

BETHEL ROAD AND SEDGWICK ROAD CORRIDOR STUDY

DRAFT PLAN

City Council Meeting
August 14, 2017

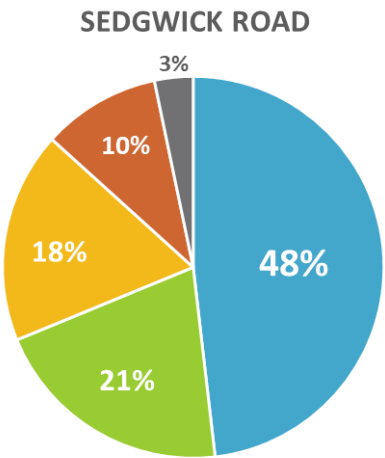
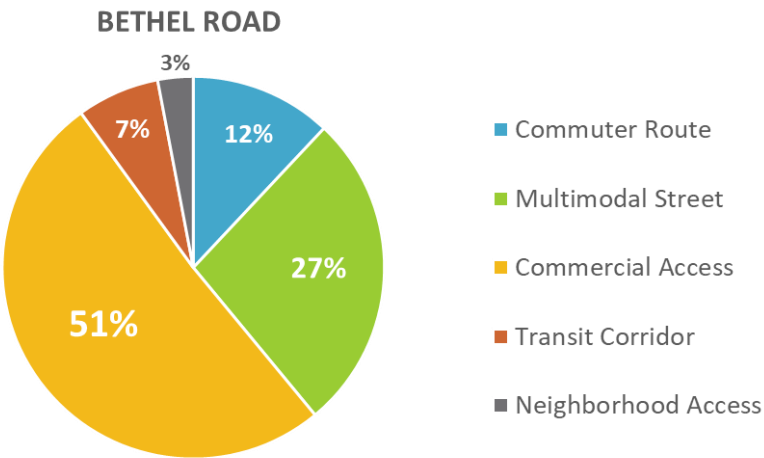


STUDY AREA

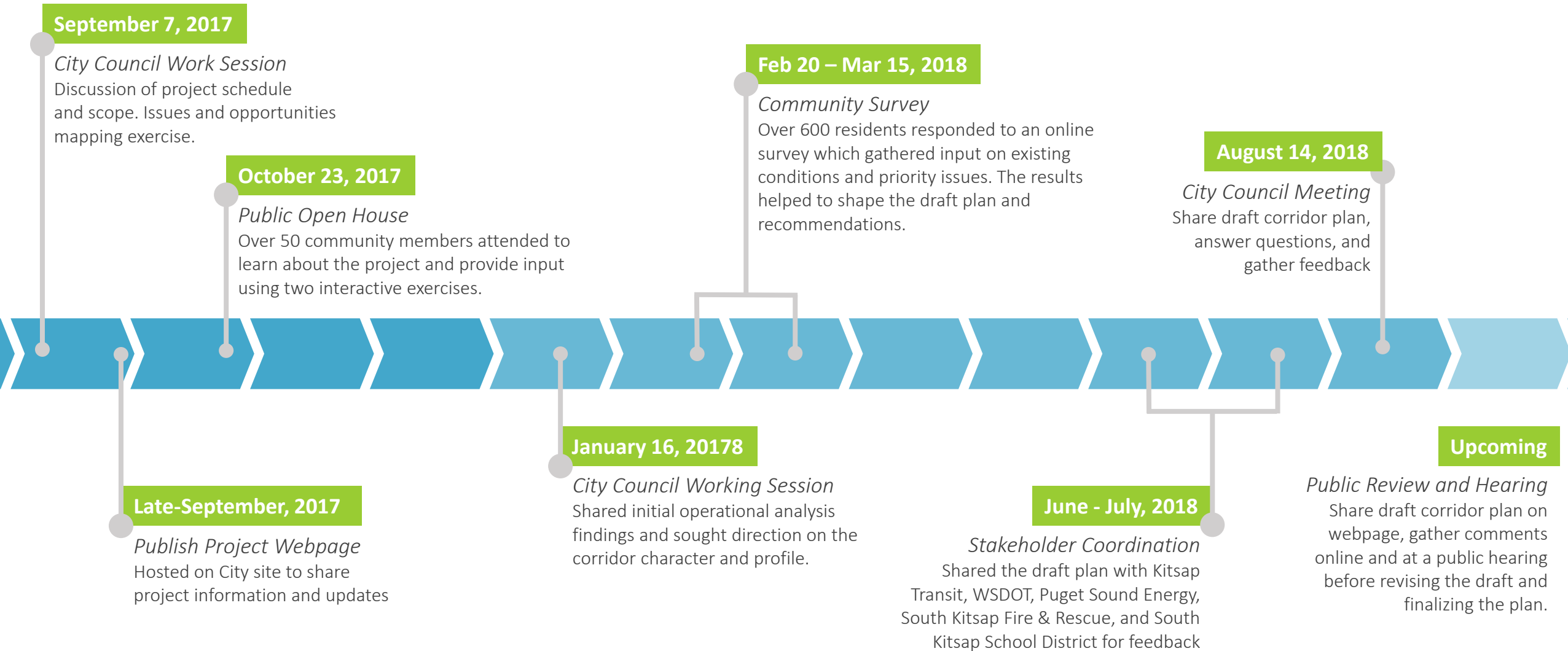
Sedgwick Corridor
State Route 160, principal arterial with Class 3 access management designation, commuter and freight route, connection to SR 16 and Southworth Ferry

Bethel Corridor
City principal arterial, mixed-use corridor with commercial access, freight and bus route

PUBLIC OPINION OF STREET CHARACTER



OUTREACH PROCESS

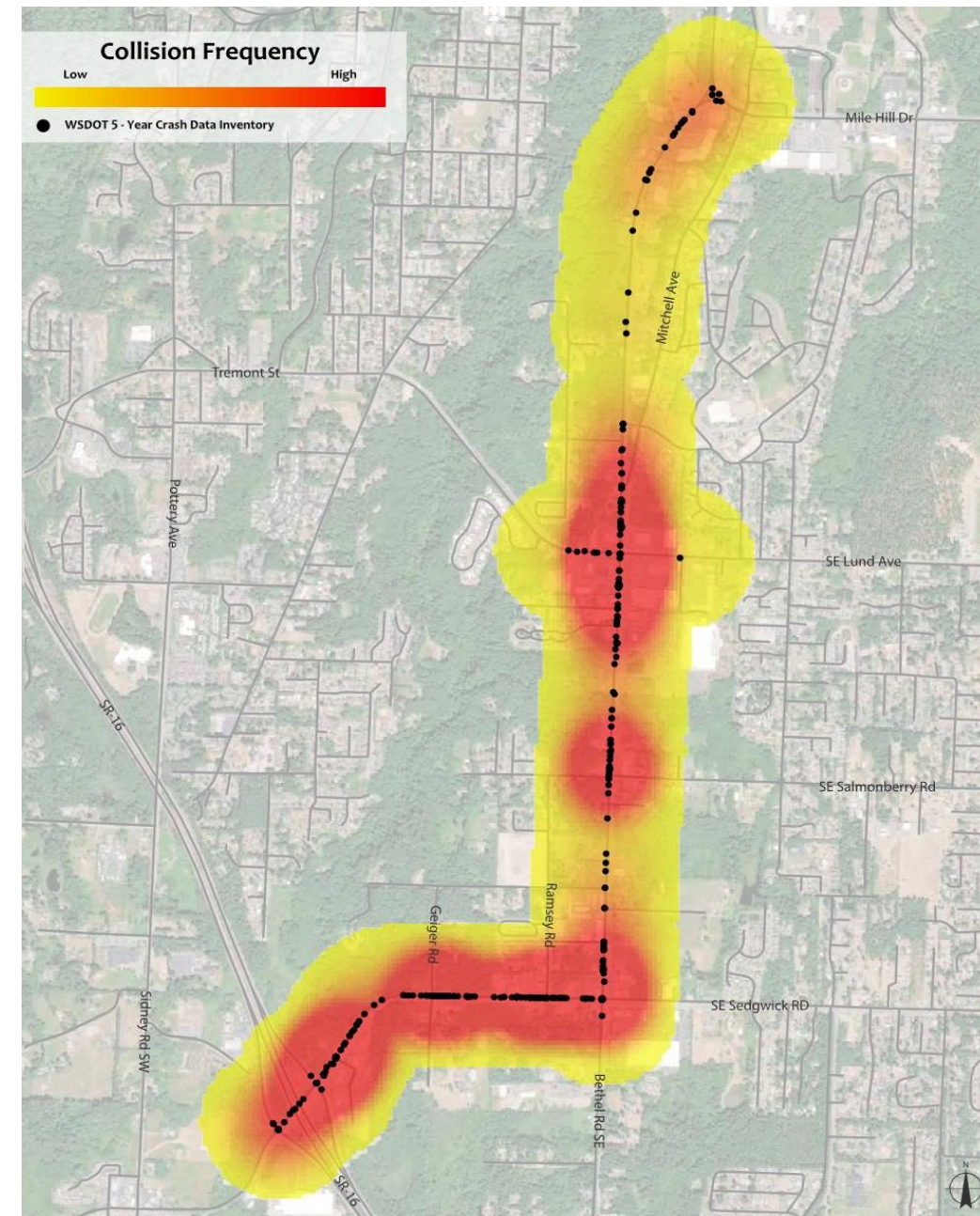
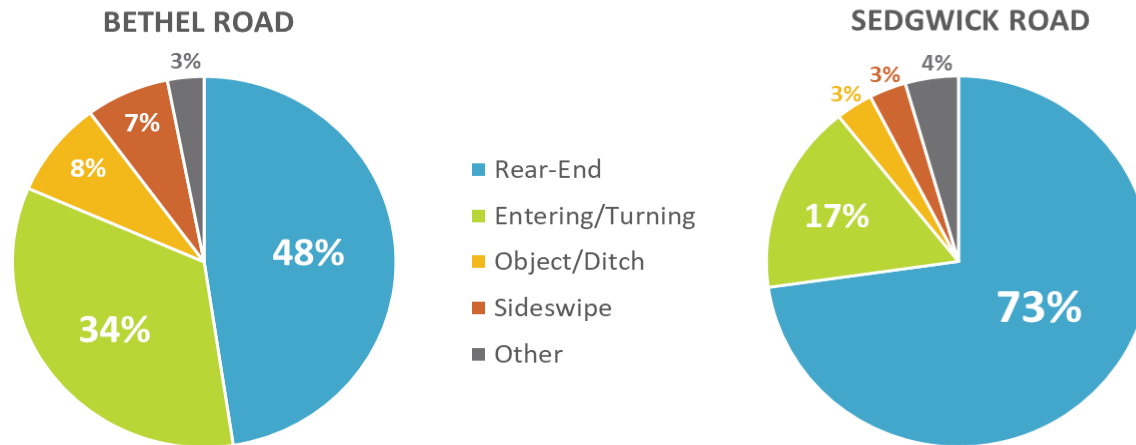


CRASH HISTORY

WSDOT 5-year crash data reveals:

- 451 total crashes
- Sedgwick Road had twice as many crashes per mile
- Bethel Road had fewer midblock crashes
- 73% of crashes on Sedgwick Road were rear-ends
- Turning/entering crashes were twice as common on Bethel Road

CRASH TYPES BY CORRIDOR



TRAFFIC VOLUME FORECAST

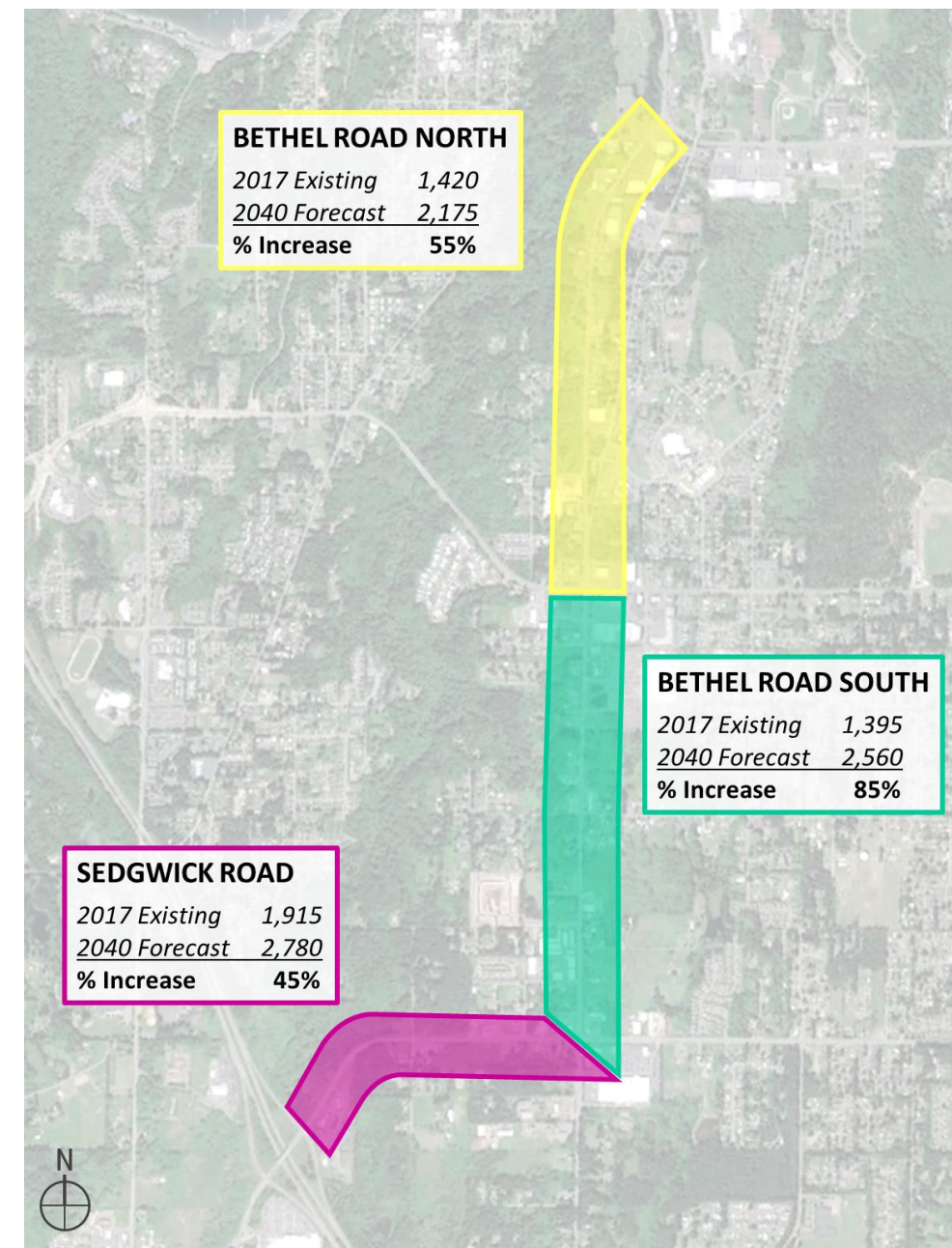
The City's travel demand model was used to develop a volume forecast for 2040 horizon year.

Conservative approach used which assumed:

- Revised zoning designations
- Completion of 6-year TIP projects
- Fully-realized development potential

Based on traffic patterns, land use, and forecasted volumes, the study area was broken into three study segments:

- Bethel Road North
- Bethel Road South
- Sedgwick Road



ALTERNATIVES ANALYSIS

For each of the three study segments, the following three alternatives were considered:

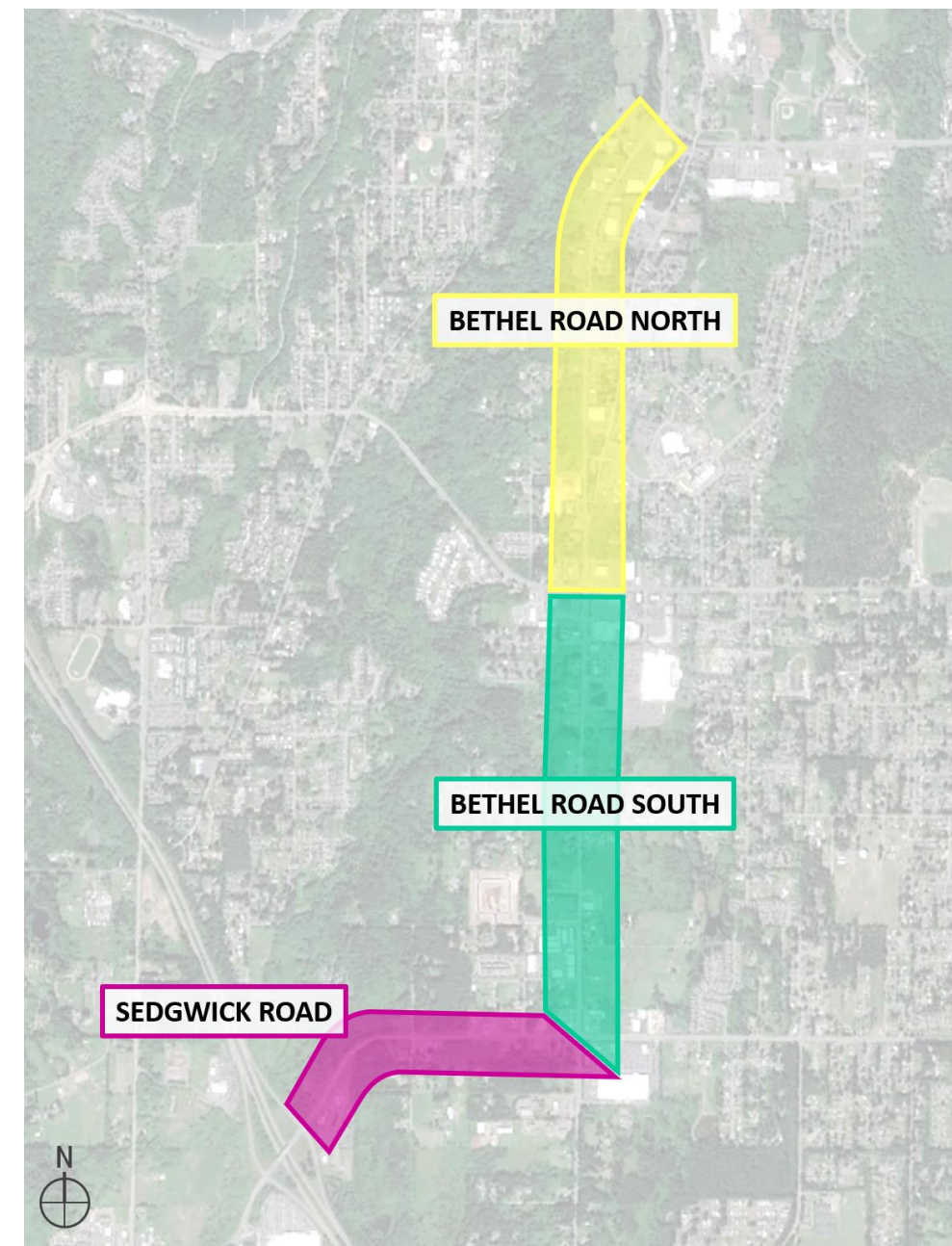
1	STREET CHARACTER	
	One Travel Lane Each Direction	Two Travel Lanes Each Direction
	<ul style="list-style-type: none">Traffic calming, more walkable with shorter crossingsLess right-of-way needed, more room for other elementsLower construction and maintenance costsLess impervious surface and stormwater runoff	<ul style="list-style-type: none">More vehicle capacityPotentially less congestion during peak periodsEasier to accommodate transit and emergency response
2	INTERSECTION CONTROL	
	Signalized Intersection	Roundabout Intersection
	<ul style="list-style-type: none">Drivers are more familiar with this type of controlGenerally requires less right-of-way at the intersectionEasier to accommodate blind pedestrians	<ul style="list-style-type: none">Fewer crashes with injuries and fatalitiesGenerally processes traffic more efficientlyAlways allows for U-turns
3	ACCESS MANAGEMENT	
	Center Left-turn Lane	Raised Median
	<ul style="list-style-type: none">Keeps turning vehicles out of the through laneProvides more direct access to propertiesFewer U-turns at intersectionsPotential to provide median refuge at pedestrian crossings	<ul style="list-style-type: none">Reduces frequency and severity of crashes on high-volume corridorsKeeps traffic moving more smoothly with less frictionProvides median refuge at pedestrian crossings

PREFERRED ALTERNATIVE

	STREET CHARACTER	INTERSECTION CONTROL	ACCESS MANAGEMENT
	<i>One Travel Lane vs. Two Travel Lanes</i>	<i>Roundabouts vs. Signalized Intersections</i>	<i>Raised Median vs. Two-way Left-turn Lane</i>
Bethel Road North <i>(Mile Hill Dr to Lincoln Ave)</i>	One lane in each direction	Roundabouts	Two-way Left-turn Lane
Bethel Road South <i>(Lund Ave to Sedgwick Rd)</i>	One lane in each direction	Roundabouts	Raised Median
Sedgwick Road <i>(SR 16 to Bethel Rd)</i>	Two lanes in each direction	Roundabouts	Raised Median

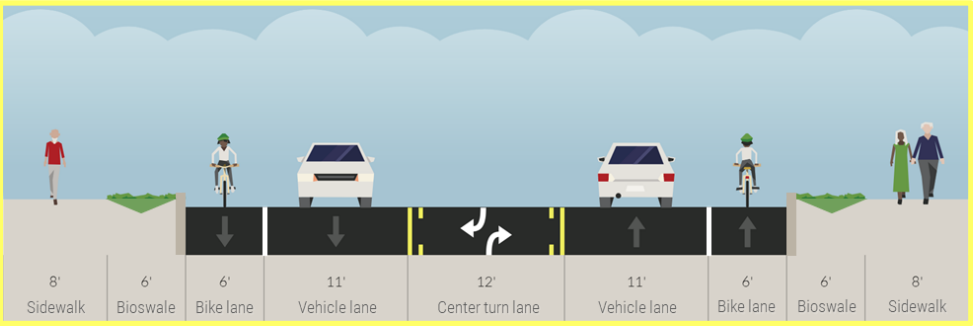
“Wide Nodes, Narrow Roads”

Roundabout corridor approach - Roundabouts can be adequately large at the node, or intersection, to process traffic during the peak hour while maintaining a narrower roadway profile between intersections. Fewer travel lanes means more room for other street elements, such as sidewalks and bike facilities, and provides traffic calming benefits during off-peak periods.

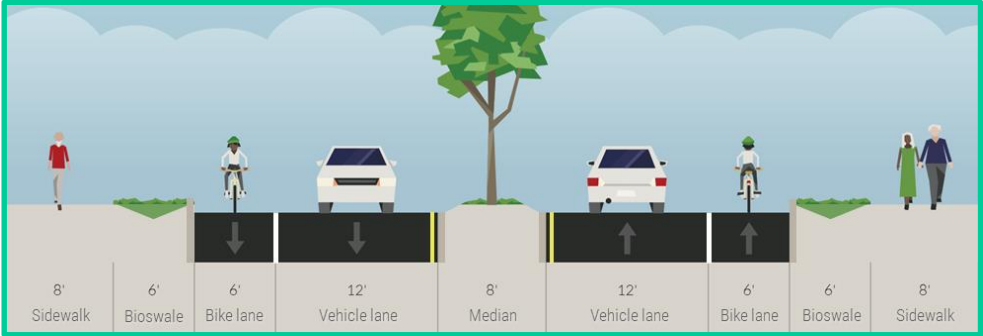


PREFERRED ALTERNATIVE

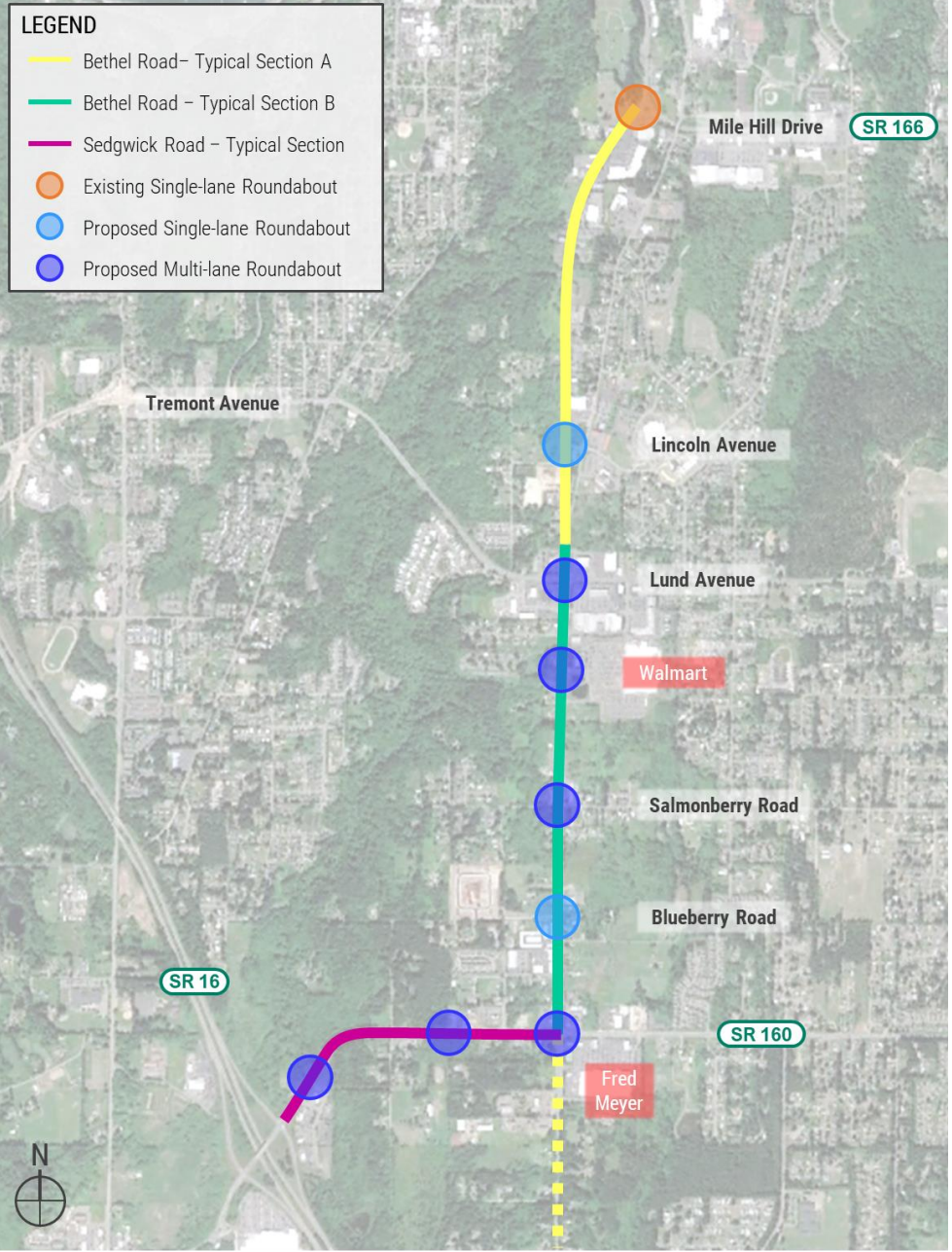
BETHEL ROAD NORTH – TYPICAL SECTION A



BETHEL ROAD SOUTH – TYPICAL SECTION B



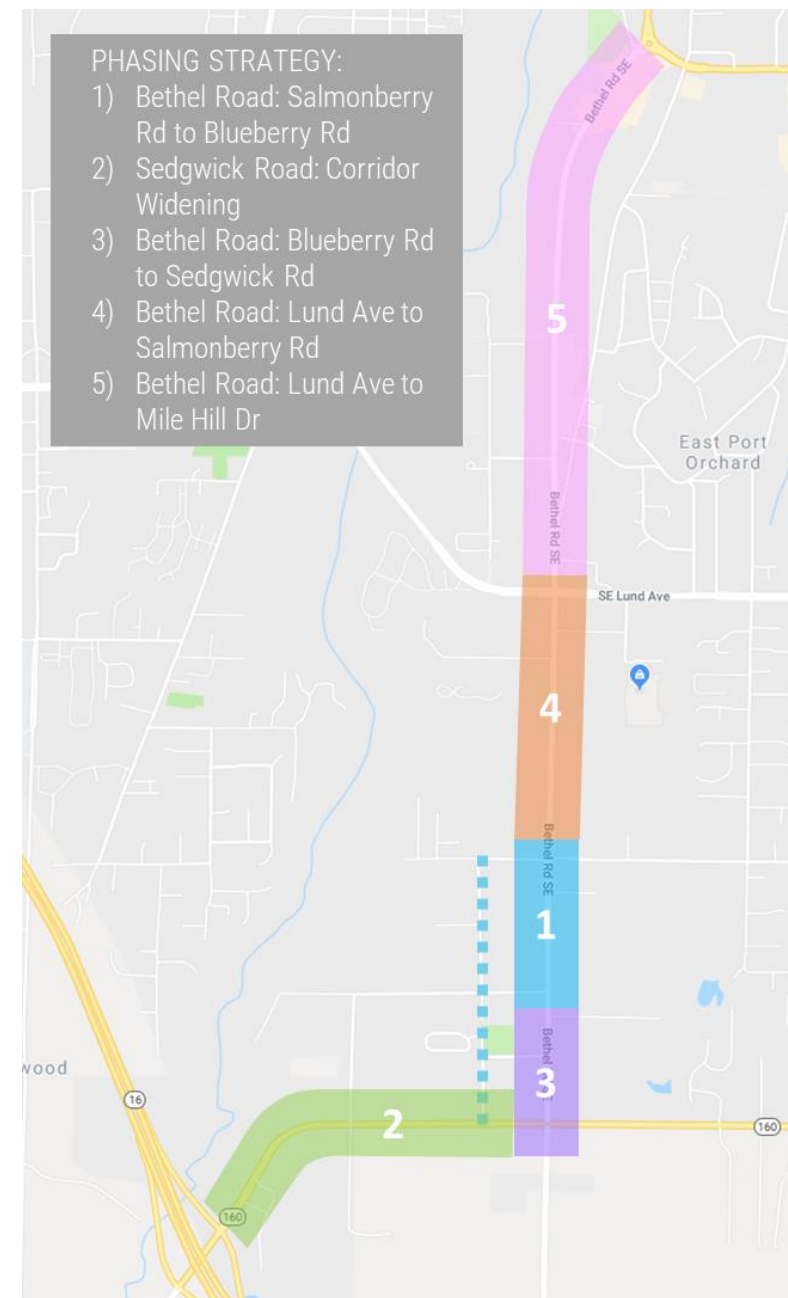
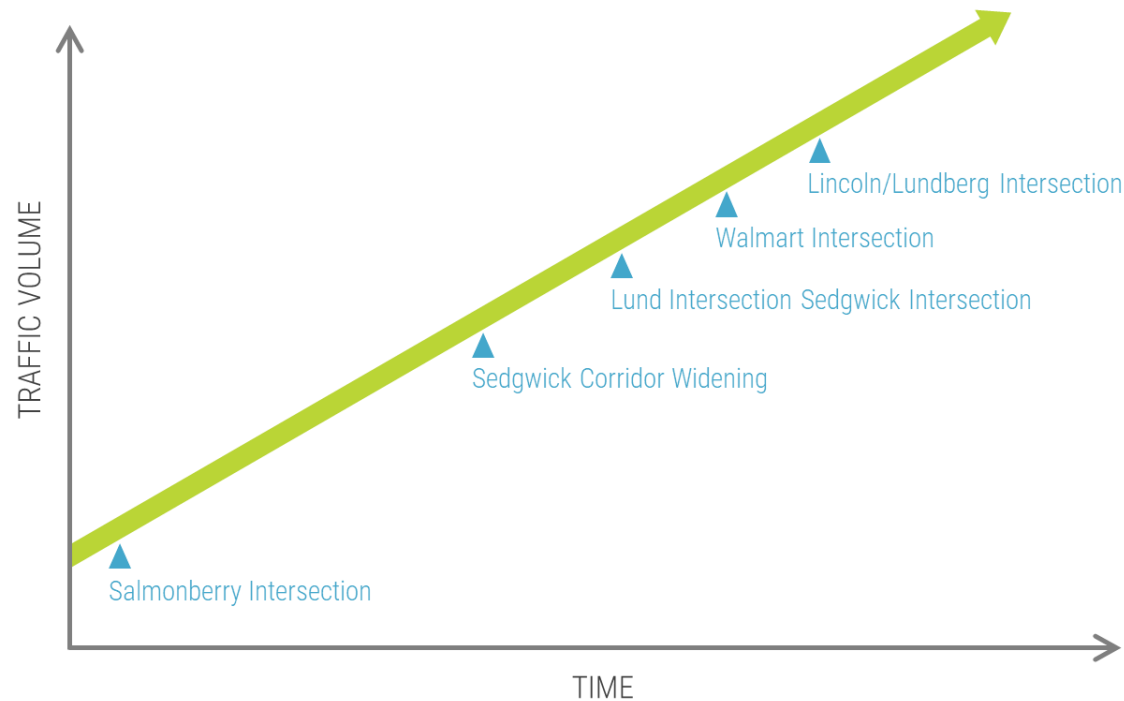
SEDGWICK ROAD – TYPICAL SECTION



PHASING STRATEGY

Using intersection operations modeling software, a sensitivity analysis was conducted for the following reasons:

- Develop a project phasing and funding prioritization strategy
- Identify potential interim roundabout design for each intersection
- Refine the full-build design for each roundabout in the horizon year



COST ESTIMATES

Preliminary cost estimates were prepared for each project phase. Further information about estimate assumptions and potential funding sources are included in the draft plan.

Project Phase	Estimated Cost <i>(2018 Dollars)</i>
Phase 1: Bethel Road – Salmonberry Rd to Blueberry Rd	\$12,020,000
Phase 2: Sedgwick Road – SR 16 NB Ramps to Bethel Rd	\$16,670,000
Phase 3: Bethel Rd – Blueberry Rd to Sedgwick Rd	\$5,820,000
Phase 4: Bethel Rd – Lund Ave to Salmonberry Rd	\$8,750,000
Phase 5: Bethel Road – Mile Hill Dr to Lund Ave	\$10,540,000
Total Project Cost	\$53,790,000

**Items yet to be incorporated include right-of-way acquisition for Ramsey Road and design adjustments made to accommodate Fire and Rescue operations*

DESIGN CONSIDERATIONS

The Draft Corridor Plan addresses the following design considerations:

- Transit
- Pedestrians
- Bicycles
- Roundabout Design
- Critical Areas
- County-owned Parcels
- Emergency Response
- Speed Limit
- Parking
- Access Management
- Adjacent Street Connections
- State Facilities
- Landscaping
- Utilities



DESIGN CONSIDERATIONS

The Draft Corridor Plan addresses the following design considerations:

- **Transit**
- Pedestrians
- Bicycles
- **Roundabout Design**
- Critical Areas
- County-owned Parcels
- **Emergency Response**
- **Speed Limit**
- **Parking**
- **Access Management**
- Adjacent Street Connections
- State Facilities
- Landscaping
- Utilities



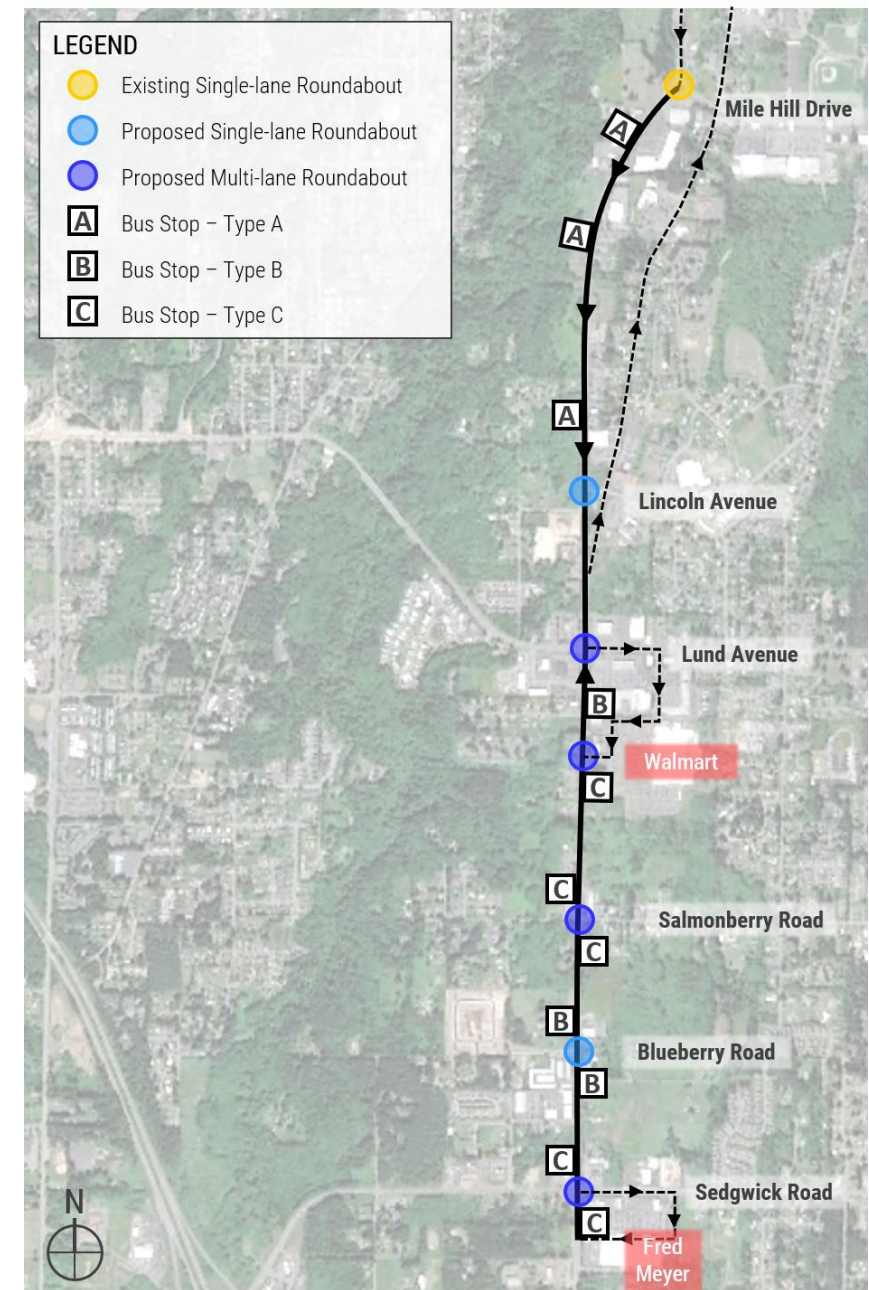
DESIGN CONSIDERATIONS

Transit

Kitsap Transit operates a bus route and several worker/driver buses within the study area. To accommodate their operations, three types of treatments are proposed for each bus stop location on Bethel Road:

- **Type A: In-lane stop with center turn-lane**
When stopped, vehicles can use the center turn-lane to get around the bus.
- **Type B: In-lane stop with raised median**
When stopped, vehicles will be stopped behind the bus.
- **Type C: In-lane stop on the near-side of a multi-lane roundabout**
When stopped, vehicles will be able to use the second approach lane to get around the bus.

Further design details are provided in the Draft Corridor Plan.



DESIGN CONSIDERATIONS

Roundabout Design

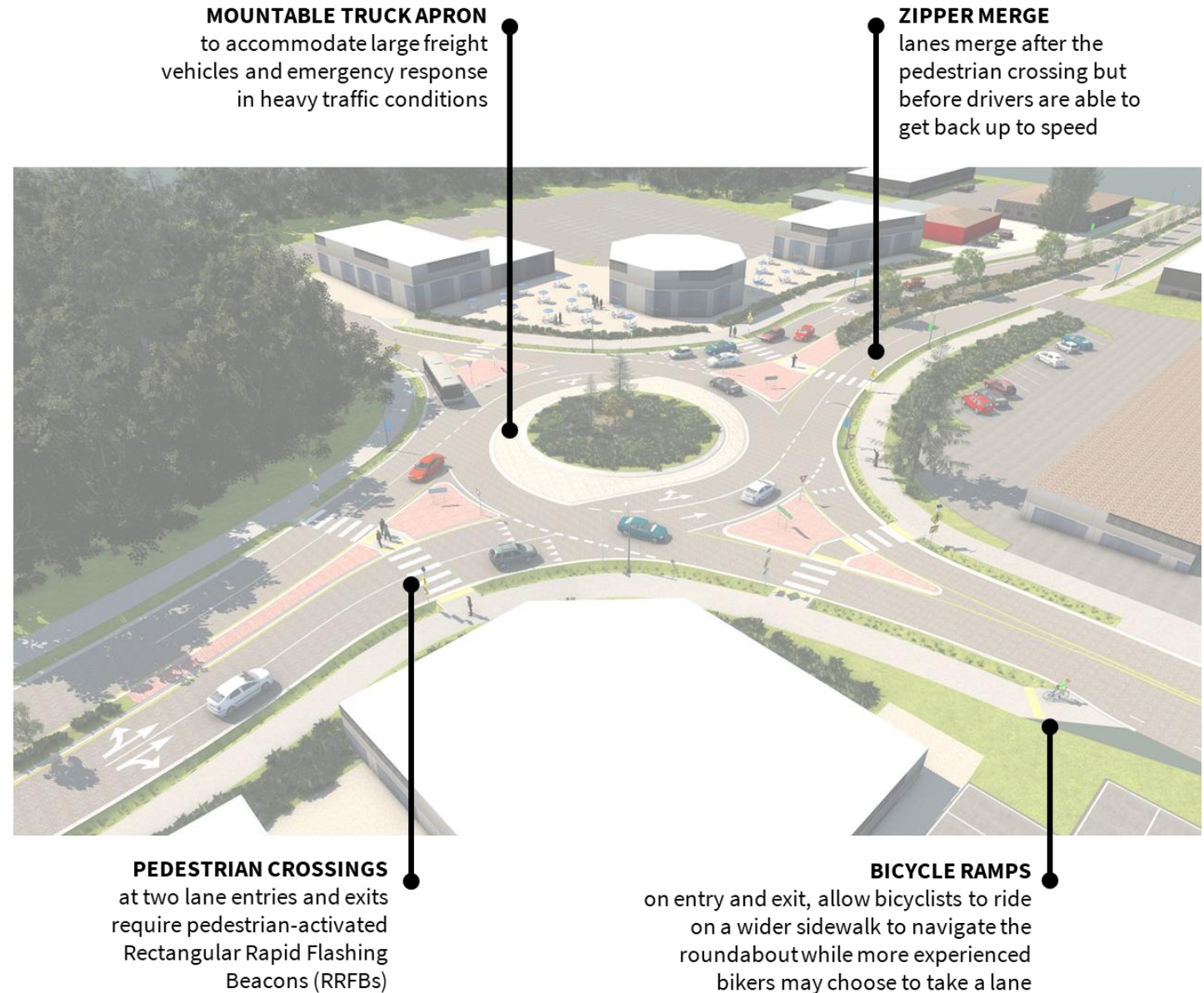
Design features of all roundabouts:

- Buses and trucks can navigate roundabout using a single lane
- The mountable truck apron accommodates large freight and emergency response vehicles
- Bike ramps at entry and exit points allow cyclists to use the sidewalk

Design features of multi-lane roundabouts:

- RRFBs are located at all two-lane pedestrian crossings
- Vehicles zipper merge upon exiting the roundabout from two-lanes to one-lane

[ZIPPER MERGE VIDEO](#)



DESIGN CONSIDERATIONS

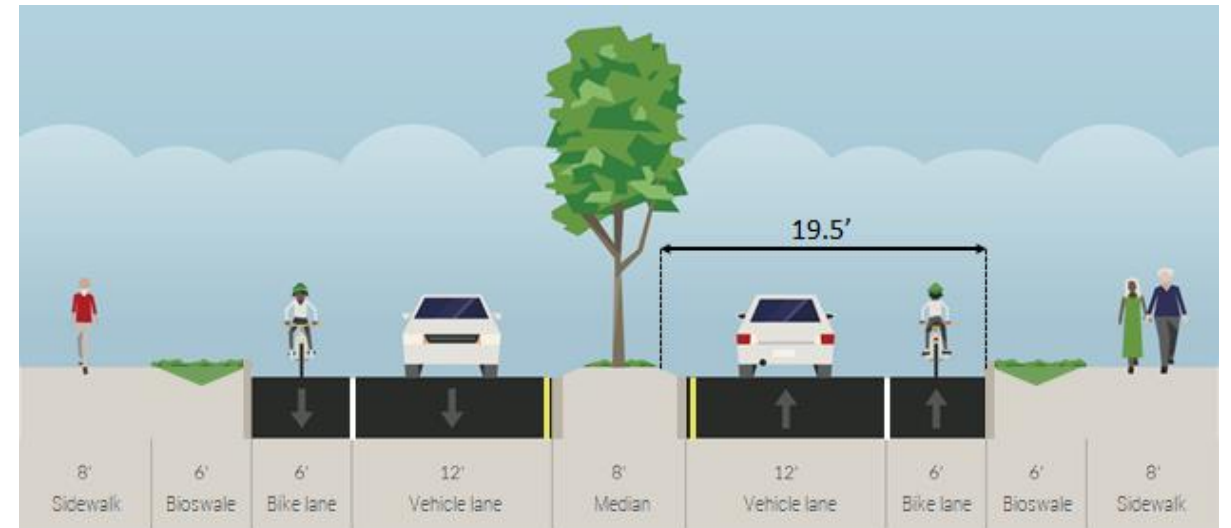
Emergency Response

South Kitsap Fire and Rescue raised two concerns regarding the raised median:

- 1) On Bethel Road and Sedgwick Road, limits left-turns and U-turns to major intersections.
- 2) On Bethel Road, creates a narrow curb-to-curb roadway width.

To resolve each of these issues, the following adjustments were made to the design:

- 1) On both Bethel Road and Sedgwick Road, provide clear areas with a mountable curb in the median, approximately every 400'.
- 2) On Bethel Road, construct a 1' concrete apron with mountable curb around the center median instead of a typical curb.



BETHEL ROAD SOUTH – TYPICAL SECTION B

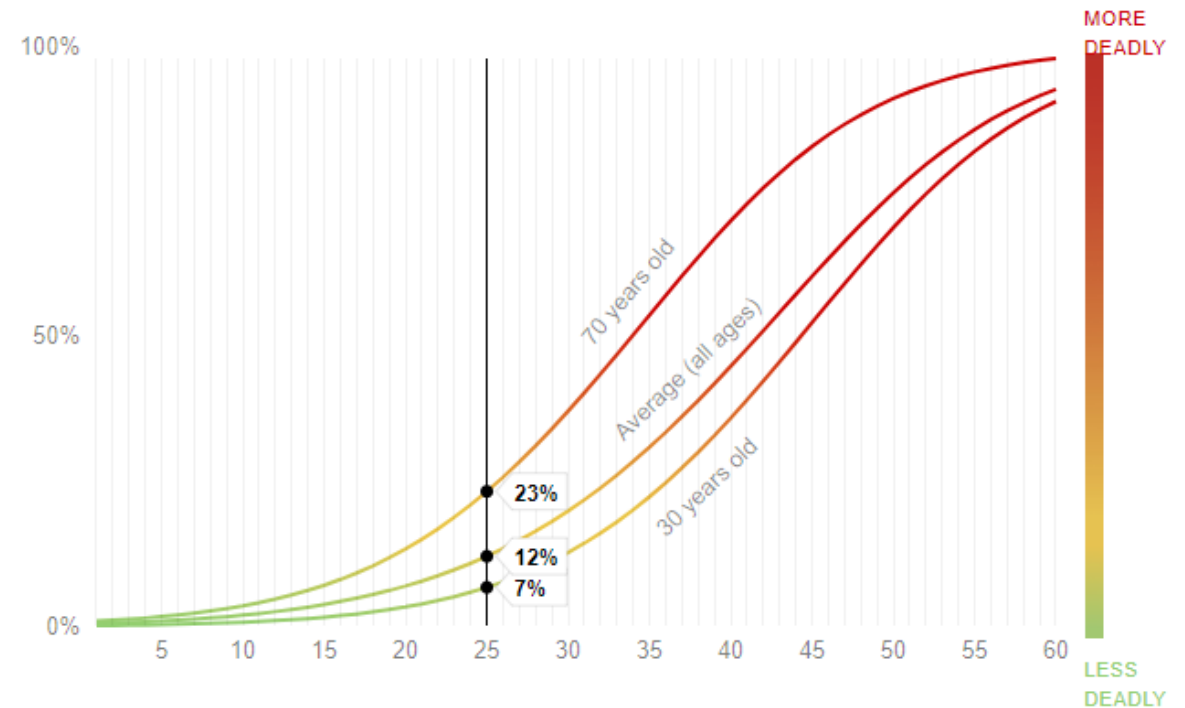
DESIGN CONSIDERATIONS

Speed Limit

Once a significant portion of Bethel Road is constructed, the City may consider a speed limit reduction to better align with the conceptual design which promotes walk-ability, bike-ability, and calmer traffic.

A pedestrian hit by a car going 35mph is over twice as likely to die from the impact when compared to a car going 25mph.

AAA Foundation for Traffic Safety's Impact Speed and a Pedestrian's Risk of Severe Injury or Death (2011)



DESIGN CONSIDERATIONS

Parking

- On-street parking is not included in the conceptual design on either Sedgwick Road or Bethel Road.
- Off-street parking requirements of existing and planned developments are expected to satisfy the parking needs of residents and visitors.
- On-street parking should be considered on the lower volume side street network to support future mixed-use development.

Over 80% of survey respondents felt that there is currently enough parking available when visiting businesses on Bethel Road.

ON-STREET PARKING	
PROS	CONS
<ul style="list-style-type: none">• Often an element of downtown commercial districts• Provides buffer between pedestrians and vehicles• Can calm traffic and reduce speeds• Creates more active and vibrant street scape	<ul style="list-style-type: none">• Parking maneuvers reduce corridor capacity• More impervious surface and stormwater runoff• Introduces “dooring” hazard if adjacent to bicycle lane• Can limit visibility and impact sightlines at crossing locations• Uses valuable right-of-way that could be used for other street scape elements

DESIGN CONSIDERATIONS

Access Management

Center-lane Treatment Application

- Raised Median: Higher volumes, concentrated land uses with higher trip generation, reasonable distances between major intersections
- Two-way Left-turn Lane: Lower volumes, dispersed land uses with lower trip generation, longer distances between major intersections

Minimum Spacing Requirements

- Sedgwick Road: Maintain WSDOT's Class 3 designation and minimum spacing requirement of 330-feet
- Bethel Road: Implement a minimum spacing requirement of 200-feet



VISUALIZATION OF PHASE 1

VIDEO OF FLY-OVER



Questions?