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Project Background and Description

The 100th Avenue Northeast Corridor Improvements Project will improve the existing roadway of 100th Avenue NE between NE 132nd Street and NE 145th Street by installing new sidewalks, curb and gutter, bike lanes, illumination system, upgrading stormwater collection and treatment facilities, optimizing traffic signals and integrating with ITS, and providing urban design amenities. As a result, the project is intended to improve safety for all users of the corridor, reduce traffic congestion, and establish a community-supported identity for the corridor.



Figure 1. Project Corridor

Development of Alternatives

Outreach

To develop a set of alternatives, the project team developed a robust plan in coordination with the City of Kirkland to collect input from local residents, community stakeholders, City staff, and many others interested in the potential changes to the 100th Avenue corridor. As a result of this plan, a stakeholder advisory committee was formed to provide representation from key groups. Input from this advisory committee was combined with feedback received from a design charrette with City staff, in-person and online open houses with over 700 public participants, and two neighborhood picnics.



Approach to Alternative Development

The approach for drafting alternatives began with balancing community input with the requirements of the project to meet the applicable design standards. Traffic analysis was completed to determine the vehicular cross section needed to support traffic volumes for the future design year 2035. This established a standard footprint of a 57-foot-wide, 5-lane roadway section between NE 132nd Street and Simonds Road NE, and a 46-foot, 4-lane roadway between Simonds Road NE and NE 145th Street.

Using this footprint, two corridor-wide alternatives were drafted to review the resulting footprint of the project for cases that maximized and minimized usage of the typical 100-foot right-of-way width. After it was determined that there would be little variation between these two alternatives, the alternative development process focused on five location-specific alternatives which would be combined to form a collective best-value alternative for the corridor as recommended by the project design team.

Alternatives for the 100th Avenue NE Project Corridor

ALTERNATIVE 1 – NON-MOTORIZED SECTION

This alternative group was developed to analyze potential configurations for the available 20.5-foot width on each side of the roadway for sidewalks, bike lanes, planters, low impact development (LID) and buffers.

Alternative Name	Description
Alternative 1-1	On-Street Bike Lane with 4-foot Planter/LID
Alternative 1-2	On-Street Bike Lane with 6-foot Planter/LID
Alternative 1-3	Sidewalk-Level Bike Lane with 5-foot Planter/LID

ALTERNATIVE 2 – JUANITA-WOODINVILLE WAY NE INTERSECTION

This set of alternatives was used to evaluate intersection configuration, viability of the west leg which accesses private properties, and a full relocation of the intersection.

Alternative Name	Description
Alternative 2-1	Realign East Approach, Retain West Leg
Alternative 2-2	Realign East Approach, Close West Leg
Alternative 2-3	Retain East Alignment with Islands, Retain West Leg
Alternative 2-4	Retain East Alignment with Islands, Close West Leg
Alternative 2-5	Realign East Approach to Match to NE 134th Court

ALTERNATIVE 3 – SIMONDS ROAD NE INTERSECTION

Three intersection alternatives were used to evaluate opportunities to improve the future level of service, address high turning volumes, minimize queue lengths, and maintain connectivity.

Alternative Name	Description
Alternative 3-1	Split Phase (Includes NB Shared Left-Thru Lane)
Alternative 3-2	Dual Protected Left for NB Approach
Alternative 3-3	Free Right from Simonds Rd NE to SB 100th Ave NE

ALTERNATIVE 4 – LIMITED RIGHT-OF-WAY

Near the Buttera Motors property, the corridor's typical 100-foot right-of-way (ROW) width narrows to 80 feet and 60 feet. This set of alternatives evaluates each ROW width condition.

Alternative Name	Description
Alternative 4-1	60-foot ROW - No ROW Acquisition
Alternative 4-2	80-foot ROW - Acquisition from King County Parcel Only
Alternative 4-3	100-foot ROW - Acquisition from Several Parcels

ALTERNATIVE 5 – CEDAR CREEK CULVERT

The existing Cedar Creek culvert connects to an upstream regional detention facility. This group of alternatives analyzes the options to retain or replace the culvert.

Alternative Name	Description
Alternative 5-1	Retain Existing Culvert
Alternative 5-2	Replace Culvert In-Kind
Alternative 5-3	Install Fish Passable Culvert

Identification of the Best-Value Alternative

The process to develop the best-value alternative for the corridor involves grading the performance of each alternative in relation to a set of defined evaluation criteria. Alternatives that score higher in relation to the evaluation criteria are determined to provide a higher level of performance. Alternatives that score lower provide a lower level of performance. These performance scores are then divided by the cost for each alternative, which determines the relative value of each alternative. The alternative with the highest value score is then identified as the best-value alternative.

As part of this process for the 100th Avenue NE project, the development of the evaluation criteria, criteria weighting, and scoring was done in stages.

Evaluation Criteria

To develop a set of evaluation criteria, the project team produced an initial set of 14 entries based on the characteristics of the corridor and public input. These entries provided the ability to evaluate alternatives with respect to three different user groups, resulting construction impacts, environmental uplift, mobility, and future compatibility. This list was provided to City staff for input. Following minor adjustments, the finalized set of 14 evaluation criteria was established as follows:

Evaluation Criteria
1) Improves pedestrian safety/access/experience
2) Improves bike safety/access/experience
3) Improves vehicular safety/access/experience
4) Minimizes traffic congestion
5) Minimizes right-of-way acquisition
6) Minimizes impacts to private properties
7) Promotes constructability (includes: temporary impacts to traffic, non-motorized users, and private properties)
8) Maximizes low impact development
9) Minimizes environmental impacts
10) Maximizes potential for gateways and placemaking
11) Minimizes maintenance
12) Compatibility with future property redevelopment
13) Compatibility with future City projects/bus routes
14) Improves access and performance for emergency services

Refer to Appendix A for a summary of the criteria as well as a description of each criterion.

Criteria Weighting

Similar to the evaluation criteria, the project team developed a draft criteria weighting. The process for developing the weighting involved conducting head-to-head comparisons between each of the criteria to determine the resulting level of importance. This draft weighting was compared to public input received to date and provided to City staff for input. Following a coordination meeting on October 27, 2016, the criteria weighting was finalized as follows:

Evaluation Criteria	Criteria Weight
1) Improves pedestrian safety/access/experience	13
2) Improves bike safety/access/experience	12
3) Improves vehicular safety/access/experience	11.5
4) Minimizes traffic congestion	13.5
5) Minimizes right-of-way acquisition	9.5
6) Minimizes impacts to private properties	6
7) Promotes constructability (includes: temporary impacts to traffic, non-motorized users, and private properties)	3
8) Maximizes low impact development	5.5
9) Minimizes environmental impacts	7.5
10) Maximizes potential for gateways and placemaking	1
11) Minimizes maintenance	5.5
12) Compatibility with future property redevelopment	4
13) Compatibility with future City projects / bus routes	4
14) Improves access and performance for emergency services	9

To view the full criteria weighting matrix and developmental documents, refer to Appendix B.

Alternatives Screening

A collective meeting was held with eight key members of the design team and Frank Reinart, representing the City. During this meeting, all attendees reviewed the alternatives and reached consensus for scoring under each criterion. The scoring was formatted to be compared to existing conditions, where alternatives which provided a significant benefit underneath an individual criterion were awarded 3 points, a total of 2 points were scored for a moderate benefit, and 1 point was awarded in cases of little to no benefit. This was consistent in the scoring for all alternatives except for Alternative 5-2 which was removed from consideration by group agreement during scoring due to permitting concerns.

Appendix C contains the full set of exhibits, roll plots, and materials used to review the alternatives during the scoring process. Appendix D contains scoring sheets for each set of alternatives as well as the resulting weighted totals which are the performance scores.

Development of Comparable Costs

Comparable costs were developed to compare each of the alternatives. This approach allows for estimating alternative costs for items where there are measurable cost differences between the alternatives. Refer to Appendix E for a summary of costs for each of the alternatives.

Best-Value Results

The final step to determine the best-value alternative for each alternative group is to take the performance scores and divide by the comparable costs to produce a numerical value for each alternative. Within each alternative grouping, these numerical values are ranked with the highest value alternative being identified as the best-value alternative.

ALTERNATIVE 1 – NON-MOTORIZED SECTION

Based solely on performance, Alternative 1-1 would be the preferred alternative. However, the additional costs for this alternative in stormwater treatment and thicker paving for on-street bike facilities compared to Alternative 1-3 produce a lower value rating for Alternative 1-1.

Therefore, Alternative 1-3 with the sidewalk-level bike lane was identified as the best-value alternative for the non-motorized section.

Name	Description	Performance	Comparable Cost	Value	Rank
Alt 1-1	On-Street Bike Lane with 4-foot Planter/LID	228	18.39	12.4	2
Alt 1-2	On-Street Bike Lane with 6-foot Planter/LID	193	17.99	10.7	3
Alt 1-3	Sidewalk-Level Bike Lane with 5-foot Planter/LID	219	16.06	13.6	1

Note: Comparable cost is listed in \$100,000 increments

ALTERNATIVE 2 – JUANITA-WOODINVILLE WAY NE INTERSECTION

For this alternative grouping, there is significant separation between the alternative scoring and value results with Alternative 2-2 receiving the highest performance score and value rating.

Name	Description	Performance	Comparable Cost	Value	Rank
Alt 2-1	Realign East Approach, Retain West Leg	203.5	5.79	35.1	2
Alt 2-2	Realign East Approach, Close West Leg	246.5	5.77	42.7	1
Alt 2-3	Retain East Alignment with Islands, Retain West Leg	144	5.36	26.9	3
Alt 2-4	Retain East Alignment with Islands, Close West Leg	139.5	5.34	26.1	4
Alt 2-5	Realign East Approach to Match to NE 134th Court	222	15.69	14.1	5

Note: Comparable cost is listed in \$100,000 increments

ALTERNATIVE 3 – SIMONDS ROAD NE INTERSECTION

In this alternative group, Alternative 3-3 was both the highest performing and lowest cost alternative leading the free-right intersection configuration to be the best-value alternative.

Name	Description	Performance	Comparable Cost	Value	Rank
Alt 3-1	Split Phase (Includes NB Shared Left-Thru Lane)	153.5	13.98	11.0	3
Alt 3-2	Dual Protected Left for NB Approach	183	14.03	13.0	2
Alt 3-3	Free Right from Simonds Road NE to SB 100th Avenue NE	210	12.93	16.2	1

Note: Comparable cost is listed in \$100,000 increments

ALTERNATIVE 4 – LIMITED RIGHT-OF-WAY

The performance score of Alternative 4-3 with a full 100-foot buildout for 100th Avenue was significantly higher than the alternatives which explored reducing the roadway section to accommodate narrower right-of-way scenarios. Based on material costs, Alternative 4-3 remains the preferred alternative. However, costs associated with right-of-way acquisition and other considerations with regards to the community may change the result where Alternative 4-2 produces the best-value.

Name	Description	Performance	Comparable Cost	Value	Rank
Alt 4-1	60-foot ROW - No ROW Acquisition	162	22.14	7.3	3
Alt 4-2	80-foot ROW - Acquisition from King County Parcel Only	185	22.90	8.1	2
Alt 4-3	100-foot ROW - Acquisition from Several Parcels	244.5	25.01	9.8	1

Note: Comparable cost is listed in \$100,000 increments and ROW acquisition is not included

ALTERNATIVE 5 – CEDAR CREEK CULVERT

The Cedar Creek culvert alternatives were scored with a subset of the applicable criteria. The result shows that Alternative 5-1, to retain the existing culvert structure, will be the best-value for the project.

Name	Description	Performance	Comparable Cost	Value	Rank
Alt 5-1	Retain Existing Culvert	67	0.50	134.0	1
Alt 5-2	Replace Culvert In-Kind	Removed from consideration during screening			
Alt 5-3	Install Fish Passable Culvert	25.5	8.96	2.8	2

Note: Comparable cost is listed in \$100,000 increments

For a compiled summary of the alternatives, performance scores, comparable costs, and best-value rankings, refer to Appendix F.

Recommendations and Next Steps

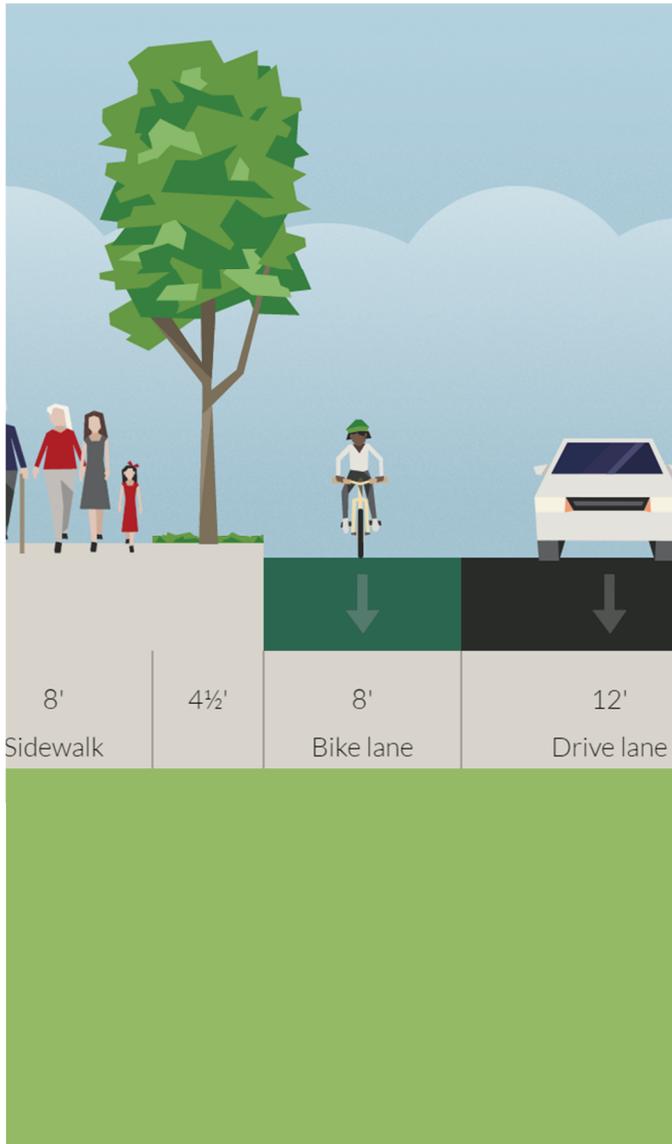
Based on the results of the alternatives analysis, the design team recommends that the City of Kirkland proceed with the following alternatives to produce the collective best-value alternative for the project corridor.

Alternative Name	Description	Special Considerations
Alternative 1-3	Sidewalk-Level Bike Lane with 5-ft Planter/LID	
Alternative 2-2	Realign East Approach, Close West Leg	Closure of the west leg will require coordination with adjacent property owners. If this closure is infeasible, Alternative 2-1, which retains the west leg, is the secondary recommendation.
Alternative 3-3	Free Right from Simonds Rd NE to SB 100th Ave NE	This option does not include a south leg crossing for non-motorized users. If this configuration is not acceptable for the City, Alternative 3-2 is the secondary recommendation.
Alternative 4-2	80-foot ROW - Acquisition from King County Parcel Only	While Alternative 4-3 is the best-value alternative based on material costs, the project team recognizes that significant right-of-way acquisitions will impact this analysis and run counter to the goals of the project. Therefore, Alternative 4-2 is recommended.
Alternative 5-1	Retain Existing Culvert	

Next Steps

At the time of writing this report, it is understood that several steps must be undertaken to formally adopt a preferred alternative for the corridor. These steps include a City review of the alternatives scoring, policy decisions regarding property interfaces and the culvert for Cedar Creek, as well as approval from key decision-makers.

Following formal approval, the project will move forward to 30% Design using the preferred alternative for the project corridor.



Appendix A

Definitions for Evaluation Criteria

Definitions for Evaluation Criteria

Criterion 1

Improves pedestrian safety / access / experience

This criterion is intended to evaluate the resulting improvement for all pedestrian users in the project corridor.

Pedestrian safety is defined by the separation between the pedestrian zone within the sidewalk and other user groups and number of potential conflicts at intersections. Separation between pedestrians and other users is achieved using buffers and dedicated bicycle facilities. Pedestrian safety is also impacted by the number of conflict points (e.g., driveways) and the speed at which vehicles are crossing the sidewalk or crosswalk at these conflict points.

Bicycle facility design may benefit pedestrian safety. For example, wider bicycle lanes and bicycle lane buffers provide more horizontal separation between motor vehicles and pedestrians, in addition to providing a better field of vision for motor vehicles turning into driveways or intersecting streets, which may improve yielding. When the bike lane is located at sidewalk-level, motor vehicles must ramp up prior to the sidewalk, reducing the speed at which motor vehicles approach the bike lane and sidewalk.

Pedestrian safety is also defined by the number of potential conflicts at intersections. Exclusive pedestrian phases at signalized intersections reduces the number of potential conflicts.

Pedestrian access is defined by the completeness and connectivity of the pedestrian network (including street crossings) in the project area and connecting areas. Alternatives which remove or reduce access for pedestrians should be interpreted to have a lower level of access.

Pedestrian experience is intended to measure the perceived quality and walkability by all pedestrian users. Alternatives which support wider sidewalks, larger intersection corners, potential gateway areas for gathering, benches, vegetation, and greater separation between other user groups (in terms of space and time) should be interpreted as providing a higher quality of experience.

Criterion 2

Improves bike safety / access / experience

This criterion is intended to evaluate the resulting improvement for all bicyclists in the project corridor.

Bicyclist safety is defined by the horizontal and vertical separation between the bike lane and other user groups and the number of conflict points. Greater horizontal separation between bicyclists and motor vehicles improves the field of vision for motorists and may result in better yielding of motorists approaching the bike lane. Vertical separation discourages or prevents motor vehicle encroachment into the bike lane and provides a high level of perceived safety.

When the bike lane is located at sidewalk-level, motor vehicles must ramp up prior to the sidewalk, reducing the speed at which motor vehicles approach the bike lane and sidewalk.

Bicyclist safety is also defined by the number of potential conflicts at intersections. Where peak hour turning volumes are high (greater than 150 veh/hour), separating bicyclist and motor vehicle movements reduces the number of potential conflicts.

Bicyclist access is defined by the completeness and connectivity of the resulting network for bike users. This includes access across intersections, to adjacent properties, and to connecting streets.

Bicyclist experience is intended to measure the perceived quality of the resulting network for all bicycle users. Alternatives which support wider bike lanes, passing, buffers, vegetation, simplify intersection crossings, and result in greater separation (in terms of space and time) between other user groups should be interpreted as providing a higher quality experience.

Criterion 3

Improves vehicular safety / access / experience

This criterion is intended to evaluate the resulting improvement for all vehicular users in the project corridor.

Vehicular safety is defined by the separation between vehicular lanes and other user groups, the number of conflict points, vehicular speeds, sight lines, sight distance, and driver expectations. Alternatives which allow for greater horizontal and vertical separation between other user groups will likely improve safety. Reductions in the number of conflict points between vehicles and other user groups will also improve safety. The design speeds within the project corridor will not change as part of this project. However, alternatives that encourage merging, turns, or crossing of mixing zones at lower speeds should be perceived as producing a higher level of safety. Alternatives that can provide clearer sight lines and greater levels of sight distance will also improve safety for drivers. Configurations which meet typical driver expectations will likely increase safety for drivers.

Vehicular access is defined by the completeness and connectivity of the roadway network in the project area and connecting areas. Alternatives which retain or extend turn lanes, retain property access points, and improve level of service should be interpreted to have a greater level of access.

Vehicular experience is intended to measure the perceived quality of the resulting roadway network for all drivers. Alternatives which provide separation from other user groups, minimize driveway apron slopes, incorporate vegetation, reduce traffic queuing, minimize lane merges, and match typical driver expectations should be interpreted as providing a higher quality of experience.

Criterion 4

Minimizes traffic congestion

This criterion is intended to evaluate the resulting vehicular traffic volumes, queuing, delay, and level of service for all users of the corridor. Alternatives which improve the level of service at intersections, reduce vehicular queue lengths and delay, and reduce wait times for pedestrians and bicyclists at intersections should be interpreted as minimizing traffic congestion.

Criterion 5

Minimizes right-of-way acquisition

This criterion is intended to evaluate the potential for acquiring additional right-of-way to support individual alternatives. Alternatives which reduce or eliminate the need to acquire right-of-way should receive higher scores during analysis.

Criterion 6

Minimizes impacts to private properties

This criterion is intended to evaluate the potential for impacts to private properties. Alternatives which allow for greater separation between the roadway footprint and the available right-of-way boundaries should be viewed as minimizing potential impacts to driveways and existing improvements. Alternatives which may promote flexibility in accommodating private property improvements within the ROW and maintain existing access should also receive higher scores during analysis.

Criterion 7

Promotes constructability

This criterion is intended to evaluate the temporary construction condition when transitioning from existing conditions to the final build out of the corridor. Alternatives which will simplify project phasing, reduce impacts to traffic, reduce duration(s) of construction, maintain access for vehicles and non-motorized users, and minimize potential temporary impacts to private properties should be interpreted as promoting constructability.

Criterion 8

Maximizes low impact development

This criterion is intended to evaluate the potential to implement low impact development features such as bioretention cells within the planter zones to manage stormwater runoff. Alternatives which provide wider planters next to the sidewalks or avoid eliminating planter lengths should be interpreted as maximizing the potential for low impact development.

Criterion 9

Minimizes environmental impacts

This criterion is intended to evaluate the potential risk to the project for impacts to existing wetlands, steep slopes, and vegetation. Alternatives which minimize impacts to these elements or have the capability to provide additional environmental uplift should be interpreted as minimizing environmental impacts.

Criterion 10

Maximizes the potential for gateways and placemaking

This criterion is intended to evaluate the potential to incorporate community defining gateways and developing a sense of place for the corridor which is above and beyond other user experience characteristics which are evaluated under separate criteria. Alternatives which provide larger footprints for gateway areas and wider planters for urban features should be interpreted as maximizing the potential for gateways and placemaking.

Criterion 11

Minimizes maintenance

This criterion is intended to evaluate the level and ease of maintenance required for each alternative. Alternatives which reduce the level of effort for maintenance tasks on short-term, recurring, and long-term bases should receive higher scores during analysis. While consideration may be given to the efforts required by adjacent property owners, this criterion is primarily intended to evaluate the resulting maintenance conducted by the City.

Criterion 12

Compatibility with future property redevelopment

This criterion is intended to evaluate how the relevant alternatives may interface with the redevelopment of adjacent properties along the project corridor. Alternatives which minimize rework, enhance connecting spaces and access, and best support the desired character of the corridor should receive higher scores.

Criterion 13

Compatibility with future City projects / bus routes

This criterion is intended to evaluate future City projects that connect or overlap with the project corridor and the potential for coordinating with bus routes managed by King County Metro and the Lake Washington School District. Alternatives which will support current City plans for future projects within and adjacent to the project corridor should be scored higher. Alternatives which can provide a greater amount of space for bus stops, bus shelters, and pullout spaces for buses should also receive higher scores.

Criterion 14

Improves access and performance for emergency services

This criterion is intended to evaluate the ability for each alternative to support access for emergency vehicles within the corridor. Alternatives which provide greater width for vehicles to pull to the side of the roadway, provide greater sight lines, and can result in improved response times and access within the project area for emergency responders should receive higher scores.



Appendix B

Criteria Weighting



Criteria Weighting

For some alternatives analyses, it is preferred for the evaluation criteria to be evenly weighted. Through several coordination meetings, collection of public input, and project team discussions, it was determined that a number of specific evaluation criteria would need to be included in the analysis and that many of these would be need to be weighted.

The approached used by the project team was to develop weighting for the criteria from three sources:

- Project Team
- Public Feedback
- City Staff

The project team developed a criteria weighting matrix which evaluated the importance of each individual criterion through head-to-head matchups between the criteria. Criteria with higher levels of importance compared to other criteria then received a higher weighting score.

Public feedback was evaluated through a review of comments received through the design charrette, open houses, neighborhood gatherings, and the stakeholder advisory group. The criteria were categorized into tiers of High, Medium, or Low focus. These were then compared to the project team's weighting results and it was apparent that all items of High focus were similarly weighted. Other criteria expected disparities between the project team and public weighting. In these cases, no changes were made to the initial project team weighting as it was determined that some of these items were important to address City concerns or project requirements.

Upon completion of the initial weighting by the project team and compilation of public feedback, the matrix was provided to City staff for review and input. Comments from City staff were compiled and then reviewed during a project coordination meeting on October 27, 2016. At this meeting, the criteria weighting matrix was revised and finalized.

Attached Document:

- Final Weighting – Adjusted to Reflect Project Team, City, and Public Input

Criteria Weighting

Establishing Criteria Weights by Prioritization

Improves pedestrian safety / access / experience	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Improves bike safety / access / experience	B	D	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Improves vehicular safety / access / experience	C	C/D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Minimizes traffic congestion	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Minimizes right-of-way acquisition	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E/O
Minimizes impacts to private properties	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Promotes constructability	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G/N
Maximizes low impact development	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Minimizes environmental impacts	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I/O
Maximizes potential for gateways and placemaking	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J
Minimizes maintenance	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
Compatibility with future property redevelopment	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M/N
Compatibility with future City projects / bus routes	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Improves access and performance for emergency services	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

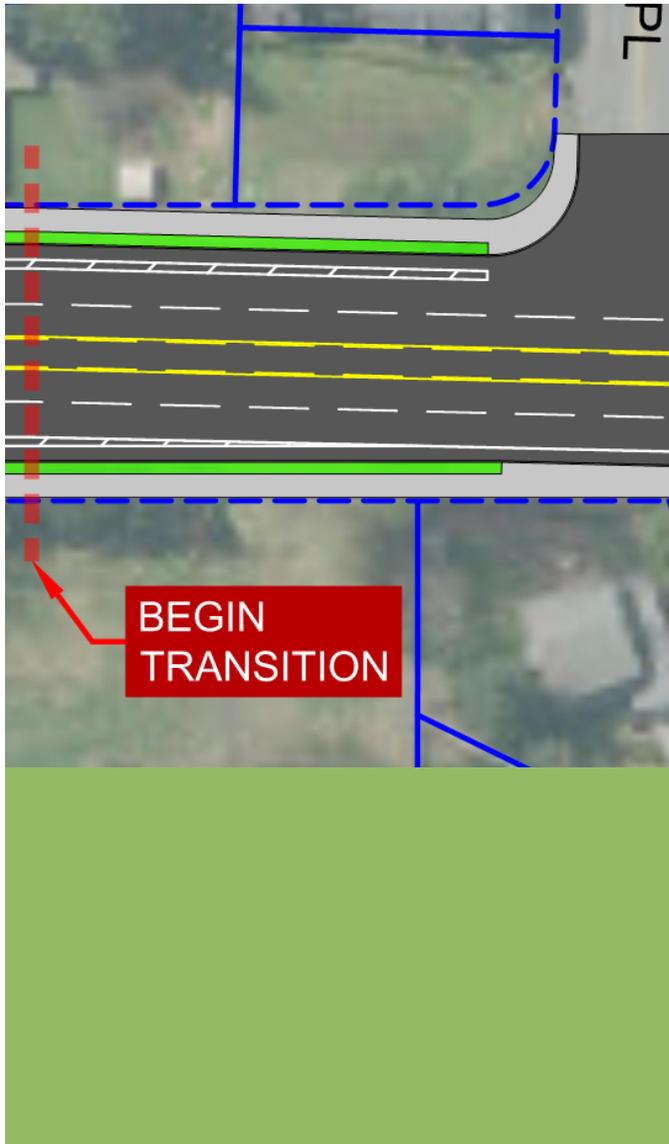
Adjusted Criteria Weighting

A	13
B	12
C	11.5
D	13.5
E	9.5
F	6
G	3
H	5.5
I	7.5
J	1
K	5.5
M	4
N	4
O	9

High
High
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Medium
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Medium
Low

Notes

1. Each criteria receives 1 point when entered as the higher priority in each head-to-head comparison.
2. Head-to-head comparisons where the criteria are tied in importance result in each criterion receiving 0.5 points.
3. The resulting weight for each criterion is determined by starting with 1 point and adding the scored points from each head-to-head comparison.
4. Public weighting was based on input received from the design charrette, open houses, stakeholder advisory group, and neighborhood events. Each criteria was assigned a weight of High, Medium, or Low depending on frequency of comments and level of importance placed on each item in the public feedback to date.



Appendix C

Materials for Alternatives Screening

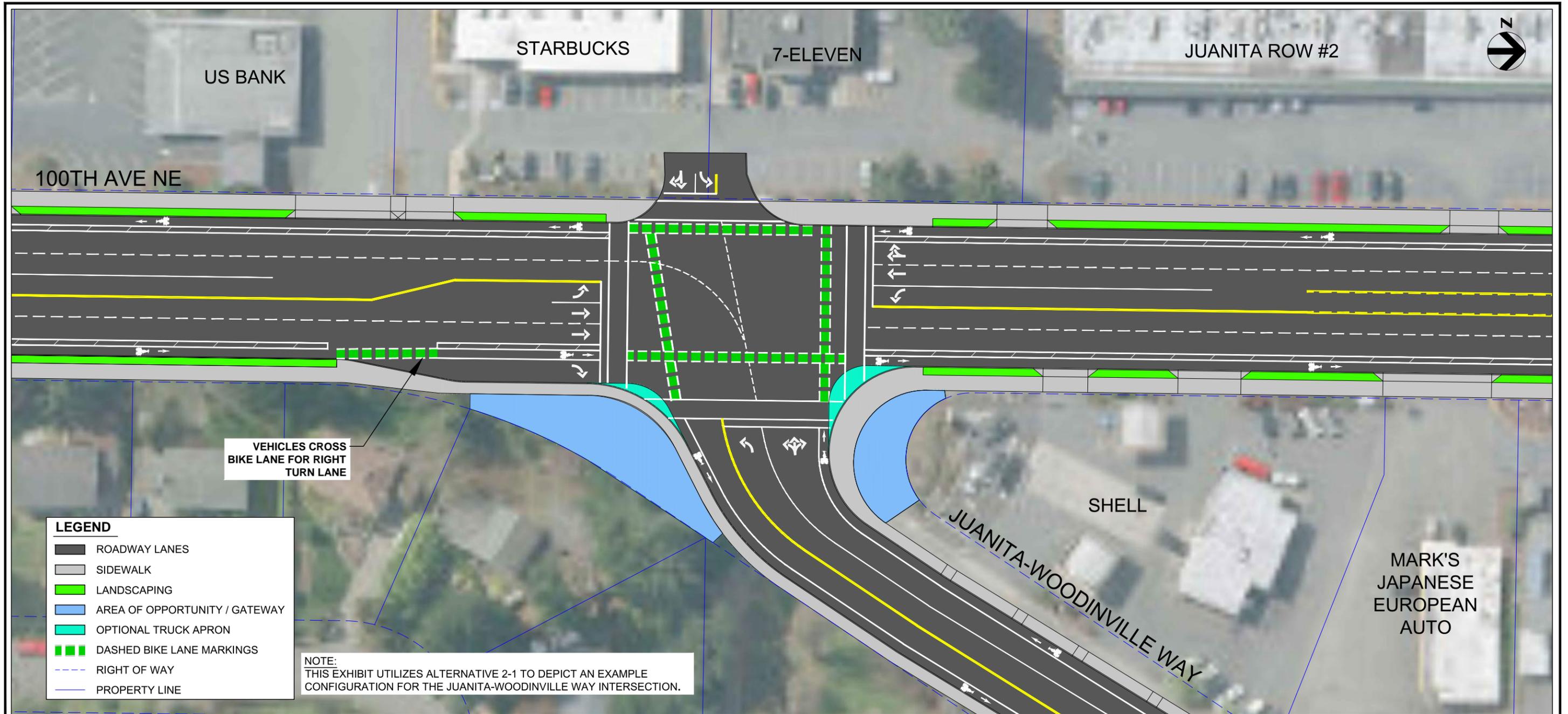


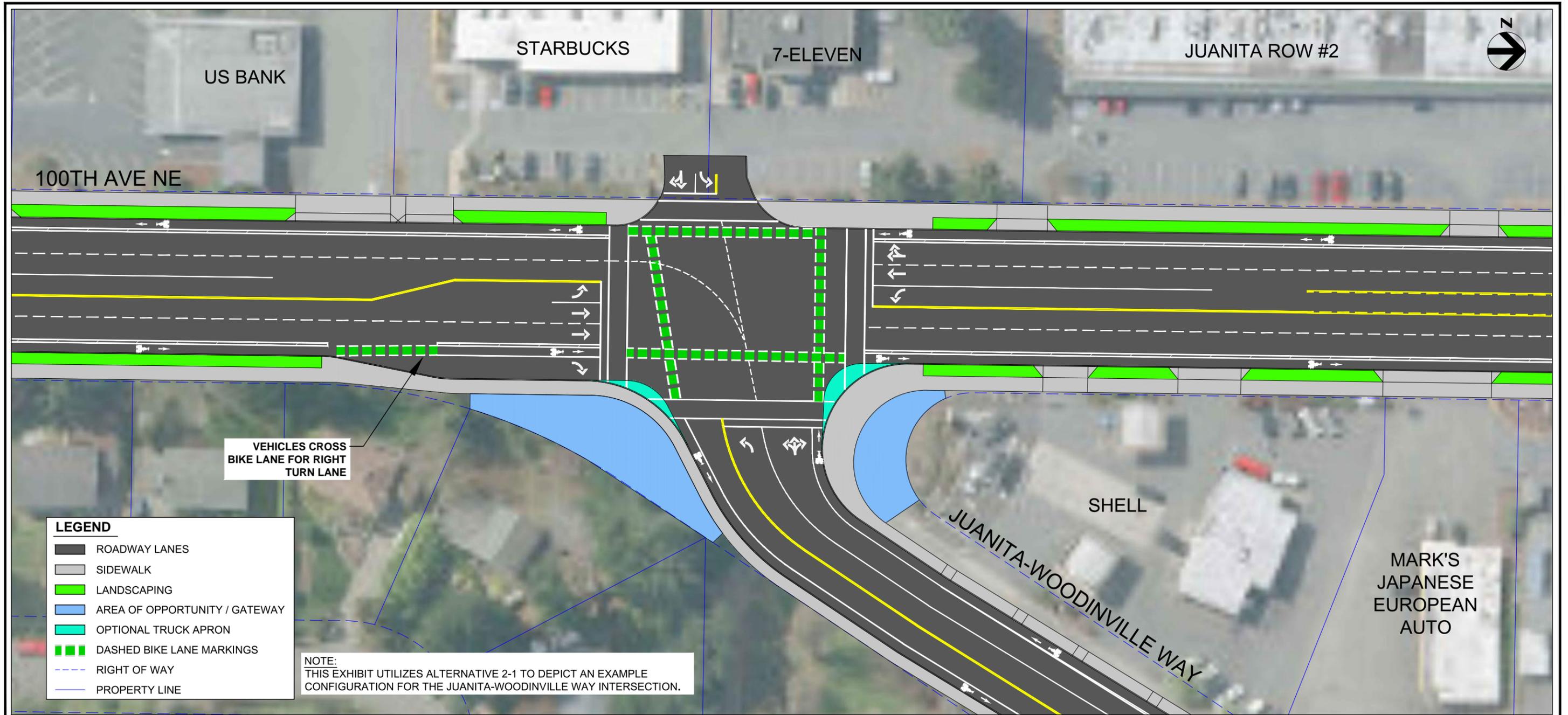
Reference Materials from Alternatives Screening

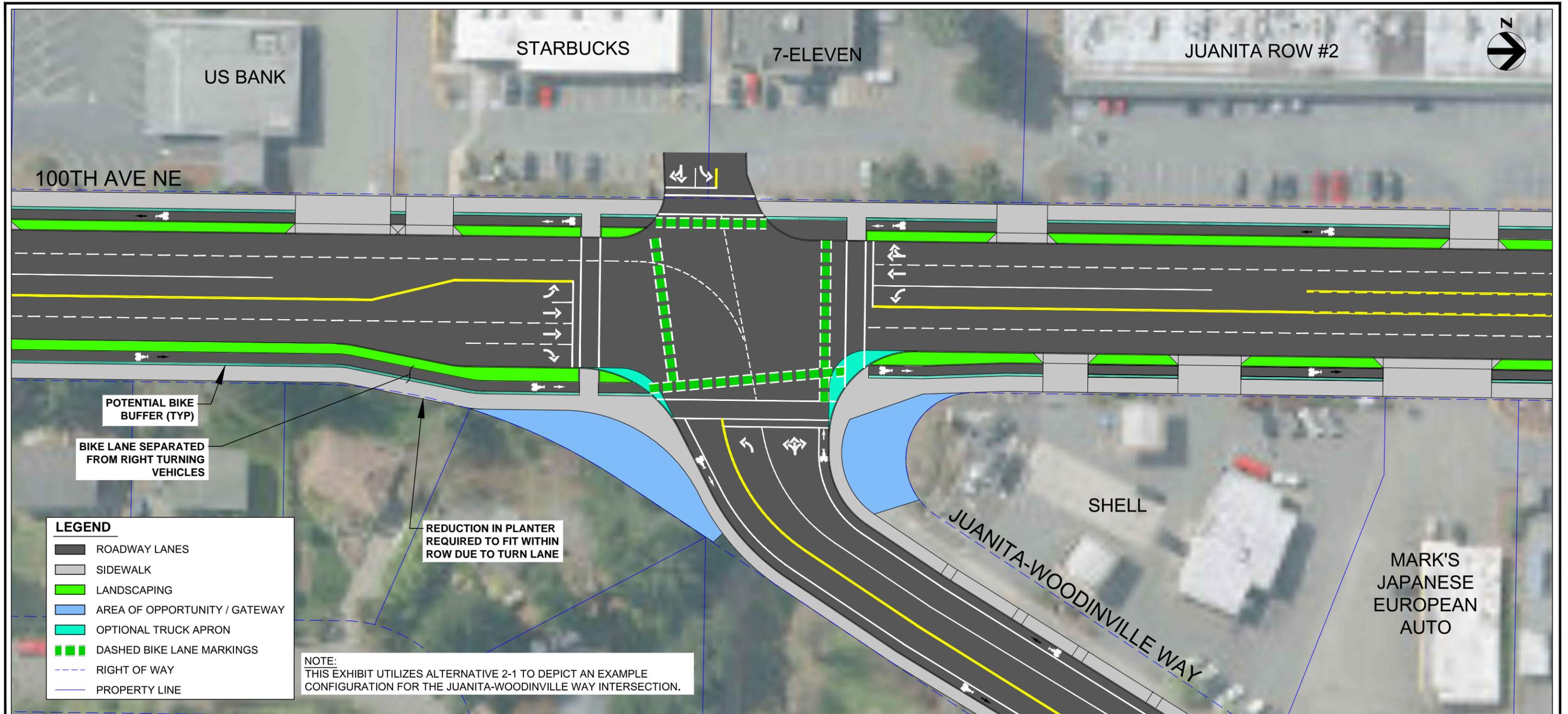
Alternative 1 - Non-Motorized Section

Alternative 1 – Non-Motorized Section

Alternative	Section	Pros	Cons	Notes
<p>Alternative 1-1 On-Street Bike Lane with 4-ft Planter/LID</p>		<ul style="list-style-type: none"> • Wide sidewalk • 8-ft bike lane allows for bikes to pass within the lane • Greater horizontal separation between bikes and motor vehicles when compared to Alternative 1-2 • Configuration may allow for buses to stop outside the vehicular travel lanes • On-street bike lane is similar to existing bike lanes north and south of the project corridor and on connecting side streets • Provides greatest dedicated width to non-motorized users (16-ft out of 20.5-ft) 	<ul style="list-style-type: none"> • Largest PGIS width (73-ft) • Least amount of space available for low impact development facilities for stormwater management within 4-ft planter • Minimal planter space may reduce opportunities to incorporate urban features without encroaching into the sidewalk 	<ol style="list-style-type: none"> 1. Bike lane buffers will utilize the available bike lane widths shown in each alternative. 2. The minimum bike lane width for this project is 5 ft. A wider bike lane width of 6.5 ft will allow for passing within the bike lane. 3. When bioretention cells are present, 6 inches of width from the adjacent sidewalk (Alternatives 1-1 and 1-2) and the adjacent bike lane (Alternative 1-3) will be used for a curb wall. 4. Bioretention cells will manage both water quality and flow control for stormwater runoff. 5. Property interfaces will be similar across all non-motorized options due to the use of a standard corridor width. 6. Each alternative is assumed to have similar impacts or costs when accounting for retaining walls, driveways, and utilities. 7. All alternatives maintain a 1-ft transition zone between the outer edge of the 20.5-ft non-motorized width and the ROW boundary. 8. These sections are intended to provide a baseline for design. The preferred alternative may be modified during design to address limited ROW, property interfaces, reduce costs, or other constraints at individual locations along the project corridor.
<p>Alternative 1-2 On-Street Bike Lane With 6-ft Planter/LID</p>		<ul style="list-style-type: none"> • Wide sidewalk • Bike lane width may allow for bikes to pass within the lane • Slightly reduced PGIS width (70-ft) compared to Alternative 1-1 • Wider planter maximizes space for LID facilities and locating urban features, and utility lids • Configuration may allow for buses to stop outside the vehicular travel lanes • On-street bike lane is similar to existing bike lanes north and south of the project corridor and on connecting side streets 	<ul style="list-style-type: none"> • Reduces width for bikes • Reduces or eliminates buffer distance between bikes and motor vehicles • Increased maintenance area due to 6-ft planter/LID width • Provides the least width directly dedicated to non-motorized users (14-ft out of 20.5-ft) 	
<p>Alternative 1-3 Sidewalk-Level Bike Lane with 5-ft Planter/LID</p>		<ul style="list-style-type: none"> • Wide sidewalk • 7.5-ft bike lane is horizontally and vertically separated from motor vehicles • Bike lane width allows for bikes to pass within the bike lane <u>and</u> for a smaller buffer to pedestrians • Significantly reduced PGIS width (57-ft) compared to Alternatives 1-1 and 1-2 • Moderate planter/LID width • Improved bike access to adjacent properties • May reduce length of crosswalks on 100th 	<ul style="list-style-type: none"> • Non-motorized configuration differs from segments of 100th Ave north and south of the project as well as connecting side streets • Configuration will require all bus stops to take place within a vehicular travel lane • Locates higher speed bicyclists next to pedestrians • May require modified curb ramp designs in some locations 	



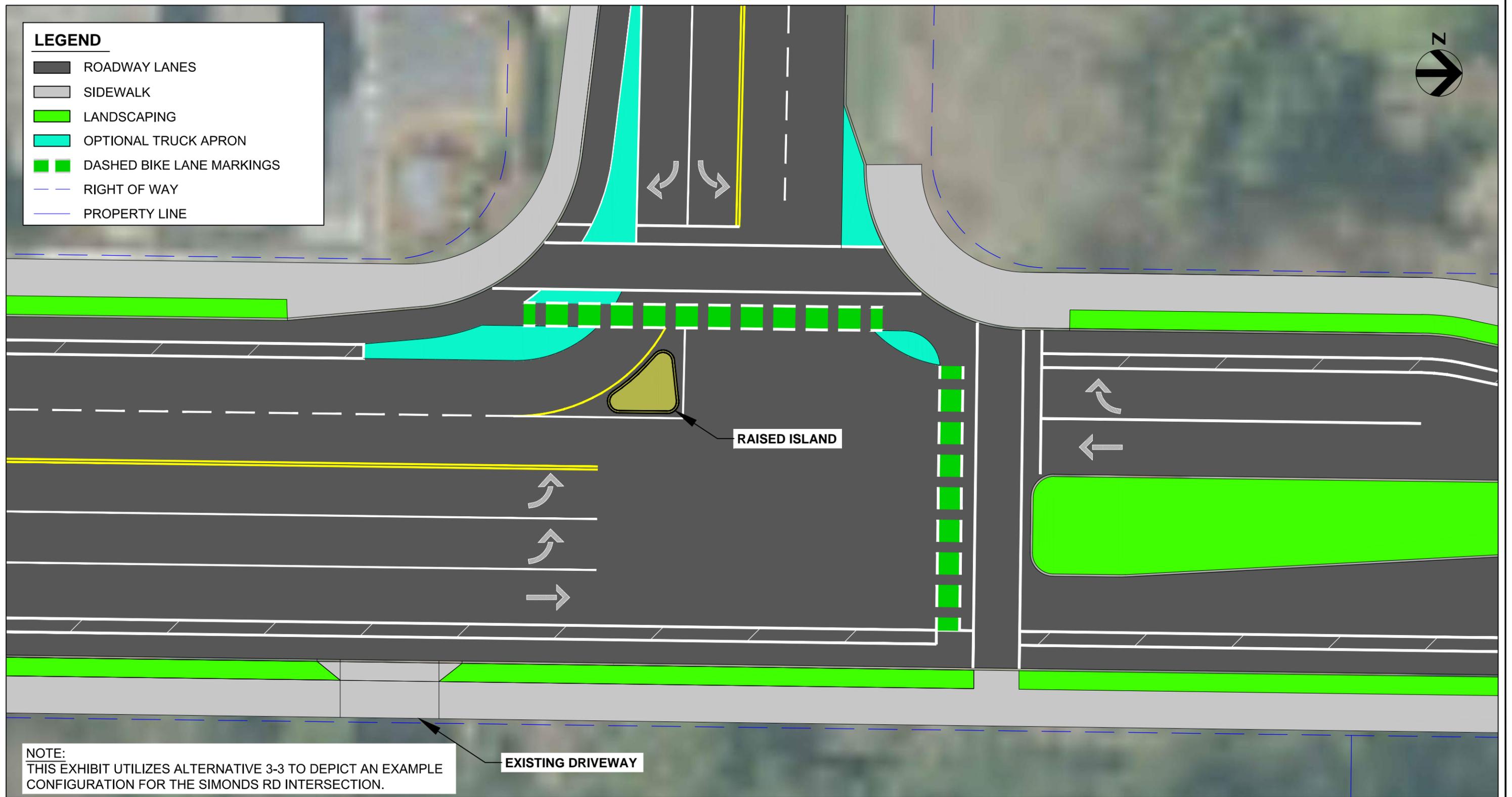




Note - This page has been modified to print as 11x17.

LEGEND

-  ROADWAY LANES
-  SIDEWALK
-  LANDSCAPING
-  OPTIONAL TRUCK APRON
-  DASHED BIKE LANE MARKINGS
-  RIGHT OF WAY
-  PROPERTY LINE



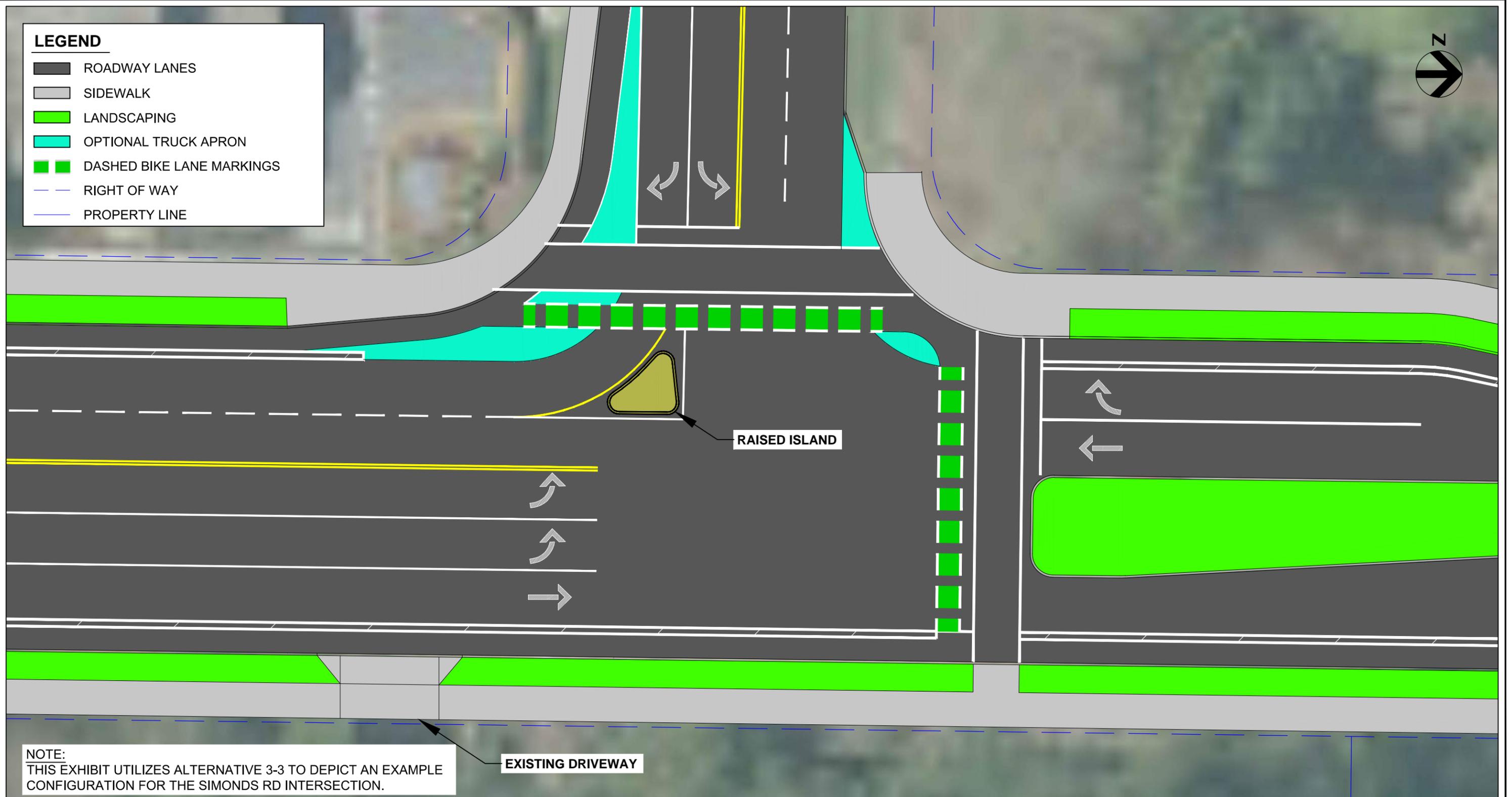
NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVE 3-3 TO DEPICT AN EXAMPLE
CONFIGURATION FOR THE SIMONDS RD INTERSECTION.

EXISTING DRIVEWAY

RAISED ISLAND

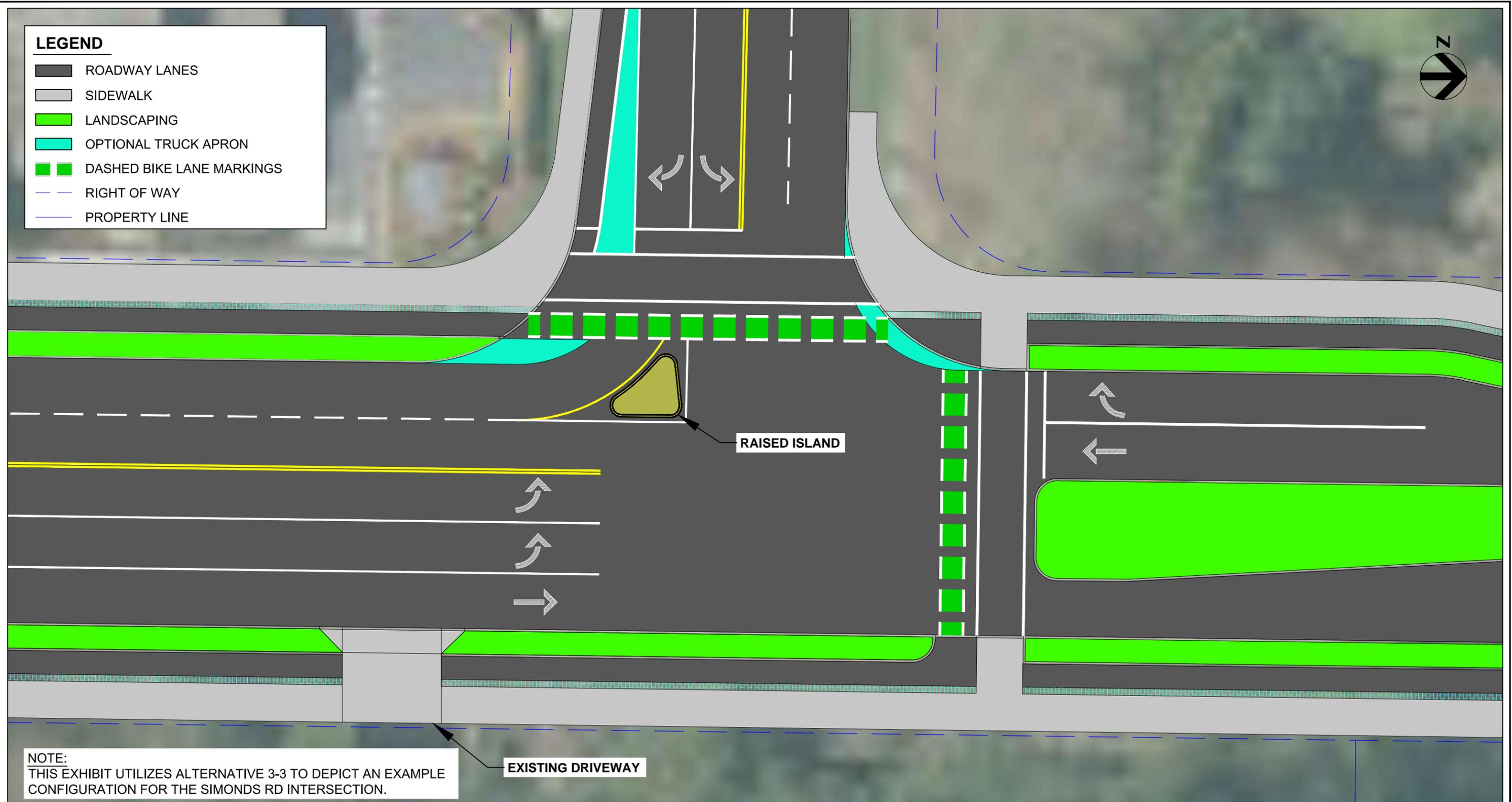
LEGEND

- ROADWAY LANES
- SIDEWALK
- LANDSCAPING
- OPTIONAL TRUCK APRON
- DASHED BIKE LANE MARKINGS
- RIGHT OF WAY
- PROPERTY LINE



LEGEND

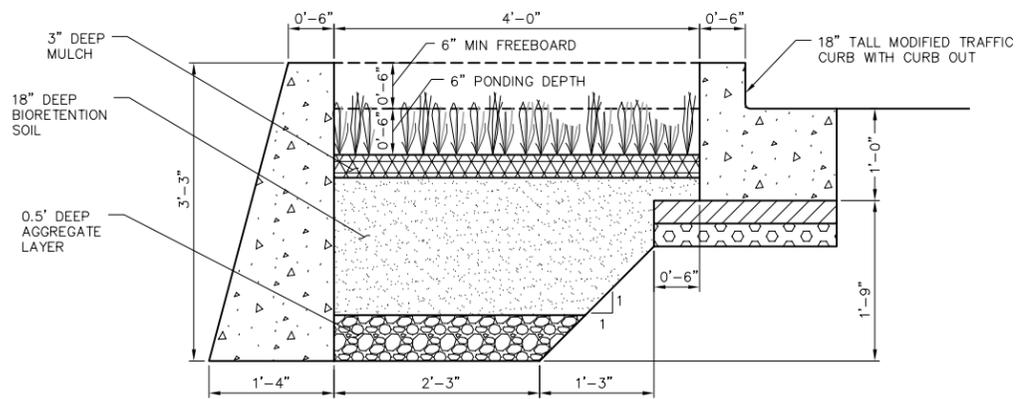
- ROADWAY LANES
- SIDEWALK
- LANDSCAPING
- OPTIONAL TRUCK APRON
- DASHED BIKE LANE MARKINGS
- RIGHT OF WAY
- PROPERTY LINE



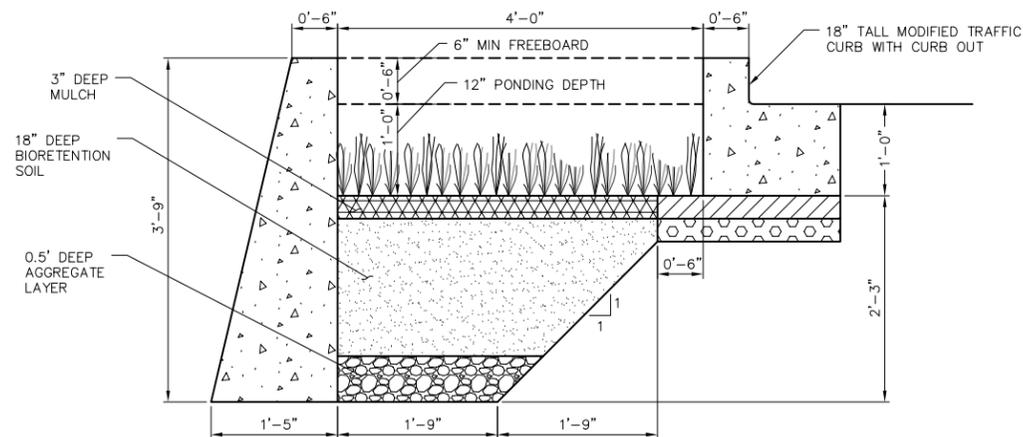
NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVE 3-3 TO DEPICT AN EXAMPLE CONFIGURATION FOR THE SIMONDS RD INTERSECTION.

EXISTING DRIVEWAY

RAISED ISLAND



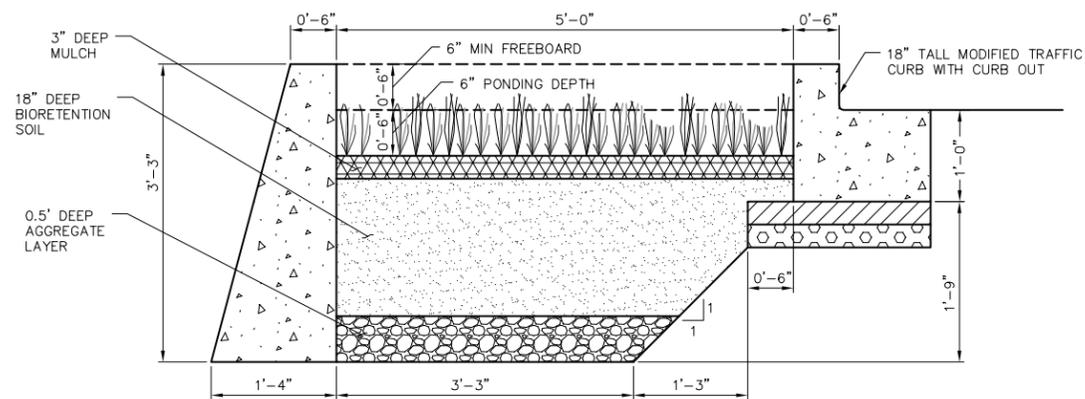
TYPICAL 4' WIDE BIORETENTION WITH 6" PONDING
NOT TO SCALE



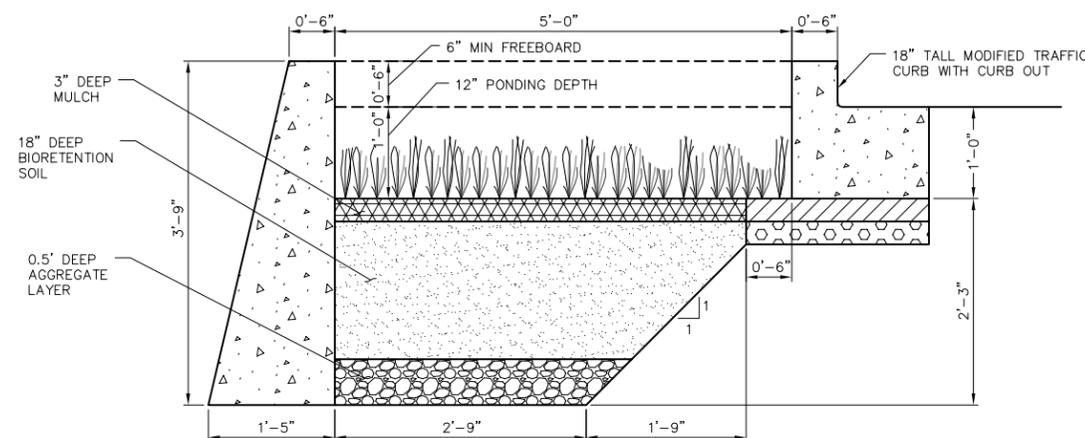
TYPICAL 4' WIDE BIORETENTION WITH 12" PONDING
NOT TO SCALE



TYPICAL BIORETENTION EXAMPLE
NOT TO SCALE

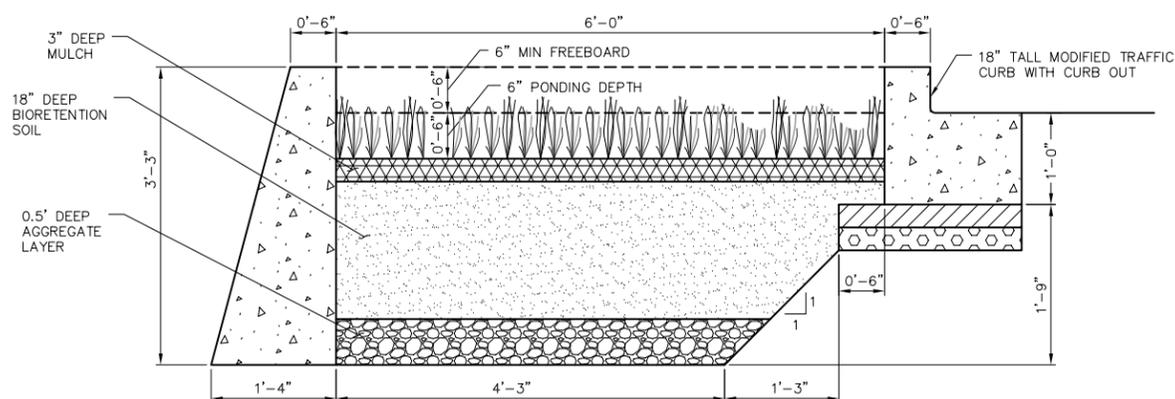


TYPICAL 5' WIDE BIORETENTION WITH 6" PONDING
NOT TO SCALE

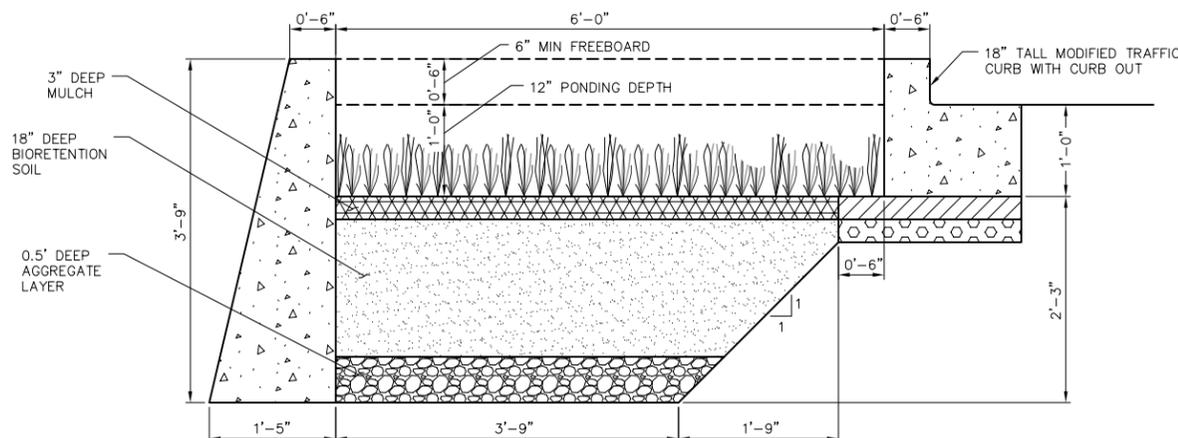


TYPICAL 5' WIDE BIORETENTION WITH 12" PONDING
NOT TO SCALE

Ponding Depth (inches)	Required Bioretention Planter Strip Length			
	Planter Strip Width (feet)			Total Available
	Alt 1-1 4	Alt 1-1 4	Alt 1-3 5	
6	4,542	2,903	2,837	4,557
12	3,186	2,037	1,990	



TYPICAL 6' WIDE BIORETENTION WITH 6" PONDING
NOT TO SCALE



TYPICAL 6' WIDE BIORETENTION WITH 12" PONDING
NOT TO SCALE

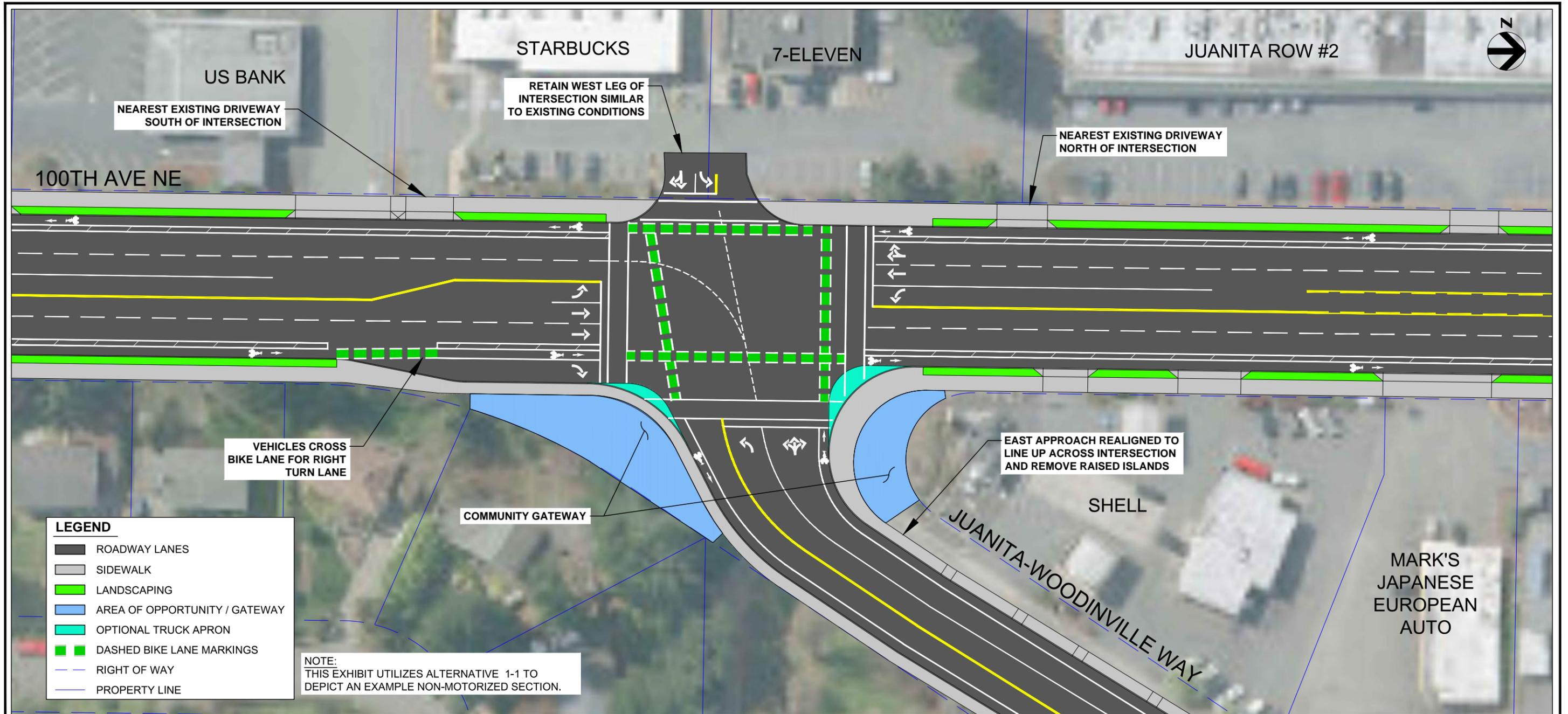
Reference Materials from Alternatives Screening

Alternative 2 - Juanita-Woodinville Way Intersection

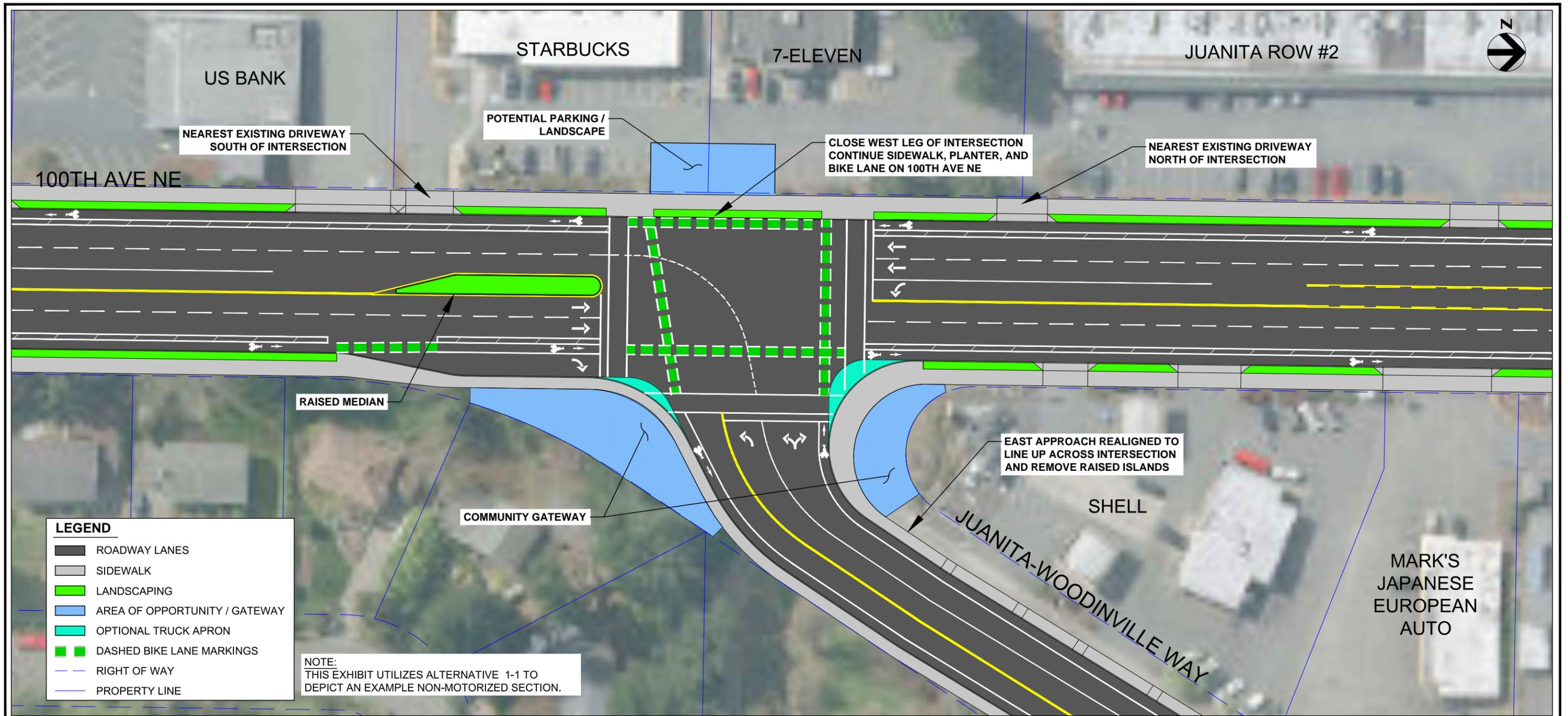
Alternative 2 – Juanita-Woodinville Way Intersection

Alternative	Plan View	LOS	Pros	Cons
Alternative 2-1 Realign East Approach, Retain West Leg		LOS AM – C LOS PM – C	<ul style="list-style-type: none"> Reduces intersection skew Reduces crossing distances for non-motorized users Maximizes the area on the SE and NE corners for gateway and placemaking features Significantly improves level of service No ROW acquisition required 	<ul style="list-style-type: none"> Does not eliminate intersection skew on east approach Will not resolve issues with Starbucks drive-thru queuing Requires extended reconstruction along Juanita-Woodinville Way to realign the intersection approach
Alternative 2-2 Realign East Approach, Close West Leg		LOS AM – B LOS PM – C	<ul style="list-style-type: none"> Reduces intersection skew Reduces crossing distances for non-motorized users Improves intersection operations and safety by closing west approach Maximizes the area on the SE and NE corners for gateway and placemaking features Significantly improves level of service No ROW acquisition required 	<ul style="list-style-type: none"> Does not eliminate intersection skew on east approach Results in access impacts to adjacent businesses Requires extended reconstruction along Juanita-Woodinville Way to realign the intersection approach
Alternative 2-3 Retain East Alignment with Islands, Retain West Leg		LOS AM – D LOS PM – F	<ul style="list-style-type: none"> Reconfigured islands will support turning movements and accommodate bikes Minimizes reconstruction for Juanita-Woodinville Way No ROW acquisition required 	<ul style="list-style-type: none"> Does not incorporate public input which supports removal of raised islands Requires longer and more complex crossings for non-motorized users Does not provide an acceptable level of service

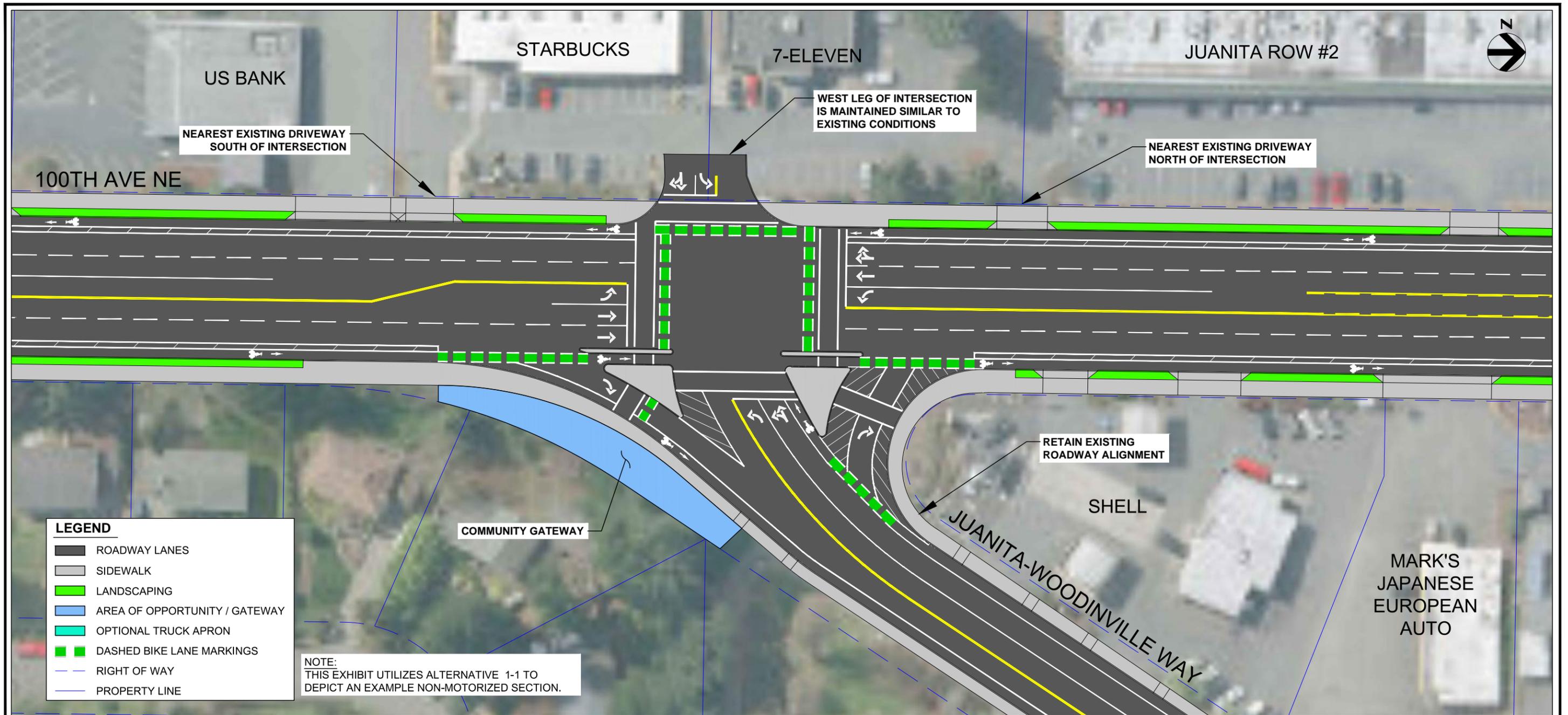
Alternative	Plan View	LOS	Pros	Cons
<p>Alternative 2-4 Retain East Alignment with Islands, Close West Leg</p>		<p>LOS AM – B LOS PM – E</p>	<ul style="list-style-type: none"> Reconfigured islands will support turning movements and accommodate bikes Improves intersection operations and safety, by closing west approach Minimizes reconstruction for Juanita-Woodinville Way No ROW acquisition required 	<ul style="list-style-type: none"> Does not incorporate public input which supports removal of raised islands Requires longer and more complex crossings for non-motorized users Results in access impacts to adjacent businesses
<p>Alternative 2-5 Realign East Approach to Match to NE 134th Ct</p>		<p>LOS AM – B LOS PM - C</p>	<ul style="list-style-type: none"> Improves intersection operations and safety by relocating access away from the Starbucks drive-thru Maintains signalized access for a west approach Provides a configuration without islands Eliminates intersection skew on east approach Shifted roadway alignment allows for a large gateway / community space SE of the intersection 	<ul style="list-style-type: none"> Significant ROW acquisition or full property take for gas station parcel Increased potential to encounter hazardous materials Relocated west approach may not be desirable for property owners on the west side of the corridor Maintaining connectivity to an existing driveway may bisect the available gateway / community space SE of the intersection Revised access to gas station parcel may require coordination for shared driveways with adjacent property



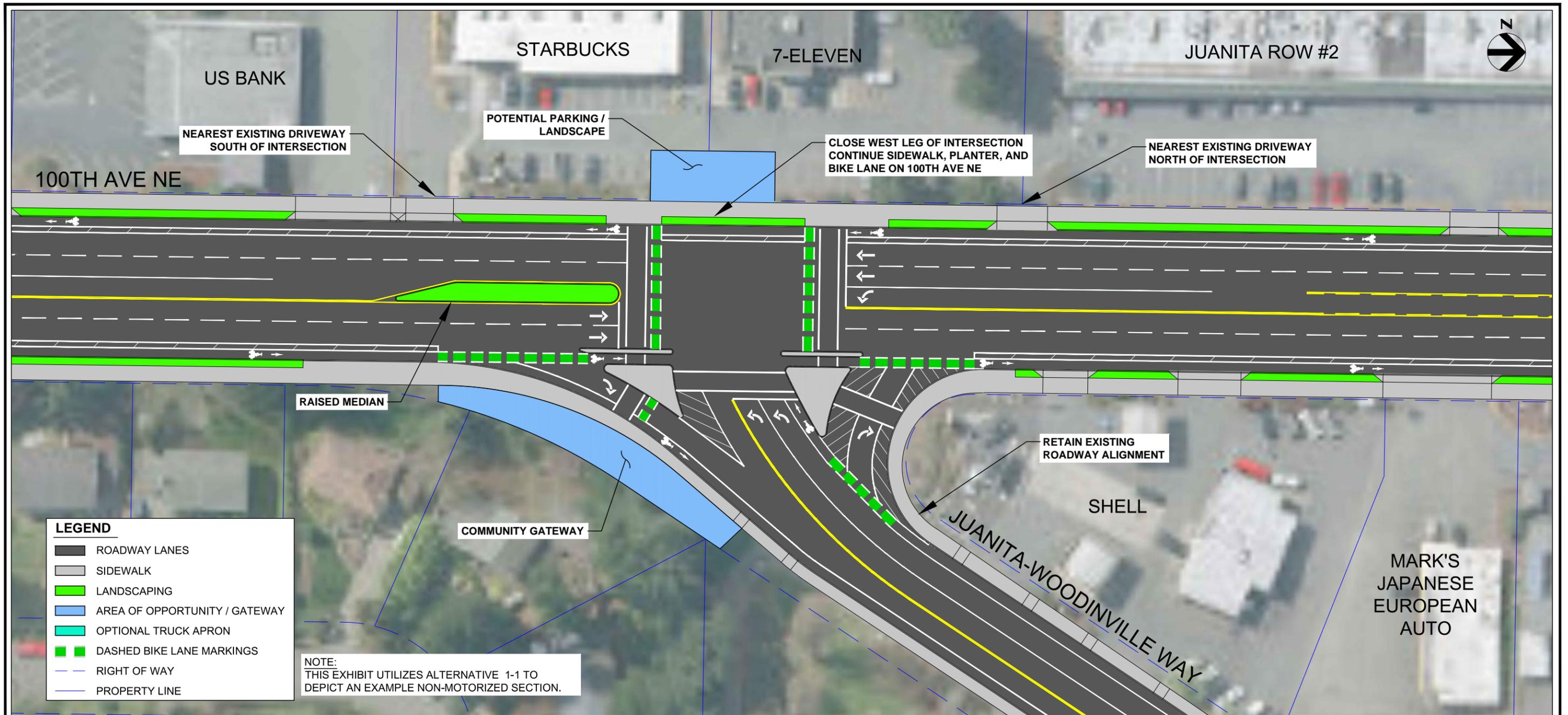
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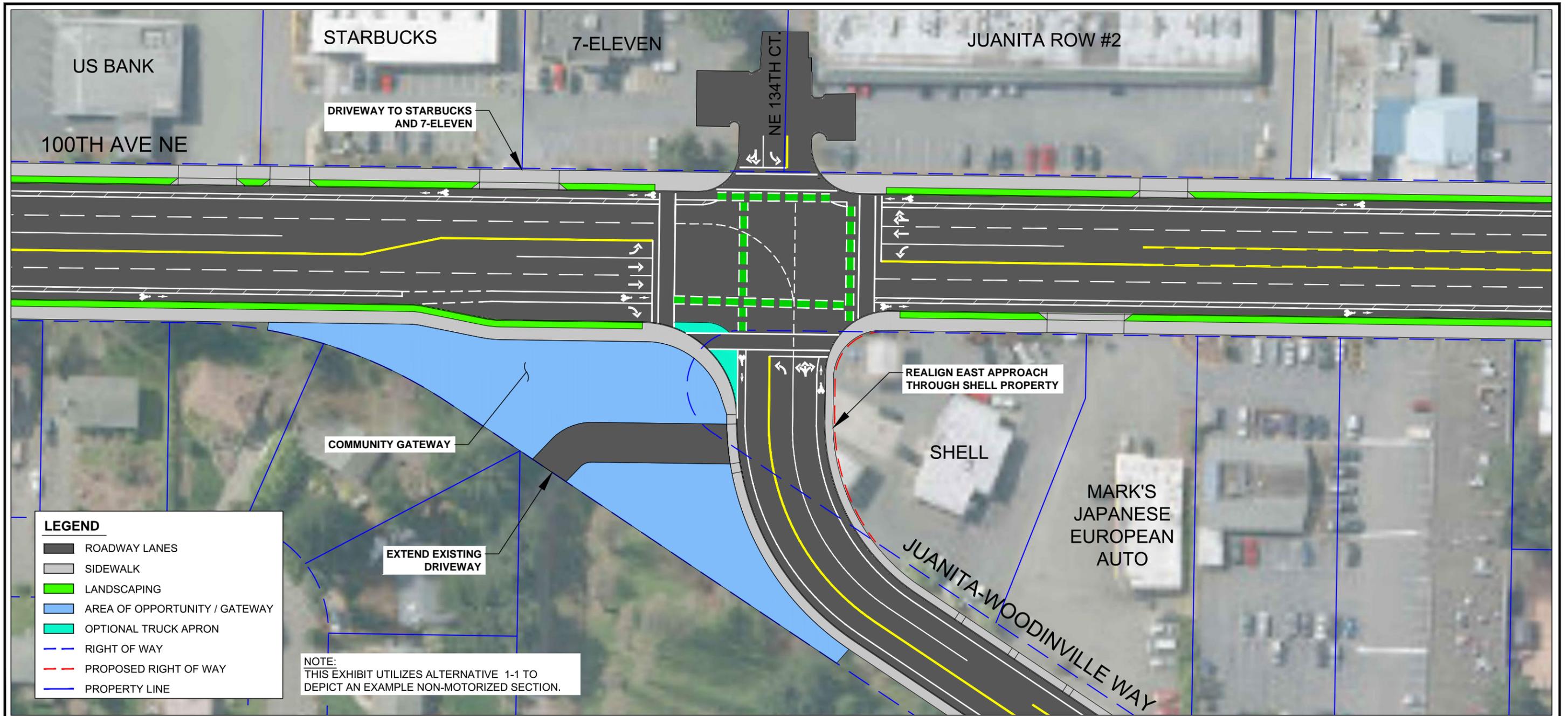
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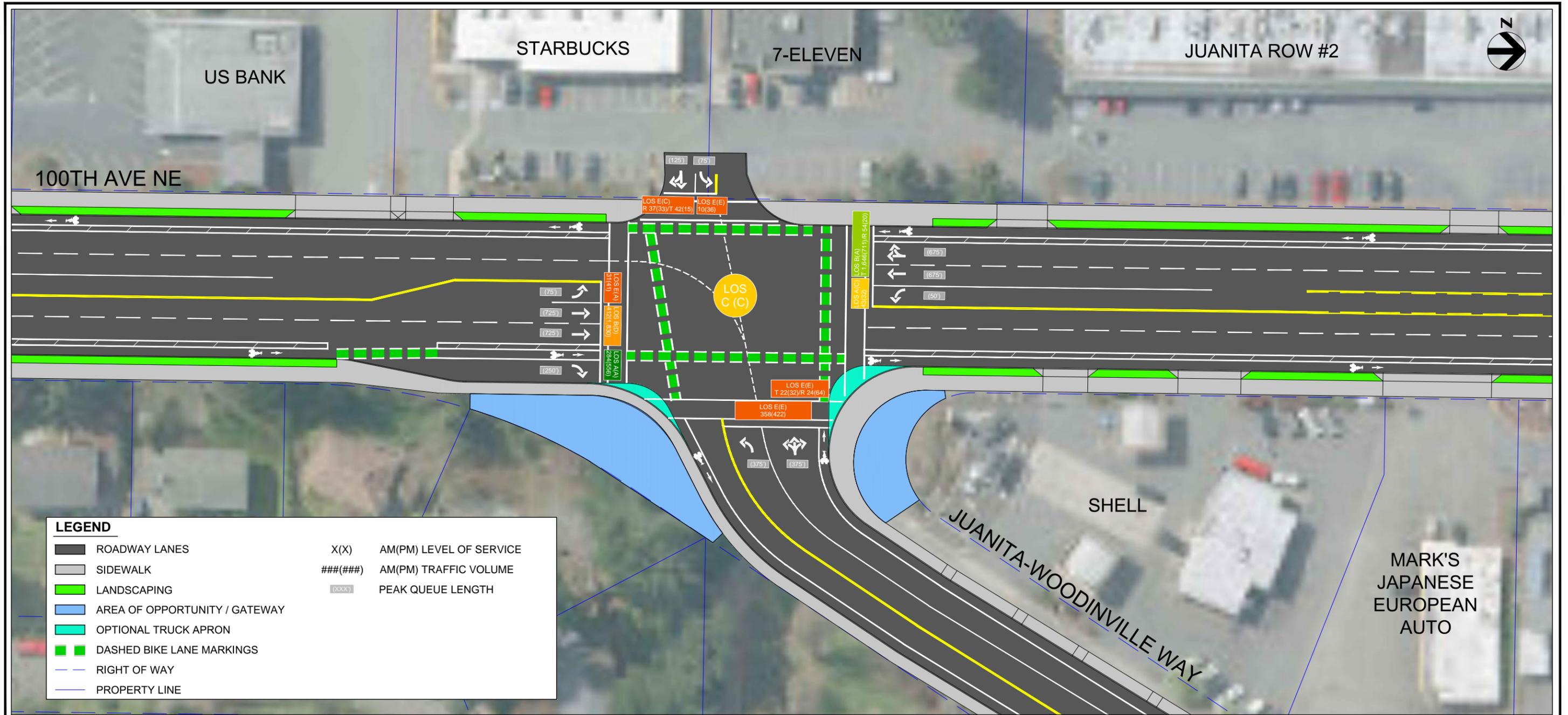
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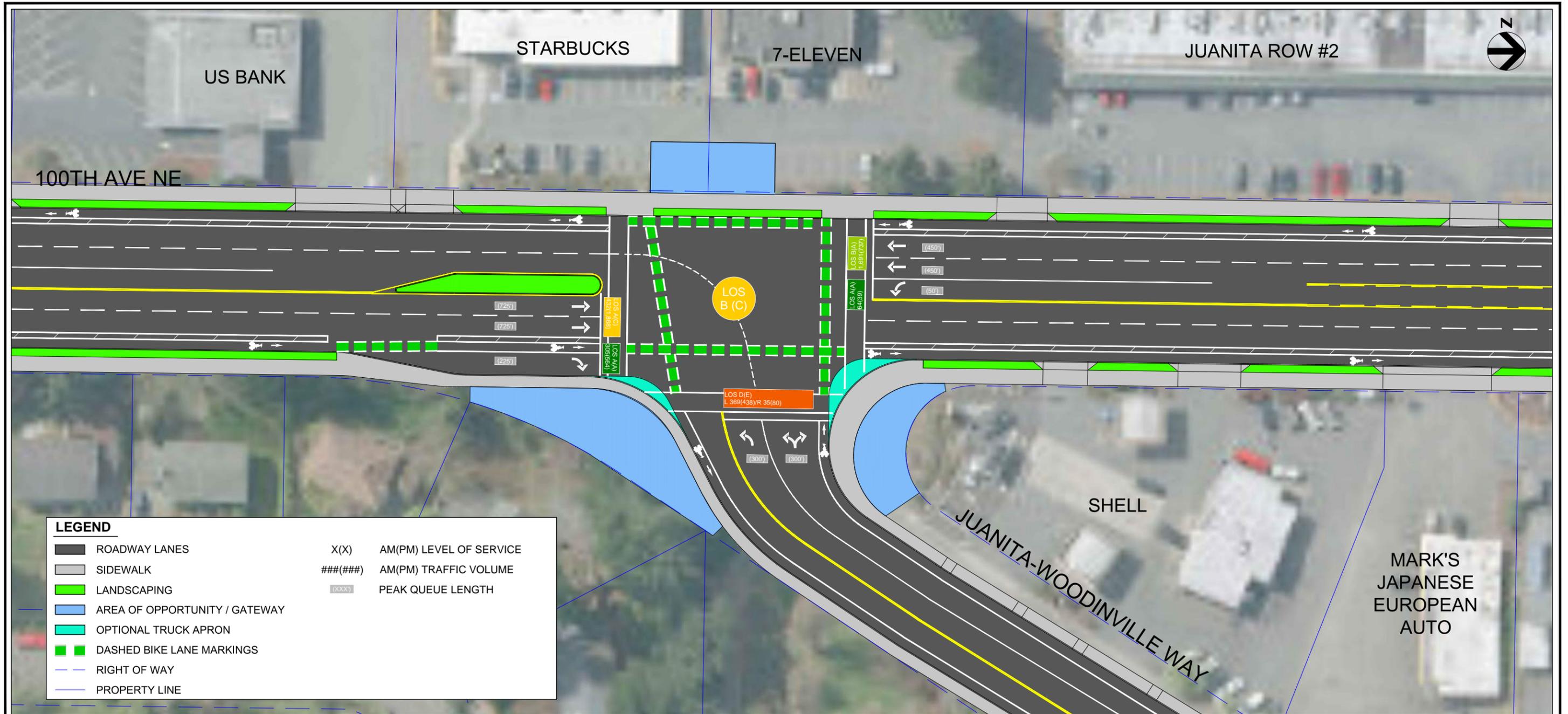


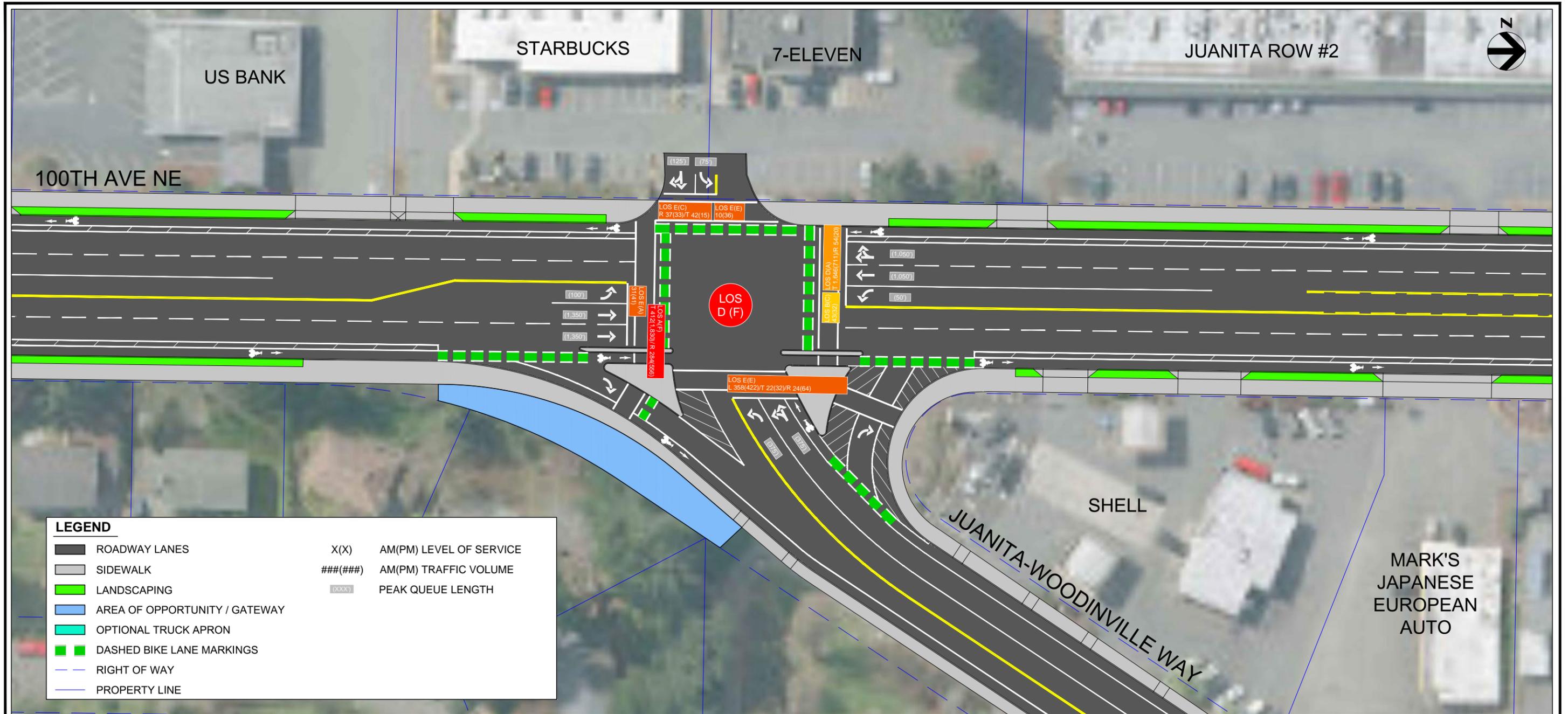
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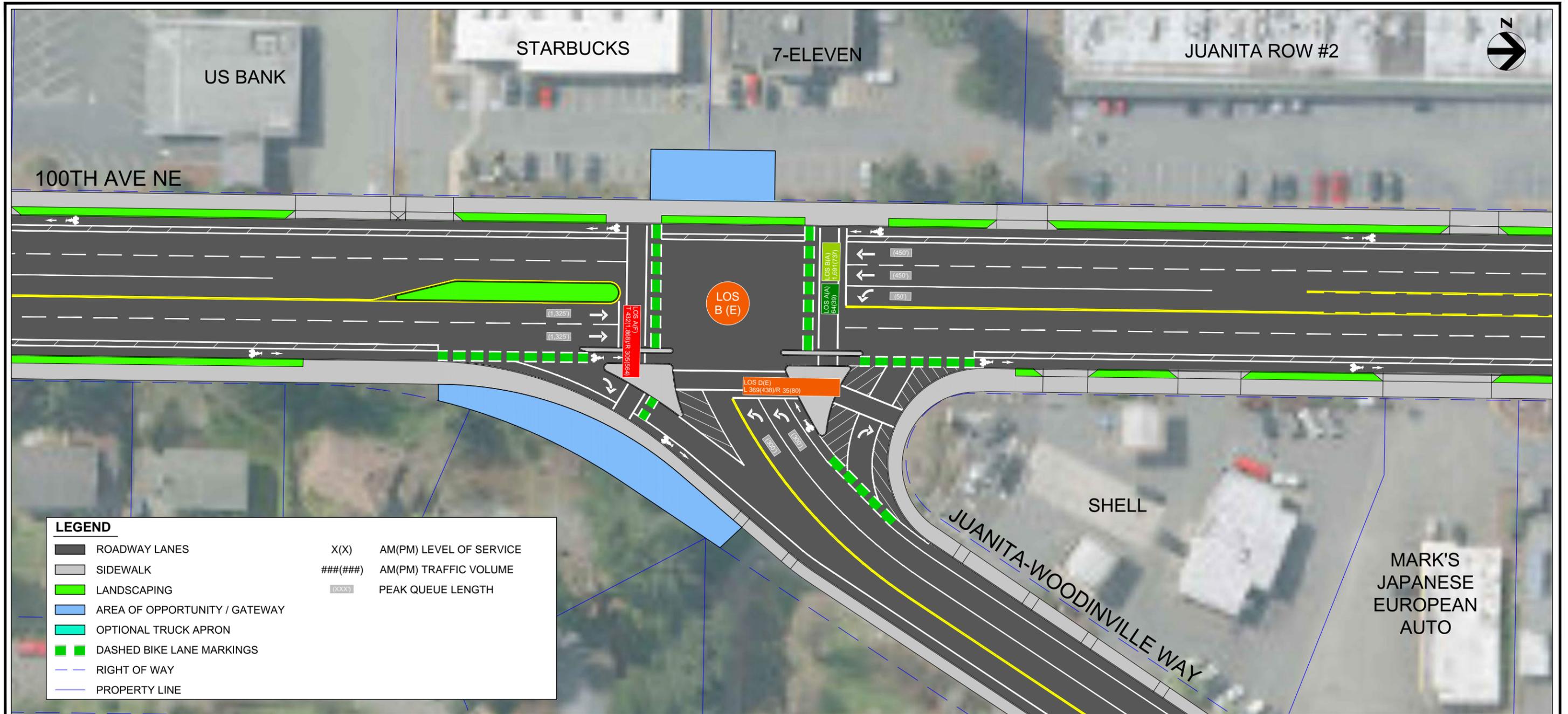
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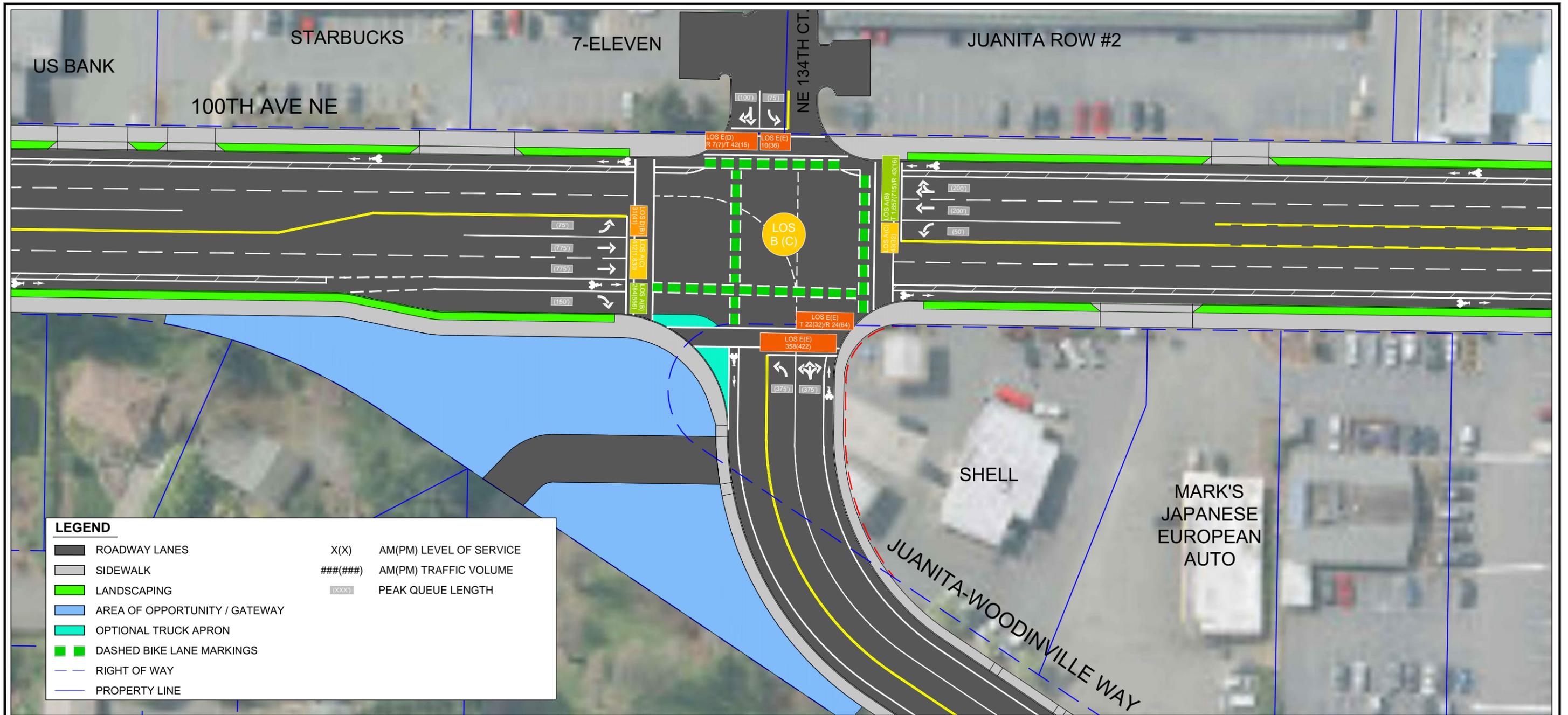




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Note - This page has been modified to print as 11x17.



100TH AVE NE Corridor Design



ALTERNATIVE 2-5
JUANITA-WOODINVILLE WAY INTERSECTION
REALIGN EAST APPROACH TO MATCH TO NE 134TH CT

PREPARED
 10/24/2016

SCALE 1" = 20'

Note - This page has been modified to print as 11x17.

JUANITA WOODINVILLE WAY / 100TH AVE NE ALTERNATIVES

LEGEND

XX - AM (XX) - PM

- volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles of 95th percentile traffic to account for the effects of spillover between cycles

m - volume for the 95th percentile queue is metered by an upstream signal

	Daily Volumes (Vehicles per Hour)	Geometry	LOS	Average Delay (Seconds per Vehicle)	95th Percentile Queue Length (Feet)	Pros/Cons
<h3>2015 Existing Condition</h3>						
<h3>2035 Alternative 2-1</h3> <p>Realign east approach, retain west leg</p>						<p>PROS</p> <ul style="list-style-type: none"> No ROW acquisition required Significantly improves level of service Reduces crossing distance for non-motorized users <p>CONS</p> <ul style="list-style-type: none"> Will not resolve issues with Starbucks drive-through queuing Requires reconstruction on Juanita-Woodinville Way
<h3>2035 Alternative 2-2</h3> <p>Realign east approach, close west leg</p>						<p>PROS</p> <ul style="list-style-type: none"> No ROW acquisition required Significantly improves level of service Closing west approach improves intersection operations/safety <p>CONS</p> <ul style="list-style-type: none"> Results in access impacts to adjacent business Requires reconstruction on Juanita-Woodinville Way
<h3>2035 Alternative 2-3</h3> <p>Retain east alignment with islands, retain west leg Equivalent to 2035 No-Build</p>						<p>PROS</p> <ul style="list-style-type: none"> No ROW acquisition required Reconfigured islands support turn. movements; accomm. bikes Minimizes reconstruction on Juanita-Woodinville Way <p>CONS</p> <ul style="list-style-type: none"> Longer, more complex crossings for non-motorized users Does not provide an acceptable level of service
<h3>2035 Alternative 2-4</h3> <p>Retain east alignment with islands, close west leg</p>						<p>PROS</p> <ul style="list-style-type: none"> No ROW acquisition required Reconfigured islands support turn. movements; accomm. bikes Closing west approach improves intersection operations/safety <p>CONS</p> <ul style="list-style-type: none"> Longer, more complex crossings for non-motorized users Results in access impacts to adjacent business
<h3>2035 Alternative 2-5</h3> <p>Realign east approach to match to NE 134th Ct.</p>						<p>PROS</p> <ul style="list-style-type: none"> Significantly improves level of service Away from drive-thru; improves intersection operations/safety Allows for large gateway/community space SE of intersection <p>CONS</p> <ul style="list-style-type: none"> Significant ROW acquisition Increased potential to encounter hazardous materials Relocated west approach may not be desirable for prop. owners

Reference Materials from Alternatives Screening

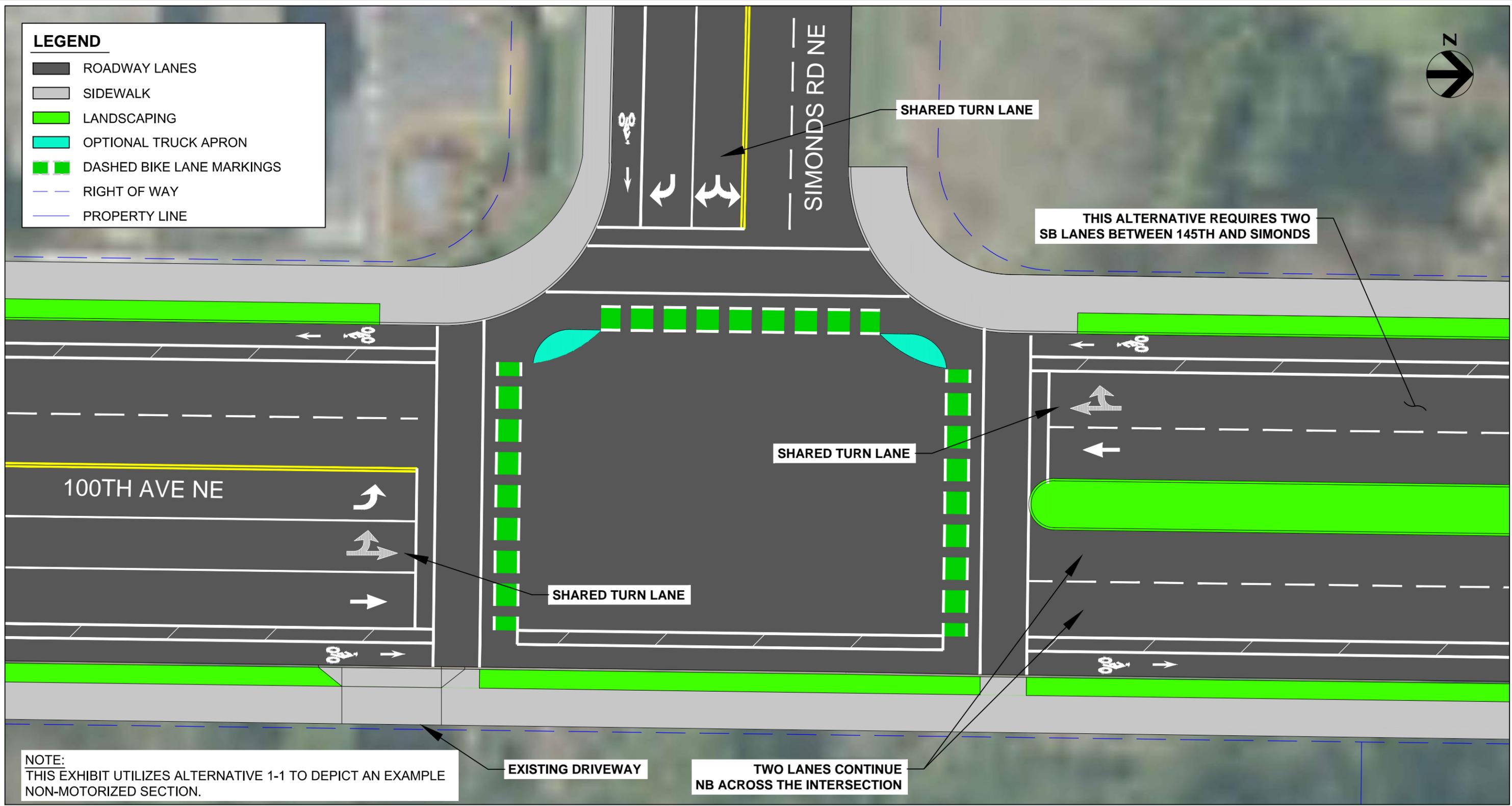
Alternative 3 - Simonds Rd Intersection

Alternative 3 – Simonds Rd Intersection

Alternative	Plan View	LOS	Pros	Cons
<p>Alternative 3-1 Split Phase (Includes NB Shared Left-Thru Lane)</p>		<p>LOS AM – E LOS PM – D</p>	<ul style="list-style-type: none"> Maintains two NB lanes through the intersection Allows for variable operation of NB shared left-thru lane similar to existing approach to NE 124th St 	<ul style="list-style-type: none"> Split phase condition degrades level of service Two SB lanes are required between 145th and Simonds Requires a shared thru-right on SB approach Dual right on east approach is required Significant storage length for NB left turn lanes is required
<p>Alternative 3-2 Dual Protected Left for NB Approach</p>		<p>LOS AM – D LOS PM – D</p>	<ul style="list-style-type: none"> Simplifies signal phasing Reducing to single NB lane allows for larger median and reduced PGIS area 	<ul style="list-style-type: none"> Reduces NB thru traffic to a single lane Two SB lanes are required between 145th and Simonds Requires a shared thru-right on SB approach Dual right on east approach is required
<p>Alternative 3-3 Free Right from Simonds Rd to SB 100th</p>		<p>LOS AM – D LOS PM – C</p>	<ul style="list-style-type: none"> Produces the best LOS Minimizes project footprint on the SB side of 100th between 145th and Simonds Eliminates the need for a dual right condition on the east approach Minimizes storage length for NB left turn lanes Reducing to single NB lane allows for larger median and reduced PGIS area 	<ul style="list-style-type: none"> Reduces NB thru traffic to a single lane Free right condition may preclude a crossing on the south leg for non-motorized users Requires some widening on east approach which will reduce space for cabinets and above-ground utilities

LEGEND

- ROADWAY LANES
- SIDEWALK
- LANDSCAPING
- OPTIONAL TRUCK APRON
- DASHED BIKE LANE MARKINGS
- RIGHT OF WAY
- PROPERTY LINE



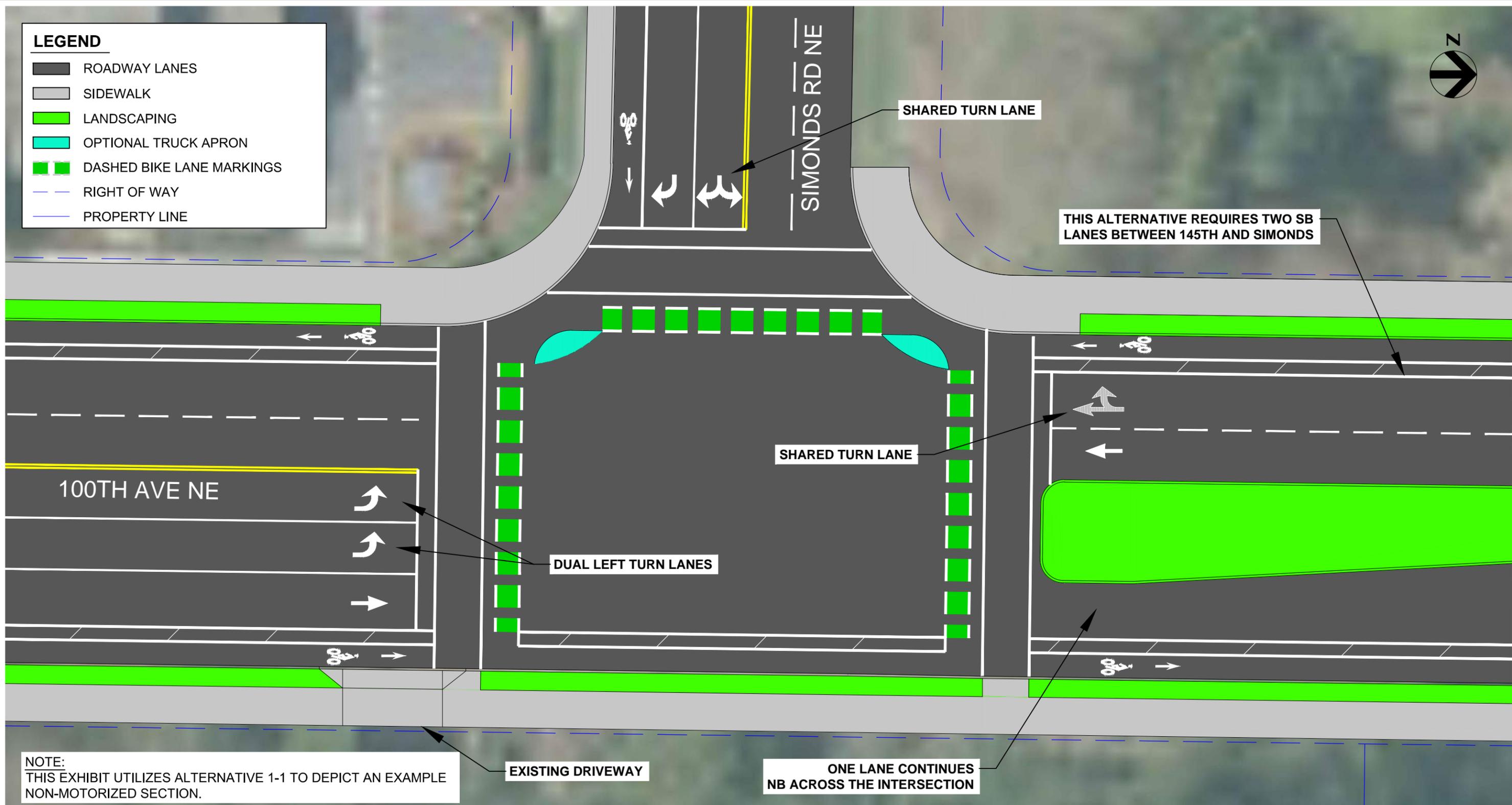
NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVE 1-1 TO DEPICT AN EXAMPLE NON-MOTORIZED SECTION.

EXISTING DRIVEWAY

TWO LANES CONTINUE NB ACROSS THE INTERSECTION

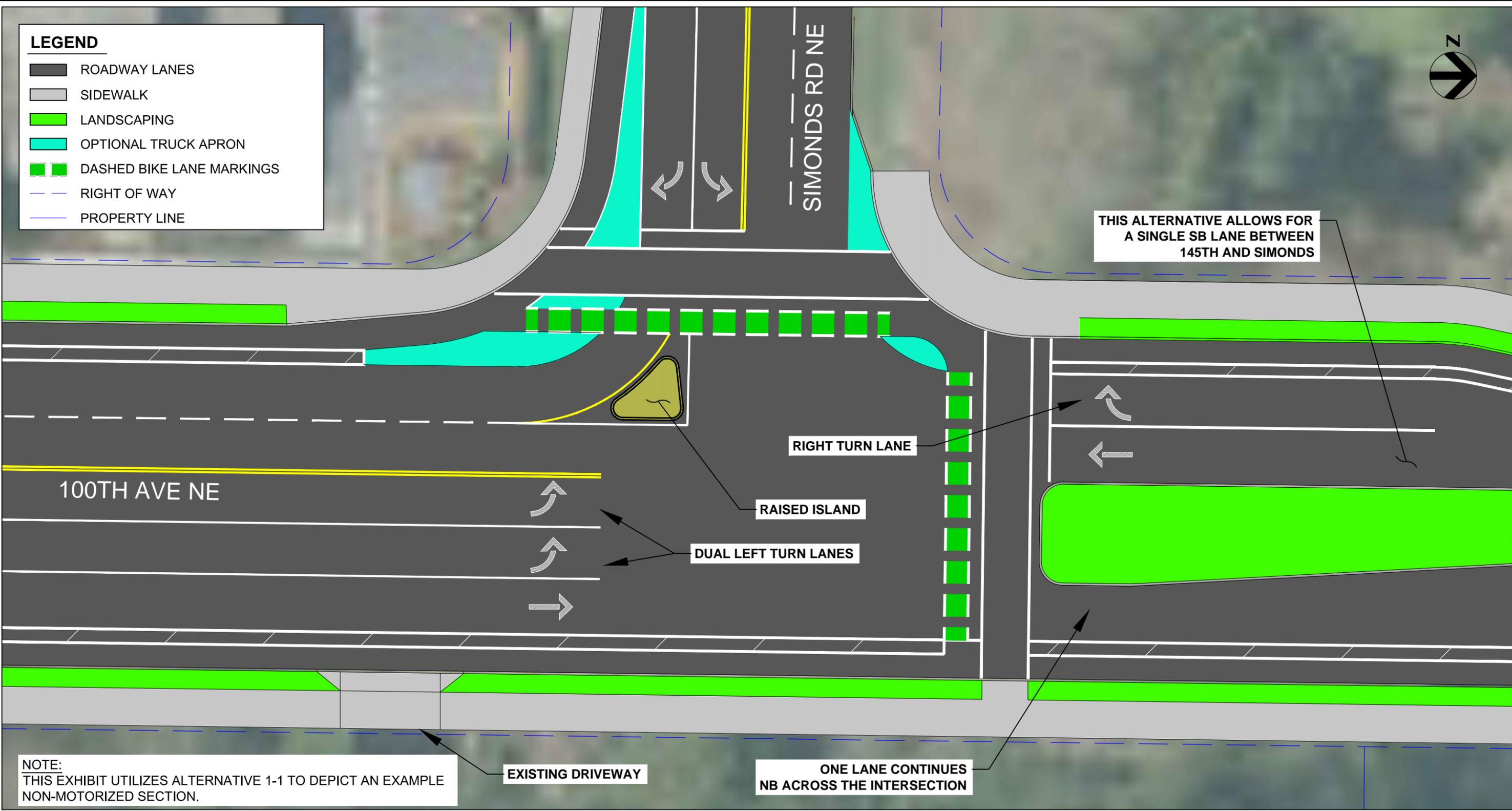
LEGEND

- ROADWAY LANES
- SIDEWALK
- LANDSCAPING
- OPTIONAL TRUCK APRON
- DASHED BIKE LANE MARKINGS
- RIGHT OF WAY
- PROPERTY LINE



LEGEND

- ROADWAY LANES
- SIDEWALK
- LANDSCAPING
- OPTIONAL TRUCK APRON
- DASHED BIKE LANE MARKINGS
- RIGHT OF WAY
- PROPERTY LINE



THIS ALTERNATIVE ALLOWS FOR
A SINGLE SB LANE BETWEEN
145TH AND SIMONDS

RIGHT TURN LANE

RAISED ISLAND

DUAL LEFT TURN LANES

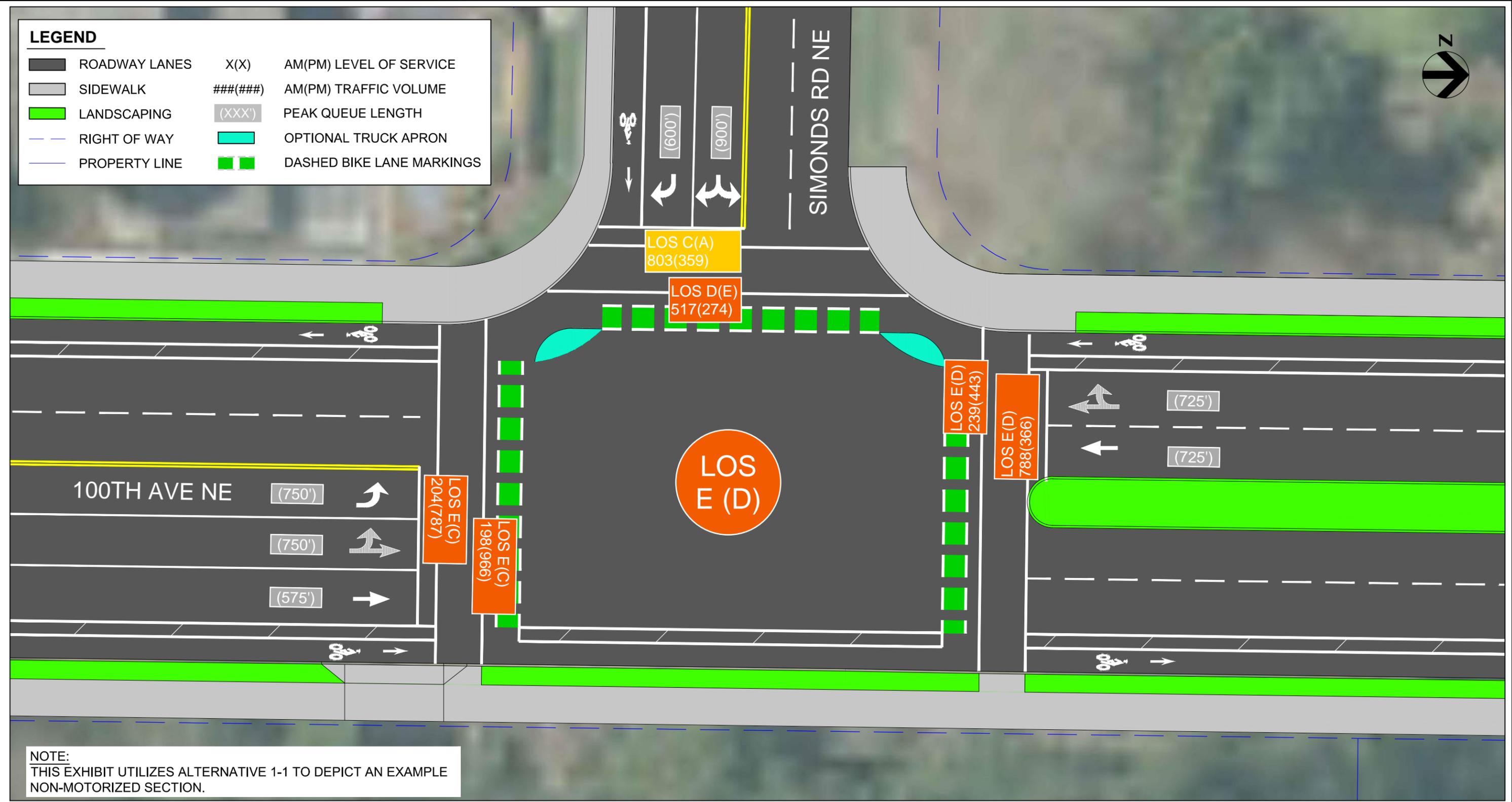
100TH AVE NE

ONE LANE CONTINUES
NB ACROSS THE INTERSECTION

EXISTING DRIVEWAY

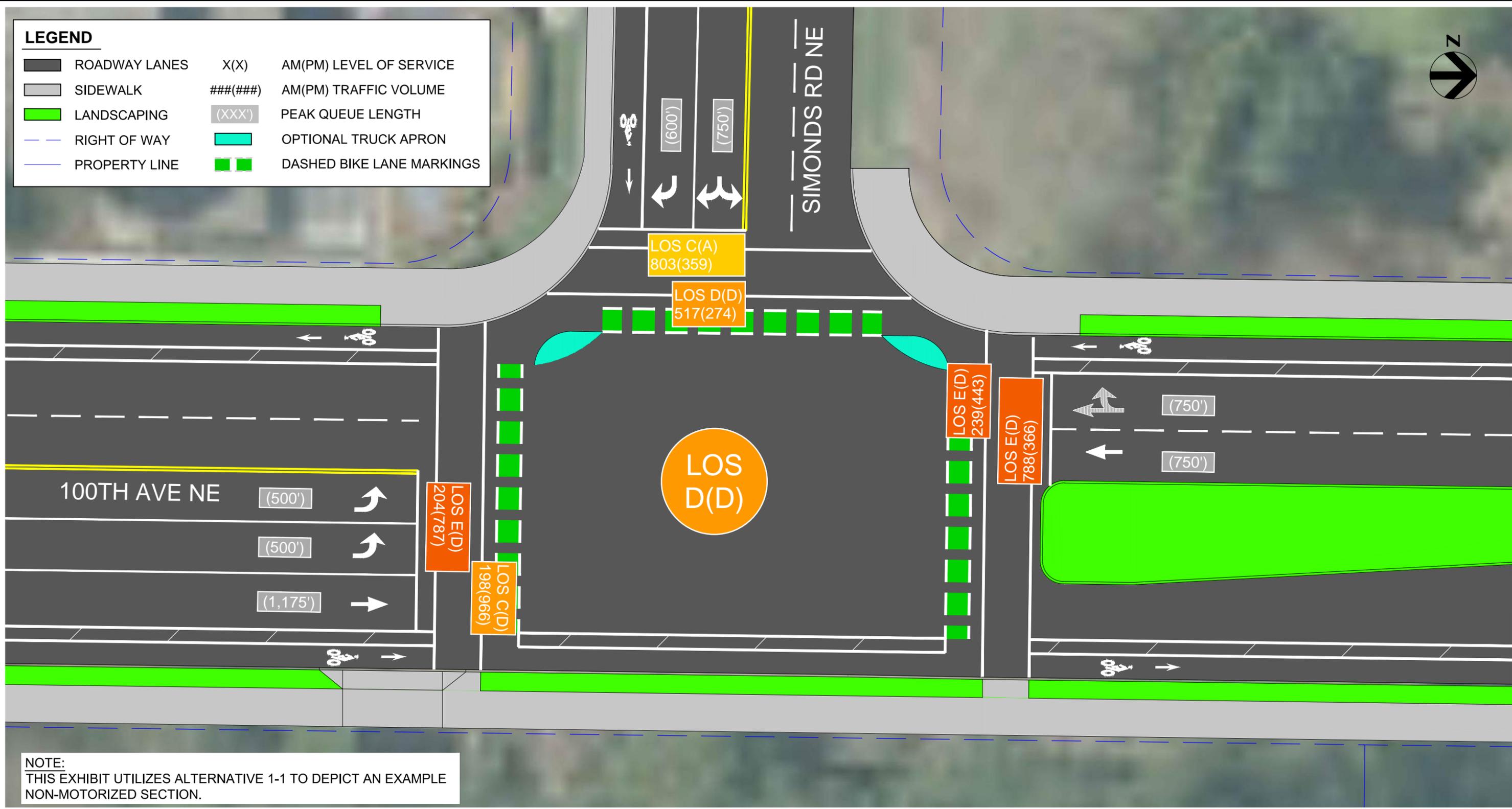
NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVE 1-1 TO DEPICT AN EXAMPLE
NON-MOTORIZED SECTION.

LEGEND			
	ROADWAY LANES	X(X) AM(PM) LEVEL OF SERVICE	
	SIDEWALK	###(###) AM(PM) TRAFFIC VOLUME	
	LANDSCAPING	(XXX') PEAK QUEUE LENGTH	
	RIGHT OF WAY		OPTIONAL TRUCK APRON
	PROPERTY LINE		DASHED BIKE LANE MARKINGS



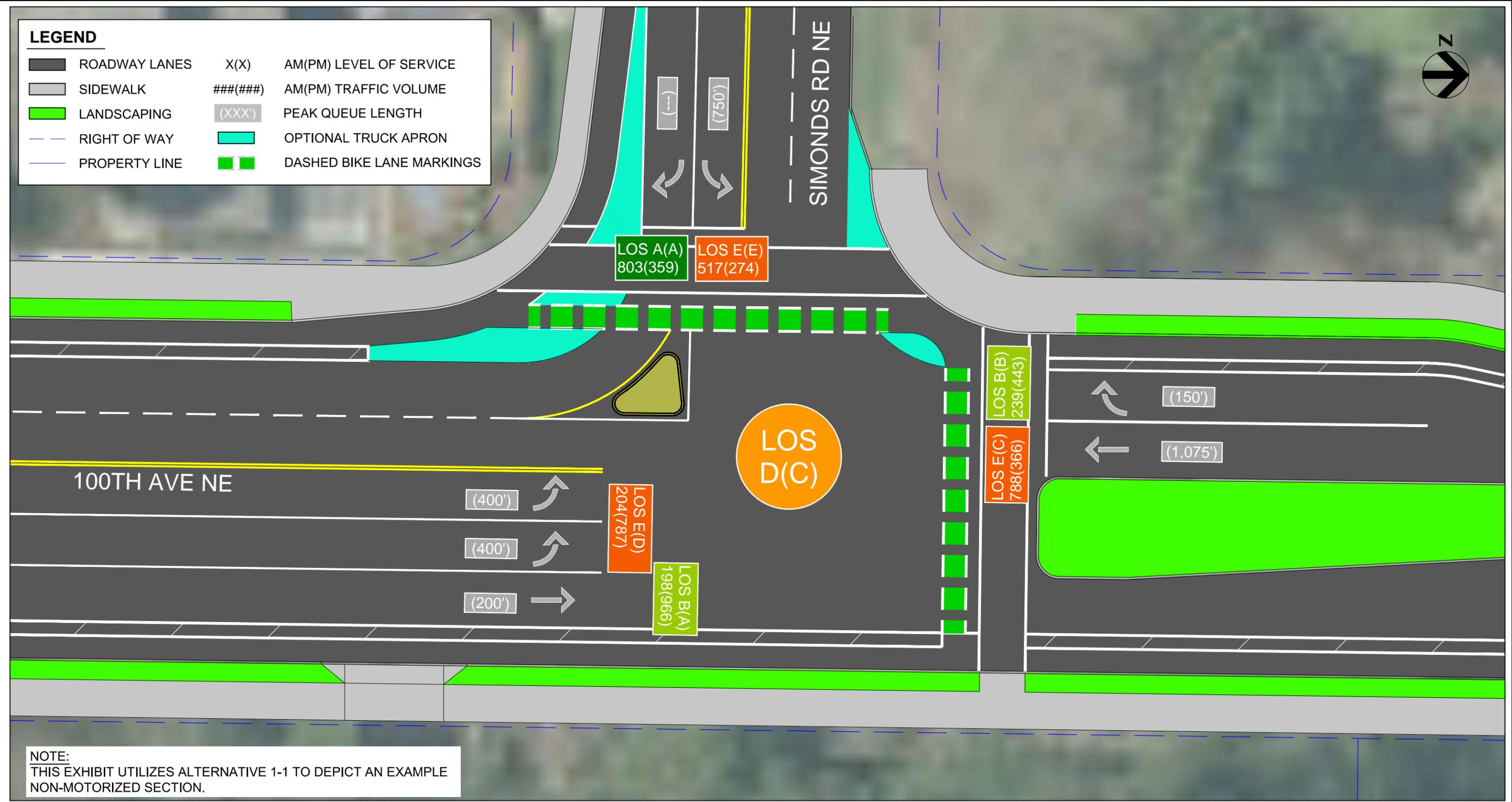
NOTE:
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NON-MOTORIZED SECTION.

LEGEND			
	ROADWAY LANES	X(X) AM(PM) LEVEL OF SERVICE	
	SIDEWALK	###(###) AM(PM) TRAFFIC VOLUME	
	LANDSCAPING	(XXX') PEAK QUEUE LENGTH	
	RIGHT OF WAY		OPTIONAL TRUCK APRON
	PROPERTY LINE		DASHED BIKE LANE MARKINGS



NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVE 1-1 TO DEPICT AN EXAMPLE NON-MOTORIZED SECTION.

LEGEND		
	ROADWAY LANES	X(X) AM(PM) LEVEL OF SERVICE
	SIDEWALK	###(###) AM(PM) TRAFFIC VOLUME
	LANDSCAPING	(XXX') PEAK QUEUE LENGTH
	RIGHT OF WAY	OPTIONAL TRUCK APRON
	PROPERTY LINE	DASHED BIKE LANE MARKINGS



NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVE 1-1 TO DEPICT AN EXAMPLE
NON-MOTORIZED SECTION.

SIMONDS RD / 100TH AVE NE ALTERNATIVES COMPARISON

	Daily Volumes (Vehicles per Hour)	Geometry	LOS	Average Delay (Seconds per Vehicle)	95th Percentile Queue Length (Feet)	Pros/Cons	We Recommend (Feet)
2015 Existing Condition	<p>Simonds Rd: (379) 195 ←, (277) 689 ↓ 100th Ave NE: (274) 428 →, (323) 657 ↘, (159) 167 ←, (680) 818 ↑</p>			<p>(20.4) 51.2</p>	<p>(230) 178, (313) 654</p>		
2035 + No-Build	<p>Simonds Rd: (443) 239 ←, (366) 788 ↓ 100th Ave NE: (274) 517 →, (359) 803 ↘, (204) 198 ←, (787) 966 ↑</p>			<p>(37.3) 104.9</p>	<p>(330) m161, (409) #999</p>		
2035 Alternative 3-1 Split Phase	<p>Simonds Rd: (443) 239 ←, (366) 788 ↓ 100th Ave NE: (274) 517 →, (359) 803 ↘, (204) 198 ←, (787) 966 ↑</p>			<p>(36.7) 56.5</p>	<p>(m281) #712</p>	<p>PROS</p> <ul style="list-style-type: none"> Shorter SB through delay and queue length during AM and PM peak periods Better intersection delay and service <p>CONS</p> <ul style="list-style-type: none"> SB through traffic may impede SB right vehicles 	
2035 Alternative 3-2 Dual Protected Left	<p>Simonds Rd: (443) 239 ←, (366) 788 ↓ 100th Ave NE: (274) 517 →, (359) 803 ↘, (204) 198 ←, (787) 966 ↑</p>			<p>(45.0) 53.0</p>	<p>(m333) #750</p>	<p>PROS</p> <ul style="list-style-type: none"> Single NB through lane <p>CONS</p> <ul style="list-style-type: none"> NB through traffic needs to merge to right lane SB through traffic may impede SB right vehicles Long PM queue on NB through due to single lane 	<p>750' ←</p> <p>600' ↘</p> <p>500' ←</p>
2035 Alternative 3-3 Free Right	<p>Simonds Rd: (443) 239 ←, (366) 788 ↓ 100th Ave NE: (274) 517 →, (359) 803 ↘, (204) 198 ←, (787) 966 ↑</p>			<p>(27.3) 43.4</p>	<p>(m134) m137, (m235) #1058</p>	<p>PROS</p> <ul style="list-style-type: none"> Free EB RT and shorter EB LT delay Decreased delay on NB approach during AM and PM <p>CONS</p> <ul style="list-style-type: none"> Extra construction cost on channelizing the EB RT Long queue on SB through in AM peak 	

LEGEND

XX - AM
(XX) - PM

- volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles of 95th percentile traffic to account for the effects of spillover between cycles

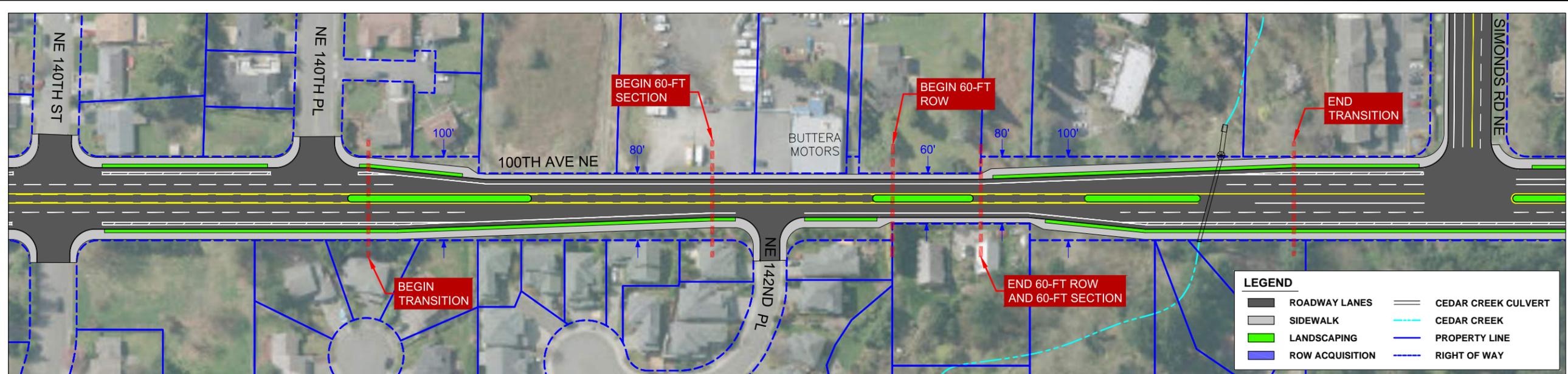
m - volume for the 95th percentile queue is metered by an upstream signal

Reference Materials from Alternatives Screening

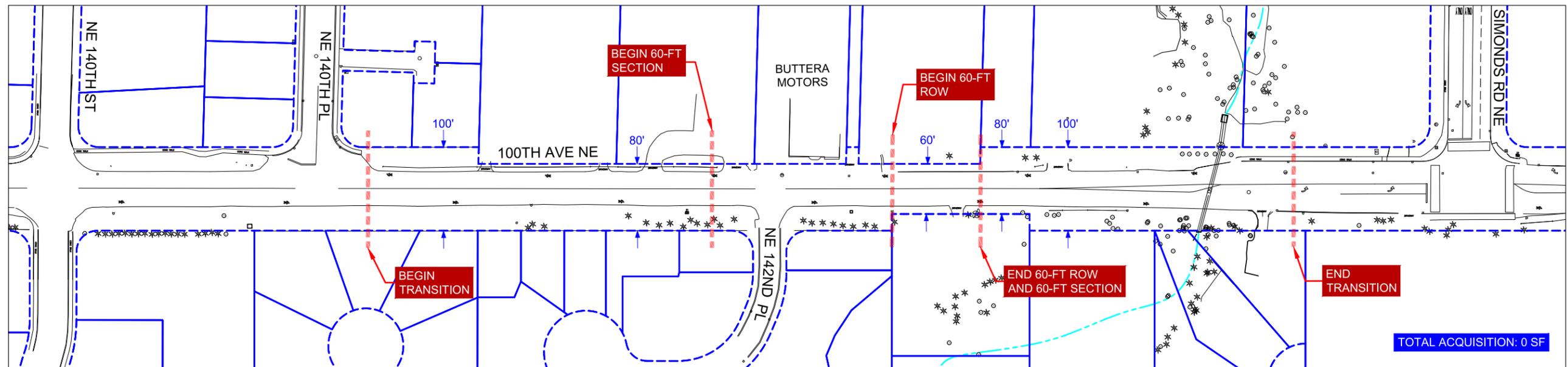
Alternative 4 - Limited ROW

Alternative 4 – Limited ROW

Alternative	Plan View	ROW Acquisition	Pros	Cons
<p>Alternative 4-1 60-ft ROW No Acquisition</p>		<p>0 SF</p>	<ul style="list-style-type: none"> Does not require ROW acquisition Roadway alignment remains consistent Reduces project footprint and need for retaining walls Does not conflict with existing flow control structure for Cedar Creek 	<ul style="list-style-type: none"> Resulting 3-lane section will not reduce traffic congestion Will impact existing property parking and access that resides within the ROW 60-ft width is insufficient to retain planters and/or buffers
<p>Alternative 4-2 80-ft ROW Acquisition from King County Parcel Only</p>		<p>3,135 SF</p>	<ul style="list-style-type: none"> Minimal ROW acquisition Allows for a 5-lane roadway section Provides sufficient capacity to address future traffic volumes Does not conflict with existing flow control structure for Cedar Creek 	<ul style="list-style-type: none"> Requires a 10-ft shift in the roadway alignment Future redevelopment may result in uneven improvements to roadway Will impact existing property parking and access that resides within the ROW 80-ft width is insufficient to retain planters and/or buffers
<p>Alternative 4-3 100-ft ROW Acquisition from Several Parcels</p>		<p>14,289 SF</p>	<ul style="list-style-type: none"> Allows for a 5-lane roadway section Includes planters and buffers Provides sufficient capacity to address future traffic volumes 	<ul style="list-style-type: none"> Requires significant ROW acquisition from 5 parcels Will impact existing property parking and access that resides within the ROW Increased project footprint and need for retaining walls Roadway section conflicts with existing flow control structure at Cedar Creek. Sidewalk and planter modifications will be required at this location to retain the structure.



ROADWAY FOOTPRINT MODIFIED TO TRANSITION THROUGH 60-FT ROW

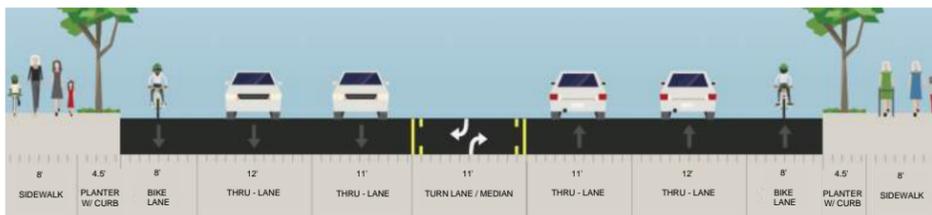


EXISTING SURFACE FEATURES AND ROW

PLAN VIEWS FOR SEGMENT OF PROJECT CORRIDOR WITH LIMITED ROW



60-FT ROW WIDTH

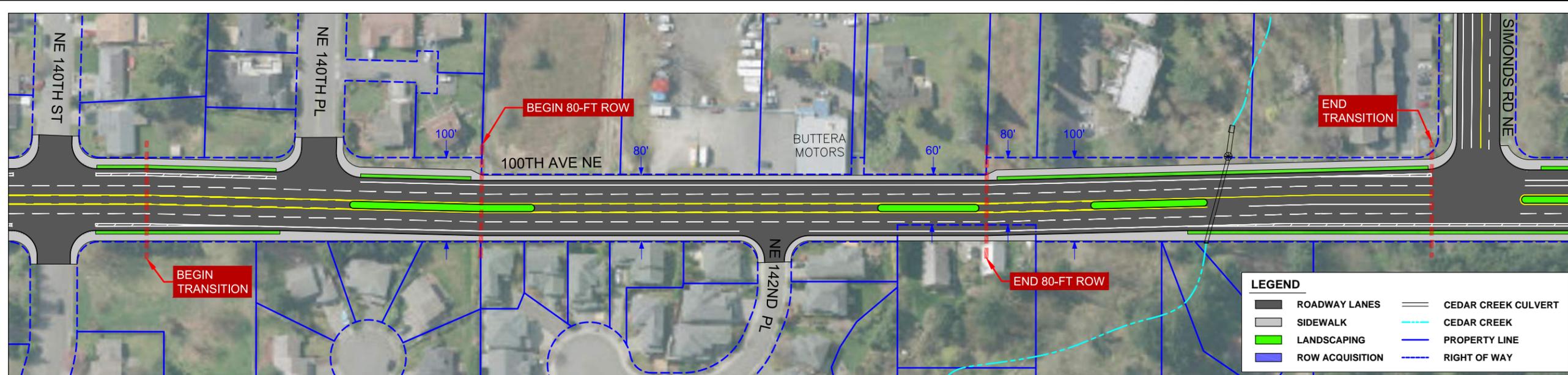


100-FT ROW WIDTH

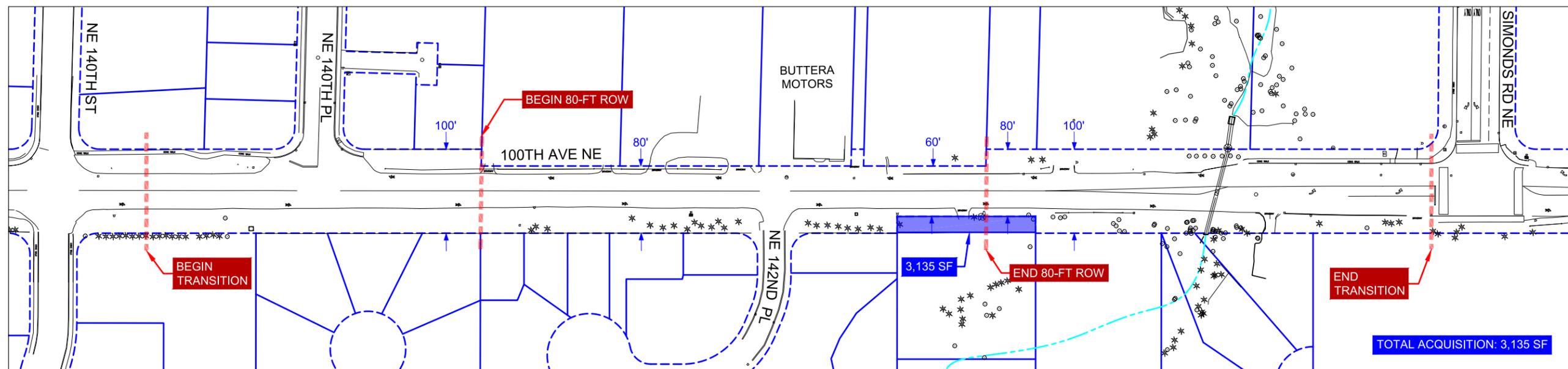
TYPICAL ROADWAY SECTIONS

NOTES:

1. PLAN VIEWS AND SECTIONS SHOWN USE ALTERNATIVE 1-1 TO DEPICT AN EXAMPLE NON-MOTORIZED SECTION.
2. PLAN VIEWS SHOWN USE ALTERNATIVE 3-3 TO DEPICT AN EXAMPLE INTERSECTION CONFIGURATION AT SIMONDS ROAD NE.
3. TYPICAL SECTIONS INCLUDE A 1-FT BUFFER BEHIND EACH SIDEWALK TO THE RIGHT-OF-WAY BOUNDARY WHICH IS NOT DEPICTED HERE FOR CLARITY.
4. DRIVEWAYS AND PROPERTY ACCESS POINTS NOT SHOWN WILL BE INCLUDED IN FUTURE STAGES OF DESIGN.



ROADWAY FOOTPRINT MODIFIED TO TRANSITION THROUGH 80-FT ROW

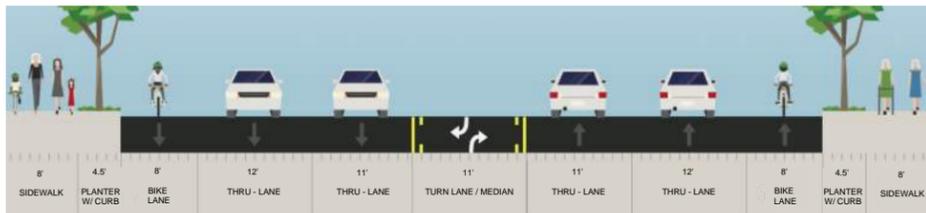


EXISTING SURFACE FEATURES AND ROW

PLAN VIEWS FOR SEGMENT OF PROJECT CORRIDOR WITH LIMITED ROW



80-FT ROW WIDTH

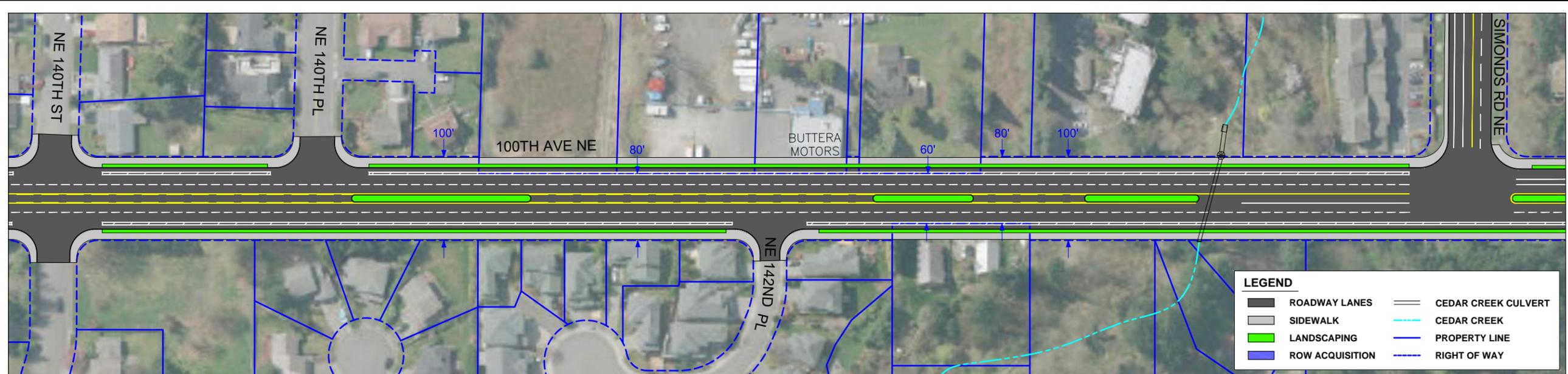


100-FT ROW WIDTH

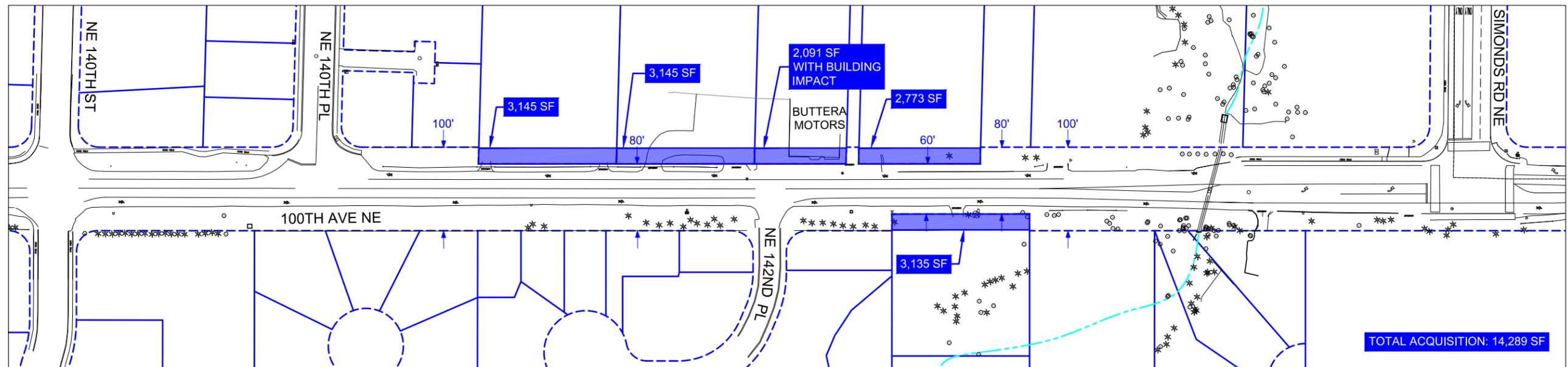
TYPICAL ROADWAY SECTIONS

NOTES:

1. PLAN VIEWS AND SECTIONS SHOWN USE ALTERNATIVE 1-1 TO DEPICT AN EXAMPLE NON-MOTORIZED SECTION.
2. PLAN VIEWS SHOWN USE ALTERNATIVE 3-3 TO DEPICT AN EXAMPLE INTERSECTION CONFIGURATION AT SIMONDS ROAD NE.
3. TYPICAL SECTIONS INCLUDE A 1-FT BUFFER BEHIND EACH SIDEWALK TO THE RIGHT-OF-WAY BOUNDARY WHICH IS NOT DEPICTED HERE FOR CLARITY.
4. DRIVEWAYS AND PROPERTY ACCESS POINTS NOT SHOWN WILL BE INCLUDED IN FUTURE STAGES OF DESIGN.

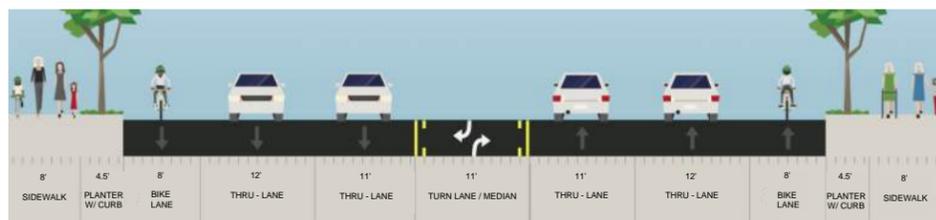


ROADWAY FOOTPRINT MODIFIED TO TRANSITION THROUGH 100-FT ROW



EXISTING SURFACE FEATURES AND ROW

PLAN VIEWS FOR SEGMENT OF PROJECT CORRIDOR WITH LIMITED ROW



100-FT ROW WIDTH
TYPICAL ROADWAY SECTION

NOTES:

1. PLAN VIEWS AND SECTIONS SHOWN USE ALTERNATIVE 1-1 TO DEPICT AN EXAMPLE NON-MOTORIZED SECTION.
2. PLAN VIEWS SHOWN USE ALTERNATIVE 3-3 TO DEPICT AN EXAMPLE INTERSECTION CONFIGURATION AT SIMONDS ROAD NE.
3. TYPICAL SECTIONS INCLUDE A 1-FT BUFFER BEHIND EACH SIDEWALK TO THE RIGHT-OF-WAY BOUNDARY WHICH IS NOT DEPICTED HERE FOR CLARITY.
4. DRIVEWAYS AND PROPERTY ACCESS POINTS NOT SHOWN WILL BE INCLUDED IN FUTURE STAGES OF DESIGN.

Reference Materials from Alternatives Screening

Alternative 5 - Cedar Creek Culvert

Alternative 5 – Cedar Creek Culvert

Alternative	Plan / Section View	Culvert	Pros	Cons
<p>Alternative 5-1 Retain Existing Culvert</p>		<p>36" H x 48" W Box Culvert (Existing)</p>	<ul style="list-style-type: none"> Minimizes construction impacts Reduces project risk and costs Streamlines environmental process Does not impact existing detention facility or upstream structure 	<ul style="list-style-type: none"> Future culvert replacement will require roadway reconstruction and traffic impacts at a later date Does not remove an impassable barrier for fish along Cedar Creek Leaves
<p>Alternative 5-2 Replace Culvert In-Kind</p>		<p>36" H x 48" W Box Culvert (New)</p>	<ul style="list-style-type: none"> Moderates construction impacts by installing a smaller culvert Culvert is replaced as part of construction within the corridor Provides a new structure Does not impact existing detention facility or upstream structure 	<ul style="list-style-type: none"> Does not remove an impassable barrier for fish along Cedar Creek. Replacement condition will require environmental approvals Added project cost for culvert removal and replacement Construction schedule may be impacted due to allowable timing of culvert work Will need to account for significant grade change
<p>Alternative 5-3 Install Fish Passable Culvert within ROW</p>		<p>Fish Passable Culvert</p>	<ul style="list-style-type: none"> Restores connectivity for fish along Cedar Creek Culvert is replaced as part of construction within the corridor Provides a new structure Does not impact existing detention facility or upstream structure 	<ul style="list-style-type: none"> Added project cost for culvert removal and replacement Construction schedule may be impacted due to allowable timing of culvert work Will need to account for significant grade change

LEGEND

-  ROADWAY LANES
-  SIDEWALK
-  LANDSCAPING
-  RIGHT OF WAY
-  PROPERTY LINE
-  CEDAR CREEK



EXISTING 60" BOX
CULVERT

REDUCE NON-MOTORIZED WIDTH
AT FLOW CONTROL STRUCTURE
AND COORDINATE RETAINING
WALL WITH EXISTING CULVERT

RETAIN EXISTING 36" H x 48" W
BOX CULVERT UNDER 100TH AVE NE

RETAINING WALL
TO BE COORDINATED
WITH EXISTING CULVERT

NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVES 1-1 AND 4-3 TO DEPICT A
POTENTIAL 100-FT BUILDOUT. ALTERNATIVES 4-1 AND 4-2 MAY REDUCE
OR ELIMINATE ROADWAY OVERLAP WITH EXISTING FLOW CONTROL
STRUCTURE ON THE WEST SIDE OF 100TH AVE NE.

100TH AVE NE Corridor Design



**ALTERNATIVE 5-1
CEDAR CREEK CULVERT
RETAIN EXISTING CULVERT**

PREPARED
10/25/2016

SCALE 1" = 20'

LEGEND

-  ROADWAY LANES
-  SIDEWALK
-  LANDSCAPING
-  RIGHT OF WAY
-  PROPERTY LINE
-  CEDAR CREEK



EXISTING 60" BOX
CULVERT

REDUCE NON-MOTORIZED SECTION
ALONG FLOW CONTROL STRUCTURE

CONNECT NEW CULVERT TO EXISTING
FLOW CONTROL STRUCTURE

REPLACE EXISTING 36" H x 48" W
BOX CULVERT UNDER 100TH AVE NE
WITH IN-KIND CULVERT

100TH AVE NE

REPLACED CULVERT TO BE INSTALLED
WITH LOWERED OUTFALL
TO MEET EXISTING GRADES

NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVES 1-1 AND 4-3 TO DEPICT A
POTENTIAL 100-FT BUILDOUT. ALTERNATIVES 4-1 AND 4-2 MAY REDUCE
OR ELIMINATE ROADWAY OVERLAP WITH EXISTING FLOW CONTROL
STRUCTURE ON THE WEST SIDE OF 100TH AVE NE.

100TH AVE NE Corridor Design



**ALTERNATIVE 5-2
CEDAR CREEK CULVERT
REPLACE CULVERT IN-KIND**

PREPARED
10/25/2016

SCALE 1" = 20'

LEGEND

-  ROADWAY LANES
-  SIDEWALK
-  LANDSCAPING
-  RIGHT OF WAY
-  PROPERTY LINE
-  CEDAR CREEK



EXISTING 60" BOX CULVERT

REDUCE NON-MOTORIZED SECTION ALONG FLOW CONTROL STRUCTURE

RETAIN EXISTING CULVERT CONNECTION TO FLOW CONTROL STRUCTURE, EXISTING 36" BOX CULVERT TO OUTFALL INSIDE OPENING OF NEW FISH PASSABLE CULVERT

REPLACE EXISTING 36" BOX CULVERT UNDER 100TH AVE NE WITH FISH PASSABLE CULVERT

100TH AVE NE

REPLACED CULVERT TO BE INSTALLED WITH LOWERED OUTFALL TO MEET EXISTING GRADES

NOTE:
THIS EXHIBIT UTILIZES ALTERNATIVES 1-1 AND 4-3 TO DEPICT A POTENTIAL 100-FT BUILDOUT. ALTERNATIVES 4-1 AND 4-2 MAY REDUCE OR ELIMINATE ROADWAY OVERLAP WITH EXISTING FLOW CONTROL STRUCTURE ON THE WEST SIDE OF 100TH AVE NE.





Base Scoring		
Alt 2-2	Alt 2-3	Alt 2-4
Realign East Approach, Close West Leg	Retain East Alignment with Islands, Retain West Leg	Retain East Alignment with Islands, Close West Leg
3	1	1
3	1	1
2	1	2
3	1	1
3	3	3
1	3	1
1	1	1
2	1	1
1	1	1
2	1	1
2	1	1
1	2	1
2	2	2
3	1	1
29	20	18



Appendix D Alternative Scoring Results





Alternative Screening Matrix

Alternative 1 - Non-Motorized Section

Evaluation Criteria	Base Scoring		
	Alt 1-1	Alt 1-2	Alt 1-3
	On-Street Bike Lane with 4-ft Planter	On-Street Bike Lane with 6-ft Planter	Sidewalk-Level Bike Lane with 5-ft Planter
1) Improves pedestrian safety / access / experience	3	3	2
2) Improves bike safety / access / experience	2	1	3
3) Improves vehicular safety / access / experience	2	1	2
4) Minimizes traffic congestion	2	1	2
5) Minimizes right-of-way acquisition	3	3	3
6) Minimizes impacts to private properties	2	2	3
7) Promotes constructability (Includes: Temporary impacts to traffic, non-motorized users, and private properties)	1	1	2
8) Maximizes low impact development	1	3	2
9) Minimizes environmental impacts	2	2	2
10) Maximizes potential for gateways and placemaking	1	1	2
11) Minimizes maintenance	2	2	1
12) Compatibility with future property redevelopment	1	1	2
13) Compatibility with future City projects / bus routes	2	2	1
14) Improves access and performance for emergency services	3	2	1
15)			
Total Points	27	25	28

Criteria Weight	Weighted Scoring		
	Alt 1-1	Alt 1-2	Alt 1-3
	On-Street Bike Lane with 4-ft Planter	On-Street Bike Lane with 6-ft Planter	Sidewalk-Level Bike Lane with 5-ft Planter
13	39	39	26
12	24	12	36
11.5	23	11.5	23
13.5	27	13.5	27
9.5	28.5	28.5	28.5
6	12	12	18
3	3	3	6
5.5	5.5	16.5	11
7.5	15	15	15
1	1	1	2
5.5	11	11	5.5
4	4	4	8
4	8	8	4
9	27	18	9
Total Points	228	193	219

Guidance:

The 14 evaluation criteria for ranking the alternatives are based upon the project goals and objectives as shown in the ranking matrix above. Each alternative receives a base score of high, medium, or low for each of the applicable evaluation criteria. The meaning of high, medium, and low are as follows:

High - Will strongly benefit the evaluation criterion

Medium - Will moderately benefit the evaluation criterion

Low - Has only minimal or no benefit to the evaluation criterion

To obtain an overall base evaluation for each alternative, the evaluation of High will be scored as three (3) points, Medium will receive two (2) points, and Low will receive one (1) point. The alternative with the highest score will become the preferred alternative. If all criteria are to be weighted equally, only the base scoring table will be used. When applying criteria weights, then weighted values may be entered and the results from the weighted scoring table will determine the preferred alternative.

Alternative Screening Matrix

Alternative 2 - Juanita-Woodinville Way Intersection

Evaluation Criteria	Base Scoring				
	Alt 2-1	Alt 2-2	Alt 2-3	Alt 2-4	Alt 2-5
	Realign East Approach, Retain West Leg	Realign East Approach, Close West Leg	Retain East Alignment with Islands, Retain West Leg	Retain East Alignment with Islands, Close West Leg	Realign East Approach to Match to NE 134th Ct NE
1) Improves pedestrian safety / access / experience	2	3	1	1	2
2) Improves bike safety / access / experience	2	3	1	1	2
3) Improves vehicular safety / access / experience	1	2	1	2	3
4) Minimizes traffic congestion	2	3	1	1	3
5) Minimizes right-of-way acquisition	3	3	3	3	1
6) Minimizes impacts to private properties	3	1	3	1	1
7) Promotes constructability (Includes: Temporary impacts to traffic, non-motorized users, and private properties)	1	1	1	1	2
8) Maximizes low impact development	2	2	1	1	2
9) Minimizes environmental impacts	1	1	1	1	1
10) Maximizes potential for gateways and placemaking	2	2	1	1	3
11) Minimizes maintenance	2	2	1	1	2
12) Compatibility with future property redevelopment	2	1	2	1	1
13) Compatibility with future City projects / bus routes	2	2	2	2	3
14) Improves access and performance for emergency services	2	3	1	1	3
15)					
Total Points	27	29	20	18	29

Guidance:
 The 14 evaluation criteria for ranking the alternatives are based upon the project goals and objectives as shown in the ranking matrix above. Each alternative receives a base score of high, medium, or low for each of the applicable evaluation criteria. The meaning of high, medium, and low are as follows:

High - Will strongly benefit the evaluation criterion
 Medium - Will moderately benefit the evaluation criterion
 Low - Has only minimal or no benefit to the evaluation criterion

To obtain an overall base evaluation for each alternative, the evaluation of High will be scored as three (3) points, Medium will receive two (2) points, and Low will receive one (1) point. The alternative with the highest score will become the preferred alternative. If all criteria are to be weighted equally, only the base scoring table will be used. When applying criteria weights, then weighted values may be entered and the results from the weighted scoring table will determine the preferred alternative.



Alternative Screening Matrix

Alternative 2 - Juanita-Woodinville Way Intersection

Evaluation Criteria	Criteria Weight	Weighted Scoring				
		Alt 2-1	Alt 2-2	Alt 2-3	Alt 2-4	Alt 2-5
		Realign East Approach, Retain West Leg	Realign East Approach, Close West Leg	Retain East Alignment with Islands, Retain West Leg	Retain East Alignment with Islands, Close West Leg	Realign East Approach to Match to NE 134th Ct NE
1) Improves pedestrian safety / access / experience	13	26	39	13	13	26
2) Improves bike safety / access / experience	12	24	36	12	12	24
3) Improves vehicular safety / access / experience	11.5	11.5	23	11.5	23	34.5
4) Minimizes traffic congestion	13.5	27	40.5	13.5	13.5	40.5
5) Minimizes right-of-way acquisition	9.5	28.5	28.5	28.5	28.5	9.5
6) Minimizes impacts to private properties	6	18	6	18	6	6
7) Promotes constructability (Includes: Temporary impacts to traffic, non-motorized users, and private properties)	3	3	3	3	3	6
8) Maximizes low impact development	5.5	11	11	5.5	5.5	11
9) Minimizes environmental impacts	7.5	7.5	7.5	7.5	7.5	7.5
10) Maximizes potential for gateways and placemaking	1	2	2	1	1	3
11) Minimizes maintenance	5.5	11	11	5.5	5.5	11
12) Compatibility with future property redevelopment	4	8	4	8	4	4
13) Compatibility with future City projects / bus routes	4	8	8	8	8	12
14) Improves access and performance for emergency services	9	18	27	9	9	27
15)						
Total Points		203.5	246.5	144	139.5	222

Guidance:

The 14 evaluation criteria for ranking the alternatives are based upon the project goals and objectives as shown in the ranking matrix above. Each alternative receives a base score of high, medium, or low for each of the applicable evaluation criteria. The meaning of high, medium, and low are as follows:

High - Will strongly benefit the evaluation criterion

Medium - Will moderately benefit the evaluation criterion

Low - Has only minimal or no benefit to the evaluation criterion

To obtain an overall base evaluation for each alternative, the evaluation of High will be scored as three (3) points, Medium will receive two (2) points, and Low will receive one (1) point. The alternative with the highest score will become the preferred alternative. If all criteria are to be weighted equally, only the base scoring table will be used. When applying criteria weights, then weighted values may be entered and the results from the weighted scoring table will determine the preferred alternative.

Alternative Screening Matrix

Alternative 3 - Simonds Rd NE Intersection

Evaluation Criteria	Base Scoring		
	Alt 3-1	Alt 3-2	Alt 3-3
	Split Phase (Includes NB Shared Left-Thru)	Dual Protected Left for NB Approach	Free Right from Simonds to SB 100th
1) Improves pedestrian safety / access / experience	2	2	1
2) Improves bike safety / access / experience	3	3	2
3) Improves vehicular safety / access / experience	1	2	3
4) Minimizes traffic congestion	1	2	3
5) Minimizes right-of-way acquisition	1	1	1
6) Minimizes impacts to private properties	2	2	2
7) Promotes constructability (Includes: Temporary impacts to traffic, non-motorized users, and private properties)	1	1	2
8) Maximizes low impact development	1	1	1
9) Minimizes environmental impacts	1	1	3
10) Maximizes potential for gateways and placemaking	1	2	2
11) Minimizes maintenance	2	1	1
12) Compatibility with future property redevelopment	1	1	1
13) Compatibility with future City projects / bus routes	1	1	1
14) Improves access and performance for emergency services	1	2	3
15)			
Total Points	19	22	26

Criteria Weight	Weighted Scoring		
	Alt 3-1	Alt 3-2	Alt 3-3
	Split Phase (Includes NB Shared Left-Thru)	Dual Protected Left for NB Approach	Free Right from Simonds to SB 100th
13	26	26	13
12	36	36	24
11.5	11.5	23	34.5
13.5	13.5	27	40.5
9.5	9.5	9.5	9.5
6	12	12	12
3	3	3	6
5.5	5.5	5.5	5.5
7.5	7.5	7.5	22.5
1	1	2	2
5.5	11	5.5	5.5
4	4	4	4
4	4	4	4
9	9	18	27
Total Points	153.5	183	210

Guidance:

The 14 evaluation criteria for ranking the alternatives are based upon the project goals and objectives as shown in the ranking matrix above. Each alternative receives a base score of high, medium, or low for each of the applicable evaluation criteria. The meaning of high, medium, and low are as follows:

High - Will strongly benefit the evaluation criterion

Medium - Will moderately benefit the evaluation criterion

Low - Has only minimal or no benefit to the evaluation criterion

To obtain an overall base evaluation for each alternative, the evaluation of High will be scored as three (3) points, Medium will receive two (2) points, and Low will receive one (1) point. The alternative with the highest score will become the preferred alternative. If all criteria are to be weighted equally, only the base scoring table will be used. When applying criteria weights, then weighted values may be entered and the results from the weighted scoring table will determine the preferred alternative.



Alternative Screening Matrix

Alternative 4 - Limited ROW

Evaluation Criteria	Base Scoring		
	Alt 4-1	Alt 4-2	Alt 4-3
	60-ft ROW No ROW Acquisition	80-ft ROW Acquisition from King County Parcel Only	100-ft ROW Acquisition from Several Parcels
1) Improves pedestrian safety / access / experience	2	1	3
2) Improves bike safety / access / experience	1	2	3
3) Improves vehicular safety / access / experience	1	2	3
4) Minimizes traffic congestion	1	2	3
5) Minimizes right-of-way acquisition	3	2	1
6) Minimizes impacts to private properties	3	2	1
7) Promotes constructability (Includes: Temporary impacts to traffic, non-motorized users, and private properties)	1	2	2
8) Maximizes low impact development	2	1	2
9) Minimizes environmental impacts	2	2	1
10) Maximizes potential for gateways and placemaking	1	1	2
11) Minimizes maintenance	1	1	1
12) Compatibility with future property redevelopment	1	2	2
13) Compatibility with future City projects / bus routes	1	2	3
14) Improves access and performance for emergency services	1	2	3
15)			
Total Points	21	24	30

Criteria Weight	Weighted Scoring		
	Alt 4-1	Alt 4-2	Alt 4-3
	60-ft ROW No ROW Acquisition	80-ft ROW Acquisition from King County Parcel Only	100-ft ROW Acquisition from Several Parcels
13	26	13	39
12	12	24	36
11.5	11.5	23	34.5
13.5	13.5	27	40.5
9.5	28.5	19	9.5
6	18	12	6
3	3	6	6
5.5	11	5.5	11
7.5	15	15	7.5
1	1	1	2
5.5	5.5	5.5	5.5
4	4	8	8
4	4	8	12
9	9	18	27
Total Points	162	185	244.5

Guidance:

The 14 evaluation criteria for ranking the alternatives are based upon the project goals and objectives as shown in the ranking matrix above. Each alternative receives a base score of high, medium, or low for each of the applicable evaluation criteria. The meaning of high, medium, and low are as follows:

High - Will strongly benefit the evaluation criterion

Medium - Will moderately benefit the evaluation criterion

Low - Has only minimal or no benefit to the evaluation criterion

To obtain an overall base evaluation for each alternative, the evaluation of High will be scored as three (3) points, Medium will receive two (2) points, and Low will receive one (1) point. The alternative with the highest score will become the preferred alternative. If all criteria are to be weighted equally, only the base scoring table will be used. When applying criteria weights, then weighted values may be entered and the results from the weighted scoring table will determine the preferred alternative.

Alternative Screening Matrix

Alternative 5 - Cedar Creek Culvert

Evaluation Criteria	Base Scoring		
	Alt 5-1	Alt 5-2	Alt 5-3
	Retain Existing Culvert	REMOVED	Install Fish Passable Culvert
1) Improves pedestrian safety / access / experience	--		--
2) Improves bike safety / access / experience	--		--
3) Improves vehicular safety / access / experience	--		--
4) Minimizes traffic congestion	--		--
5) Minimizes right-of-way acquisition	2		1
6) Minimizes impacts to private properties	--		--
7) Promotes constructability (Includes: Temporary impacts to traffic, non-motorized users, and private properties)	3		1
8) Maximizes low impact development	--		--
9) Minimizes environmental impacts	3		1
10) Maximizes potential for gateways and placemaking	--		--
11) Minimizes maintenance	3		1
12) Compatibility with future property redevelopment	--		--
13) Compatibility with future City projects / bus routes	--		--
14) Improves access and performance for emergency services	--		--
15)			
Total Points	11		4

Criteria Weight	Weighted Scoring		
	Alt 5-1	Alt 5-2	Alt 5-3
	Retain Existing Culvert	REMOVED	Install Fish Passable Culvert
13			
12			
11.5			
13.5			
9.5	19		9.5
6			
3	9		3
5.5			
7.5	22.5		7.5
1			
5.5	16.5		5.5
4			
4			
9			
Total Points	67		25.5

Guidance:

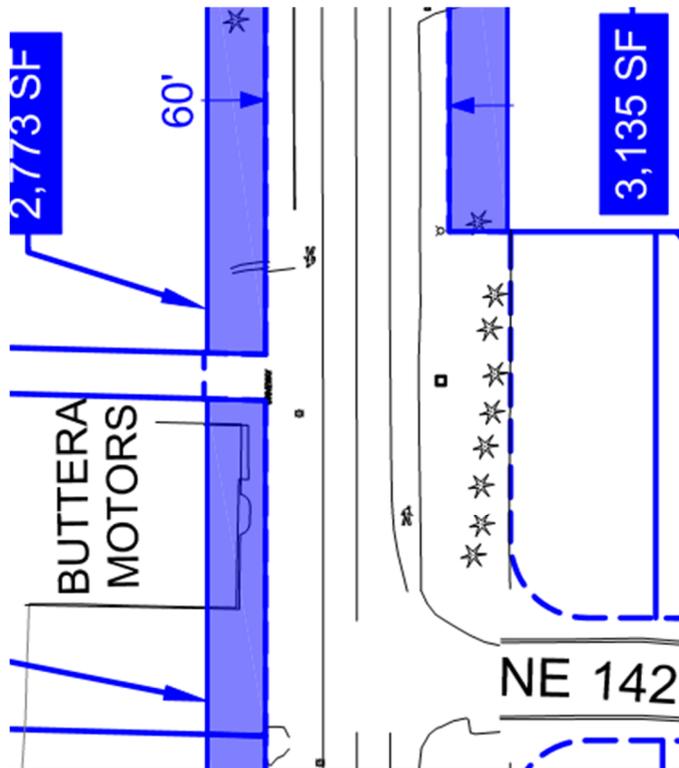
The 14 evaluation criteria for ranking the alternatives are based upon the project goals and objectives as shown in the ranking matrix above. Each alternative receives a base score of high, medium, or low for each of the applicable evaluation criteria. The meaning of high, medium, and low are as follows:

High - Will strongly benefit the evaluation criterion

Medium - Will moderately benefit the evaluation criterion

Low - Has only minimal or no benefit to the evaluation criterion

To obtain an overall base evaluation for each alternative, the evaluation of High will be scored as three (3) points, Medium will receive two (2) points, and Low will receive one (1) point. The alternative with the highest score will become the preferred alternative. If all criteria are to be weighted equally, only the base scoring table will be used. When applying criteria weights, then weighted values may be entered and the results from the weighted scoring table will determine the preferred alternative.



Appendix E

Comparable Cost Summaries



Comparable Costs

Cost estimating was completed for each alternative grouping using a comparable cost approach. Within each of the five alternative sets, a specific set of items was evaluated where cost differences were expected between the alternatives in areas such as paving quantities, retaining walls, and stormwater management. The following tables present the comparable costs for each set of alternatives and the relevant assumptions that apply to each grouping.

Alternative 1 – Non-Motorized Sections

Name	Description	Cost
Alt 1-1	On-Street Bike Lane with 4-foot Planter/LID	\$1,838,957
Alt 1-2	On-Street Bike Lane with 6-foot Planter/LID	\$1,799,402
Alt 1-3	Sidewalk-Level Bike Lane with 5-foot Planter/LID	\$1,605,516

Notes:

1. Costs include sidewalk, driveways, planting, bioretention, asphalt, and crushed surfacing. Additional bid items such as curb and gutter, retaining walls, urban features, and utilities are expected to be similar across all options above and are not included as part of this analysis.
2. Costs for alternate sections applied at locations such as those with limited ROW, sensitive property interfaces, or at transitional intersection areas are not included in this analysis.

Alternative 2 – Juanita-Woodinville Way NE Intersection

Name	Description	Cost
Alt 2-1	Realign East Approach, Retain West Leg	\$579,469
Alt 2-2	Realign East Approach, Close West Leg	\$577,362
Alt 2-3	Retain East Alignment with Islands, Retain West Leg	\$535,810
Alt 2-4	Retain East Alignment with Islands, Close West Leg	\$534,353
Alt 2-5	Realign East Approach to Match to NE 134th Court	\$1,569,107

Notes:

1. Costs include sidewalk, driveways, planting, asphalt, curb and gutter, crushed surfacing, partial right-of-way acquisition (Alternative 2-5 only), and retaining walls. Additional bid items such as utilities, stormwater management, traffic signals, and urban features are expected to be similar across all options above and are not included as part of this analysis.
2. Costs for alternate sections applied at locations such as sensitive property interfaces or for non-motorized sections other than Alternative 1-1 have not been included in this analysis.
3. Paving at intersections and for connecting roadways where work is to be completed is assumed to be full depth.
4. For alternatives which include the closure of the west leg, it is assumed that the cost savings attained on the resulting traffic signal will be roughly similar to the costs required to restore the private property interfaces.

Alternative 3 – Simonds Road NE Intersection

Name	Description	Cost
Alt 3-1	Realign East Approach, Retain West Leg	\$1,397,770
Alt 3-2	Realign East Approach, Close West Leg	\$1,402,818
Alt 3-3	Retain East Alignment with Islands, Retain West Leg	\$1,293,289

Notes:

1. Costs include sidewalk, driveways, planting, asphalt, curb and gutter, crushed surfacing, and retaining walls. Additional bid items such as utilities, stormwater management, traffic signals, and urban features are expected to be similar across all options above and are not included as part of this analysis.
2. Costs for alternate sections applied at locations such as sensitive property interfaces or for non-motorized sections other than Alternative 1-1 have not been included in this analysis.
3. Paving at intersections and for connecting roadways where work is to be completed is assumed to be full depth.
4. For alternatives which include the closure of the west leg, it is assumed that the cost savings attained on the resulting traffic signal will be roughly similar to the costs required to restore the private property interfaces.

Alternative 4 – Limited Right-Of-Way

Name	Description	Cost
Alt 4-1	60-foot ROW - No ROW Acquisition	\$2,214,245
Alt 4-2	80-foot ROW - Acquisition from King County Parcel Only	\$2,290,449
Alt 4-3	100-ft ROW - Acquisition from Several Parcels	\$2,500,855

Notes:

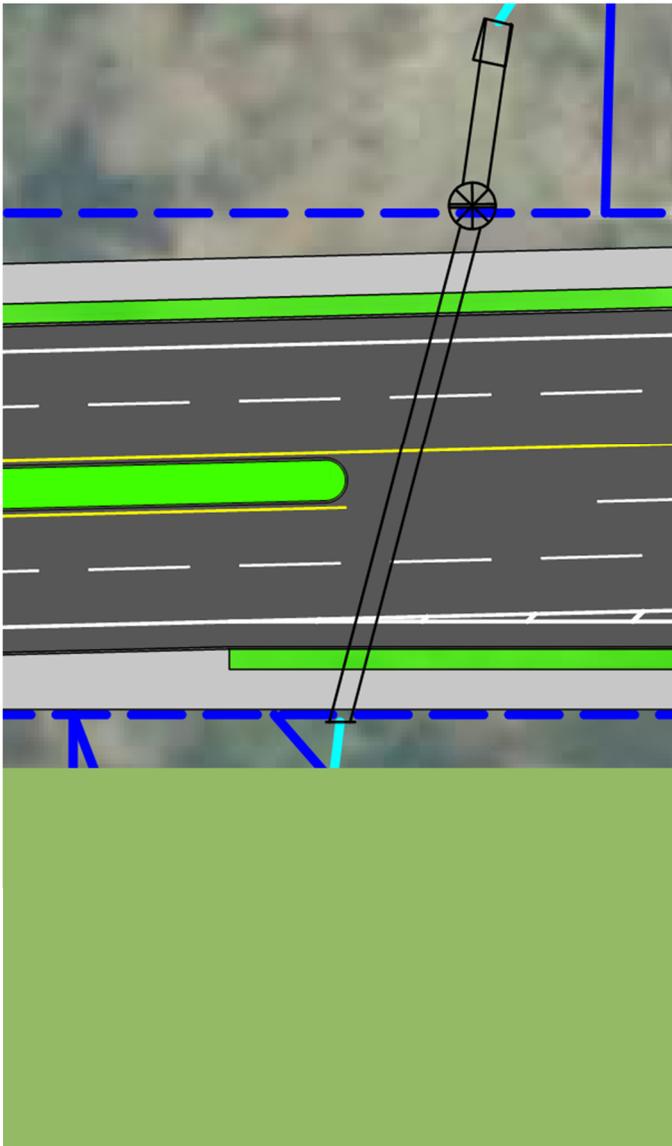
1. Costs include sidewalk, planting, curb and gutter, asphalt, crushed surfacing, and walls. Additional bid items for urban features, stormwater management, utilities, and other elements are expected to be similar across all options above and are not included as part of this analysis.
2. This analysis uses Alternative 1-1 to evaluate an example non-motorized section.
3. ROW acquisition is not included in costs shown.
4. Driveways and property access points not shown will be included in future stages of design.

Alternative 5 – Cedar Creek Culvert

Name	Description	Cost
Alt 5-1	Retain Existing Culvert	\$50,000
Alt 5-2	Removed from consideration	N/A
Alt 5-3	Install New Fish Passable Culvert	\$895,579

Notes:

1. Costs include coordination with roadway-related retaining walls, removal of existing culvert, excavation, new fish passage culvert, streambed sediment, and streambed cobbles. Additional costs such as extensive channel regrading, other fish passage features, and modifications to the existing flow control structure and upstream detention facility are not included as part of this analysis.
2. Alternative 5-2 was removed from consideration during alternatives screening.



Appendix F

Summary of Best-Value Alternatives Analysis





Alternatives Analysis Summary

Alternative 1 - Non-Motorized Section

Name	Description	Performance	Comparable Cost	Value	Rank
Alternative 1-1	On-Street Bike Lane with 4-ft Planter/LID	228	18.39	12.4	2
Alternative 1-2	On-Street Bike Lane with 6-ft Planter/LID	193	17.99	10.7	3
Alternative 1-3	Sidewalk-Level Bike Lane with 5-ft Planter/LID	219	16.06	13.6	1

Alternative 2 - Juanita-Woodinville Way Intersection

Name	Description	Performance	Comparable Cost	Value	Rank
Alternative 2-1	Realign East Approach, Retain West Leg	203.5	5.79	35.1	2
Alternative 2-2	Realign East Approach, Close West Leg	246.5	5.77	42.7	1
Alternative 2-3	Retain East Alignment with Islands, Retain West Leg	144	5.36	26.9	3
Alternative 2-4	Retain East Alignment with Islands, Close West Leg	139.5	5.34	26.1	4
Alternative 2-5	Realign East Approach to Match to NE 134th Ct	222	15.69	14.1	5

Note - Costs for Alternative 2-5 include land acquisition, building impact, and relocation. Additional costs related to acquisition or hazardous materials are not included and are not anticipated to change the resulting value ranking.

Alternative 3 - Simonds Rd Intersection

Name	Description	Performance	Comparable Cost	Value	Rank
Alternative 3-1	Split Phase (Includes NB Shared Left-Thru Lane)	153.5	13.98	11.0	3
Alternative 3-2	Dual Protected Left for NB Approach	183	14.03	13.0	2
Alternative 3-3	Free Right from Simonds Rd NE to SB 100th Ave NE	210	12.93	16.2	1

Alternative 4 - Limited ROW

Name	Description	Performance	Comparable Cost	Value	Rank
Alternative 4-1	60-ft ROW - No ROW Acquisition	162	22.14	7.3	3
Alternative 4-2	80-ft ROW - Acquisition from King County Parcel Only	185	22.90	8.1	2
Alternative 4-3	100-ft ROW - Acquisition from Several Parcels	244.5	25.01	9.8	1

Note - Costs for Alternatives 4-2 and 4-3 do not include ROW acquisition or associated costs

Alternative 5 - Cedar Creek Culvert

Name	Description	Performance	Comparable Cost	Value	Rank
Alternative 5-1	Retain Existing Culvert	67	0.50	134.0	1
Alternative 5-2	Replace Culvert In-Kind	Removed from consideration during screening			
Alternative 5-3	Install Fish Passable Culvert	25.5	8.96	2.8	2

Note - Cost for Alternative 5-3 does not include additional costs for modifications to the existing detention facility

General Notes:

1. All comparable costs are listed in \$100,000 increments and were determined using items which vary within the five alternative groups. Additional costs for items with similar costs and quantities within each alternative grouping were not included.

2. Added ROW costs are not included for Alternative 4. This is due to the project goal of minimizing right-of-way acquisition. While Alternative 4-3 is showing as the best-value on a material-based cost analysis, Alternatives 4-2 and 4-1 will be preferable at this time due to this policy consideration.

3. Additional costs for Alternative 5-3 related to modifications to the existing detention facility are not estimated here as these costs are not able to be fully estimated at this time and will not change the resulting rankings for Alternative 5.



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