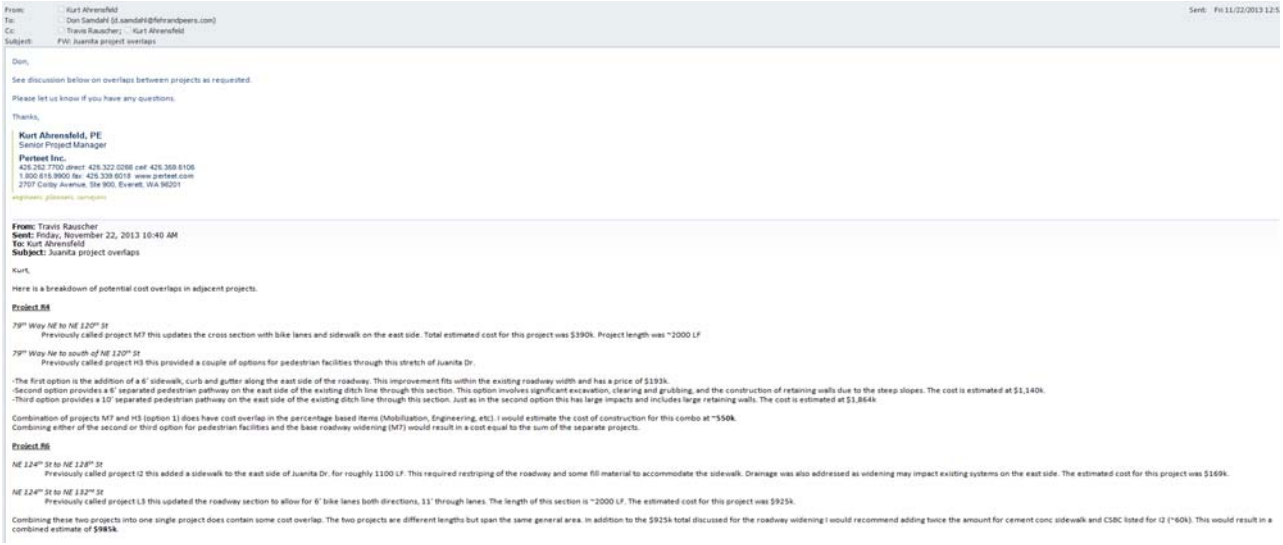
Project Details	Location	Project Description
Project NM1	98th Ave NE Intersection	Bicycle and Pedestrian enhancements beginning at the SW corner of the Juanita Dr & Ne 98th Ave NE intersection and continuing south along the west side of 98th Ave NE for ~500 LF. Additional striping will be done to creat a bike box at the NB LT lane of 98th Ave NE to Juanita Dr.

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
13-Dec-13
Perteet Project # 20110185

ITEM	UNITS	UNIT PRICE	PROJECT R6 - QUANTITY	PROJECT R6 - AMOUNT	PROJECT R6w - QUANTITY	PROJECT R6w - AMOUNT	PROJECT NM4 - QUANTITY	PROJECT NM4 - AMOUNT
PREPARATION								
Mobilization (10%)	LS	$ 1	43,000	$ 43,000	8,000	$ 8,000	8,000	$ 8,000
Roadway Surveying (2%)	LS	$ 1	9,000	$ 9,000	2,000	$ 2,000	2,000	$ 2,000
Structure Surveying (5%)	LS	$ 1		$ -		$ -	4,000	$ 4,000
Removal of Structures & Obstructions (1%)	LS	$ 1	5,000	$ 5,000	1,000	$ 1,000	1,000	$ 1,000
Clearing and Grubbing	AC	$ 10,000	0.23	$ 2,300	0.1	$ 800	0.02	$ 200
GRADING								
Roadway Excavation Incl. Haul	CY	$ 15	970	$ 14,600	210	$ 3,200		$ -
Gravel Borrow Incl. Haul	TON	$ 16	520	$ 8,400	90	$ 1,500		$ -
STORM SEWER								
Drainage Systems	LS	$ 1	40,000	$ 40,000	22,000	$ 22,000		$ -
SURFACING								
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	265,500	$ 265,500		$ -		$ -
Portland Cement Concrete Sidewalk	SY	$ 35		$ -	740	$ 25,900	20	$ 700
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -		$ -		$ -
Crushed Surfacing Base Course	TON	$ 25		$ -	204	$ 5,100	19	$ 500
EROSION CONTROL AND PLANTING								
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	26,000	$ 26,000	5,000	$ 5,000	5,000	$ 5,000
TRAFFIC								
Project Traffic Control (10%)	EST	$ 1	43,000	$ 43,000	8,000	$ 8,000	8,000	$ 8,000
Traffic Signal Systems	EST	$ 1		$ -		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15	2,000	$ 30,000	1,100	$ 16,500		$ -
Cement Conc Curb Ramps	EA	$ 1,500		$ -		$ -	2	$ 3,000
Illumination System	EST	$ 1	50,000	$ 50,000		$ -	10,000	$ 10,000
Striping	LF	$ 3	6,000	$ 18,000		$ -		$ -
OTHER								
Retaining Walls (SEW)	SF	$ 60		$ -		$ -		$ -
Enhanced Pedestrian Crossing	LS	$ 1					60,000	$ 60,000
CONSTRUCTION SUB TOTAL				**$ 555,000**		**$ 99,000**		**$ 103,000**
Construction Contingencies (30%)				$ 170,000		$ 30,000		$ 40,000
CONSTRUCTION TOTAL				**$ 725,000**		**$ 129,000**		**$ 143,000**
ENGINEERING SERVICES								
Preliminary Engineering (15%)				$ 110,000		$ 20,000		$ 30,000
Construction Engineering (12%)				$ 90,000		$ 20,000		$ 20,000
Total Preliminary Opinion of Cost				**$ 925,000**		**$ 169,000**		**$ 193,000**

$985,000.00
**Combining projects R6 and R6w into one project, this is the cost. See email below

Project Details	Location	Project Description
Project R6	NE 124th St to NE 132nd St	This project involves the widening of the existing roadway section to include two through lanes, bicycle lanes, and sidewalk facilities on the east side of the roadway. Any impacts to the existing drainage systems will be mitigated. Sta 222+00 to Sta 242+00
Project R6w	NE 124th St - NE 128th St	This project adds a sidewalk to the east side of the existing roadway section
Project NM4	NE 124th St Intersection	This project involves intersection improvements at Juanita Dr & NE 124th St. A new pedestrian connection to the adjacent neighborhood to the east wil be installed. This new pathway will lead to a new crossing at Juanita Dr.



From: Kurt Ahrensfeld
To: Dan Sandahl (d.sandahl@fehrandpeers.com)
Cc: Travis Rauscher; Kurt Ahrensfeld
Subject: FW: Juanita project overlaps
Sent: Fri 11/22/2013 12:5

Dan,

See discussion below on overlaps between projects as requested.

Please let us know if you have any questions.

Thanks,

Kurt Ahrensfeld, PE
Senior Project Manager
Perteet Inc.
426.262.7700 direct 426.322.0288 cell 426.369.6106
1.800.615.9900 fax 425.338.6018 www.perteet.com
2707 Colby Avenue, Ste 900, Everett, WA 98201

From: Travis Rauscher
Sent: Friday, November 22, 2013 10:40 AM
To: Kurt Ahrensfeld
Subject: Juanita project overlaps

Kurt,

Here is a breakdown of potential cost overlaps in adjacent projects.

Project R4

79th Way NE to NE 120th St
Previously called project M7 this updates the cross section with bike lanes and sidewalk on the east side. Total estimated cost for this project was $390k. Project length was ~2000 LF

79th Way Ne to south of NE 120th St
Previously called project H3 this provided a couple of options for pedestrian facilities through this stretch of Juanita Dr.

-The first option is the addition of a 6' sidewalk, curb and gutter along the east side of the roadway. This improvement fits within the existing roadway width and has a price of $193k.
-Second option provides a 6' separated pedestrian pathway on the east side of the existing ditch line through this section. This option involves significant excavation, clearing and grubbing, and the construction of retaining walls due to the steep slopes. The cost is estimated at $1,140k.
-Third option provides a 10' separated pedestrian pathway on the east side of the existing ditch line through this section. Just as in the second option this has large impacts and includes large retaining walls. The cost is estimated at $1,864k

Combination of projects M7 and H3 (option 1) does have cost overlap in the percentage based items (Mobilization, Engineering, etc). I would estimate the cost of construction for this combo at **~$50k**.
Combining either of the second or third option for pedestrian facilities and the base roadway widening (M7) would result in a cost equal to the sum of the separate projects.

Project R6

NE 124th St to NE 128th St
Previously called project I2 this added a sidewalk to the east side of Juanita Dr. for roughly 1100 LF. This required restriping of the roadway and some fill material to accommodate the sidewalk. Drainage was also addressed as widening may impact existing systems on the east side. The estimated cost for this project was $169k.

NE 124th St to NE 132nd St
Previously called project L3 this updated the roadway section to allow for 6' bike lanes both directions, 11' through lanes. The length of this section is ~2000 LF. The estimated cost for this project was $925k.

Combining these two projects into one single project does contain some cost overlap. The two projects are different lengths but span the same general area. In addition to the $925k total discussed for the roadway widening I would recommend adding twice the amount for cement conc sidewalk and CSBC listed for I2 (~60k). This would result in a combined estimate of **$985k**.

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
13-Dec-13
Perteet Project # 20110185

ITEM	UNITS	UNIT PRICE	PROJECT NM5 - QUANTITY	PROJECT NM5 - AMOUNT
PREPARATION				
Mobilization (10%)	LS	$ 1	28,000	$ 28,000
Roadway Surveying (2%)	LS	$ 1	6,000	$ 6,000
Structure Surveying (5%)	LS	$ 1		$ -
Removal of Structures & Obstructions (1%)	LS	$ 1	28,000	$ 28,000
Clearing and Grubbing	AC	$ 10,000	0.26	$ 2,600
GRADING				
Roadway Excavation Incl. Haul	CY	$ 15	140	$ 2,100
Gravel Borrow Incl. Haul	TON	$ 16	90	$ 1,500
STORM SEWER				
Drainage Systems	LS	$ 1		$ -
SURFACING				
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1		$ -
Portland Cement Concrete Sidewalk	SY	$ 35		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 100	260	$ 26,000
Crushed Surfacing Base Course	TON	$ 25	241	$ 6,100
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	17,000	$ 17,000
TRAFFIC				
Project Traffic Control (10%)	EST	$ 1	28,000	$ 28,000
Traffic Signal Systems	EST	$ 1		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -
Cement Conc Curb Ramps	EA	$ 1,500		$ -
Illumination System	EST	$ 1	40,000	$ 40,000
Striping	LF			$ -
OTHER				
Retaining Walls	SF	$ 60		$ -
Enhanced Pedestrian Crossing	LS	$ 1		$ -
Gateway Island	LS	$ 1		$ -
Timber Bridge	SF	$ 100	1,800	$ 180,000
Trail Extension	LF	$ 20	600	$ 12,000
CONSTRUCTION SUB TOTAL				**$ 186,000**
Construction Contingencies (30%)				$ 60,000
CONSTRUCTION TOTAL				**$ 246,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 40,000
Construction Engineering (12%)				$ 30,000
Total Preliminary Opinion of Cost				**$ 316,000**

Project Details	Location	Project Description
Project NM5	NE 132nd St- Juanita Drive to 72nd Ave NE	This project involves the construction of a pedestrian/bicycle pathway between the intersection of Juanita Dr. & NE 132nd St heading west to 76th Ave NE.

Preliminary Level Opinion of Cost				
City of Kirkland: Juanita Dr. Corridor Study				
13-Dec-13				
Perteet Project # 20110185				
ITEM	**UNITS**	**UNIT PRICE**	**PROJECT NM6 - QUANTITY**	**PROJECT NM6 - AMOUNT**
PREPARATION				
Mobilization (10%)	LS	$ 1	9,000	$ 9,000
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000
Structure Surveying (5%)	LS	$ 1	0	$ -
Removal of Structures & Obstructions (1%)	LS	$ 1	1,000	$ 1,000
Clearing and Grubbing	AC	$ 10,000	0.1	$ 600
GRADING				
Roadway Excavation Incl. Haul	CY	$ 15	290	$ 4,400
Gravel Borrow Incl. Haul	TON	$ 16	290	$ 4,700
STORM SEWER				
Drainage Systems	LS	$ 1	7,000	$ 7,000
SURFACING				
Portland Cement Concrete Sidewalk	SY	$ 35		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -
Crushed Surfacing Base Course	TON	$ 25		$ -
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	6,000	$ 6,000
TRAFFIC				
Project Traffic Control (10%)	EST	$ 1	9,000	$ 9,000
Traffic Signal Systems	EST	$ 1		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -
Cement Conc Curb Ramps	EA	$ 1,500		$ -
Illumination System	EST	$ 1	10,000	$ 10,000
Striping	LF		1,600	$ -
OTHER				
Retaining Walls	SF	$ 60		$ -
Enhanced Pedestrian Crossing	LS	$ 1	60,000	$ 60,000
CONSTRUCTION SUB TOTAL				**$ 113,000**
Construction Contingencies (30%)				$ 40,000
CONSTRUCTION TOTAL				**$ 153,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 30,000
Construction Engineering (12%)				$ 20,000
Total Preliminary Opinion of Cost				**$ 203,000**

Project Details	Location	Project Description
Project NM6	Big Finn Hill Park	This project involves the contruction of a enhanced pedestrian crossing of Juanita Dr. approx 1000 ft south of the Big Finn Hill Park entrance. This crossing will connect the two existing trail networks in Big Finn Hill Park. Improvements to the existing drainage systems along the west side of Juanita Dr. will be completed. Roadway lighting will be enhanced to increase visibility and pedestrian/bicycle safety.

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
13-Dec-13
Perteet Project # 20110185

ITEM		UNITS	UNIT PRICE	PROJECT NM8 - QUANTITY	PROJECT NM8 - AMOUNT
PREPARATION					
Mobilization (10%)		LS	$ 1	4,000	$ 4,000
Roadway Surveying (2%)		LS	$ 1	1,000	$ 1,000
Removal of Structures & Obstructions (10%)		LS	$ 1	4,000	$ 4,000
Roadway Excavation (10%)		EST	$ 1	4,000	$ 4,000
SURFACING					
Pavement Repair (15%)		EST	$ 1	6,000	$ 6,000
TRAFFIC					
Project Traffic Control (15%)		EST	$ 1	6,000	$ 6,000
Plastic Wide Lane Line		LF	$ 2.50	6,300	$ 15,800
Double Yellow Center Stripe		LF	$ 5		$ -
Removing Existing Striping		LF	$ 2	6,300	$ 12,600
OTHER					
Guide Posts		EA	$ 50	119	$ 6,000
Signing		EA	$ 750	13	$ 9,500
CONSTRUCTION SUB TOTAL					**$ 69,000**
Construction Contingencies (15%)					$ 20,000
CONSTRUCTION TOTAL					**$ 89,000**
ENGINEERING SERVICES					
Preliminary Engineering (15%)					$ 20,000
Construction Engineering (12%)					$ 20,000
Total Preliminary Opinion of Cost					**$ 129,000**

Project Details	Location	Project Description
Project NM8	Corridor	Add markings and guide posts at specific locations to improve safety

Total Length of Buffer Type Edge Line = 6300 **LF**

Total Length of Double Yellow Center Stripe = **LF**

Number of Guide Posts = 119.318 **EA**

# of New Sign, Post, and Foundation = 12.6 **EA**

Unit Cost = $750.00 **EA**

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
13-Dec-13
Perteet Project # 20110185

ITEM		UNITS	UNIT PRICE	PROJECT NM9 - QUANTITY	PROJECT NM9 - AMOUNT
PREPARATION					
Mobilization (10%)		LS	$ 1	13,000	$ 13,000
Roadway Surveying (2%)		LS	$ 1	3,000	$ 3,000
Removal of Structures & Obstructions (10%)		LS	$ 1	13,000	$ 13,000
Roadway Excavation (10%)		EST	$ 1	13,000	$ 13,000
SURFACING					
Pavement Repair (15%)		EST	$ 1	19,000	$ 19,000
TRAFFIC					
Project Traffic Control (15%)		EST	$ 1	19,000	$ 19,000
Plastic Wide Lane Line		LF	$ 2.50	16,900	$ 42,300
Double Yellow Center Stripe		LF	$ 5	4,300	$ 21,500
Removing Existing Striping		LF	$ 2	21,200	$ 42,400
OTHER					
Guide Posts		EA	$ 50	300	$ 15,000
Permanent Signing		LS	$ 1	15,000	$ 15,000
CONSTRUCTION SUB TOTAL					**$ 217,000**
Construction Contingencies (30%)					$ 70,000
CONSTRUCTION TOTAL					**$ 287,000**
ENGINEERING SERVICES					
Preliminary Engineering (15%)					$ 50,000
Construction Engineering (12%)					$ 40,000
Total Preliminary Opinion of Cost					**$ 377,000**

Project Details	Location	Project Description
Project NM9	Corridor	Create Northbound Bicycle Lane. Edge line will be similar to a gore area, two 4" plastic lines with hatching of 45deg strips inbetween. Total width is 2'

Section	Description	Length	# of lines	Total	# of Posts
116th to 120th	6', 11', 11', 6' Typ Section. Restripe edge lines	8100	1	8100	
	Guide posts put on the inside of curve at 83rd Ave area spaced at 10'				100
NE 122nd Pl to NE 124th St	No change to typical section	1000	1	1000	
	Restriping edge lines to wide lane line				
NE 124th to NE 132nd St	7', 11', 11', 6' Typical Section	2700	1	2700	
	Restriping edge lines to wide lane line				
	Guide posts on the west side of Juanita Dr. at the NE 128th St intersection				50
NE 132nd St to NE 133rd Pl	6', 11', 11', 12' Typical Section	500		0	
	Restriping edge lines to wide lane line		1	500	
	Restriping of center line to accommodate adjusted section		1	500	
	12' shoulder is wide ot accommodate bicycle lane and bus stop				
	Guide posts on the west side of Juanita Dr. at the NE 132nd St intersection				50
NE 133rd Pl to NE 138th St.	6', 11', 11', 7' Typical Section	1800			
	Restriping edge lines to wide lane line		1	1800	
	Restriping of center line to accommodate adjusted section		1	1800	
NE 1389th St to NE 138th Pl	6', 11', 11', 11', 6' Typical Section	1000			
	Restriping edge lines to wide lane line		1	1000	
	Restriping of center line to accommodate adjusted section		2	2000	
	Guide posts will be placed on the west side of Juanita Dr at the NE 138th St intersection				50
	Guide posts will be placed on the east side of Juanita Dr at the NE 138th Pl intersection				50
NE 138th Pl to NE 141st St.	6', 11', 11', 6' Typical Section	800	1	800	
	Restriping edge lines to wide lane line				
NE 141st to NE 143rd	Not change to typical section				
	Restriping edge lines to wide lane line	1000	1	1000	
	Total Length of Buffer Type Edge Line =			**16900**	**LF**
	Total Length of Double Yellow Center Stripe =			**4300**	**LF**
	Number of Guide Posts =			**300**	**EA**

Preliminary Level Opinion of Cost					
City of Kirkland: Juanita Dr. Corridor Study					
13-Dec-13					
Perteet Project # 20110185					
ITEM		UNITS	UNIT PRICE	PROJECT NM10 QUANTITY	PROJECT NM10 AMOUNT
PREPARATION					
Mobilization (10%)		LS	$ 1	10,000	$ 10,000
Roadway Surveying (2%)		LS	$ 1	2,000	$ 2,000
Removal of Structures & Obstructions (10%)		LS	$ 1	10,000	$ 10,000
OTHER					
Permanent Signing		LS	$ 1	94,500	$ 94,500
CONSTRUCTION SUB TOTAL					**$ 117,000**
Construction Contingencies (15%)					$ 20,000
CONSTRUCTION TOTAL					**$ 137,000**
ENGINEERING SERVICES					
Preliminary Engineering (15%)					$ 30,000
Construction Engineering (12%)					$ 20,000
Total Preliminary Opinion of Cost					**$ 187,000**

Project Details	Location	
Enhanced Signing	Corridor	

Section	Description	Length	# of Existing Signs	# of New Signs
Corridor in the Northbound direction	This project will replace the existing signs along the corridor to enhance driver awareness for bicycle users. It will also add an average of two signs per 1000LF of roadway notifying users of increased bicycle traffic. No Parking signs will be installed in areas as well.	18000	135	36

# of Signs to be Removed and Replaced = 135 EA
Unit Cost = $ 500.00 EA

# of New Sign, Post, and Foundation = 36 EA
Unit Cost = $ 750.00 EA

Total Cost = $ 94,500.00

Preliminary Level Opinion of Cost				
City of Kirkland: Juanita Dr. Corridor Study				
13-Dec-13				
Perteet Project # 20110185				
ITEM	**UNITS**	**UNIT PRICE**	**PROJECT R1 - QUANTITY**	**PROJECT R1 - AMOUNT**
PREPARATION				
Mobilization (10%)	LS	$ 1	215,000	$ 215,000
Roadway Surveying (2%)	LS	$ 1	43,000	$ 43,000
Structure Surveying (5%)	LS	$ 1	108,000	$ 108,000
Removal of Structures & Obstructions (1%)	LS	$ 1	22,000	$ 22,000
Clearing and Grubbing	AC	$ 10,000	0.21	$ 2,100
GRADING				
Roadway Excavation Incl. Haul	CY	$ 15	2,670	$ 40,100
Gravel Borrow Incl. Haul	TON	$ 16	2,200	$ 35,200
STORM SEWER				
Drainage Systems	LS	$ 1	50,000	$ 50,000
SURFACING				
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	239,000	$ 239,000
Portland Cement Concrete Sidewalk	SY	$ 20		
HMA CL 1/2 IN. PG 64-22	TON	$ 120	80	$ 9,600
Crushed Surfacing Base Course	TON	$ 35		$ -
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	129,000	$ 129,000
TRAFFIC				
Project Traffic Control (15%)	EST	$ 1	323,000	$ 323,000
Traffic Signal Systems	EST	$ 1		$ -
Cement Conc Curb and Gutter	LF	$ 15	1,800	$ 27,000
Cement Conc Curb Ramps	EA	$ 1,500		$ -
Illumination System	EST	$ 1		$ -
Striping	LF	$ 3	5,400	$ 16,200
OTHER				
Retaining Walls (Soilder Pile)	SF	$ 100	9,600	$ 960,000
Retaining Walls (SEW)	SF	$ 80	9,600	$ 768,000
Gateway Island	LS	$ 4,000	1	$ 4,000
Property Restoration (1%)	EST	$ 1	22,000	$ 22,000
CONSTRUCTION SUB TOTAL				**$ 3,014,000**
Construction Contingencies (30%)				$ 910,000
CONSTRUCTION TOTAL				**$ 3,924,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 590,000
Construction Engineering (12%)				$ 480,000
Total Preliminary Opinion of Cost				**$ 4,994,000**

Project Details	Location	Project Description
Project R1	NE 116th Pl to 86th Ave NE	This project widens the existing roadway section to include two through lanes, bicycle lanes in both directions, and sidewalk along the south side of the roadway. Drainage improvements will be installed along the north side of the roadway to collect both runoff and groundwater. Due to the steep slopes along both the north and south sides of the roadway through this area, retaining walls will be installed. Improvements to NE Juanita Ln will be completed to improve access, sight distances, and pedestrian safety. A Gateway island will be constructed at the east end of the project area near the east leg of the NE 116th Pl intersection. Approximate Length = 1800 ~Sta 124+00 to Sta 142+00

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
21-Nov-13
Perteet Project # 20110185

ITEM	UNITS	UNIT PRICE	PROJECT R1 - QUANTITY	PROJECT R1 - AMOUNT
PREPARATION				
Mobilization (10%)	LS	$ 1	92,000	$ 92,000
Roadway Surveying (2%)	LS	$ 1	19,000	$ 19,000
Structure Surveying (5%)	LS	$ 1	46,000	$ 46,000
Removal of Structures & Obstructions (1%)	LS	$ 1	10,000	$ 10,000
STORM SEWER				
Drainage Systems	LS	$ 1	50,000	$ 50,000
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	55,000	$ 55,000
TRAFFIC				
Project Traffic Control (15%)	EST	$ 1	138,000	$ 138,000
OTHER				
Retaining Walls (Soilder Pile)	SF	$ 100	4,800	$ 480,000
Retaining Walls (SEW)	SF	$ 80	4,800	$ 384,000
CONSTRUCTION SUB TOTAL				**$ 1,274,000**
Construction Contingencies (30%)				$ 390,000
CONSTRUCTION TOTAL				**$ 1,664,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 250,000
Construction Engineering (12%)				$ 200,000
Total Preliminary Opinion of Cost				**$ 2,114,000**

Project Details	Location	Project Description
Project R1	NE 116th Pl to 86th Ave NE	This project widens the existing roadway section to include two through lanes, bicycle lanes in both directions, and sidewalk along the south side of the roadway. Drainage improvements will be installed along the north side of the roadway to collect both runoff and groundwater. Due to the steep slopes along both the north and south sides of the roadway through this area, retaining walls will be installed. Improvements to NE Juanita Ln will be completed to improve access, sight distances, and pedestrian safety. A Gateway island will be constructed at the east end of the project area near the east leg of the NE 116th Pl intersection. Approximate Length = 1800 ~Sta 124+00 to Sta 142+00 This estimate summary contains Drainage related items only! Assumptions include that the walls on both the north and south side of the roadway are for both roadway and drainage purposes and thus the costs are split equally.

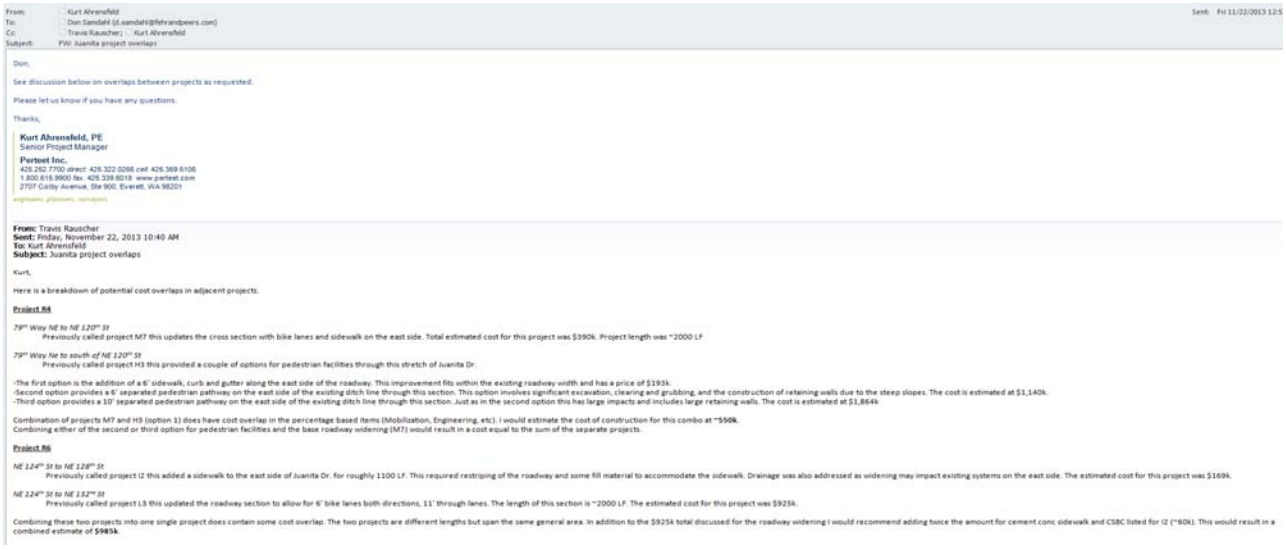
Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
13-Dec-13
Perteet Project # 20110185

ITEM	UNITS	UNIT PRICE	PROJECT R3 - QUANTITY	PROJECT R3 - AMOUNT	PROJECT R4 - QUANTITY	PROJECT R4 - AMOUNT	PROJECT R4 SW - QUANTITY	PROJECT R4 SW - AMOUNT
PREPARATION								
Mobilization (10%)	LS	$ 1	49,000	$ 49,000	16,000	$ 16,000	7,000	$ 7,000
Roadway Surveying (2%)	LS	$ 1	10,000	$ 10,000	4,000	$ 4,000	2,000	$ 2,000
Structure Surveying (5%)	LS	$ 1		$ -		$ -		$ -
Removal of Structures & Obstructions (1%)	LS	$ 1	5,000	$ 5,000	2,000	$ 2,000	20,000	$ 20,000
Clearing and Grubbing	AC	$ 10,000	0.10	$ 1,000		$ -	0.07	$ 700
GRADING								
Roadway Excavation Incl. Haul	CY	$ 15	1,120	$ 16,800	560	$ 8,400	230	$ 3,500
Gravel Borrow Incl. Haul	TON	$ 16	170	$ 2,800	90	$ 1,500	250	$ 4,000
STORM SEWER								
Drainage Systems	LS	$ 1	10,000	$ 10,000		$ -	10,000	$ 10,000
SURFACING								
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	132,800	$ 132,800	117,800	$ 117,800		$ -
Portland Cement Concrete Sidewalk	SY	$ 20		$ -		$ -	670	$ 13,400
HMA CL 1/2 IN. PG 64-22	TON	$ 90		$ -		$ -		$ -
Crushed Surfacing Base Course	TON	$ 25		$ -		$ -	148	$ 3,700
EROSION CONTROL AND PLANTING								
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	30,000	$ 30,000	10,000	$ 10,000	4,000	$ 4,000
TRAFFIC								
Project Traffic Control (10%)	EST	$ 1	49,000	$ 49,000	16,000	$ 16,000	7,000	$ 7,000
Traffic Signal Systems	EST	$ 1		$ -		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15	1,000	$ 15,000	1,000	$ 15,000	1,000	$ 15,000
Cement Conc Curb Ramps	EA	$ 1,500		$ -		$ -	2	$ 3,000
Illumination System	EST	$ 1		$ -		$ -		$ -
Striping	LF	$ 3	3,000	$ 9,000	3,000	$ 9,000	3,000	$ 9,000
OTHER								
Retaining Walls	SF	$ 60	5,000	$ 300,000		$ -		$ -
Beam Guardrail	LF	$ 100			300	$ 30,000		
CONSTRUCTION SUB TOTAL				**$ 631,000**		**$ 230,000**		**$ 103,000**
Construction Contingencies (30%)				$ 190,000		$ 70,000		$ 40,000
CONSTRUCTION TOTAL				**$ 821,000**		**$ 300,000**		**$ 143,000**
ENGINEERING SERVICES								
Preliminary Engineering (15%)				$ 130,000		$ 50,000		$ 30,000
Construction Engineering (12%)				$ 100,000		$ 40,000		$ 20,000
Total Preliminary Opinion of Cost				**$ 1,051,000**		**$ 390,000**		**$ 193,000**

550000 +$980000

**Creating the basic section would be $550K. Adding the multipurpose trail (second option below) would add apprx. $980K. See email below

Project Details	Location	Project Description
Project R3	NE 112th St to 79th Way NE	Widening of existing roadway cross section to accommodate the proposed thru lanes, bicycle lanes, and sidewalk on the east side of the roadway. Approximate length of project = 1000 LF | ~ Sta 180+00 to Sta 190+00
Project R4	79th Way NE to NE 120th St	Widening of existing roadway cross section to accommodate the proposed thru lanes, bicycle lanes, and sidewalk on the east side of the roadway. The existing beam guardrail will be replaced. Approximate length of project = 1000 LF | ~ Sta 190+00 to Sta 200+00
Project R4 SW	79th Way NE to South of NE 120th St	Installation of a sidewalk along the east side of the roadway. Approximate length of project = 1000 LF | ~ Sta 190+00 to Sta 200+00



From: Kurt Ahrensfeld
To: Don Samdahl (d.samdahl@fehrandpeers.com)
Cc: Travis Rauscher; Kurt Ahrensfeld
Subject: FW: Juanita project overlaps
Sent: Fri 11/22/2013 12:5

Don,

See discussion below on overlaps between projects as requested.

Please let us know if you have any questions.

Thanks,

Kurt Ahrensfeld, PE
Senior Project Manager
Perteet Inc.
425.252.7700 direct 425.322.0266 cell 425.369.6106
1.800.615.9900 fax 425.339.6018 www.perteet.com
2707 Colby Avenue, Ste 900, Everett, WA 98201

From: Travis Rauscher
Sent: Friday, November 22, 2013 10:40 AM
To: Kurt Ahrensfeld
Subject: Juanita project overlaps

Kurt,

Here is a breakdown of potential cost overlaps in adjacent projects.

Project R4

79th Way NE to NE 120th St
Previously called project M7 this updates the cross section with bike lanes and sidewalk on the east side. Total estimated cost for this project was $390k. Project length was ~2000 LF

79th Way Ne to south of NE 120th St
Previously called project H3 this provided a couple of options for pedestrian facilities through this stretch of Juanita Dr.

-The first option is the addition of a 6' sidewalk, curb and gutter along the east side of the roadway. This improvement fits within the existing roadway width and has a price of $193k.
-Second option provides a 6' separated pedestrian pathway on the east side of the existing ditch line through this section. This option involves significant excavation, clearing and grubbing, and the construction of retaining walls due to the steep slopes. The cost is estimated at $1,140k.
-Third option provides a 10' separated pedestrian pathway on the east side of the existing ditch line through this section. Just as in the second option this has large impacts and includes large retaining walls. The cost is estimated at $1,864k

Combination of projects M7 and H3 (option 1) does have cost overlap in the percentage based items (Mobilization, Engineering, etc). I would estimate the cost of construction for this combo at **~$50k.**
Combining either of the second or third option for pedestrian facilities and the base roadway widening (M7) would result in a cost equal to the sum of the separate projects.

Project R6

NE 124th St to NE 128th St
Previously called project I2 this added a sidewalk to the east side of Juanita Dr. for roughly 1100 LF. This required restriping of the roadway and some fill material to accommodate the sidewalk. Drainage was also addressed as widening may impact existing systems on the east side. The estimated cost for this project was $169k.

NE 124th St to NE 132nd St
Previously called project L3 this updated the roadway section to allow for 6' bike lanes both directions, 11' through lanes. The length of this section is ~2000 LF. The estimated cost for this project was $925k.

Combining these two projects into one single project does contain some cost overlap. The two projects are different lengths but span the same general area. In addition to the $925k total discussed for the roadway widening I would recommend adding twice the amount for cement conc sidewalk and CSBC listed for I2 (~60k). This would result in a combined estimate of **$985k**.

Preliminary Level Opinion of Cost							
City of Kirkland: Juanita Dr. Corridor Study							
13-Dec-13							
Perteet Project # 20110185							
ITEM	UNITS	UNIT PRICE	PROJECT R4B - QUANTITY	PROJECT R4B - AMOUNT	PROJECT R4C - QUANTITY	PROJECT R4C - AMOUNT
PREPARATION						
Mobilization (10%)	LS	$ 1	43,000	$ 43,000	70,000	$ 70,000
Roadway Surveying (2%)	LS	$ 1	9,000	$ 9,000	14,000	$ 14,000
Structure Surveying (5%)	LS	$ 1	18,000	$ 18,000	30,000	$ 30,000
Removal of Structures & Obstructions (1%)	LS	$ 1	20,000	$ 20,000	7,000	$ 7,000
Clearing and Grubbing	AC	$ 10,000	0.23	$ 2,300	0.35	$ 3,500
GRADING						
Roadway Excavation Incl. Haul	CY	$ 15	230	$ 3,500	750	$ 11,300
Gravel Borrow Incl. Haul	TON	$ 16	480	$ 7,700	780	$ 12,500
STORM SEWER						
Drainage Systems	LS	$ 1	10,000	$ 10,000	10,000	$ 10,000
SURFACING						
Portland Cement Concrete Sidewalk	SY	$ 20		$ -		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 100	230	$ 23,000	360	$ 36,000
Crushed Surfacing Base Course	TON	$ 35	148	$ 5,200	241	$ 8,500
EROSION CONTROL AND PLANTING						
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	26,000	$ 26,000	42,000	$ 42,000
TRAFFIC						
Project Traffic Control (10%)	EST	$ 1	43,000	$ 43,000	70,000	$ 70,000
Traffic Signal Systems	EST	$ 1		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -		$ -
Cement Conc Curb Ramps	EA	$ 1,500		$ -		$ -
Illumination System	EST	$ 1		$ -		$ -
Striping	LF	$ 3	3,000	$ 9,000	3,000	$ 9,000
OTHER						
Retaining Walls (SEW)	SF	$ 60	6,000	$ 360,000	10,000	$ 600,000
ROW Acquisition	SF	$ 20	5,000	$ 100,000	10,000	$ 200,000
Enhanced Pedestrian Crossing	EST	$ 1		$ -		$ -
CONSTRUCTION SUB TOTAL				**$ 680,000**		**$ 1,124,000**
Construction Contingencies (30%)				$ 210,000		$ 340,000
CONSTRUCTION TOTAL				**$ 890,000**		**$ 1,464,000**
ENGINEERING SERVICES						
Preliminary Engineering (15%)				$ 140,000		$ 220,000
Construction Engineering (12%)				$ 110,000		$ 180,000
Total Preliminary Opinion of Cost				**$ 1,140,000**		**$ 1,864,000**

Project Details	Location	Project Description
Project R4B	79th Way NE to South of NE 120th St	Installation of a 6' separated pedestrian walkway along the east side of the roadway. This pathway/sidewalk will be to the east of the existing open drainage ditch and will require tree removal and retaining walls in most areas. Approximate length of project = 1000 LF | ~ Sta 190+00 to Sta 200+00
Project R4C	79th Way NE to South of NE 120th St	Installation of a 10' separated pedestrian walkway along the east side of the roadway. This pathway/sidewalk will be to the east of the existing open drainage ditch and will require tree removal and retaining walls in most areas. Approximate length of project = 1000 LF | ~ Sta 190+00 to Sta 200+00

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ITEM	UNITS	UNIT PRICE	PROJECT R5 - QUANTITY	PROJECT R5 - AMOUNT
PREPARATION				
Mobilization (10%)	LS	$ 1	14,000	$ 14,000
Roadway Surveying (2%)	LS	$ 1	3,000	$ 3,000
Structure Surveying (5%)	LS	$ 1	3,000	$ 3,000
Removal of Structures & Obstructions (1%)	LS	$ 1	2,000	$ 2,000
Clearing and Grubbing	AC	$ 10,000	0.07	$ 700
GRADING				
Roadway Excavation Incl. Haul	CY	$ 15	60	$ 900
Gravel Borrow Incl. Haul	TON	$ 16		$ -
STORM SEWER				
Drainage Systems	LS	$ 1	2,000	$ 2,000
SURFACING				
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	62,500	$ 62,500
Portland Cement Concrete Sidewalk	SY	$ 20		
HMA CL 1/2 IN. PG 64-22	TON	$ 120		$ -
Crushed Surfacing Base Course	TON	$ 35		$ -
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	9,000	$ 9,000
TRAFFIC				
Project Traffic Control (10%)	EST	$ 1	14,000	$ 14,000
Traffic Signal Systems	EST	$ 1		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -
Cement Conc Curb Ramps	EA	$ 1,500		$ -
Illumination System	EST	$ 1	10,000	$ 10,000
Striping	LF	$ 3	1,200	$ 3,600
OTHER				
Retaining Walls (SEW)	SF	$ 60	900	$ 54,000
Gateway Island	LS	$ 4,000		$ -
Property Restoration (1%)	EST	$ 1		$ -
CONSTRUCTION SUB TOTAL				**$ 179,000**
Construction Contingencies (30%)				$ 60,000
CONSTRUCTION TOTAL				**$ 239,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 40,000
Construction Engineering (12%)				$ 30,000
Total Preliminary Opinion of Cost				**$ 309,000**

Project Details	Location	Project Description
Project R5	NE 120th St. to NE 122nd Lane	This project widens the roadway to accommodate a SB LT lane on Juanita Dr. The existing sidewalk on the east side will be extended, roadway lighting will me improved. Approximate Length = 300

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
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ITEM	UNITS	UNIT PRICE	PROJECT R7A - QUANTITY	PROJECT R7A - AMOUNT	PROJECT R7B - QUANTITY	PROJECT R7B - AMOUNT
PREPARATION						
Mobilization (10%)	LS	$ 1	36,000	$ 36,000	79,000	$ 79,000
Roadway Surveying (2%)	LS	$ 1	9,000	$ 9,000	11,000	$ 11,000
Structure Surveying (5%)	LS	$ 1		$ -	5,000	$ 5,000
Removal of Structures & Obstructions (1%)	LS	$ 1	4,000	$ 4,000	10,000	$ 10,000
Clearing and Grubbing	AC	$ 10,000	0.17	$ 1,700	0.49	$ 4,900
GRADING						
Roadway Excavation Incl. Haul	CY	$ 15	680	$ 10,200	1,200	$ 18,000
Gravel Borrow Incl. Haul	TON	$ 16	270	$ 4,400	1,070	$ 17,200
STORM SEWER						
Drainage Systems	LS	$ 1	28,000	$ 28,000	28,000	$ 28,000
SURFACING						
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	236,500	$ 236,500	203,800	$ 203,800
Portland Cement Concrete Sidewalk	SY	$ 20		$ -		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -	490	$ 49,000
Crushed Surfacing Base Course	TON	$ 35		$ -	481	$ 16,900
EROSION CONTROL AND PLANTING						
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	22,000	$ 22,000	47,000	$ 47,000
TRAFFIC						
Project Traffic Control (10%)	EST	$ 1	36,000	$ 36,000	79,000	$ 79,000
Traffic Signal Systems	EST	$ 1		$ -		$ -
Cement Conc Curb and Gutter	LF	$ 15	1,400	$ 21,000	1,400	$ 21,000
Cement Conc Curb Ramps	EA	$ 1,500		$ -		$ -
Illumination System	EST	$ 1	30,000	$ 30,000	30,000	$ 30,000
Striping	LF	$ 3	4,200	$ 12,600	4,200	$ 12,600
OTHER						
Retaining Walls (SEW)	SF	$ 60		$ -	1,500	$ 90,000
ROW Acquisition	SF	$ 20			14,000	$ 280,000
Gateway Island	LS	$ 1	5,000	$ 5,000	5,000	$ 5,000
Trail Extention	LF	$ 20	200	$ 4,000	200	$ 4,000
CONSTRUCTION SUB TOTAL				**$ 461,000**		**$ 1,012,000**
Construction Contingencies (30%)				$ 140,000		$ 310,000
CONSTRUCTION TOTAL				**$ 601,000**		**$ 1,322,000**
ENGINEERING SERVICES						
Preliminary Engineering (15%)				$ 100,000		$ 200,000
Construction Engineering (12%)				$ 80,000		$ 160,000
Total Preliminary Opinion of Cost				**$ 781,000**		**$ 1,682,000**

Project Details	Location	Project Description
Project R7A	NE 133rd Pl to south of NE 138th St	This project involves widening the existing roadway section from just north of NE 133rd Pl to the entrance to Big Finn Hill Park to accommodate two through lanes, bicycle lanes, and sidewalk along the east side of Juanita Dr. Any impacts to the existing drainage systems will be mitigated. ~Sta 253+00 to Sta 267+00
Project R7B	NE 138th St intersection	This project involves widening the existing roadway section to accommodate two through lanes, bicycle lanes, and a 10' separated pathway along the east side of Juanita Dr. Any impacts to the existing drainage systems will be mitigated. ~Sta 267+00 to Sta 273+00

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
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ITEM	UNITS	UNIT PRICE	PROJECT R9A - QUANTITY	PROJECT R9A - AMOUNT	PROJECT R9B - QUANTITY	PROJECT R9B - AMOUNT		
PREPARATION								
Mobilization (10%)	LS	$ 1	20,000	$ 20,000	26,000	$ 26,000		
Roadway Surveying (2%)	LS	$ 1	5,000	$ 5,000	5,000	$ 5,000		
Structure Surveying (5%)	LS	$ 1		$ -	3,000	$ 3,000		
Removal of Structures & Obstructions (1%)	LS	$ 1	2,000	$ 2,000	3,000	$ 3,000		
Clearing and Grubbing	AC	$ 10,000	0.11	$ 1,100	0.11	$ 1,100		
GRADING								
Roadway Excavation Incl. Haul	CY	$ 15	750	$ 11,250	810	$ 12,150		
Gravel Borrow Incl. Haul	TON	$ 16	200	$ 3,200	290	$ 4,640		
STORM SEWER								
Drainage Systems	LS	$ 1	25,000	$ 25,000	25,000	$ 25,000		
SURFACING								
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1	107,100	$ 107,100	107,100	$ 107,100		
Portland Cement Concrete Sidewalk	SY	$ 35	110	$ 3,850		$ -		
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -	80	$ 8,000		
Crushed Surfacing Base Course	TON	$ 25	37	$ 925	56	$ 1,388		
EROSION CONTROL AND PLANTING								
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	12,000	$ 12,000	16,000	$ 16,000		
TRAFFIC								
Project Traffic Control (10%)	EST	$ 1	20,000	$ 20,000	26,000	$ 26,000		
Traffic Signal Systems	EST	$ 1		$ -		$ -		
Cement Conc Curb and Gutter	LF	$ 15	900	$ 13,500	900	$ 13,500		
Cement Conc Curb Ramps	EA	$ 1,500		$ -		$ -		
Illumination System	EST	$ 1	20,000	$ 20,000	20,000	$ 20,000		
Striping	LF	$ 3	3,352	$ 10,056	3,352	$ 10,056		
OTHER								
Retaining Walls (SEW)	SF	$ 60		$ -	815	$ 48,900		
Gateway Island	LS	$ 1	4,000	$ 4,000	4,000	$ 4,000		
Enhanced Pedestrian Crossing	LS	$ 60,000		$ -		$ -		
						$ -		
CONSTRUCTION SUB TOTAL				**$ 259,000**		**$ 335,000**		
Construction Contingencies (30%)				$ 80,000		$ 110,000		
CONSTRUCTION TOTAL				**$ 339,000**		**$ 445,000**		
ENGINEERING SERVICES								
Preliminary Engineering (15%)				$ 60,000		$ 70,000		
Construction Engineering (12%)				$ 50,000		$ 60,000		
Total Preliminary Opinion of Cost				**$ 449,000**		**$ 575,000**		

Project Details	Location	Project Description
Project R9A	STA 276 to NE 141st St	This project involves the construction of a gateway island just south of the Juanita Dr & NE 141st St. intersection. The roadway section will be widened to accommodate this new feature. The roadway lighting will be improved throughout the project area. This project also involves widening the existing roadway section from just north of NE 138th Pl to NE 141st St. to accommodate two through lanes, bicycle lanes, Any impacts to the existing drainage systems will be mitigated. This project involves widening the existing roadway section to accommodate a sidewalk along the east side of Juanita Dr. Any impacts to the existing drainage systems will be mitigated.
Project R9B	STA 276 to NE 141st St	This project involves the construction of a gateway island just south of the Juanita Dr & NE 141st St. intersection. The roadway section will be widened to accommodate this new feature. The roadway lighting will be improved throughout the project area. This project also involves widening the existing roadway section from just north of NE 138th Pl to NE 141st St. to accommodate two through lanes, bicycle lanes, Any impacts to the existing drainage systems will be mitigated. This project involves widening the existing roadway section to accomodate a 10' separated pathway along the east side of Juanita Dr. Any impacts to the existing drainage systems will be mitigated.

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ITEM	UNITS	UNIT PRICE	PROJECT R10 - QUANTITY	PROJECT R10 - AMOUNT
PREPARATION				
Mobilization (10%)	LS	$ 1	1,000	$ 1,000
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000
Structure Surveying (5%)	LS	$ 1		$ -
Removal of Structures & Obstructions (10%)	LS	$ 1	1,000	$ 1,000
Clearing and Grubbing	AC	$ 10,000		$ -
GRADING				
Roadway Excavation Incl. Haul	CY	$ 15		$ -
Gravel Borrow Incl. Haul	TON	$ 16		$ -
STORM SEWER				
Drainage Systems	LS	$ 1		$ -
SURFACING				
Portland Cement Concrete Sidewalk	SY	$ 20		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 100		$ -
Crushed Surfacing Base Course	TON	$ 35		$ -
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	1,000	$ 1,000
TRAFFIC				
Project Traffic Control (15%)	EST	$ 1	5,000	$ 5,000
Traffic Signal Systems	EST	$ 1		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -
Cement Conc Curb Ramps	EA	$ 1,500		$ -
Illumination System	EST	$ 1		$ -
Striping	LF	$ 6	4,000	$ 24,000
OTHER				
Retaining Walls (SEW)	SF	$ 60		$ -
ROW Acquisition	SF	$ 20		$ -
Enhanced Pedestrian Crossing	EST	$ 1		$ -
CONSTRUCTION SUB TOTAL				**$ 33,000**
Construction Contingencies (30%)				$ 10,000
CONSTRUCTION TOTAL				**$ 43,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 10,000
Construction Engineering (12%)				$ 10,000
Total Preliminary Opinion of Cost				**$ 63,000**

Project Details	Location	Project Description
Project R10	NE 141st to NE 143rd ~1000 LF	Cross Section upgrades. Roadway is restriped with buffer strips for bike lanes

Preliminary Level Opinion of Cost					
City of Kirkland: Juanita Dr. Corridor Study					
13-Dec-13					
Perteet Project # 20110185					
ITEM		UNITS	UNIT PRICE	PROJECT V2 - QUANTITY	PROJECT V2 - AMOUNT
PREPARATION					
Mobilization (10%)		LS	$ 1	1,000	$ 1,000
Roadway Surveying (2%)		LS	$ 1	1,000	$ 1,000
Removal of Structures & Obstructions (10%)		LS	$ 1	1,000	$ 1,000
Roadway Excavation (10%)		EST	$ 1	1,000	$ 1,000
SURFACING					
Pavement Repair (15%)		EST	$ 1	1,000	$ 1,000
TRAFFIC					
Project Traffic Control (15%)		EST	$ 1	1,000	$ 1,000
Rumble Strip		LF	$ 0.35	3,700	$ 1,300
Double Yellow Center Stripe		LF	$ 5	0	$ -
Removing Existing Striping		LF	$ 2	0	$ -
OTHER					
Guide Posts		EA	$ 50	0	$ -
Permanent Signing		LS	$ 1	0	$ -
CONSTRUCTION SUB TOTAL					**$ 8,000**
Construction Contingencies (15%)					$ 10,000
CONSTRUCTION TOTAL					**$ 18,000**
ENGINEERING SERVICES					
Preliminary Engineering (15%)					$ 10,000
Construction Engineering (12%)					$ 10,000
Total Preliminary Opinion of Cost					**$ 38,000**

Project Details	Location	Project Description
Project V2	Corridor	Add Centerline Rumble Strips- 3700 feet total throughout corridor

Preliminary Level Opinion of Cost
City of Kirkland: Juanita Dr. Corridor Study
13-Dec-13
Perteet Project # 20110185

ITEM	UNITS	UNIT PRICE	PROJECT V3 - QUANTITY	PROJECT V3 - AMOUNT
PREPARATION				
Mobilization (10%)	LS	$ 1	1,000	$ 1,000
Roadway Surveying (2%)	LS	$ 1	1,000	$ 1,000
Structure Surveying (5%)	LS	$ 1		$ -
Removal of Structures & Obstructions (1%)	LS	$ 1		$ -
Clearing and Grubbing	AC	$ 10,000	0.10	$ 1,000
GRADING				
Roadway Excavation Incl. Haul	CY	$ 15		$ -
Gravel Borrow Incl. Haul	TON	$ 16		$ -
STORM SEWER				
Drainage Systems	LS	$ 1		$ -
SURFACING				
Roadway Widening (Includes HMA, CSBC, CSTC, Sidewalk)	EST	$ 1		
Portland Cement Concrete Sidewalk	SY	$ 20		$ -
HMA CL 1/2 IN. PG 64-22	TON	$ 90		$ -
Crushed Surfacing Base Course	TON	$ 25		$ -
EROSION CONTROL AND PLANTING				
Temporary Water Pollution & Erosion Control (6%)	LS	$ 1	1,000	$ 1,000
TRAFFIC				
Project Traffic Control (10%)	EST	$ 1	1,000	$ 1,000
Traffic Signal Systems	EST	$ 1		$ -
Cement Conc Curb and Gutter	LF	$ 15		$ -
Cement Conc Curb Ramps	EA	$ 1,500		$ -
Illumination System	EST	$ 1		$ -
Striping	LF	$ 3	2,000	$ 6,000
OTHER				
Retaining Walls	SF	$ 60		$ -
Enhanced Pedestrian Crossing	LS	$ 60,000		$ -
CONSTRUCTION SUB TOTAL				**$ 11,000**
Construction Contingencies (30%)				$ 10,000
CONSTRUCTION TOTAL				**$ 21,000**
ENGINEERING SERVICES				
Preliminary Engineering (15%)				$ 10,000
Construction Engineering (12%)				$ 10,000
Total Preliminary Opinion of Cost				**$ 41,000**

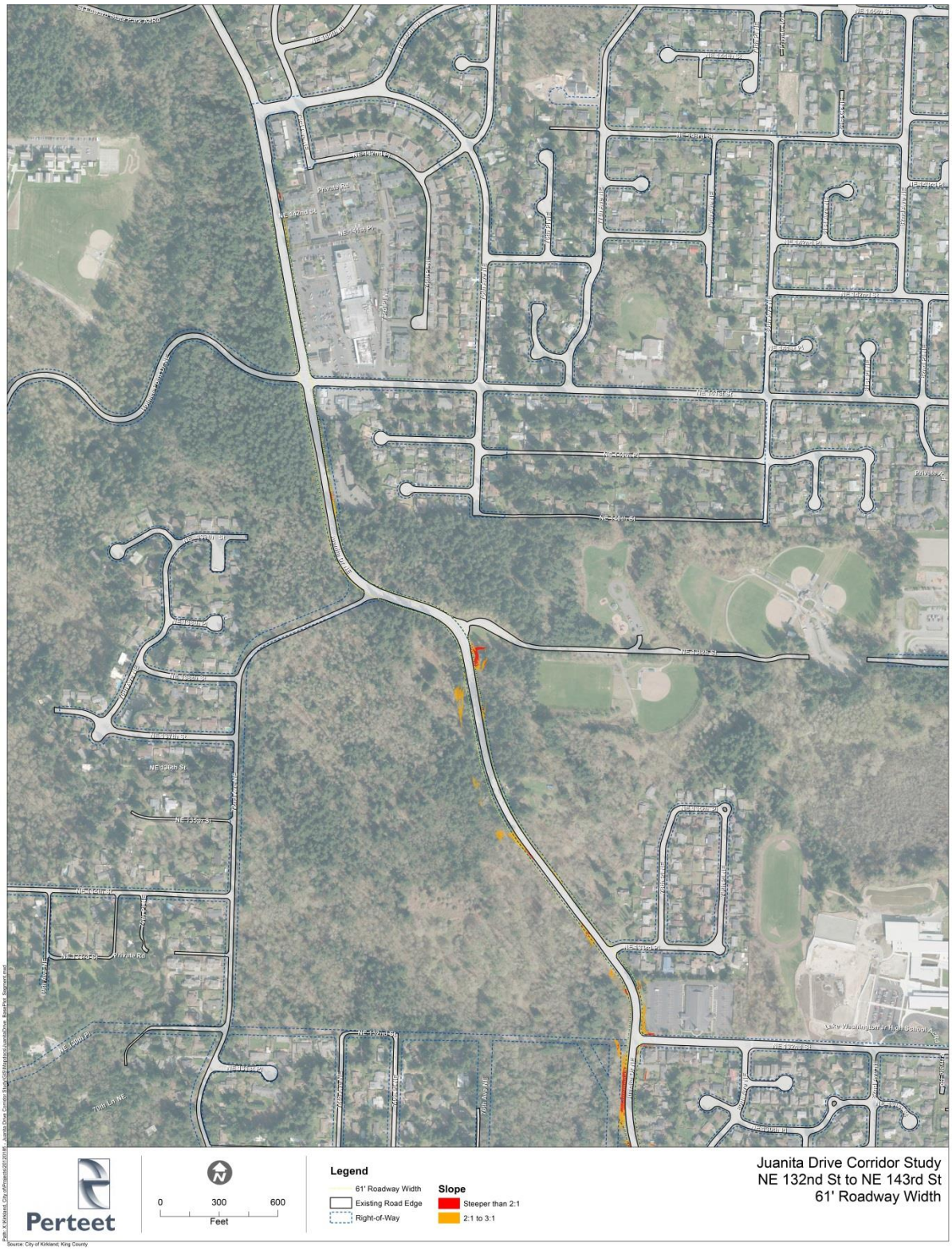
Project Details	Location	Project Description
Project V3	NE 138th Pl Intersection	This project involves the restriping of the NE 138th Pl & Juanita Dr. intersection. Striping will be done to improve sight distance for drivers turning onto Juanita Dr. from NE 138th Pl and will also provide a protected area on Juanita Dr. allowing drivers to join traffic safetly.

Appendix C

Corridor Profile Details

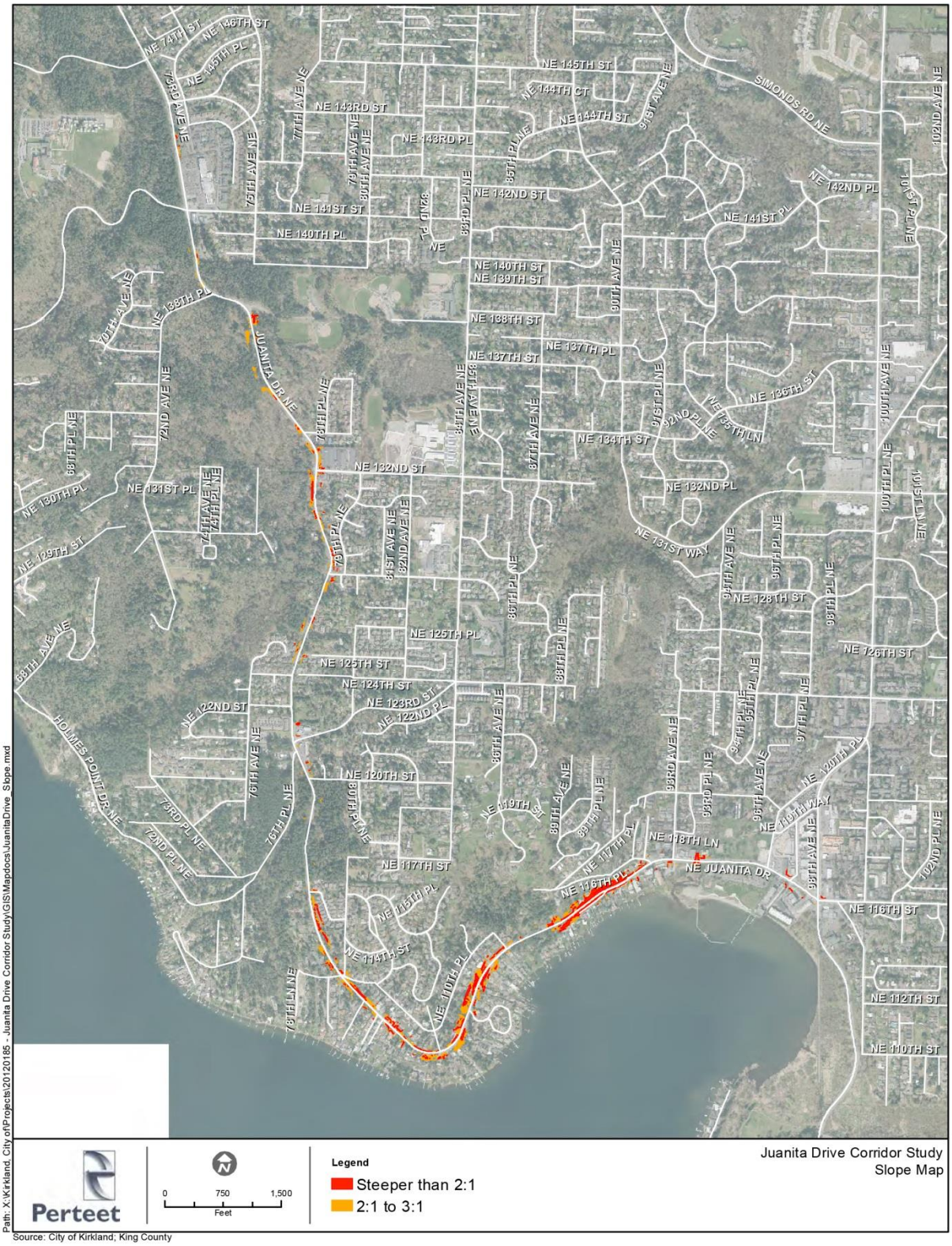
PHYSICAL CONDITIONS

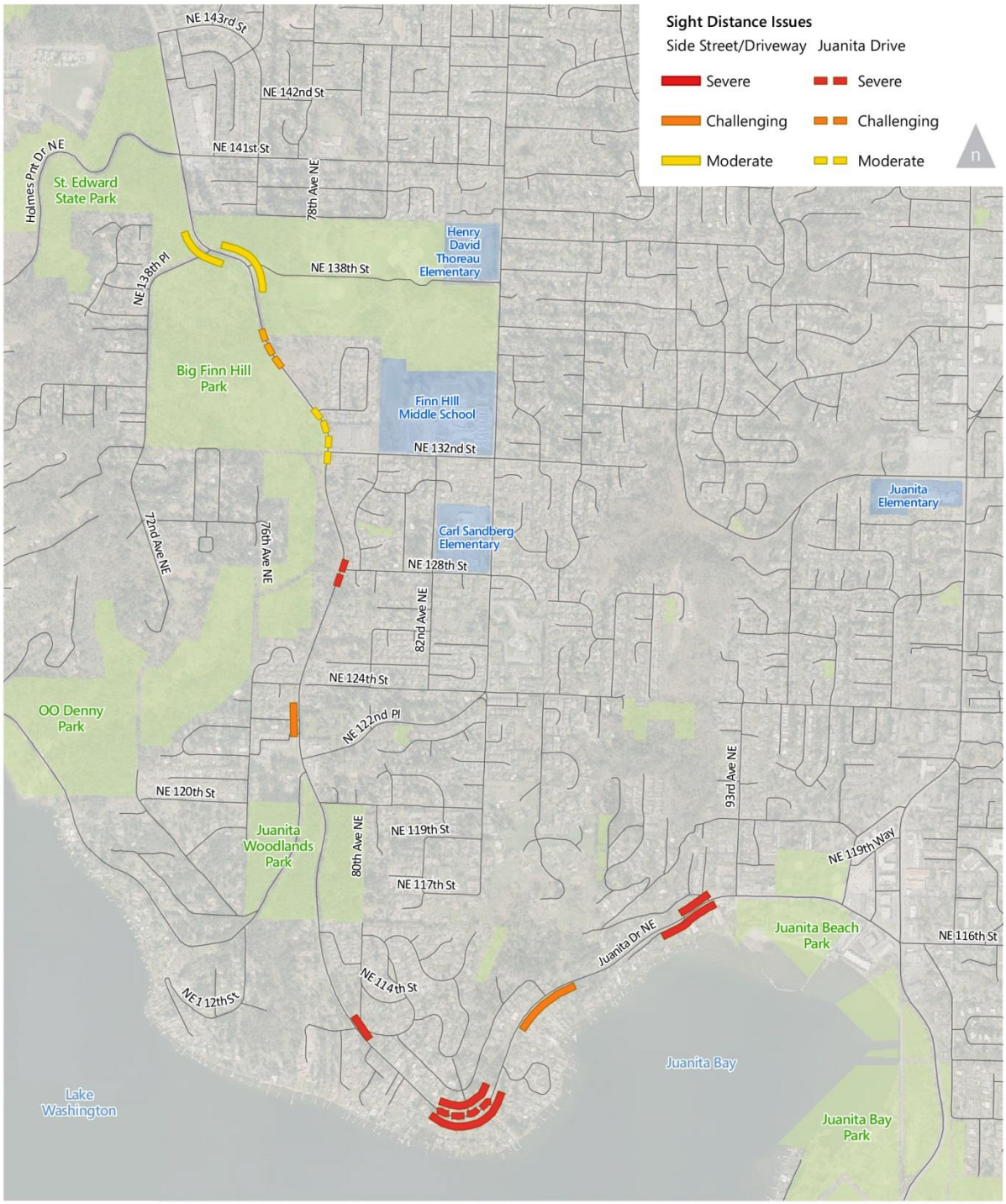
This section contains detailed figures of existing physical conditions along Juanita Drive. Figures related to sub-sections in the "Physical Conditions" section of the report include:

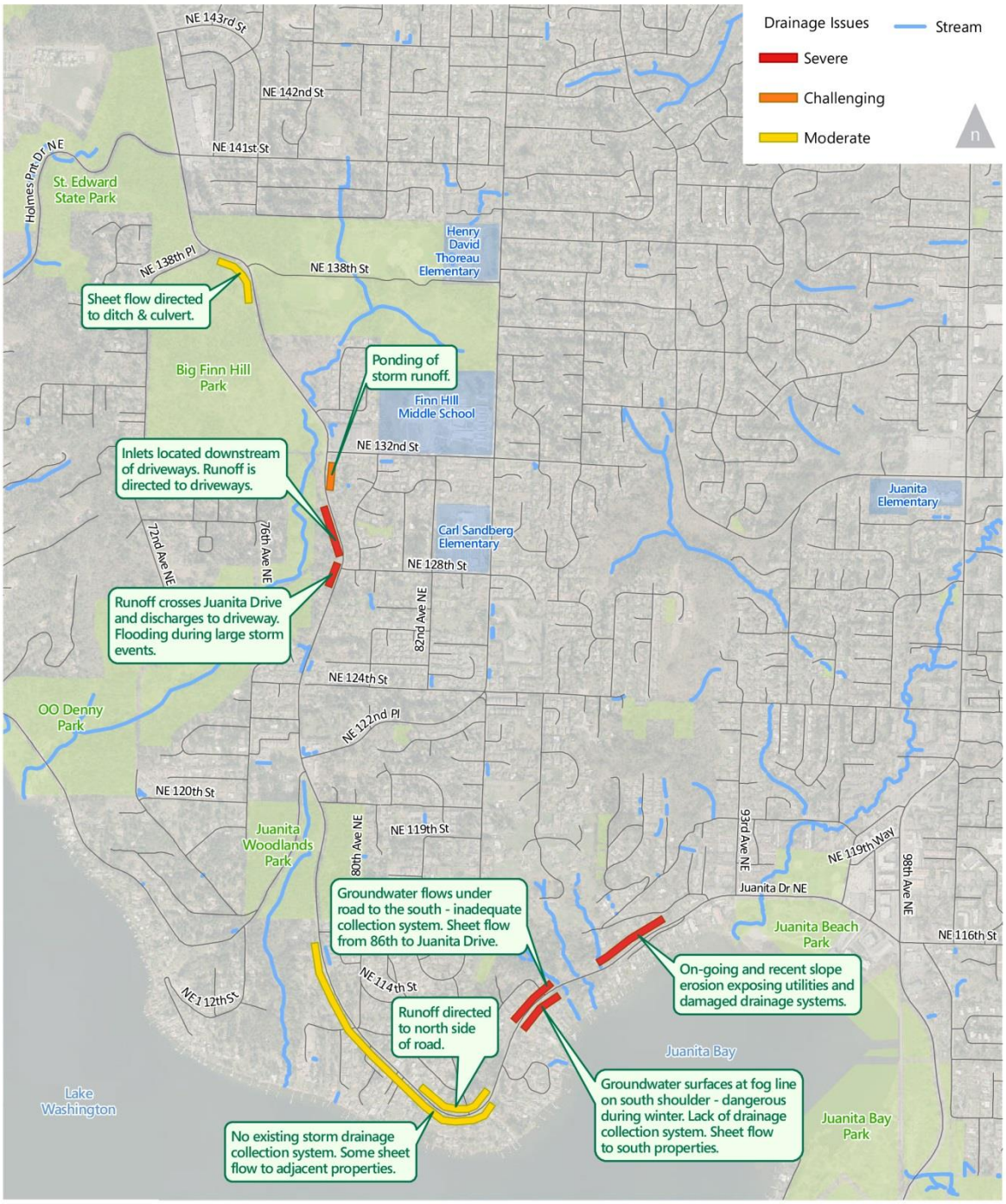

Perteet
0
300
600
Feet
Legend
61' Roadway Width
Existing Road Edge
Right-of-Way
Slope
Steeper than 2:1
2:1 to 3:1
Juanita Drive Corridor Study
NE 132nd St to NE 143rd St
61' Roadway Width
Source: City of Kirkland, King County


Perteet
0
300
600
Feet
Legend
61' Roadway Width
Existing Road Edge
Right-of-Way
Slope
Steeper than 2:1
2:1 to 3:1
Juanita Drive Corridor Study
NE 117th St to NE 132nd St
61' Roadway Width
Source: City of Kirkland, King County


Perteet
0
300
600
Feet
Legend
61' Roadway Width
Existing Road Edge
Right-of-Way
Slope
Steeper than 2:1
2:1 to 3:1
Juanita Drive Corridor Study
93rd Ave NE to NE 117th St
61' Roadway Width
Source: City of Kirkland, King County


NE 147TH ST
NE 146TH PL
NE 145TH PL
NE 145TH ST
NE 144TH CT
NE 144TH ST
NE 143RD ST
NE 143RD PL
NE 142ND ST
NE 142ND PL
NE 141ST ST
NE 141ST PL
NE 140TH PL
NE 140TH ST
NE 139TH ST
NE 138TH ST
NE 138TH PL
NE 137TH ST
NE 137TH PL
NE 136TH ST
NE 135TH LN
NE 134TH ST
NE 132ND ST
NE 132ND PL
NE 131ST PL
NE 131ST WAY
NE 130TH PL
NE 129TH ST
NE 128TH ST
NE 126TH ST
NE 125TH PL
NE 125TH ST
NE 124TH ST
NE 123RD ST
NE 122ND PL
NE 122ND ST
NE 120TH ST
NE 119TH ST
NE 118TH LN
NE 118TH PL
NE 117TH PL
NE 117TH ST
NE 116TH ST
NE 115TH PL
NE 114TH ST
NE 112TH ST
NE 110TH ST
NE 110TH PL
NE JUANITA DR
JUANITA DR NE
SIMONDS RD NE
HOLMES POINT DR NE
68TH AVE NE
70TH AVE NE
72ND AVE NE
73RD AVE NE
74TH AVE NE
74TH PL NE
75TH AVE NE
76TH AVE NE
76TH PL NE
77TH AVE NE
78TH AVE NE
78TH PL NE
79TH AVE NE
80TH PL NE
81ST AVE NE
82ND AVE NE
82ND PL NE
83RD PL NE
84TH AVE NE
85TH AVE NE
85TH PL NE
86TH AVE NE
86TH PL NE
87TH AVE NE
88TH AVE NE
88TH PL NE
89TH AVE NE
89TH PL NE
90TH AVE NE
91ST AVE NE
91ST PL NE
92ND PL NE
93RD AVE NE
93RD PL NE
94TH AVE NE
94TH PL NE
95TH PL NE
96TH AVE NE
97TH PL NE
98TH AVE NE
100TH AVE NE
100TH PL NE
101ST LN NE
102ND AVE NE
102ND PL NE
72ND PL NE
73RD PL NE
75TH LN NE
Path: X:\Kirkland, City of\Projects\20120185 - Juanita Drive Corridor Study\GIS\Mapdocs\JuanitaDrive_Slope.mxd
Perteet
0
750
1,500
Feet
Legend
Steeper than 2:1
2:1 to 3:1
Juanita Drive Corridor Study
Slope Map
Source: City of Kirkland; King County


Sight Distance Issues
Side Street/Driveway
Juanita Drive
Severe
Challenging
Moderate
Severe
Challenging
Moderate
n
NE 143rd St
NE 142nd St
NE 141st St
Holmes Pnt Dr NE
St. Edward State Park
78th Ave NE
Henry David Thoreau Elementary
NE 138th Pl
NE 138th St
Big Finn Hill Park
Finn Hill Middle School
NE 132nd St
Juanita Elementary
72nd Ave NE
76th Ave NE
Carl Sandberg Elementary
NE 128th St
82nd Ave NE
NE 124th St
OO Denny Park
NE 122nd Pl
93rd Ave NE
NE 120th St
Juanita Woodlands Park
80th Ave NE
NE 119th St
NE 119th Way
NE 117th St
Juanita Beach Park
Juanita Dr NE
NE 116th St
NE 114th St
NE 112th St
Juanita Bay
Lake Washington
Juanita Bay Park



Juanita Drive Corridor Study
Drainage Issues and Concerns

\\Fpse03\fpse2\Data2\2013Projects\SE13-0292_JuanitaDrive_MP_Corridor_Study\Graphics\Draft\GIS\MXD\Figures\Drainage.mxd

FEHR PEERS

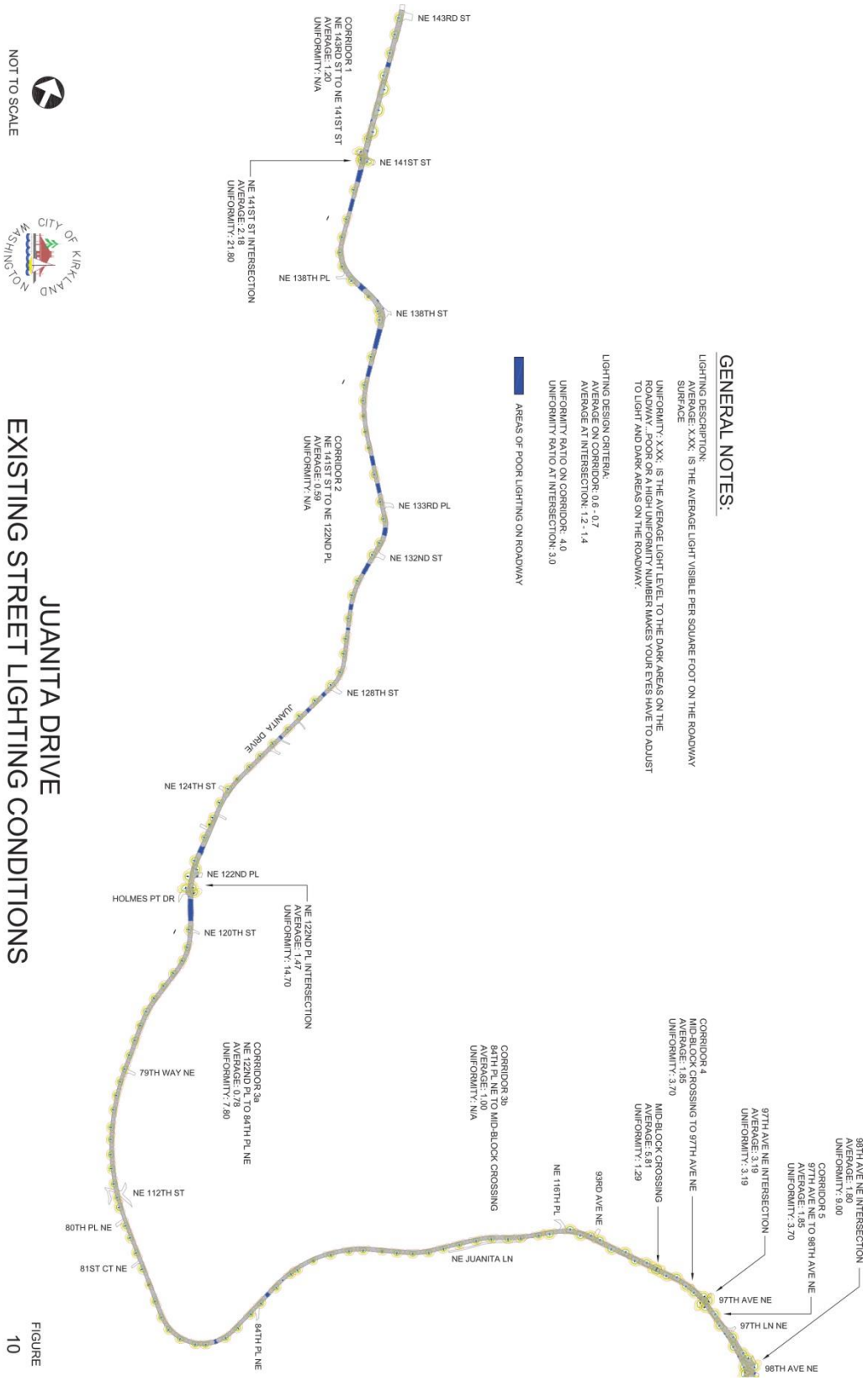

NOT TO SCALE
CITY OF KIRKLAND WASHINGTON
JUANITA DRIVE
EXISTING STREET LIGHTING CONDITIONS
GENERAL NOTES:
LIGHTING DESCRIPTION:
AVERAGE: X.XX: IS THE AVERAGE LIGHT VISIBLE PER SQUARE FOOT ON THE ROADWAY SURFACE
UNIFORMITY: X.XX: IS THE AVERAGE LIGHT LEVEL TO THE DARK AREAS ON THE ROADWAY...POOR OR A HIGH UNIFORMITY NUMBER MAKES YOUR EYES HAVE TO ADJUST TO LIGHT AND DARK AREAS ON THE ROADWAY.
LIGHTING DESIGN CRITERIA:
AVERAGE ON CORRIDOR: 0.6 - 0.7
AVERAGE AT INTERSECTION: 1.2 - 1.4
UNIFORMITY RATIO ON CORRIDOR: 4.0
UNIFORMITY RATIO AT INTERSECTION: 3.0
AREAS OF POOR LIGHTING ON ROADWAY
CORRIDOR 1
NE 143RD ST TO NE 141ST ST
AVERAGE: 1.20
UNIFORMITY: N/A
NE 141ST ST INTERSECTION
AVERAGE: 2.18
UNIFORMITY: 21.80
CORRIDOR 2
NE 141ST ST TO NE 122ND PL
AVERAGE: 0.59
UNIFORMITY: N/A
NE 122ND PL INTERSECTION
AVERAGE: 1.47
UNIFORMITY: 14.70
CORRIDOR 3a
NE 122ND PL TO 84TH PL NE
AVERAGE: 0.78
UNIFORMITY: 7.80
CORRIDOR 3b
84TH PL NE TO MID-BLOCK CROSSING
AVERAGE: 1.00
UNIFORMITY: N/A
CORRIDOR 4
MID-BLOCK CROSSING TO 97TH AVE NE
AVERAGE: 1.85
UNIFORMITY: 3.70
MID-BLOCK CROSSING
AVERAGE: 5.81
UNIFORMITY: 1.29
97TH AVE NE INTERSECTION
AVERAGE: 3.19
UNIFORMITY: 3.19
CORRIDOR 5
97TH AVE NE TO 98TH AVE NE
AVERAGE: 1.85
UNIFORMITY: 3.70
98TH AVE NE INTERSECTION
AVERAGE: 1.80
UNIFORMITY: 9.00
NE 143RD ST
NE 141ST ST
NE 138TH PL
NE 138TH ST
NE 133RD PL
NE 132ND ST
NE 128TH ST
JUANITA DRIVE
NE 124TH ST
NE 122ND PL
HOLMES PT DR
NE 120TH ST
79TH WAY NE
NE 112TH ST
80TH PL NE
81ST CT NE
84TH PL NE
NE JUANITA LN
NE 116TH PL
93RD AVE NE
97TH AVE NE
97TH LN NE
98TH AVE NE

FIGURE 10

NE JUANITA DRIVE CORRIDOR STUDY

City of Kirkland

Existing Sign Schedule

SIGN NO.	POST TYPE	SIGN SIZE	SIGN TEXT	SIGN DESCRIPTION	FIELD OBSERVATIONS
351	STEEL POST	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
353	STEEL POST	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
358	STEEL POST	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
969	STEEL POST	WD: 24, HT: 30	<Null>	KEEP RIGHT (BULL NOSE W/ ARROW)	
972	STEEL POST	WD: 24, HT: 30	<Null>	KEEP RIGHT (BULL NOSE W/ ARROW)	
973	STEEL POST	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
974	OVERHEAD	WD: 48, HT: 48	<Null>	PED CROSS SYMBOL O/H	
975	LIGHT POLE	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
976	OVERHEAD	WD: 48, HT: 48	<Null>	PED CROSS SYMBOL O/H	
977	STEEL POST	WD: 24, HT: 30	<Null>	KEEP RIGHT (BULL NOSE W/ ARROW)	
981	LIGHT POLE	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
1420	LIGHT POLE	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
1441	LIGHT POLE	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
1511	LIGHT POLE	WD: 30, HT: 30	<Null>	RIGHT LANE ENDS AHEAD (SYMBOL)	
5979	STEEL POST	WD: 24, HT: 24	<Null>	NO LEFT TURN (SYMBOL)	
5980	LIGHT POLE	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
8544	WOOD	WD: 24, HT: 24	<Null>	NO LEFT TURN (SYMBOL)	
8546	WOOD	UNKNOWN	<Null>	DEER CROSSING (SYMBOL)	
8580	WOOD	UNKNOWN	<Null>	HAIRPIN CURVE (L)	
8583	WOOD	UNKNOWN	<Null>	HAIRPIN CURVE (R)	
8586	WOOD	WD: 30, HT: 30	<Null>	INTERSECTION SYMBOL	
8601	WOOD	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
8606	WOOD	UNKNOWN	<Null>	DEER CROSSING (SYMBOL)	
8629	WOOD	WD: 30, HT: 30	<Null>	INTERSECTION SYMBOL	
8646	WOOD	WD: 30, HT: 18	<Null>	DIAGONAL ARROW POINTING TO GROUND (L)	
8647	WOOD	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
8651	WOOD	WD: 30, HT: 18	<Null>	DIAGONAL ARROW POINTING TO GROUND (L)	
8652	WOOD	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
8734	WOOD	WD: 24, HT: 24	<Null>	NO RIGHT TURN	
8774	STEEL POST	WD: 24, HT: 24	<Null>	NO TRUCKS - SYMBOL	
8861	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
8869	WOOD	WD: 30, HT: 30	<Null>	SIGNAL AHEAD (SYMBOL)	
8881	WOOD	WD: 30, HT: 30	<Null>	FIRE STATION (SYMBOL)	
8982	WOOD	WD: 30, HT: 30	<Null>	SIGNAL AHEAD (SYMBOL)	SIGN COMPLETELY COVERED BY VEGETATION
9237	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
9248	WOOD	WD: 30, HT: 30	<Null>	PEDESTRIAN ADVANCE	
9285	OVERHEAD	UNKNOWN	<Null>	NO LEFT TURN (WORDS)	
9289	WOOD	UNKNOWN	<Null>	SINGLE ARROW (SYMBOL)	
9290	LIGHT POLE	WD: 18, HT: 18	<Null>	NO PEDESTRIAN CROSSING SYMBOL	
9298	WOOD	WD: 18, HT: 18	<Null>	NO PEDESTRIAN CROSSING SYMBOL	
9301	WOOD	WD: 18, HT: 18	<Null>	NO PEDESTRIAN CROSSING SYMBOL	
9304	STEEL POST	WD: 18, HT: 18	<Null>	NO PEDESTRIAN CROSSING SYMBOL	
9658	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
9695	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
9852	WOOD	WD: 30, HT: 30	<Null>	CURVE - LEFT	
10115	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
10357	WOOD	WD: 30, HT: 30	<Null>	CURVE - RIGHT	
10778	WOOD	WD: 30, HT: 30	<Null>	REVERSE TURN - LEFT	
11181	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
11453	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
11593	WOOD	WD: 30, HT: 30	<Null>	SIGNAL AHEAD (SYMBOL)	
11615	WOOD	WD: 30, HT: 30	<Null>	REVERSE TURN - LEFT	COVERED BY VEGETATION
12212	WOOD	WD: 30, HT: 30	<Null>	SIGNAL AHEAD (SYMBOL)	
12449	WOOD	WD: 30, HT: 30	<Null>	SIDE ROAD 90 DEGREE (D)	
982	STEEL POST	WD: 12, HT: 18	<null>	HOW TO USE CROSSWALK FLAGS	
983	STEEL POST	WD: 12, HT: 18	<null>	HOW TO USE CROSSWALK FLAGS	
8587	WOOD	UNKNOWN	80 AVE NE / NE 112 ST	STREET SIGN ADVANCE	
8628	WOOD	UNKNOWN	80 AVE NE / NE 112 ST	STREET SIGN ADVANCE	
8600	WOOD	UNKNOWN	AHEAD	AHEAD (PLAQUE) - ADVANCED WARNING	
9247	WOOD	UNKNOWN	AHEAD	AHEAD (PLAQUE) - ADVANCED WARNING	
11084	WOOD	WD: 78, HT: 18	BIG FINN HILL PARK	STREET SIGN PANEL - KING COUNTY STYLE	
9293	WOOD	WD: 78, HT: 18	CHAMPAGNE PT.	STREET SIGN PANEL - KING COUNTY STYLE	
10329	WOOD	WD: 18, HT: 24	DENNY CREEK	INFO SIGN - CREEK W/FISH SYM	
8891	WOOD	WD: 24, HT: 30	DO NOT BLOCK INTERSECTION	DO NOT BLOCK INTERSECTION	
8919	WOOD	WD: 24, HT: 30	DO NOT BLOCK INTERSECTION	DO NOT BLOCK INTERSECTION	
970	STEEL POST	WD: 30, HT: 30	DO NOT ENTER	DO NOT ENTER	
5825	LIGHT POLE	WD: 24, HT: 48	ENTERING KIRKLAND	ENTERING KIRKLAND	
9565	WOOD	WD: 30, HT: 30	HIDDEN DRIVEWAY	HIDDEN DRIVEWAY	
11592	WOOD	UNKNOWN	HOLMES PT DR / NE 141 ST	STREET SIGN ADVANCE	
8868	WOOD	UNKNOWN	HOLMES PT. DR / NE 122 PL	STREET SIGN ADVANCE	
12213	WOOD	UNKNOWN	HOLMES PT. DR NE / NE 141 ST	STREET SIGN ADVANCE	
356	STEEL POST		LANE ENDS	<Null>	
1070	OVERHEAD	WD: 24, HT: 30	LEFT TURN YIELD ON GREEN	LEFT TURN MUST YIELD ON GREEN	
1071	OVERHEAD	WD: 24, HT: 30	LEFT TURN YIELD ON GREEN	LEFT TURN MUST YIELD ON GREEN	
8656	WOOD	WD: 30, HT: 30	NARROW ROAD	NARROW ROAD AHEAD	

NE JUANITA DRIVE CORRIDOR STUDY

City of Kirkland

Existing Sign Schedule

SIGN NO.	POST TYPE	SIGN SIZE	SIGN TEXT	SIGN DESCRIPTION	FIELD OBSERVATIONS
8860	WOOD	UNKNOWN	NE 120 ST	STREET SIGN ADVANCE	
8981	WOOD	UNKNOWN	NE 122 PL / HOLMES PT DR	STREET SIGN ADVANCE	
9238	WOOD	UNKNOWN	NE 128 ST	STREET SIGN ADVANCE	
9659	WOOD	UNKNOWN	NE 128 ST	STREET SIGN ADVANCE	
9694	WOOD	UNKNOWN	NE 132 ST	STREET SIGN ADVANCE	
10117	WOOD	UNKNOWN	NE 132 ST	STREET SIGN ADVANCE	
11180	WOOD	UNKNOWN	NE 138 PL	STREET SIGN ADVANCE	
11454	WOOD	UNKNOWN	NE 138 PL	STREET SIGN ADVANCE	DIFFICULT TO SEE. DIRTY
12448	WOOD	UNKNOWN	NE 143 ST	STREET SIGN ADVANCE	PARTIALLY COVERED BY VEGETATION
9252	WOOD	WD: 12, HT: 18	NO PARKING	NO PARKING (NO ARROWS) - OLD STYLE	
8644	WOOD	UNKNOWN	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
8653	WOOD	UNKNOWN	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
9335	WOOD	WD: 12, HT: 18	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
9339	WOOD	WD: 12, HT: 18	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
9353	WOOD	WD: 12, HT: 18	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
9987	WOOD	WD: 12, HT: 18	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
10012	WOOD	WD: 12, HT: 18	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
10145	WOOD	WD: 12, HT: 18	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
10156	WOOD	WD: 12, HT: 18	NO PARKING ANY TIME	NO PARKING ANY TIME - OLD STYLE	
9956	WOOD	UNKNOWN	NO PARKING AREA BICYCLES PEDESTRIANS ONLY	NO CODE	
8639	WOOD	WD: 12, HT: 18	NO PARKING EAST OF HERE	NO PARKING (E,W,N,S) OF HERE	
12327	WOOD	WD: 12, HT: 18	NO PARKING NORTH OF HERE	NO PARKING (E,W,N,S) OF HERE	
8725	WOOD	WD: 12, HT: 18	NO PARKING ON PAVEMENT	NO PARKING ON PAVEMENT - OLD STYLE	
8733	WOOD	WD: 12, HT: 18	NO PARKING ON PAVEMENT	NO PARKING ON PAVEMENT - OLD STYLE	
8682	LIGHT POLE	UNKNOWN	NO PARKING ON WALKWAY	NO PARKING IN/ON ( )	
8662	WOOD	WD: 12, HT: 18	NO PARKING WEST OF HERE	NO PARKING (E,W,N,S) OF HERE	
9047	WOOD	UNKNOWN	NO SHOULDER DRIVING	NO DRIVING ON SHOULDER	
9509	WOOD	UNKNOWN	NO SHOULDER DRIVING	NO DRIVING ON SHOULDER	
10049	WOOD	UNKNOWN	NO SHOULDER DRIVING	NO DRIVING ON SHOULDER	
9310	OVERHEAD	UNKNOWN	NO TURN ON RED	NO TURN ON RED (WORDS)	
1423	OVERHEAD	WD: 30, HT: 36	ONLY	RIGHT ARROW ONLY	
1424	OVERHEAD	WD: 24, HT: 30	ONLY	LEFT ARR ONLY	
5995	STEEL POST	WD: 30, HT: 36	ONLY	RIGHT ARROW ONLY	
1389	LIGHT POLE	WD: 18, HT: 24	PEDESTRIANS LOOK FOR TURNING VEHICLES	LOOK FOR TURNING VEHICLES	
1421	LIGHT POLE	WD: 18, HT: 24	PEDESTRIANS LOOK FOR TURNING VEHICLES	LOOK FOR TURNING VEHICLES	
1442	LIGHT POLE	WD: 18, HT: 24	PEDESTRIANS LOOK FOR TURNING VEHICLES	LOOK FOR TURNING VEHICLES	
7583	LIGHT POLE	WD: 18, HT: 24	PEDESTRIANS LOOK FOR TURNING VEHICLES	LOOK FOR TURNING VEHICLES	
8698	WOOD	UNKNOWN	REDUCED SPEED 25	REDUCED SPEED __ M.P.H. (SPECIFY MILES)	
968	LIGHT POLE	WD: 30, HT: 30	RIGHT LANE ENDS	RIGHT LANE ENDS (WORDS)	
1074	STEEL POST	WD: 30, HT: 30	RIGHT LANE MUST TURN RIGHT	RIGHT LANE MUST TURN RIGHT	
355	STEEL POST	WD: 24, HT: 30	RIGHT LANE ONLY	RIGHT LANE BIKE ONLY	
1073	LIGHT POLE	WD: 24, HT: 30	RIGHT LANE ONLY	RIGHT LANE BIKE ONLY	
8549	WOOD	WD: 30, HT: 30	SCHOOL BUS STOP AHEAD	SCHOOL BUS STOP AHEAD	
8569	WOOD	WD: 30, HT: 30	SCHOOL BUS STOP AHEAD	SCHOOL BUS STOP AHEAD	
9291	LIGHT POLE	WD: 18, HT: 12	USE CROSSWALK	USE CROSSWALK W/ARR (D)	
9297	WOOD	WD: 18, HT: 12	USE CROSSWALK	USE CROSSWALK W/ARR (D)	
9300	WOOD	WD: 18, HT: 12	USE CROSSWALK	USE CROSSWALK W/ARR (D)	
9305	STEEL POST	WD: 18, HT: 12	USE CROSSWALK	USE CROSSWALK W/ARR (D)	
8953	WOOD	WD: 18, HT: 24	WARNING THIS IS A BLOCK WATCH COMMUNITY / WE IMMEDIATELY REPORT ALL SUSPICIOUS PERSONS AND ACTIVITIES TO OUR POLICE DEPARTMENT	CRIME WATCH	
11895	LIGHT POLE	WD: 24, HT: 48	WELCOME TO KIRKLAND	ENTERING KIRKLAND	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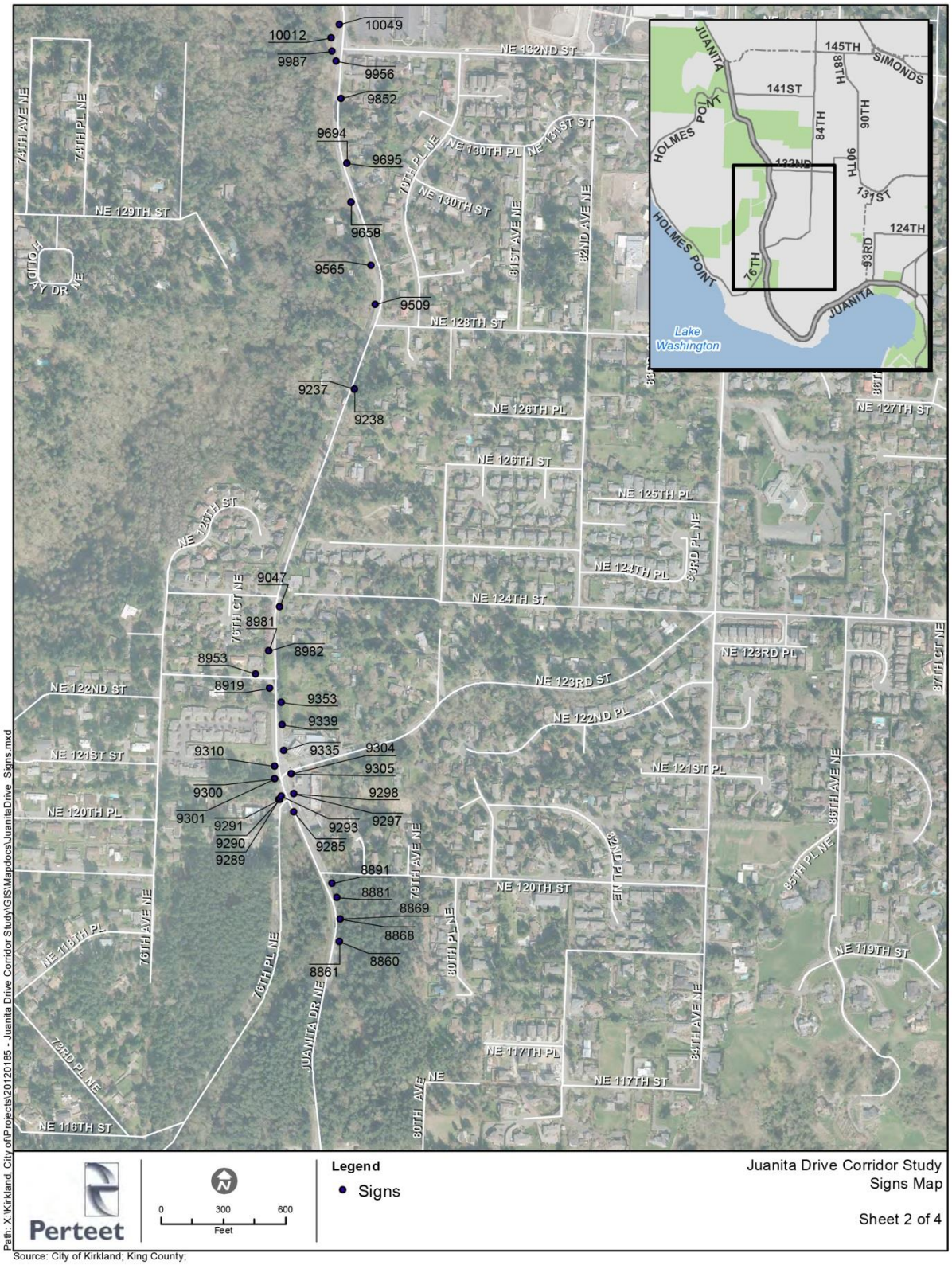
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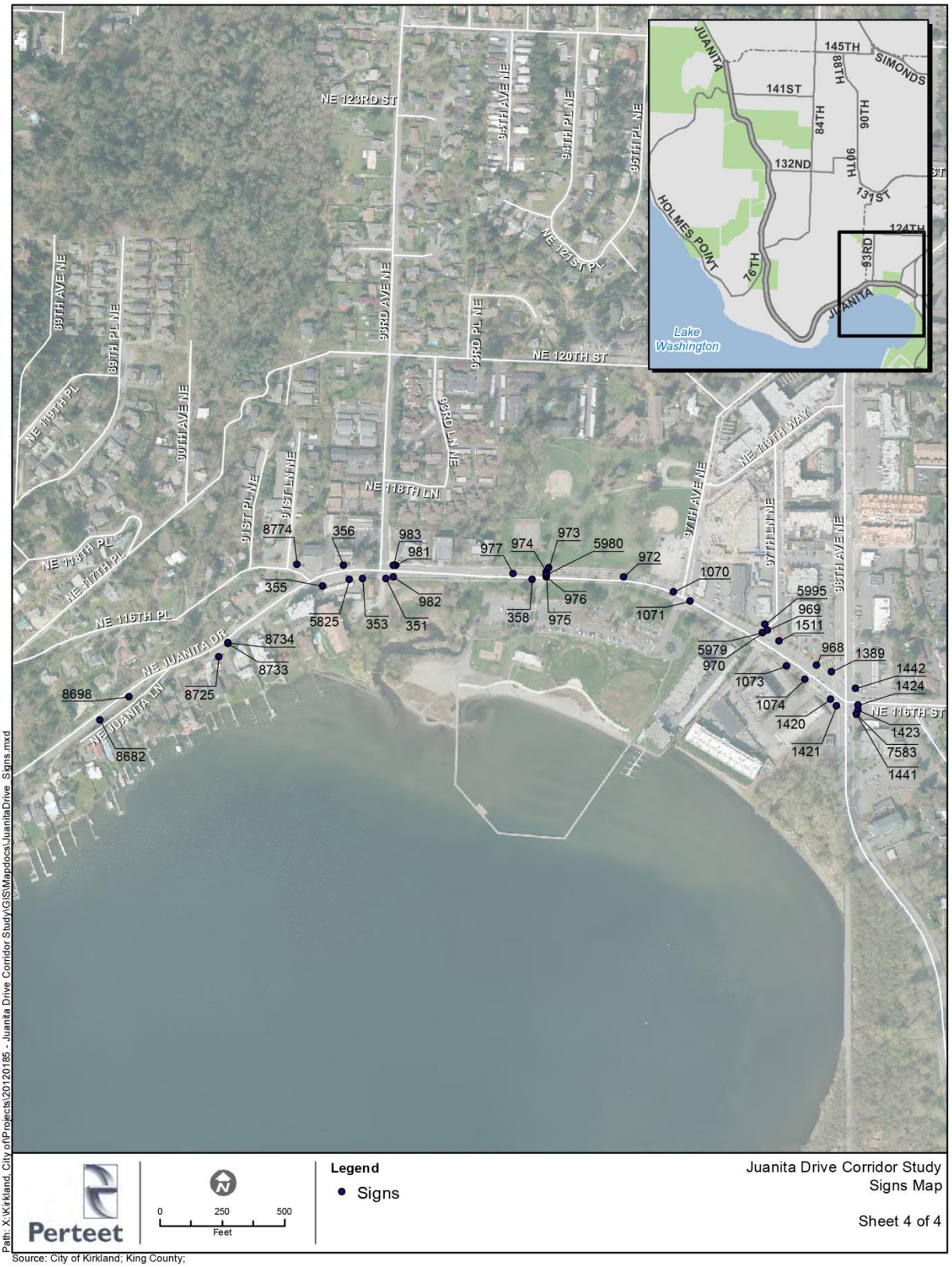
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TRANSPORTATION OPERATIONS

This section provides detailed information about existing transportation operations along Juanita Drive, including traffic flow, safety, and vehicle speeds. The section is organized as follows:

TRAFFIC FLOW

Traffic flow operations were characterized by two measures, corridor traffic volume and intersection level of service.

CORRIDOR TRAFFIC VOLUMES

Data Collection and Methodology

Traffic counts were collected by tube counter at five locations along Juanita Drive:

- West of 98th Avenue NE (February 2013; collected for City of Kirkland)
- West of 93rd Avenue NE (May 2013; collected for Fehr & Peers)
- North of NE 112th Street / 80th Avenue NE (May 2013; collected for Fehr & Peers)
- North of NE 138th Street (May 2013; collected for Fehr & Peers)
- North of NE 141st Street (February 2013; collected for City of Kirkland)

These counts occurred for consecutive 24-hour periods on Tuesday, Wednesday, and Thursday, which represent the most typical weekday traffic conditions. Daily traffic totals for the three days were averaged to obtain the average weekday traffic (AWDT) volumes. AM and PM peak hour traffic counts were calculated by identifying the highest traffic volume each day over a one-hour period between 6 to 9 AM

for AM peak and 3 to 6 PM for PM peak. As with the AWDT measure, peak hour volumes were averaged for the three-day collection period.

Existing 2013 Volumes

The traffic counts show that the southern portion of the corridor experiences the highest traffic demand, with 17,700 AWDT in the vicinity of Juanita Village. Continuing north, demand decreases to 11,100 AWDT in the vicinity of Big Finn Hill Park before increasing to 12,700 AWDT near the shopping center at NE 141st Street.

Peak hour traffic counts show that morning commute traffic on Juanita Drive is heaviest in the southbound direction. Comparable demand occurs northbound during the PM peak hour. In accordance with the daily counts, AM and PM peak hour demand is heaviest near Juanita Village.

2030 Forecast Volumes

By 2030, the number of households in the vicinity of Juanita Drive is expected to increase from 8,000 to 8,700, representing a total increase of 9%. The household growth will be spread throughout the greater Finn Hill area. Employment is expected to increase by a total of 34%, from 1,120 in 2013 to 1,500 in 2030. Most of this employment growth will be concentrated along 100th Avenue NE rather than Juanita Drive.

Based on the expected land use growth, traffic demand along Juanita Drive could grow by 15 to 20 percent during the peak commute period by 2030. It should be noted that traffic growth along the central portion of the corridor will be constrained by the traffic throughput capacity at the southern and northern ends of the corridor. Because traffic demand is already saturated entering Juanita Drive at the 98th Avenue NE intersection at the southern end of the corridor and at Simonds Road NE (in the City of Kenmore) at the northern end, total peak period traffic demand on most portions of the corridor would likely increase by only 5 to 10 percent.

INTERSECTION LEVEL OF SERVICE

Data Collection and Methodology

Intersection turning movement counts were collected at the following Juanita Drive intersections during the AM and PM peak hours:

- NE 141st Street / Holmes Point Drive NE
- NE 132nd Street *(PM peak only)*

- NE 128th Street *(PM peak only)*
- NE 122nd Street
- 76th Place NE / Holmes Point Drive NE
- NE 112th Street/80th Avenue NE
- 97th Avenue NE
- 98th Avenue NE

The counts at NE 132nd Street, NE 128th Street, and NE 112th Street/80th Avenue NE were commisioned in Summer 2013. All other counts were collected in 2011. Collectively, these volumes were used to calculate the level of service (LOS) for each intersection by the methods described below.

The City of Kirkland Comprehensive Plan establishes peak hour intersection level of service (LOS) standards based on a ratio of entering traffic volume to intersection capacity (V/C ratio). The calculation of these V/C ratios has been determined by the City using planning methods from *Transportation Research Circular 212*. For development proposals that stand to add more than a small amount of traffic to City streets, the accompanying traffic impact analysis must use the City's V/C ratio LOS system. By contrast, the Juanita Drive Master Plan is not a development-driven project, so a formal traffic impact analysis with V/C ratio-based is not necessary. Instead, intersection operations along Juanita Drive were calculated in terms of Highway Capacity Manual (HCM) LOS. This measure ranks intersection operating conditions from A to F in terms of total delay per entering vehicle. **Table C-1** provides a detailed summary of these rankings for signal and all-way stop-controlled intersections. It should be noted that LOS at side-street stop-controlled intersections is determined by the movement with the highest average delay per vehicle.

The HCM LOS rankings were calculated using a software package called Syncrho/SimTraffic 7. The Synchro program component calculates delay on an individual intersection basis, while SimTraffic is a more labor-intensive program used to simulate traffic flow through a system of adjacent intersection. Between NE 122nd Street and 98th Avenue NE, intersections were analyzed using SimTraffic because we observed that peak period vehicle queues at certain intersections along this segment often back-up to adjacent intersections. The remaining intersections were analyzed with Synchro.

TABLE C-1: SIGNALIZED AND ALL-WAY STOP INTERSECTION LOS CRITERIA

Level of Service	Description	Delay in Seconds per vehicle
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios . Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: 2000 Highway Capacity Manual.

Existing 2013 Operations

Results from the existing-year intersection LOS analysis are summarized in **Table C-2**.

The LOS analysis confirms high levels of congestion near Juanita Village. During the AM peak hour, 98th Avenue NE and 97th Avenue NE operate at LOS E and F, respectively. In most jurisdictions that use HCM-based LOS standards, these rankings would exceed the acceptable LOS threshold. During the PM peak hour, the 98th Avenue NE intersection is also heavily congested, but the delay is not as heavy at 97th Avenue NE. This occurs because peak-direction traffic is metered by the heavy congestion at 98th Avenue NE. All other intersections operate at reasonable congestion levels during the AM and PM peak hours, though slow moving, rolling traffic queues are commonly encountered heading southbound towards Juanita Village in the AM peak period and northbound towards the traffic signal at 76th Place NE / Holmes Point Drive NE during the PM peak period.

TABLE C-2: INTRSECTION LEVEL OF SERVICE AND DELAY – EXISTING AM/PM PEAK PERIOD

#	Intersection	AM		PM	
		LOS/Delay[1]	Highest Delay Approach[2]	LOS/Delay[1]	Highest Delay Approach[2]
1	NE 141st Street / Holmes Point Drive NE	B/15		B/14	
2	NE 132nd Street	no data	-	C/19	Westbound
3	NE 128th Street	no data	-	C/21	Westbound
4	NE 122nd Street	**C/28**		**B/13[4]**	
5	76th Pl NE / Holmes Point Drive NE	**A/8**		**C/23[5]**	
6	NE 112th Street/80th Avenue NE	**C/23**	**Westbound**	**C/24**	**Westbound**
7	97th Avenue NE	**F/130**		**B/19**	
8	98th Avenue NE	**E/63**		**E/61**	

[1] In seconds.
[2] Used to calculate LOS and delay at side-street stop sign controlled intersections.
Bolded results were calculated with SimTraffic simulation analysis. Non-bolded results were calculated with Synchro7.

2030 PM Forecast Operations

Based on existing year counts and traffic data from the 2010 and 2030 BKR models, Fehr & Peers developed PM peak hour turning movement forecast for the eight study intersections. The final 2030 turning movement forecasts were calculated by adding the growth between the 2010 and 2030 models to the existing year counts. **Table C-3** summarizes 2030 intersection LOS compared to existing year results.

In 2030, the signalized intersections at 98th Avenue NE and 97th Avenue NE are expected to continue operating at LOS E. Congestion at the 76th Place NE / Holmes Point Drive NE intersection would increase during the commute peak, resulting in longer traffic queues approaching the signal.

TABLE C-3: INTRSECTION LEVEL OF SERVICE AND DELAY – EXISTING AND 2030 PM PEAK HOUR

#	Intersection	Existing		2030 Forecast[3]	
		LOS/Delay[1]	Highest Delay Approach[2]	LOS/Delay[1]	Highest Delay Approach[2]
1	NE 141st Street / Holmes Point Drive NE	B/14		B/17	
2	NE 132nd Street	C/19	Westbound	C/23	Westbound
3	NE 128th Street	C/21	Westbound	D/26	Westbound
4	NE 122nd Street	**B/13**[4]		**B/18**[4]	
5	76th Pl NE / Holmes Point Drive NE	**C/23**[5]		**D/44**[5]	
6	NE 112th Street/80th Avenue NE	**C/24**	**Westbound**	**D/27**	**Westbound**
7	97th Avenue NE	**B/19**		**E/51**	
8	98th Avenue NE	**E/61**		**E/66**	

[1] In seconds.
[2] Used to calculate LOS and delay at side-street stop sign controlled intersections.
[3] Estimate based on corridor travel demand growth in 2030 model compared to 2010 model.
Bolded results were calculated with SimTraffic simulation analysis. Non-bolded results were calculated with Synchro7.

SAFETY – COLLISION ANALYSIS

Juanita Drive traverses steep topography with many twists and turns. The existing roadway geometry, multiple driveway access points, and limited sight distance complicate overall safety conditions along the corridor. Vehicle collision data were collected to determine where these design concerns might translate into safety deficiencies.

DATA COLLECTION AND METHODOLOGY

Vehicle collision data were obtained from the Washington State Department of Transportation (WSDOT) and the City of Kirkland for the entire portion of the Juanita Drive corridor within City limits. The reports provided collision data over a period of four years (January 2009 – December 2012), indicating a total of 142 collisions, an average of 36 collisions per year. The reports also provided various details about the individual collisions, including type, probable cause, severity, time of day, and weather conditions.

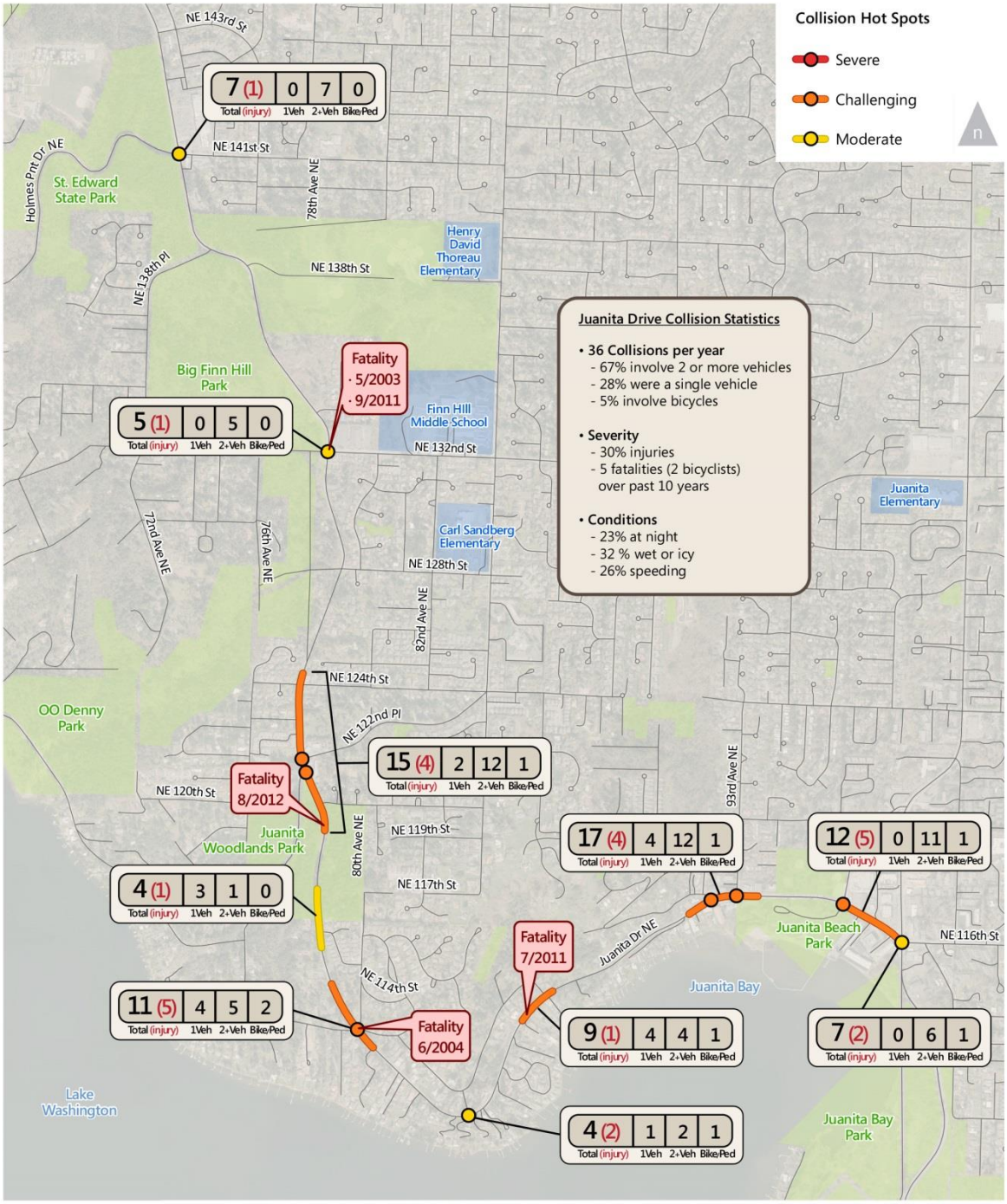
RESULTS

Roadway segments and intersections with at least four collision events over the four year data period are shown as collision "hot spots" in the figure on page C-23. For each hot spot location, the total number of collisions is broken down by the parties involved (i.e., single vehicle; two or more vehicles; or at least one bicycle and/or pedestrian). The number of collisions resulting in at least one injury is listed for each hot spot location. Collisions from 2001 to 2012 that resulted in a fatality are also pinpointed along the corridor. The dates, locations, and contributing circumstances of these collisions are listed below:

- **August 7, 2012, 8:45 PM** – 280 feet S. of NE 120th Street; dry, nighttime conditions; driver under influence traveling southbound, head-on collision with northbound vehicle.
- **September 28, 2011, 11:19 PM** – Near NE 132nd Street intersection; dry, nighttime conditions; single vehicle, exceeding safe speed limit, collides with fixed object outside roadway.
- **July 22, 2011, 3:45 PM** – 400 feet SW of 86th Avenue NE; dry, daylight conditions; heavy vehicle traveling eastbound collides with bicyclist.
- **June 19, 2004, 3:10 PM** – At 112th Street/80th Avenue intersection; dry, daylight conditions; motorcyclist traveling northbound, exceeding safe speed limit, collides with stopped northbound vehicle.
- **May 10, 2003, 3:23 PM** – At NE 132nd Street intersection; dry, daylight conditions; vehicle traveling southbound, exceeding safe speed limit, collides with bicyclist.

Additional corridor-wide collision statistics are summarized in **Table C-4**, including measures of collision severity, collision type, probable cause, weather conditions, and time of day.

The preceding results suggest a number of specific issues that the Corridor Master Plan could address. For example, most of the rear-end collisions occurred at major cross streets where vehicles on Juanita Drive were stopped, waiting to turn left. Examples include the NE 132nd Street and NE 112th Street intersections. Angle collisions occur throughout the corridor where drivers attempt to turn out of side streets or driveways onto Juanita Drive, facing high speed traffic and limited sight distance. Single vehicle and head-on collisions often occurred along segments where speeds exceed safe conditions (see next section). One example location is along the Juanita Woodlands Park.



DRAFT (June 12, 2013)

Juanita Drive Corridor Study
Collisions (2009 - 2012)

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FEHR PEERS

TABLE C-4: JUANITA DRIVE COLLISION STATISTICS

Measure	Number of Collisions (January 2009 – December 2012)	Percent of Total
Total collisions	142	100.0%
Single vehicle collisions	38	26.8%
Rear-end collisions	62	43.7%
Collisions due to speeding	37	26.1%
Bike collisions	7	4.9%
Pedestrian collisions	1	0.7%
Injury collisions	42	29.6%
Fatality collisions	3	2.1%
Driving under the influence (DUI)	9	6.3%
Nighttime collisions	32	23%
Wet/ice/snow conditions	45	32%

Sources: WSDOT (January 2009 – December 2011) and City of Kirkland (January 2012 – December 2012).

SPEED

DATA COLLECTION AND METHODOLOGY

Speed studies were conducted at three locations along Juanita Drive in both the northbound and southbound directions – west of 93rd Avenue NE, north of NE 112th Street / 80th Avenue NE, and north of NE 138th Street. In general, northbound travel is uphill and southbound is downhill.

The raw speed data was used to calculate the following measures:

- **Average daily speed –** average travel speed of all motorists over the course of 24 hour day
- **50th percentile speed** – half of motorists travel below this speed, and half of motorists exceed this speed.
- **85th percentile speed** – 85 percent of motorists travel below this speed, and 15 percent of motorists exceed this speed. Typically, the 85th percentile speed is used to establish posted speed limits.

- **Percent of drivers exceeding the speed limit**
- **Percent of drivers traveling at extreme speed** – the percentage of motorists exceeding the speed limit by at least 10 mph)

RESULTS

The figure on page C-26 summarizes directional speed measures at the three data collection locations, including the variation of the 85th percentile speed over the course of 24 hours, the occurrence of drivers traveling at extreme speeds, and the average daily speed. **Table C-5** summarizes the posted speed limit and daily observed 50th and 85th percentile speeds.

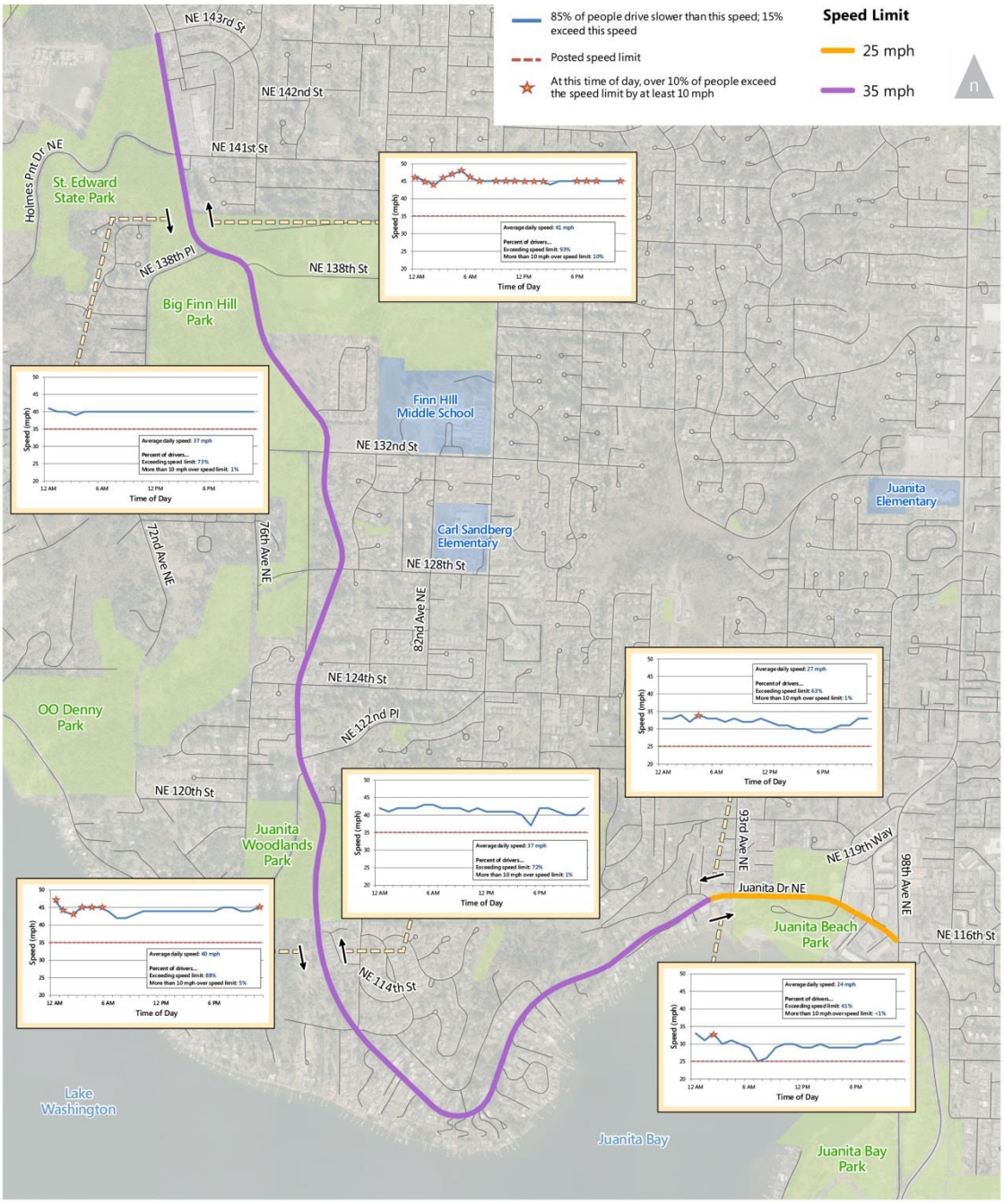
TABLE C-5: OBSERVED CORRIDOR SPEEDS

Location on Juanita Drive	Posted Speed Limit (mph)	50th Percentile Speed (mph)		85th Percentile Speed (mph)	
		Southbound	Northbound	Southbound	Northbound
North[1]	35	37	41	40	45
Central[2]	35	39	38	44	41
South / Juanita Village[3]	25	25	27	29	31

[1] Recorded directly north of NE 138th Street
[2] Recorded directly north of NE 112th Street / 80th Avenue NE
[3] Recorded directly west of NE 93rd Street
Source: Fehr & Peers, 2013.

Results show that the majority of drivers exceed the posted speed limit throughout the study area. Speeding is particularly prevalent in the north and central areas of the corridor, where over 70 percent of drivers exceed the posted speed. Over 10 percent of drivers travel at extreme speeds (10 mph or more over the posted speed) northbound near Big Finn Hill Park and southbound (downhill) in the vicinity of Juanita Woodlands Park. Time of day data associated with the observations indicate that most extreme speeding occurs at night.

The large share of drivers exceeding 40 mph conflicts with the established 35 mph posted speed of Juanita Drive. All of the horizontal curves meet the safety standards of the established 35 mph posted speed, but several curves do not meet the standards for 40 mph travel.



DRAFT (June 12, 2013)

Juanita Drive Corridor Study
Weekday Vehicle Speeds

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FEHR PEERS