

SMC 20.30.355(C) Decision Criteria	MGP Analysis	Shoreline Analysis
<p>1. The project is consistent with goals and policies of the Comprehensive Plan. If the project is located within a subarea plan, then the project shall be consistent with the goals and policies of the subarea plan.</p>	<p>As explained in response to Criterion 2, the new Shoreline Place, located in the Comprehensive Plan Mixed Use 1 (MU1) land use designation (CRA), is centered around vibrant community gathering spaces, incorporating multi-family housing, retail, and restaurants where only acres of parking exist. The Westminster Way plaza will activate the re-envisioned Westminster Way N. and draw pedestrians into the Project and its open space system.</p> <p>As the City’s Parks, Recreation and Open Space Plan (PROS Plan) explains, parks, open spaces, and recreational opportunities play a critical role in “who the city is becoming.” PROS Plan, Executive Summary, page 4. The Conceptual Guide Plan includes a publicly-accessible Open Space System which will create a series of spaces spread throughout the Project varying from green lawns for summer day picnics, outdoor movies and concerts in the park, to intimate plazas and paseos adjacent to lively restaurants and retail shops, well-appointed with comfortable seating areas and creative landscape and hearts gave elements. It will provide pedestrian and bicycle access to and through Shoreline Place and be connected to the public and private improvements implementing the City’s reimagined Westminster Way N. and to the Interurban Trail. Figures 2.4 and 4.14 of the PROS Plan illustrate that there are no neighborhood parks within a 15-minute walkshed of Shoreline Place. (The City has established a level of service target for providing neighborhood parks within a 15-minute walk to all city residents.) The Open Space System will help close this</p>	<p>The proposed development is strongly supported by the City’s 2012 Comprehensive Plan. Vision 2029, developed in 2009, was the City’s long-range vision that is the basis of the Framework Goals and the goals and policies of the Land Use, Community Design, Housing, Economic Development, and Capital Facilities elements. In general, these goals and policies support quality development, functionality, walkability, high density, business-friendly environment, mixed development with more pedestrian/ public spaces and activities, new businesses and employers, and economic growth. More explicitly, two policies promote a vision, strategy for mixed uses in Aurora’s retail centers and a master planned, sustainable, life-style center at Aurora Square.</p> <p>Although, the Community Renewal Area Plan is not a subarea plan it functions like a subarea plan because it is an adopted plan and gives statements that provide vision, goals and policies that become a framework for implementation (Attachment C).</p> <p>Comprehensive Plan Framework Goals and Elements Goals and Policies (excerpts)</p> <p><u>Framework Goals</u> FG 9: Promote quality building, functionality, and walkability through good design and development that is compatible with the surrounding area. FG 14: Designate specific areas for high density development, especially along major transportation corridors.</p>

	<p>gap. One of the many benefits of the open space system is that it will accommodate the Farmers’ Market.</p> <p>The Project implements Comprehensive Plan Goals and Policies:</p> <p><u>Land Use:</u></p> <ul style="list-style-type: none"> • Goal LU I (encourage development that creates a variety of housing, shopping, entertainment, recreation, gathering spaces, employment, and services that are accessible to neighborhoods). • Goal LU VI (encourage pedestrian-scale design). • Goal LU VII (plan for commercial areas that serve the community, are attractive, and have long-term economic vitality). • Goal LU VIII (encourage redevelopment of the Aurora corridor). • Goal LU XII (increase access to healthy food by encouraging... farmers markets) • Policy LU9 (the MU1 designation encourages the development of walkable places with architectural interest that integrate a wide variety of retail... and service uses, along with form-based maximum density residential uses). <p><u>Community Design:</u></p> <ul style="list-style-type: none"> • Goal CD I (promote community... redevelopment that is aesthetically pleasing, functional, and consistent with the City’s vision). 	<p>FG 15: Create a business- friendly environment that supports small and local businesses, attracts large businesses to serve the community and expand our jobs and tax base, and encourages innovation and creative partnerships.</p> <p><u>Land Use Element</u></p> <p>Goal LU VI: Encourage pedestrian-scale design in commercial and mixed-use areas.</p> <p>Goal LU VII: Plan for commercial areas that serve the community, are attractive, and have long-term economic vitality.</p> <p>Goal LU VIII: Encourage redevelopment of the Aurora corridor from a commercial strip to distinct enters with variety, activity, and interest.</p> <p>LU9: The Mixed-Use 1 (MU1) designation encourages the development of walkable places with architectural interest that integrate a wide variety of retail, office, and service uses, along with form-based maximum density residential uses. Transition to adjacent single-family neighborhoods may be accomplished through appropriate design solutions. Limited manufacturing uses may be permitted under certain conditions.</p> <p><u>Community Design Element</u></p> <p>Goal CD I: Promote community development and redevelopment that is aesthetically pleasing, functional, and consistent with the City’s vision.</p> <p>Goal CD III: Expand on the concept that people using places and facilities draw more people.</p> <p>CD1. Encourage building design that creates distinctive places in the community.</p>
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	<ul style="list-style-type: none"> • Goal CD II (design streets to create a cohesive image, including continuous pedestrian improvements that connect to the surrounding neighborhoods). • Goal CD III (expand on the concept that people using places and facilities draw more people). • Policy CD1 (encourage building design that creates distinctive places in the community). • Policy CD3 (encourage commercial, mixed-use, and multi-family development to incorporate public amenities, such as public and pedestrian access, pedestrian-oriented building design, mid-block connections, public spaces, activities, and solar access). • Policy CD5 (encourage architectural elements that provide protection from the weather). • Policy CD18 (preserve, encourage, and enhance open space as a key element of the community’s character). • Policy CD20 (provide public spaces of various sizes and types throughout the community). • Policy CD21 (design public spaces to provide amenities and facilities such as seating, lighting, landscaping, kiosks, and connections to surrounding uses and activities that contribute to a sense of security). • CD24 (encourage building and site design to provide solar access, and as well as protection from weather). 	<p>CD3.Encourage commercial, mixed–use, and multi-family development to incorporate public amenities, such as public and pedestrian access, pedestrian-oriented building design, mid-block connections, public spaces, activities, and solar access.</p> <p>CD21.Design public spaces to provide amenities and facilities such as seating, lighting, landscaping, kiosks, and connections to surrounding uses and activities that contribute to a sense of security.</p> <p>CD24.Encourage building and site design to provide solar access, as well as protection from weather.</p> <p><u>Housing Element</u></p> <p>Goal H I: Provide sufficient development capacity to accommodate the 20-year growth forecast and promote other goals, such as creating demand for transit and local businesses through increased residential density along arterials; and improved infrastructure, like sidewalks and stormwater treatment, through redevelopment.</p> <p><u>Economic Development Element</u></p> <p>Goal ED I: Maintain and improve the quality of life in the community by:</p> <ul style="list-style-type: none"> •Increasing employment opportunities and the job base; •Supporting businesses that provide goods and services to local and regional populations; <p>Goal ED II: Promote retail and office activity to diversify sources of revenue and expand the employment base.</p> <p>Goal ED III: Facilitate private sector economic development through partnerships and coordinating funding opportunities.</p>
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	<ul style="list-style-type: none"> • CD27 (where appropriate and feasible, provide lighting, seating, landscaping and other amenities for sidewalks, walkways, and trails). • CD30 (provide pedestrian gathering spaces to unify corners of key intersections involving principal arterials). <p><u>Housing:</u></p> <ul style="list-style-type: none"> • Goal H I (provide sufficient development capacity to accommodate the 20-year growth forecast and promote other goals, such as creating demand for transit and local businesses through increased residential density along arterials; and improved infrastructure, like sidewalks and stormwater treatment, through redevelopment). • Policy H3 (encourage infill development on vacant or underutilized sites). <p><u>Transportation:</u></p> <ul style="list-style-type: none"> • Goal T III (provide a pedestrian system that is safe, and connects to destinations, accesses transit, and is accessible by all). • Policy T22 (prioritize construction of sidewalks, walkways, and trails. Pedestrian facilities should connect to destinations, access transit, and be accessible by all). • Policy T49 (expand the city’s pedestrian network). <p><u>Economic Development:</u></p> <ul style="list-style-type: none"> • Goal ED I (maintain and improve the quality of life in the community by increasing employment opportunities; supporting businesses that provide goods and services to 	<p>Goal ED VI: Support employers and new businesses that create more and better jobs.</p> <p>Goal ED VII: Encourage multi-story buildings for efficient land use.</p> <p>Goal ED VIII: Promote and support vibrant activities and businesses that grow the local economy.</p> <p>ED1: Improve economic vitality by:</p> <ul style="list-style-type: none"> •Promoting existing businesses; •Recruiting new businesses; •Encouraging increased housing density around commercial districts, especially those served by high capacity rapid transit, to expand customer base; and •Developing design guidelines to enhance commercial areas with pedestrian amenities, and “protect and connect” adjacent residential areas. <p>ED2: Promote non-motorized connections between commercial businesses, services, and residential neighborhoods.</p> <p>ED4: Use incentives and development flexibility to encourage quality development.</p> <p>ED6: Work to reinvigorate economically blighted areas in Shoreline by establishing Community Renewal Areas with associated renewal plans.</p> <p>ED7: Enhance existing neighborhood shopping and community nodes to support increased commercial activity, neighborhood identity, and walkability.</p> <p>ED8: Explore whether creating an “Aurora Neighborhood” as a fifteenth neighborhood in Shoreline would allow the City to better serve citizens, and to capitalize on its infrastructure investment.</p> <p>ED9: Promote land use and urban design that allows for smart growth and dense nodes of transit-supportive</p>
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	<p>local and regional populations; ... complementing community character).</p> <ul style="list-style-type: none"> • Goal ED II (promote retail... activity to diversify sources of revenue and expand the employment base). • Goal ED VII (encourage multi-story buildings for efficient land use). • Goal ED VIII (promote and support vibrant activities and businesses that grow the local economy). • Policy ED6 (reinvigorate economically blighted areas in Shoreline by establishing <i>Community Renewal Areas</i> with associated renewal plans). • Policy ED7 (enhance existing neighborhood shopping and community notes to support increased commercial activity, neighborhood identity, and walkability). • Policy ED12 (revitalize commercial business districts and encourage high-density mixed-use in these areas). • Policy ED 14 (encourage a mix of businesses that complement each other and provide variety to the community to create activity and economic momentum). • Policy ED 32 (support farmers market). <p><u>Parks, Recreation & Open Space:</u></p> <ul style="list-style-type: none"> • Policy 1.2 (provide a variety of indoor and outdoor gathering places for recreational and cultural activities). • Policy 1.3 (plan for, acquire and develop land for new facilities to meet the need of a growing population). 	<p>commercial activity to promote a self-sustaining local economy.</p> <p>ED12: Revitalize commercial business districts and encourage high-density mixed-use in these areas.</p> <p>ED14: Encourage a mix of businesses that complement each other and provide variety to the community to create activity and economic momentum.</p> <p>ED23: Encourage the redevelopment of key and/or underused parcels through incentives and public/private partnerships.</p> <p>ED27: Develop a vision and strategies for creating dense mixed-use nodes anchored by Aurora’s retail centers, including how to complement, support, and connect them with mid-rise residential, office, and destination retail buildings.</p> <p>ED29: Reinvent Aurora Square to help catalyze a master-planned, sustainable lifestyle destination.</p> <p><u>Capital Facilities Element</u></p> <p>CF5: Identify, construct, and maintain infrastructure systems and capital facilities needed to promote the full use of the zoning potential in areas zoned for commercial and mixed-use.</p> <p>CF25: Evaluate and establish designated levels of service to meet the needs of existing and anticipated development.</p>
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	<ul style="list-style-type: none"> • Goal PR II (provide community-based recreation and cultural programs that are diverse and affordable). • Goal PR III (meet the parks, recreation and cultural service needs of the community by equitably distributing resources). • Policy 3.3 (equitably distribute facilities and program offerings based on identified need). • Policy 3.4 (identify unserved and underserved populations with unmet recreation and cultural needs). • Policy 4.2 (seek partners and planning, enhancement and maintenance of facilities and programs). • Policy 4.4 (engage and partner with the business community to create public open space in private development). <p>In addition to re-channelizing N. 160th Street to provide bicycle lanes, as illustrated on page 105 of the Conceptual Guide Plan, bicycle circulation through the Project site will be accommodated for advanced/commuter riders along the northern property boundary and N. 157th Street in a sharrow lane. Other bicycle circulation through the site for residents, children and recreational bicyclists will be provided through a wide multipurpose raised sidewalk. These elements of the Project implement the following Comprehensive Plan Goals and Policies:</p> <ul style="list-style-type: none"> • Land Use Goal LU II (establish land use patterns that promote walking, biking and 	
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	<p>using transit to access goods, services, education, employment, recreation).</p> <ul style="list-style-type: none"> • Transportation Goal T II (develop a bicycle system that is connective, safe, and encourages bicycling as a viable alternative to driving). • Transportation Goal T VI (encourage alternative modes of transportation to reduce the number of automobiles on the road, promote a healthy city, and reduce carbon omissions). • Transportation Policy T6 (support and promote opportunities and programs a residents have options to travel ... using modes other than single-occupancy vehicles). • Transportation Policy T 50 (prioritize projects that complete the city’s bicycle networks). • Economic Development Policy ED2 (promote non-motorized connections between commercial businesses, services, and residential neighborhoods). <p>The Developer will provide a mid-block crossing on N. 160th Street which implements Transportation Policy T 23 (design crossings that are appropriately located and provide safety and convenience for pedestrians).</p> <p>The City has approved a deviation to allow the N. 160th Street ADA accessible pedestrian facility to be located on the Property, allowing the Developer to retain the trees adjacent to the N. 160th right-of-way. Retention</p>	
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	<p>of these trees is consistent with Policy CD 16 (where feasible, preserve significant trees and mature vegetation); and Policy NE 19 (minimize removal of healthy trees).</p> <p>As discussed in response to Criterion 5, the proposed development utilizes a variety of strategies to respond the residentially zoned areas across N. 160th Street. These strategies implement the following Housing Goals and Policies:</p> <ul style="list-style-type: none">• Goal H V (integrate new development with consideration to design and scale the complements existing neighborhoods and provides effective transitions between different uses and intensities).• Policy H 23 (assure that site, landscaping, building, and design regulations create effective transitions between different land uses and densities). <p>On-site stormwater management will implement:</p> <ul style="list-style-type: none">• Land Use Policy LU69 (design, locate and construct surface water facilities to promote water quality).• Natural Environment Goal NE VI (manage the stormwater system through the preservation of natural system and structural solutions in order to protect water quality).• Natural Environment Goal NE VII (continue to require that natural and on-site solutions, such as infiltration and rain gardens be proven infeasible before considering	
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	<p>engineered solutions, such as detention).</p> <p>As explained in response to Criterion 3, the Project satisfies the City’s concurrency standards and is consistent with Transportation Policy T 44 (adopted Level of Service D).</p> <p>As explained in response to Criteria 3 and 4, there is sufficient capacity and infrastructure (roads, sidewalks, bike lanes) to meet the City’s adopted level of service standards and sufficient capacity within public services (water, sewer and stormwater) to adequately serve the development proposal in all future phases. Consequently, the Project satisfies Capital Facilities Goal CF II (ensure the capital facilities and public services necessary to support... new development is available, concurrent with locally adopted levels of service and in accordance with Washington State Law).</p> <p>As detailed in Section 11 of the Development Agreement, an existing City stormwater line is located on the Property adjacent to the Westminster Way N. right-of-way. The Developer will relocate the City stormwater line from the Property to the Westminster Way N. right-of-way in a coordination with the Alexan project. Relocation of the stormwater line is consistent with Utilities Policy U7 (encourage the co-location or joint use of trenches... so that utilities may encourage expansion, maintenance, undergrounding, and upgrading of facilities with the least amount of disruption to the community or of service delivery).</p>	
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<p>2. The proposed development uses innovative, aesthetic, energy-efficient and environmentally sustainable architecture and site design.</p>	<p>Developed in the middle of the last Century, the Aurora Square super-block was conceived of an auto-centric retail development that is largely disconnected from the broader neighborhood context. The new Shoreline Place is centered around vibrant community gathering space, incorporating multi-family housing, retail, and restaurants where only acres of parking exist. A new network of inter-connected open spaces will include a pedestrian street or woonerf, public plazas, and park space that prioritize the pedestrian realm and connections to transit. The new stormwater system will incorporate low impact development strategies that integrate with the landscape design to improve storm water quality. Replacing the existing large parking fields with dispersed parking and mixed-use development will mitigate the urban heat island while promoting walkability. New buildings will be at least 60 percent more energy efficient than those originally developed on-site.</p>	<p>The proposed Development Agreement includes departures from some of the Commercial Design Standards (Attachment E, Section 12 Modifications). These departures are typical and approved for most developments in Shoreline. The Alexan Apartments, being built across Westminster Way N, and Paceline at 172 and Aurora Ave N are prime examples.</p> <p>In general, when reviewing departures from these standards, the City decides whether these developments meet the code’s stated intent and views the entire design as well as individual, smaller departures. The inclusion of other design standards that will be met make it difficult to discern the minor departures by this Development Agreement.</p> <ul style="list-style-type: none"> • Building design departures to allow an “articulation feature” from every 35 feet to 80 feet and a façade offset from 20 feet to 10 feet deep are relatively minor amongst all the other features and components of the proposed development. • Site design departures such as allowing parking lot walkways to be separated from every 200 feet to 265 feet, allowing sidewalks to be reduced from 8 feet to 6 feet wide, and allowing pavers in landscape areas adjacent to parking stalls are small adjustments to make the overall site design function and fit with adjoining properties. • The building height departure to allow an additional 10 feet of height in large part is due the
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		<p>grade change of 15 feet from the lower portion of Shoreline Place to the upper portion. Height is determined by average grade per code. See Criterion 5 for how buildings with 80 feet of height in Transition Areas are modified by greater setbacks and therefore meet code standards.</p> <p>The proposed development will develop a town center with parks, plazas, internal walkways, and public spaces for day and evening activity. Though the development does not propose the highest possible sustainable building practices, the replacement of the Sears buildings and hardscape with the current International Building Code (IBC) energy and Department of Ecology (DOE) surface water codes will be a large step in that direction.</p> <p>The proposed approach to development is innovative for Shoreline where most development is one building without any physical, visual, or design connection to the adjacent properties. A mixed use, town center with retail, groceries, residences, office (WSDOT), and a nearby college that has connected walkways and public places will physically hold or draw these activities and land uses together. This development will allow people to find a variety of activities and have less of a need to drive around town to connect them. In addition, this site will be served by high-capacity transit along Aurora Avenue and bicyclists and pedestrians by way of the Interurban Trail. The proposed development is about 1/3 of the entire CRA and located in the center of Shoreline Place. Its precedence, physical template, and the activity</p>
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		<p>of this development will likely initiate positive changes on the adjoining properties when those redevelop.</p>
<p>3. There is either sufficient capacity and infrastructure (e.g., roads, sidewalks, bike lanes) that meet the City’s adopted level of service standards (as confirmed by the performance of a transportation impact analysis) in the transportation system (motorized and nonmotorized) to safely support the development proposed in all future phases or there will be adequate capacity and infrastructure by the time each phase of development is completed. If capacity or infrastructure must be increased to support the proposed development agreement, then the applicant must identify a plan for funding their proportionate share of the improvements.</p>	<p>The Developer has provided and the City has reviewed and approved a Transportation Consistency Analysis which provides a trip generation analysis of the Project; documents that, with buildout of the Project, the Alexan apartments, and addition of 200 employees to the WSDOT Headquarters building, new PM peak hour trips will total 264 trips, well below the 808 trips analyzed in the Aurora Square CRA Environmental Impact Statement (EIS) as addended in March, 2019; and proposes mitigation.</p> <p>Transportation improvements, identified in Section 7 of the Development Agreement, include: Westminster Way N. frontage improvements; a proportionate share contribution to the Westminster Way N./155th Street N. intersection; channelization improvements to N. 160th Street to provide bike lanes; a mid-block pedestrian crossing on N. 160th Street; proportionate share contributions to the Greenwood Avenue N./NW Innis Arden Way and Greenwood Avenue N./N 160th Street intersections; and a proportionate share contribution to the Carlyle Hall Road/Dayton Avenue N./N.165th Street intersection.</p> <p>As explained in Section 20 of the Development Agreement, the City has determined that development of up to 1,358 residential units and 75,610 square feet of commercial space through the year 2039 passes the concurrency test.</p>	<p>The development proposal includes a thorough transportation consistency analysis which demonstrates compliance with Shoreline Municipal Code 20.60.140 Adequate Streets and consistency with environmental analysis performed as part of the City-led Community Renewal Area Plan. The development demonstrated compliance in the following ways:</p> <ul style="list-style-type: none"> • The total maximum net new proposed peak hour trips generated by the project is 160. Project trips, in addition to pipeline trips for active projects within the CRA such as the Alexan, remain well under the EIS studied threshold of 808 trips. • The proposal build-out year extends to 2039. Current City analysis only extends to 2030. As such, additional analysis was performed to determine the net difference in trips that would be added to the various CRA study intersections in the 2039 out year in comparison to what was studied by the City. The results showed very little difference in comparison to what was studied under Shoreline’s environmental analysis; as such no change to the traffic Level of Service outcomes would be anticipated. (Attachment G Exhibit B) • The project will contribute proportional share mitigation funding to 2 locations (See

		<p>Attachment G Exhibit B). shown to be failing the City’s level of Service standards in future years, as previously identified by Shoreline Community College analysis.</p> <ul style="list-style-type: none">• The project will pay Transportation Impact Fees for other citywide impacts, in accordance with the code applicable at the time of permit. This accounts for permits both now, and in out years past 2030, as the City’s concurrency standards and associated growth projects may evolve with updated Transportation Master Plan analysis.• The project will include a public bike connection through the site for advanced/commuter riders along the northern property boundary controlled by Shoreline Place diagonally through the project in a “sharrow” lane, while other bicycle circulation through the site for residents, children, and recreational bicyclists would be provided through a wide multipurpose raised sidewalk. This bicycle facility will serve as an important connection between the Shoreline Community College and neighborhoods to the west, and the Interurban Trail.• The development proposal improves transportation facilities consistent with the CRA plan and slated planned improvement projects in Attachment G Exhibit B.• Off-site Transportation Improvements are detailed in Attachment E, Section 7.
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<p>4. There is either sufficient capacity within public services such as water, sewer and stormwater to adequately serve the development proposal in all future phases, or there will be adequate capacity available by the time each phase of development is completed. If capacity must be increased to support the proposed development agreement, then the applicant must identify a plan for funding their proportionate share of the improvements.</p>	<p><u>Utilities Generally:</u> Section 10 of the Development Agreement requires that the Developer construct the requisite water, sanitary sewer, and stormwater facilities (the “Utilities”) onsite and pay any connection fees and impact fees due for utility facilities located offsite as part of the buildout of the Project. No off-site utility improvements within the City's control are required. Developer is responsible for the costs associated with alteration or extension of on-site utility infrastructure necessary to connect to the City’s infrastructure.</p> <p><u>Water:</u> As explained in the CRA EIS, the City of Seattle was provided with a description of the growth planned for the CRA and indicated that the water system has capacity for this growth. Section 23 of the Development Agreement requires that the Developer provide the City with a Water Availability Certificate with all building permit applications requiring the provision of potable water or fire flow.</p> <p><u>Sewer:</u> As explained in Section 24 of the Development Agreement, the Ronald Wastewater District City has analyzed its existing and future sanitary sewer capacity and infrastructure. Based on its review for the next 25 years, the District has acknowledged that there is sufficient local sanitary sewer capacity and infrastructure in place or planned to serve the Project and that Developer may construct on-site capacity and connect to the City’s sanitary sewer system to serve the Project subject to review and approval of a Developer Extension Agreement. The</p>	<p>The proposed Development Agreement adequately addresses the capacity for services for water, sewer and stormwater based on the Conceptual Guide Plan. The following is summary of each utility:</p> <ul style="list-style-type: none"> • Water: MGP has had preliminary discussions with Seattle Public Utilities who have indicated there is or can be adequate water supply. • Sewer: Ronald Wastewater District is reviewing their capacity analysis. RWD has indicated there are no significant issues that cannot be addressed through the development process. • Storm: The City is in discussion with MGP regarding the relocation of an existing stormwater pipe (does not serve the Sears site) from their property into the Right of Way of Westminster Way because it will limit the placement of proposed buildings on that part of the site and therefore have ramifications on the remainder of the site and urban design. The Agreement will address the responsibility and timing of the stormwater pipe relocation. MGP will be responsible to manage stormwater on their project site in accordance with the stormwater regulations in place at the time of each phase of development. • In general, MGP will be responsible to coordinate directly with the utility providers to ensure
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	<p>Developer has applied to Ronald Wastewater District for a Developer Extension Agreement.</p> <p><u>Stormwater:</u> It is anticipated that stormwater will be managed on-site and that no off-site improvements are necessary. <i>See also, Section 22 of the Development Agreement</i> which requires that all stormwater facilities meet current City, state, and federal regulations in effect at the time of application for the permit triggering the need for stormwater facilities. Such stormwater facilities will provide a substantial improvement over existing conditions. The City has acknowledged that it is not aware of capacity constraints in the natural conveyance system in the event that Developer’s stormwater will discharge off-site to the natural environment in addition to the use of onsite detention/vaults in accordance with applicable local and state requirements.</p>	<p>capacity is available at each phase of the development.</p>
<p>5. The development agreement proposal contains architectural design (including but not limited to building setbacks, insets, facade breaks, roofline variations) and site design standards, landscaping, provisions for open space and/or recreation areas, retention of significant trees, parking/traffic management, multimodal transportation improvements, and other features that minimize conflicts and create transitions between the proposal site and adjacent property zoned R-4, R-6, R-8 or MUR-35'.</p>	<p>The proposed development utilizes a variety of strategies to respond the residentially zoned areas across N. 160th Street. Commercial uses and active open spaces are oriented towards the eastern portion of the site, transitioning to solely residential uses closer to the existing residential zone. Significant building setbacks are provided along N.160th Street to retain the existing densely vegetated frontage and provide for an internal pedestrian pathway adjacent to the street. In addition to code required building modulation, the upper floor façades adjacent to residential zones will use material changes or setbacks to reduce the perceived height and scale.</p>	<p>The portion of this criterion related to minimizing conflicts and creating transitions between the project and R-4, R-6, R-8 or MUR-35’, only applies to the R-6 zoned neighborhood directly across from the proposal on the north side of N 160th Street. That R-6 area fronts approximately 270 feet directly across from the Sears site and includes three single-family residences. The proposed Development Agreement shows proposed buildings on the south side of N. 160th Street directly across from these R-6 residences.</p> <p>The proposed buildings will meet most of the City’s Commercial Design Standards (see Criterion 2 above).</p>

		<p>In addition, the City has Transition Area Standards that require the proposed buildings to be setback and the upper stories stepped-back to minimize the apparent building size toward the R-6 homes. The proposed buildings will meet this standard by increasing the setback at the building base from 10 feet to 60 feet. This increased setback allows the proposed building height to be 80 feet in height and to meet the Transition Area standards.</p>
<p>6. The project is consistent with the standards of the critical areas regulations, Chapter 20.80 SMC, Critical Areas, or Shoreline Master Program, SMC Title 20, Division II, and applicable permits/approvals are obtained.</p>	<p><u>Critical areas:</u> The Project is located south of Boeing Creek, which is piped within N. 160th Street near the northeast property line. SMC Table 20.80.280(1) requires a 10’ buffer for a piped stream. Work will occur within the buffer for driveway and right-of-way improvements as permitted by SMC 20.80.274.C.4.</p> <p><u>Shoreline Master Program:</u> The SMP is not applicable. The Property is not within the shoreline jurisdiction.</p>	<p>There are no Wetland, Floodplain, Fish and Wildlife Habitat (stream corridors), Flood Hazard Areas, or Aquifer Recharge critical areas on site. “Piped Streams” are included in the Critical Area Code; however, they only exist along the proposed N 160th Street improvements. The proposed relocation of the stormwater pipe in Westminster is not designated as a “Piped Stream”. There are some isolated, man-made, moderately hazardous and minorly high hazardous steep slope indicated on the Sears site. These slopes were originally created to level parking and building pad areas. The conceptual development plans are not specific enough to discern whether this is a conflict. However, the proposed Development Agreement is not requesting a departure from the critical areas code. The Sears site is not within the Shoreline Master Program area.</p>

Attachment G

Vision 2029 and Comprehensive Plan Policies (Excerpts)

Vision 2029 Statement

Shoreline in 2029 is a thriving, friendly city where people of all ages, cultures, and economic backgrounds love to live, work, play and, most of all, call home. Whether you are a first-time visitor or long-term resident, you enjoy spending time here. There always seems to be plenty to do in Shoreline -- going to a concert in a park, exploring a Puget Sound beach or dense forest, walking or biking miles of trails and sidewalks throughout the city, shopping at local businesses or the farmer's market, meeting friends for a movie and meal, attending a street festival, or simply enjoying time with your family in one of the city's many unique neighborhoods....

Shoreline is culturally and economically diverse, and draws on that variety as a source of social and economic strength...

Schools, parks, libraries, restaurants, local shops and services, transit stops, and indoor and outdoor community gathering places are all easily accessible, attractive and well maintained...

Gathering places - like parks, plazas, cafes and wine bars - provide opportunities for neighbors to meet, mingle and swap the latest news of the day...

If you live nearby, sidewalks connect these hubs of activity to the surrounding neighborhood, bringing a car-free lifestyle within reach for many...

Aurora Avenue is Shoreline's grand boulevard. It is a thriving corridor, with a variety of shops, businesses, eateries and entertainment, and includes clusters of some mid-rise buildings, well-designed and planned to transition to adjacent residential neighborhoods gracefully. Shoreline is recognized as a business-friendly city. Most services are available within the city, and there are many small businesses along Aurora, as well as larger employers that attract workers from throughout the region. Here and elsewhere, many Shoreline residents are able to find family-wage jobs within the City. Housing in many of the mixed-use buildings along the boulevard is occupied by singles, couples, families, and seniors. Structures have been designed in ways that transition both visually and physically to reinforce the character of adjacent residential neighborhoods. The improvements put in place in the early decades of the 21st century have made Aurora an attractive and energetic district that serves both local residents and people from nearby Seattle, as well as other communities in King and Snohomish counties. As a major transportation corridor, there is frequent regional rapid transit throughout the day and evening. Sidewalks provide easy access for walking to transit stops, businesses, and connections to adjacent neighborhoods. Aurora has become a green boulevard, with

Proposed DA - Att. A/Exhibit A - Vision 2019 & Comp. Plan Policies Excerpts

mature trees and landscaping, public plazas, and green spaces. These spaces serve as gathering places for neighborhood and citywide events throughout the year. It has state-of-the-art stormwater treatment and other sustainable features along its entire length. As you walk down Aurora you experience a colorful mix of bustling hubs – with well-designed buildings, shops and offices – big and small – inviting restaurants, and people enjoying their balconies and patios....

2012 Comprehensive Plan (Excerpts Below).

FG 9: Promote quality building, functionality, and walkability through good design and development that is compatible with the surrounding area.

FG 14: Designate specific areas for high density development, especially along major transportation corridors.

FG 15: Create a business- friendly environment that supports small and local businesses, attracts large businesses to serve the community and expand our jobs and tax base, and encourages innovation and creative partnerships.

Land Use Element

Goal LU VI: Encourage pedestrian-scale design in commercial and mixed-use areas.

Goal LU VII: Plan for commercial areas that serve the community, are attractive, and have long-term economic vitality.

Goal LU VIII: Encourage redevelopment of the Aurora corridor from a commercial strip to distinct enters with variety, activity, and interest.

LU9: The Mixed-Use 1 (MU1) designation encourages the development of walkable places with architectural interest that integrate a wide variety of retail, office, and service uses, along with form-based maximum density residential uses. Transition to adjacent single-family neighborhoods may be accomplished through appropriate design solutions. Limited manufacturing uses may be permitted under certain conditions.

Community Design

Goal CD I: Promote community development and redevelopment that is aesthetically pleasing, functional, and consistent with the City's vision.

Goal CD III: Expand on the concept that people using places and facilities draw more people.

CD1. Encourage building design that creates distinctive places in the community.

CD3. Encourage commercial, mixed-use, and multi-family development to incorporate public amenities, such as public and pedestrian access, pedestrian-oriented building design, mid-block connections, public spaces, activities, and solar access.

Proposed DA - Att. A/Exhibit A - Vision 2019 & Comp. Plan Policies Excerpts

CD21. Design public spaces to provide amenities and facilities such as seating, lighting, landscaping, kiosks, and connections to surrounding uses and activities that contribute to a sense of security.

CD24. Encourage building and site design to provide solar access, as well as protection from weather.

Housing

Goal H I: Provide sufficient development capacity to accommodate the 20-year growth forecast and promote other goals, such as creating demand for transit and local businesses through increased residential density along arterials; and improved infrastructure, like sidewalks and stormwater treatment, through redevelopment.

Economic Development

Goal ED I: Maintain and improve the quality of life in the community by:

- Increasing employment opportunities and the job base;*
- Supporting businesses that provide goods and services to local and regional populations;*

Goal ED II: Promote retail and office activity to diversify sources of revenue, and expand the employment base.

Goal ED III: Facilitate private sector economic development through partnerships and coordinating funding opportunities.

Goal ED VI: Support employers and new businesses that create more and better jobs.

Goal ED VII: Encourage multi-story buildings for efficient land use.

Goal ED VIII: Promote and support vibrant activities and businesses that grow the local economy.

ED1: Improve economic vitality by:

- Promoting existing businesses;*
- Recruiting new businesses;*
- Encouraging increased housing density around commercial districts, especially those served by high capacity rapid transit, to expand customer base; and*
- Developing design guidelines to enhance commercial areas with pedestrian amenities, and “protect and connect” adjacent residential areas.*

ED2: Promote non-motorized connections between commercial businesses, services, and residential neighborhoods.

ED4: Use incentives and development flexibility to encourage quality development.

Proposed DA - Att. A/Exhibit A - Vision 2019 & Comp. Plan Policies Excerpts

ED6: Work to reinvigorate economically blighted areas in Shoreline by establishing Community Renewal Areas with associated renewal plans.

ED7: Enhance existing neighborhood shopping and community nodes to support increased commercial activity, neighborhood identity, and walkability.

ED8: Explore whether creating an “Aurora Neighborhood” as a fifteenth neighborhood in Shoreline would allow the City to better serve citizens, and to capitalize on its infrastructure investment.

ED9: Promote land use and urban design that allows for smart growth and dense nodes of transit-supportive commercial activity to promote a self-sustaining local economy.

ED12: Revitalize commercial business districts, and encourage high-density mixed-use in these areas.

ED14: Encourage a mix of businesses that complement each other, and provide variety to the community to create activity and economic momentum.

ED23: Encourage the redevelopment of key and/or underused parcels through incentives and public/private partnerships.

ED27: Develop a vision and strategies for creating dense mixed-use nodes anchored by Aurora’s retail centers, including how to complement, support, and connect them with mid-rise residential, office, and destination retail buildings.

ED29: Reinvent Aurora Square to help catalyze a master-planned, sustainable lifestyle destination.

Capital Facilities

CF5: Identify, construct, and maintain infrastructure systems and capital facilities needed to promote the full use of the zoning potential in areas zoned for commercial and mixed-use.

CF25: Evaluate and establish designated levels of service to meet the needs of existing and anticipated development.

MEMORANDUM

DATE: April 8, 2019

TO: Kendra Dedinsky, PE, City of Shoreline Traffic Engineer
Jamás Gwillam, Merlone Geier Partners

FROM: Michael J. Read, PE, Principal, TENW

SUBJECT: Shoreline Place - Transportation Consistency/Traffic Impact Analysis
Expanded Study

This memorandum documents both a transportation consistency analysis of specific transportation evaluations and land use assumptions documented in the *Aurora Square Community Renewal Area (CRA)* and project-level EIS analysis, as well as a traffic impact analysis to ensure functionality of existing and proposed site access roadways and operations of intersections consistent with the City of Shoreline Concurrency requirements based upon the proposed *Shoreline Place* redevelopment project. As one of the first redevelopment projects within the Aurora Square CRA, this consistency and traffic impact analysis provides the following transportation-related items:

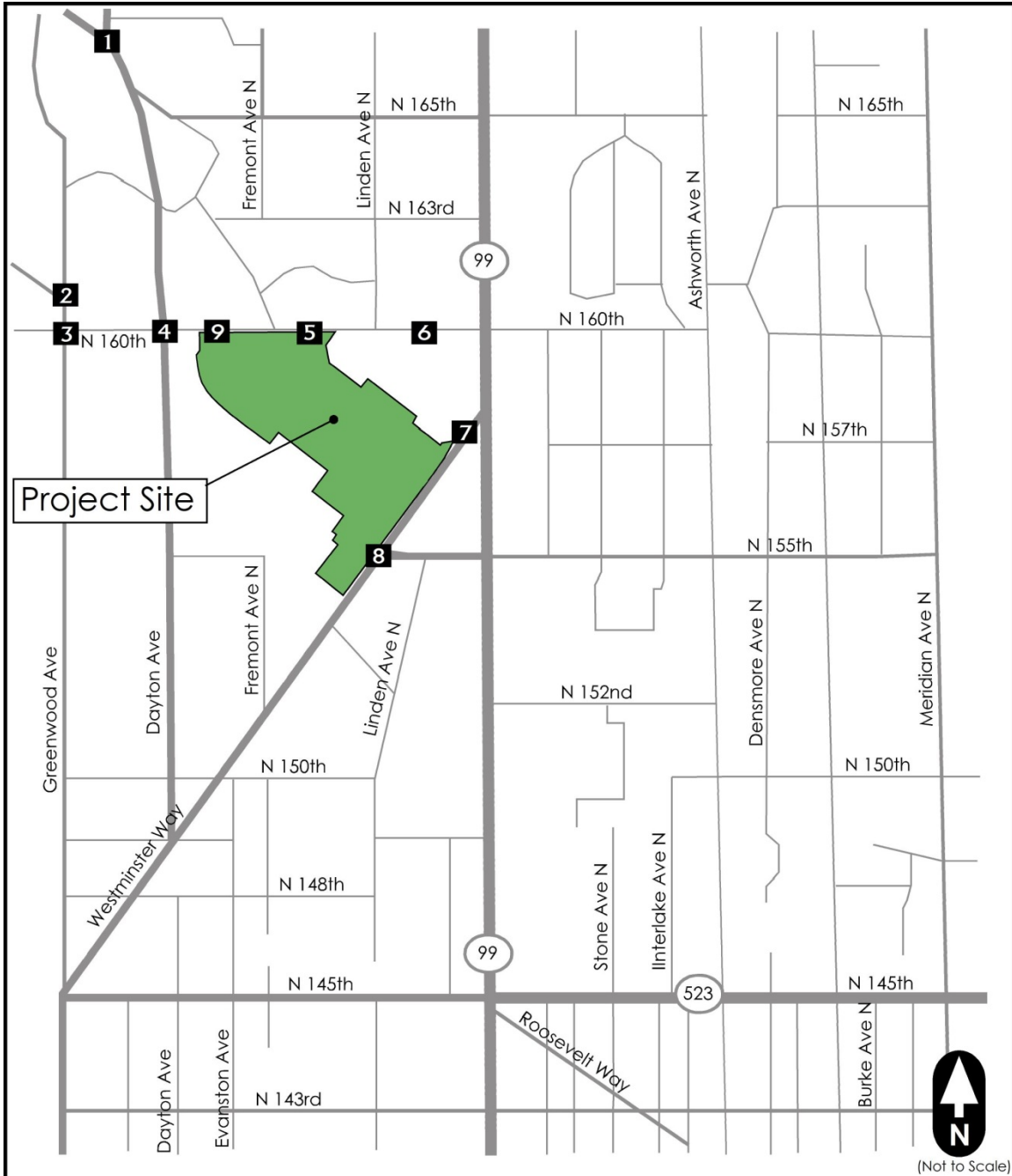
- A comparative trip generation analysis of the *Shoreline Place* project in contrast to existing commercial retail uses within the Sears property using trip generation rates published by ITE in the *Trip Generation Manual, 10th, Edition, 2017*. A comparative analysis with the EIS assumptions and conclusions document the remaining trip entitlements within the overall Aurora Square CRA.
- A review of traffic operations and vehicle queueing at existing or proposed future driveways (two existing on N 160th Street and two onto Westminster Way) as well as several off site intersections with buildout of *Shoreline Place* to ensure City Transportation Concurrency standards are met. Traffic forecasts consider growth rates applied in the *Aurora Square Planned Action EIS*, buildout of the adjacent Alexan Apartment project, and employment growth expected at the WSDOT Headquarters building.
- A review of existing/proposed truck access driveways to ensure no impacts to adjacent existing retail owners/tenants within the Aurora Square CRA and an identification of truck access driveways and routing to ensure goods mobility and freight deliveries.
- An overview of a designated bikeway through the *Shoreline Place* project site.
- An overview of transportation improvements necessitated as a result of frontage along public rights-of-way and contributions towards specific projects determined as Priority Renewal projects within the Aurora Square CRA.

Project Trip Generation

Using the latest edition of the *Trip Generation Manual, 10th Edition, 2017*, TENW prepared the estimated vehicle trip generation as a result of the *Shoreline Place* project within the Aurora Square CRA. A site vicinity map with study intersections is provided in **Figure 1**, while a conceptual site plan is provided in **Attachment A**. For trip generation/traffic analysis purposes, a total of 1,358

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Place
Transportation Consistency Analysis - Expanded Study FINAL



(Not to Scale)

	Figure 1 Project Site Vicinity	Shoreline Place Transportation Consistency Analysis
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residential apartments with 59,160 square-feet of new retail and 13,000 square-feet of sit-down quality restaurant were assumed. An existing bank with drive-thru within the property boundary (3,450 square feet) would remain.

The primary retail center that would be removed as part of the *Shoreline Place* project is a former Sears Retail complex. For the purposes of the transportation analysis, the series of buildings comprised approximately 143,753 square-feet of net retail space, 72,193 square-feet of net warehouse/storage (appliance distribution center), 20,000 square-feet of office (administrative/call-center), and 50,042 square-feet in auto center/tire store services. It should be noted that approximately 286,000 square feet of existing commercial building space was assumed to be removed as part of the *Shoreline Place* project for traffic analysis purposes (with a total floor area of up to 333,600 square-feet determined as of March 2019).

As shown in **Table 1**, a total of approximately 505 new a.m. peak hour (142 entering and 363 exiting), and 651 new p.m. peak hour vehicular trips (392 entering and 259 exiting) would be generated at full buildout of *Shoreline Place*. It should be noted that these net vehicle trips do not account for removal of the Sears retail complex or pass-by trips. Detailed trip generation tables are provided in **Attachment B**, and where appropriate, fitted curve equations were applied. Consistent with the CRA EIS assumptions, NCHRP 684 methodology was applied to estimate internal trips that would remain within the development.

Table 1: Shoreline Place Net Trip Generation Summary

Time Period	In	Out	Total
<i>Standard ITE Rates with Pass-By/Internal Adjustments</i>			
Weekday AM Peak Hour	142	363	505
Weekday PM Peak Hour	392	259	651

Source: Trip Generation Manual, 10th Edition, ITE, 2017.

Comparative Trip Generation Analysis with the CRA EIS

The *Aurora Square Planned Action EIS* modeled three redevelopment scenarios, with redevelopment that would include remove and replace approximately 433,000 square-feet of existing retail uses and construct up to 1,000 new apartment units, 250,000 square-feet of additional retail and 250,000 square-feet of new office uses under the highest approved land use scenario (Alternative 3).

As summarized in **Table 2**, the relative increase in vehicle trip generation contemplated within the *Aurora Square Planned Action EIS* would range from zero (0) under the No Action Alternative to approximately 808 new p.m. peak hour trips under Alternative 3 (City adopted Alternative 3 as referenced in the Addendum to the *Aurora Square Planned Action Draft Environmental Impact Statement* (December 12, 2014) and *Final Environmental Impact Statement* (July 24, 2015), issued on March 8, 2019).

Under the *Shoreline Place* redevelopment scenario (accounting for removal of existing Sears retail complex and internal/pass-by trips), a net increase of 99 new p.m. peak hour trips (132 new entering trips and 33 fewer existing trips) would be generated in comparison to existing land uses. When considering Shoreline Place, the adjacent Alexan Apartment complex, and WSDOT employment growth, the net change is estimated at 264 new trips in total, well below

the EIS threshold of 808 new p.m. peak hour trips under a cumulative comparison. A detailed summary of land use and vehicle trip generation assumptions of the EIS trip thresholds is provided in **Attachment C**. As such, the proposed Shoreline Place project is consistent with the traffic analysis and land use assumptions of the *Aurora Square Planned Action EIS*.

Table 2: EIS PM Trip Threshold Comparisons

Scenario	In	Out	Total	Net Change
No Action	453	594	1,047	0
Alternative 2	633	812	1,445	+398
Alternative 3	817	1,038	1,855	+808
Shoreline Place (only)	585	561	1,146	+99
Shoreline Place + Alexan Apts (+85)+ WSDOT Growth (+80)	+87=672	+78=629	+165=1,311	+264

Source: Aurora Square CRA EIS and the Trip Generation Manual, 10th Edition, ITE, 2017.

Traffic Impact Analysis

To ensure compliance with the City’s Transportation Concurrency standards and to evaluate consistency with the traffic operational results of the *Aurora Square Planned Action EIS* transportation analysis, intersection level of service (LOS) analyses were conducted at all site driveways and additional off-site intersections northwest of the Shoreline Place project per the direction of the City Traffic Engineer. Intersection level of service analysis reviewed future baseline conditions under a 20-year buildout horizon year (2039) and with new project traffic generated at full buildout of the *Shoreline Place* project.

2039 Baseline Traffic Forecasts

To evaluate project traffic operations at full buildout of *Shoreline Place*, review of the traffic projections within the *Aurora Square Planned Action EIS* was conducted by TENW. As provided in **Attachment D**, the average annual growth rate between 2013 and 2030 determined in the EIS was 1.2 percent per year of total entering volumes at study intersections (see **Figure 1**) that immediately serve the site. As such, to prepare 2039 forecasts under the buildout horizon year for Shoreline Place, this average annual growth rate was applied to all study intersections for a 21-year period using an extrapolation method of 21-years growth on traffic counts collected in 2018.

In addition to these background traffic growth rates, known pipeline traffic associated with the Alexan Apartment complex and additional employment expected at the adjacent WSDOT Headquarters building (200 new employees from the Department of Ecology) within the Aurora Square CRA area were added to these forecasts. The resultant cumulative total growth factor applied to study intersections and site driveways ranged from approximately 25 percent to 33 percent between 2018 and 2039.

To evaluate project traffic impacts, the total net increase in vehicle trip generation from the Shoreline Place project were added to the baseline 2039 traffic forecasts with additional adjustments for pass-by trips associated with proposed retail land uses. As the 2018 traffic counts did not account for any significant vehicle trip generation associated with the Sears retail complex, no adjustments to existing counts were made as a conservative approach. Adjustments were made however, to

account for removal of the off-site student parking/shuttle service that currently occurs on-site to support the Shoreline Community College. **Attachment D** also provides existing 2018 traffic counts and the resultant p.m. peak hour traffic forecasts for 2039 under future baseline and with project conditions.

Consistency

As part of the consistency review, a comparative analysis of detailed EIS forecasts at the intersection-level was completed with additional factoring to 2039 to ensure growth projections used in evaluation of traffic impacts associated with Shoreline Place were consistent with assumptions within the CRA EIS. As provided in **Attachment E**, totaling entering volumes at each study intersection within the CRA is documented and factored to 2039 under the No Action Scenario. Net increases in vehicle trips associated with known buildout within the CRA including the Alexan Apartment complex, new WSDOT trips, and Shoreline Place are identified. The resultant intersection-level total entering volumes in 2039 “with known CRA buildout” were then compared with the adopted Alternative 3 forecasts (representing a 2030 horizon year), and on an aggregate basis totaling entering traffic at all study intersections is approximately 3.7 percent lower than those levels evaluated in the CRA EIS.

At an intersection level, those study intersections that were slightly higher than EIS forecasts were forecasted at no more than 2.7 percent or less, and at those intersections within Shoreline’s jurisdiction, were projected to operate at LOS D or better. At those intersections where EIS forecasts are higher using these methods, projected level of service is better than that documented in the CRA EIS. This is primarily due to the fact that the overall net increase in traffic generated by uses within the CRA is significantly lower than EIS assumptions.

Project Trip Distribution

To estimate vehicle trip distribution, existing traffic patterns at regional intersections and site access driveways as well as the distribution of land uses and proposed parking facilities on-site were all considered. As provided in **Figure 2** portrays off-site trip distribution patterns as well as general site driveway trip distribution patterns. Detailed trip assignments of turning movements and directional flows are provided in **Attachment D** as part of 2039 Traffic Forecasts.

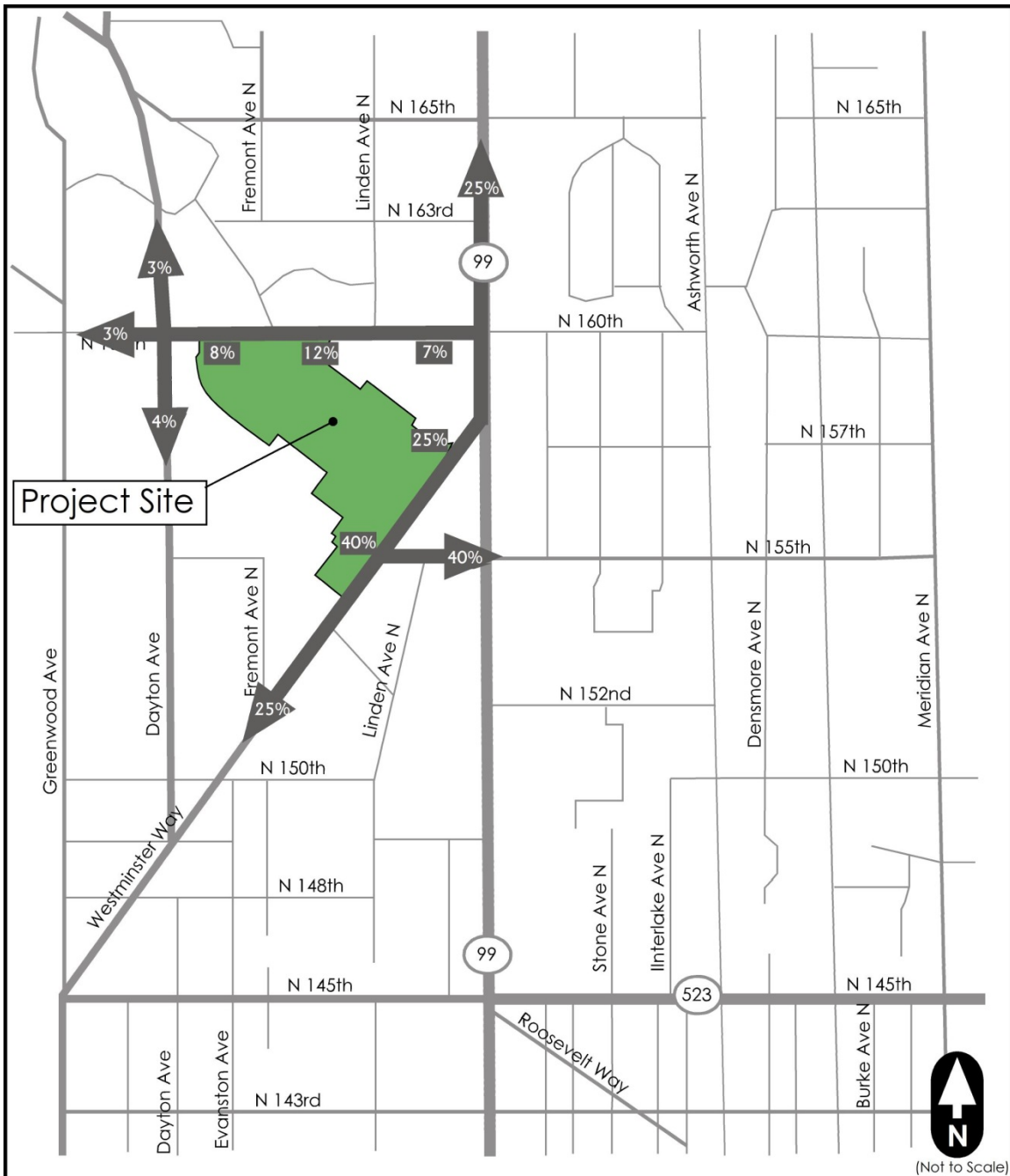
Intersection Level of Service Analysis

LOS refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes LOS. At signalized intersections, LOS A represents free-flow conditions-motorists experience little or no delays, and LOS F represents forced-flow conditions-motorists experience an average delay in excess of 80 seconds per vehicle. The LOS reported for signalized intersections represents the average control delay per vehicle entering the intersection. The LOS reported at stop-controlled intersections is also based on the average control delay (sec/veh) and is reported for each movement. Therefore, the reported LOS at unsignalized intersections does not represent a measure of the overall operations of the intersection.

LOS calculations for both signalized and stop-controlled intersections were calculated using the methodologies and procedures outlined in the 2010 *Highway Capacity Manual (HCM)*, Special

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Place
 Transportation Consistency Analysis - Expanded Study FINAL



	<p>Figure 2 Project Trip Distribution</p>	<p>Shoreline Place Transportation Consistency Analysis</p>
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Report 209, Transportation Research Board (TRB). **Table 3** outlines the LOS criteria for signalized and unsignalized intersections based on these methodologies.

Table 3: Level of Service Criteria for Intersections

Level of Service	Signalized Intersection	Unsignalized Intersection
	Average Delay Range (sec)	Delay Range (sec)
A	≤ 10	≤ 10
B	> 10 to ≤ 20	> 10 to ≤ 15
C	> 20 to ≤ 35	> 15 to ≤ 25
D	> 35 to ≤ 55	> 25 to ≤ 35
E	> 55 to ≤ 80	> 35 to ≤ 50
F	> 80	> 50

Source: "Highway Capacity Manual", Special Report 209, Transportation Research Board, 2010.

To evaluate consistency with the Aurora Square CRA EIS, intersection LOS were calculated using HCM 2010 procedures with the *Synchro 8* software program at all primary access intersections and off-site vicinity intersections northwest of the site that would serve the site. Baseline and With Project forecasts in 2039 during the p.m. peak hour are summarized in **Table 4**. In December 2018, the City of Shoreline and Shoreline Community College (SCC) executed a Transportation Mitigation Agreement in support of the College’s buildout of student housing and Master Plan. As part of this effort, detailed modeling of transportation mitigation alternatives was completed by SCC and approved by the City of Shoreline. As the net increase in new trips generated by Shoreline Place is negligible at Study Intersections 1, 2, and 3, and as the Transportation Mitigation Agreement identifies long range transportation improvements and proportional share contributions from new development, the traffic analysis and long range improvements at these off-site intersections are documented in *Shoreline Community College Transportation Technical Report*, October 2018, Transpo Group, Inc.

Figure 3 overviews p.m. peak hour traffic forecasts in 2039 at study intersections 4 through 9, also denoting the net increase in p.m. peak hour vehicle trips that would be generated by the project. As shown, all intersections or critical stopped controlled movements are forecast to operate at LOS D or better with or without Shoreline Place in 2039. Detailed level of service summary sheets are also included in **Attachment F**. As reported in the *Shoreline Community College Transportation Technical Report*, October 2018, Transpo Group, Inc., Study Intersections 1, 2, and 3 would operate at LOS D or better with planned transportation mitigation by SCC and the City of Shoreline (traffic forecasts and level of service results are provided in **Attachment G**).

Queuing Analysis at Site Driveways

Using HCM 2010 procedures, **Table 4** also includes 95th-percentile vehicle queuing estimates of critical entering/existing lanes or flows at site driveways or relevant study intersections. As shown, all exiting site driveways are estimated to experience vehicle queues of no more than 2 vehicles at stop controlled approaches and up to 6 vehicles (less than 150 feet) at the signalized approach of Westminster Way and N 155th Street. Supporting total entering and exiting traffic associated with Shoreline Place development are also summarized in **Table 4** for disclosure of trip assignments that were used in the evaluation of project-level traffic impacts.

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Place
Transportation Consistency Analysis - Expanded Study FINAL

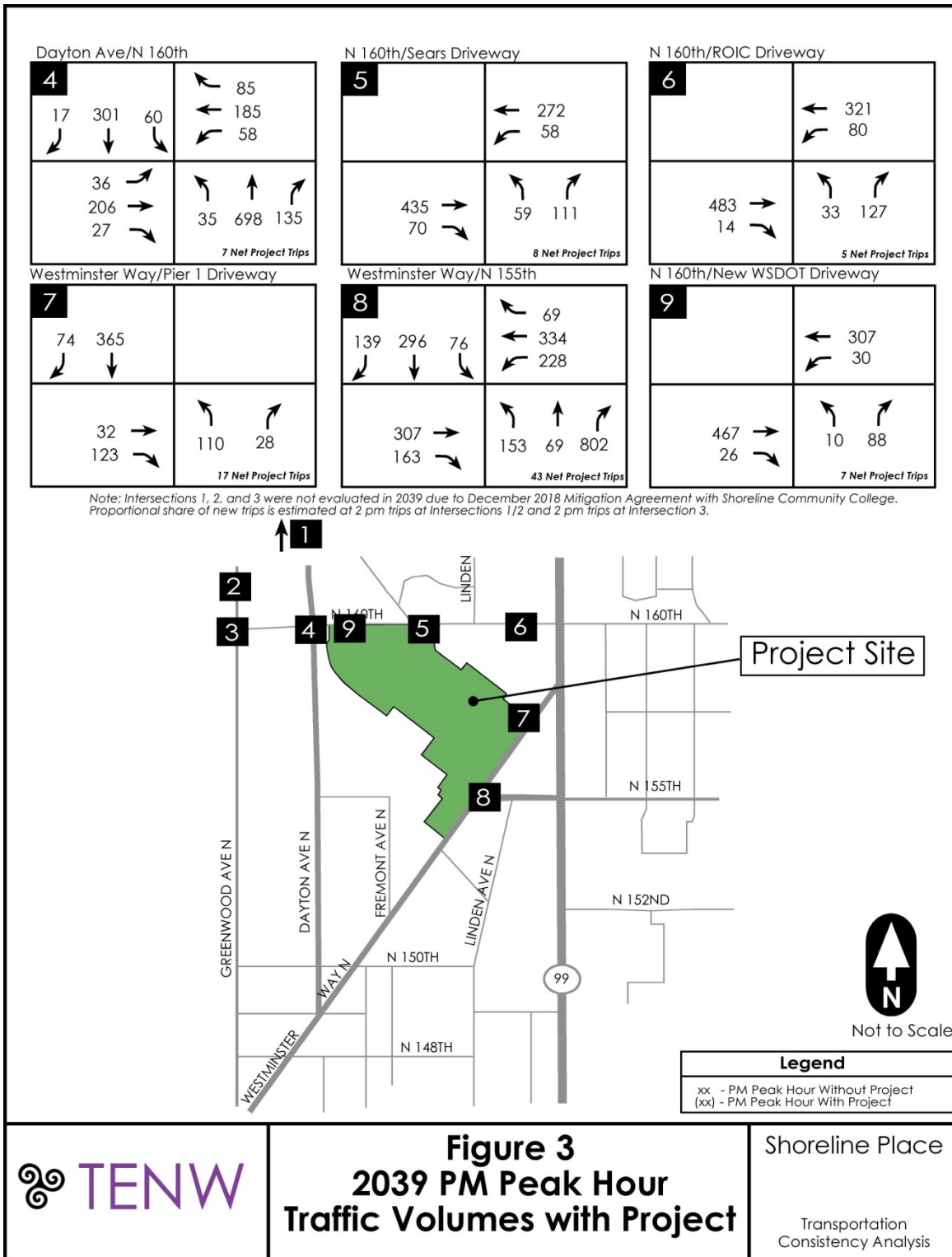


Figure 3
2039 PM Peak Hour
Traffic Volumes with Project

Shoreline Place
Transportation
Consistency Analysis

Table 4
Shoreline Place 2039 LOS/Queuing Summary Analysis

ID#	Intersection	Analysis Method	PM Peak		With Project Vehicle Queues Enter/Exit (95th Percentile)
			2039 Baseline	2039 With Project	
4	Dayton Ave/N 160th St	HCM	B	B	WB LT - 50 feet WB TH - 150 feet
5	Sears West Dr/N 160th St	HCM	C	C	NB LT - 25 feet NB RT - 25 feet
6	ROIC Dr/N 160th St	HCM	C	C	NB LT/RT - 50 feet
7	Westminster Wy/Pier 1 Dr	HCM	A	B	EB TH/RT - 25 feet
8	Westminster Wy/N 155th St	HCM	B	B	EB TH/RT - 125 feet NB LT - 250 feet EB TH - 150 feet
9	New SP NW Dr/N 160th St	HCM	--	B	NB LT/RT - 25 feet

As noted in the study document, Study Intersections 1 through 3 are not reported in this analysis, but by reference are reported in the Shoreline Community College Transportation Technical Report, Transpo Group, October 2018.

Project Trip Generation (Gross Trips)			Enter	Exit	Total
AM Peak Hour	166	388	554		
PM Peak Hour	477	348	825		
Project Trip Generation (Net New Trips)			Enter	Exit	Total
AM Peak Hour	142	363	505		
PM Peak Hour	392	259	651		
Pass-By Trips Reassigned at Driveways			Enter	Exit	Total
AM Peak Hour	5	5	10		
PM Peak Hour	24	25	49		

Net New Trips Removes Internal Trips between Uses within Shoreline Place and within the Aurora Square CRA and Removes Pass-by Trips. These figures do not account for removal of the existing Sears retail complex.

Truck Routes

Large wheel-based vehicles (semi-truck/trailer combinations) currently make regular deliveries to four separate loading docks throughout the retail core of the existing Aurora Square CRA properties. With removal of the Sears retail complex, deliveries by these large vehicles are not expected as a result of the small retail shops proposed within the Shoreline Place development. However, continued truck deliveries using WB-62 combinations would require access to Marshall's, Central Market (2 separate locations), and the Salvation Army Family Store. **Figure 4** identifies these four loading dock locations and outlines existing/proposed truck entry/exit points around the Shoreline Place development. To continue truck accessibility, the planned relocated WSDOT access onto N 160th Street within the northwest quadrant of the site would provide a majority of this accessibility, while a proposed new driveway to serve truck "entering vehicles only" at the Marshall's loading dock from N 160th Street immediately east of the primary Shoreline Place driveway is proposed.

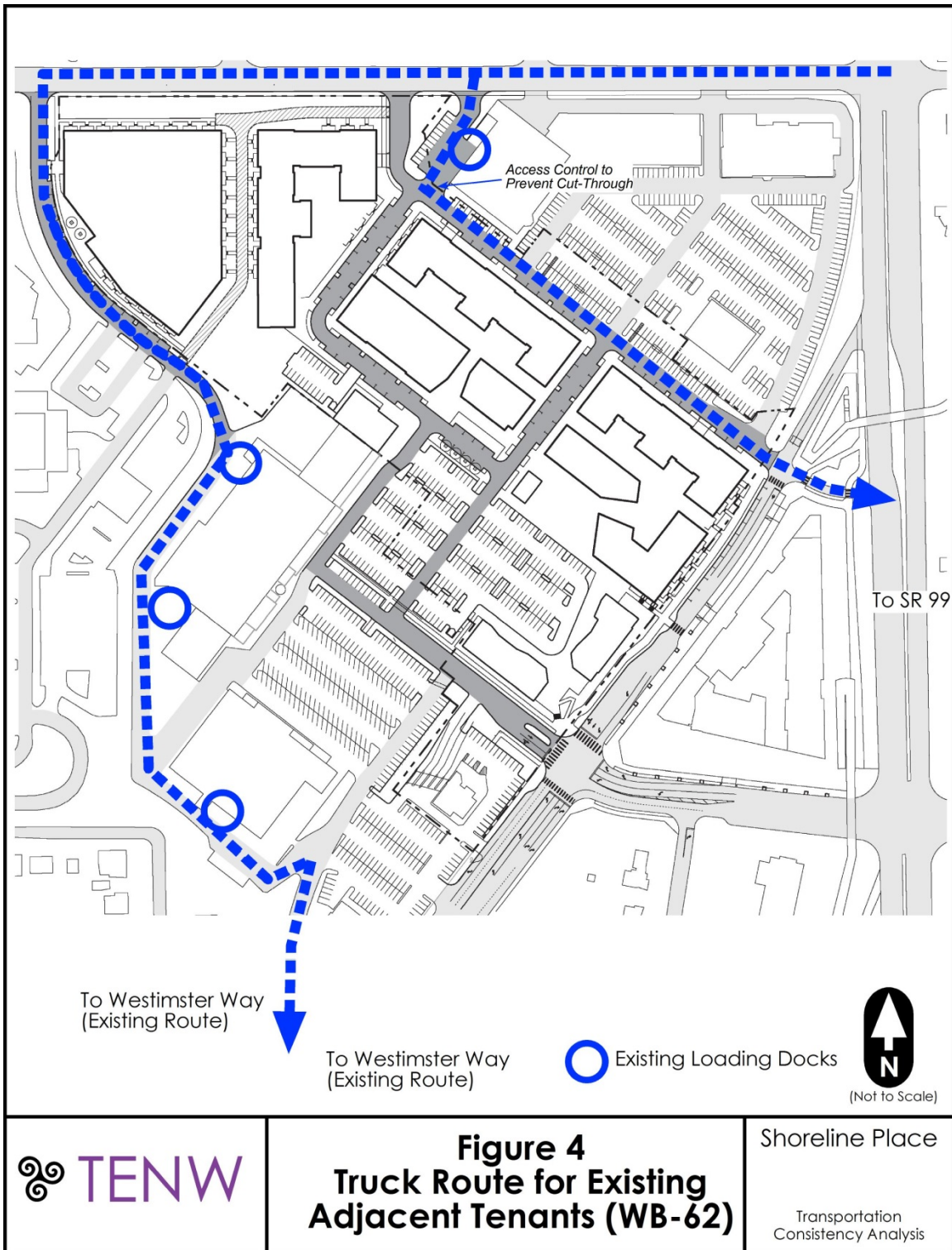
Interior Bike Routes

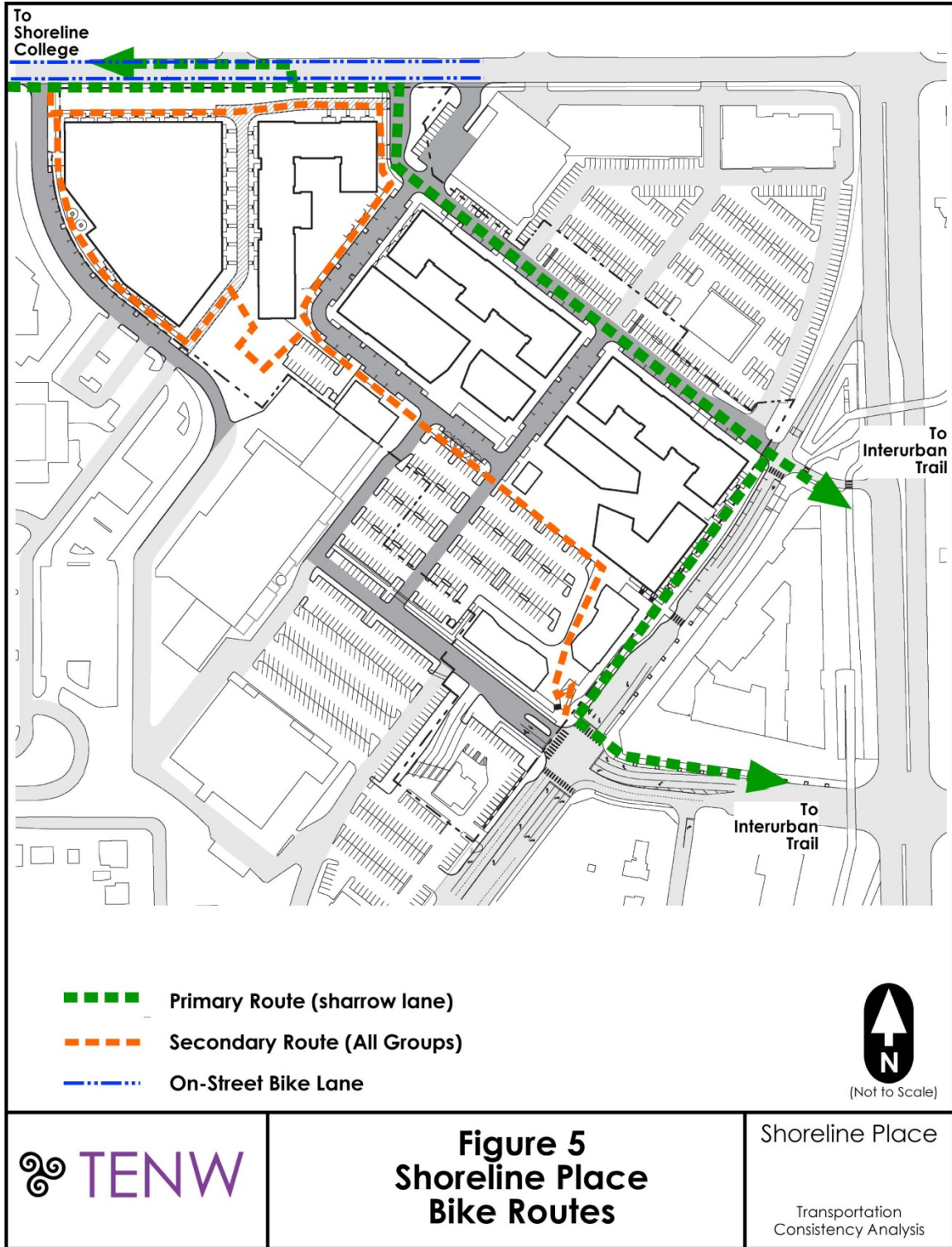
Given the mixed use nature of the *Shoreline Place* project and the overall Aurora Square CRA community priorities and redevelopment goals, bike circulation "through the site" would be accommodated for advanced/commuter riders along the northern property boundary controlled by *Shoreline Place* diagonally through the project in a narrow lane, while other bicycle circulation through the site for residents, children, and recreational bicyclists would be provided through a wide multipurpose raised sidewalk. **Figure 5** overviews these two bicycle routes through the site.

Transportation Mitigation

With establishment of the *Aurora Square CRA* and Renewal Plan, the City master planning identified a number of projects that the City of Shoreline can accomplish in partnership with redevelopment. The transportation improvements identified through the Planned Action EIS process were prioritized to support economic renewal of the Aurora Square CRA area. Of the eleven transportation improvements identified in Table A-1. Renewal Priority of Aurora Square CRA Transportation Improvements, six were a high priority, including:

- **Project 1.** Rechannelization of N 160th St from Dayton Avenue to Aurora Avenue to a 3-lane section with bike lanes and transition back to signalized approaches.
- **Project 2.** Midblock pedestrian crossing of N 160th Street with a refuge to provide for safe pedestrian crossings given the distance between Dayton Avenue and Aurora Avenue N.
- **Project 3.** Provide a new bicycle connection between the Interurban Trail and N 160th Street along Westminster Way.
- **Project 4.** Redevelop Westminster Way N from N 155th Street to N 160th Street to provide a more pedestrian and bicycle friendly section with street parking.
- **Project 5.** Construct N 157th Street from Westminster Way N to Aurora Ave N.
- **Project 6.** Reconstruct the signalized intersection at N 155th St and Westminster Way N in conjunction with the Westminster Way N project to increase safety for pedestrians and bicycles. Includes improvements to the section of N 155th St between Westminster Way N and Aurora Ave.





As part of the project, through construction of frontage improvements, contributions towards the City's Westminster Way N and Westminster Way N/N 155th Street intersection project, and construction of Project 2, Shoreline Place would be a major contributor to these high priority transportation improvements:

Project 1. Shoreline Place would be responsible for rechannelization of N 160th Street for approximately 1,200-linear feet of frontage (with transitions beyond) to provide 3 travel lanes and bike lanes on both sides of the street (see **Attachment H** of N 160th Street roadway section) with appropriate transition back to Linden Avenue N and Dayton Avenue N. This channelization improvement replaces the previously identified "cycle track" project along N 160th Street.

Project 2. Shoreline Place would construct this mid-block pedestrian crossing treatment (Rectangular Rapid Flash Beacon or RRFB) on the east leg of the N 160th Street and Fremont Place N.

Project 3. Completed with contributions by *Shoreline Place* towards the City's Westminster Way N and Westminster Way N/N 155th Street intersection project.

Project 4. Completed with contributions by *Shoreline Place* towards the City's Westminster Way N and Westminster Way N/N 155th Street intersection project.

Project 6. Completed with contributions by *Shoreline Place* towards the City's Westminster Way N and Westminster Way N/N 155th Street intersection project.

To mitigate *Shoreline Place* impacts at off-site study intersections beyond the CRA study area, as part of the City's executed Transportation Mitigation Agreement with SCC, a proportional share basis of 3 new p.m. peak hour trips is estimated for *Shoreline Place* towards transportation improvements required by the SCC campus at the intersections of Dayton Avenue N/Carlyle Hill Road (out of a total of 21 p.m. peak hour by SCC), and 3 new p.m. peak hour trips at the adjacent intersections of Greenwood Avenue N/Innis Arden, and Greenwood Avenue N/N 160th Street (out of a total of 58 p.m. peak hour by SCC).

Development Phasing

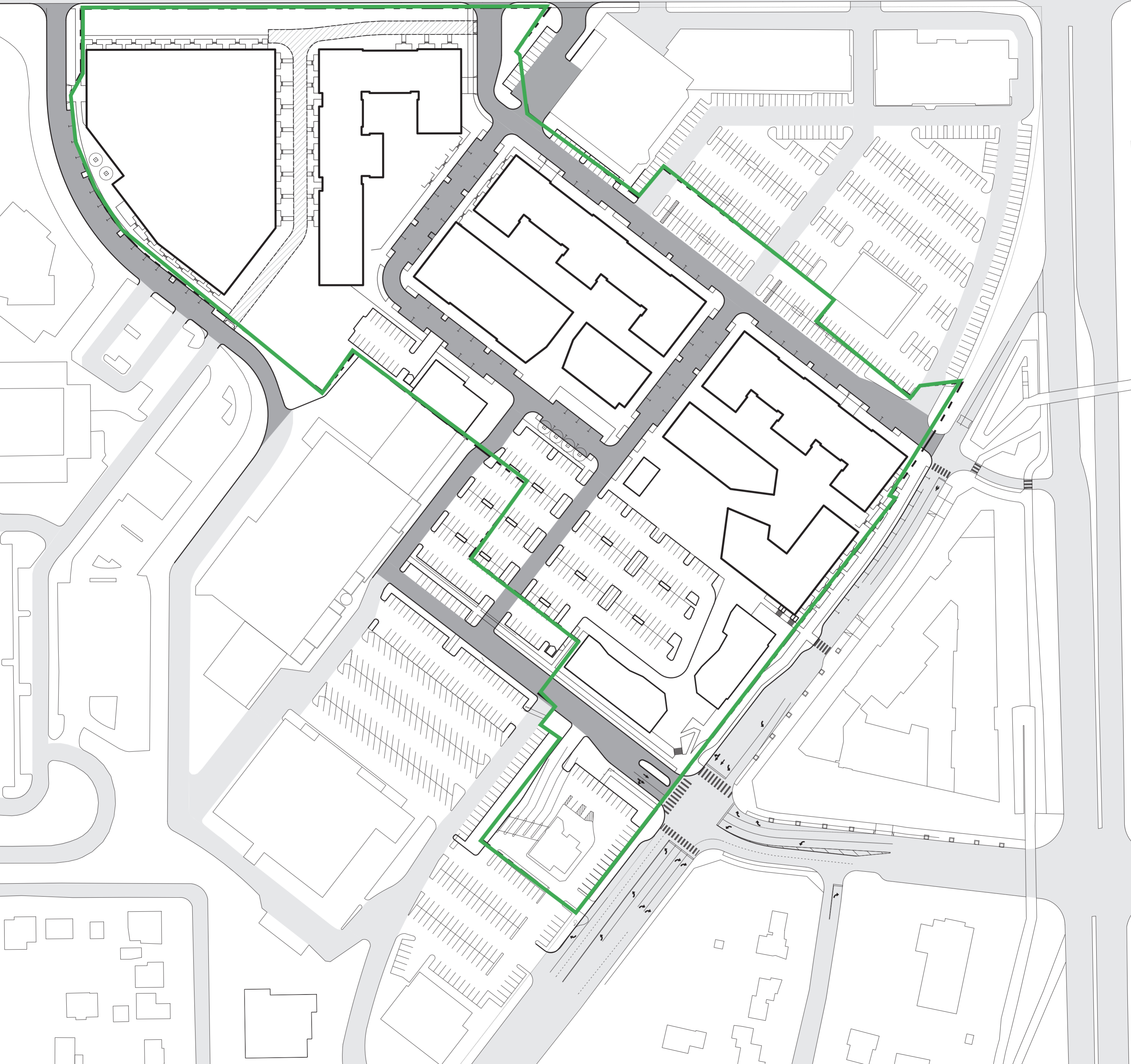
Given the likely development of the site, individual blocks or groups of buildings would be constructed as existing buildings are removed or undeveloped parking lots are redeveloped. Under a worse-case scenario, a majority of the site could be redeveloped with the exception of the primary Sears Retail building. Under this scenario, the net increase in vehicle trip generation from the overall Shoreline Place development area is estimated to generate up to 160 new p.m. peak hour vehicle trips (in contrast to 99 new p.m. peak hour trips under full redevelopment). This scenario would also fall well below the overall CRA upper threshold of 808 new p.m. peak hour trips, and would be consistent on an interim basis under this worse-case scenario

Conclusions

Based upon the review of comparative trip generation and land use assumptions, traffic operational and vehicle queueing analysis, and the transportation improvements planned or required, the proposed Shoreline Place project was found to be consistent with the overall assumptions, findings, and conclusions of the Aurora Square CRA and underlying EIS documents, and therefore, no other transportation review is warranted. If you have any questions, comments, or concerns, please do not hesitate to contact me at (206) 361-7333 ext. 101.

ATTACHMENT A

Conceptual Site Plan



ATTACHMENT B

Detailed Trip Generation Estimates

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Sears Redevelopment
AM Peak Hour Trip Generation

Shoreline Place - Preliminary Trip Generation Analysis (Program April 2019 with 1,358 Apts & 72,160K Total Commercial Retail)

A.M. Peak Hour Trip Generation									
Land Use	Area	Units ¹	ITE LUC ²	Trip Rates			Trips Generated		
				*****AM Peak Hour*****			*****AM Peak Hour*****		
				In	Out	Total	In	Out	Total
Subarea A (Proposed Residential Core)									
RETAIL	19,625	GFA	820	62%	38%	0.94	11	7	18
Internal Trips	From Residential/Retail						(6)	(2)	(8)
Passby ³	34%						(1)	(2)	(3)
						Subtotal =	4	3	7
MULTIFAMILY	1,358	UNITS	221	26%	74%	0.36	127	362	489
Internal Trips	Residential-Retail (15%)						(6)	(18)	(24)
						Subtotal =	121	344	464
						Subarea A Subtotal =	125	347	471
Subarea B (Proposed Retail Core)									
RETAIL	39,535	GFA	820	62%	38%	0.94	23	14	37
Internal Trips	From Residential Above/Below						(12)	(4)	(16)
Passby ³	34%						(3)	(4)	(7)
						Subtotal =	8	6	14
RESTAURANT (2 Sit-Down)	13,000	GFA	931	50%	50%	0.73	5	5	10
						Subtotal =	5	5	10
						Subarea B Subtotal =	13	11	24
Removal of Existing Uses									
RETAIL	143,753	GFA	820	62%	38%	0.94	84	51	135
Internal Trips	From Auto/Tire Center Below						(15)	(8)	(23)
Passby ³	34%						(28)	(17)	(37)
						Subtotal =	41	26	75
WAREHOUSE/STORAGE	72,193	GFA	150	77%	23%	0.17	9	3	12
						Subtotal =	9	3	12
OFFICE ⁴	20,000	GFA	710	86%	14%	1.16	20	3	23
						Subtotal =	20	3	23
AUTO/TIRE CENTER	50,042	UNITS	942	66%	34%	2.25	74	38	112
Internal Trips	Retail Above (25%)						(15)	(8)	(23)
						Subtotal =	59	30	89
						Existing Subtotal =	129	62	191
Gross A.M. Peak Hour Trips Generated from Redevelopment Area =							166	388	554
Less Total Internal Trips =							(24)	(24)	(50)
Less Total Passby Trips =							(5)	(5)	(10)
Less Total Existing Trips =							(129)	(62)	(191)
Net A.M. Peak Hour Trips Generated from Redevelopment Area =							7	296	303

Notes:

¹ GFA is Gross Floor Area, GLA is Gross Leasable Area.

² Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017 Land Use Codes.

³ Passby percent existing/proposed retail use based on documented average rate from ITE Trip Generation Handbook.

⁴ Trip generation for proposed office use based on ITE, with minimum rate of 1.20 trips per 1,000 sf.

Net New Project Trips 142 363 505
Project Pass-by Trips 5 5 10

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Sears Redevelopment
PM Peak Hour Trip Generation

Shoreline Place - Preliminary Trip Generation Analysis (Program April 2019 with 1,358 Apts & 72,160K Total Commercial Retail)

P.M. Peak Hour Trip Generation									
Land Use	Area	Units ¹	ITE LUC ²	Trip Rates			Trips Generated		
				*****PM Peak Hour*****			*****PM Peak Hour*****		
				In	Out	Total	In	Out	Total
Subarea A (Proposed Residential Core)									
RETAIL	19,625	GFA	820	48%	52%	3.81	36	39	75
Internal Trips	From Residential/Retail						(11)	(16)	(27)
Passby ³	34%						(8)	(8)	(16)
						Subtotal =	18	14	32
MULTIFAMILY	1,358	UNITS	221	61%	39%	0.40	331	211	542
Internal Trips	Residential-Retail (15%)						(50)	(32)	(81)
	From Restaurant Below						(4)	(8)	(12)
						Subtotal =	277	172	449
						Subarea A Subtotal =	294	186	480
Subarea B (Proposed Retail Core)									
RETAIL	39,535	GFA	820	48%	52%	3.81	72	79	151
Internal Trips	From Residential/Hotel Above/Below						(21)	(33)	(54)
Passby ³	34%						(16)	(17)	(33)
						Subtotal =	34	29	63
RESTAURANT	13,000	GFA	931	67%	33%	4.37	38	19	57
	Residential-Restaurant (20%)						(8)	(4)	(12)
						Subtotal =	30	15	45
						Subarea B Subtotal =	64	44	108
Removal of Existing Uses									
RETAIL	143,753	GFA	820	48%	52%	3.81	263	285	548
Internal Trips	From Auto/Tire Center Below						(16)	(15)	(31)
Passby ³	34%						(79)	(97)	(176)
						Subtotal =	168	173	341
WAREHOUSE/STORAGE	72,193	GFA	150	27%	73%	0.19	4	10	14
						Subtotal =	4	10	14
OFFICE ⁴	20,000	GFA	710	16%	84%	1.15	4	19	23
						Subtotal =	4	19	23
AUTO/TIRE CENTER	50,042	UNITS	942	48%	52%	3.11	75	81	156
Internal Trips	Retail Above (20%)						(15)	(16)	(31)
						Subtotal =	60	65	125
						Existing Subtotal =	235	267	502
Gross P.M. Peak Hour Trips Generated from Redevelopment Area =							477	348	825
<i>Less Total Internal Trips =</i>							<i>(85)</i>	<i>(89)</i>	<i>(175)</i>
<i>Less Total Passby Trips =</i>							<i>(24)</i>	<i>(25)</i>	<i>(49)</i>
<i>Less Total Existing Trips =</i>							<i>(235)</i>	<i>(267)</i>	<i>(502)</i>
Net P.M. Peak Hour Trips Generated from Redevelopment Area =							132	(33)	99
Net New Project Trips							392	259	650
Project Pass-by Trips							24	25	49

Notes:

¹ GFA is Gross Floor Area, GLA is Gross Leasable Area.

² Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017 Land Use Codes.

³ Passby percent existing/proposed retail use based on documented average rate from ITE Trip Generation Handbook.

⁴ Trip generation for proposed office use based on ITE, with minimum rate of 1.20 trips per 1,000 sf.

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

NCHRP 8-51 Internal Trip Capture Estimation Tool				
Project Name:	Shoreline Place		Organization:	TENW
Project Location:	Aurora Square CRA		Performed By:	MJR
Scenario Description:	Buildout		Date:	28-Jan-19
Analysis Year:	2039		Checked By:	
Analysis Period:	PM Peak Hour		Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	820	59,160		226	108	118
Restaurant	931	13,000		57	38	19
Cinema/Entertainment				0		
Residential	221	1,400		558	340	218
Hotel				0		
All Other Land Uses ²				0		
Total				841	486	355

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.90	10%	2%	1.90	10%	2%
Restaurant	2.40	5%	4%	2.40	5%	4%
Cinema/Entertainment						
Residential	1.20	10%	7%	1.20	10%	7%
Hotel						
All Other Land Uses ²						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		29	0	8	0
Restaurant	0	6		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	18	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	1,236	704	532
Internal Capture Percentage	11%	9%	12%
External Vehicle-Trips ³	651	383	268
External Transit-Trips ⁴	107	62	45
External Non-Motorized Trips ⁴	56	34	22

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	4%	17%
Restaurant	52%	17%
Cinema/Entertainment	N/A	N/A
Residential	2%	8%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

ATTACHMENT C

Aurora Square Planned Action EIS
Land Use and Trip Generation Comparative Analysis

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Project Trip Generation Summary with Planned Action Trip Threshold Assumptions

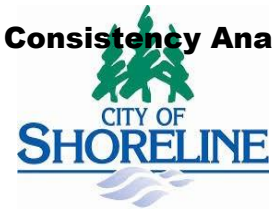
Alternative	Land Use Assumptions	PM Peak		
		Enter	Exit	Trips
No Action Alternative (All Existing Uses)	WSDOT, Westminster Place & Triangle Property	453	594	1,047
Planned Action - Alternative 2	Remove & Replace Sears Complexes (~286,000 SF of var retail/office) Construct New 500 Apt units, 125,000 SF retail, and 125,000 SF office	633	812	1,445
Net Increase with Alternative 2 from Existing		180	218	398
Planned Action - Alternative 3	Remove & Replace Sears Complexes & Central Market & Mervyns Shopping (~433,000 SF of var retail) Construct New 1,000 Apt units, 250,000 SF retail, and 250,000 SF office	817	1,038	1,855
Net Increase with Alternative 3 from Existing		364	444	808
Shoreline Place - February 2019 Program	Remove Sears Complexes (~286,000 SF of var retail/office) Construct 1,400 Apt units, 59,160 SF retail, and 13,000 SF restaurant	585	561	1,146
Net Increase with Alternative 3 from Existing		132	(33)	99

Shoreline Place is only 24.9% of total new trips from Alt 2 and 12.3% of total new trips from Alt 3.
--

Source: ITE Trip Generation, 10th Edition & Aurora Square DEIS/FEIS.

Shoreline Place - April 2019 Program with a total of 72,160 commercial retail and 1,358 residential apartment units.

Note: Existing Buildings Removed under the Shoreline Place are Estimated to Generate Approximately 477 PM Peak Hour Trips (37% of total Existing).



Addendum

Addendum to: City of Shoreline, Aurora Square Planned Action Draft Environmental Impact Statement (December 12, 2014) and Final Environmental Impact Statement (July 24, 2015).

Date Issued: March 8, 2019

Introduction

This document addends the City of Shoreline, Aurora Square Planned Action Draft Environmental Impact Statement (EIS) and Final Environmental Impact Statement.

The Draft EIS is available at this website:

<http://www.shorelinewa.gov/Home/ShowDocument?id=19087>

The Final EIS is available at this website:

<http://www.shorelinewa.gov/Home/ShowDocument?id=21489>

Consistent with the State Environmental Policy Act (SEPA), this addendum has been prepared to correct a reporting error in the trip generation numbers of the Draft EIS and the Final EIS. The trip generation numbers were reported incorrectly in the documents and have been corrected to match the trip generation numbers used in the analysis. There is no change to the analysis of alternatives, significant impacts, or mitigation measures. A notice of this Addendum has been circulated to those receiving the Final EIS.

Discussion

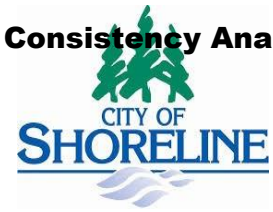
The Draft EIS identified the PM peak hour trips generated for each of the three alternatives in Chapter 3.3, Table 3-13 on page 3-51.

Table 0-1. PM Peak Hour Trip Generation by Alternative

	No Action Alternative 1	Phased Growth Alternative 2	Planned Growth Alternative 3
Inbound Trips	553	933	1,313
Outbound Trips	737	1,159	1,581
Total Trips	1,289	2,092	2,894

Source: KPG 2014

Table 3-13 (above) shows the trip generation numbers without a reduction for trips occurring within a site that has multiple land uses. The *National Cooperative Highway Research Program (NCHRP) Report 684* methodology estimates the number of trips between land uses within the site



(internal capture), which decreases the total vehicle trips external to the site. The transportation analysis in the EIS used trip generation numbers with a reduction for internal capture to evaluate traffic operations for the alternatives. The data in the Table 3-13 incorrectly reports the trip generation numbers without the internal capture reduction.

EIS Corrections

Based on the above review, make the following changes to the Draft EIS and the Final EIS.

1. In the Draft EIS, amend Table 3-13 on page 3-51 as corrected below:

Table 0-1. PM Peak Hour Trip Generation by Alternative

	No Action Alternative 1	Phased Growth Alternative 2	Planned Growth Alternative 3
Inbound Trips	553 <u>453</u>	933 <u>633</u>	1,313 <u>817</u>
Outbound Trips	737 <u>594</u>	1,159 <u>812</u>	1,581 <u>1,038</u>
Total Trips	1,289 <u>1,047</u>	2,092 <u>1,445</u>	2,894 <u>1,855</u>

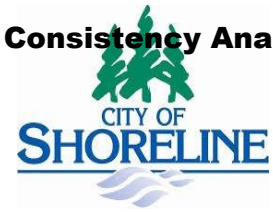
Source: KPG ~~2014~~2019

2. In the Draft EIS, amend Appendix D: Draft Planned Action Ordinance, Section III D (3) (a) Trip Ranges & Thresholds on page 4 as corrected below:

Peak Hour Inbound and Outbound trips during the PM Peak Hour by Alternative

	No Action Alternative 1	Phased Growth Alternative 2	Alternative 2 Net Trips	Planned Growth Alternative 3	Alternative 3 Net Trips
Inbound Trips	553 <u>453</u>	933 <u>633</u>	380 <u>180</u>	1,313 <u>817</u>	760 <u>364</u>
Outbound Trips	737 <u>594</u>	1,159 <u>812</u>	422 <u>218</u>	1,581 <u>1,038</u>	844 <u>444</u>
Total Trips	1,289 <u>1,047</u>	2,092 <u>1,445</u>	803 <u>398</u>	2,894 <u>1,855</u>	1,605 <u>808</u>

Source: KPG ~~2014~~2019



3. In the Final EIS, amend Appendix B: Proposed Planned Action Ordinance, Section 3 C (3) Transportation Thresholds as corrected below:

(a) Trip Ranges and Thresholds. The number of new PM Peak hour ~~and daily~~ trips anticipated within the Planned Action Area and reviewed in the FEIS for 2035 are as follows:

	No Action Alternative 1	Phased Growth Alternative 2	Net Trips Alternative 2	Phased Planned Growth Alternative 3	Net Trips Alternative 3
Inbound Trips	553 <u>453</u>	933 <u>633</u>	380 <u>180</u>	1,313 <u>817</u>	760 <u>364</u>
Outbound Trips	737 <u>594</u>	1,159 <u>812</u>	422 <u>218</u>	1,581 <u>1,038</u>	844 <u>444</u>
Total Trips	1,289 <u>1,047</u>	2,092 <u>1,445</u>	803 <u>398</u>	2,894 <u>1,855</u>	1,605 <u>808</u>

ATTACHMENT D

Comparative Traffic Volume Forecasts at Study Intersections

2018 Turning Movement Counts

2039 PM Peak Hour Turning Movement Forecasts with
Shoreline Place

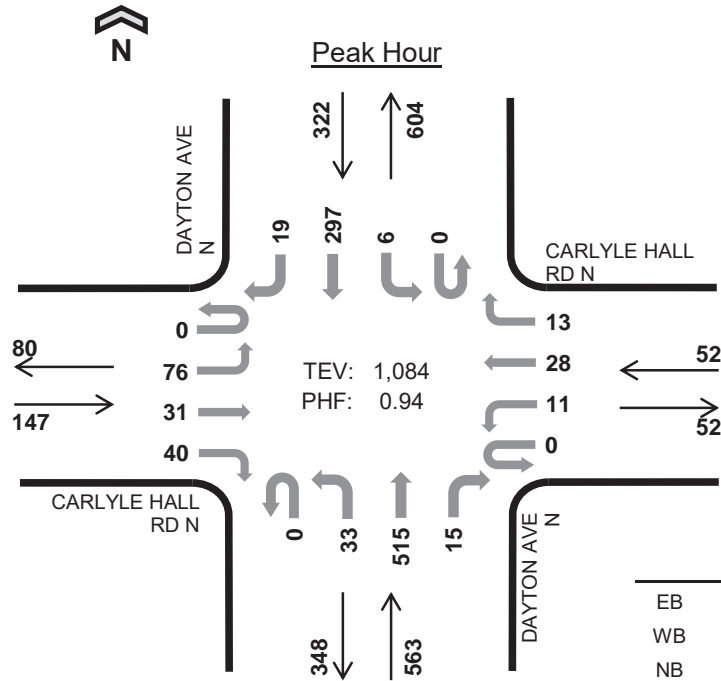
Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Total Entering Volume Analysis

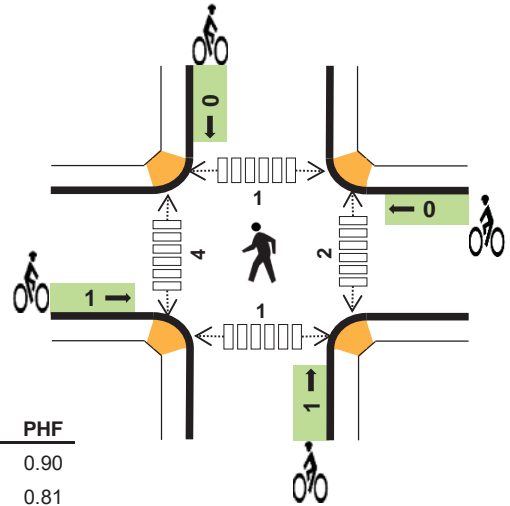
<u>CRA EIS</u>	<u>2013</u>	<u>2030</u>	<u>Annual Growth Factor</u>		<u>TEV 2039 with Shoreline Place</u>
Greenwood/N 160 Street	970	1,215	1.3%		
Dayton Ave/N 160th Street	1,182	1,550	1.4%		
Westminster Wy/N 155th St	1,708	2,045	1.1%		
Aurora Ave/N 160th Street	3,672	4,505	1.2%		
Aurora Ave/N 155th Street	3,946	4,850	1.2%		
			1.2%		
<u>Shoreline Place Consistency Anal</u>	<u>2018</u>	<u>2039</u>	<u>Annual Growth Factor</u>	<u>Project Traffic</u>	<u>TEV 2039 with Shoreline Place</u>
Greenwood/N 160 Street	917	1,184	1.2%	20	1,204
Dayton Ave/N 160th Street	1,387	1,793	1.2%	65	1,858
Westminster Wy/N 155th St	1,665	2,089	1.1%	443	2,532
Dayton Ave/Carlyle Hall Rd	1,084	1,394	1.2%	15	1,409
Sears West Dr/N 160th St	717	956	1.4%	126	1,082
			1.2%		



DAYTON AVE N
CARLYLE HALL RD N



Date: Thu, Apr 12, 2018
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.7%	0.90
WB	5.8%	0.81
NB	1.1%	0.94
SB	0.9%	0.88
TOTAL	1.2%	0.94

Two-Hour Count Summaries

Interval Start	CARLYLE HALL RD N Eastbound				CARLYLE HALL RD N Westbound				DAYTON AVE N Northbound				DAYTON AVE N Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	17	5	12	0	0	3	3	0	14	132	5	0	2	56	4	253	0
4:15 PM	0	11	5	16	0	3	9	3	0	6	136	2	0	1	51	4	247	0
4:30 PM	0	21	12	8	0	1	6	6	0	8	132	4	0	2	84	4	288	0
4:45 PM	0	20	8	11	0	2	7	1	0	10	116	2	0	2	89	1	269	1,057
5:00 PM	0	19	4	9	0	5	7	4	0	6	137	6	0	0	54	6	257	1,061
5:15 PM	0	16	7	12	0	3	8	2	0	9	130	3	0	2	70	8	270	1,084
5:30 PM	0	13	11	6	0	5	4	4	0	11	140	6	0	0	48	8	256	1,052
5:45 PM	0	18	20	8	0	2	9	2	0	13	121	6	0	1	50	12	262	1,045
Count Total	0	135	72	82	0	21	53	25	0	77	1,044	34	0	10	502	47	2,102	0
Peak Hour	0	76	31	40	0	11	28	13	0	33	515	15	0	6	297	19	1,084	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	0	1	1	5	0	0	0	1	1	0	0	0	0	0
4:15 PM	1	1	1	1	4	0	0	0	0	0	0	2	2	0	4
4:30 PM	0	0	1	1	2	0	0	0	0	0	1	2	0	1	4
4:45 PM	0	1	1	2	4	0	0	1	0	1	0	0	0	0	0
5:00 PM	1	1	1	0	3	0	0	0	0	0	0	2	1	0	3
5:15 PM	0	1	3	0	4	1	0	0	0	1	1	0	0	0	1
5:30 PM	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0
5:45 PM	1	1	1	0	3	0	0	0	0	0	0	0	0	1	1
Count Total	7	5	9	5	26	1	0	2	1	4	2	6	3	2	13
Peak Hour	1	3	6	3	13	1	0	1	0	2	2	4	1	1	8

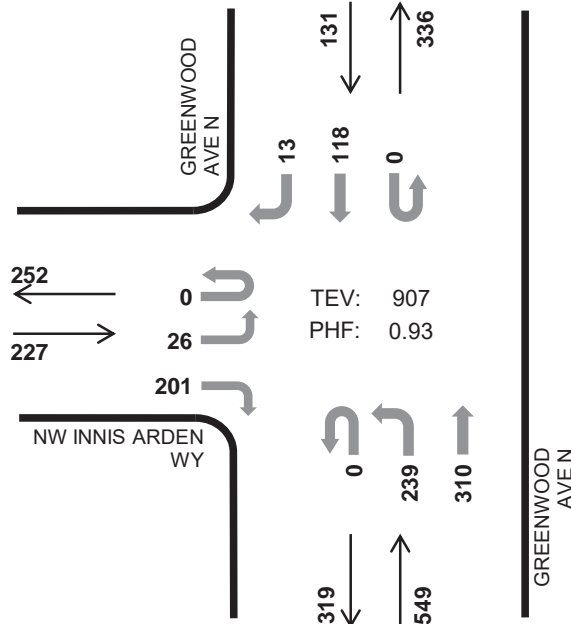


GREENWOOD AVE N NW INNIS ARDEN WY

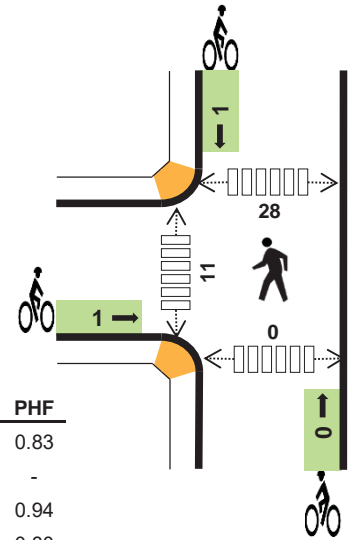
Date: Thu, Apr 12, 2018

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	5.7%	0.83
WB	-	-
NB	1.6%	0.94
SB	3.1%	0.80
TOTAL	2.9%	0.93



Two-Hour Count Summaries

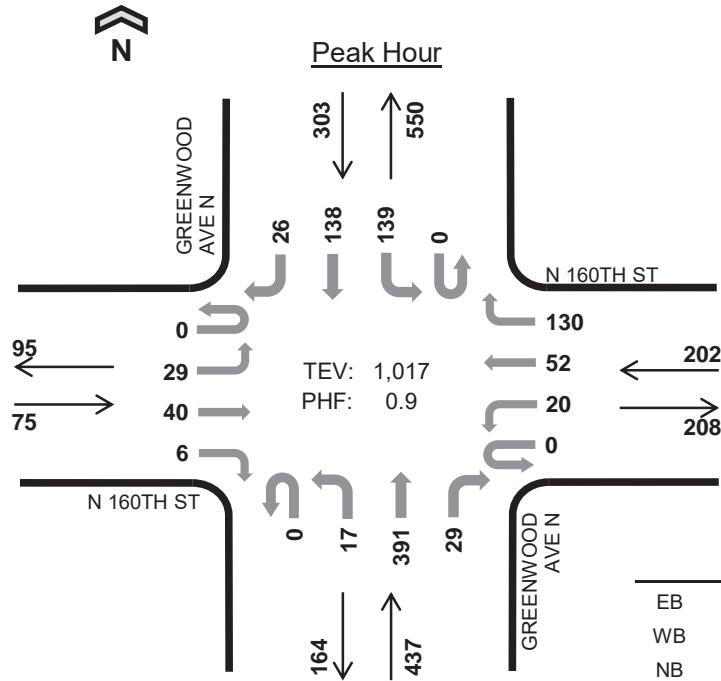
Interval Start	NW INNIS ARDEN WY				0				GREENWOOD AVE N				GREENWOOD AVE N				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	5	0	43	0	0	0	0	0	46	51	0	0	0	25	6	176	0
4:15 PM	0	7	0	30	0	0	0	0	0	48	75	0	0	0	19	2	181	0
4:30 PM	0	8	0	51	0	0	0	0	0	36	67	0	0	0	31	2	195	0
4:45 PM	1	3	0	43	0	0	0	0	0	51	80	0	0	0	24	1	203	755
5:00 PM	0	6	0	51	0	0	0	0	0	54	92	0	0	0	39	2	244	823
5:15 PM	0	5	0	46	0	0	0	0	0	54	86	0	0	0	26	4	221	863
5:30 PM	0	6	0	45	0	0	0	0	0	52	81	0	0	0	29	5	218	886
5:45 PM	0	9	0	59	0	0	0	0	0	79	51	0	0	0	24	2	224	907
Count Total	1	49	0	368	0	0	0	0	0	420	583	0	0	0	217	24	1,662	0
Peak Hour	0	26	0	201	0	0	0	0	0	239	310	0	0	0	118	13	907	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

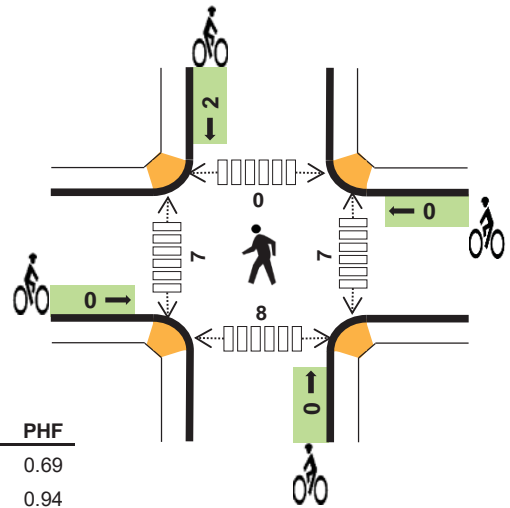
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	1	0	2	0	0	0	0	0	0	4	10	2	16
4:15 PM	3	0	4	3	10	0	0	0	0	0	0	0	5	0	5
4:30 PM	2	0	3	0	5	0	0	1	0	1	0	0	1	0	1
4:45 PM	2	0	3	1	6	0	0	0	0	0	0	0	1	0	1
5:00 PM	2	0	2	2	6	1	0	0	1	2	0	1	4	0	5
5:15 PM	3	0	3	1	7	0	0	0	0	0	0	2	7	0	9
5:30 PM	3	0	2	0	5	0	0	0	0	0	0	5	8	0	13
5:45 PM	5	0	2	1	8	0	0	0	0	0	0	3	9	0	12
Count Total	21	0	20	8	49	1	0	1	1	3	0	15	45	2	62
Peak Hr	13	0	9	4	26	1	0	0	1	2	0	11	28	0	39



GREENWOOD AVE N N 160TH ST



Date: Thu, Apr 12, 2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



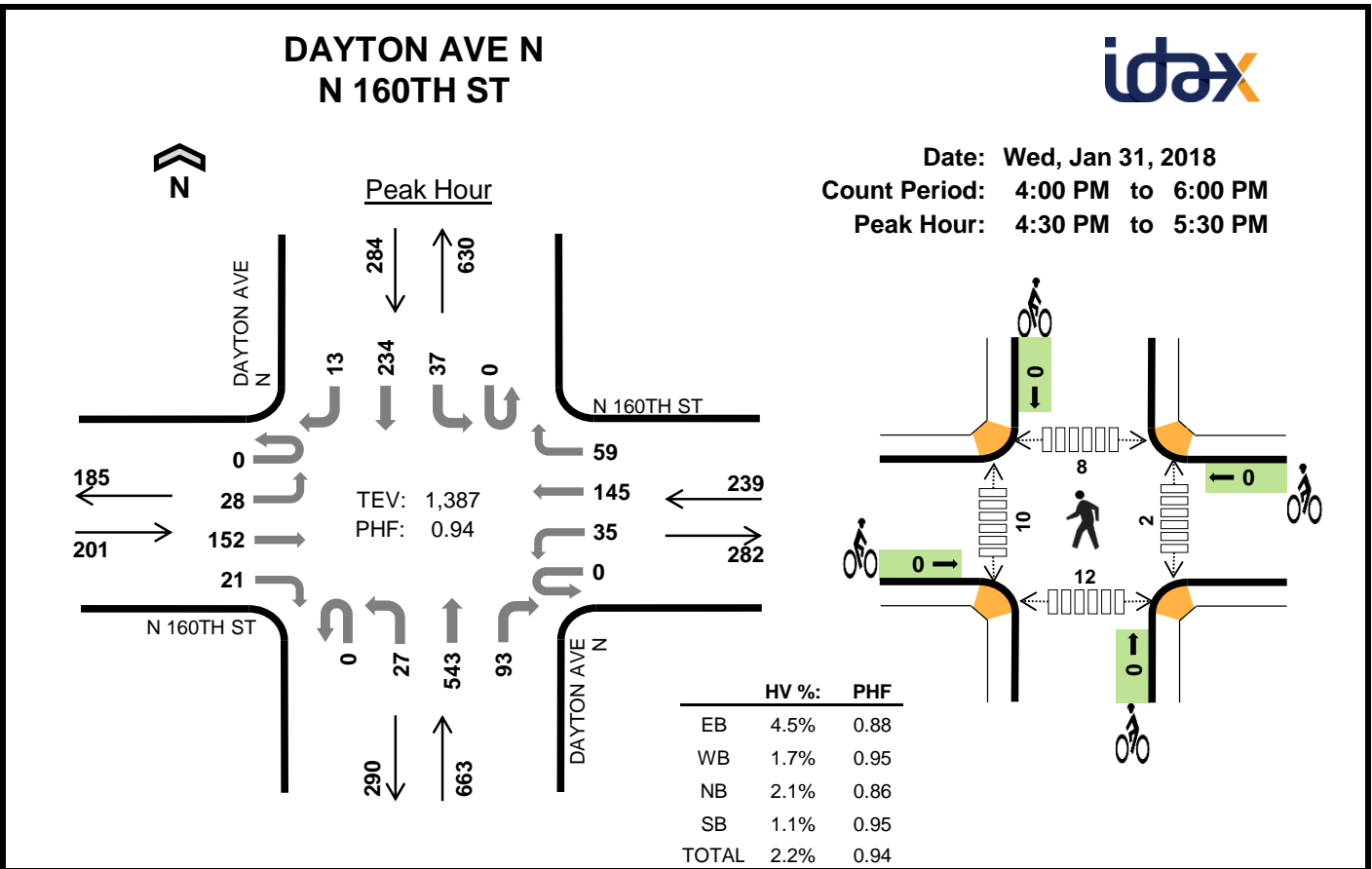
	HV %:	PHF
EB	2.7%	0.69
WB	5.0%	0.94
NB	0.5%	0.94
SB	3.3%	0.84
TOTAL	2.4%	0.90

Two-Hour Count Summaries

Interval Start	N 160TH ST				N 160TH ST				GREENWOOD AVE N				GREENWOOD AVE N				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	7	2	0	4	7	27	0	1	68	2	0	35	29	4	188	0
4:15 PM	0	5	18	2	0	3	8	35	0	4	83	5	0	27	21	1	212	0
4:30 PM	0	3	7	0	0	5	6	28	0	3	72	11	0	35	44	3	217	0
4:45 PM	0	8	13	3	0	4	17	33	0	8	90	5	0	22	31	14	248	865
5:00 PM	0	12	14	1	0	10	11	27	0	5	107	4	0	43	39	8	281	958
5:15 PM	0	7	6	1	0	4	13	35	0	2	98	11	0	37	31	4	249	995
5:30 PM	0	2	7	1	0	2	11	35	0	2	96	9	0	37	37	0	239	1,017
5:45 PM	0	0	3	1	0	7	6	44	0	3	86	5	0	51	30	2	238	1,007
Count Total	0	39	75	11	0	39	79	264	0	28	700	52	0	287	262	36	1,872	0
Peak Hour	0	29	40	6	0	20	52	130	0	17	391	29	0	139	138	26	1,017	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	2	0	1	3	0	0	0	0	0	2	13	2	13	30
4:15 PM	1	4	1	4	10	0	1	0	0	1	2	1	0	1	4
4:30 PM	0	3	0	2	5	0	1	0	0	1	1	3	0	6	10
4:45 PM	1	3	1	2	7	0	0	0	0	0	3	0	0	1	4
5:00 PM	1	2	0	3	6	0	0	0	2	2	3	3	0	3	9
5:15 PM	0	3	1	3	7	0	0	0	0	0	1	4	0	4	9
5:30 PM	0	2	0	2	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	0	4	6	0	0	0	0	0	4	4	0	5	13
Count Total	3	21	3	21	48	0	2	0	2	4	16	28	2	33	79
Peak Hour	2	10	2	10	24	0	0	0	2	2	7	7	0	8	22



Two-Hour Count Summaries

Interval Start	N 160TH ST Eastbound				N 160TH ST Westbound				DAYTON AVE N Northbound				DAYTON AVE N Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	8	52	3	0	6	39	18	0	5	123	16	0	17	65	6	358	0
4:15 PM	0	5	49	4	0	9	23	16	0	3	138	34	0	10	61	3	355	0
4:30 PM	0	5	40	3	0	8	37	18	0	4	130	29	0	7	64	4	349	0
4:45 PM	0	1	38	7	0	5	33	16	0	7	128	16	0	12	56	3	322	1,384
5:00 PM	0	12	41	4	0	13	37	11	0	10	125	22	0	10	61	3	349	1,375
5:15 PM	0	10	33	7	0	9	38	14	0	6	160	26	0	8	53	3	367	1,387
5:30 PM	0	3	27	1	0	8	45	17	0	5	130	18	0	8	67	1	330	1,368
5:45 PM	0	5	33	7	0	3	50	22	0	9	118	22	0	8	51	1	329	1,375
Count Total	0	49	313	36	0	61	302	132	0	49	1,052	183	0	80	478	24	2,759	0
Peak Hour	0	28	152	21	0	35	145	59	0	27	543	93	0	37	234	13	1,387	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

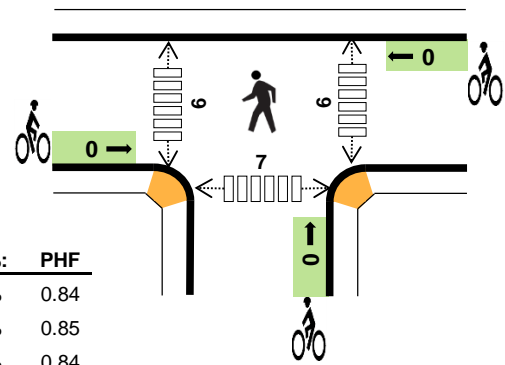
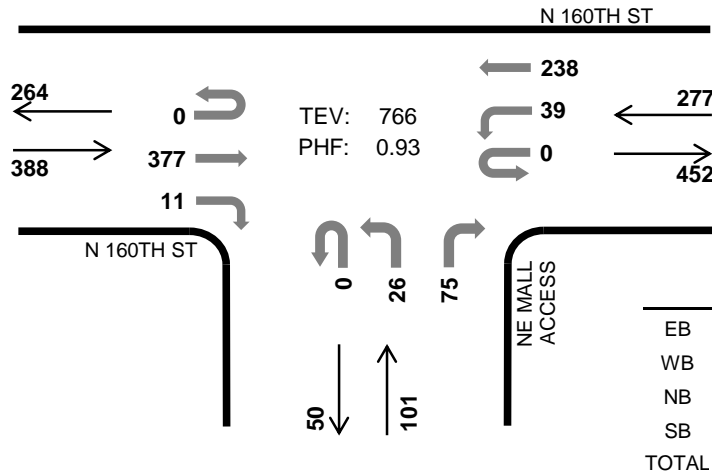
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	2	3	2	11	0	0	0	0	0	0	0	0	0	0
4:15 PM	3	0	3	1	7	0	0	0	0	0	0	2	3	7	12
4:30 PM	2	1	3	1	7	0	0	0	0	0	1	3	3	2	9
4:45 PM	3	0	4	2	9	0	0	0	0	0	0	2	1	3	6
5:00 PM	2	2	2	0	6	0	0	0	0	0	0	4	3	4	11
5:15 PM	2	1	5	0	8	0	0	0	0	0	1	1	1	3	6
5:30 PM	2	1	3	0	6	0	0	0	0	0	2	1	4	3	10
5:45 PM	3	1	3	0	7	0	0	0	0	0	0	0	1	5	6
Count Total	21	8	26	6	61	0	0	0	0	0	4	13	16	27	60
Peak Hour	9	4	14	3	30	0	0	0	0	0	2	10	8	12	32

NE MALL ACCESS N 160TH ST



Peak Hour

Date: Thu, Sep 13, 2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	2.3%	0.84
WB	0.7%	0.85
NB	3.0%	0.84
SB	-	-
TOTAL	1.8%	0.93

Two-Hour Count Summaries

Interval Start	N 160TH ST				N 160TH ST				NE MALL ACCESS				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	99	2	0	16	40	0	0	8	0	22	0	0	0	0	187	0
4:15 PM	0	0	84	2	0	9	61	0	0	7	0	23	0	0	0	0	186	0
4:30 PM	0	0	112	4	0	7	63	0	0	4	0	16	0	0	0	0	206	0
4:45 PM	0	0	82	3	0	7	74	0	0	7	0	14	0	0	0	0	187	766
5:00 PM	0	0	87	0	0	6	67	0	0	6	0	14	0	0	0	0	180	759
5:15 PM	0	0	86	4	0	9	52	0	0	3	0	17	0	0	0	0	171	744
5:30 PM	0	0	86	2	0	10	49	0	0	7	0	21	0	0	0	0	175	713
5:45 PM	0	0	69	6	0	13	82	0	0	10	0	16	0	0	0	0	196	722
Count Total	0	0	705	23	0	77	488	0	0	52	0	143	0	0	0	0	1,488	0
Peak Hour	0	0	377	11	0	39	238	0	0	26	0	75	0	0	0	0	766	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

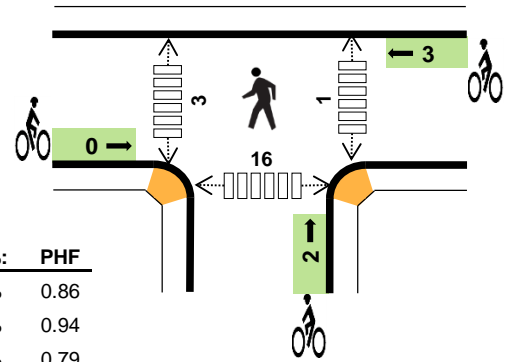
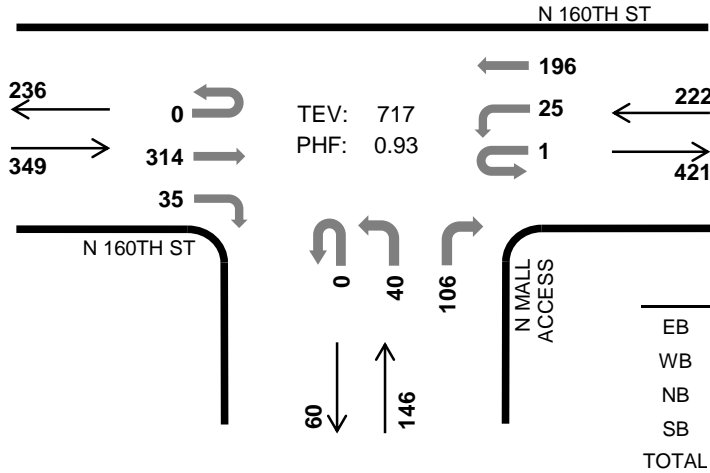
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	0	1	0	3	0	0	0	0	0	1	2	0	1	4
4:15 PM	2	1	1	0	4	0	0	0	0	0	1	2	0	1	4
4:30 PM	2	0	1	0	3	0	0	0	0	0	4	1	0	4	9
4:45 PM	3	1	0	0	4	0	0	0	0	0	0	1	0	1	2
5:00 PM	1	2	0	0	3	0	0	1	0	1	1	3	0	2	6
5:15 PM	3	0	0	0	3	0	0	4	0	4	0	0	0	1	1
5:30 PM	0	1	0	0	1	0	0	2	0	2	0	0	0	0	0
5:45 PM	3	1	1	0	5	0	0	0	0	0	0	1	0	0	1
Count Total	16	6	4	0	26	0	0	7	0	7	7	10	0	10	27
Peak Hr	9	2	3	0	14	0	0	0	0	0	6	6	0	7	19

N MALL ACCESS N 160TH ST



Peak Hour

Date: Tue, Sep 18, 2018
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	3.2%	0.86
WB	1.8%	0.94
NB	2.1%	0.79
SB	-	-
TOTAL	2.5%	0.93

Two-Hour Count Summaries

Interval Start	N 160TH ST				N 160TH ST				N MALL ACCESS				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	89	12	0	8	51	0	0	7	0	25	0	0	0	0	192	0
4:15 PM	0	0	77	10	0	6	53	0	0	13	0	23	0	0	0	0	182	0
4:30 PM	0	0	83	6	1	6	40	0	0	10	0	36	0	0	0	0	182	0
4:45 PM	0	0	65	7	0	5	52	0	0	10	0	22	0	0	0	0	161	717
5:00 PM	0	0	74	8	0	3	65	0	0	15	0	21	0	0	0	0	186	711
5:15 PM	0	0	59	6	0	3	46	0	0	6	0	19	0	0	0	0	139	668
5:30 PM	0	0	57	8	0	1	47	0	0	8	0	22	0	0	0	0	143	629
5:45 PM	0	0	55	5	0	4	73	0	0	12	0	9	0	0	0	0	158	626
Count Total	0	0	559	62	1	36	427	0	0	81	0	177	0	0	0	0	1,343	0
Peak Hour	0	0	314	35	1	25	196	0	0	40	0	106	0	0	0	0	717	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	0	0	0	3	0	1	0	0	1	0	2	0	2	4
4:15 PM	6	2	0	0	8	0	0	1	0	1	1	1	0	2	4
4:30 PM	2	0	0	0	2	0	1	0	0	1	0	0	0	4	4
4:45 PM	0	2	3	0	5	0	1	1	0	2	0	0	0	8	8
5:00 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	1	1
5:15 PM	1	1	0	0	2	0	0	1	0	1	1	3	0	4	8
5:30 PM	2	0	0	0	2	1	0	0	0	1	1	0	0	5	6
5:45 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	9	9
Count Total	17	9	3	0	29	1	3	3	0	7	3	6	0	35	44
Peak Hr	11	4	3	0	18	0	3	2	0	5	1	3	0	16	20

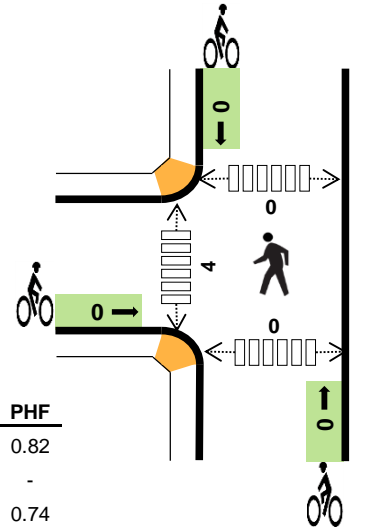
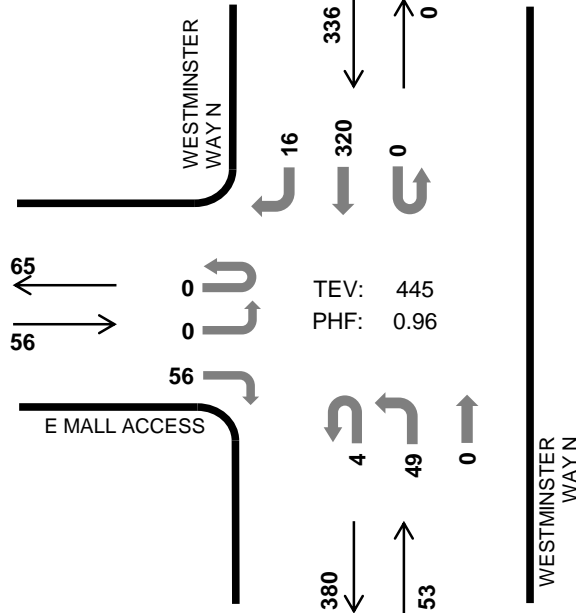


WESTMINSTER WAY N E MALL ACCESS



Peak Hour

Date: Thu, Sep 13, 2018
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	7.1%	0.82
WB	-	-
NB	0.0%	0.74
SB	0.6%	0.92
TOTAL	1.3%	0.96

Two-Hour Count Summaries

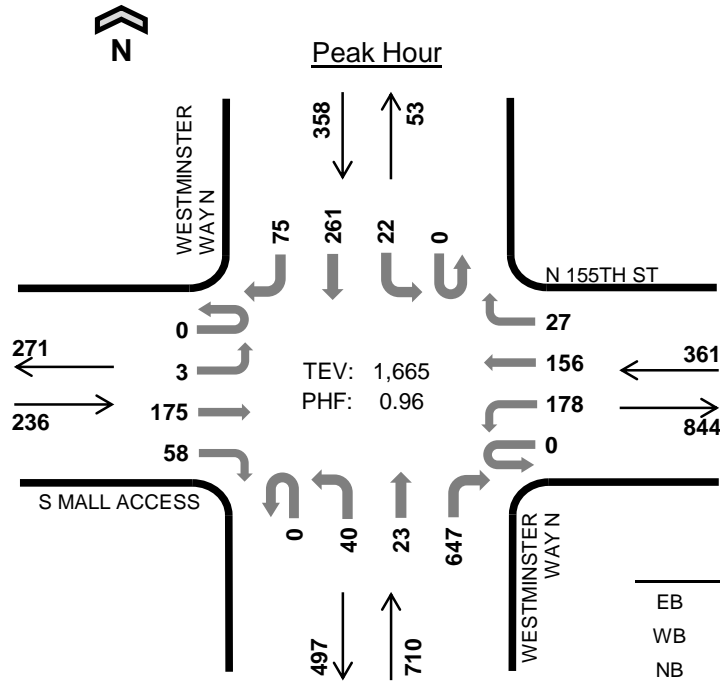
Interval Start	E MALL ACCESS				0				WESTMINSTER WAY N				WESTMINSTER WAY N				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	14	0	0	0	0	1	10	0	0	0	0	81	5	111	0
4:15 PM	0	0	0	11	0	0	0	0	3	15	0	0	0	0	67	7	103	0
4:30 PM	0	0	0	14	0	0	0	0	0	10	0	0	0	0	88	3	115	0
4:45 PM	0	0	0	17	0	0	0	0	0	14	0	0	0	0	84	1	116	445
5:00 PM	0	0	0	9	0	0	0	0	0	10	0	0	0	0	78	3	100	434
5:15 PM	0	0	0	9	0	0	0	0	1	12	0	0	0	0	80	1	103	434
5:30 PM	0	0	0	10	0	0	0	0	2	11	0	0	0	0	81	0	104	423
5:45 PM	0	0	0	5	0	0	0	0	0	16	0	0	0	0	84	4	109	416
Count Total	0	0	0	89	0	0	0	0	7	98	0	0	0	0	643	24	861	0
Peak Hour	0	0	0	56	0	0	0	0	4	49	0	0	0	0	320	16	445	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

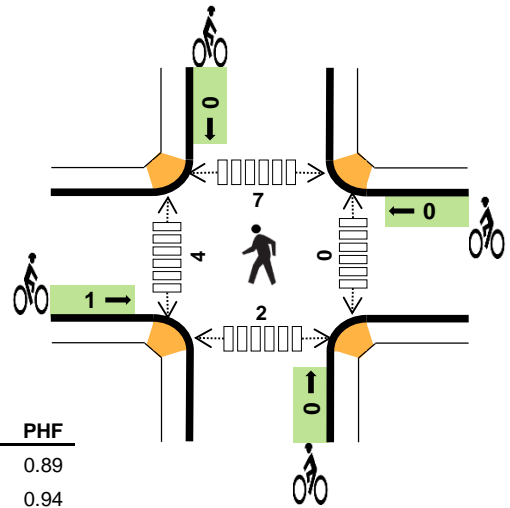
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	2	2	0	0	0	0	0	0	1	0	0	1
4:30 PM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	4	0	1	4	9	0	0	0	0	0	0	5	0	0	5
Peak Hr	4	0	0	2	6	0	0	0	0	0	0	4	0	0	4



WESTMINSTER WAY N N 155TH ST



Date: Thu, Sep 13, 2018
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 5:00 PM to 6:00 PM



Two-Hour Count Summaries

Interval Start	S MALL ACCESS				N 155TH ST				WESTMINSTER WAY N				WESTMINSTER WAY N				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	56	8	0	29	49	7	0	10	4	143	0	6	66	27	406	0
4:15 PM	0	2	51	16	0	39	33	9	0	7	7	150	0	5	50	22	391	0
4:30 PM	0	0	50	14	0	37	30	6	0	16	4	158	0	11	76	11	413	0
4:45 PM	0	1	38	10	0	41	39	10	0	9	3	150	0	10	83	12	406	1,616
5:00 PM	0	0	41	14	0	43	47	6	0	9	4	161	0	4	53	18	400	1,610
5:15 PM	0	0	41	15	0	46	43	6	0	17	6	145	0	5	75	19	418	1,637
5:30 PM	0	2	50	14	0	43	31	8	0	6	3	161	0	9	66	20	413	1,637
5:45 PM	0	1	43	15	0	46	35	7	0	8	10	180	0	4	67	18	434	1,665
Count Total	0	7	370	106	0	324	307	59	0	82	41	1,248	0	54	536	147	3,281	0
Peak Hour	0	3	175	58	0	178	156	27	0	40	23	647	0	22	261	75	1,665	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	1	3	4	0	0	0	0	0	0	0	1	2	3
4:15 PM	1	0	3	2	6	0	1	0	0	1	0	1	0	0	1
4:30 PM	0	0	1	1	2	1	0	0	0	1	0	3	6	3	12
4:45 PM	0	1	1	0	2	0	0	0	0	0	0	4	4	6	14
5:00 PM	0	1	5	1	7	1	0	0	0	1	0	1	3	1	5
5:15 PM	1	0	2	1	4	0	0	0	0	0	0	1	1	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	3	0	4	0	0	0	0	0	0	2	3	1	6
Count Total	2	3	16	8	29	2	1	0	0	3	0	12	18	13	43
Peak Hour	1	2	10	2	15	1	0	0	0	1	0	4	7	2	13

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Place

2039 Full Buildout PM Peak Hour Turning Movement Volumes

Growth Rate =	1.20%
Seasonality =	1
Count Year =	2018
Future Year =	2039

21

Enter Exit
392 259

2018 Count Year	Pipeline #1 Alexan Apts	Pipeline #2 Ecology @ WSDOT HQ	2039 Baseline	Removal of SCC On-Site Parking	Trip Distribution	Project Trips	2039 With Project
1 Dayton Ave/Carlyle Hall Rd 	1 Dayton Ave/Carlyle Hall Rd 	1 Dayton Ave/Carlyle Hall Rd 	1 Dayton Ave/Carlyle Hall Rd <p>% Increase = 28.6%</p>	1 Dayton Ave/Carlyle Hall Rd 	1 Dayton Ave/Carlyle Hall Rd 	1 Dayton Ave/Carlyle Hall Rd 	1 Dayton Ave/Carlyle Hall Rd <p>Project Share = 1.4%</p>
2 Greenwood Ave/Innis Arden Wy 	2 Greenwood Ave/Innis Arden Wy 	2 Greenwood Ave/Innis Arden Wy 	2 Greenwood Ave/Innis Arden Wy <p>% Increase = 28.7%</p>	2 Greenwood Ave/Innis Arden Wy 	2 Greenwood Ave/Innis Arden Wy 	2 Greenwood Ave/Innis Arden Wy 	2 Greenwood Ave/Innis Arden Wy <p>Project Share = 1.7%</p>
3 Greenwood Ave/N 160th St 	3 Greenwood Ave/N 160th St 	3 Greenwood Ave/N 160th St 	3 Greenwood Ave/N 160th St <p>% Increase = 29.1%</p>	3 Greenwood Ave/N 160th St 	3 Greenwood Ave/N 160th St 	3 Greenwood Ave/N 160th St 	3 Greenwood Ave/N 160th St <p>Project Share = 1.6%</p>
4 Dayton Ave/N 160th St 	4 Dayton Ave/N 160th St 	4 Dayton Ave/N 160th St 	4 Dayton Ave/N 160th St <p>% Increase = 29.3%</p>	4 Dayton Ave/N 160th St 	4 Dayton Ave/N 160th St 	4 Dayton Ave/N 160th St 	4 Dayton Ave/N 160th St <p>Project Share = 3.5%</p>

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Place 2039 Full Buildout PM Peak Hour Turning Movement Volumes

Growth Rate = 1.20%
Seasonality = 1
Count Year = 2018
Future Year = 2039

21

Enter Exit
392 259

2018 Count Year	Pipeline #1 Alexan Apts	Pipeline #2 Ecology @ WSDOT HQ	2039 Baseline	Removal of SCC On-Site Parking	Trip Distribution	Project Trips	2039 With Project
<p>5</p> <p>Sears West Dr/N 160th St</p>	<p>5</p> <p>Sears West Dr/N 160th St</p>	<p>5</p> <p>Sears West Dr/N 160th St</p>	<p>5</p> <p>Sears West Dr/N 160th St</p> <p>% Increase = 33.3%</p>	<p>5</p> <p>Sears West Dr/N 160th St</p>	<p>5</p> <p>Sears West Dr/N 160th St</p>	<p>5</p> <p>Sears West Dr/N 160th St</p> <p>Pass-by Adjustments #DIV/0!</p>	<p>5</p> <p>Sears West Dr/N 160th St</p> <p>Project Share = 12.5%</p>
<p>6</p> <p>ROCI Dr/N 160th St</p>	<p>6</p> <p>ROCI Dr/N 160th St</p>	<p>6</p> <p>ROCI Dr/N 160th St</p>	<p>6</p> <p>ROCI Dr/N 160th St</p> <p>% Increase = 33.0%</p>	<p>6</p> <p>ROCI Dr/N 160th St</p>	<p>6</p> <p>ROCI Dr/N 160th St</p>	<p>6</p> <p>ROCI Dr/N 160th St</p> <p>#DIV/0!</p>	<p>6</p> <p>ROCI Dr/N 160th St</p> <p>Project Share = 9.1%</p>
<p>7</p> <p>Westminster Wy/Pier 1 Dr</p>	<p>7</p> <p>Westminster Wy/Pier 1 Dr</p>	<p>7</p> <p>Westminster Wy/Pier 1 Dr</p>	<p>7</p> <p>Westminster Wy/Pier 1 Dr</p> <p>% Increase = 24.6%</p>	<p>7</p> <p>Westminster Wy/Pier 1 Dr</p>	<p>7</p> <p>Westminster Wy/Pier 1 Dr</p>	<p>7</p> <p>Westminster Wy/Pier 1 Dr</p> <p>Pass-by Adjustments #DIV/0!</p>	<p>7</p> <p>Westminster Wy/Pier 1 Dr</p> <p>Project Share = 23.6%</p>
<p>8</p> <p>Westminster Wy/N 155th St</p>	<p>8</p> <p>Westminster Wy/N 155th St</p>	<p>8</p> <p>Westminster Wy/N 155th St</p>	<p>8</p> <p>Westminster Wy/N 155th St</p> <p>% Increase = 25.5%</p>	<p>8</p> <p>Westminster Wy/N 155th St</p>	<p>8</p> <p>Westminster Wy/N 155th St</p>	<p>8</p> <p>Westminster Wy/N 155th St</p> <p>Pass-by Adjustments #DIV/0!</p>	<p>8</p> <p>Westminster Wy/N 155th St</p> <p>Project Share = 18.3%</p>

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Shoreline Place 2039 Full Buildout PM Peak Hour Turning Movement Volumes

Growth Rate =	1.20%
Seasonality =	1
Count Year =	2018
Future Year =	2039

21

Enter Exit
392 259

2018 Count Year	Pipeline #1 Alexan Apts	Pipeline #2 Ecology @ WSDOT HQ	2039 Baseline	Removal of SCC On-Site Parking	Trip Distribution	Project Trips Enter Exit 392 259	2039 With Project																																																																																																																																																																																																																																	
<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>236</td><td>349</td><td>585</td><td>236</td><td>236</td></tr> <tr><td>349</td><td></td><td></td><td></td><td>349</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table>	New SP NW Dr/N 160th St					0	0	0	0	0	236	349	585	236	236	349				349	0	0	0	0	0	<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>4</td><td>5</td><td>1</td><td>1</td></tr> <tr><td>4</td><td></td><td></td><td></td><td>4</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table>	New SP NW Dr/N 160th St					0	0	0	0	0	1	4	5	1	1	4				4	0	0	0	0	0	<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>5</td><td></td><td>36</td><td></td><td>5</td></tr> <tr><td>1</td><td>1</td><td></td><td>5</td><td>25</td></tr> <tr><td>6</td><td></td><td>25</td><td></td><td>30</td></tr> </table>	New SP NW Dr/N 160th St					0	0	0	0	0	5		36		5	1	1		5	25	6		25		30	<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>314</td><td>0</td><td>858</td><td>0</td><td>314</td></tr> <tr><td>452</td><td>6</td><td></td><td>10</td><td>527</td></tr> <tr><td>16</td><td>10</td><td></td><td>75</td><td>85</td></tr> <tr><td colspan="5">% Increase = 46.6%</td></tr> </table>	New SP NW Dr/N 160th St					0	0	0	0	0	314	0	858	0	314	452	6		10	527	16	10		75	85	% Increase = 46.6%					<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>-10</td><td>-5</td><td>-15</td><td>-10</td><td>-10</td></tr> <tr><td>-5</td><td></td><td></td><td></td><td>-5</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table>	New SP NW Dr/N 160th St					0	0	0	0	0	-10	-5	-15	-10	-10	-5				-5	0	0	0	0	0	<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0%</td><td>0%</td><td>0%</td><td>0%</td><td>0%</td></tr> <tr><td>10%</td><td>5%</td><td>30%</td><td>5%</td><td>10%</td></tr> <tr><td>10%</td><td>5%</td><td></td><td>5%</td><td>10%</td></tr> <tr><td>10%</td><td>5%</td><td></td><td>5%</td><td>10%</td></tr> </table>	New SP NW Dr/N 160th St					0%	0%	0%	0%	0%	10%	5%	30%	5%	10%	10%	5%		5%	10%	10%	5%		5%	10%	<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>13</td><td>20</td><td>85</td><td>13</td><td>33</td></tr> <tr><td>39</td><td>20</td><td></td><td>20</td><td>33</td></tr> <tr><td>39</td><td></td><td>13</td><td></td><td>33</td></tr> <tr><td colspan="5">#DIV/0!</td></tr> </table>	New SP NW Dr/N 160th St					0	0	0	0	0	13	20	85	13	33	39	20		20	33	39		13		33	#DIV/0!					<table border="1"> <tr><td colspan="5">New SP NW Dr/N 160th St</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>317</td><td>0</td><td>927</td><td>0</td><td>337</td></tr> <tr><td>493</td><td>467</td><td></td><td>307</td><td>555</td></tr> <tr><td>26</td><td></td><td></td><td>30</td><td></td></tr> <tr><td>10</td><td>0</td><td></td><td>88</td><td></td></tr> <tr><td>55</td><td></td><td></td><td>98</td><td></td></tr> <tr><td colspan="5">Project Share = 9.1%</td></tr> </table>	New SP NW Dr/N 160th St					0	0	0	0	0	317	0	927	0	337	493	467		307	555	26			30		10	0		88		55			98		Project Share = 9.1%				
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ATTACHMENT E

Consistency Analysis between CRA EIS and Shoreline
Place Traffic Forecasts

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

CRA EIS - Comparative Total Entering Volume Analysis Using Shoreline Place TIS Methods and EIS Forecasts

		<i>Net New Trips Only</i>								
<u>CRA EIS Study Intersections</u>	<u>2013</u>	<u>No Action</u> <u>(EIS)</u>	<u>2039</u> <u>No Action¹</u>	<u>Alexan</u> <u>Trips</u>	<u>WSDOT</u> <u>Trips</u>	<u>Shoreline</u> <u>Place Trips</u>	<u>2039</u> <u>with Buildout</u>	<u>FEIS 2030</u> <u>Alternative 3</u>	<u>% Difference to</u> <u>2039 Buildout</u>	<u>2039 LOS</u>
1 Greenwood/N 160 Street	970	1,215	1,274	2	1	3	1,280	1,268	-0.9%	D ²
2 Dayton Ave/N 160th Street	1,182	1,550	1,626	4	6	8	1,644	1,839	11.9%	C ²
3 Aurora Ave/N 160th Street	3,672	4,505	4,725	21	30	25	4,801	4,780	-0.4%	B ²
4 Aurora Ave/N 155th Street	3,946	4,850	5,087	51	16	39	5,193	5,675	9.3%	F ³
5 Westminster Wy/N 155th St	1,708	2,045	2,145	28	0	64	2,237	2,583	15.5%	B
6 Westminster Wy/Dayton Ave	2,116	2,416	2,534	17	35	25	2,611	2,578	-1.3%	B ³
7 Westminster Wy/Greenwood Ave	2,400	2,880	3,021	17	35	25	3,098	3,037	-2.0%	C ³
8 Greenwood/N 145 Street	3,204	3,790	3,975	17	35	25	4,052	3,943	-2.7%	E ³
Average Difference at EIS Study Intersections									3.7%	

1 - Factored to 2039 through application of EIS annual average growth rate of 1.2% compounded annually for 4 years given that no growth has occurred in the last 5 years.

It should be noted that factoring 2013 counts (which included both Sears retail complex and retailers within the "triangle" property, i.e., the Alexan site) annually over 20 years factors 2013 site-generated trips by over 30 percent in addition to those trips throughout the vicinity at study intersections.

2 - Source: Shoreline Community College Transportation Technical Report, Transpo Group, October 2018.

3 - Source: Aurora Square DEIS, December 2014.

ATTACHMENT F

LOS/Vehicle Queuing Summary Sheets

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings

4: Dayton Ave & N 160th St

4/5/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	206	27	58	186	85	35	698	135	60	301	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	645		0	250		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.953			0.976			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1831	0	1770	1775	0	1770	1818	0	1770	1848	0
Flt Permitted	0.423			0.497			0.538			0.144		
Satd. Flow (perm)	788	1831	0	926	1775	0	1002	1818	0	268	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			37			29			8	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		704			284			543			1479	
Travel Time (s)		13.7			5.5			12.3			33.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	224	29	63	202	92	38	759	147	65	327	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	253	0	63	294	0	38	906	0	65	345	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings

4: Dayton Ave & N 160th St

4/5/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		40.0	40.0		40.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Maximum Green (s)	16.0	16.0		16.0	16.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	12.4	12.4		12.4	12.4		29.7	29.7		29.7	29.7	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.59	0.59		0.59	0.59	
v/c Ratio	0.20	0.55		0.28	0.63		0.06	0.84		0.41	0.32	
Control Delay	20.0	22.5		20.9	23.0		5.2	17.8		16.0	6.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.0	22.5		20.9	23.0		5.2	17.8		16.0	6.3	
LOS	B	C		C	C		A	B		B	A	
Approach Delay		22.1			22.7			17.2			7.8	
Approach LOS		C			C			B			A	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 50.5
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 17.0
 Intersection Capacity Utilization 77.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service D

Splits and Phases: 4: Dayton Ave & N 160th St

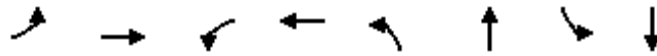


Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Queues

4: Dayton Ave & N 160th St

4/5/2019



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	253	63	294	38	906	65	345
v/c Ratio	0.20	0.55	0.28	0.63	0.06	0.84	0.41	0.32
Control Delay	20.0	22.5	20.9	23.0	5.2	17.8	16.0	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	22.5	20.9	23.0	5.2	17.8	16.0	6.3
Queue Length 50th (ft)	10	70	17	76	4	187	9	45
Queue Length 95th (ft)	33	135	47	149	15	#472	43	90
Internal Link Dist (ft)		624		204		463		1399
Turn Bay Length (ft)	150		645		250		100	
Base Capacity (vph)	263	618	308	617	734	1341	196	1357
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.41	0.20	0.48	0.05	0.68	0.33	0.25

Intersection Summary

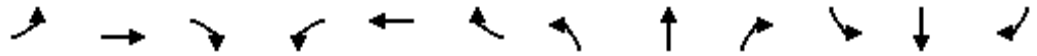
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Intersection Capacity Utilization

4: Dayton Ave & N 160th St

4/5/2019























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Volume (vph)	36	206	27	58	186	85	35	698	135	60	301	17		
Pedestrians														
Ped Button														
Pedestrian Timing (s)														
Free Right			No			No			No			No		
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Refr Cycle Length (s)	90	90	90	90	90	90	90	90	90	90	90	90		
Volume Combined (vph)	36	233	0	58	271	0	35	833	0	60	318	0		
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Factor (vph)	0.95	0.98	0.85	0.95	0.95	0.85	0.95	0.98	0.85	0.95	0.99	0.85		
Saturated Flow (vph)	1805	1867	0	1805	1811	0	1805	1854	0	1805	1885	0		
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00			
Protected Option Allowed		Yes			Yes			Yes			Yes			
Reference Time (s)	1.8	11.2	0.0	2.9	13.5	0.0	1.7	40.4	0.0	3.0	15.2	0.0		
Adj Reference Time (s)	8.0	15.2	0.0	8.0	17.5	0.0	8.0	44.4	0.0	8.0	19.2	0.0		
Permitted Option														
Adj Saturation A (vph)	160	1867		160	1811		160	1854		160	1885			
Reference Time A (s)	20.2	11.2		32.5	13.5		19.6	40.4		33.7	15.2			
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		NA	NA			
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA			
Reference Time (s)		20.2			32.5			40.4			33.7			
Adj Reference Time (s)		24.2			36.5			44.4			37.7			
Split Option														
Ref Time Combined (s)	1.8	11.2		2.9	13.5		1.7	40.4		3.0	15.2			
Ref Time Seperate (s)	1.8	9.9		2.9	9.2		1.7	33.9		3.0	14.4			
Reference Time (s)	11.2	11.2		13.5	13.5		40.4	40.4		15.2	15.2			
Adj Reference Time (s)	15.2	15.2		17.5	17.5		44.4	44.4		19.2	19.2			
Summary														
	EB WB		NB SB		Combined									
Protected Option (s)	25.5		52.4											
Permitted Option (s)	36.5		44.4											
Split Option (s)	32.7		63.6											
Minimum (s)	25.5		44.4		69.9									
Right Turns														
Adj Reference Time (s)														
Cross Thru Ref Time (s)														
Oncoming Left Ref Time (s)														
Combined (s)														
Intersection Summary														
Intersection Capacity Utilization			77.7%			ICU Level of Service			D					
Reference Times and Phasing Options do not represent an optimized timing plan.														

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM 2010 Signalized Intersection Summary

4: Dayton Ave & N 160th St

4/5/2019

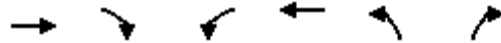
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	206	27	58	186	85	35	698	135	60	301	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	39	224	29	63	202	92	38	759	147	65	327	18
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	396	51	269	297	135	667	926	179	265	1067	59
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1081	1617	209	1122	1213	552	1031	1517	294	613	1749	96
Grp Volume(v), veh/h	39	0	253	63	0	294	38	0	906	65	0	345
Grp Sat Flow(s),veh/h/ln	1081	0	1826	1122	0	1765	1031	0	1811	613	0	1846
Q Serve(g_s), s	1.9	0.0	6.7	2.9	0.0	8.3	1.0	0.0	21.6	5.1	0.0	4.9
Cycle Q Clear(g_c), s	10.2	0.0	6.7	9.6	0.0	8.3	6.0	0.0	21.6	26.7	0.0	4.9
Prop In Lane	1.00		0.11	1.00		0.31	1.00		0.16	1.00		0.05
Lane Grp Cap(c), veh/h	232	0	447	269	0	432	667	0	1105	265	0	1126
V/C Ratio(X)	0.17	0.00	0.57	0.23	0.00	0.68	0.06	0.00	0.82	0.25	0.00	0.31
Avail Cap(c_a), veh/h	280	0	529	319	0	511	710	0	1181	291	0	1203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.5	0.0	18.3	22.5	0.0	18.9	6.6	0.0	8.4	18.8	0.0	5.2
Incr Delay (d2), s/veh	0.3	0.0	1.1	0.4	0.0	2.9	0.0	0.0	4.5	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	0.0	3.5	0.9	0.0	4.3	0.3	0.0	11.9	0.9	0.0	2.5
LnGrp Delay(d),s/veh	23.8	0.0	19.4	22.9	0.0	21.8	6.6	0.0	12.9	19.3	0.0	5.3
LnGrp LOS	C		B	C		C	A		B	B		A
Approach Vol, veh/h		292			357			944			410	
Approach Delay, s/veh		20.0			22.0			12.6			7.5	
Approach LOS		B			C			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.7		17.5		37.7		17.5				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		36.0		16.0		36.0		16.0				
Max Q Clear Time (g_c+I1), s		23.6		12.2		28.7		11.6				
Green Ext Time (p_c), s		7.6		1.3		5.0		1.5				
Intersection Summary												
HCM 2010 Ctrl Delay			14.3									
HCM 2010 LOS			B									

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings

5: Sears West Dr & N 160th St

4/5/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	435	70	58	272	59	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1827	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1827	0	1770	1863	1770	1583
Link Speed (mph)	35			35	30	
Link Distance (ft)	460			770	202	
Travel Time (s)	9.0			15.0	4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	473	76	63	296	64	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	549	0	63	296	64	121
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

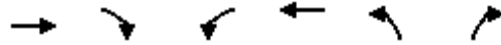
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.4%
Analysis Period (min)	15
	ICU Level of Service A

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Intersection Capacity Utilization

5: Sears West Dr & N 160th St

4/5/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	435	70	58	272	59	111
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	90	90	90	90	90	90
Volume Combined (vph)	505	0	58	272	59	111
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.98	0.85	0.95	1.00	0.95	0.85
Saturated Flow (vph)	1860	0	1805	1900	1805	1615
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	Yes			Yes	No	
Reference Time (s)	24.4	0.0	2.9	12.9		6.2
Adj Reference Time (s)	28.4	0.0	8.0	16.9		10.2
Permitted Option						
Adj Saturation A (vph)	1860		160	1900	160	
Reference Time A (s)	24.4		32.5	12.9	33.1	
Adj Saturation B (vph)	NA		NA	NA	NA	
Reference Time B (s)	NA		NA	NA	NA	
Reference Time (s)	24.4			32.5		
Adj Reference Time (s)	28.4			36.5		
Split Option						
Ref Time Combined (s)	24.4		2.9	12.9	2.9	
Ref Time Seperate (s)	21.0		2.9	12.9	2.9	
Reference Time (s)	24.4		12.9	12.9	2.9	
Adj Reference Time (s)	28.4		16.9	16.9	8.0	
Summary	EB WB		NB	Combined		
Protected Option (s)	36.4		NA			
Permitted Option (s)	36.5		Err			
Split Option (s)	45.3		8.0			
Minimum (s)	36.4		8.0	44.4		
Right Turns	NBR					
Adj Reference Time (s)	10.2					
Cross Thru Ref Time (s)	28.4					
Oncoming Left Ref Time (s)	0.0					
Combined (s)	38.6					
Intersection Summary						
Intersection Capacity Utilization		49.4%		ICU Level of Service		A
Reference Times and Phasing Options do not represent an optimized timing plan.						

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM 2010 TWSC

5: Sears West Dr & N 160th St

4/5/2019

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	435	70	58	272	59	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	473	76	63	296	64	121

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	549
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1021
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1021
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	277	563	-	-	1021	-
HCM Lane V/C Ratio	0.232	0.214	-	-	0.062	-
HCM Control Delay (s)	21.9	13.1	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.8	-	-	0.2	-

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings

6: ROCI East Dr & N 160th St

4/5/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	483	14	80	321	33	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.996				0.893	
Flt Protected				0.990	0.990	
Satd. Flow (prot)	1855	0	0	3504	1647	0
Flt Permitted				0.990	0.990	
Satd. Flow (perm)	1855	0	0	3504	1647	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	770			357	181	
Travel Time (s)	15.0			7.0	4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	525	15	87	349	36	138
Shared Lane Traffic (%)						
Lane Group Flow (vph)	540	0	0	436	174	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

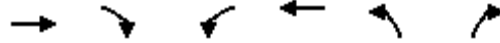
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.5%
Analysis Period (min)	15
	ICU Level of Service B

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Intersection Capacity Utilization

6: ROCI East Dr & N 160th St

4/5/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	483	14	80	321	33	127
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	90	90	90	90	90	90
Volume Combined (vph)	497	0	0	401	160	0
Lane Utilization Factor	1.00	1.00	1.00	0.95	1.00	1.00
Turning Factor (vph)	1.00	0.85	0.95	0.99	0.87	0.85
Saturated Flow (vph)	1892	0	0	3582	1657	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	1892		0	159	147	
Reference Time A (s)	23.6		0.0	45.2	97.8	
Adj Saturation B (vph)	NA		NA	NA	NA	
Reference Time B (s)	NA		NA	NA	NA	
Reference Time (s)	23.6			45.2		
Adj Reference Time (s)	27.6			49.2		
Split Option						
Ref Time Combined (s)	23.6		0.0	10.1	8.7	
Ref Time Seperate (s)	23.0		4.0	8.0	1.8	
Reference Time (s)	23.6		10.1	10.1	8.7	
Adj Reference Time (s)	27.6		14.1	14.1	12.7	
Summary	EB WB		NB	Combined		
Protected Option (s)	NA		NA			
Permitted Option (s)	49.2		Err			
Split Option (s)	41.7		12.7			
Minimum (s)	41.7		12.7	54.4		

Right Turns

Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary

Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Reference Times and Phasing Options do not represent an optimized timing plan.			

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM 2010 TWSC

6: ROCI East Dr & N 160th St

4/5/2019

Intersection

Int Delay, s/veh 3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	483	14	80	321	33	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	525	15	87	349	36	138

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	540
Stage 1	-	-	533
Stage 2	-	-	348
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	5.43
Critical Hdwy Stg 2	-	-	5.83
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1028
Stage 1	-	-	587
Stage 2	-	-	687
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1028
Mov Cap-2 Maneuver	-	-	269
Stage 1	-	-	587
Stage 2	-	-	615

Approach	EB	WB	NB
HCM Control Delay, s	0	2	18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	450	-	-	1028	-
HCM Lane V/C Ratio	0.386	-	-	0.085	-
HCM Control Delay (s)	18	-	-	8.8	0.3
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.3	-

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings

7: Westminster Way N & Pier 1 Dr

4/5/2019



Lane Group	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Volume (vph)	0	0	110	0	28	0	365	74	32	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0		100	100		0	0	0
Storage Lanes	0	0	1		1	0		0	1	1
Taper Length (ft)	25		25			25			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.850		0.977			0.850
Flt Protected			0.950						0.950	
Satd. Flow (prot)	0	0	1593	0	1425	0	1638	0	1593	1425
Flt Permitted			0.950						0.950	
Satd. Flow (perm)	0	0	1593	0	1425	0	1638	0	1593	1425
Link Speed (mph)	30			35			35		15	
Link Distance (ft)	179			244			339		204	
Travel Time (s)	4.1			4.8			6.6		9.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	120	0	30	0	397	80	35	134
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	0	120	0	30	0	477	0	35	134
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)	0			12			12		12	
Link Offset(ft)	0			0			0		0	
Crosswalk Width(ft)	16			16			16		16	
Two way Left Turn Lane										
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15	9	15		9	15		9	15	9
Sign Control	Stop			Free			Free		Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	50.9%
Analysis Period (min)	15
	ICU Level of Service A

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Intersection Capacity Utilization

7: Westminster Way N & Pier 1 Dr

4/5/2019



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Volume (vph)	0	0	110	0	28	0	365	74	32	123
Pedestrians										
Ped Button										
Pedestrian Timing (s)										
Free Right	No				No				No	
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	90	90	90	90	90	90	90	90	90	90
Volume Combined (vph)	0	0	110	0	28	0	439	0	32	123
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.85
Saturated Flow (vph)	0	0	1625	0	1454	0	1667	0	1625	1454
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00		0.00		0.00		0.00	
Protected Option Allowed	No		Yes		Yes		No			
Reference Time (s)	0.0		6.1	0.0	1.7	0.0	23.7	0.0	7.6	
Adj Reference Time (s)	0.0		10.1	0.0	8.0	0.0	27.7	0.0	11.6	
Permitted Option										
Adj Saturation A (vph)	0	144		0	0		1667	144		
Reference Time A (s)	0.0	68.6		0.0	0.0		23.7	19.9		
Adj Saturation B (vph)	NA	NA		NA	0		1667	NA		
Reference Time B (s)	NA	NA		NA	0.0		23.7	NA		
Reference Time (s)				68.6				23.7		
Adj Reference Time (s)				72.6				27.7		
Split Option										
Ref Time Combined (s)	0.0	6.1		0.0	0.0		23.7	1.8		
Ref Time Seperate (s)	0.0	6.1		0.0	0.0		19.7	1.8		
Reference Time (s)	0.0	6.1		6.1	23.7		23.7	1.8		
Adj Reference Time (s)	0.0	10.1		10.1	27.7		27.7	8.0		
Summary	WB	NB SB		SE		Combined				
Protected Option (s)	NA	37.8		NA						
Permitted Option (s)	Err	72.6		Err						
Split Option (s)	0.0	37.8		8.0						
Minimum (s)	0.0	37.8		8.0		45.8				
Right Turns	NBR	SER								
Adj Reference Time (s)	8.0	11.6								
Cross Thru Ref Time (s)	0.0	27.7								
Oncoming Left Ref Time (s)	0.0	0.0								
Combined (s)	8.0	39.3								

Intersection Summary

Intersection Capacity Utilization 50.9% ICU Level of Service A
 Reference Times and Phasing Options do not represent an optimized timing plan.

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM 2010 TWSC

7: Westminster Way N & Pier 1 Dr

4/5/2019

Intersection

Int Delay, s/veh 1.3

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Vol, veh/h	0	0	110	0	28	0	365	74	32	123
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	-	-	0	-	100	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	120	0	30	0	397	80	35	134

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	477	0	437
Stage 1	-	-	437
Stage 2	-	-	0
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1085	-	577
Stage 1	-	-	651
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1085	-	513
Mov Cap-2 Maneuver	-	-	513
Stage 1	-	-	651
Stage 2	-	-	-

Approach	NB	SB	SE
HCM Control Delay, s	7	0	-
HCM LOS	-	-	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	SELn1	SELn2	SBL	SBT	SBR
Capacity (veh/h)	1085	-	-	-	620	-	-	-
HCM Lane V/C Ratio	0.11	-	-	-	0.216	-	-	-
HCM Control Delay (s)	8.7	-	-	-	12.4	0	-	-
HCM Lane LOS	A	-	-	-	B	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-	0.8	-	-	-

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings

8: Westminster Way N & N 155th St

4/5/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑	↗	↖	↑	↗↗	↖	↗	
Volume (vph)	0	307	163	228	334	69	153	69	802	76	296	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		50	175		0	300		0	100		500
Storage Lanes	0		0	1		1	1		2	1		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	1.00
Ped Bike Factor		0.99		1.00		0.97	1.00		0.98	1.00	0.99	
Frt		0.948				0.850			0.850		0.952	
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	3034	0	1608	1693	1439	1608	1693	2533	1608	1600	0
Flt Permitted				0.248			0.260			0.709		
Satd. Flow (perm)	0	3034	0	419	1693	1395	440	1693	2476	1199	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		116				78			397		28	
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		483			515			1441			349	
Travel Time (s)		13.2			10.0			28.1			6.8	
Confl. Peds. (#/hr)	5		3	3		5	1		1	1		1
Peak Hour Factor	0.87	0.87	0.87	0.89	0.89	0.89	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	0	353	187	256	375	78	163	73	853	81	315	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	540	0	256	375	78	163	73	853	81	463	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1	1	1	1	1	1	1	
Detector Template												
Leading Detector (ft)		50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)		0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)		0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)		50		50	50	50	50	50	50	50	50	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type		NA		pm+pt	NA	Perm	Perm	NA	pm+ov	Perm	NA	
Protected Phases		4		3	8			2	3		6	
Permitted Phases				8		8	2		2	6		
Detector Phase		4		3	8	8	2	2	3	6	6	
Switch Phase												
Minimum Initial (s)		5.0		5.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings

8: Westminster Way N & N 155th St

4/5/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		28.0		26.0	26.0	26.0	21.0	21.0	26.0	28.0	28.0	
Total Split (s)		29.0		27.0	56.0	56.0	29.0	29.0	27.0	29.0	29.0	
Total Split (%)		34.1%		31.8%	65.9%	65.9%	34.1%	34.1%	31.8%	34.1%	34.1%	
Maximum Green (s)		24.0		22.0	52.0	52.0	24.0	24.0	22.0	24.0	24.0	
Yellow Time (s)		4.0		4.0	3.5	3.5	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)		1.0		1.0	0.5	0.5	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)		-1.3		-1.3	-1.3	0.0	-1.5	-1.5	0.0	-1.5	-1.5	
Total Lost Time (s)		3.7		3.7	2.7	4.0	3.5	3.5	5.0	3.5	3.5	
Lead/Lag		Lag		Lead					Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)		3.5		3.5	3.0	3.0	2.0	2.0	3.5	2.0	2.0	
Recall Mode		None		None	None	None	Max	Max	None	Max	Max	
Walk Time (s)				7.0	7.0	7.0	5.0	5.0		7.0	7.0	
Flash Dont Walk (s)				12.0	12.0	12.0	11.0	11.0		14.0	14.0	
Pedestrian Calls (#/hr)				0	0	0	0	0		0	0	
Act Effect Green (s)		17.7		38.6	39.6	38.3	25.9	25.9	40.1	25.9	25.9	
Actuated g/C Ratio		0.25		0.54	0.55	0.53	0.36	0.36	0.56	0.36	0.36	
v/c Ratio		0.65		0.50	0.40	0.10	1.03	0.12	0.54	0.19	0.78	
Control Delay		22.9		12.3	10.2	2.2	111.1	19.3	5.4	20.6	32.9	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		22.9		12.3	10.2	2.2	111.1	19.3	5.4	20.6	32.9	
LOS		C		B	B	A	F	B	A	C	C	
Approach Delay		22.9			10.1			22.2			31.1	
Approach LOS		C			B			C			C	

Intersection Summary

Area Type: CBD
 Cycle Length: 85
 Actuated Cycle Length: 71.8
 Natural Cycle: 85
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 21.0
 Intersection LOS: C
 Intersection Capacity Utilization 83.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 8: Westminster Way N & N 155th St



Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Queues

8: Westminster Way N & N 155th St

4/5/2019



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	540	256	375	78	163	73	853	81	463
v/c Ratio	0.65	0.50	0.40	0.10	1.03	0.12	0.54	0.19	0.78
Control Delay	22.9	12.3	10.2	2.2	111.1	19.3	5.4	20.6	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	12.3	10.2	2.2	111.1	19.3	5.4	20.6	32.9
Queue Length 50th (ft)	86	56	86	0	~80	21	45	24	170
Queue Length 95th (ft)	141	93	133	15	#230	60	107	68	#413
Internal Link Dist (ft)	403		435			1361			269
Turn Bay Length (ft)		175			300			100	
Base Capacity (vph)	1160	617	1276	1046	159	610	1768	432	595
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.41	0.29	0.07	1.03	0.12	0.48	0.19	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Intersection Capacity Utilization

8: Westminster Way N & N 155th St

4/5/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑	↗	↖	↑	↗↗	↖	↗	
Volume (vph)	0	307	163	228	334	69	153	69	802	76	296	139
Pedestrians	5		3	3		5	1		1	1		1
Ped Button		Yes			Yes			No			No	
Pedestrian Timing (s)		16.0			19.0			16.0			21.0	
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	2.7	3.7	2.7	3.7	2.7	4.0	3.5	3.5	5.0	3.5	3.5	2.5
Minimum Green (s)	4.0	5.0	4.0	5.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0
Refr Cycle Length (s)	90	90	90	90	90	90	90	90	90	90	90	90
Volume Combined (vph)	0	470	0	228	334	69	153	69	802	76	435	0
Lane Utilization Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.95	0.85
Saturated Flow (vph)	0	3086	0	1625	1710	1454	1625	1710	2573	1625	1628	0
Ped Intf Time (s)	0.0	0.1	0.3	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.1
Pedestrian Frequency (%)		0.07			0.12			1.00			1.00	
Protected Option Allowed		Yes			Yes			Yes			Yes	
Reference Time (s)	0.0	13.8	0.0	12.6	17.6	4.8	8.5	3.6	28.2	4.2	24.1	0.0
Adj Reference Time (s)	0.0	17.8	0.0	16.6	21.7	10.4	12.5	20.0	33.2	9.0	28.1	0.0
Permitted Option												
Adj Saturation A (vph)	0	1543		144	1710		144	1710		144	1628	
Reference Time A (s)	0.0	13.8		142.1	17.6		95.4	3.6		47.4	24.1	
Adj Saturation B (vph)	NA	NA		NA	NA		NA	NA		0	1628	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		12.2	24.1	
Reference Time (s)		13.8			142.1			95.4			24.1	
Adj Reference Time (s)		17.8			146.1			99.4			28.1	
Split Option												
Ref Time Combined (s)	0.0	13.8		12.6	17.6		8.5	3.6		4.2	24.1	
Ref Time Seperate (s)	0.0	9.1		12.6	17.6		8.5	3.6		4.2	16.4	
Reference Time (s)	13.8	13.8		17.6	17.6		8.5	8.5		24.1	24.1	
Adj Reference Time (s)	17.8	17.8		21.7	21.7		20.0	20.0		28.1	28.1	
Summary												
	EB WB		NB SB		Combined							
Protected Option (s)	34.4		40.6									
Permitted Option (s)	146.1		99.4									
Split Option (s)	39.6		48.1									
Minimum (s)	34.4		40.6		75.0							
Right Turns												
	WBR		NBR									
Adj Reference Time (s)	10.4		33.2									
Cross Thru Ref Time (s)	20.0		17.8									
Oncoming Left Ref Time (s)	0.0		9.0									
Combined (s)	30.4		60.0									
Intersection Summary												
Intersection Capacity Utilization			83.3%		ICU Level of Service				E			
Reference Times and Phasing Options do not represent an optimized timing plan.												

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM 2010 Signalized Intersection Summary

8: Westminster Way N & N 155th St

4/5/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	307	163	228	334	69	153	69	802	76	296	139
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1693	1710	1693	1693	1693	1693	1693	1693	1693	1693	1710
Adj Flow Rate, veh/h	0	353	187	256	375	78	163	73	853	81	315	148
Adj No. of Lanes	0	2	0	1	1	1	1	1	2	1	1	0
Peak Hour Factor	0.87	0.87	0.87	0.89	0.89	0.89	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	0	549	286	467	833	675	239	671	1313	314	432	203
Arrive On Green	0.00	0.27	0.27	0.17	0.49	0.47	0.40	0.40	0.37	0.40	0.40	0.40
Sat Flow, veh/h	0	2130	1064	1612	1693	1431	841	1693	2529	547	1090	512
Grp Volume(v), veh/h	0	276	264	256	375	78	163	73	853	81	0	463
Grp Sat Flow(s),veh/h/ln	0	1608	1501	1612	1693	1431	841	1693	1265	547	0	1602
Q Serve(g_s), s	0.0	9.8	10.0	6.5	9.3	2.0	9.7	1.8	15.8	7.1	0.0	15.8
Cycle Q Clear(g_c), s	0.0	9.8	10.0	6.5	9.3	2.0	25.5	1.8	15.8	8.8	0.0	15.8
Prop In Lane	0.00		0.71	1.00		1.00	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	0	431	403	467	833	675	239	671	1313	314	0	635
V/C Ratio(X)	0.00	0.64	0.65	0.55	0.45	0.12	0.68	0.11	0.65	0.26	0.00	0.73
Avail Cap(c_a), veh/h	0	632	590	784	1403	1157	239	671	1313	314	0	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	20.8	20.9	12.6	10.7	9.5	28.4	12.3	11.2	15.0	0.0	16.5
Incr Delay (d2), s/veh	0.0	1.9	2.2	1.2	0.4	0.1	14.7	0.3	2.5	2.0	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	4.5	4.3	2.9	4.4	0.8	3.8	0.9	5.9	1.2	0.0	8.2
LnGrp Delay(d),s/veh	0.0	22.7	23.1	13.8	11.1	9.6	43.1	12.6	13.7	17.0	0.0	23.7
LnGrp LOS		C	C	B	B	A	D	B	B	B		C
Approach Vol, veh/h		540			709			1089			544	
Approach Delay, s/veh		22.9			11.9			18.1			22.7	
Approach LOS		C			B			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		29.0	14.4	21.0		29.0		35.3				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		* 5				
Max Green Setting (Gmax), s		24.0	22.0	24.0		24.0		* 52				
Max Q Clear Time (g_c+11), s		27.5	8.5	12.0		17.8		11.3				
Green Ext Time (p_c), s		0.0	1.0	3.9		3.3		5.5				
Intersection Summary												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Lanes, Volumes, Timings
 9: SP NW Dr & N 160th St

4/5/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	467	26	30	307	10	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.879	
Flt Protected				0.996	0.995	
Satd. Flow (prot)	1850	0	0	1855	1629	0
Flt Permitted				0.996	0.995	
Satd. Flow (perm)	1850	0	0	1855	1629	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	284			460	207	
Travel Time (s)	5.5			9.0	4.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	508	28	33	334	11	96
Shared Lane Traffic (%)						
Lane Group Flow (vph)	536	0	0	367	107	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

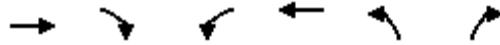
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.8%
ICU Level of Service	A
Analysis Period (min)	15

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

Intersection Capacity Utilization

9: SP NW Dr & N 160th St

4/5/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (vph)	467	26	30	307	10	88
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	90	90	90	90	90	90
Volume Combined (vph)	493	0	0	337	98	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.99	0.85	0.95	1.00	0.86	0.85
Saturated Flow (vph)	1885	0	0	1892	1636	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	1885		0	966	145	
Reference Time A (s)	23.5		0.0	31.4	60.7	
Adj Saturation B (vph)	NA		NA	NA	NA	
Reference Time B (s)	NA		NA	NA	NA	
Reference Time (s)	23.5			31.4		
Adj Reference Time (s)	27.5			35.4		
Split Option						
Ref Time Combined (s)	23.5		0.0	16.0	5.4	
Ref Time Seperate (s)	22.3		1.5	14.5	0.6	
Reference Time (s)	23.5		16.0	16.0	5.4	
Adj Reference Time (s)	27.5		20.0	20.0	9.4	
Summary	EB WB		NB		Combined	
Protected Option (s)	NA		NA			
Permitted Option (s)	35.4		Err			
Split Option (s)	47.6		9.4			
Minimum (s)	35.4		9.4		44.8	

Right Turns

Adj Reference Time (s)	
Cross Thru Ref Time (s)	
Oncoming Left Ref Time (s)	
Combined (s)	

Intersection Summary

Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Reference Times and Phasing Options do not represent an optimized timing plan.			

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM 2010 TWSC

9: SP NW Dr & N 160th St

4/5/2019

Intersection

Int Delay, s/veh 1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	467	26	30	307	10	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	508	28	33	334	11	96

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	536
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1032
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1032
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	14
HCM LOS			B

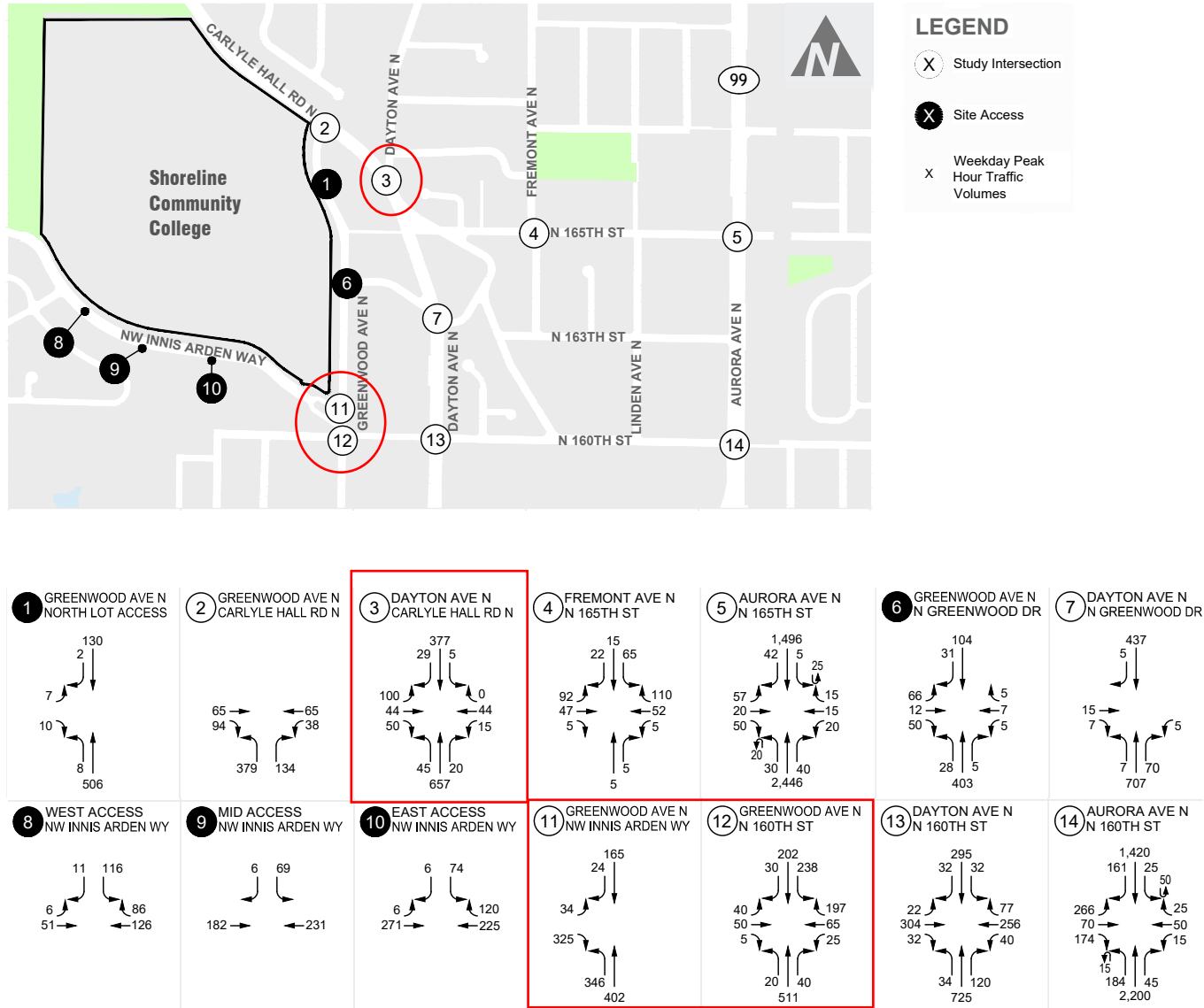
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	507	-	-	1032	-
HCM Lane V/C Ratio	0.21	-	-	0.032	-
HCM Control Delay (s)	14	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

ATTACHMENT G

















Shoreline Community College Traffic Forecasts at Study
Intersections 1, 2, & 3

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

















Figure 16: Future (2040) With-Project PM Peak Hour Traffic Volumes



Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis
 HCM 2010 Signalized Intersection Summary Shoreline Community College
 3: Dayton Ave N Future (2040) With-Project Midday Peak Hour Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	101	40	15	44	15	20	283	5	5	252	59
Future Volume (veh/h)	106	101	40	15	44	15	20	283	5	5	252	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1759	1900	1900	1863	1900	1900	1881	1900
Adj Flow Rate, veh/h	138	131	52	19	57	19	26	368	6	6	327	77
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	1	1	1	8	8	8	2	2	2	1	1	1
Cap, veh/h	168	159	63	28	85	28	90	856	13	64	725	168
Arrive On Green	0.22	0.22	0.22	0.09	0.09	0.09	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	763	724	288	333	1000	333	53	1729	27	7	1464	340
Grp Volume(v), veh/h	321	0	0	95	0	0	400	0	0	410	0	0
Grp Sat Flow(s),veh/h/ln	1775	0	0	1667	0	0	1809	0	0	1811	0	0
Q Serve(g_s), s	10.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0	3.3	0.0	0.0	8.3	0.0	0.0	8.8	0.0	0.0
Prop In Lane	0.43		0.16	0.20		0.20	0.06		0.01	0.01		0.19
Lane Grp Cap(c), veh/h	390	0	0	142	0	0	959	0	0	957	0	0
V/C Ratio(X)	0.82	0.00	0.00	0.67	0.00	0.00	0.42	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	473	0	0	445	0	0	959	0	0	957	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	26.6	0.0	0.0	9.8	0.0	0.0	9.9	0.0	0.0
Incr Delay (d2), s/veh	9.5	0.0	0.0	5.3	0.0	0.0	1.3	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	0.0	1.7	0.0	0.0	4.6	0.0	0.0	4.7	0.0	0.0
LnGrp Delay(d),s/veh	31.8	0.0	0.0	32.0	0.0	0.0	11.1	0.0	0.0	11.3	0.0	0.0
LnGrp LOS	C			C			B			B		
Approach Vol, veh/h		321			95			400			410	
Approach Delay, s/veh		31.8			32.0			11.1			11.3	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.7		17.2		33.7		9.1				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+I1), s		10.3		12.3		10.8		5.3				
Green Ext Time (p_c), s		2.5		0.6		2.3		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay				18.2								
HCM 2010 LOS				B								

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis
 HCM 2010 Signalized Intersection Summary Shoreline Community College
 3: Dayton Ave N Future (2040) With-Project PM Peak Hour Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	42	51	13	42	19	45	657	19	6	377	29
Future Volume (veh/h)	100	42	51	13	42	19	45	657	19	6	377	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1792	1900	1900	1881	1900	1900	1881	1900
Adj Flow Rate, veh/h	106	45	54	14	45	20	48	699	20	6	401	31
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	6	6	6	1	1	1	1	1	1
Cap, veh/h	132	56	67	20	64	29	92	1073	30	50	1087	83
Arrive On Green	0.15	0.15	0.15	0.07	0.07	0.07	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	895	380	456	299	961	427	70	1688	47	6	1710	131
Grp Volume(v), veh/h	205	0	0	79	0	0	767	0	0	438	0	0
Grp Sat Flow(s),veh/h/ln	1731	0	0	1687	0	0	1805	0	0	1848	0	0
Q Serve(g_s), s	9.2	0.0	0.0	3.7	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.2	0.0	0.0	3.7	0.0	0.0	20.4	0.0	0.0	9.0	0.0	0.0
Prop In Lane	0.52		0.26	0.18		0.25	0.06		0.03	0.01		0.07
Lane Grp Cap(c), veh/h	255	0	0	113	0	0	1195	0	0	1220	0	0
V/C Ratio(X)	0.80	0.00	0.00	0.70	0.00	0.00	0.64	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	346	0	0	337	0	0	1195	0	0	1220	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.0	0.0	0.0	36.5	0.0	0.0	9.0	0.0	0.0	6.9	0.0	0.0
Incr Delay (d2), s/veh	9.4	0.0	0.0	7.6	0.0	0.0	2.7	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	0.0	2.0	0.0	0.0	11.1	0.0	0.0	4.8	0.0	0.0
LnGrp Delay(d),s/veh	42.4	0.0	0.0	44.1	0.0	0.0	11.7	0.0	0.0	7.8	0.0	0.0
LnGrp LOS	D			D			B			A		
Approach Vol, veh/h		205			79			767			438	
Approach Delay, s/veh		42.4			44.1			11.7			7.8	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		54.9		15.8		54.9		9.4				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		36.0		16.0		36.0		16.0				
Max Q Clear Time (g_c+I1), s		22.4		11.2		11.0		5.7				
Green Ext Time (p_c), s		7.0		0.5		9.8		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				16.5								
HCM 2010 LOS				B								

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis
 HCM Signalized Intersection Capacity Analysis
 11: Greenwood Ave N & Innis Arden Way

Shoreline Community College
 Future (2040) With-Project AM Peak Hour Mitigation



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	276	698	128	175	91
Future Volume (vph)	28	276	698	128	175	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.96	1.00	1.00	0.95	
Flpb, ped/bikes	0.87	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1424	1412	1736	1827	1686	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1424	1412	1736	1827	1686	
Peak-hour factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	37	368	931	171	233	121
RTOR Reduction (vph)	0	310	0	0	19	0
Lane Group Flow (vph)	37	58	931	171	335	0
Confl. Peds. (#/hr)	49	7	7			49
Heavy Vehicles (%)	10%	10%	4%	4%	2%	2%
Turn Type	Perm	Perm	Split	NA	NA	
Protected Phases			2 8	2 8	6	
Permitted Phases	4	4				
Actuated Green, G (s)	15.3	15.3	51.0	51.0	19.0	
Effective Green, g (s)	15.3	15.3	51.0	51.0	19.0	
Actuated g/C Ratio	0.16	0.16	0.52	0.52	0.20	
Clearance Time (s)	4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0			3.0	
Lane Grp Cap (vph)	223	222	909	957	329	
v/s Ratio Prot			c0.54	0.09	c0.20	
v/s Ratio Perm	0.03	c0.04				
v/c Ratio	0.17	0.26	1.02	0.18	1.02	
Uniform Delay, d1	35.5	36.0	23.1	12.2	39.1	
Progression Factor	1.00	1.00	0.85	0.98	1.00	
Incremental Delay, d2	0.4	0.6	31.9	0.1	54.7	
Delay (s)	35.8	36.7	51.5	12.0	93.9	
Level of Service	D	D	D	B	F	
Approach Delay (s)	36.6			45.4	93.9	
Approach LOS	D			D	F	
Intersection Summary						
HCM 2000 Control Delay			52.7		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.93			
Actuated Cycle Length (s)			97.3		Sum of lost time (s)	16.0
Intersection Capacity Utilization			70.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM Signalized Intersection Capacity Analysis

Shoreline Community College

12: Greenwood Ave N & N 160 St

Future (2040) With-Project AM Peak Hour Mitigation



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Volume (vph)	26	75	15	15	115	456	20	350	40	154	241	45
Future Volume (vph)	26	75	15	15	115	456	20	350	40	154	241	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frbp, ped/bikes		0.98			1.00	0.99		0.99			0.99	
Flpb, ped/bikes		0.99			0.99	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.99			0.99	
Flt Protected		0.99			0.99	1.00		1.00			0.98	
Satd. Flow (prot)		1670			1769	1509		1812			1717	
Flt Permitted		0.90			0.96	1.00		1.00			0.98	
Satd. Flow (perm)		1528			1715	1509		1812			1717	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	32	91	18	18	140	556	24	427	49	188	294	55
RTOR Reduction (vph)	0	5	0	0	0	46	0	4	0	0	4	0
Lane Group Flow (vph)	0	136	0	0	158	510	0	496	0	0	533	0
Confl. Peds. (#/hr)	35		60	37		11	60		37	11		35
Confl. Bikes (#/hr)						2			2			
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	2%	2%	2%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA	pm+ov	Split	NA		Split	NA	
Protected Phases		8			8	4 6	2	2		4 6	4 6	
Permitted Phases	8			8		8						
Actuated Green, G (s)		18.0			18.0	56.3		29.0			38.3	
Effective Green, g (s)		18.0			18.0	56.3		29.0			38.3	
Actuated g/C Ratio		0.18			0.18	0.58		0.30			0.39	
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		282			317	935		540			675	
v/s Ratio Prot						c0.21		c0.27			c0.31	
v/s Ratio Perm		0.09			0.09	0.12						
v/c Ratio		0.48			0.50	0.55		0.92			0.79	
Uniform Delay, d1		35.5			35.6	12.6		33.0			26.0	
Progression Factor		1.00			1.00	1.00		1.00			0.60	
Incremental Delay, d2		1.3			1.2	0.7		20.5			3.6	
Delay (s)		36.8			36.8	13.3		53.5			19.1	
Level of Service		D			D	B		D			B	
Approach Delay (s)		36.8			18.5			53.5			19.1	
Approach LOS		D			B			D			B	

Intersection Summary

HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	97.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis
 HCM Signalized Intersection Capacity Analysis
 11: Greenwood Ave N & Innis Arden Way

Shoreline Community College
 Future (2040) With-Project Midday Peak Hour Mitigation



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	538	490	157	181	44
Future Volume (vph)	71	538	490	157	181	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.96	1.00	1.00	0.96	
Flpb, ped/bikes	0.83	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1437	1496	1752	1845	1697	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1437	1496	1752	1845	1697	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	88	664	605	194	223	54
RTOR Reduction (vph)	0	485	0	0	9	0
Lane Group Flow (vph)	88	179	605	194	268	0
Confl. Peds. (#/hr)	62	6	6			62
Heavy Vehicles (%)	4%	4%	3%	3%	5%	5%
Turn Type	Perm	Perm	Split	NA	NA	
Protected Phases			2 8	2 8	6	
Permitted Phases	4	4				
Actuated Green, G (s)	27.0	27.0	43.0	43.0	18.0	
Effective Green, g (s)	27.0	27.0	43.0	43.0	18.0	
Actuated g/C Ratio	0.27	0.27	0.43	0.43	0.18	
Clearance Time (s)	4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0			3.0	
Lane Grp Cap (vph)	387	403	753	793	305	
v/s Ratio Prot			c0.35	0.11	c0.16	
v/s Ratio Perm	0.06	c0.12				
v/c Ratio	0.23	0.44	0.80	0.24	0.88	
Uniform Delay, d1	28.4	30.3	24.8	18.2	39.9	
Progression Factor	1.00	1.00	0.82	0.95	1.00	
Incremental Delay, d2	0.3	0.8	4.3	0.1	28.2	
Delay (s)	28.7	31.1	24.7	17.4	68.1	
Level of Service	C	C	C	B	E	
Approach Delay (s)	30.8			22.9	68.1	
Approach LOS	C			C	E	
Intersection Summary						
HCM 2000 Control Delay			33.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	16.0
Intersection Capacity Utilization			58.1%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

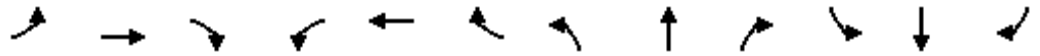
Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM Signalized Intersection Capacity Analysis

Shoreline Community College

12: Greenwood Ave N & N 160 St

Future (2040) With-Project Midday Peak Hour Mitigation



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Volume (vph)	5	30	5	15	25	342	5	305	25	438	275	16
Future Volume (vph)	5	30	5	15	25	342	5	305	25	438	275	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frbp, ped/bikes		0.99			1.00	0.98		0.99			1.00	
Flpb, ped/bikes		1.00			0.95	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.99			1.00	
Flt Protected		0.99			0.98	1.00		1.00			0.97	
Satd. Flow (prot)		1780			1691	1507		1839			1766	
Flt Permitted		0.98			0.90	1.00		1.00			0.97	
Satd. Flow (perm)		1747			1557	1507		1839			1766	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	6	37	6	19	31	422	6	377	31	541	340	20
RTOR Reduction (vph)	0	5	0	0	0	17	0	3	0	0	1	0
Lane Group Flow (vph)	0	44	0	0	50	405	0	411	0	0	900	0
Confl. Peds. (#/hr)	13		24	50		39	24		50	39		13
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	1%	1%	1%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA	pm+ov	Split	NA		Split	NA	
Protected Phases		8			8	4 6	2	2		4 6	4 6	
Permitted Phases	8			8		8						
Actuated Green, G (s)		18.0			18.0	67.0		21.0			49.0	
Effective Green, g (s)		18.0			18.0	67.0		21.0			49.0	
Actuated g/C Ratio		0.18			0.18	0.67		0.21			0.49	
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		314			280	1069		386			865	
v/s Ratio Prot						c0.19		c0.22			c0.51	
v/s Ratio Perm		0.03			0.03	0.08						
v/c Ratio		0.14			0.18	0.38		1.06			1.04	
Uniform Delay, d1		34.5			34.7	7.3		39.5			25.5	
Progression Factor		1.00			1.00	1.00		1.00			0.81	
Incremental Delay, d2		0.2			0.3	0.2		63.9			35.3	
Delay (s)		34.7			35.0	7.5		103.4			55.9	
Level of Service		C			D	A		F			E	
Approach Delay (s)		34.7			10.4			103.4			55.9	
Approach LOS		C			B			F			E	

Intersection Summary			
HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis
 HCM Signalized Intersection Capacity Analysis
 11: Greenwood Ave N & Innis Arden Way

Shoreline Community College
 Future (2040) With-Project PM Peak Hour Mitigation



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	36	324	346	401	163	23
Future Volume (vph)	36	324	346	401	163	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.94	1.00	1.00	0.98	
Flpb, ped/bikes	0.89	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1510	1435	1770	1863	1783	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1510	1435	1770	1863	1783	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	39	348	372	431	175	25
RTOR Reduction (vph)	0	296	0	0	5	0
Lane Group Flow (vph)	39	52	372	431	195	0
Confl. Peds. (#/hr)	43	13	13			43
Confl. Bikes (#/hr)		2				2
Heavy Vehicles (%)	6%	6%	2%	2%	3%	3%
Turn Type	Perm	Perm	Split	NA	NA	
Protected Phases			2 8	2 8	6	
Permitted Phases	4	4				
Actuated Green, G (s)	14.2	14.2	50.6	50.6	18.1	
Effective Green, g (s)	14.2	14.2	50.6	50.6	18.1	
Actuated g/C Ratio	0.15	0.15	0.53	0.53	0.19	
Clearance Time (s)	4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0			3.0	
Lane Grp Cap (vph)	225	214	943	993	340	
v/s Ratio Prot			0.21	c0.23	c0.11	
v/s Ratio Perm	0.03	c0.04				
v/c Ratio	0.17	0.24	0.39	0.43	0.57	
Uniform Delay, d1	35.2	35.6	13.1	13.5	34.9	
Progression Factor	1.00	1.00	0.60	0.59	1.00	
Incremental Delay, d2	0.4	0.6	0.1	0.2	6.9	
Delay (s)	35.6	36.2	8.0	8.1	41.8	
Level of Service	D	D	A	A	D	
Approach Delay (s)	36.1			8.0	41.8	
Approach LOS	D			A	D	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

HCM Signalized Intersection Capacity Analysis

Shoreline Community College

12: Greenwood Ave N & N 160 St

Future (2040) With-Project PM Peak Hour Mitigation



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Volume (vph)	38	51	6	25	64	197	19	512	38	236	200	32
Future Volume (vph)	38	51	6	25	64	197	19	512	38	236	200	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frbp, ped/bikes		1.00			1.00	0.99		1.00			1.00	
Flpb, ped/bikes		1.00			0.99	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		0.99			0.99	
Flt Protected		0.98			0.99	1.00		1.00			0.98	
Satd. Flow (prot)		1777			1767	1526		1853			1777	
Flt Permitted		0.85			0.92	1.00		1.00			0.98	
Satd. Flow (perm)		1548			1641	1526		1853			1777	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	42	57	7	28	71	219	21	569	42	262	222	36
RTOR Reduction (vph)	0	2	0	0	0	33	0	3	0	0	2	0
Lane Group Flow (vph)	0	104	0	0	99	186	0	629	0	0	518	0
Confl. Peds. (#/hr)	8		17	17		8	17		17	8		8
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	1%	1%	1%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	pm+ov	Split	NA		Split	NA	
Protected Phases		8			8	4 6	2	2		4 6	4 6	
Permitted Phases	8			8		8						
Actuated Green, G (s)		16.4			16.4	52.7		30.2			36.3	
Effective Green, g (s)		16.4			16.4	52.7		30.2			36.3	
Actuated g/C Ratio		0.17			0.17	0.56		0.32			0.38	
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		267			283	911		589			679	
v/s Ratio Prot						0.08		c0.34			c0.29	
v/s Ratio Perm		c0.07			0.06	0.04						
v/c Ratio		0.39			0.35	0.20		1.07			0.76	
Uniform Delay, d1		34.8			34.6	10.6		32.4			25.5	
Progression Factor		1.00			1.00	1.00		1.00			0.63	
Incremental Delay, d2		0.9			0.8	0.1		56.7			4.0	
Delay (s)		35.7			35.3	10.7		89.0			20.2	
Level of Service		D			D	B		F			C	
Approach Delay (s)		35.7			18.4			89.0			20.2	
Approach LOS		D			B			F			C	

Intersection Summary

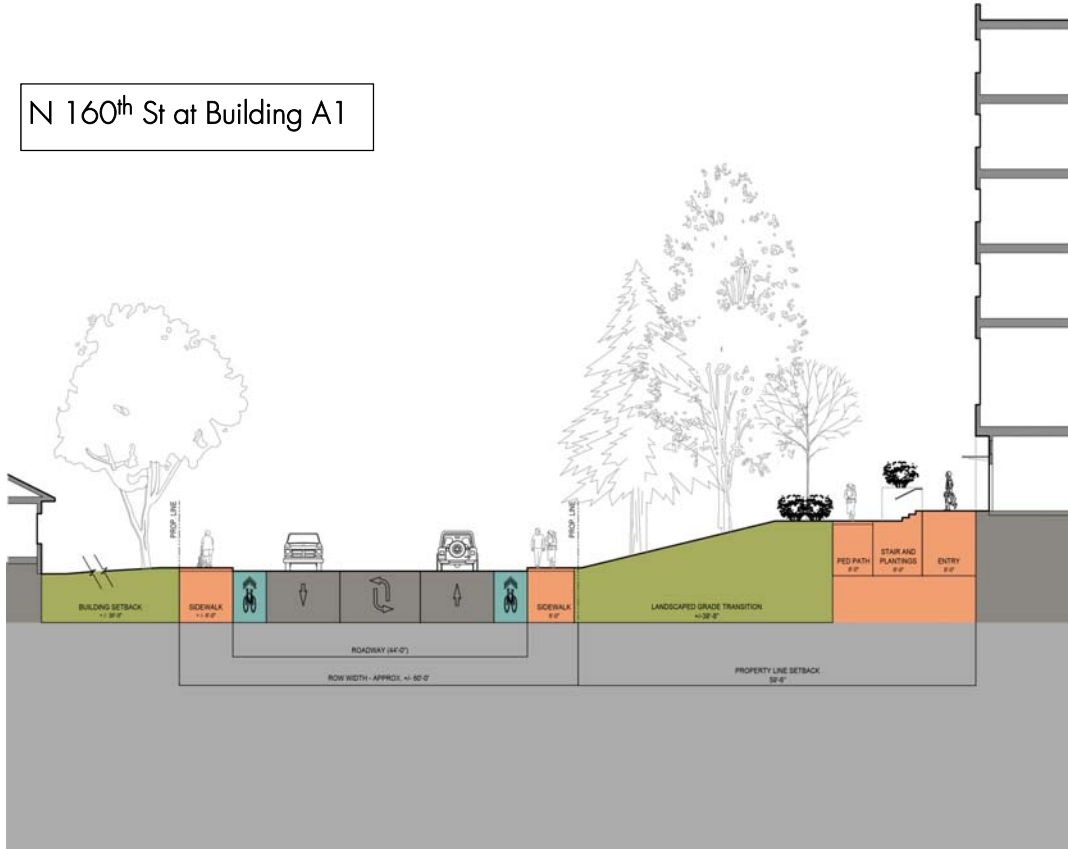
HCM 2000 Control Delay	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

ATTACHMENT H

N 160th Street Roadway Cross Section

Proposed DA - Att. G/Exhibit B - Shoreline Place Transportation Consistency Analysis

N 160th St at Building A1



N 160th St at Building B1

