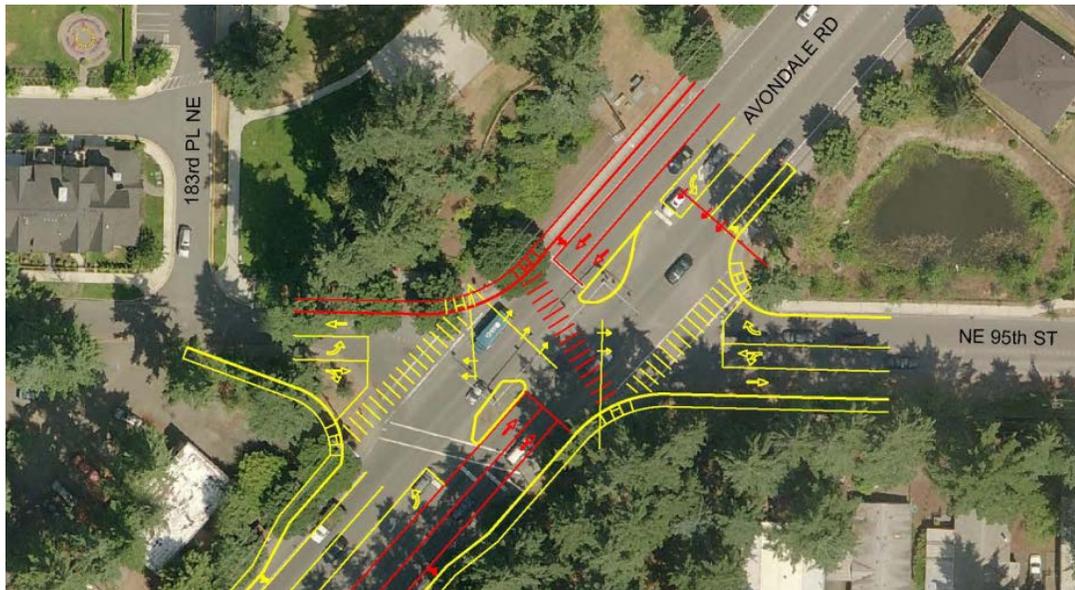




City of Redmond

Avondale Road Corridor Plan

June 28, 2016



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EXECUTIVE SUMMARY

Avondale Road is a Principal Arterial in Redmond that serves as a critical north-south connection for regional destinations and a large area of the city. It is heavily traveled, carrying over 30,000 vehicles per day, and experiences congestion for several hours each weekday in the peak travel direction, especially between the intersections at Union Hill Road and Novelty Hill Road. The purpose of this document—the Avondale Road Corridor Plan—is to further explore the issues identified during previous planning efforts and use those findings to identify and rank a set of candidate projects that could be implemented to reduce vehicle delay and advance other safety and mobility goals.

After reviewing existing conditions and trends, the Plan identifies 22 long-term and 11 short-term potential improvement projects, many of which seek to mitigate the traffic impacts of school buses that currently stop in-lane and have been observed to cause lingering congestion effects throughout each peak period. Most of the projects proposed in the Plan are pullouts for school buses; other project types include new connections, intersection redesigns/signalizations, and pedestrian improvements.

All 11 short-term projects and one long-term project were evaluated using the following weighted criteria. Weights are in parentheses:

- Safety (2)
- Mobility (2)
- Benefit to transit (2)
- Benefit to cyclists (1)
- Benefit to pedestrians (1)
- Livability (1)
- Construction Feasibility (1)
- Cost (2)

This process yielded the following list of projects, in order of priority:

Description	Timing	Rank	Comments
Signalized Pedestrian Crossing at 85th or 88 th	Long -Term	1	Signal warrants for pedestrians and vehicles would need to be conducted.
Avondale Way/Avondale Road Realignment	Long -Term	2	Additional Traffic Signal Analysis needs to be evaluated for phasing
Cycle tracks/buffered bicycle lanes	Short -Term	3	Delineators and/or paint could enable near term installation

Medians	Long -Term	4	Medians would be installed when U turn options are available.
Novelty Hill Rd School Bus pullouts	Short -Term	5	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
NE 95 th Street School Bus pullouts	Short -Term	6	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
88 th / 182 nd School Bus Pullouts	Short -Term	7	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
180 th School Bus pullouts	Short -Term	8	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
NE 90 th St School Bus pullouts	Short -Term	9	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)

For these candidate projects to advance they would need to be submitted in the next update of the Capital Investment Strategy, which will occur in 2018.

INTRODUCTION

A team of Redmond staff and consultants has been cultivating a long-term access management concept for the segment of the Avondale Road corridor between Union Hill Road and Novelty Hill Road. This effort builds upon and provides focus for previous transportation planning work, with an objective to define a long-term traffic access management concept in the corridor.

The clarity of concept provided with the long-term plan will guide design of short-term projects within the corridor toward long-term goals. This effort therefore seeks to define future access points, pedestrian crossing locations, signal locations, transit facilities, and other considerations within the corridor to improve safety and eventually provide optimal traffic operations throughout the multi-modal corridor.

The city's Traffic Safety Improvement Program (TSIP) identified the need for the Avondale Road Corridor Study:

TSIP: Avondale Road Corridor Study

Issue: Improving traffic flow along the corridor as well as circulation for all modes of travel and connectivity to neighborhoods off of Avondale Road is needed. The Greater Southeast Redmond Area Transportation Study identified locations needing further design to address access management and u-turns on Avondale Road. Safety and operational issues relative to transit pedestrian movements and access have been reported through citizen complaints.

Solution: Evaluate, prioritize, and design improvements for these safety, access, and mobility issues.

Intended Outcome: A prioritized plan for delivering safety, access, and mobility improvements for the corridor.

The Bear Creek Neighborhood Plan, now part of the Redmond Comprehensive Plan, identifies several specific policies for Avondale Road planning that have guided this corridor plan:

The Bear Creek Neighborhood Plan

23: Coordinate location of crosswalks near transit stops and future trail connections to facilitate safe and convenient pedestrian crossings of Avondale Road.

27: Provide safe and convenient bidirectional access to Avondale Road for local residents. Achieve this by building new local street connections to provide access to signalized intersections, creating safe u-turn opportunities, or using other traffic management techniques.

29: Remediate local access issues in the Avondale corridor when opportunities arise through private development or capital improvement projects, consistent with

transportation planning documents. For example, replace individual residential driveways with consolidated access to a signalized intersection.

30: Design site plans for new developments so that they accommodate planned street connections as shown in the Transportation Master Plan and Bear Creek Neighborhood Transportation Connections Map.

34: Evaluate strategies in future Avondale corridor planning efforts that would:

- Improve safety for students walking and riding the bus to school.
- Work to improve traffic flow by partnering with the school district and other transit agencies to evaluate and encourage alternatives to in-lane stops.

The corridor long-term access management plan identifies candidate improvement projects at specific locations within the corridor that align with TSIP and Bear Creek Neighborhood Plan objectives. Candidate projects are identified and discussed in this report. A prioritization of candidate project by the project staff team is summarized at the end.

I.0 PROJECT SUMMARY

I.1 Previous corridor planning

Various corridor studies for Avondale Road have been performed in the past. Below are brief descriptions of the findings for each analysis and planning effort.

Greater Southeast Redmond Transportation Study, Avondale Road Recommendations 2010

- Roadway widening
- Access management
- HOV lane, southbound from 180th to SR520
- Southbound bike lane, path on east side
- 180th Extension
- 95th intersection reconfiguration
- Novelty Hill Road intersection reconfiguration

Avondale Road Corridor Final Technical Memorandum, May 2011

- Provided collision analysis
- Catalogued transit and school bus activity
- Developed project concepts, priority and costs
 - Avondale / Avondale Intersection reconfiguration \$1.1M
 - 180th extension \$4.0M
 - 95th intersection reconfiguration \$0.8M
- Recommended the development of a corridor access management plan

Avondale Road Corridor Planning Summary of Findings and Recommendations, October 2011

- Bus pull-outs for Lake Washington School District
- Bus pull-outs for KC Metro and ST buses
- Median refuge areas
- Develop a long-term (30-year) access management plan
- Implement walking audit recommendations

I.2 Current Project: Avondale Road Corridor Plan

The Corridor Plan has the following objectives:

- Further explore the outstanding issues and concepts along Avondale Road previously identified through the SE Redmond Transportation Planning process
- Identify and evaluate potential improvement projects
- Develop an access management plan for the Avondale Road corridor

2.0 CORRIDOR OVERVIEW

Avondale Road is functionally classified as a Principal Arterial and Automobile Modal Corridor in Redmond's Street System Plan. Its principal function is to provide multi-modal capacity and continuity for travel between different areas of the region. The Transportation Master Plan envisions:

- 4 general purpose lanes
- Automobile modal corridor
- Bicycle modal corridor
- Transit modal corridor

The existing cross-section includes four 11-foot travel lanes, a 12-foot median area, a 5-foot bicycle lane in each direction, curb, gutter and a 6-foot sidewalk on each side, with mature landscape behind the sidewalk to the edge of the right-of-way. Current curb-to-curb width is 70 feet. Current right-of-way width is 90 feet.

Current access controls are inconsistent. In most locations direct property access is not allowed, yet there are some direct driveways present. Some single-family detached properties access through shared driveways. There are some large multifamily communities accessed through major driveways. There is some raised and landscaped median, as well as significant reaches of median two-way left-turn lane.

As the only connecting N-S roadway corridor between SR202 and SR203, the Avondale Road corridor provides a critical regional connection for a large area. The current travel demand in the corridor is very high. Volume exceeds capacity for several hours each weekday in the peak travel direction. Avondale Road is an important work trip commute route, with high travel demand southbound toward the more urbanized areas in the AM peak, and the inverse in the PM peak period. 2012 ADT on Avondale Road was measured at 41,800 vehicles.

There are no new roadway corridors planned to supplement the capacity afforded by the Avondale Road corridor aside from the recently built 196th Ave NE. The planned growth in area population and travel demand in upcoming decades must therefore be serviced by this corridor. Projected volume in the corridor in the year 2030 is 46,300 ADT, an 11% increase over 2012 volumes over the next 18 years. Because maximum hourly volume has already been reached during peak travel periods, the additional volume would only be accommodated by increasing the number of hours of saturated (forced flow / LOS F) conditions, or by diverting the additional trips to alternative modes.

The study segment of the Avondale Road corridor, Union Hill Road to Novelty Hill Road, is the most congested 0.5-mile of the 6.5-mile regional principal arterial connecting the terminus of the SR520 freeway at Union Hill Road with the Woodinville-Duvall Road. Capacity in the highest-volume segment (Union Hill Road to Novelty Hill Road) is governed at either end by intersection capacity. During peak periods the traffic signals at both Union Hill Road and Novelty Hill Road are over capacity and meter volumes within the segment.

2.1 Issues

Safety

A principal objective of any proposed corridor improvement is to reduce the likelihood of future accidents and injuries. To better understand this issue the following tasks were undertaken by this analysis:

Speed Zoning Analysis

A formal traffic engineering speed survey was conducted and included as an appendix to this report. The existing posted speed limit within this segment of the corridor is 40mph. The new speed zone analysis confirmed that this is the appropriate speed limit for this corridor under the current channelization, and the recommendation is to maintain the 40mph speed limit. In a review of reported collisions in the Avondale Road corridor, speed has not been shown to be a significant contributing factor to either causation or severity. It is acknowledged that there has been a recommendation from a previous walking audit to lower the posted limit to improve the pedestrian experience, yet the recommended reduction is not supported by the traffic engineering analysis due to the concern that a lower posted limit would:

- Increase speed differential within the traffic stream and lead to an increased likelihood of traffic accident due to increased weaving, decreased headway, and other inconsistencies in flow.
- Create an unenforceable condition where more than 15% of the drivers would drive above the posted limit regularly, making it more difficult to apply enforcement to the truly imprudent drivers.

The traffic engineering speed survey was based on day-long multi-direction counts. The observed speed decreases during the AM and PM peaks may have artificially decreased the determined free-flow speed.

Collision Analysis

37 months of traffic accident reports were reviewed as part of this effort (1-19-10 to 2-11-13) seeking to understand causation patterns, magnitude and frequencies. This work built upon previous accident analysis conducted as part of the Avondale Road Corridor Technical Memorandum, May 2011, and the Avondale Road Final Summary of Findings and Conclusions, October 2011. Previous analysis failed to discern significant factors that could be mitigated. This more focused effort reviewed the written narratives of each accident report seeking a more thorough level of understanding to the accident history. In the study period there were 109 reported accidents in this segment of the Avondale Road corridor.

- 9 bicycle accidents. 5 of these involved a right-turning vehicle entering the corridor and colliding with a bicycle. 2 of these involved the bicycle going wrong-way on the sidewalk. This is one of the highest bicycle collision corridors in the City.
- 2 pedestrian accidents. One was jaywalking after exiting a bus, one involved a right-turning vehicle entering the corridor colliding with a contra-flow pedestrian (an identical causation to two of the bicycle collisions).
- 35 accidents were minor rear-end types attributed to either a distracted driver or inadequate attention, with an additional 25 collisions attributed to following too closely. All of these accidents can be grouped as similar in conditions (congested, low speed, stop-and go, and low severity). This category totals 60 collisions, 55% of all period accidents.
- 23 accidents occurred at a signalized intersection. 19 of these involved the yellow change interval of the signal, with 9 accidents resulting from running the red light and 10 resulting from the first vehicle stopping for yellow and a following car not intending to stop resulting in a rear-end collision. It should be noted that the city has already acted to mitigate this pattern by installing a supplemental signal head for northbound traffic at the location of a majority of this accident type, the Avondale Way intersection. This accident pattern has already been significantly reduced due to this mitigation.

- 9 accidents occurred due to improper lane changing.

The crash rate for Avondale Road during the study period was 2.55 crashes per million vehicle miles travelled (VMT). The King County crash rate (based on 2011 data) was 2.04. The conclusion of the accident history analysis is that the accident rate and severity within the corridor is not a significant issue. Considering the large volume of vehicles and the relatively minor injuries resulting from the accidents, there were no apparent safety concerns discovered which could be mitigated.

Future Corridor Safety

As travel demand increases in future years the existing safety environment may change. It is anticipated that the future would see an increased reliance on alternative transportation modes to provide mobility. This desired planning theme is formalized in Redmond's Transportation Master Plan and Comprehensive Plan. This shift to additional transit, bicycle, vehicular, freight and pedestrian travel will demand operational changes in the corridor to accommodate needs and to reduce accident potential. Specific changes that can optimize safety under conditions with increased reliance on alternative modes would involve:

- Additional pedestrian crossings to reduce unprotected crossings, ease transit access, and decrease contra-flow bicycle trips.
- Increased access management to provide consistency, provide positive guidance, and reduce the number of conflict points such as driveways and left-turn locations.
- Additional traffic signals to protect left-turns and crossings.
- Additional transit service to accommodate the planned transit service demand increase.
- Improved transit amenities to improve transit experience and encourage transit use.
- Transit stop / school bus waiting areas to accommodate riders in areas more distant from the travel lanes to segregate waiting pedestrians from travel lanes to improve the transit user experience, create a neighborhood place, and reduce the likelihood of accident.
- Select intersection reconfigurations to improve multi-modal Level-of-Service (LOS).
- Enhanced street lighting to improve security and reduce the likelihood of accidents.

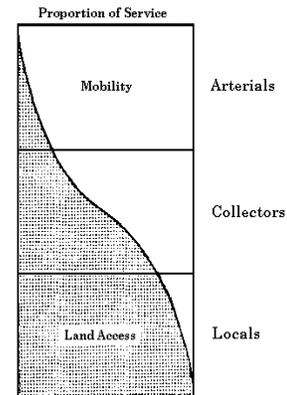
Capacity

The Avondale Road corridor has a primary function of providing transportation throughput. In the functional classification hierarchy, this regional facility is intended to favor safe and efficient throughput over access and convenience to adjacent properties. The FHWA Functional Classification Guidelines state that "For principal arterials, the concept of service to abutting land should be subordinate to the provision of travel service to major traffic movements. It should be noted that only facilities within the "other principal arterial" system are capable of providing any direct access to adjacent land, and such service should be purely incidental to the primary functional responsibility of this system." The diagram Figure II-4, taken from the FHWA Functional Classification Guidelines, has been utilized for decades as the guiding concept in urban transportation planning. It demonstrates that the primary function of the Avondale Road corridor should be mobility, with land access such as local convenience, driveways, crossings, and other degradations to mobility minimized.

Avondale Road, functionally classified by FHWA, WSDOT, and the City of Redmond as a Principal Arterial, is one of very few through transportation corridors in a large subarea, and the only north-south continuous route between SR202 (Minor Arterial) to the west 4 miles, and SR203 (Major Collector) to the east 5 miles. Avondale Road serves as the principal transportation facility for a large area with significant population.

It has been acknowledged for some time and documented in several transportation analyses that travel demand on the Avondale Road corridor exceeds available capacity for several hours each weekday. As volume reaches capacity, trips are delayed and deferred into other time periods with available capacity. Other trips can be deflected to other routes, burdening collectors and local streets with higher volumes. Other trips are abandoned or suspended. The concept of latent demand acknowledges that there are already considerable trips deferred away from the Avondale Road corridor due to the existing lack of capacity, and that if corridor capacity were increased the latent demand would immediately produce new trips to continually match capacity in peak demand hours. With population growth continuing into the future, producing increased travel demand, increases in both latent demand and in the number of hours of saturated flow are anticipated. The need for efficient mobility is very high, with an expected exacerbation of this condition in future years.

Figure II-4
Relationship of functionally Classified Systems
in Serving Traffic Mobility and Land Access



The corridor capacity is dictated by the most constrained locations within the corridor (bottleneck concept). The lowest capacity in most corridor segments is at the signalized intersections. On Avondale Road, the capacity bottlenecks are the intersections with the least amount of green time allocation to corridor throughput. For southbound Avondale Road, the intersection at Union Hill Road is the critical intersection for capacity. For northbound, the lowest capacity point is the intersection with Novelty Hill Road. Cross-traffic volumes are highest at these two intersections, requiring considerable green time for the cross-traffic and turning movements. The time necessary to service other movements reduces available time for progression on Avondale Road. Increasing vehicular throughput at these intersections, and thereby capacity in the corridor would involve measures either to increase Avondale Road green time allocation, at the expense of other intersection movements, or measures to optimize throughput within the available green time.

An increase in trip throughput (as opposed to vehicular throughput) would also be realized with a modal shift to higher occupancy vehicles. Yet this very effective mobility enhancement would be difficult to achieve unless the option provides a significant travel time reduction, as there are inherent personal drawbacks to ride sharing and transit that cannot be overcome without a time reduction benefit.

In defining a future corridor access management concept, it is clear that measures to increase mobility along the Avondale Road corridor should be identified.

With a primary function of personal mobility, consideration of all possible capacity improvement projects should be encouraged. Capacity enhancement and safety measures that should be considered include:

- HOV segregation facilities
- School Bus-pullouts
- Turn restrictions
- Driveway elimination and consolidation

- Right-turn lanes
- U-Turn lanes
- Geometric improvements to increase throughput
- Bicycle facilities physically separated from vehicle traffic

The city considered each concept's multi-modal capacity improvement value along with cost, impact, context, and other factors as the Avondale Road Corridor Plan was developed. Mode and environmental issues are discussed in the following section.

Freight

Efficient freight and truck movement is an important component of mobility on arterial roadways such as Avondale Road. Efficient freight is an economic necessity in any society and should always be an important consideration when evaluating cost / benefit in project evaluation. Freight movement is widely recognized as an important facet of regional transportation and should not be overlooked as an important consideration. A recent shift from personal shopping to e-commerce and delivery is expected to grow in future years and further emphasize the priority of freight movement in the Avondale Road corridor.

In addition to the regional freight movements to and from the metropolitan core via SR520, the local community contains some significant freight businesses sensitive to Avondale Road travel efficiency such as UPS, Cadman, and other firms in Southeast Redmond.

Transit

Transit and high occupancy vehicles provide the greatest opportunity to increase corridor throughput and overall mobility in both near term and long-term eras.

At the present time, transit and HOV are not significant contributors to overall person throughput. This fact is understandable when considering that:

- Transit service is currently limited
- Transit stops are unattractive
- Transit / HOV modes are not provided any travel time benefit over single-occupant vehicles
- Transit frequency, speed and reliability are low

Transit enhancements are critically important to realize the mobility improvement potential of this mode. Ridership is stifled by unattractive waiting areas, low frequency and reliability, and a lack of time savings over driving single-occupant vehicles. Transit enhancement candidates include:

- ITS – CCTV security, real time arrival information
- School Bus pullout
- Additional protected crossings
- Bus Stop improvements – lighting, “place,” waiting area, secure bicycle storage facilities
- Increased service and service reliability
- Grade separation at Union Hill Road

Bicycle

Redmond, the “Bicycle Capital of the Northwest,” has developed a robust segregated bicycle facility network and has many facilities in place, including existing bicycle lanes as part of the cross-section of Avondale Road. Connectivity to other bicycle transportation network facilities is limited due to lack of bicycle lanes at the south end of the corridor near Union Hill Road and on Avondale Way. Additional enhancements to regional bicycle network connectivity are being planned but are not funded in the foreseeable future.

There is potential for bicycling to be an attractive travel choice on Avondale due to flat grades, significant trip destinations/housing, and travel time savings over other modes during peak period. However, high vehicle speeds and volumes discourage bicycle ridership on the corridor and leads to many people who bicycle on the corridor to ride on the sidewalk instead of bicycle lanes (which studies show feels more comfortable but is less safe). Bicycling will be a more attractive option with:

- Additional physical separation – buffered bicycle lanes or protected bicycle lanes will increase separation from vehicles, encouraging a broader set of residents to consider bicycling on Avondale. The higher the level of separation (wider the buffer or flexpost) the more comfortable bicycling on the corridor will be.
- Improved connectivity – A complete system of dedicated bicycle facilities that connect to Downtown and Southeast Redmond could be achieved via: the extension of the Bear Creek Trail (to Avondale Road and Avondale Way), and/or installation of bicycle lanes on Avondale Way (from Union Hill Road to Avondale Road) and on Avondale Road (from Union Hill Road to Avondale Way).
- Additional protected crossings – Wrong way direction bicycle accidents have proven to be a significant safety issue in the corridor and are the leading cause of bicycle collisions nationally. The decision to make a wrong-way trip is often influenced by the difficulty (scarcity of crossings and delay) of crossing.

Pedestrians

Pedestrian activity is fairly light yet constant throughout the corridor. Walking trips take place for a wide variety of purposes. Observations indicate that the primary trip purposes for walking are transit access, school bus access, shopping, and recreation. The corridor is used frequently by runners for exercise.

The Avondale Road corridor provides the only continuous route for walking trips in range of the dense residential community adjacent to the corridor with a 6.5-foot sidewalk on each side segregated from the bike lanes and roadway by curb and gutter.

Pedestrian area lighting is fairly low due to the considerable tree canopy overhanging the sidewalk areas in many locations.

Safety concerns with pedestrian trips include jaywalking (principally to access transit) and with turning vehicles.

The walking experience is significantly diminished by the proximity and speed of traffic with resulting noise, wind, air quality, and threat aspects. This issue was the central component behind the Walking Audit recommendation to lower the posted speed limit.

Although most of the adjacent properties are developed there is opportunity for development that would increase pedestrian volumes in addition to increased use of transit, with more walking trips to the future transit stop locations. Improvements to pedestrian mobility should therefore prioritize measures to enhance walking access to transit locations in the corridor. Candidate pedestrian improvements would include:

- Additional protected crossing locations
- Improvements to transit waiting areas such as size, sheltering, and segregation
- Widening of the sidewalk or narrowing vehicle lanes to move vehicles further away from pedestrians
- Reducing the speed limit
- Segregation of walking areas from the travel lanes
- Pedestrian scale lighting
- ADA improvements

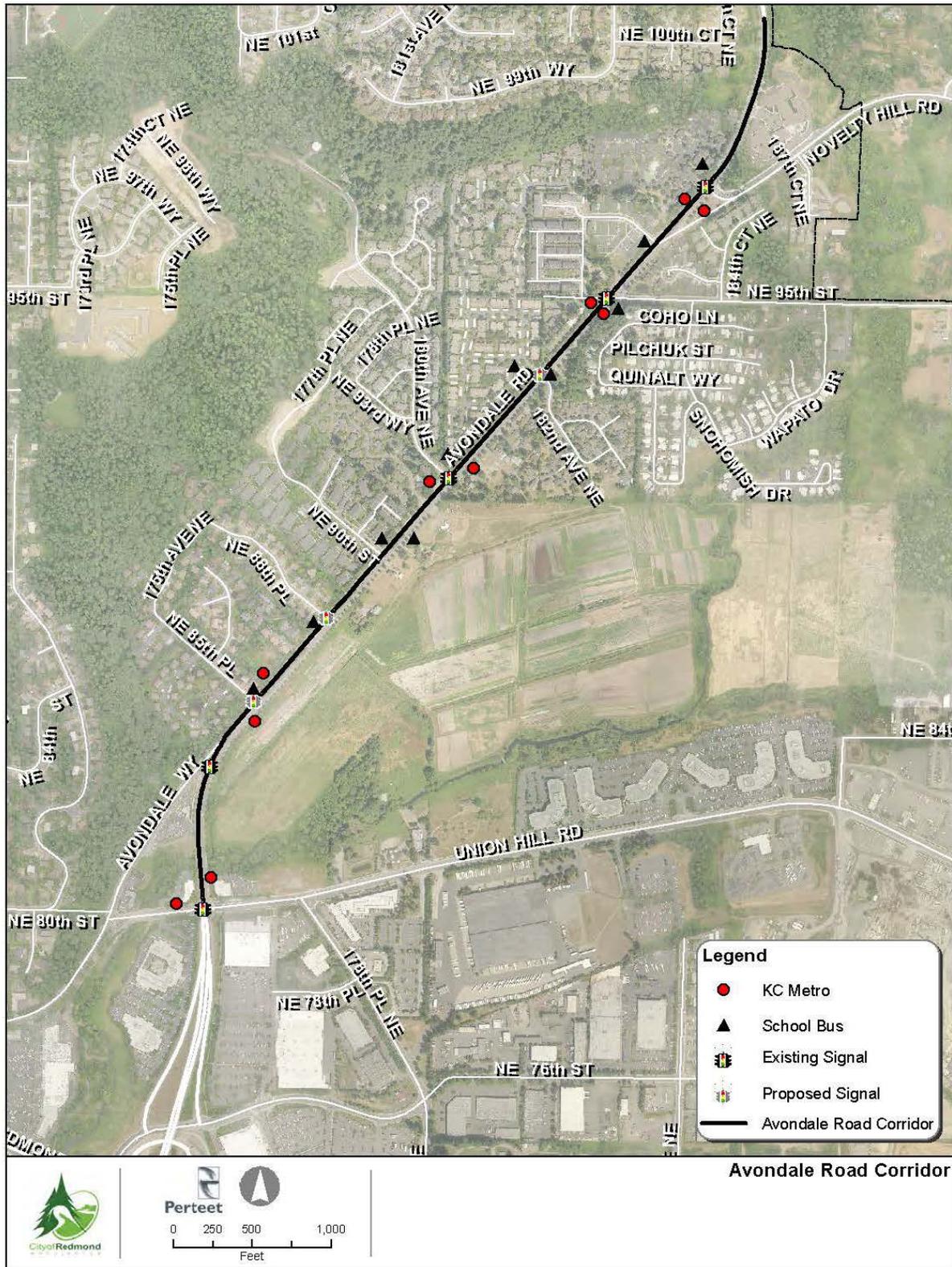
School Transportation

Observations and measurements have revealed that the most detrimental factor currently impacting Avondale Road corridor throughput is school bus operation. No other operational factor currently approaches the negative impacts to capacity imposed on corridor capacity. With an objective of optimizing corridor capacity, diminishing the negative impact created by school bus operations has emerged as a high priority. Friction created by school bus operations has a particularly negative impact in the critical AM peak period. All traffic in the same direction along the corridor is required to come to a stop as a bus engages flashing red lights. During these delay periods traffic queues rapidly, commonly backing through intersections and causing a cascading long-term failure throughout the corridor. Progressive stop locations for each bus as it moves southward in the corridor greatly exacerbate this condition. Typically, traffic flow does not normalize for the remainder of the peak period.

Regulations on school bus loading require that they engage their red light beacons (and that subsequently other traffic must then stop) unless they are outside of the travel lane of the roadway. The corridor currently has one existing school bus loading pullout in the corridor at 180th Ave. NE. Here, the school bus does not cause traffic to stop while loading, whereas elsewhere in the corridor the bus stops traffic and significantly reduces LOS. The elimination of the obligation of traffic to stop for school bus operations would provide a significant improvement to mobility throughout the corridor, particularly in the critical AM peak period.

The project team has focused on this issue and, in cooperation with the Lake Washington School District, recommends a potential mitigation strategy to address this significant corridor mobility issue:

- Construct school bus pullout areas at optimal locations in the corridor.
- As part of the pullout construction projects, create attractive and secure pedestrian plaza areas to segregate waiting children and parents from the travel lanes.



Source: City of Redmond (2008)

Figure 1: Bus stop locations and ridership

Lighting

Existing street lighting satisfies roadway lighting design recommendations, yet it is compromised by tree canopy, particularly affecting pedestrian and roadside areas with inconsistency in lighting ratio.

Lighting enhancements may be considered to compensate for canopy shadowing with pedestrian scale lighting, enhanced lighting at proposed enhanced pedestrian plazas, and at decision point such as major driveways and intersection areas.

Intelligent Transportation Systems (ITS)

The use of technology in optimizing traffic operations is and will continue to be an important asset in managing mobility in the Avondale Road corridor. Already, the existing traffic signals are part of the city's RITS traffic management system. They are tied into the traffic management center for monitoring and control, signal coordination, and timing plan flexibility. Corridor traffic monitoring is presently augmented with the presence of CCTV cameras in the corridor. This enables remote observations of traffic observations for incident detection and remote mitigation, and other advantages.

Further enhancements to technology and additional equipment distribution in the future will improve the effectiveness of ITS in helping corridor mobility. Potential ITS enhancements may include:

- Traffic signal queue jumps (as part of a queue bypass construction project)
- Additional CCTV
- Variable speed limit capability
- Travel time information
- Incident detection and alerts
- Additional technologies under development

Access Management

Previous planning efforts for the Avondale Road corridor have recognized that while property access continues to be a corridor function, future conditions may warrant the imposition of access management at some locations to smooth traffic flow, improve capacity, or address high accident locations. As access to adjacent properties is managed with prohibitions on left-turns, driveway closure or consolidation, impacts should be anticipated and mitigated. For instance, if a left-turn restriction is implemented, diverted trips should be accommodated at proximate U-Turn locations. Access management considerations include:

- Provide an alternate route. One specific suggested project to mitigate turn restrictions at midblock driveways is to build the eastern leg of the 180th intersection, providing a back-door route for the community to access the existing signalized intersection without additional maneuvers on Avondale Road.
- Consolidate driveways
- Construct channelized median refuge areas
- Construct mid-block U-Turn facilities
- Construct U-Turn widening

3.0 PROPOSED ACCESS MANAGEMENT PLAN

Previous Avondale Road recommended next steps include the development of a long-term access management plan. In consideration of all of the above issues, projections, corridor needs, opportunities and constraints, the project team has developed a conceptual 30 year + access management plan for the corridor, presented in Figure 2.

This access management plan has been evaluated in terms of mobility relative to a no-action alternative utilizing a Synchro computer model. The model was calibrated in an attempt to accurately simulate the current volumes and travel times based on available data. Such data included daily traffic volumes, signal timing information, corridor geometry, and bus ridership. An initial model was developed that used the Highway Capacity Manual (HCM) methodology for predicting user delays and vehicle behavior. However, that model needed to be focused to specific local conditions to account for certain factors.

The primary issue with the Avondale Road corridor is school bus traffic during the AM and PM peak commutes. Currently, the HCM model has a feature that can account for “bus blockages” at an intersection (either on the nearside or farside), however that feature cannot account for the legal requirement of all traffic in the direction to stop for the flashing red lights of a school bus. To help offset the lack of this modeling capability, the number of bus blockages (which impact only one of the two travel lanes in each direction) was increased substantially.

To further counteract the deficiency in the model in respect to school bus activity, the saturation flow rate for each segment was reduced to reflect decreased mobility. These additions to the model resulted in level of service values that appeared to match observed behaviors along the corridor.

That model was developed using present-day volumes. A second model was also developed using present-day volumes, but incorporated the short-term proposed access management plan improvements throughout the corridor. As a result, bus blockages were nearly eliminated, certain access points were adjusted, signals were added, and the saturation flow rate was returned to the standard value. A final model was developed to show the effects of the short- and long- term projects. The results of the three models are presented in Table 1.

The Access Management Plan, once adopted, would establish intention to guide upcoming private and public development projects throughout the corridor. It is possible that all proposed changes would be implemented as one corridor enhancement project. As a large project, funding would likely be delayed until it could become part of the PSRC Regional Transportation Improvement Program. This approach offers advantages:

- Economy of scale
- High likelihood of regional funding
- Improved product
- Reduced overall construction impact

It is more likely that the implementation of the Access Management Plan would be as a series of changes over time at various locations within the corridor. Each project would build incrementally toward the future footprint depicted by the Long-Term Access Management Concept.

The following section of this report explores individual locations within the corridor seeking to identify potential short-term candidate improvement projects at each location which build toward the long-term Access Management Plan.

Table I: Synchro LOS Comparison

<i>No-build, Reduced</i>	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Novelty Hill Road	C			F	F	C	F	E		F	F		
NE 95th Street	E		A	E		B	F	D		E	F		
180th Avenue NE	E		B				E	A				F	
Avondale Way	D		E					A				D	B

<i>Arterial LOS</i>	
SB	F
NB	C

**No-build, Reduced includes a 20% reduction in saturation flow rate to account for school bus delays that could not be modeled otherwise*

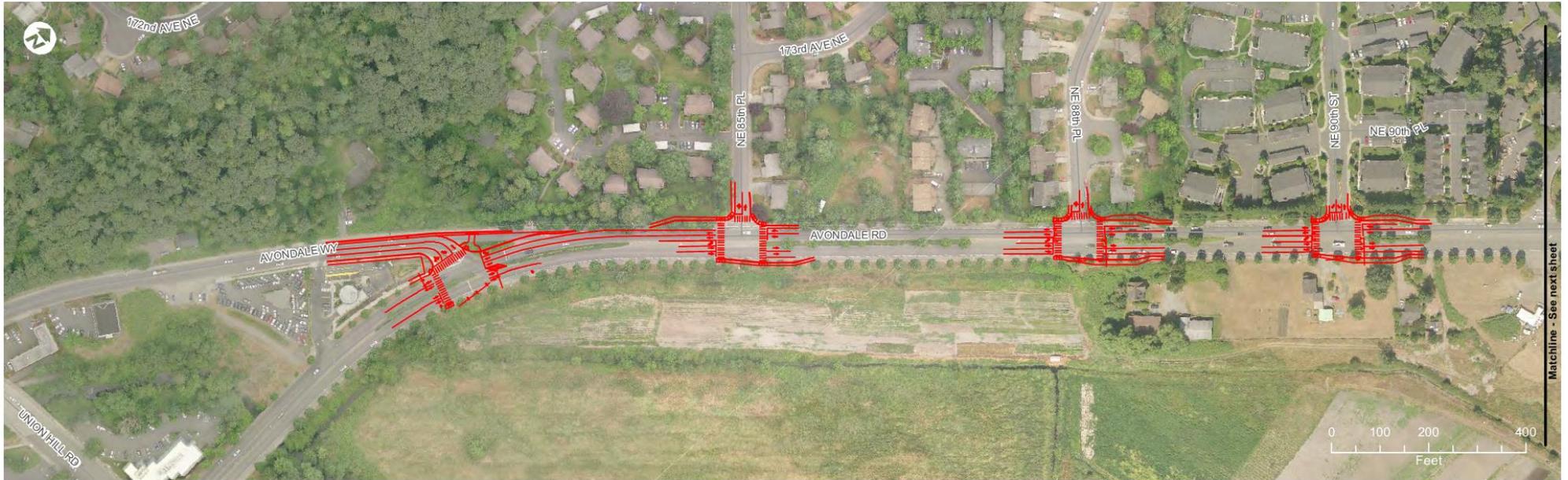
<i>Build</i>	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Novelty Hill Road	C			F	F	B	E	D		E	F		
NE 95th Street	E		A	E		B	E	C		E	F		
180th Avenue NE	F	B					D	F	C		F	F	
Avondale Way	D		E					A				B	A

<i>Arterial LOS</i>	
SB	F
NB	C

<i>Future</i>	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Novelty Hill Road	D			E	E	B	E	D		E	F		
NE 95th Street	E		A	E		B	E	C		E	F		
182nd Avenue NE	F			D	D		A	A		A	F		
180th Avenue NE	F	B					D	E	C		F	F	
NE 90th Street	E		E				A	A				E	
NE 88th Place	E		E				A	A				E	
Avondale Way	D		E					A				B	A

<i>Arterial LOS</i>	
SB	F
NB	D

Avondale Road Corridor Plan



LONG-TERM ACCESS MANAGEMENT CONCEPT

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Figure 2: Long-term access management concept

4.0 CANDIDATE PROJECTS

4.1 Corridor Plan Goals

The corridor plan seeks to accomplish the following goals. A candidate project would advance the plan's goals.

Safety

Improving safety is a primary goal for the corridor. The history for Avondale Road does not indicate an excessive crash rate. Candidate projects should either maintain or improve safety levels. Avondale Road should develop a roadway environment that protects all left turn movements, provides pedestrian crossings, buffers transit riders, improves lighting, reduces conflicts, and increases predictability to reduce crash potential.

Mobility

Improving mobility is a primary goal for the corridor. Substantial, corridor-wide delays are frequent during the AM and PM peak periods. Traffic volumes on Avondale Road are projected to increase in future years which could further reduce mobility. Candidate projects should either maintain or improve mobility, defined here as Level-of-Service (LOS).

Transit

Improving transit is a goal for the corridor. With vehicle capacity maximized, corridor throughput can only be increased through vehicle occupancy rate increases. Increased transit use is the most likely method for achieving increased mobility. Bus ridership is currently low for Avondale Road and is an area of potentially strong growth in the future. Increasing transit speed and reliability will tend to increase ridership, which should reduce congestion and emissions along the corridor. Candidate projects should tend to maintain or improve transit speed and reliability. The corridor is bracketed with high density developments and a demography that could generate significant transit users. One factor that may be discouraging potential users, other than the low transit service level, may be the quality of transit stop amenities. Candidate projects should improve transit stop amenities.

Bicycle

Improving bicycle facilities is a goal for the corridor. Avondale Road generally has directional bicycle lanes. Candidate projects should tend to maintain or improve bicycle facilities.

Pedestrian

Improving pedestrian facilities is a goal for the corridor. Avondale Road currently has continuous sidewalks on both sides of the roadway throughout the corridor. Candidate projects should tend to maintain or improve pedestrian facilities, prioritizing accessible route connectivity.

Livability

Improving livability is a goal for the corridor. Livability includes corridor aesthetics, local access, community environment, convenience, project approval level, and safety of access. Candidate projects should tend to maintain or improve livability.

Construction Feasibility

Maximizing construction feasibility is a goal for each candidate project. Complex projects are less feasible. Typical factors complicating project progress include community resistance, property rights, physical obstacles, and resources. Candidate projects should tend to maximize construction feasibility.

Cost

Minimizing cost is a goal for each candidate project. Costs to be considered include engineering, construction, mitigation and maintenance expenses for the life of the improvement. Candidate projects should tend to minimize cost.

4.2 Novelty Hill Intersection

Long-Term Plan

This intersection is a critical intersection metering throughput at the confluence of two regional roadways. As such, projects to improve LOS at this location would deliver corridor-level benefit.

The corridor plan does not explore the long-term intersection reconfiguration alternatives, instead assumes that the intersection will maintain signalized control, with all four approaches remaining in the same location. Pedestrians have marked crosswalks across all four legs. Current operations are hampered by the existence of a south-leg crosswalk which is in conflict with and thereby restricts the dual westbound-left turn movement from Novelty Hill Road.

Transit facilities should be important at the confluence of these corridors and incorporated into any proposed future intersection reconfiguration. An existing school bus pullout just north of the intersection function should also be accommodated as part of future concepts.

Short-Term Plan

Transit and school bus ridership at this intersection is high for the Avondale Road corridor. On average weekdays, 188 school bus riders use a southbound stop to the north of the intersection, 26 northbound Metro bus riders uses a nearside stop at the southeast corner, and 41 southbound bus riders use a farside stop over 75 feet south of the southwest corner.

Southbound school and transit ridership could be consolidated at a revised pedestrian area to the south of the intersection. This area would be constructed as a “plaza”, including wide sidewalks, buffer distance between traffic, and possibly even artistic or landscaping elements to improve aesthetics. Right of way appears to be available (or easy to obtain) in the vicinity near the current Metro shelter. Some trees may require removal, but could be relocated to create a landscape buffer between the sidewalk and roadway.

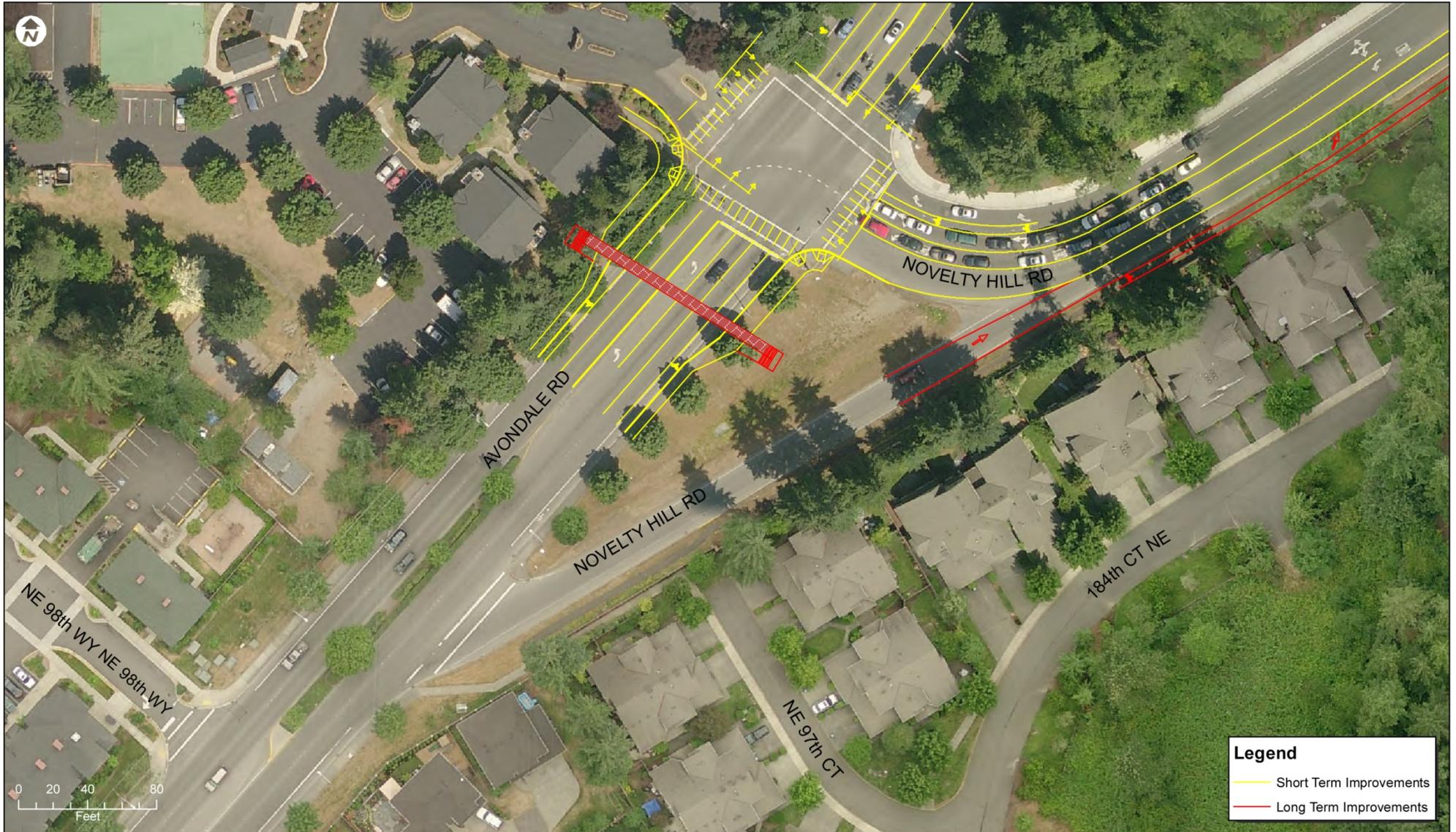
The centerpiece of the plaza setup would be a pullout to be used by both Metro and Lake Washington School District buses. This pullout will improve operations by reducing delay caused by buses stopping in-lane while passengers board. This benefit will be amplified for school buses, because they are not required to activate flashing red lights while in a pullout.

A similar configuration could be used for northbound bus travel at the southeast corner. Ample right-of-way is available for a pedestrian plaza and bus pullout area. A bus pullout at this location could

extend to intersection as a dedicated bus lane that is given priority at the beginning of the northbound thru phase at the signal.

Improvements	
Long-Term Plan	Reconfigure intersection footprint Develop additional public facilities, Install northbound transit queue bypass
Short-Term Plan	Construct pullout plaza for school and Metro use (southbound, farside) Construct pullout plaza for Metro use (northbound, nearside)





CONCEPTUAL PLAN
AVONDALE RD & NOVELTY HILL RD

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Figure 4: Novelty Hill Road improvements

4.3 NE 95th Street Intersection

Long-Term Plan

The intersection will maintain signalized control, though the defined pedestrian crossing locations may shift to increase safety and reduce vehicle travel delay. The high degree of skew at this location presents challenges for safety and operations for all modes of travel. The long-term plan therefore depicts geometric changes for this intersection to provide improved LOS.

Short-Term Plan

Current bus facilities at the intersection of NE 95th Street mirror the intersection of Novelty Hill Road. Both transit stops are south of the intersection, with a shelter for southbound travel and an uncovered bench for northbound. Ridership is higher at this location with 52 daily average southbound riders and 47 northbound. A northbound school bus stop caters to 2 riders per day.

Both directions of travel offer prime locations for plaza-style pedestrian improvements. The northbound stop has between 5 and 10 feet of right-of-way available next to the existing trailer park. The southbound location (shown in Figure 5) sits adjacent to an undeveloped corner that would provide for a community plaza environment. Both locations should be wide enough to allow for bus pullouts, which will improve operations in the corridor.

The location provides a very good open space to build a plaza for southbound on the SW corner. Incorporate the trees into the pedestrian boarding area. If the utility pole at the corner can be avoided it would be a straightforward project.

Improvements	
Long-Term Plan	Modify intersection layout Add transit signal priority Install pedestrian crosswalks
Short-Term Plan	Construct pullout plaza for Metro use (southbound, farside) Construct pullout plaza for school use (northbound, nearside)



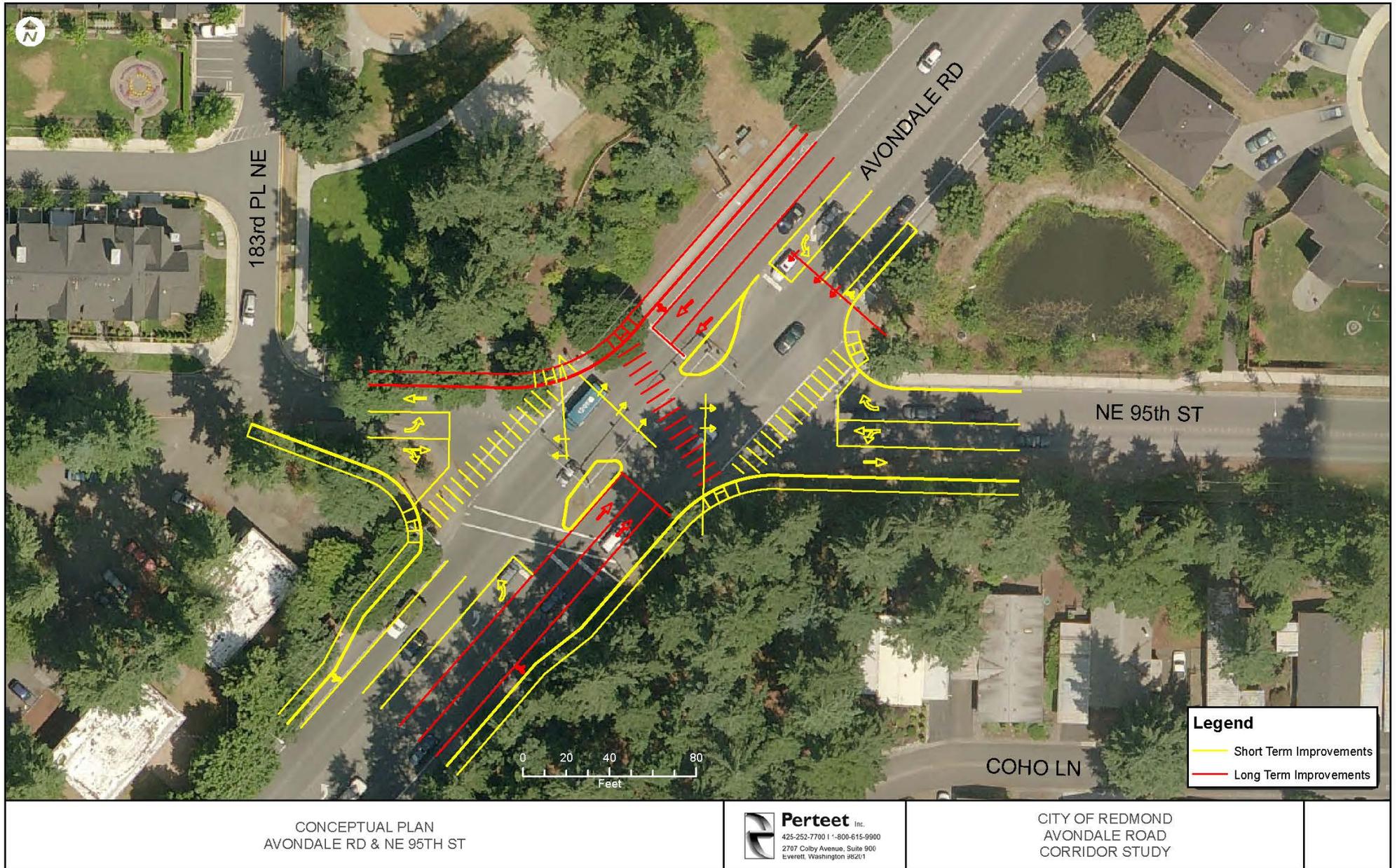


Figure 5: NE 95th Street improvements

4.4 88th St / 182nd Ave / Colony entrance / Avondale Green entrance intersection

Long-Term Plan

The intersection will gain signalized control and marked crosswalks at all legs to promote pedestrian safety. In accordance with the proposed Access Management Plan, all turning movements in the nearby vicinity will be directed to this or surrounding intersections because of the installation of a median island in place of the existing two way left turn lane (TWLTL).

Short-Term Plan

While no King County Metro bus stops currently serve this intersection, there are a very high number of school bus riders that board at both the northbound and southbound stops. As a result, each direction is a candidate for plaza-style pedestrian improvements with bus pullout locations. These pullouts would be initially for school buses, but designed to accommodate transit in the future.

Multiple potential locations exist for a southbound plaza. To the north of the entrance to The Colony, available right-of-way appears to be long but narrow. To the south of the entrance, existing landscaping could be removed to create a wide, but short, plaza, though an existing utility pole is present and may create construction difficulties.

The ideal northbound improvement location is to the south of the intersection. A few utility lids are present, but the only existing pole is for a luminaire. These conflicts are not anticipated to be substantial obstacles.

Improvements	
Long-Term Plan	Signalize intersection Install marked pedestrian crosswalks
Short-Term Plan	Construct pullout plaza for school use (southbound, nearside) Construct pullout plaza for school use (northbound, nearside)



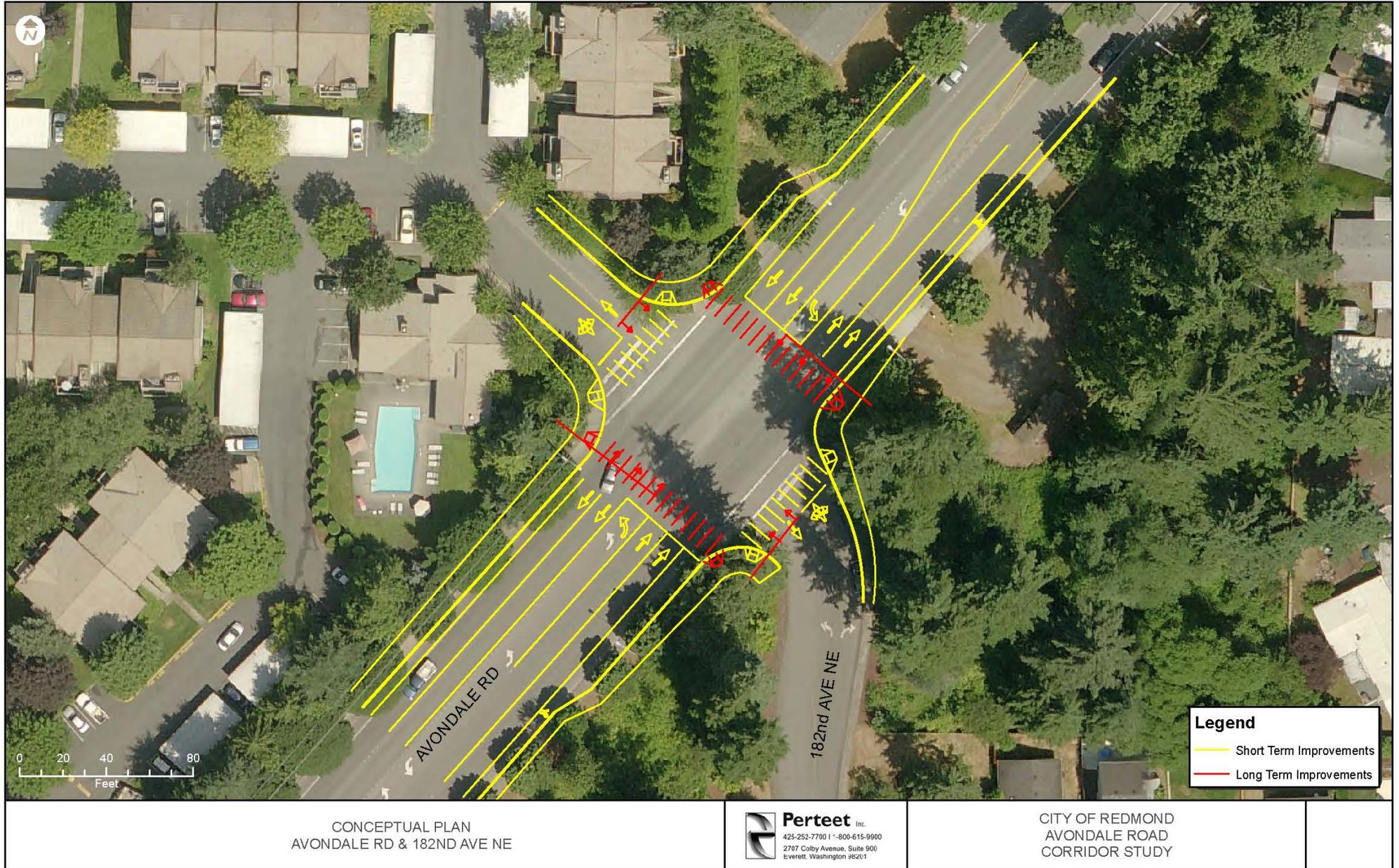


Figure 6: 182nd Avenue NE improvements

4.5 180th Avenue NE Intersection

Long-Term Plan

The intersection will maintain signalized control with marked crosswalks at the north and west legs. A northbound pullout and plaza will be developed as part of an intersection improvement project such as extending 180th Avenue NE to the east, or as an access point to private properties developing along the Avondale Road frontage in this reach.

The northbound facility could be located either north or south of the intersection. The current Metro stop is on the farside and consists of a bus flag. Undeveloped property exists to the east of Avondale Road at this location and would be a good candidate for developing a plaza. The potential of future private or public roadway projects impacting the eastern side of the roadway at this intersection make it problematic to define a design for a northbound transit facility in the short-term.

Short-Term Plan

The existing southbound but pullout on the farside of the intersection will be improved by enhancing pedestrian facilities and amenities. Right-of-way appears to be available to develop a plaza, though some retention may be necessary. The plaza would be designed around the existing controller cabinet and utility pole. The plaza and pullout would be used for both transit and school bus purposes.

Improvements	
Long-Term Plan	Construct pullout plaza for Metro use (northbound, farside)
Short-Term Plan	Construct enhanced plaza at pullout for school use (southbound, farside)



4.6 180th Avenue NE Extension

Long-Term Plan

A fourth, southeast leg would be constructed and extended to the current dead end at 183rd Court NE. This extension would consolidate access for the residents in the community to the northeast of the intersection. Currently, drivers in this area use left turns, private driveways, and local roads to access homes in the area. Extending 180th Avenue NE would improve safety for all modes of travel and aid small-scale freight in reaching these properties with ease.

Allowing for this access point would allow for the current TWLTL in the area to be changed to a raised median. This would tend to reduce crash likelihood and improve safety as the number of conflict points would be reduced.

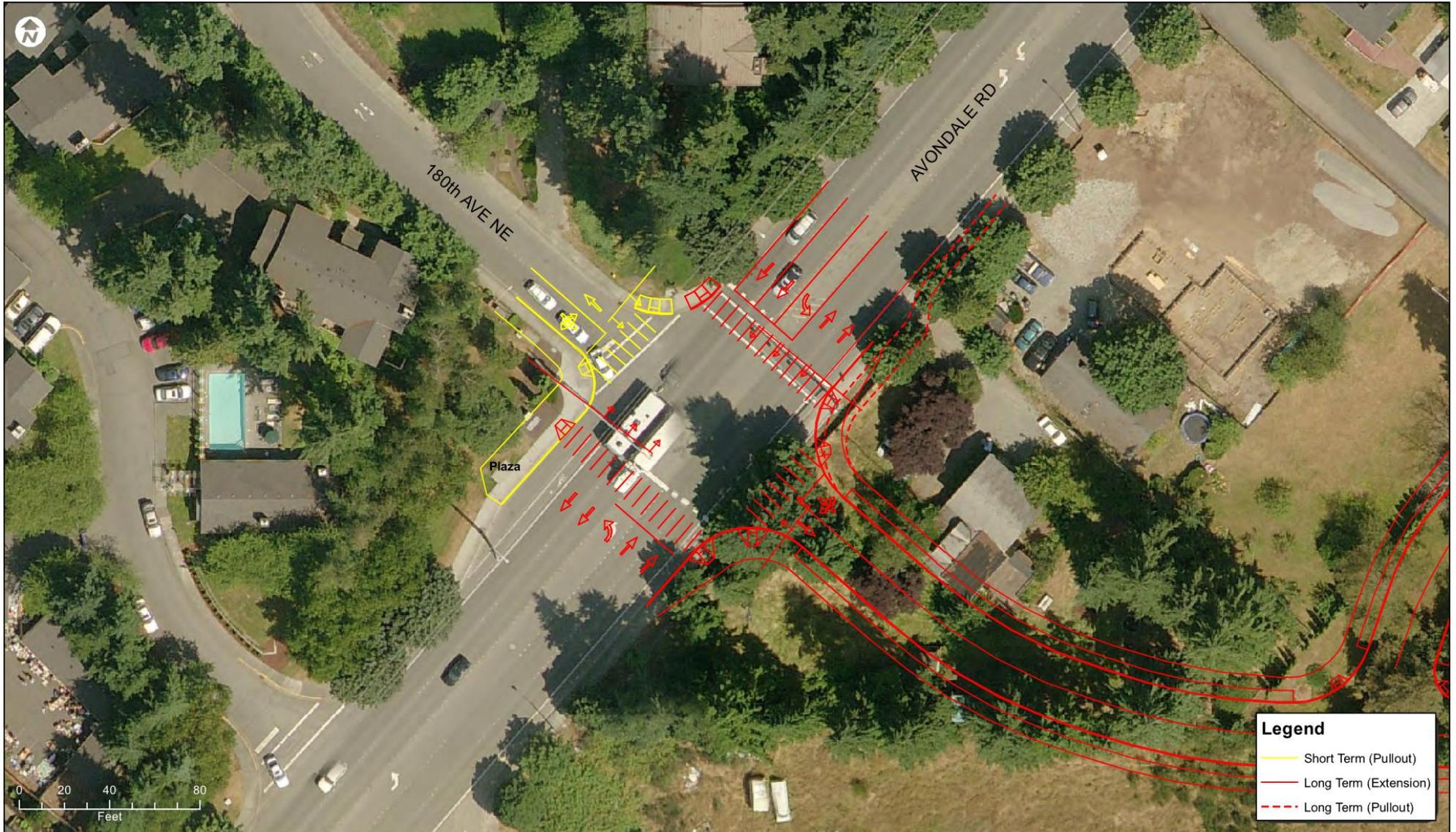
The City of Redmond plans to maintain ownership of a majority of the un-developed land, so land acquisition would be a limited need.

Short-Term Plan

The intersection will maintain signalized control with marked crosswalks, and add a near-side bus pullout and pedestrian plaza on the southern side of the intersection. Transit improvements could also be constructed in the short-term as an aspect of the proposed short-term project.

Improvements	
Long-Term Plan	Extend 180 th Avenue NE to 183 rd Court NE
Short-Term Plan	Maintain signalization





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AVONDALE RD & 180TH AVE NE

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Figure 7: 180th Avenue NE improvements

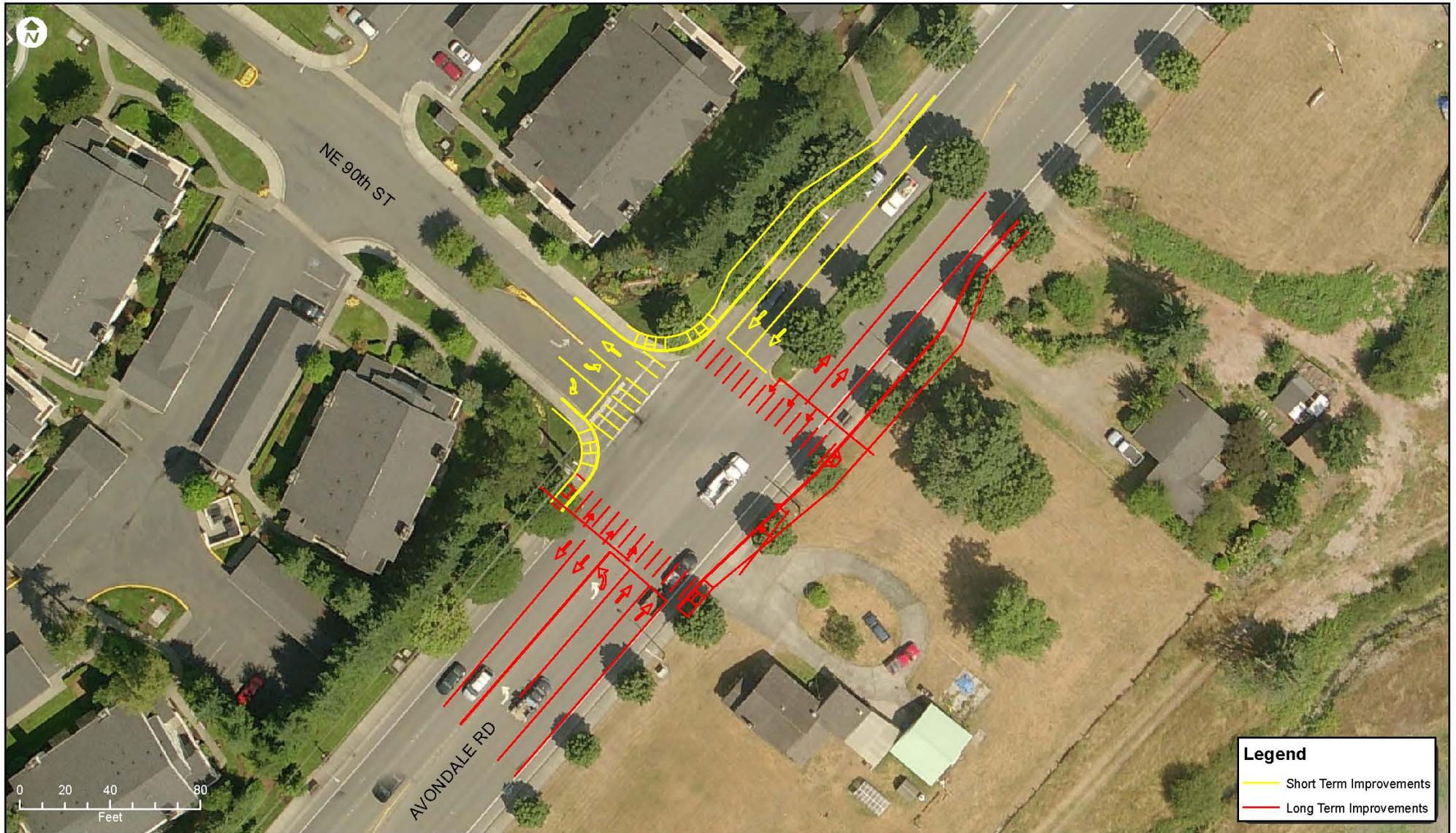
4.7 NE 90th St. / entrance to The Heights intersection

Short-Term Plan

A sizeable number of children (42 per day) use a southbound school bus stop at this intersection. This stop could be improved using a plaza arrangement like at other locations in the Avondale Road corridor. A difficulty with this intersection is that The Heights community currently has two monuments, one on either side of the main entrance point, which may interfere with an ideal plaza layout. Additionally, both corners have sloping earthwork which may require retaining walls in order to construct any improvements. Considering those obstacles, a southbound plaza and pullout may be best served a few feet north of the northwest corner.

Improvements	
Short-Term Plan	Construct pullout plaza for school use (southbound, nearside)





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Figure 8: NE 90th Street improvements

4.8 NE 88th PI Intersection

Long-Term Plan

Signalize the three-legged intersection to improve pedestrian and turning-vehicle safety. Install marked crosswalks at each leg. An eastern leg extension is not planned for this location though the City is anticipated to purchase the surrounding property to the east of the intersection.

Short-Term Plan

High southbound school bus volumes here make a bus pullout with a pedestrian plaza an attractive improvement. The existing improvements along the west side of Avondale Road at this intersection make it difficult to find an ideal location for the candidate project. An existing rockery to the south of the intersection eliminates the possibility of feasibly installing a bus pullout or plaza. To the north, vertical slopes and multiple trees present potential issues that would need to be tackled in order for the improvements to be installed. However, no obstacle at the northwest corner is insurmountable.

Improvements	
Long-Term Plan	Signalize all approaches Install marked crosswalks at all legs Construct pullout plaza for school use (northbound, farside)
Short-Term Plan	Construct pullout plaza for school use (southbound, nearside)



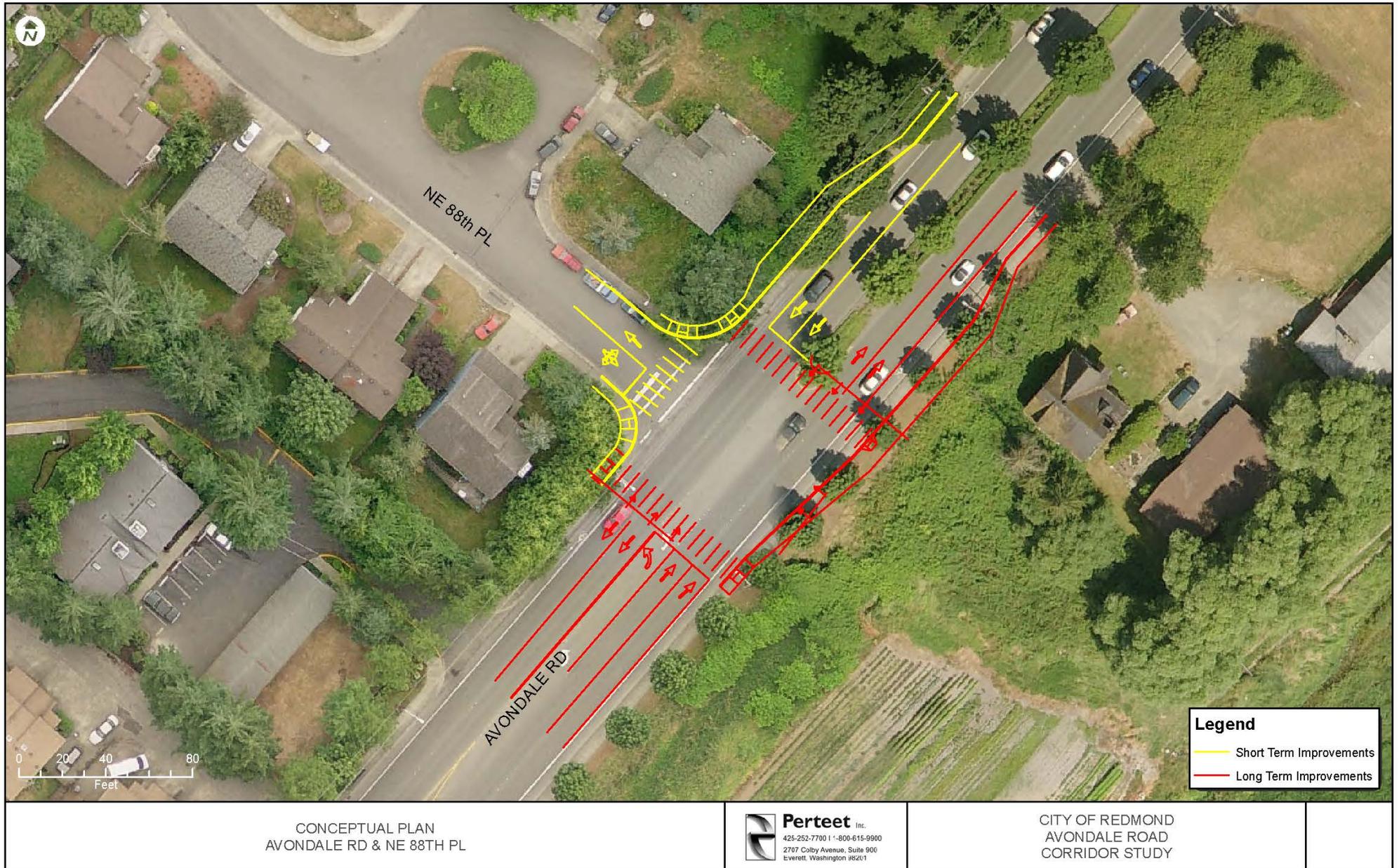


Figure 9: NE 99th Place improvements

4.9 NE 85th PI Intersection

Long-Term Plan

The intersection will be signalized at all three legs. Marked crosswalks will be installed at all legs to increase pedestrian safety.

A future, northbound transit pullout and plaza could be constructed when protected marked crosswalks are made available to pedestrians in the area with the proposed traffic signal.

Short-Term Plan

Medium-volume transit ridership is present for this intersection in both directions. Additionally, more than 20 children use the southbound LWSD bus stop at this location each day. These volumes warrant a pullout and plaza improvement in the southbound direction. At the northwest corner, utility poles and cabinets present a considerable obstacle for installing a pullout. However, the southwest corner has large amounts of open space for a pullout or plaza improvement with few conflicts.

The improvements at the Avondale Road / Avondale Way intersection should be considered in conjunction with any projects at NE 85th Place due to proximity.

Improvements	
Long-Term Plan	Signalize all approaches Install marked crosswalks at all legs Construct pullout plaza for school use (northbound, farside)
Short-Term Plan	Construct pullout plaza for school use (southbound, farside)



Similar improvements are shown for both intersections NE 88th Place and NE 85th Place however, the recommendation is to only install one signalized intersection unless warrants are met for both.

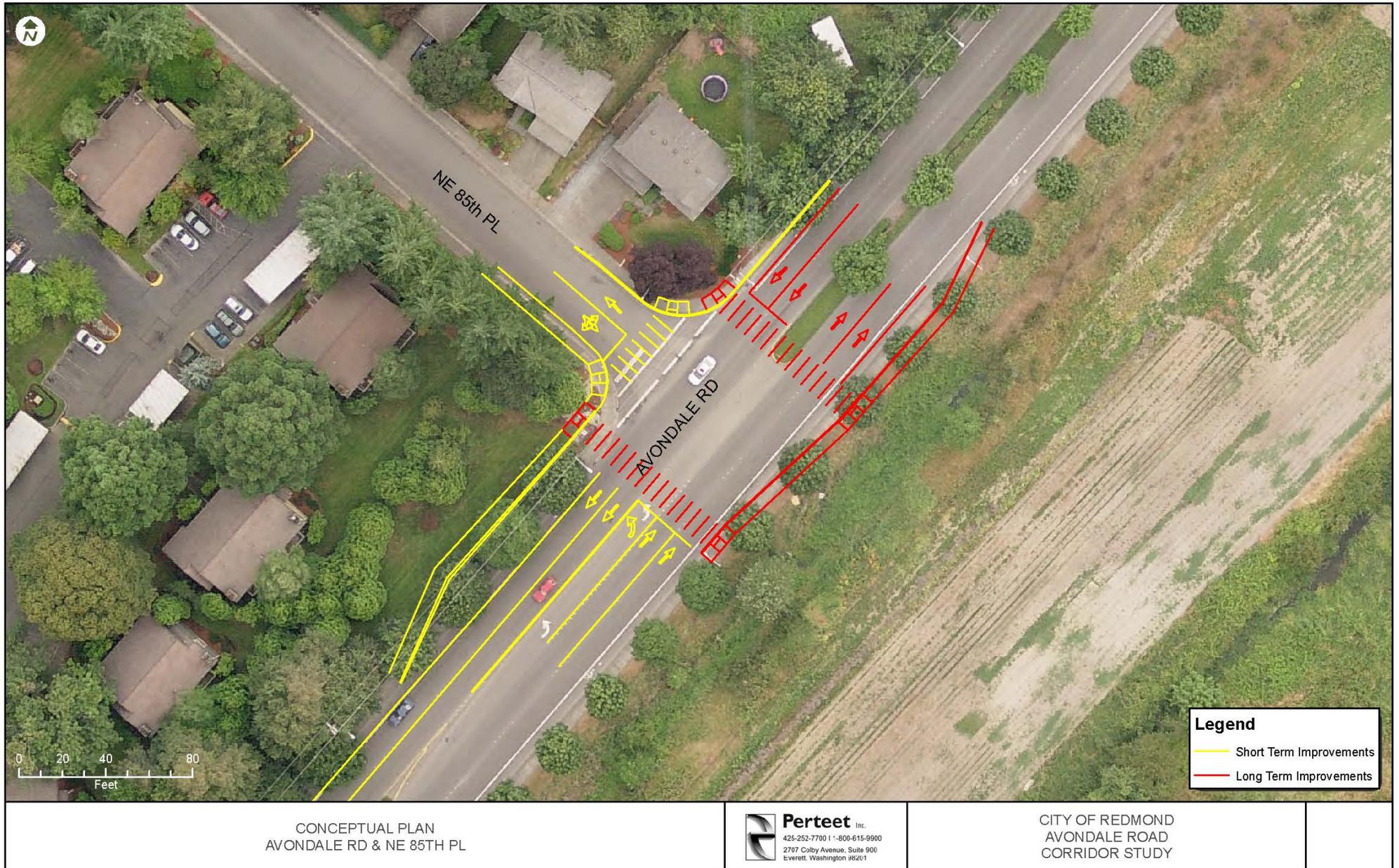


Figure 10: NE 85th Place improvements

4.10 Avondale Way Intersection

Long-Term Plan

Reconfigure the intersection to enable a future southbound HOV lane, accommodate a future widening and elevation change for the Avondale Road Bridge over Bear Creek, and permanently connect regional non-motorized transportation facilities.

Short-Term Plan

The proposed project would realign the southbound right-turn lane approaching the intersection, shorten the lane and provide an alignment requiring a maneuver to enter the right-turn lane, in lieu of the existing straighter slip-lane alignment for the right-turn maneuver. This reduces the overall intersection footprint and creates geometry more typical to a standard urban intersection.

The excess property created could be landscaped or dedicated to other non-roadway function. Speeds entering Avondale Way and driver expectations on the nature of the roadway would be reduced. Capacity would be incrementally reduced in the southbound direction. A marked crosswalk on the southern side of the intersection would be introduced to accommodate a crossing for the Bear Creek Trail and other non-motorized users, with a subsequent reduction in Avondale Road corridor capacity.

Despite the changes to the right turn and intersection configurations, the LOS (based on the Synchro model previously discussed in chapter 3) is not expected to worsen. In fact, certain approaches are anticipated to see a reduction in delay due, presumably due to surrounding improvements to bus pullouts.

Improvements	
Long-Term Plan	Connect regional trails and develop trail facilities.
Short-Term Plan	Realign intersection to reduce travel speeds. Improve pedestrian and bicycle facilities.

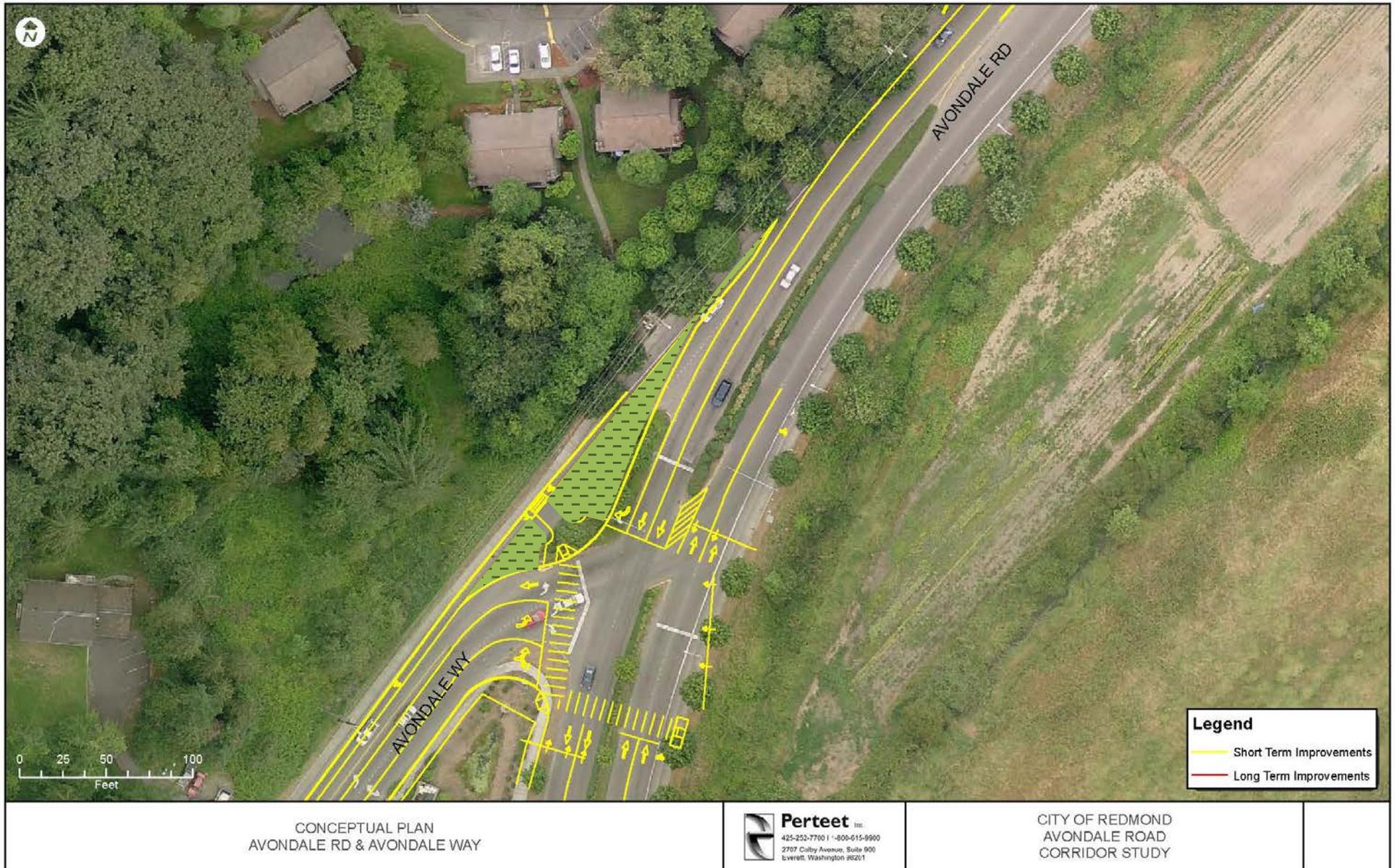


Figure 11: Avondale Way improvements

4.11 Cycle Tracks

Short-Term – increase separation between bicycles and vehicles by widening the bike lane to add buffer and/or vertical delineators.

4.12 Medians

Once school bus pullouts are installed along the corridor implement medians to provide access management. Installation of medians may require additional signalized intersections. See description of project 4.4

5.0 EVALUATION

An evaluation matrix was developed to rank each short-term project based on the goals for the corridor. Each criterion can have a score from low to high of 1-3, with 0 symbolizing no change to the corridor based on existing conditions. The un-weighted score should go in the upper left corner of each project ranking box. The weighted score should go in the lower right corner. A description of the criteria follows the matrix.

Candidate CIP	Safety	Mobility	Transit	Bicycle Facilities	Pedestrian Facilities	Freight	Livability & Community	Access	Construction Feasibility	Cost	Total
WEIGHT	3	2	2	1	1	1	1	1	1	2	
1. 180 th Extension Adds a fourth leg to the intersection. Dependent on development of the Keller property	2 6	0 0	1 2	0 0	1 1	0 0	2 2	3 3	1 1	0 0	15
2. 180 th Crosswalk on Southside to provide bus riders with a closer crossing	0 0	0 0	2 4	0 0	2 2	0 0	1 1	0 0	3 3	3 6	16
3. NE 95 th St Intersections Improvements – simplify the pedestrian crossing and realign crosswalks.	1 3	3 6	0 0	0 0	2 2	0 0	1 1	0 0	2 2	1 2	16
4. Avondale Way/Avondale Road Realignment to improve crossings for pedestrians and bicyclists	2 6	0 0	2 4	2 2	3 3	0 0	2 2	0 0	2 2	2 4	23
5. Novelty Hill Rd School Bus pullouts	2 6	2 4	0 0	0 0	0 0	0 0	2 2	1 1	1 1	2 4	18
6. NE 95 th Street School Bus pullouts	2 6	0 0	1 2	0 0	1 1	0 0	2 2	3 3	1 1	0 0	15

Avondale Road Corridor Plan

Candidate CIP	Safety	Mobility	Transit	Bicycle Facilities	Pedestrian Facilities	Freight	Livability & Community	Access	Construction Feasibility	Cost	Total
WEIGHT	3	2	2	1	1	1	1	1	1	2	
7. 88 th / 182 nd School Bus pullouts	/	/	/	/	/	/	/	/	/	/	18
8. 180 th Ave NE School Bus pullouts	/	/	/	/	/	/	/	/	/	/	18
9. NE 90 th St School Bus pullouts	/	/	/	/	/	/	/	/	/	/	18
10. Signalized Crossing at 88 th Pl	2	0	3	2	2	0	2	2	2	2	
	6	0	6	2	2	0	2	2	2	4	26
11. Signalized Crossing at 85 th Pl	/	/	/	/	/	/	/	/	/	/	
	/	/	/	/	/	/	/	/	/	/	26
12. Cycle Tracks Both directions	3	0	0	3	1	0	1	0	3	3	
	9	0	0	3	1	0	1	0	3	6	23
13. Medians	3	2	0	0	1	0	2	0	3	1	
	9	4	0	0	1	0	2	0	3	2	21
1-Low, 2-Medium, 3-High											

Safety

The safety characteristic relates directly to the impact that the improvement has on reducing crash likelihood and severity. A positive score means that safety will be improved; a negative score shows a decrease in safety and severity, and higher likelihood of crashes. This category reflects all travel modes including walking and biking. Safety measurements are highly dependent on other characteristics, such as throughput, so the score for safety may be partially based on other factors. Safety is triple weighted because it is a fundamental goal for each and every transportation improvement.

Mobility

Mobility (throughput) measures the efficiency of the roadway in terms of the volume of motorized and non-motorized road users that can traverse the corridor in a given length of time. The number of passengers in a vehicle is considered when measuring throughput, which may lead to advantages for improvements which boost transit ridership or HOV usage. Lane configurations signal timing, peak hour operations, and demand rates for various transportation modes are all considered with a throughput analysis. A positive score indicates that throughput and mobility in the corridor will improve; a negative score shows that a project will reduce capacity or harm the current or future level of service (LOS). Mobility is double weighted because it is a chief concern for this corridor.

Transit

The transit category measures the degree to which candidate projects improve the transit ridership experience. In theory, the more attractive the transit mode becomes, the more people who would typically drive will switch to transit for some or all of their trips. Increases in transit usage tend to decrease congestion and improve the operations of a corridor. A positive score demonstrates that a project will improve the transit experience for riders, either through superior travel times, better facilities, or safer conditions. Transit is normally weighted.

Bicycle Facilities

Similar to the transit category, the bicycle facilities category measures the safety, travel time, and overall experience for cyclists along the corridor. Connectivity between facilities and geometric considerations are evaluated when comparing bicycle effects between projects. A positive bike score shows that the project will improve the combination of facilities, safety, and connectivity associated with biking on Avondale. Bicycle facilities are normally weighted.

Pedestrian Facilities

The pedestrian facilities score measures the comfort and connectivity improvements for each candidate measure. Items that may be considered are sidewalk widths, crosswalk locations, and ADA-facility availability. A positive pedestrian score represents a net increase in the combination of safety, connectivity, and comfort when it comes to walking along or across Avondale. Pedestrian facilities is normally weighted.

Freight

The freight score measures the ability for freight to traverse the corridor efficiently. Factors that are considered are curb radii, lane widths, travel times, and reliability. A positive freight score indicates an increase in freight efficiency compared to existing conditions. Freight is normally weighted. Livability and community incorporates the aesthetic improvements for a project, changes in access to local roads

and private residences, as well as voter approval of the project. A positive score indicates that the community, as a whole, will react favorably to the improvement because it will improve the aesthetics, operations or safety in the area. A negative score indicates that citizens will be unhappy with the proposed changes and that it may be difficult to sway local opinions. Livability and community is normally weighted.

Access

The access criterion scores the impact on local property accessibility from Avondale Road. A positive score in this category means that a driver, bicyclist, or pedestrian has increased routes with which to reach a desired local business or residence. A negative score indicates that, on the whole, properties are less available to traffic than they currently are.

Construction Feasibility

The construction feasibility category evaluates how easy it would be to complete the candidate project. This includes the construction duration, total user delay, and right-of-way negotiations (in terms of coordination difficulty, not cost). A negative score for this category indicates that the project will be a disruption to traffic via construction activities or required temporary traffic control. A positive score is not possible for this project (zero is possible if no disruption will be created and no right-of-way difficulties are anticipated). Construction feasibility is normally weighted.

Cost

Cost relates directly to the raw construction, maintenance, and user delay costs associated with installing a particular improvement. The cost may include the purchase of necessary right-of-way. This category does not score projects in terms of their cost effectiveness (i.e. bang for the buck), rather it looks at raw dollar amounts. A negative score indicates that this project will cost the City of Redmond money for either construction, maintenance, or both. A positive score would be possible for toll-generating improvements, however no proposed projects for this corridor feature such measures.

6.0 RECOMMENDATIONS

Each candidate project has been ranked. Some with similar elements were grouped together to provide more efficiency in funding, design and construction and have the same total score. The corridor improvements could also be grouped for Grant opportunities. Short-Term is defined the next 5-10 years; Long-Term is defined as 20 years.

Description	Timing	Rank	Comments
10.Signalized Pedestrian Crossing at 85th or 88 th	Long-Term	1	Signal warrants for pedestrians and vehicles would need to be conducted.
4.AvondaleWay/Avondale Road Realignment	Long-Term	2	Additional Traffic Signal Analysis needs to be evaluated for phasing
11. Cycle tracks/buffered bicycle lanes	Short-Term	3	Delineators and/or paint could enable near term installation
12. Medians	Long-Term	4	Medians would be installed when U turn options are available.
5. Novelty Hill Rd School Bus Pullouts	Short-Term	5	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
6. NE 95 th Street School Bus Pullouts	Short-Term	6	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
7. 88 th / 182 nd School Bus Pullouts	Short-Term	7	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
8. 180 th School Bus Pullouts	Short-Term	8	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)

Avondale Road Corridor Plan

9. NE 90 th St School Bus Pullouts	Short-Term	9	All bus pullouts will allow for vehicles to improve travel times. If construction is phased, they should be constructed on each side of the road at the same time (all on the west as one contract, all on the eastside as a contract)
2. 180th Crosswalk on the Southside	Short-Term	10	Providing additional crossing to improve pedestrian safety and mobility. Could be combined with #8 above.
3. NE 95 th St Intersection Improvements	Long-Term	11	Geometric changes to crossings to provide increased LOS. Moving signal poles out of the center median.
1. 180 th Extension	Long-Term	12	Extending the fourth leg of the intersection would be to the current dead end at the 183 rd Courte NE. This would consolidate access points and provide signalized access to Avondale.