

Meeting Minutes

Tuesday, Dec. 12, 2023

4:30 p.m.

City Hall

Council Chambers

415 W 6th Street

Vancouver, WA

Commission Members Present:

Patrick Adigweme, Larry Blaufus, Nena Cavel, Marjorie Ledell, Zach Pyle, Steve Schulte, Melissa von Borstel

Commission Members Absent:

none

Staff Present: Rebecca Kennedy, staff liaison, Julie Nischik, staff liaison, Becky Rude, staff attorney

The meeting was called to order at 4:30 pm by Chair Ledell.

Motion by Commissioner Schulte, seconded by Commissioner Cavel, and carried unanimously to approve the November 14, 2023 minutes.

Strategic Plan Overview

Aaron Lande, Policy and Program Manager, City Manager's Office

Staff presented the purpose of the Strategic Plan, how it connects with other policy plans adopted by the City, an overview of the public engagement process, the core values and focus areas identified in the plan, measuring progress through performance measures and community indicators, and next steps for implementation of the Strategic Plan.

Commission discussion and staff responses:

- Is the community dashboard interactive? Staff responded it allows you to view community indicators. There are also survey questions within the dashboard to collect real-time data.

Members

Marjorie Ledell

Chair

Zach Pyle

Vice Chair

Steve Schulte

Larry Blaufus

Nena Cavel

Patrick Adigweme

Melissa von Borstel

Community Development Department

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Community Development Department | 360-487-7813 | TTY: 711 | PlanningCommission@cityofvancouver.us

- Proactive identification of areas with safety concerns. Staff responded at this point it's a reactive report, rather than proactive. As part of the biennial budget process, we can use this tool to respond to issues as they arise in real time. There are also metrics in the Transportation System Plan to review collision inventory and staff can respond pro-actively based on that data to address safety concerns.
- During the public engagement process, who were the interested parties that were involved? Staff responded they included neighborhood associations and community organizations and can follow up with more details on specific groups that were contacted.
- Reconciling community indicators and performance measures. Staff responded the community indicators are a longer-term measurement. In the example of community safety and preparedness, if crime rates go down, but the community responds that they don't feel safer, staff will need to work through how to respond and react to that issue as it arises.
- How to determine which areas or neighborhoods receive investment. Staff responded this plan is intended as a high-level policy document for Council to direct staff on what types of investments to make, and staff will provide recommendations on how to make those investments throughout the City.
- Is there any prioritization for the indicators, values, or outcomes? Staff responded there is not.
- Will the Comprehensive Plan replicate the goals from the Strategic Plan? Staff responded the two policies should be consistent, and there may be minor updates to the Strategic Plan after the Comprehensive Plan is adopted.

Critical Areas Ordinance (CAO) Update

Domenique Martinelli, Senior Planner; Keith Jones, Senior Planner, Community Development Department; Ethan Spoo, consultant project manager, WSP

Staff presented background information on the Growth Management Act and critical areas, goals for the CAO, the purpose and intent of this update, the timeline and scope for the update, the types of critical areas and the types of changes including wetlands, fish and wildlife habitat conservation areas, and geological hazard areas. Staff presented takeaway themes from the focus group discussions, alignment of the proposed changes with the City's core values, and the timeline and next steps for this update.

Commission discussion and staff responses:

- In critical areas assessments, is adjacent land use a consideration? Staff responded land use can be factored in. For example, in each of the options for wetlands, adjacent land use is considered from low to high impact. The City is considering some flexibility in regard to specific sites and types of development.
- Are critical areas regulated for performance outcomes? Staff responded the primary goal of the ordinance is "no net loss". If a property owner or developer impacts a critical area, they must demonstrate how that impact is mitigated. The State provides regulatory guidance on the science of critical areas. For instance, wetland categories are consistent throughout the State of Washington.
- How do surrounding jurisdictions treat these regulations? Staff responded these updates happen on a similar schedule with the Comprehensive Plans. All the jurisdictions in Clark County are updating their critical areas ordinances now. Staff are reviewing what other jurisdictions are updating to identify opportunities for alignment.
- Are there grant opportunities for property owners and small developers for environmental assessments? Staff responded they are not aware of any current grant opportunities.
- Impacts to critical areas outside this jurisdiction if applications are denied due to impacts on critical areas in Vancouver. Staff responded the primary goal is "no net loss", which would be

applied consistently for each property. All jurisdictions are required to have critical areas ordinances that meet state law and utilize the best available science. It's unlikely an application would be denied in Vancouver and approved in another jurisdiction with similar critical areas conditions.

- Impacts beyond the regulatory extent of a critical area. Staff responded runoff can impact wetlands, and there are rules that apply in those situations. For example, if a property has runoff into a wetland, it must get a permit from the State and meet water quality requirements. The buffer area is regulated in the code to assess when critical areas permits are required.
- Is there a buffer for geological hazard? Staff responded there are buffers for landslide and erosion hazard areas. If there is a geological hazard on a development site, the developer must hire a geotechnical engineer to do a site-specific study of the area and the risks associated with development, and the development itself must either avoid or mitigate the hazard.
- Are there changes to mitigation practices? Staff responded they are looking at some changes for wetland mitigation, though the mitigation ratios would stay largely the same.

Community Forum

Teresa Hardy had questions regarding the Vancouver Innovation Center, related to accommodations by the developer for the nearby elementary school to manage the increase in students, affordable housing units, and the amount of existing forest that will be retained in the development.

Vancouver Innovation Center (VIC) Master Plan and Development Agreement Amendment

Joana Filgueiras, Real Estate Project Manager, Economic Prosperity & Housing; Mark Person, Senior Planner, Community Development Department

Staff presented an overview of the proposed revisions to the master plan, including removal of the single-family detached zoning, increased maximum density, changes in the land use area acreage, the proposed open space plan, and the proposed street plan and streetscapes.

Commission discussion and staff responses:

- What is the current and proposed forested area, in acres? Staff responded the City is negotiating to acquire 13.7 acres, which is the same area in both the approved plan and in the proposed amendment. The overall open space in the proposed amendment is greater than in the approved plan.
- Which streets are dedicated as public right of way? Staff responded this hasn't been finalized yet, as the developer is still finalizing building configurations and access.
- Do the approved development agreement minimum parking requirements include or exclude on street parking? If the minimum parking standards are changed throughout the City, would this be updated in the agreement? Staff responded the developer is including minimum parking based on an analysis of need, and it includes on street parking. If there were changes to the minimum parking requirements, the developer could propose an amendment to be consistent with the new policy.
- Transitional spaces between industrial and residential land uses. Staff responded there is right of way separation. With light industrial, there is less need to separate industrial nuisances from residential.
- How many acres of open space are part of the property where the school will be located? Staff responded they will provide this information at a future presentation.
- Evergreen trees in the median of the loop road. Staff responded the developer has not yet planned out the placement of trees on the site. They are planning for 30% canopy coverage.

Staff continued the presentation with details of the proposed changes to the development agreement.

Commission discussion and staff responses:

- How many jobs will be within this development? Staff responded the previous master plan estimated 5,000 jobs.
- Of the trees that will be replaced with parking, will they be moved, or new trees planted? Staff responded new trees will be planted to replace those that need to be removed. There is a calculation to determine what types of trees are planted to replace those that are removed.
- Do the business tenants need to demonstrate a need for dedicated or assigned parking? Staff responded they do not, tenants have indicated they need the assigned parking.
- Removal of the sequencing of development for housing and commercial. Staff responded the office market has changed and it is difficult to get financing for office buildings due to lack of demand, which is the reason the applicant and staff are proposing more flexibility on the office development. Often developers will build housing before commercial, but there is already permitted light industrial on the site which provides a level of comfort that the jobs portion of this development will come to fruition.
- Current tree canopy coverage on the site. Staff responded as of 2021, it was about 20%.
- The multifamily tax exemption (MFTE) program. Staff responded it is a property tax exemption for 12 years if 20% of the housing units are at 80% of the area median income (AMI), with an option to reapply for another 12-year exemption. After the exemption expires, there is a limit on how much rent can increase over five years to get to the market rate.
- Who and how is the synchronicity in the development agreement enforced? Staff responded every land use and building application is reviewed against the development agreement. The applicant will need to show how they are meeting those requirements for every land use and building application.
- Structural requirements in the mixed-use zone. Staff responded the mixed use has design standards for ground level interactivity, three stories where feasible around the loop road, among others.
- Is there an expiration date for the development agreement. Staff responded it will expire in 15 years, in 2036.

The developer, represented by Ian Klein, Jennifer Rabina, and Marc Esrig, was present to answer the Commissions questions.

- How will the developers provide placemaking in the proposed commercial corridor? The developer responded the proposal is an enhancement of the town center, that will wrap around the light industrial village and include retail streets. The sidewalks are wide to accommodate pedestrians narrow traffic lanes to slow traffic, and bike lanes. The new commercial corridors is larger than the town center in the original plan and includes different types of surfaces and lightweight structures that could hold farmers markets, craft fairs, and other community activities. The perimeter park is open to the public and integrated with the City's plans for adjacent streets.
- Community engagement for the amended development agreement. The developer responded they held two community forums in January to present the master plan and invited the public to ask questions. They notified area homeowner and neighborhood associations of these events to gather public input and feedback. They could also consider sending postcards to all who live nearby to notify them of the proposed changes. The response was largely positive, including support for the buffer between light industrial and the existing homes to the north, the perimeter trail and open space. Concerns about traffic were also shared.
- Updates on transit and communications with C-TRAN. The developer responded they have met with C-TRAN staff on site and are currently considering a shuttle system to connect with the Vine on Mill Plain. They are open to accommodating C-TRAN within the site.

- Building more housing than is currently proposed. The developer responded there is existing traffic capacity to consider, height restrictions, and market demand for parking for residential and commercial that limit how many housing units can be built on this site.

Election of Officers

Rebecca Kennedy, Deputy Director, Community Development Department

Commissioner Pyle nominated Patrick Adigweme for Chair.

Roll Call Vote

Commissioner von Borstel	Yes
Commissioner Cavel	Yes
Commissioner Pyle	Yes
Commissioner Blaufus	Yes
Commissioner Schulte	Yes
Commissioner Ledell	Yes
Commissioner Adigweme	Yes

Commissioner Schulte nominated Zach Pyle for Vice Chair.

Roll Call Vote

Commissioner von Borstel	Yes
Commissioner Cavel	No
Commissioner Pyle	Yes
Commissioner Blaufus	Yes
Commissioner Schulte	Yes
Commissioner Ledell	Yes
Commissioner Adigweme	Yes

Communication from the Chair

Chair Ledell thanked and congratulated Steve Schulte and Larry Blaufus for their commitment and service to the Planning Commission.

Communication from Staff

Rebecca Kennedy recognized the work of Steve Schulte in his effort to shape the Planning Commission into what it is today, his preparedness for meetings, and building the team. She recognized Larry Blaufus for his work with the Commission, his concern for the community, and preparedness for meetings. She thanked Marjorie Ledell for her 6 years of service as Chair.

The meeting adjourned at 8:36 pm

Marjorie Ledell, Chair



CITY OF
Vancouver
WASHINGTON

Housing Action Plan

Planning Commission Workshop

Patrick Quinton, Director

Samantha Whitley, Housing Programs Manager
Economic Prosperity & Housing
February 13, 2024



Agenda

- Background
- Needs
- Summary of Actions
- Work to Date
- Next Steps
- Questions & Comments



Housing Action Plan Development



ECONW Report

Assessed housing
need



Plan Development

Multiple City
departments



City Council Updates

Regular workshops
and reports



Work Underway

Regular check-ins
and reports with staff





Acute Housing Need

- Current Housing and Homeless Emergency
- Unprecedented population growth
- Deficit of at least 10,000 units
- 2% vacancy rate
- Rents increase 19% in 5 years
- 51% of renters cost burdened





Closing the Housing Deficit

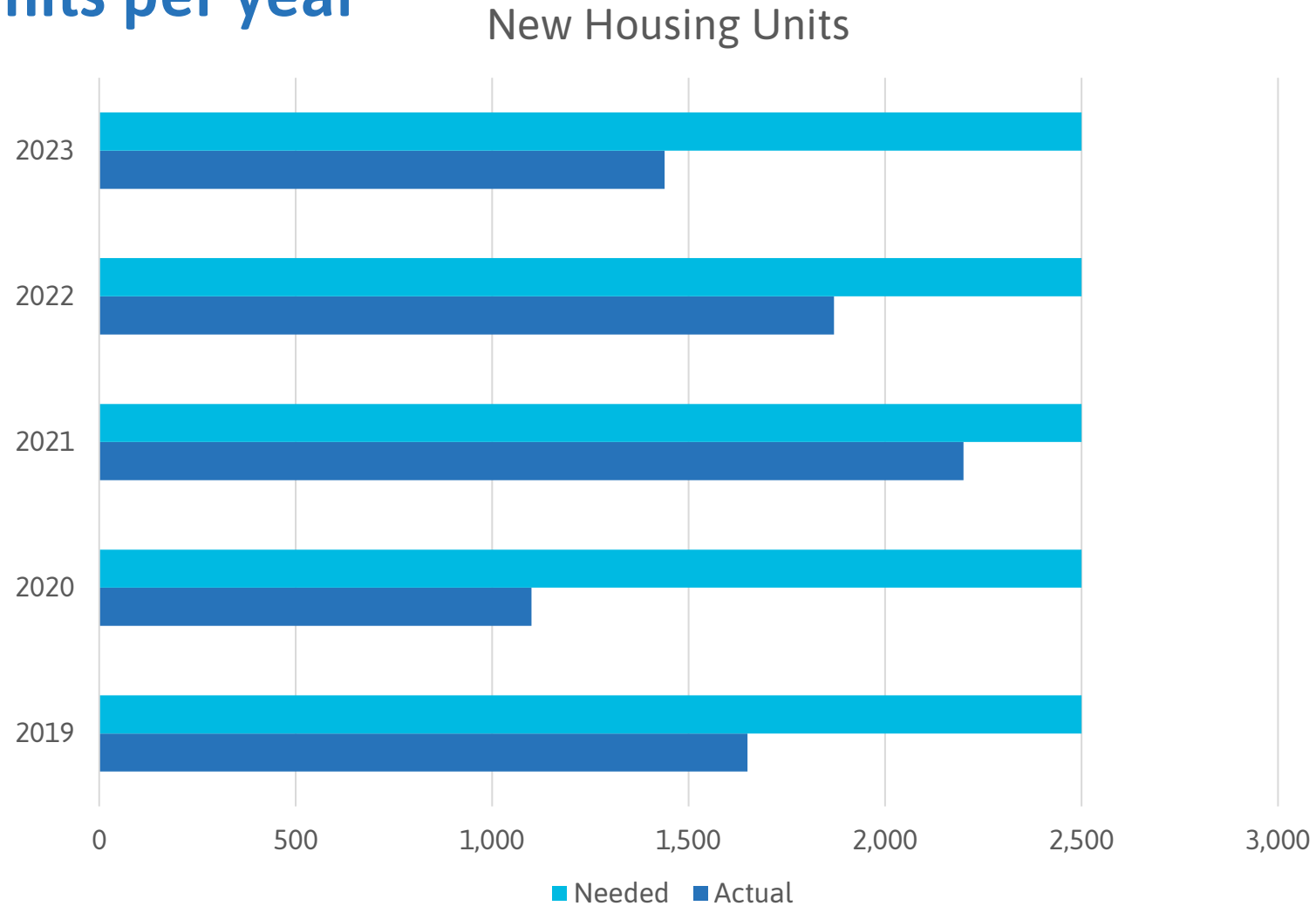
To meet our 20-year growth projections and close existing deficit in 10 years, we must:

- Increase housing production to at least **2,500** new units per year.
- Including at least **1,000** new units per year affordable to those earning 80% AMI or less.



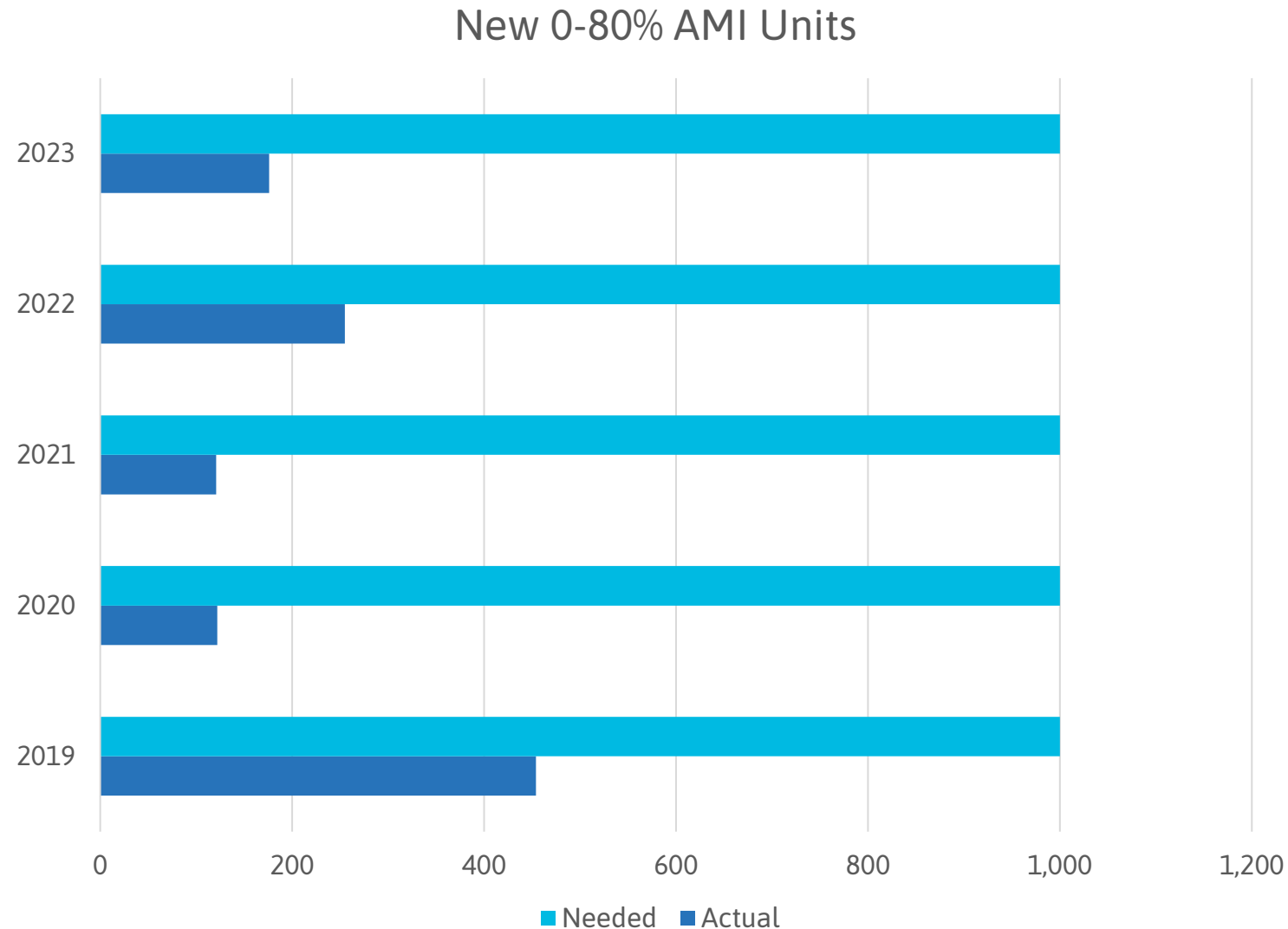
Vancouver Housing Production

1,650 housing units per year



Vancouver Affordable Housing Production

225 housing units per year



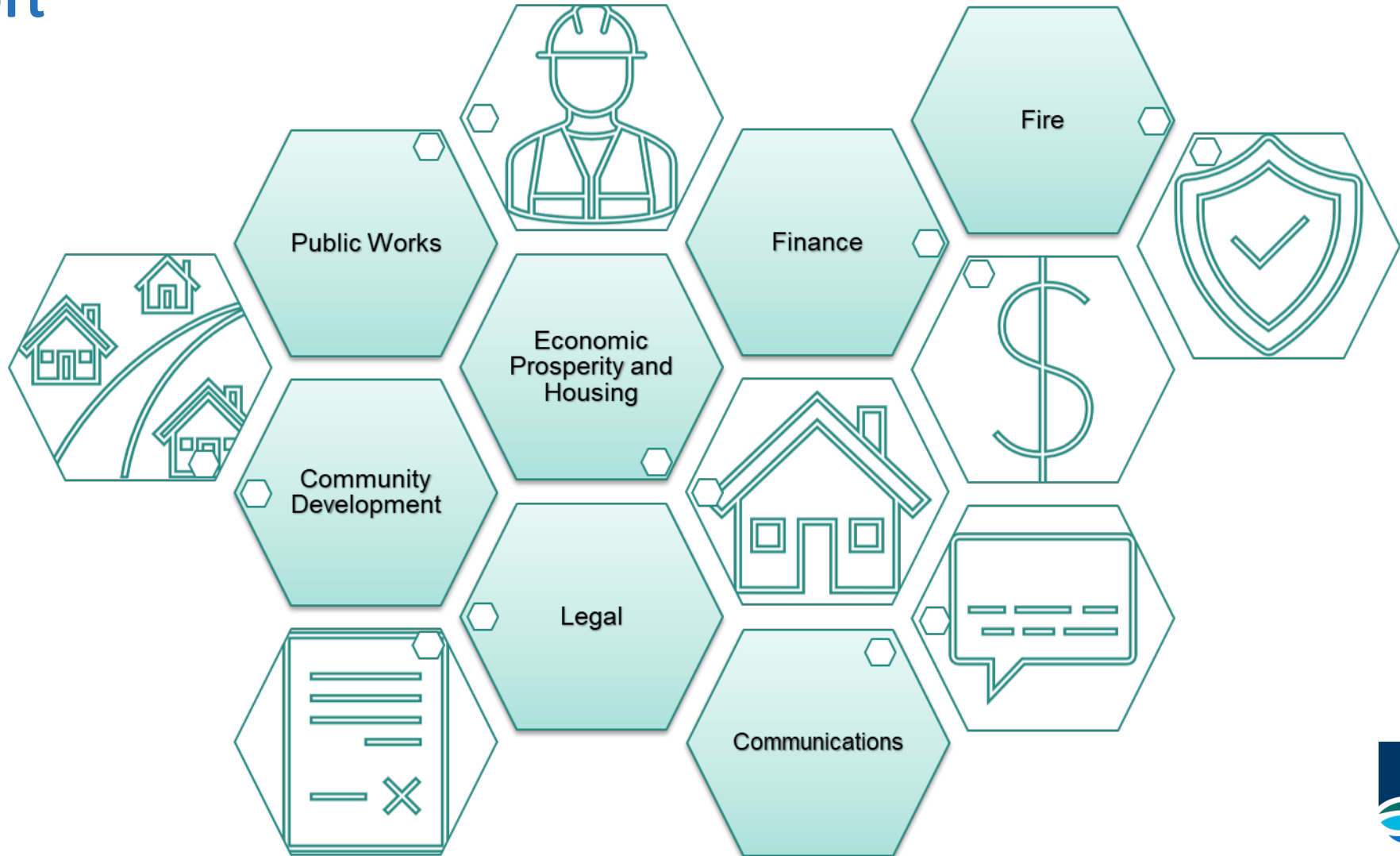
Housing Action Principles

- All housing production improves affordability
- Grow resources for affordable housing:
 - Increase leverage of existing housing funds
 - Pursue new fundings and programs to expand resource base
- Housing production must be a Citywide priority



Housing Action Plan Development

Citywide effort



Action Plan Tasks

Pull all levers

Land Use and Code

- Complete Comprehensive Plan
- Update code to increase density and type
- Update single-family zoning for middle housing
- Provide affordable housing entitlement bonuses

Policies and Process

- Assess and Streamline Development Review
- Increase SEPA threshold for housing projects
- Finalize Green Building Policy
- Facilitate ADU Development
- Limit Traffic Studies
- Review Building Codes



Action Plan Tasks

Pull all levers

Investments & Incentives

- Pass Affordable Housing Levy
- Update MFTE Program
- Establish Affordable Housing Fee-in-Lieu Fund
- Establish Construction Sales Tax Exemption program
- Pursue other state and federal resources

Investments & Incentives

- Preserve naturally affordable housing
- Acquire strategic sites for development or redevelopment
- Leverage other City funds
- Identify underutilized City and other public property



Action Plan Tasks

Pull all levers

Fees

- Review City-imposed costs
- Expand use of affordable housing impact fee discounts
- Study building fee rate and caps
- Establish SDC deferral program

Innovation

- Explore co-ops & alternative ownership models
- Encourage innovative building technologies
- Promote redevelopment & adaptive re-use
- Establish homeownership programs
- Explore Land Bank



Action Plan Tasks

Pull all levers

Advocacy

- Advocate for increased state & federal funding
- Seek corporate support for affordable housing
- Pursue additional reform to condo laws
- Change SDC cost recovery statute

Data Tracking

- Establish baseline & track annual housing outcomes
- Publish online housing dashboard
- Take corrective action as necessary



Investment Work to Date

- ✓ AHF levy renewal
- ✓ MFTE updates
- ✓ Impact fee discounts
- ✓ SDC fee deferrals
- ✓ New State resources (e.g., CHIP)
- ✓ Homeownership programs
- ✓ Construction Sales Tax Exemption program
- ✓ Fee in Lieu Fund



Policy Work to Date

- ✓ Comp Plan kickoff
- ✓ ADU code update
- ✓ Higher SEPA exemption threshold
- ✓ Development Review process review
- ✓ Housing dashboard and annual outcomes reporting



Questions and Discussion





MEMORANDUM

DATE: February 13, 2024

TO: Chair Adigweme and Planning Commissioners

FROM: Rebecca Kennedy, Deputy Director; Domenique Martinelli, Senior Long-Range Planner, Community Development Department

RE: **OUR VANCOUVER – Alternatives and Assumptions**

Intent

Provide Planning Commission with an overview of proposed data assumptions and inputs that will inform the development of three Land Use Alternatives for evaluation as part of the Comprehensive Plan update, including elements that will be common to each alternative.

Background

The City of Vancouver's Comprehensive Plan provides the overall long-term vision and policy direction to manage the built and natural environment in Vancouver and provide necessary public facilities to achieve that vision. The City adopted its first comprehensive plan under Washington's Growth Management Act in 1994 (Chapter 36.70A RCW), with a major re-write occurring in 2004, and a less substantive update occurring most recently in 2011. The existing Comprehensive Plan builds its policy approach off of a Centers and Corridors strategy, which designates key areas where the City will grow and develop in the future, and an anticipated timeframe for these areas to develop on a short, medium and long term basis. The Centers and Corridors identified in this approach determine where the City undertakes more detailed subarea and district level planning. Since the initial adoption of the Comprehensive Plan in 2004, the following sub-area plans have been adopted based on this broader overall strategy:

- Evergreen and Grand Commercial Corridors Strategy
- Fourth Plain Corridor Subarea Plan and Fourth Plain Forward Action Plan
- Lower Grand Employment Area Action Plan
- 112th Avenue Corridor Subarea Plan

- Central Park Subarea Plan
- Fruit Valley Subarea Plan
- Heights District Plan
- Riverview Gateway Subarea Plan
- Section 30 Subarea Plan
- Vancouver City Center Vision Plan

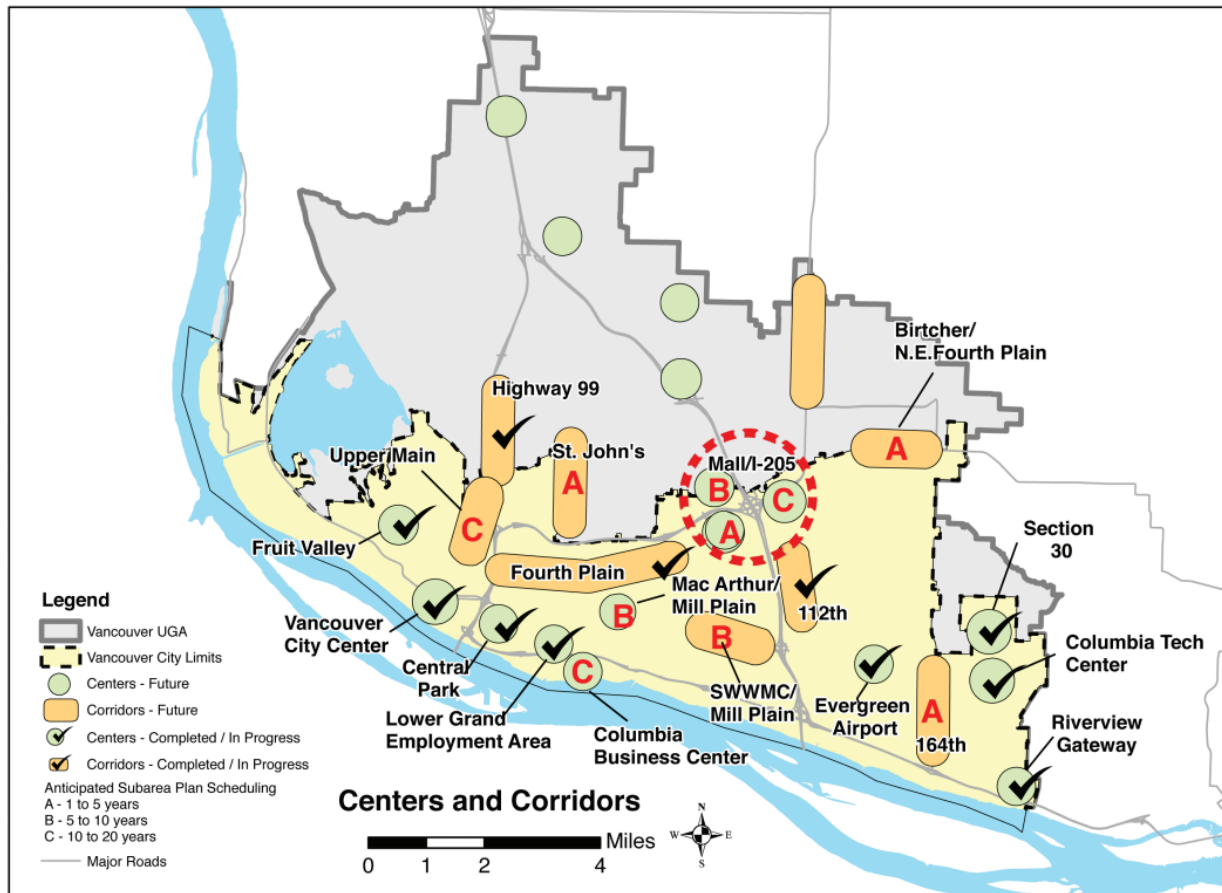


Figure 1-2. Comprehensive land use map showing designated types and intensities of land use allowed throughout the City of Vancouver. Source: City of Vancouver GIS.

This strategy also informed the Land Use designations within the comprehensive land use map, which designates types and intensities of land use allowed throughout the City. The current map is broken down into five general designations – Residential (Urban Low Density and Urban High Density), Water, Open Space or Public Facility, Commercial/Mixed Use, and Industrial, which segments uses by geographic district. Seventeen specific zoning districts that the City utilizes for land use regulation within Vancouver Municipal Code (VMC) Title 20 are nested within these. In general, designations were based on the traditional Euclidian zoning model that aims to segment incompatible land uses based on perceived externalities and impacts, as was common with many Cities in the State of Washington and the country at large in the 20th and early 21st century. As with many other Cities nationally, this pattern of development has both directly and indirectly contributed to sprawling land use patterns, auto dependency,

discrimination in access to housing, and increased energy usage and greenhouse gas emissions (GHG's) in our community. Given recent statewide legislation, Council policy direction on implementing 15-minute neighborhoods and complete streets, and a goal of net zero GHG emissions Citywide by 2040, it is necessary to explore alternative methods to regulate land use within our community. This includes creating designations and zoning districts that focus more on mixing and integrating land uses, providing flexibility, and allowing for a combination of market driven approaches and regulatory interventions where the private market doesn't deliver outcomes that are critical to the overall strategy and approach.

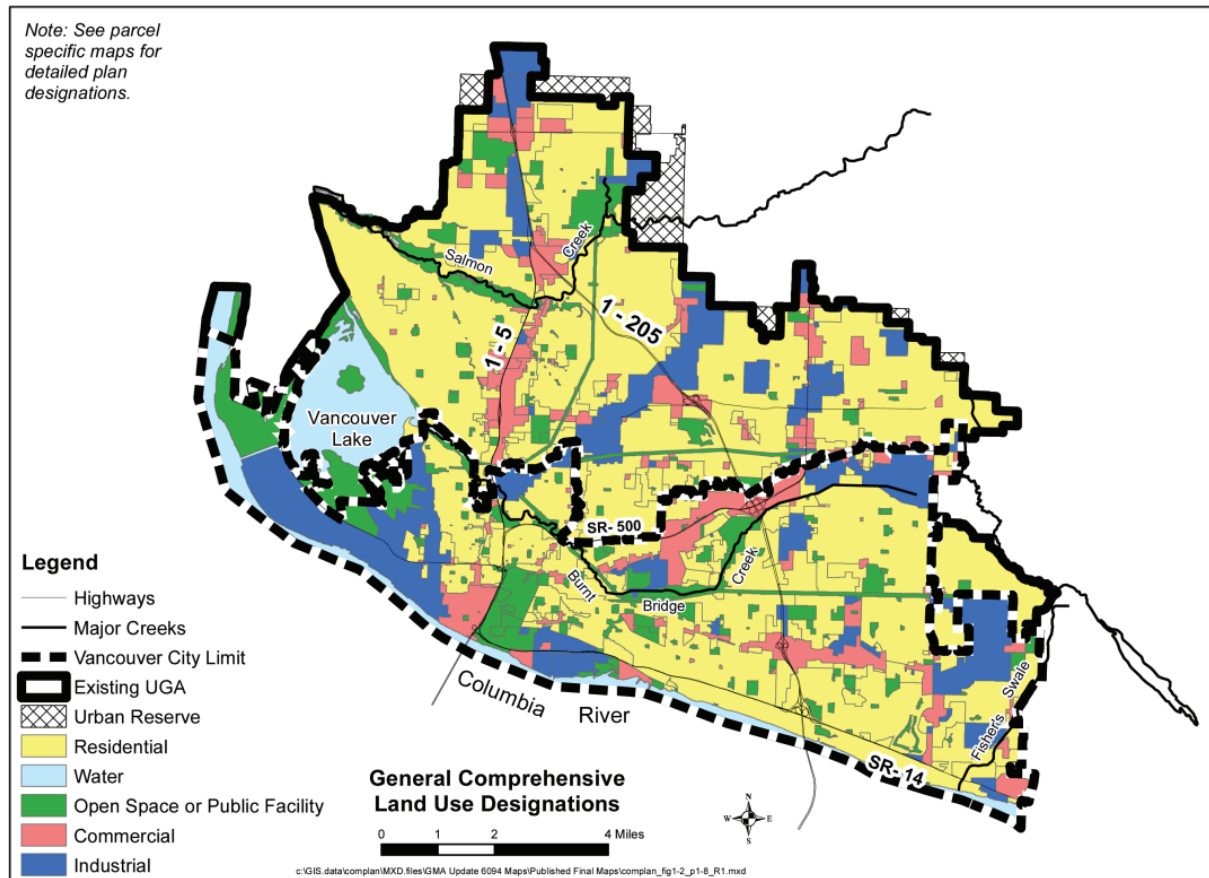


Figure 1-6. Comprehensive land use map showing designated types and intensities of land use allowed throughout the City of Vancouver.
Source: City of Vancouver GIS

One of the key aspects of the process of developing a new Comprehensive Plan update will be the development of three distinct Land Use Alternatives to evaluate. Each will propose a new growth and development strategy that responds to current needs and reflects of the overall plan vision that was established for **OUR VANCOUVER** during the first phase of the project. The community vision statement reads as follows:

“Vancouver is an equitable and prosperous community, which ensures that all residents, businesses and organizations benefit from the growth and advancement we make together. Vancouver will be recognized for our quality of life, as evidenced by affordable

housing in vibrant, safe and walkable neighborhoods, access to jobs and economic opportunity for all, and resilience to the impacts of climate change.”

Alternative Components

Each of the three land use alternatives will identify the **intensity** of land uses throughout the city and the Vancouver Urban Growth Area (VUGA), as well as define **nodes** of future growth and development and specific **place types**, such as commercial corridors, neighborhood centers, mixed-use centers, etc. that are applied within each node. A breakdown of these three elements are as follows:

Intensity

- **Intensity.** An assigned intensity rating of low, medium, or high will be designated for all areas of the City. This is intended to capture the generalized scale of development that is envisioned for future growth and development in the community. Intensity will be assigned on a parcel level basis. The policy development phase will identify measures to ease transition between areas of differing intensities where necessary.
- **Shift.** The degree of change envisioned from baseline conditions. How much are various portions of the City proposing to change from what exists today?

Nodes

Each of the three alternatives will feature *nodes* of activity, where the majority of growth and development will occur over the 20-year time horizon. These areas will be examined in greater detail and specificity to achieve stated outcomes.

- **Variation.** Each of the three alternatives may contain the same nodes or have nodes that are entirely different from one alternate to the next.
- **Type.** Each of the three alternatives will apply a place types (see next section) to each node.
- **Extent.** Each node will have a clearly demarcated geographic extent that defines the boundaries of the area.
- **Vision.** Each node will include a brief vision statement that identifies its intent, and what it's trying to achieve.

Place Type

Each node will be assigned a place type that includes the following elements:

- **Goal.** A description of the stated intent of a type. What is this designation trying to achieve, and how does it create a sense of place?
- **Form.** A description of the form and scale of buildings intended for this type, and other key design elements that need to be emphasized to communicate the vision. What types of buildings and structures will generally be present?
- **Use.** A statement of the typical land uses that are envisioned to be present in this type. This is not intended to be an exhaustive list of permitted uses but will include uses that are incompatible with the defined goal. In general, more uses will be allowed in areas within a higher assigned intensity. Lower intensity

districts will have greater restrictions on allowed uses, while higher intensity districts will have fewer restrictions and will incorporate and expand upon allowed uses in lower intensity areas. The only exception to this general rule will be the clear separation of higher intensity industrial and residential districts.

- **Public Space.** A brief description of the type and quality of public and open spaces that are available in this type.

Assumptions

The determinations that are made in each of the three Land Use Alternatives regarding **Intensity, Nodes** and **Place Types** will be based on available data sources and a set of assumptions derived from this data as well as guiding City policy direction. Being clear and transparent about the decisions (assumptions) and available data that inform the land use alternative base model is central to establishing a sense of shared understanding and ownership with Community Partners, community-based organizations (CBO's), Planning Commission and City Council, as well as the general public. These assumptions will largely inform the development of a site selection model, which will be utilized as a quantitative measure to help guide the selection of the geographic extent and location of nodes. The model will be used in conversations with City Staff, Community Partners, and community-based organizations and the broader community to help inform where the City will concentrate growth and development. Each of the assumptions highlighted in this section will remain consistent between the three alternatives – for example, there won't be a different population forecast and housing target assumption between Alternative A and Alternative B. Below is an overview of the inputs into the model, and the key assumptions that will drive it.

Population

The Washington State Office of Financial Management (OFM) provides official state and local population estimates and projections for use in the allocation of funds, growth management, and other planning functions. Below is a summary of official population estimates from 2000-2023 to understand Vancouver's population growth over the last few decades. Population growth and household formation are the primary drivers of demand for housing. The rate of population growth and household characteristics heavily influence the demand for specific housing types.

	2000	2010	2023	Change, 200-2023	% Change	Annualized growth rate
City of Vancouver	143,560	161,791	199,600	56,040	39%	1.4%
Clark County	345,238	425,363	527,400	182,162	53%	1.9%

Vancouver and the region have grown substantially over the last two decades and are projected to continue to grow over the 20-year planning period. From 2000 to 2023, Vancouver's population grew by just over 56,000 residents, or 39%, which works out to

an annualized compounded growth rate of 1.4% growth per year. Clark County has experienced higher population growth than the City of Vancouver largely due to suburban housing development in greenfield areas outside of the city, particularly in unincorporated areas to the north, east and west.

Based on this context, the following is assumed:

- A 2045 forecast of **281,544** persons is assumed for planning purposes within current Vancouver city limits. This is based on general assumptions that Clark County will grow to **698,416**, persons which the Washington Office of Financial Management has projected is most likely, and that the City of Vancouver will maintain its current share of that growth. This forecast value does not include population increases associated with annexation.

Housing

Along with assumed population growth, housing need will be one of the biggest determinants and drivers of growth within existing land resources and constraints over the next 20 years. In 2021, the Washington Legislature changed the way communities are required to plan for housing. House Bill 1220 (HB 1220) amended the Growth Management Act to require local governments to “plan for and accommodate” set numbers of housing units affordable to a set range of income levels provided by the Department of Commerce. In order to provide for housing needs and address affordability shortfalls, and assuming there will be an average of 2.3 persons per housing unit and 7.4% of units will be unoccupied, City staff and consultants estimate 38,128 units additional housing units beyond current levels will be needed in current city limits by 2045. Under the Department of Commerce estimates required under HB 1220, approximately 13,000 to 19,000 of the total housing units to be planned for and accommodated will need to be affordable to households earning 80% of area median income or less, and approximately 2,500 of the housing units will need to be permanent supportive housing.

It is important to note that the City is not directly responsible for the construction of new housing, but is required by state law to develop regulations, plans and policies that allow for and encourage private market delivery of the overall housing target. One of the most significant actions the City will take to demonstrate compliance with this requirement is developing land use regulations and zoning designations that provide enough capacity to reasonably achieve the identified target.

The other key housing assumption included in the model is allowing for a minimum of at least four (4) residential units per lot on all properties where the model assumes housing will be an allowed use, and at least six (6) residential units for all lots within ¼ mile of high-capacity transit stations (which includes C-Tran’s vine system). This is in accordance with requirements under House Bill 1110 and will provide for residential growth outside nodes. The redevelopment assumption rate for how many parcels currently zoned single-family will convert into middle housing may vary between each of the three alternatives.

Land Use

As mentioned above, each of the Alternatives will need to be able to demonstrate the ability to reasonably accommodate the community wide housing allocation target, as well as employment, commercial and retail space to support population growth within existing land resources. To meet policy direction established by City Council within the 2023-2029 Strategic Plan, the alternatives will need to account for the development of 15-minute neighborhoods. This strategy will require access to a variety of amenities, essential services and places, and access to public transportation options within a 15-minute walk of each node where new housing growth will occur, as well as the location of existing housing stock. To facilitate this, each alternative will need to *define* a 15-minute neighborhood by establishing a minimum number of services and amenities that are required to meet the definition. The list of services and amenities that compose a 15-minute neighborhood have not been defined, but this work is underway and part of ongoing community engagement efforts.

Due to deficiencies within the County's Vacant Buildable Lands Model (VBLM), the land use alternatives will likely need to develop a methodology that assumes greater capacity for various uses than what the County model allocates to the City.

Employment

Over the last fifteen years, Vancouver has added over 1 million square feet each of new office and retail space, and roughly 4 million square feet of industrial capacity. Given finite amounts of land, which are expected to accommodate a large share of Clark County's employment growth in coming years, policy decisions around efficient land use are becoming more critical. In recent years, Vancouver's commercial real estate trends have closely tracked Clark County and the broader Portland metro area, with several gaps closing for the city in the three years since the onset of the COVID-19 pandemic. Since 2020, office, retail, and industrial vacancies have climbed in the four-county area, while Vancouver's commercial vacancies remained lower in all categories. In 2023 year-to-date the region has over 11 percent of its office space vacant, compared to only 5 percent in Vancouver. While the vacancy rate across the region has continued to increase since 2020, Vancouver and Clark County's office markets have remained below average and generally recovered quickly from pandemic-related impacts.

During its Comprehensive Plan Update process, Clark County established an assumption of 1 new job for each new unit of housing that is produced as part of its Comprehensive Plan Update. The City will likely assume a slightly higher ratio in order to support future goals related to jobs-housing balance, GHG reductions, and 15-minute neighborhoods. One option under consideration is to continue using our existing jobs-to-housing target of 1:17 to 1.

Equity & Inclusion

In order to ensure policy decisions are being delivered in an equitable manner that reduces displacement and targets investment in an equitable manner, the City's Equity and Displacement Risk indices will be used as a **context layer** to inform each of the land use alternatives. It is anticipated that this will occur by informing the scale and intensity of new developments that occur within areas with census tracts that have varying Equity

and Displacement risk values, rather than an input that constrains outright the concentration of new development in areas with high sensitivity.

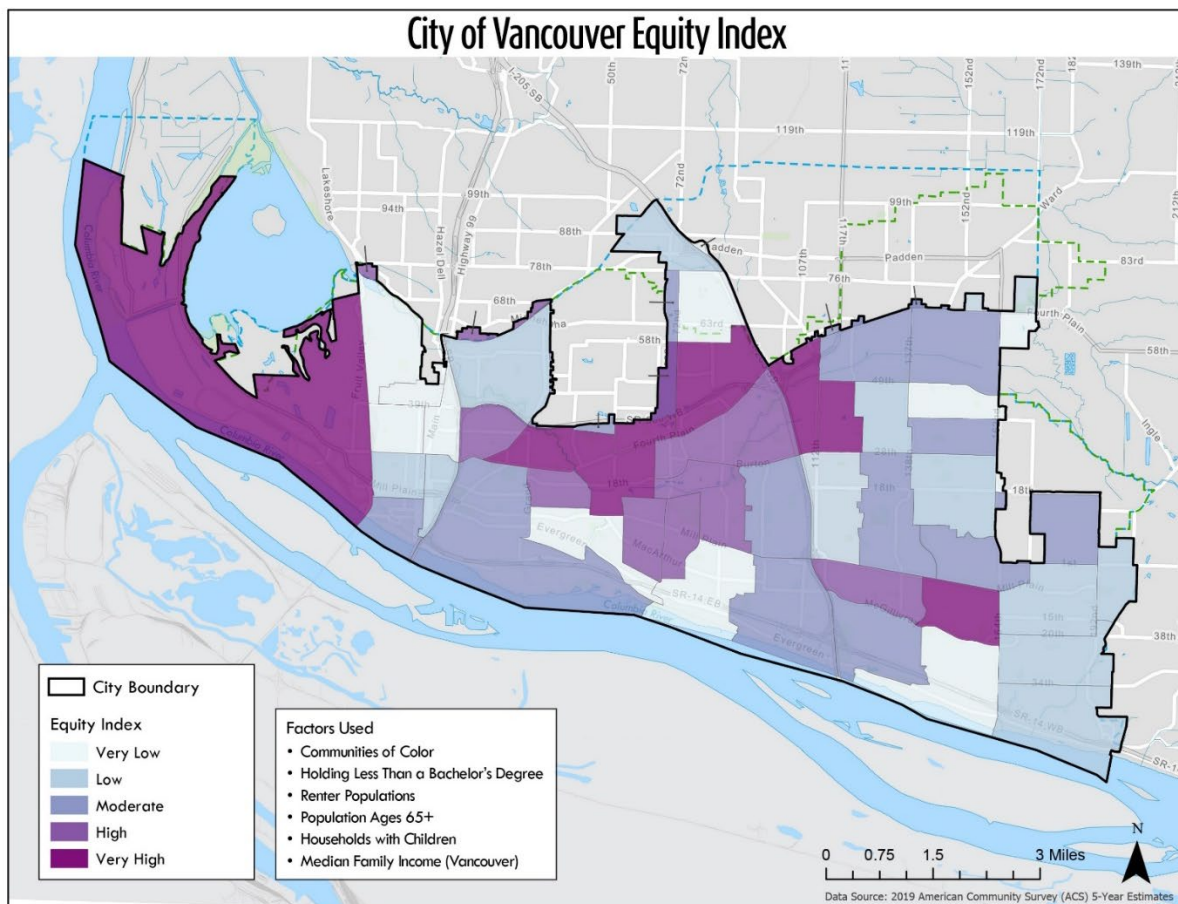


Figure 2: Equity Index

Greenhouse Gas Emissions

Each of the alternatives will assume reductions in community wide greenhouse gas emissions (GHG's) that lead to achieving carbon neutrality by 2040, to meet policy direction established by City Council in the Climate Action Framework (CAF). The Land Use Alternatives will only be able to model potential impacts on community wide GHG emissions through changes in land use, and how they impact travel demand and behavior (on road vehicles represent 34% of total community wide GHG's based on 2019 citywide inventory), as well as potential assumptions around energy reductions in the construction of new housing and commercial spaces by 2045 (a maximum of 28%). These modeled changes will only impact new housing units, jobs, and commercial space added over the 20 year timeline, rather than modeling the impacts of policy outcomes on existing buildings and structures.

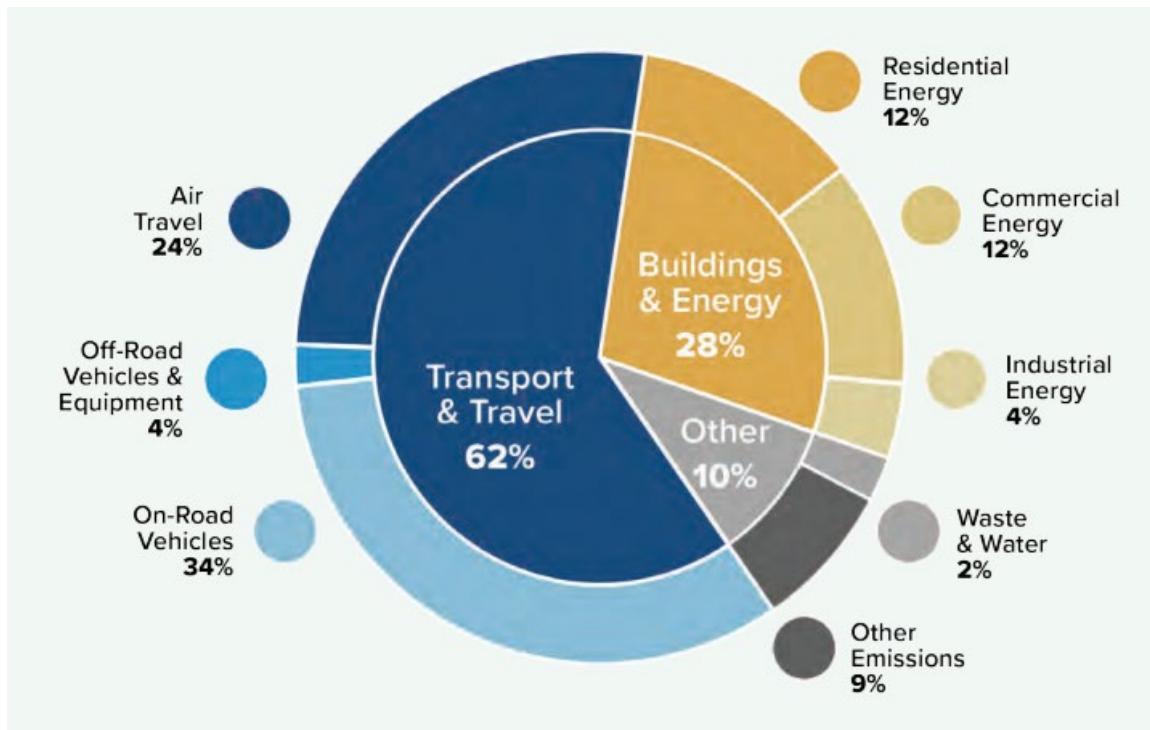


Figure 3: 2019 snapshot of Community Emissions (Climate Action Framework)

This will be accomplished primarily through utilizing an *Active Trip Potential Analysis* as a context layer to inform the siting of new collocated housing, employment and commercial uses. The Active Trip Potential Analysis identifies areas of Vancouver where people are already taking short trips more frequently and where there is the strongest potential to see a reduction in vehicle trips if supportive infrastructure were available for people to choose active modes of travel.

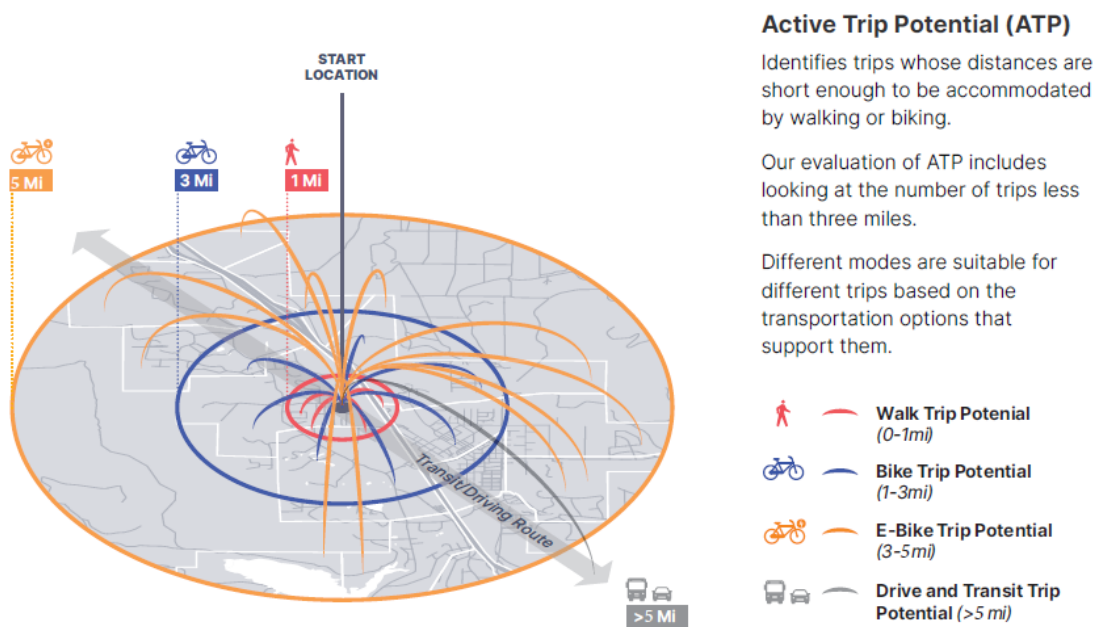


Figure 4: Active Trip Potential Graphic

Active trip potential analysis will be conducting for walking and rolling trips, bike trips, E-bike trips and transit trips.

Critical Areas

Critical Areas will be used as a **constraint** layer – meaning that areas with Critical Area designations will not assume any share of new housing, commercial space, or job growth. Critical Areas designated in the model include:

- **Geologic Hazard Areas:** areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events, are not suited to siting commercial, residential, or industrial development consistent with public health or safety concerns.
- **Fish and Wildlife Habitat Conservation Areas:** Areas that directly and indirectly impact fish and wildlife habitat quality, quantity, and connectivity to support long term, viable populations of fish and wildlife species. These areas are protected by placing buffers from shorelines, lakes, streams, rivers, and riparian areas.
- **Frequently Flooded Areas:** Lands within the floodplain which have at least a 1 percent or greater chance of flooding in any given year or are within areas that flood due to high groundwater. These areas can include streams, rivers, lakes, coastal areas, wetlands, and areas where high groundwater forms ponds on the ground surface.
- **Wetlands:** Areas that are inundated or saturated by surface water or groundwater that serve many important beneficial functions, which generally include swamps, marshes, bogs, and similar areas. Protection is designated by placing a buffer from these areas in accordance with Washington Department of Ecology Standards.

Critical Aquifer Recharge Area (CARAs) are defined as areas that have a critical recharging effect on aquifers used for potable water. Given the entire City of Vancouver is designated as a CARA, this will not be included as a modeled assumption in the Land Use Alternatives. However, inclusion of specific Public Water Supply wells may be included as a constraint feature in the model.

Climate Vulnerability

Climate vulnerability is defined as the sum of exposure to a changing climate, and the capacity of the community and place to cope with impacts of a changing climate. Two separate indices will be used as **context** layers to inform the impacts of placing new housing, employment or commercial space in areas where people or the environment is inherently more sensitive to the impacts of a changing climate. The first index that will be used in the model is a *Climate Exposure Index*, which shows where exposure to heat, flooding/precipitation, and air quality/fire/smoke **overlap**, highlighting where people may experience a compounding impact of multiple climate exposures. The index consists of the following components:

- **Heat Exposure** - Impacts of extreme heat waves and hotter conditions may be more intensely felt in certain areas due to the urban environment. Higher

concentrated impervious areas are harder to cool and have less tree shade to help mitigate heat.

- **Flooding / Precipitation Exposure** - Highlights areas where extreme precipitation events may have a disproportionately strong impact relative to other parts of the Vancouver area.
- **Air Quality / Fire / Smoke Exposure** - Shows where there are existing areas of poor air quality and higher fire risk, and where the impacts of future smoke and fire conditions may be compounded.

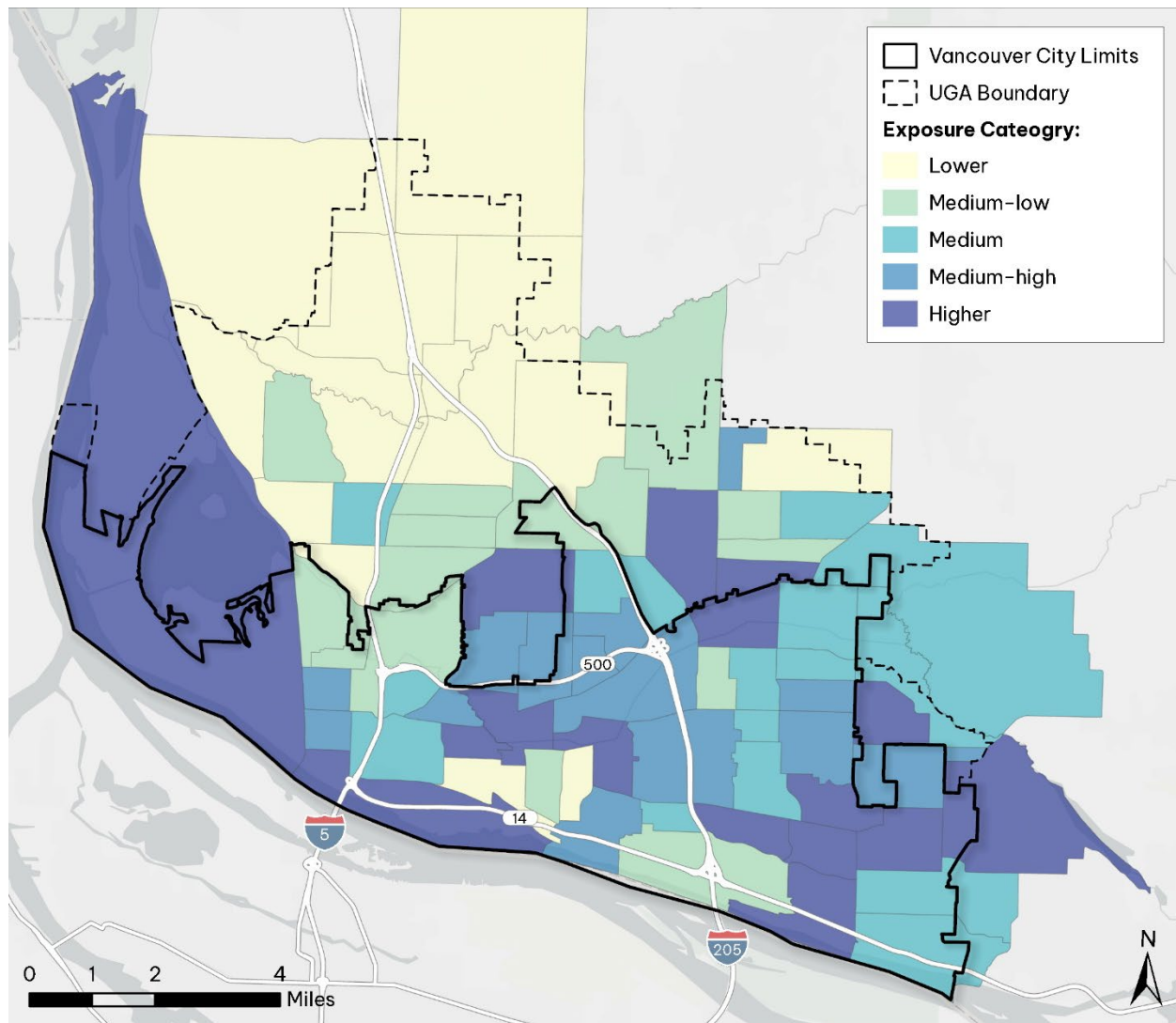


Figure 5: Climate Exposure Index

The second index used in the model is a Health Sensitivity Index, which shows where there are higher shares of the population with overlapping health sensitivities to extreme climate exposures, and highlights potential community health disparities. The index is comprised of health indicators obtained from CDC data that include information on Asthma, Coronary Heart Disease, Chronic Pulmonary Obstructive Disorder (COPD), Diabetes, Poor Physical Health, Poor Mental Health, and Low Insurance Access.

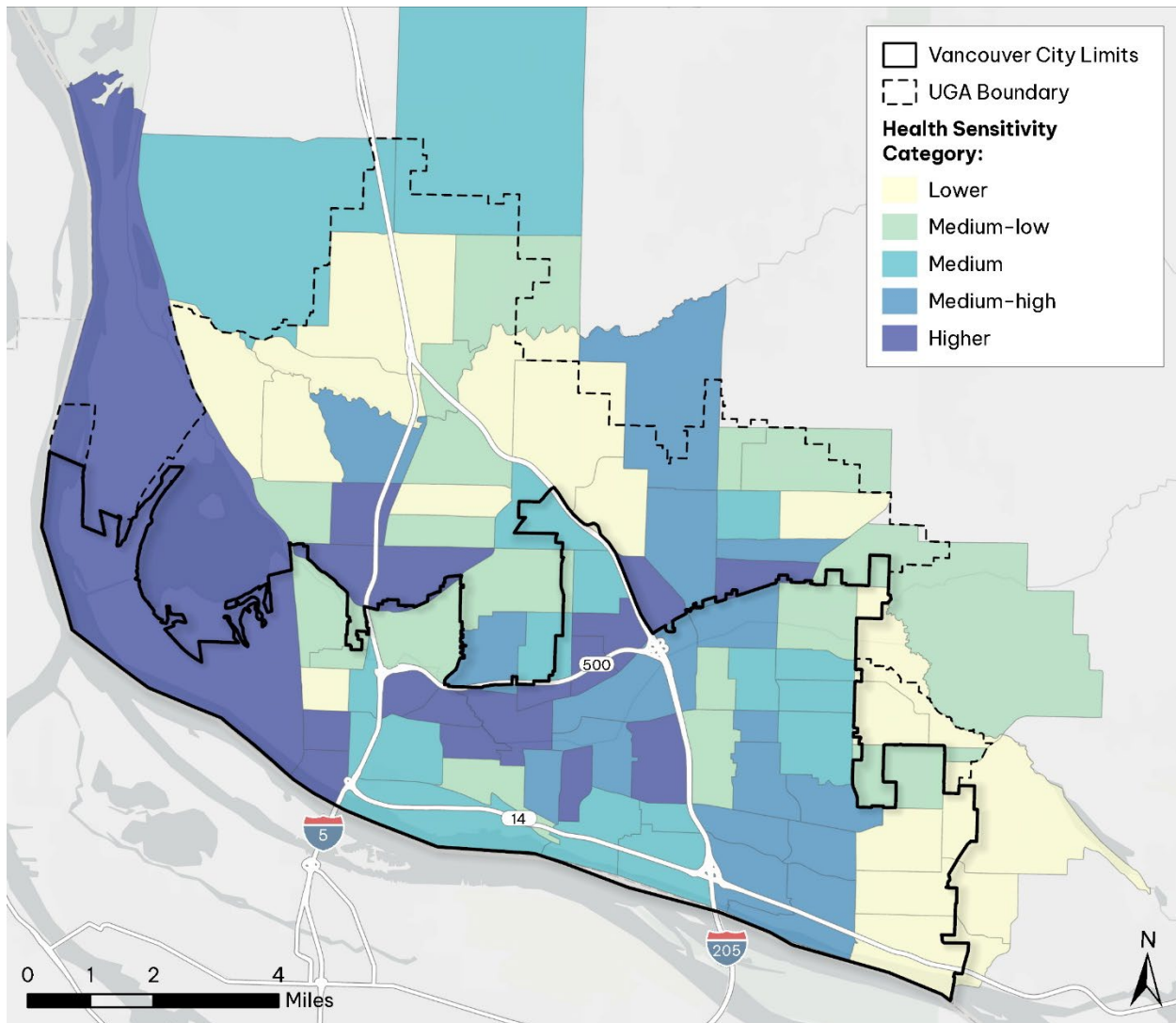


Figure 6: Health Sensitivity Index

Parks, Transportation and Infrastructure

Each of the alternatives will feature inputs for Parks, Transportation and Infrastructure that serve as a **context layer** to inform where new housing, commercial space, and employment growth should be focused in each of the alternatives. The data sources and layers that will inform them are as follows:

- The location of existing and planned park facilities as defined in the Parks Comprehensive Plan. The 2031 plan outlines a level of service standard of a 10-minute walk or roll (standard utilized in Parks Comprehensive Plan) for community members to access a public park or open space.
- The City's modal networks as defined in the Transportation System Plan, which designate the City's policy framework for investing in new networks for walking and rolling infrastructure, Bicycle and Small Mobility (BSM), transit and freight networks. Transportation and Land Use are highly interrelated – the ability to successfully implement 15-minute neighborhoods is dependent on collocating new housing and retail spaces in places where there will be targeted

programmatic investment in pedestrian and multimodal infrastructure. Commercial and industrial growth is highly dependent on freight access.

- The location and capacity of existing and planned water, sewer, wastewater, and electrical infrastructure.
- The location of new capital investments that support the growth of new housing and development.

Additionally, each of the alternatives will feature an analysis that looks at how they reinforce the chapter vision statements that were co-created with the Community Partners and technical staff and informed by existing City policy guidance. Each of the Alternatives may emphasize certain elements or key themes more highly than others or maintain an even balance between all the vision statement themes.

Next Steps

Following a Joint Planning Commission and City Council work session on April 1, three discrete alternatives will be developed in partnership with the Community Partners and presented to Council and Planning Commission during subsequent work sessions. Other key stakeholders from equity priority communities, community-based organizations, topic-specific stakeholder groups and the community at large will be engaged in developing the alternatives, and the project team will compile and report back on the outcomes, findings, takeaways, and key tradeoffs between the alternatives. Each alternative will reflect Council's core policy priorities of safety, equity and climate action and the community vision statement. Based on the feedback and input received, the project team will develop a proposed preferred alternative for Council, Planning Commission and community review. The project team anticipates Council endorsement of a preferred alternative in September of this year. The preferred alternative will then be evaluated through an Environmental Impact Statement (EIS) process and become the basis for the policy development phase of the project and the re-write of Vancouver Municipal Code Title 20 - Land Use and Development. It is likely that the preferred alternative will contain components of each of the three alternatives in response to community input, rather than a discrete selection of one over the others.

Staff Contact

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Rebecca Kennedy (she/her), Deputy Director, Community Development
Rebecca.kennedy@cityofvancouver.us



Work Session – Assumptions and Land Use Alternative Components

February 13, 2024

Agenda

- **Part 1 – Methods and Assumptions**

- ➔ The data inputs that will be used to inform all three Land Use Alternatives, and the assumptions that went into them

- **Part 2 – Alternative Components**

- ➔ What will the alternatives feature? How are we organizing information and conveying the vision?

- **Presenters**

- ➔ Dominique Martinelli (she/her), City of Vancouver
- ➔ Nicole McDermott (she/her), WSP
- ➔ Tyler Bump (he/him), ECONorthwest

Purpose

Create grounding and shared understanding in what each of the Land Use Alternatives will consist of, and what assumptions inform their development.



The Process



**Collect
Data**



**Develop
Assumptions**



**Workshops:
How We Grow**



**Evaluate
and Refine**



**Select
Preferred
Alternate**

A New Alternative.

- Each of the three (3) alternatives contained in **OUR VANCOUVER** will propose a new growth strategy for the City, envisioned for the year 2045. Below is the current strategy – Centers and Corridors, and the corresponding Land Use Designations assigned from it.

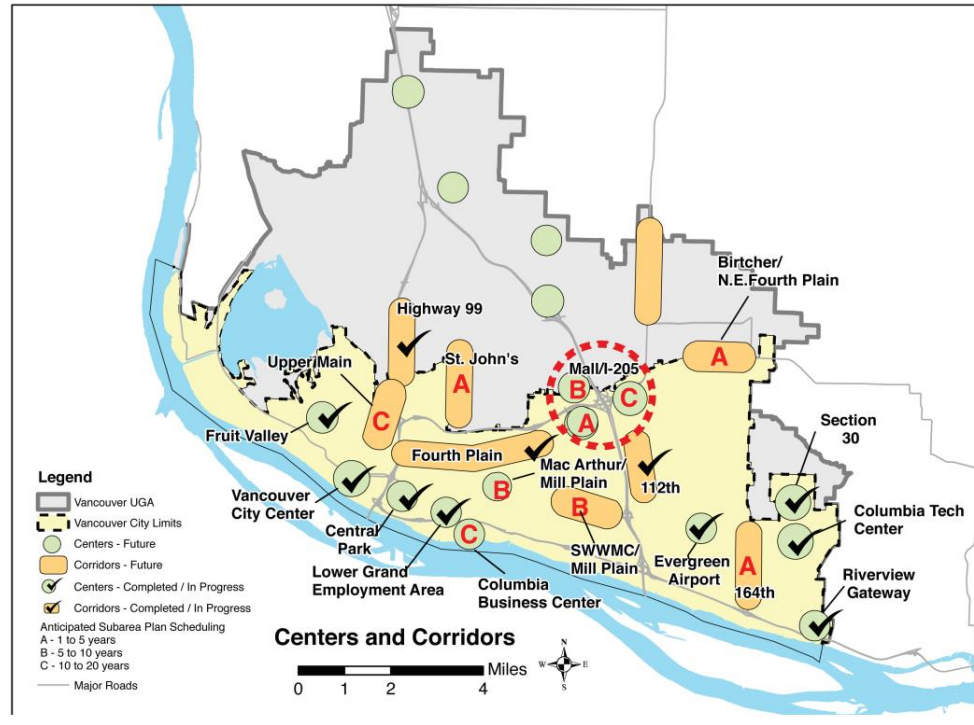


Figure 1-2. Comprehensive land use map showing designated types and intensities of land use allowed throughout the City of Vancouver. Source: City of Vancouver GIS.

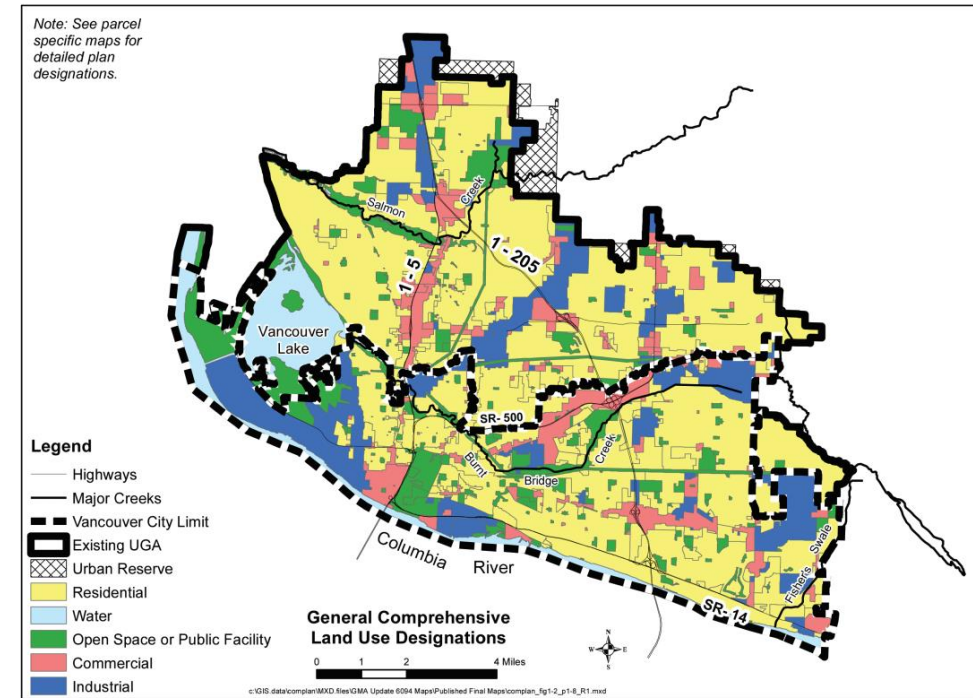


Figure 1-6. Comprehensive land use map showing designated types and intensities of land use allowed throughout the City of Vancouver. Source: City of Vancouver GIS.



Methods and Assumptions

Methods and Assumptions

- Serve as the **foundational inputs** for developing the three (3) alternatives.
- Assumptions made to develop inputs align with guiding City policy directives and best practices.
- Are data inputs that will remain constant between each of the three alternatives. Based on state level regulations, existing City policies, and other factors.
- The three alternatives brought forward will have community stories embedded in them.
 - ➔ Alternatives will reflect the key themes identified by the Community Partners, members of the community, and Community Based Organizations (CBO's).



Key Assumptions

Population

- 698,416 identified by Office of Financial Management as most likely for Clark County
 - Countywide population forecast of 718,154 adopted by County Council for 2045.
- City population forecast of **281,544**, based on maintaining last decade share (42%) of most likely county growth
 - Household size of **2.3** persons
 - Vacancy rate of **7.4%**

Housing

- ***38,128** new housing units by 2045
 - **Approximately 15,000 – 19,000** units below 80% of Area Median Income
 - **Up to 2,500** permanently supportive housing units
- **4 units per lot** on all lots where residential uses are permitted
 - **6 units** for lots within ¼ mile transit, or if 2 units are affordable

*Applies to current City boundaries – does not account for future annexation.

More on Housing

As of April 2023,
the City had **86,878** **estimated housing units.**

52% of these were **single-family units.**

57% of residents are **cost burdened**, meaning they pay more than **30%** of their income on rent.

- An estimated 1,733 housing units per year will need to be built between 2023 to 2045 to meet housing need in the City. Current production rate is 1,466 per year.
- Given housing crisis, our Housing Action Plan directs us to close deficit within 10 years, which will require 2,500 new units per year.
- Given land availability is decreasing, all three alternatives will assume changes in zoning to accommodate greater housing capacity.

Hmm... I wonder how we are going to fit all the new homes we need to meet our population growth within the amount of land resources we have in the City?



Some form of housing is allowed on **78%** of properties in the City*.

59% of those properties only allow the construction of a single-family home.



Key Housing Legislation

HB 1220

- *Plan for and Accommodate* housing need for all economic segments
- Demonstrate zoned capacity for need
- Analyze racially disparate impacts in housing

HB 1337

- Two Accessory Dwelling Units Per Lot, caps impact fees, reduced parking for ADU's

HB 1110

- Four (4) residential units per lot
- Six (6) residential units within ¼ mile of high capacity transit
- Max of one (1) off street space for lots under 6,000 square feet
 - ➔ Maximum of two (2) for all others

- **SB 5491** – single stair buildings up to six stories

- **HB 1042** – ease requirements for housing conversions from commercial buildings

Key Assumptions

Land Use

- All residences in the City will be accessible to a minimum number of amenities within a 15-minute walk or rolling distance by 2045. List of amenities being developed from Community Partner and general engagement input.
- Methodology for redevelopment potential will be greater than the County's model.

Employment

- Up to **44,609** new jobs by 2045
 - Higher end based on current jobs / housing ratio of 1.17 to 1.

Equity & Inclusion

- Equity and Displacement Risk indices will be used to *inform* **intensity** of development in node selection model.

Key Assumptions

Climate and Environment

- **Net zero** Greenhouse Gas Emissions (GHG) community wide by 2040 (Climate Action Framework)
- Climate Exposure and Health Sensitivity Indices will be used to *inform* **intensity** of development in node selection model.
- **Critical Areas** will be used as a *constraint* in node selection model – areas to **protect**.

Parks

- All parks in the City will be accessible within a 10-minute walk or rolling distance by 2045.

Infrastructure

- Existing utility locations and capacity as well as planned new capital investments will *inform* intensity of development.

Transportation

- TSP modal networks and potential for active walking or biking trips will *inform* intensity of development.

Vision

- Chapter vision statements and key themes developed by Community Partners will *inform* development of **place types**.



Alternative Components

Alternative Components

Each of the alternatives will be organized into the following elements:

Nodes

- The “**where**” of each of the alternatives. The areas in the City that we forecast the majority of growth and activity to occur. Nodes define boundaries

Intensity

- The “**how much**”. Captures the general form and scale of development. Assigned intensity of low, medium, or high, and shows the degree of change from existing conditions today.

Place Types

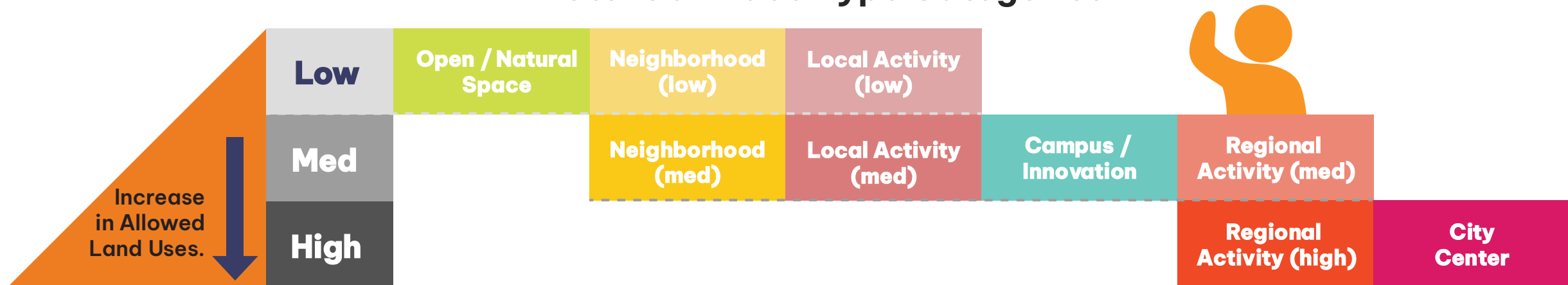
- The “**what**”. Specifies an intentional vision for a place, designates intended uses and other key design elements.

Intensity vs Place Type

- Each **node** will be assigned a **place type** *and* an **intensity**.
- Lower intensities will have greater restrictions on use, bulk and scale.

These designations will be the foundation for updating the Title 20 Land Use and Development Code during the final phase of OUR VANCOUVER .

Potential Place Type Categories



Example

Where: Node

How much: Intensity

What: Place Type

Intensity Scale:

Low Med High

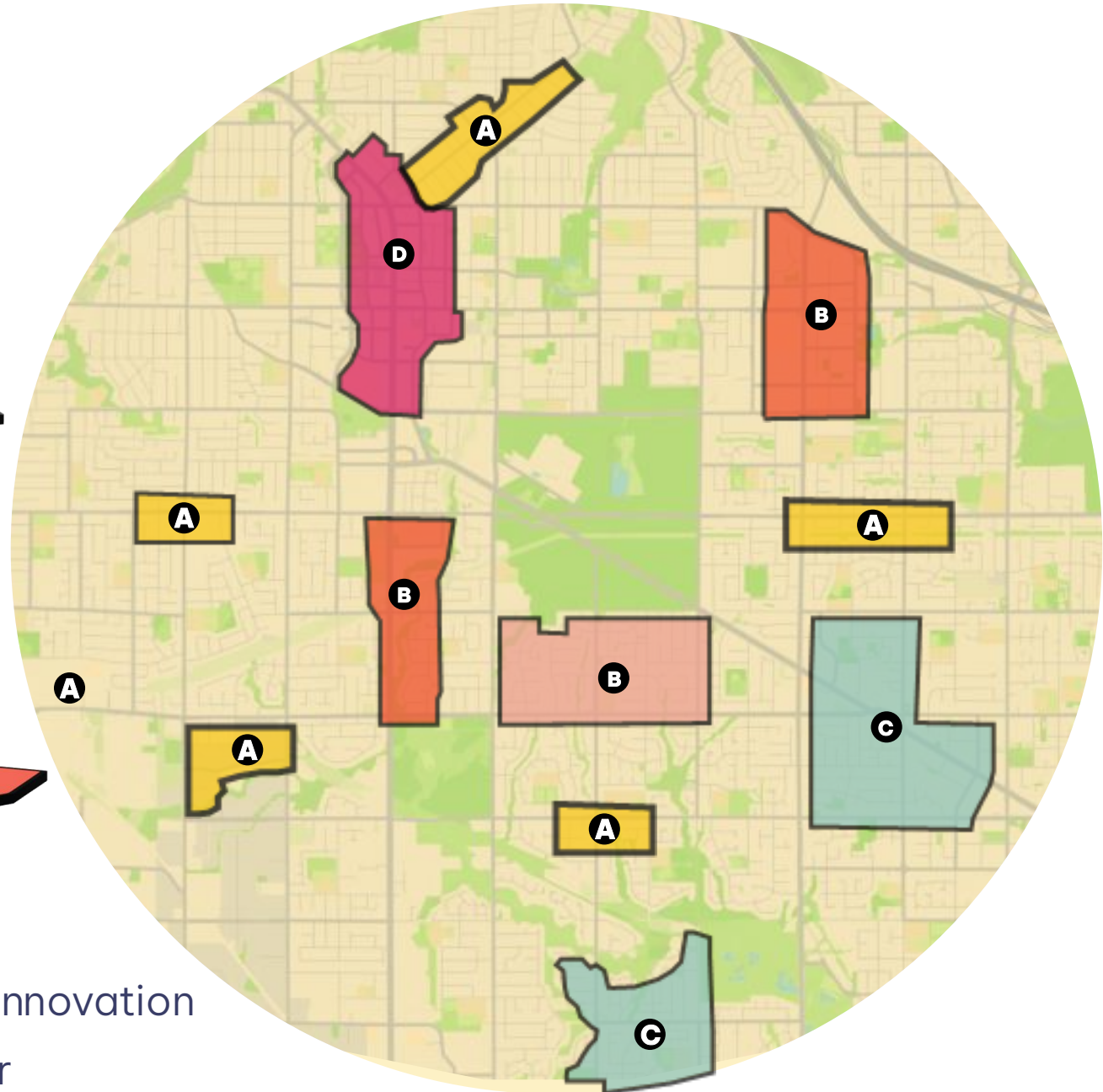
Place Type:

A Neighborhood

B Regional Activity

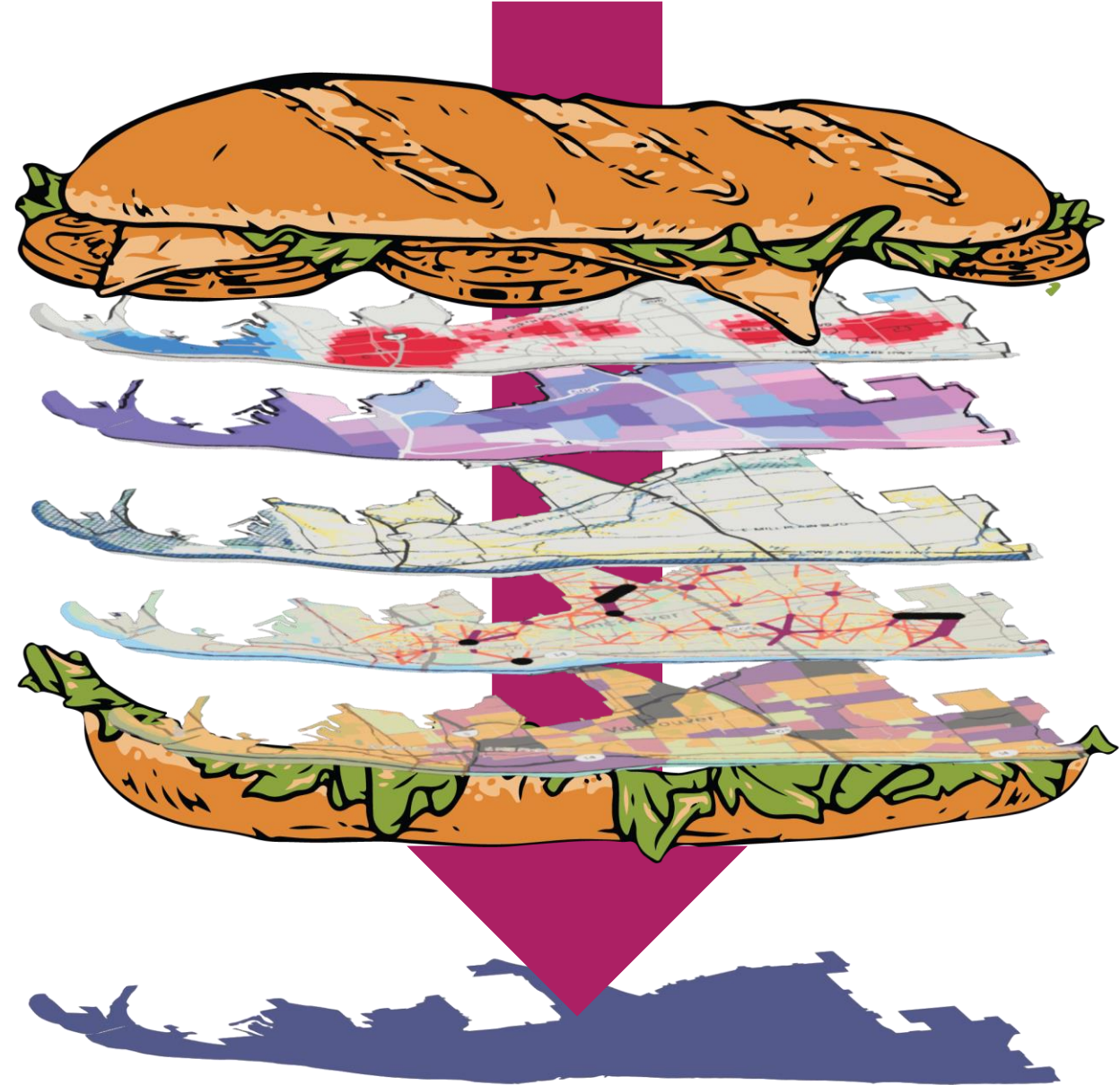
C Campus / Innovation

D City Center



Site Selection

- Assumptions with elements that can be mapped will be incorporated into the *site selection model* - to help determine where to place **nodes**, and the **intensity** of development assigned to them.
- Think of the model as a “*data sandwich*”, consisting of multiple layers of data compressed into one analysis.



Up Next

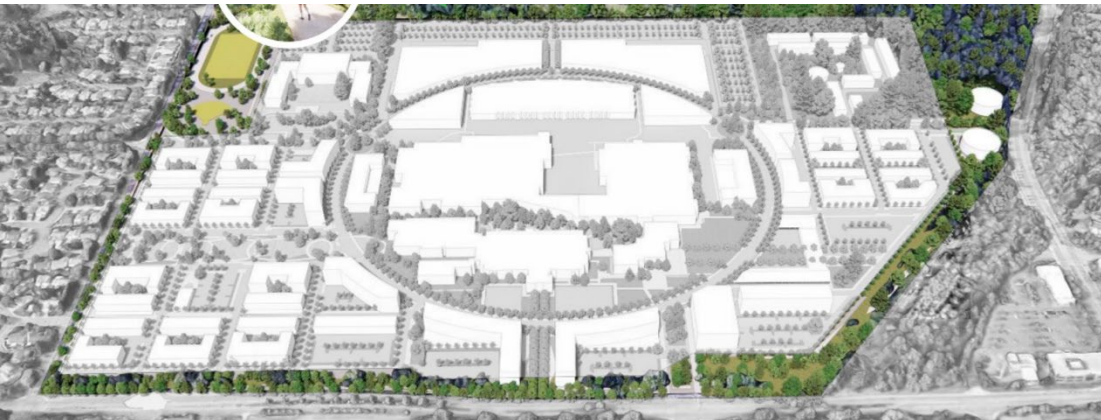
- Community survey is live
- April 1st: Joint Planning Commission City Council
 - ➔ Joint participation in Land Use Alternatives Exercise
- May 14th : Initial Planning Commission review of three (3) draft alternatives
- July 9th : Initial Planning Commission review of preferred alternative

Members of the public
will be engaged in the
alternatives exercise
**Early April through
Late June.**





CITY OF
Vancouver
WASHINGTON



Vancouver Innovation Center Revised Master Plan and DA

Mark Person, Senior Planner
Community Development Department

Patrick Quinton, Director
Economic Prosperity and Housing
February 13, 2024

Agenda



Site History



**Existing and
Proposed
Revised Plan**



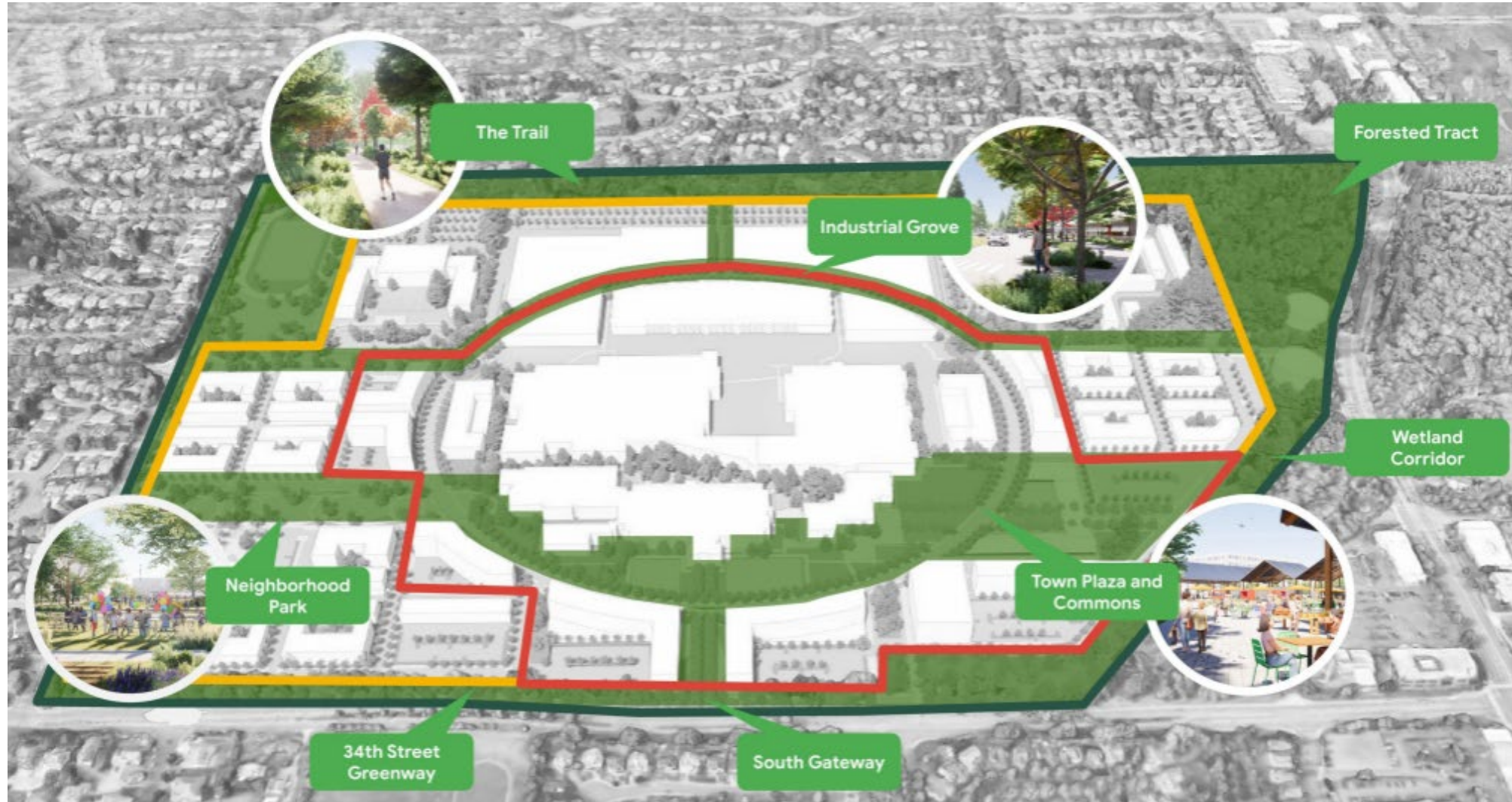
Policy Context



Next Steps



Revised Master Plan



Site History

- 179-acre site originally developed by Hewlett-Packard, approximately 715,000 square feet of existing buildings onsite
- Comprehensive Plan designation and zoning change (Light Industrial to Mixed Use) and Master Plan and associated development agreement approved in 2021
- 200,981 square foot industrial building approved north of the existing building under the existing master plan



Revisions to the Master Plan/Development Agreement

Original Master Plan	Proposed Revisions
Main East-West Road	Central Loop/ Ring Road
Defined Open Space LUA	Open Space as an overlay throughout the campus
Detached Single-Family Residential LUA	Removal of detached Single-Family Residential
Density- up to 1,200 Residential Units	Increased density to 1,800 Residential Units
No Affordable Housing Commitment	Commitment to Affordable Housing through MFTE
Commercial node/Town Center (subject to future master plan amendment)	Commercial node/corridor extending from the Town Center through the Central Loop/ Ring Road

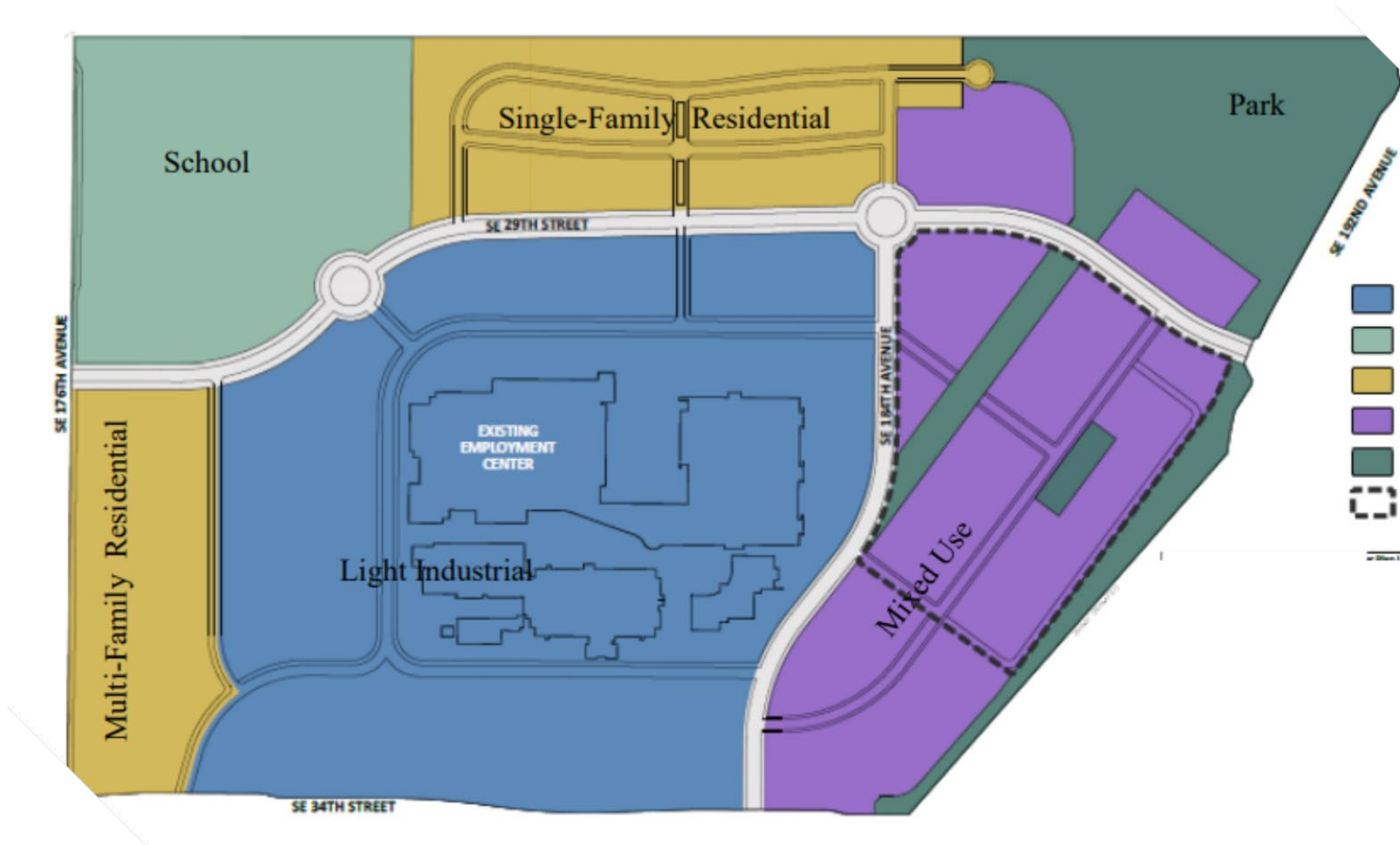


Revisions to the Master Plan/Development Agreement

Original Master Plan	Proposed Revisions
Forested area access acquisition – no clarity on ownership, development and management	Clarity on Forested area acquisition, timeline for development and City management
Hotel and Community space allowed as Type III application	Hotel and Community Space allowed as a Type II application
School as part of the Master Plan	School removed – Sold to Evergreen School District
Specifically defined phasing of development	Phasing to follow infrastructure and market needs (complying with the vision of a walkable neighborhood)



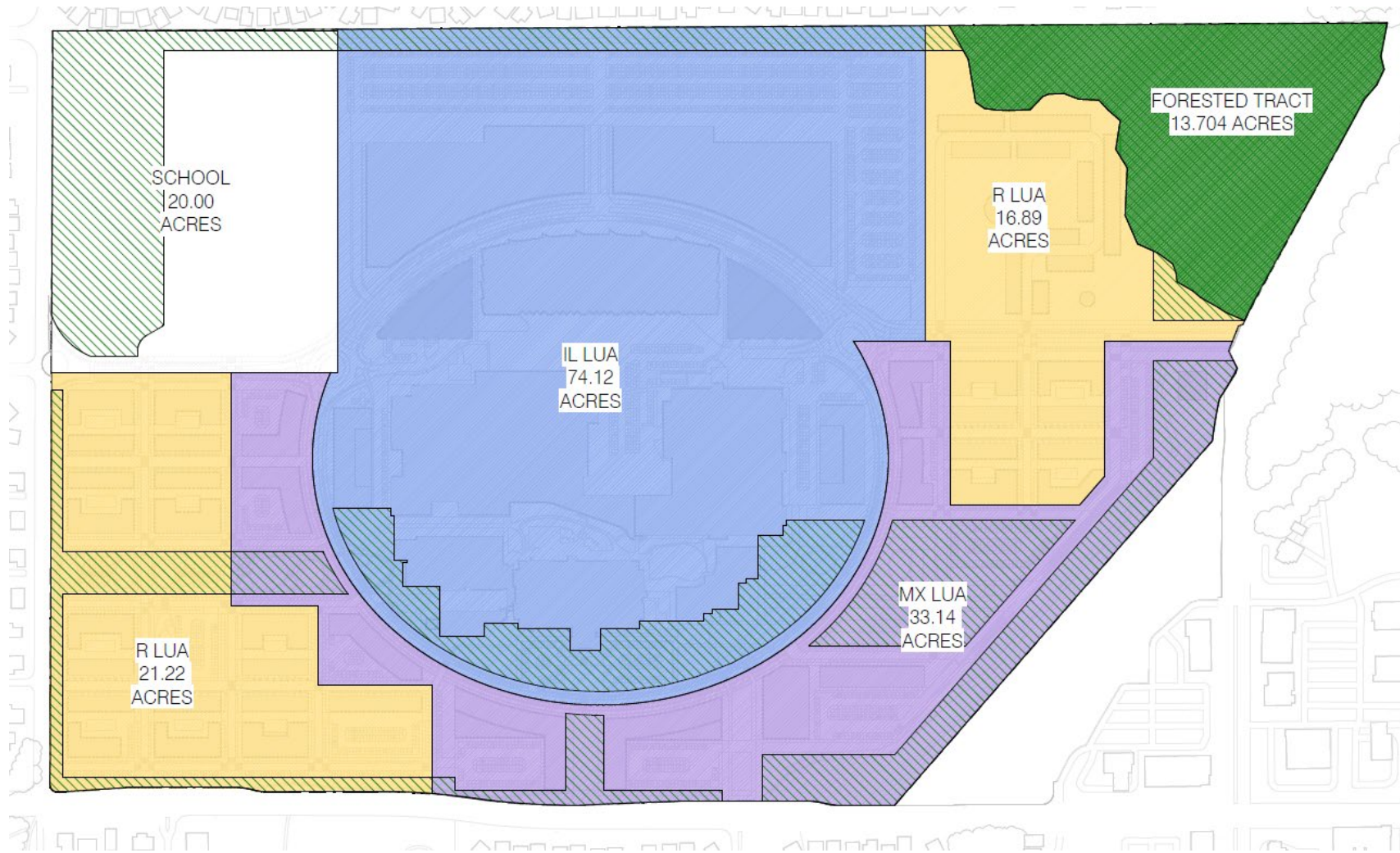
Approved Master Plan



- Single-Family Residential LUA
- Non-integrated LUAs
- East- West Main Road
- Defined Open Area
- Light Industrial dividing the campus



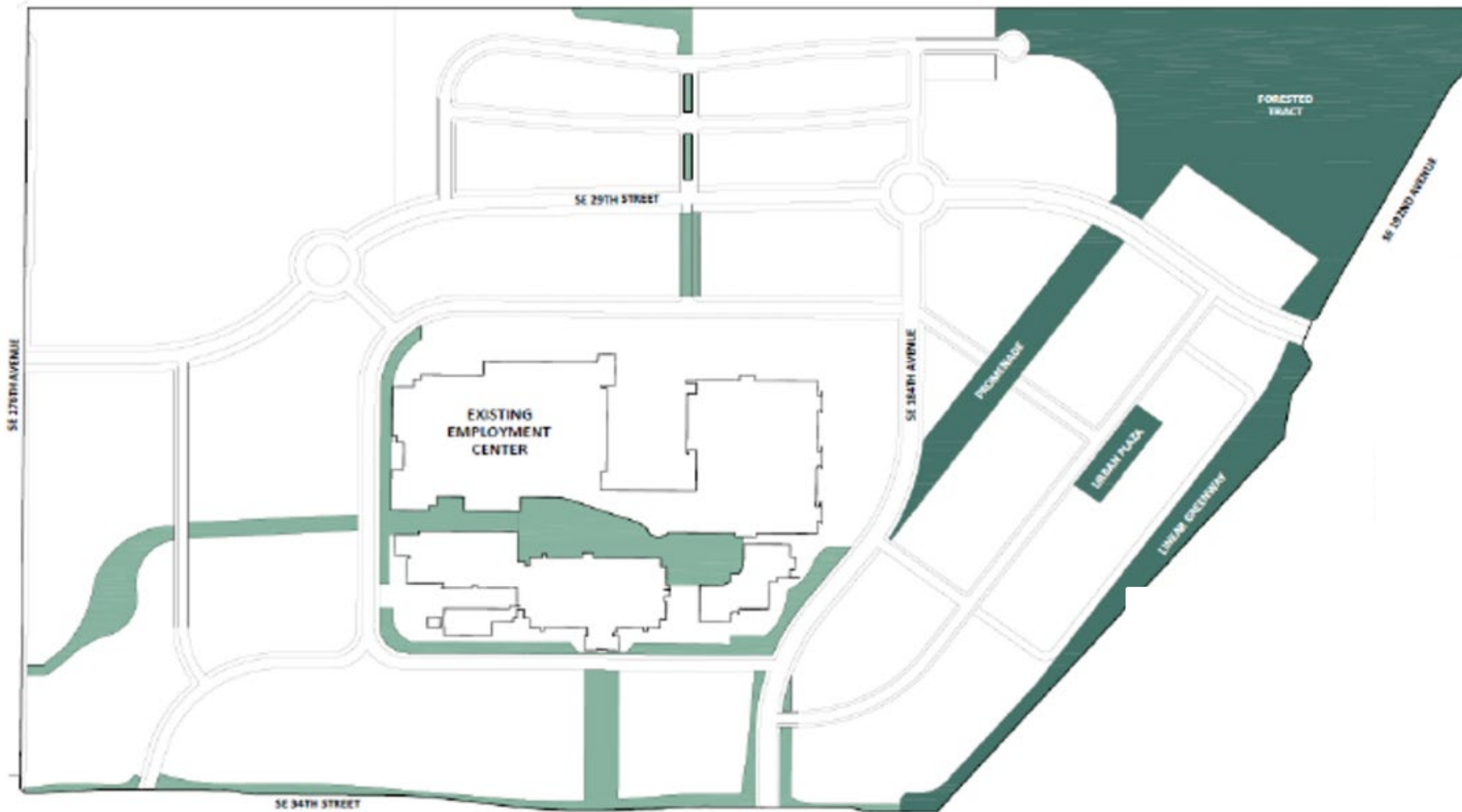
Revised Master Plan



- Consolidated Residential (R) LUA
- Central Loop/ Ring Road
- Open Areas throughout the campus
- Mixed-use Area connecting the different areas



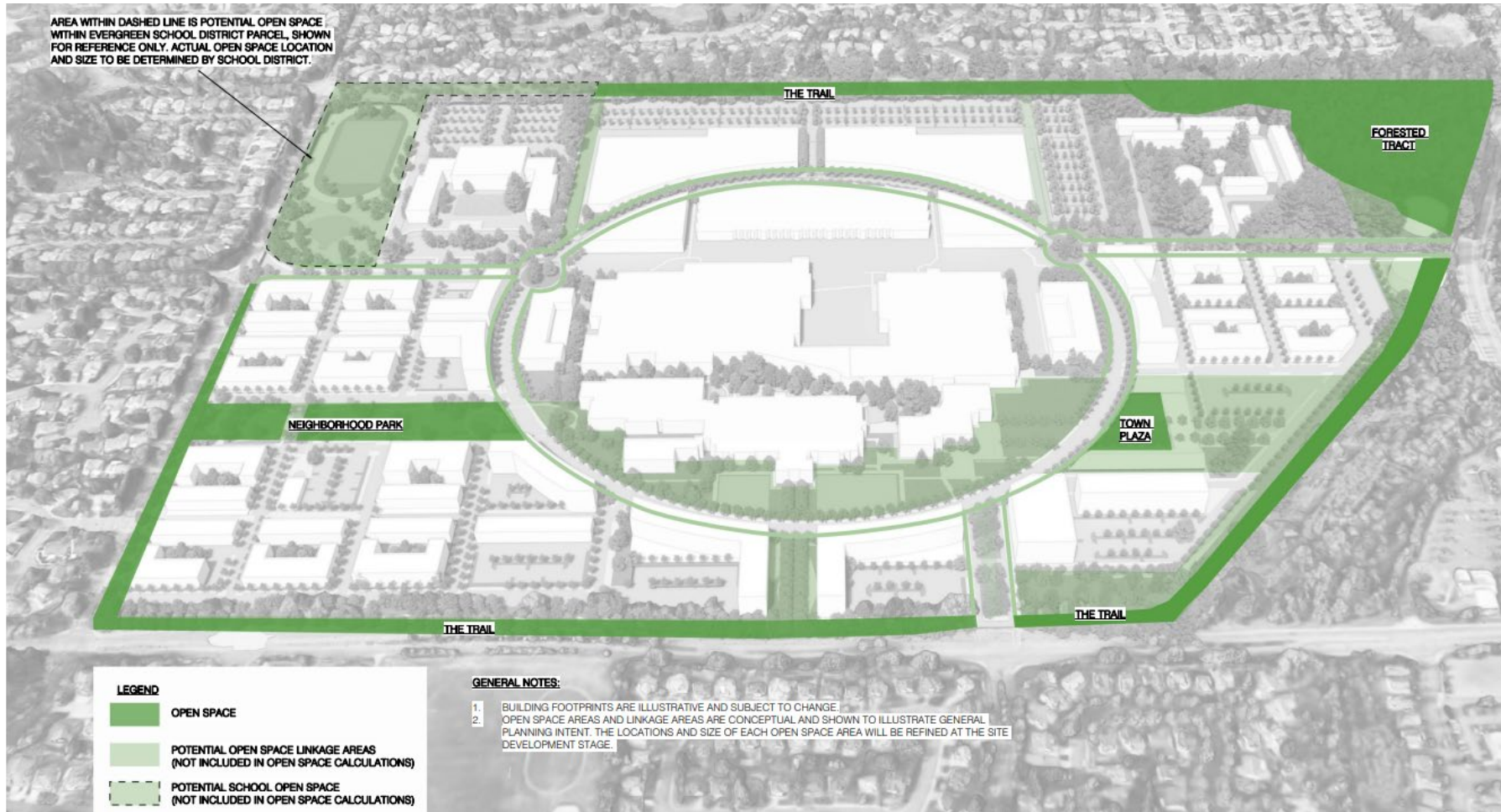
Approved Open Space



- 19 Acres of Open Space
- Silver Leaf Tree Cap canopy goal– 30% coverage



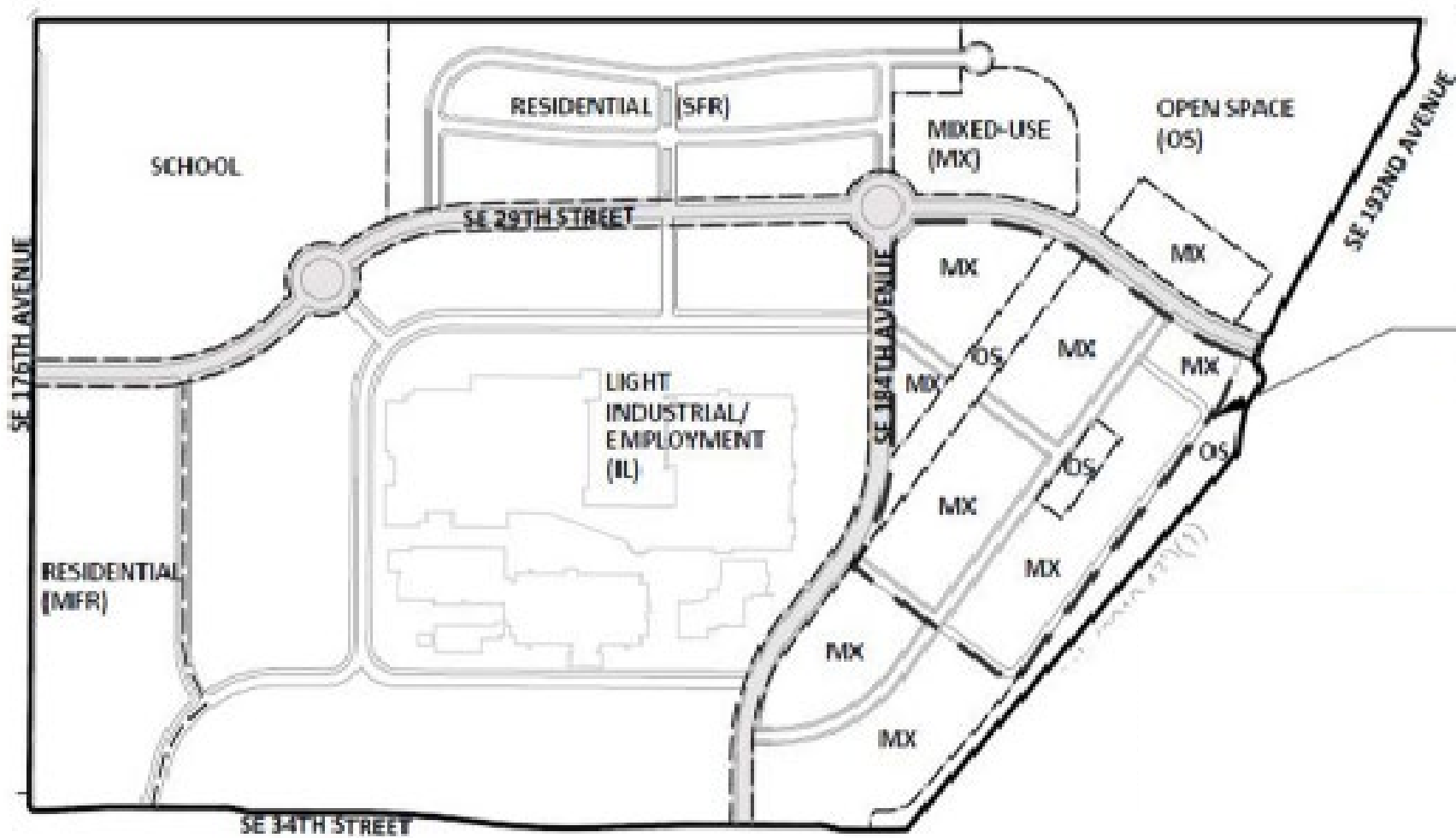
Proposed Open Space



- 24 acres of Open Space (excluding school area)
- Silver Leaf Tree Cap canopy – 30% coverage
- Trail around campus



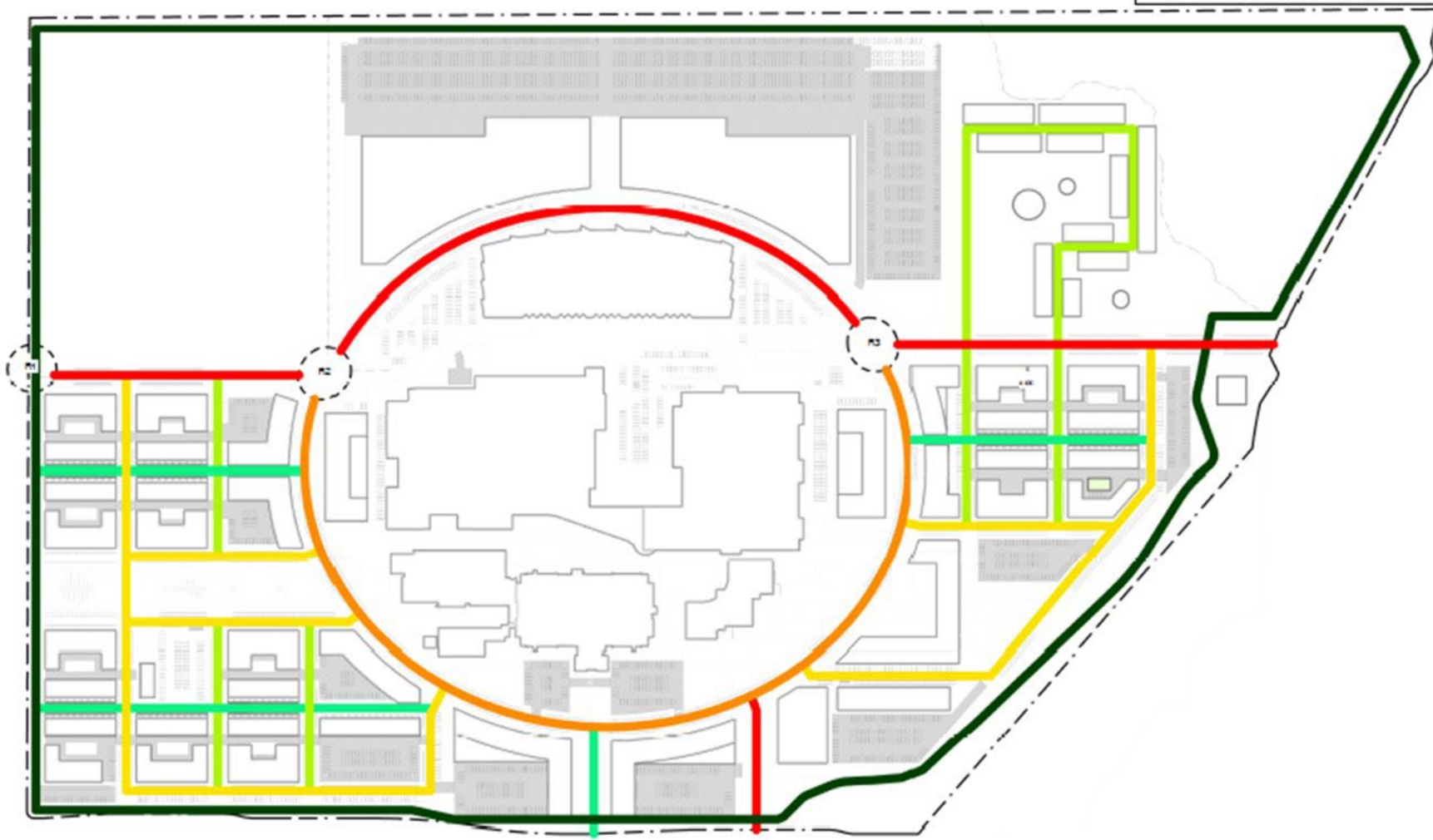
Approved Transportation Network



- East- West/
North- South
main roads



Proposed Transportation Network



- Central Loop/ Ring Road for better connectivity and traffic
- Additional local roads for better connectivity and multi-modal access



Public Outreach

Applicant outreach:

- Virtual open houses on January 30, 2023, January 29, 2024, and January 31, 2024
- Direct mailing to properties within 500 feet
- Project website

City outreach:

- Pre-application conference notification
- Direct mailing to properties within 500 feet
- Contact to parties of record that testified during the original master plan and zone change



Sustainability

- Optimizing Green performance of existing building
- Electrification of all residential building systems
- EV charging availability throughout the campus
- 30% Tree Canopy - Silver Cap
- Compliance with interim Green Building Policy



Recommendation

- Staff Recommendation: Recommend approval of the revised master plan and associated development agreement.
- Based on the February 13, 2024 public hearing discussion and staff report findings, the Planning Commission recommends that the City Council approve the Vancouver Innovation Center master plan and development agreement revisions.



Next Steps

- Council Workshop
- Council Hearing



Discussion



Site/Aerial Photo



Approved vs. Proposed LUAs

Approved	
LUA	Acres
School	20
Open Space	19.1
LI	67.2
Residential	30.4
Mixed Use	31.9
ROW	10.5
Total	179.1

Proposed	
LUA	Acres
School	20
Forested Tract	13.704
LI	74.12
Residential	38.11
Mixed Use	33.14
ROW	Within the LUA
Total	179.1

Open Space, outside of the Forested Area, is within each LUA. 24 Acres total proposed Open Space



February 13, 2024

Rabina / New Blueprint Partners

Vancouver Innovation Center

SHoP Architects

Development Team



Design Team



Urban Design +
Masterplan Architect

Design Team Lead



Masterplan Local
Architect



Landscape Architect



Civil Engineer



MEP/Sustainability



Land Use Advisory



Traffic Engineer



Land Use Attorney

Why has the Masterplan Evolved?

Why has the VIC Masterplan evolved?



Why has the VIC Masterplan evolved?

More multi-family housing to align with the City's density goals

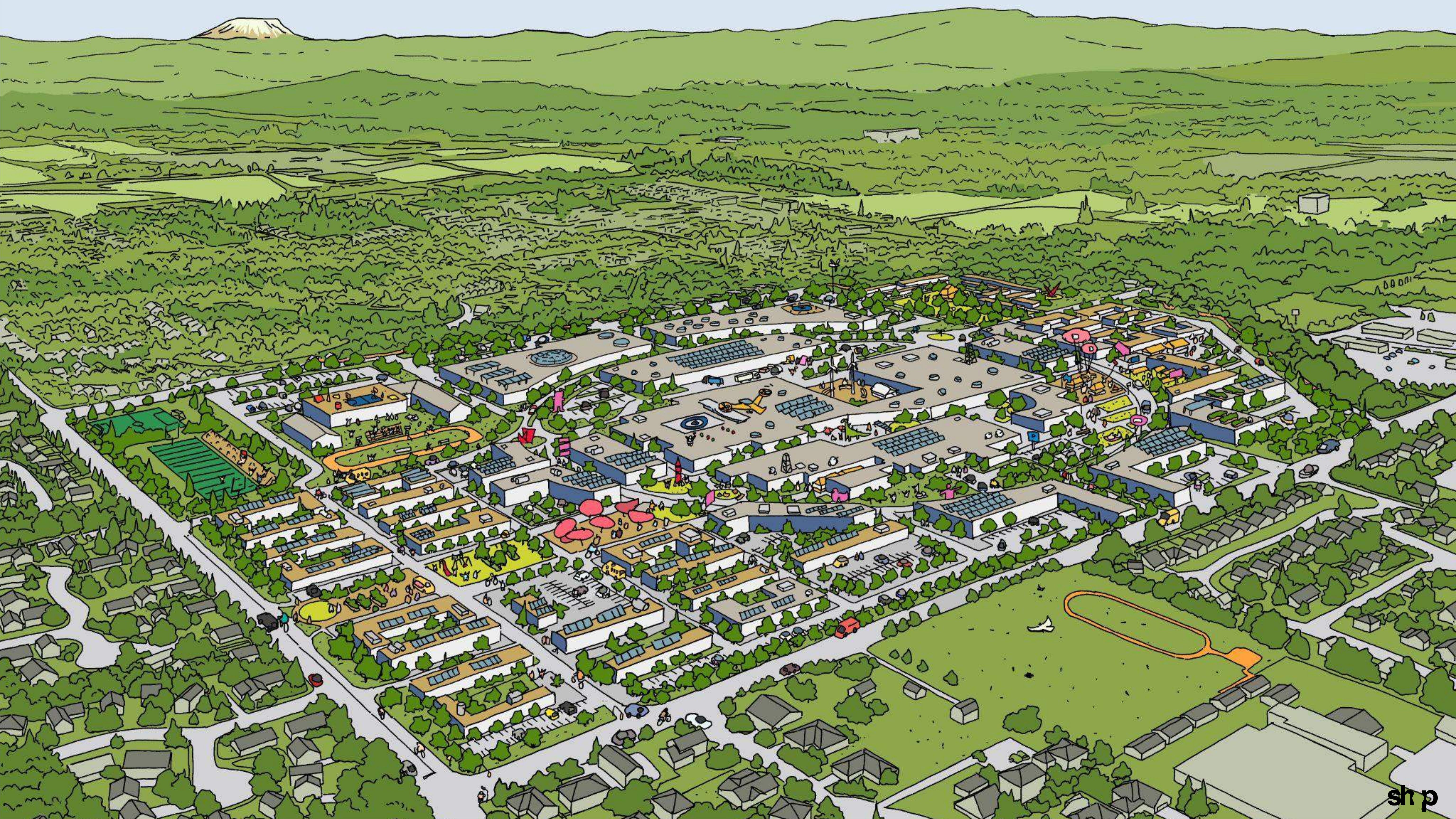
Streamline street network and separate traffic flows

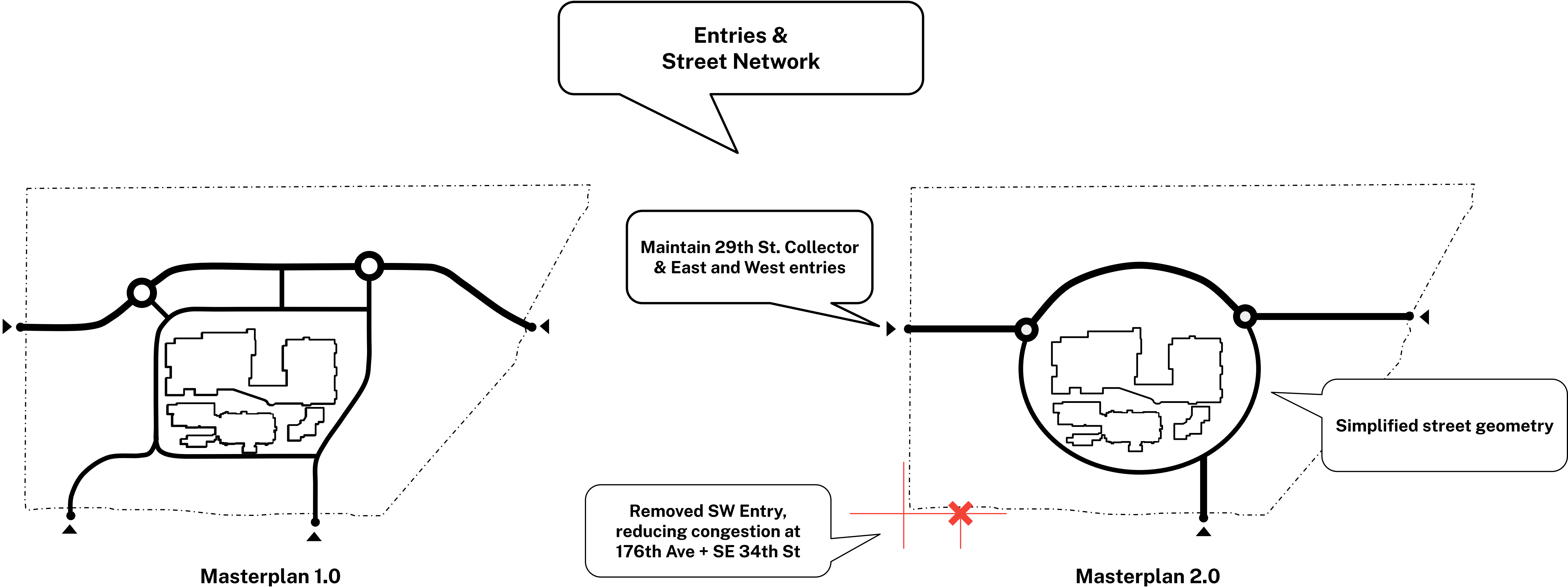
Larger, more contiguous open space network

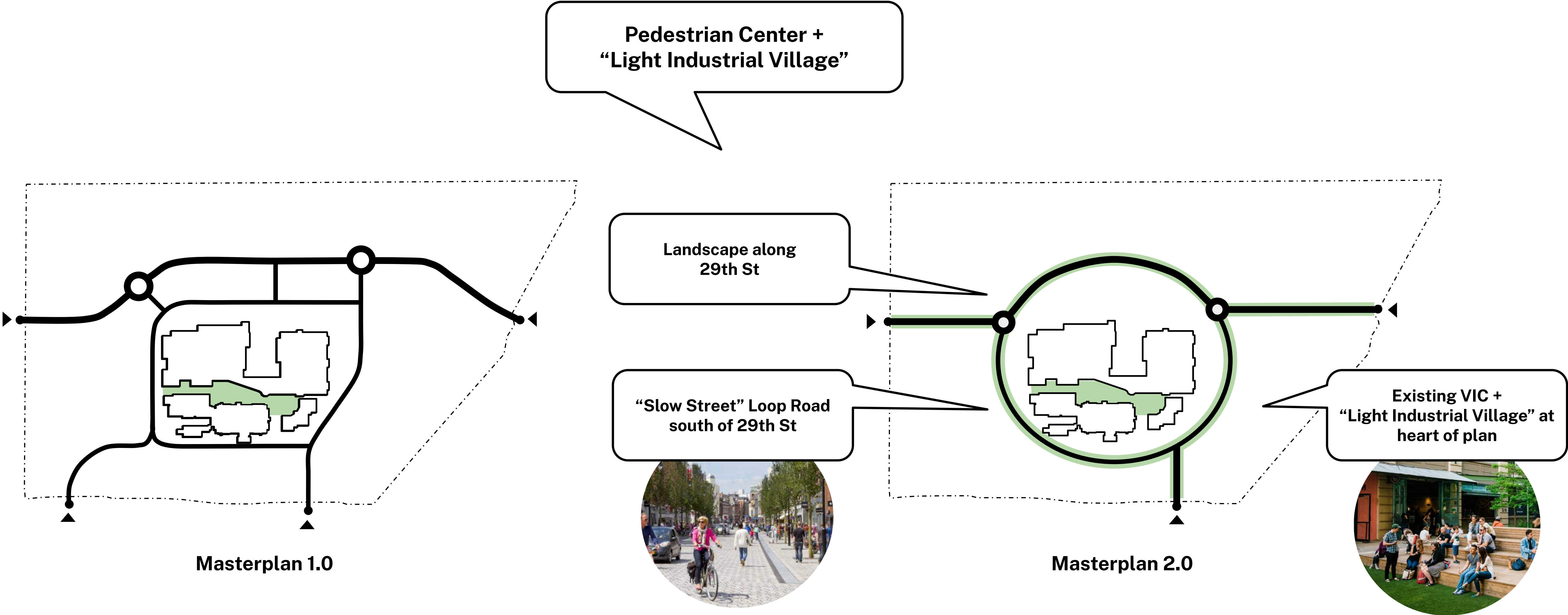
Better integration between neighborhoods, anchored by VIC Commons and Mixed Use

Larger building footprints to attract innovation- focused employment

How has the Masterplan Evolved?

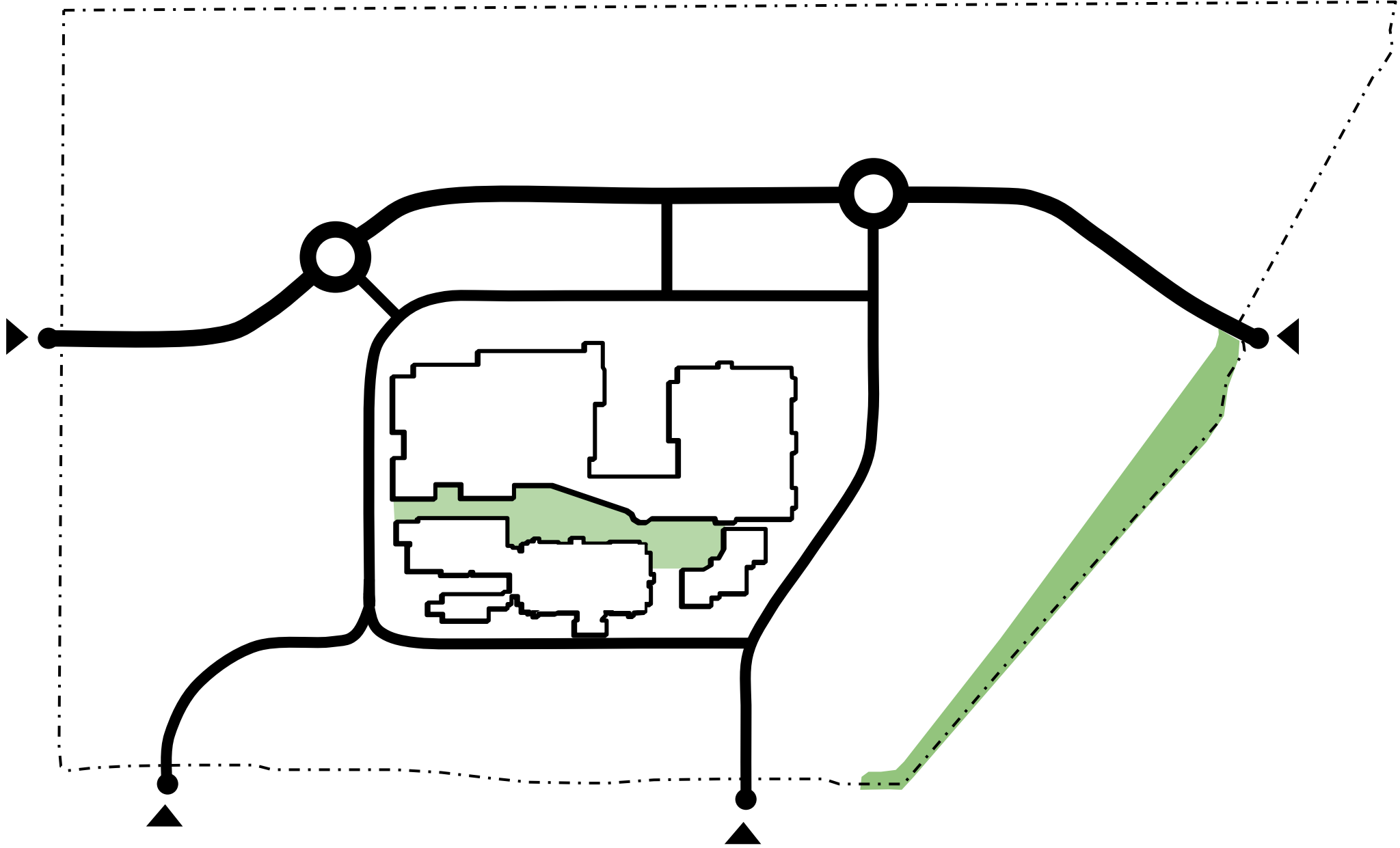




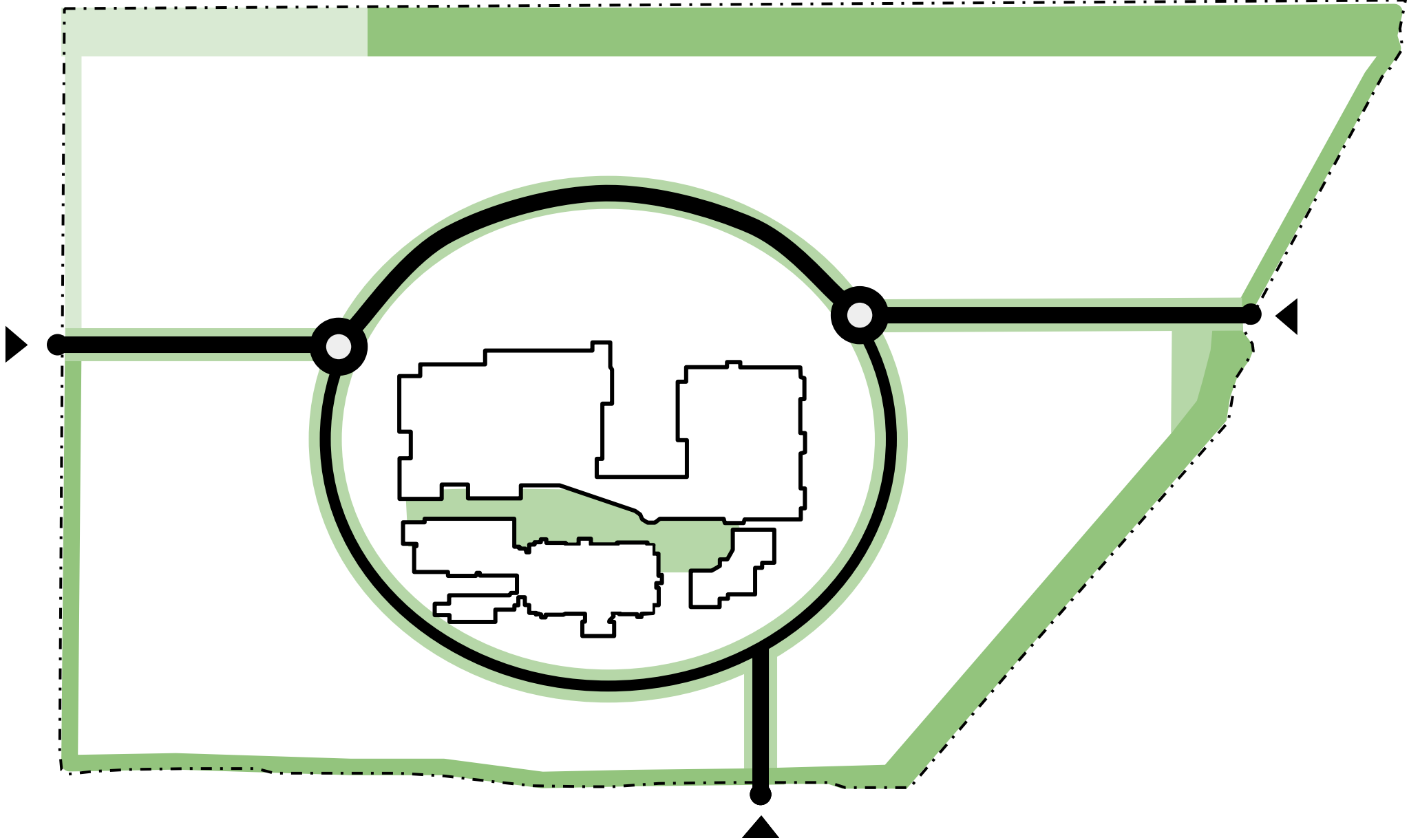


Green Edge Trail

Multi-use
bike and pedestrian trail

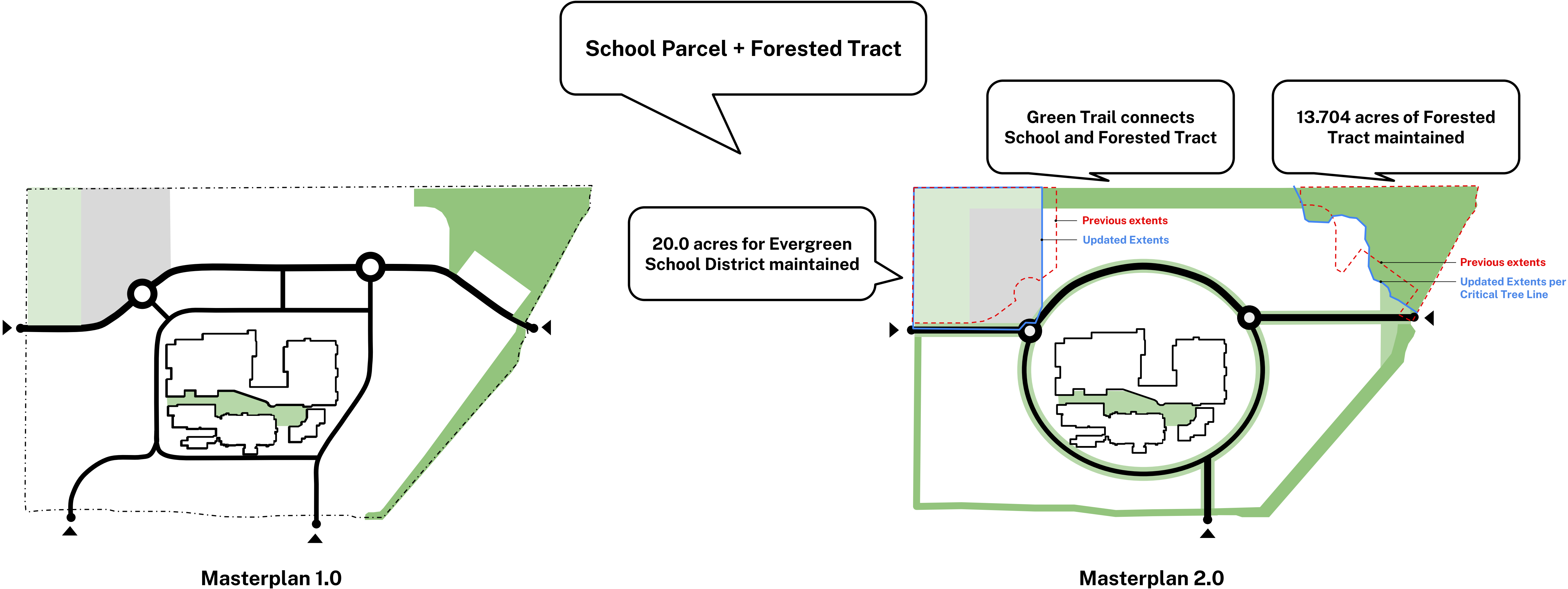


Masterplan 1.0

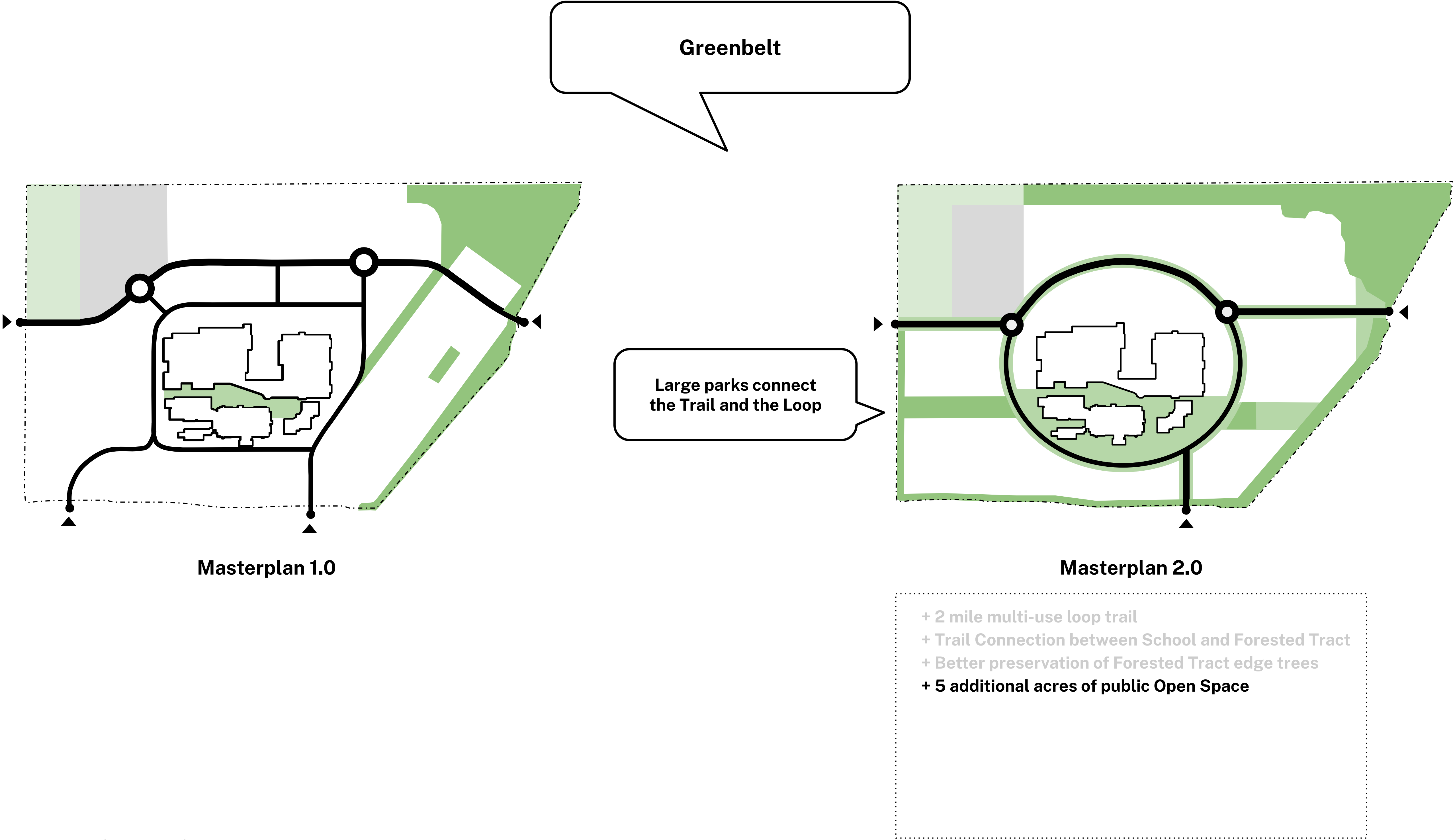


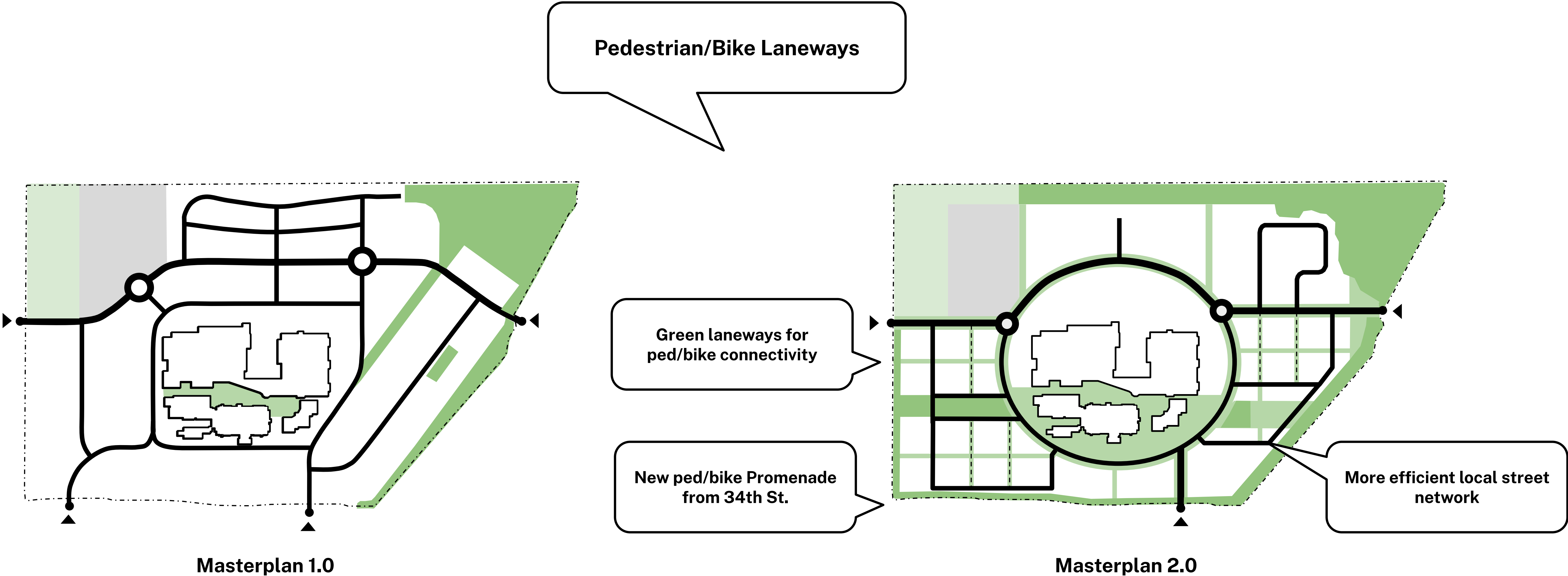
Masterplan 2.0

+ 2 mile multi-use loop trail

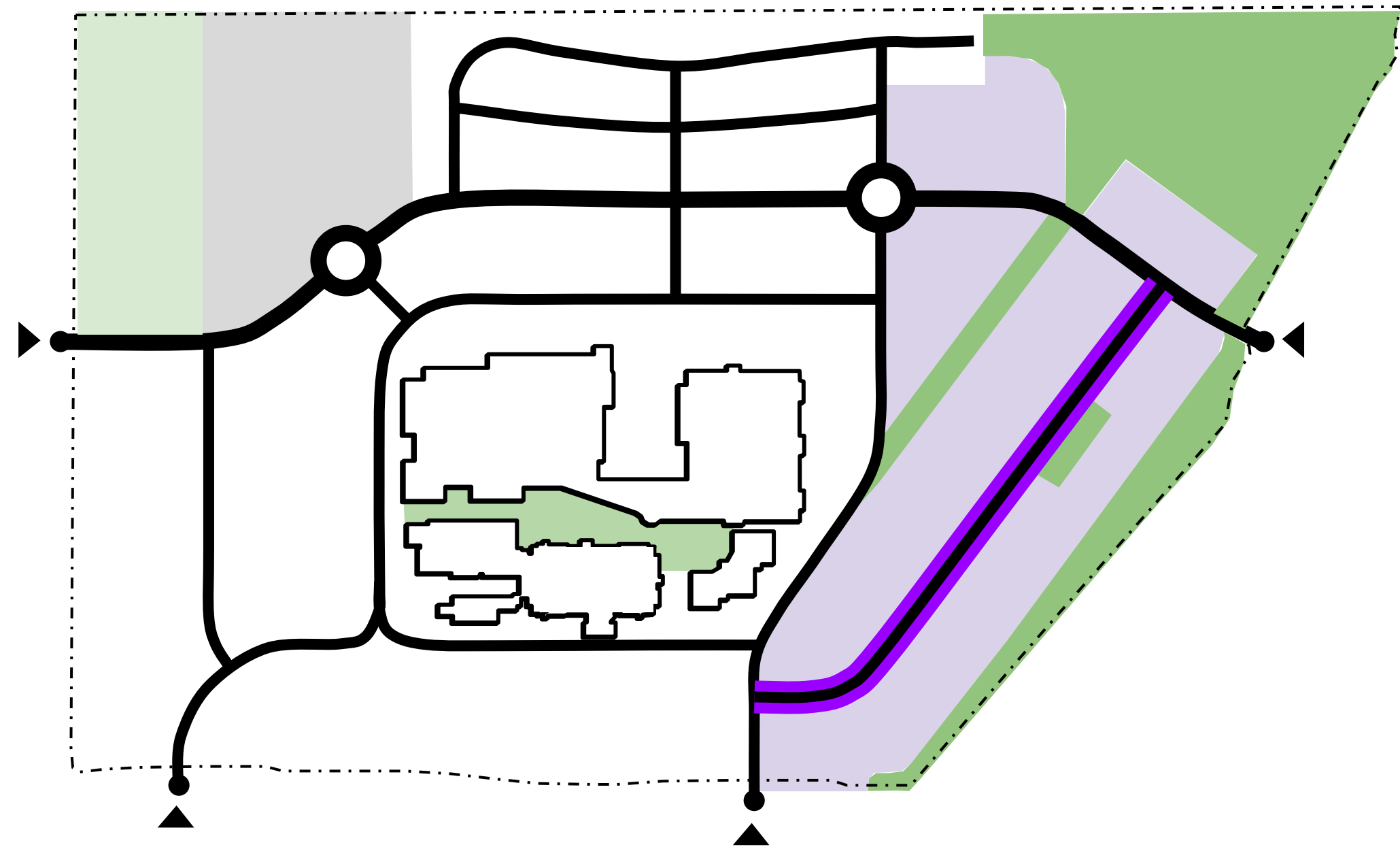


- + 2 mile multi-use loop trail
- + Trail Connection between School and Forested Tract
- + Better preservation of Forested Tract edge trees





- + 2 mile multi-use loop trail
- + Trail Connection between School and Forested Tract
- + Better preservation of Forested Tract edge trees
- + 5 additional acres of public Open Space
- 17% reduction in paved street area
- + 1.3 miles of pedestrian- and bicycle-first laneways



Masterplan 1.0

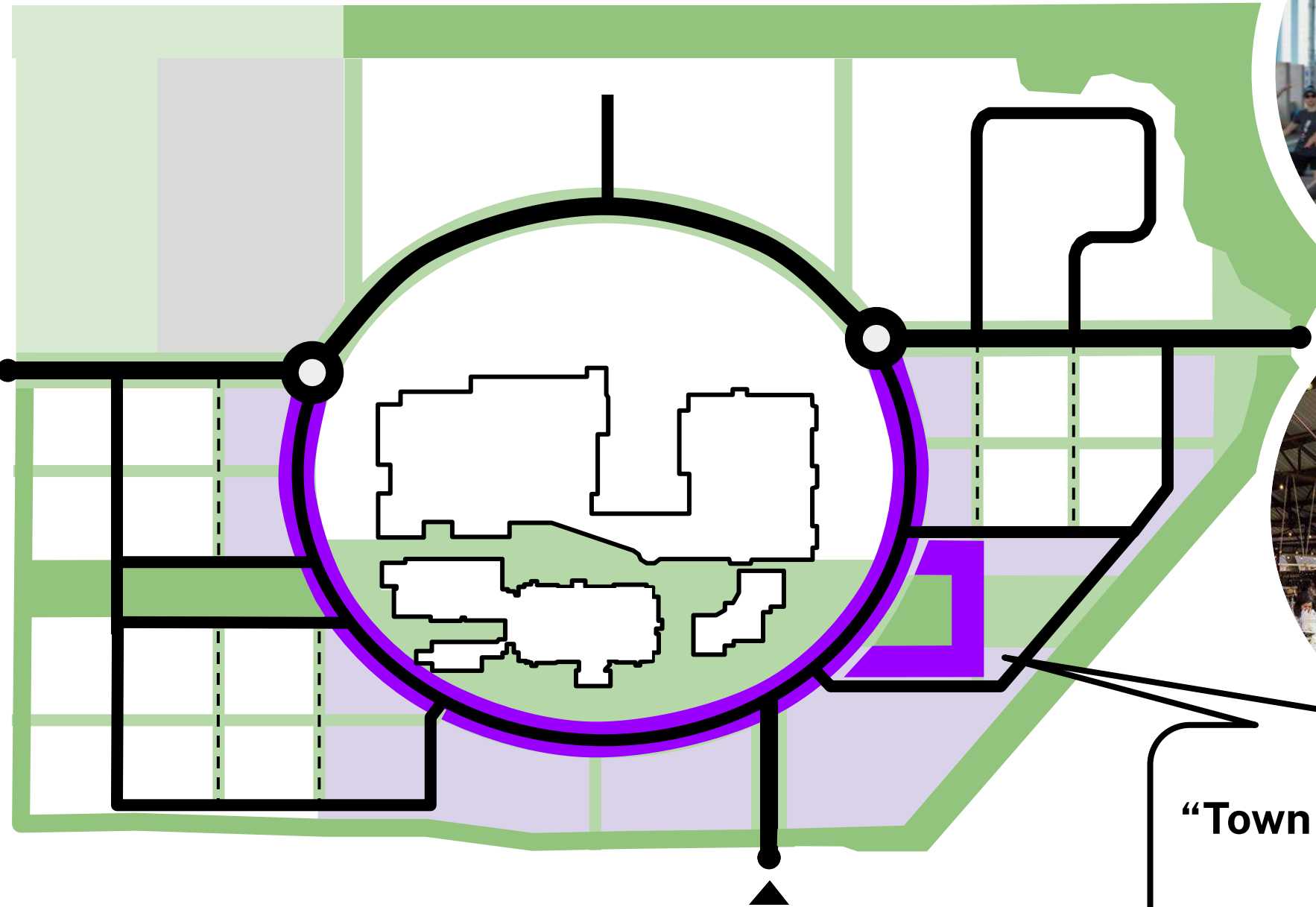
Mixed Use Zones +
Town Center



“Slow Street” urban
experience along The Loop

All MX moved south of
29th St along The Loop

Density increased along
The Loop (total 1800 DU)

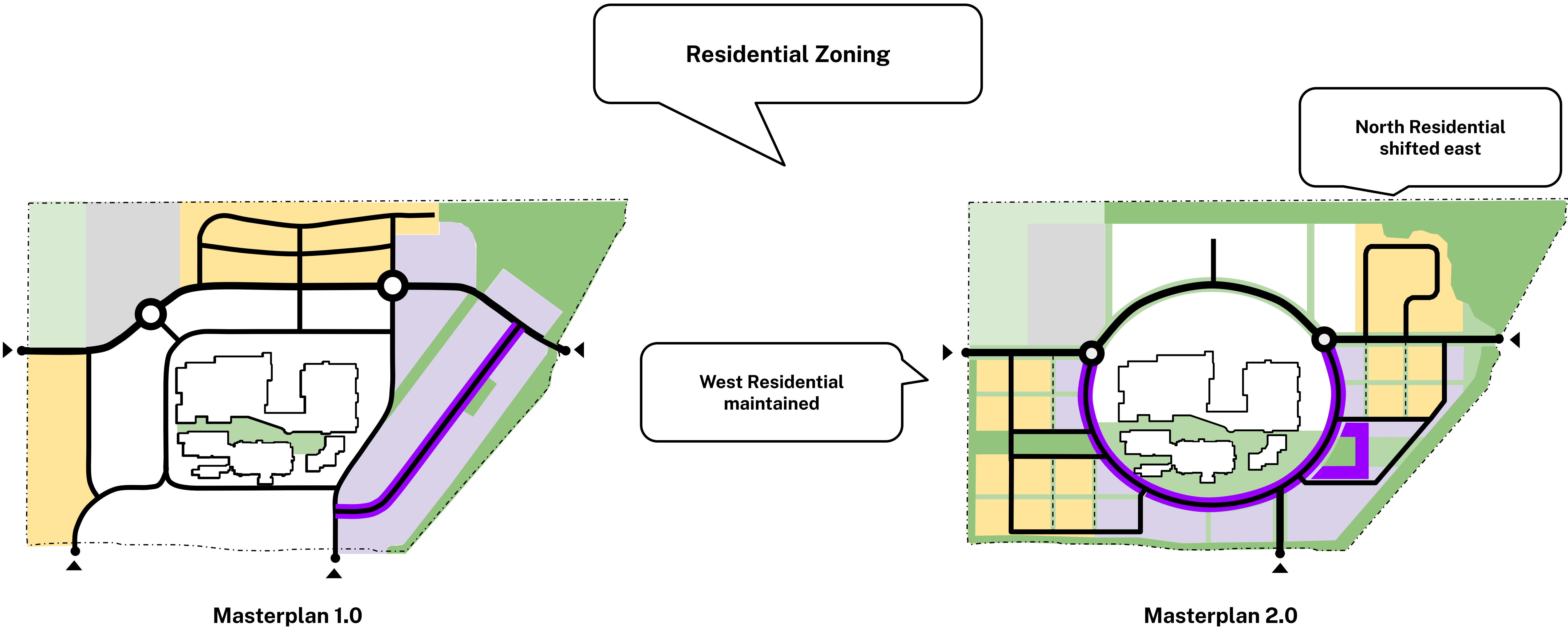


Masterplan 2.0

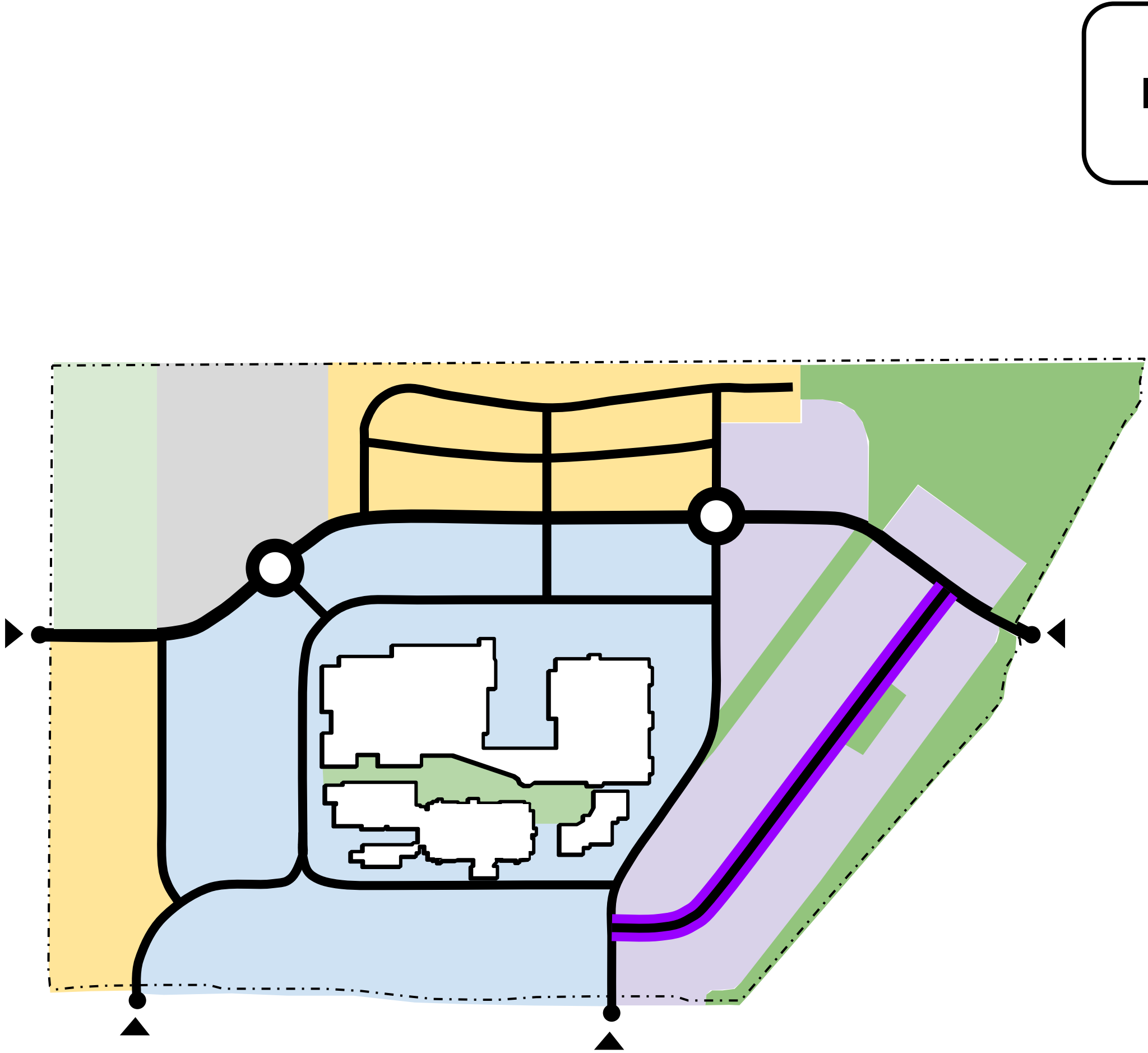


“Town Plaza” hosts events +
programming

- + 2 mile multi-use loop trail
- + Trail Connection between School and Forested Tract
- + Better preservation of Forested Tract edge trees
- + 5 additional acres of public Open Space
- 17% reduction in paved street area
- + 1.3 miles of pedestrian- and bicycle-first laneways
- Mixed Use + Denser Multifamily focused around Loop**
- + Town Plaza for events + programming**

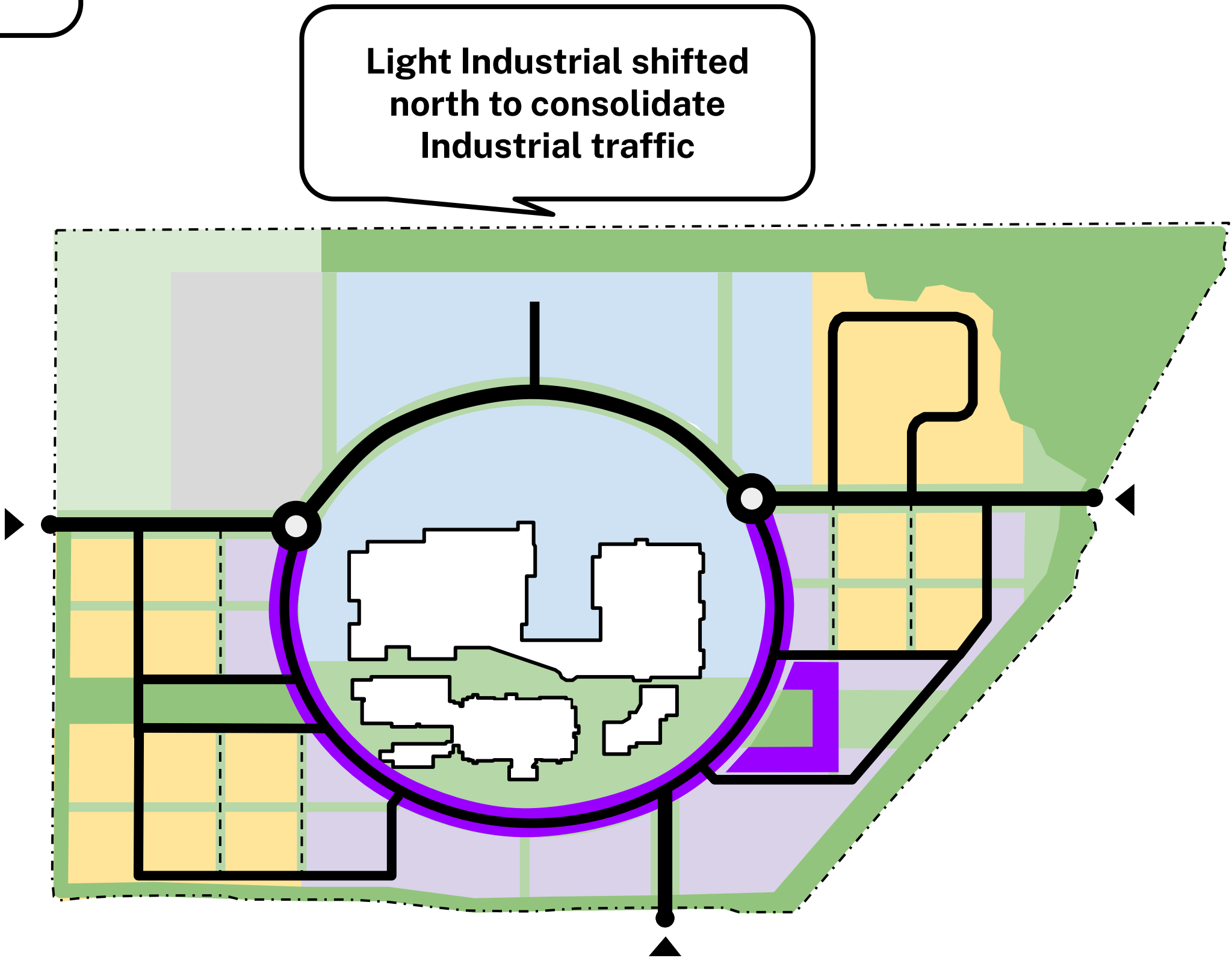


- + 2 mile multi-use loop trail
- + Trail Connection between School and Forested Tract
- + Better preservation of Forested Tract edge trees
- + 5 additional acres of public Open Space
- 17% reduction in paved street area
- + 1.3 miles of pedestrian- and bicycle-first laneways
- Mixed Use + Denser Multifamily focused around Loop
- + Town Plaza for events + programming
- < 5 min walking distance from any home to Mixed Use



Masterplan 1.0

Existing VIC + Light Industrial

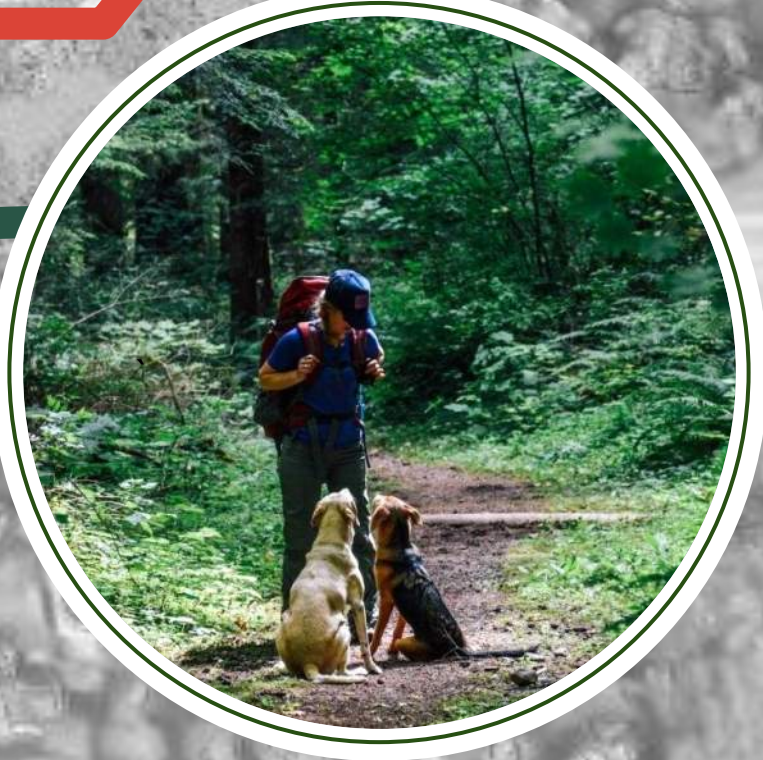
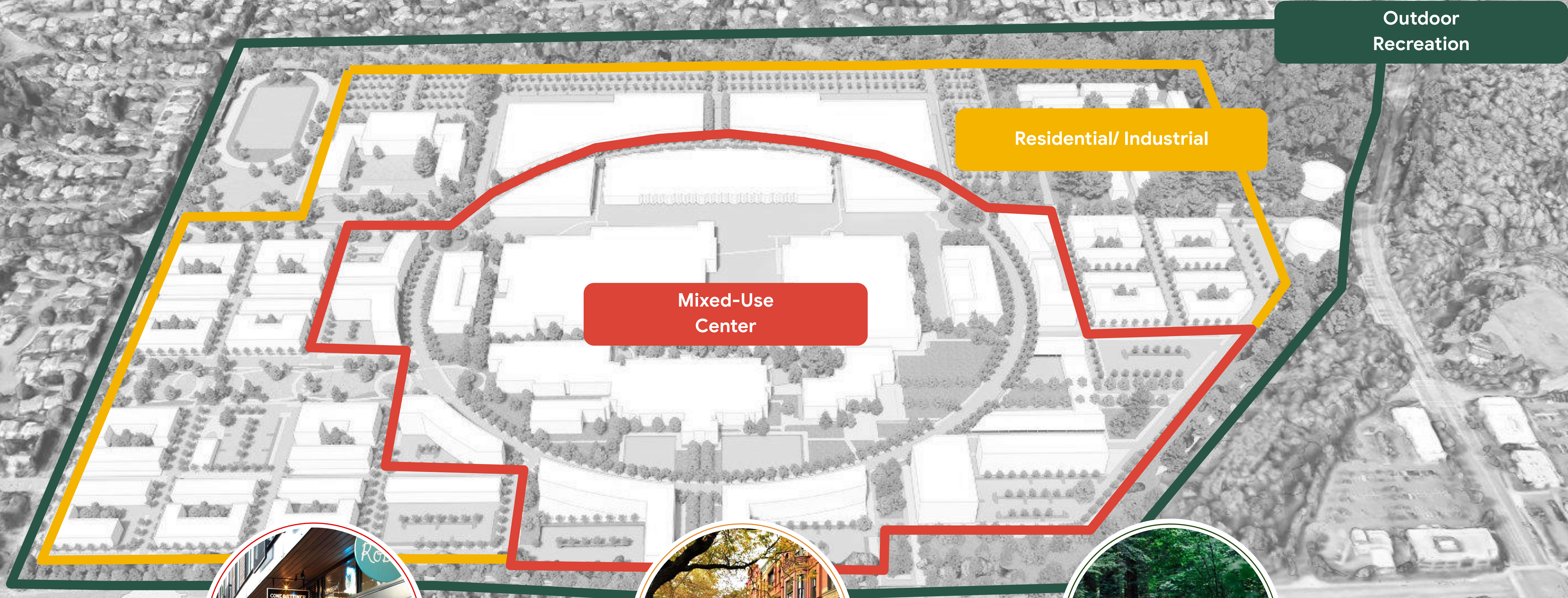


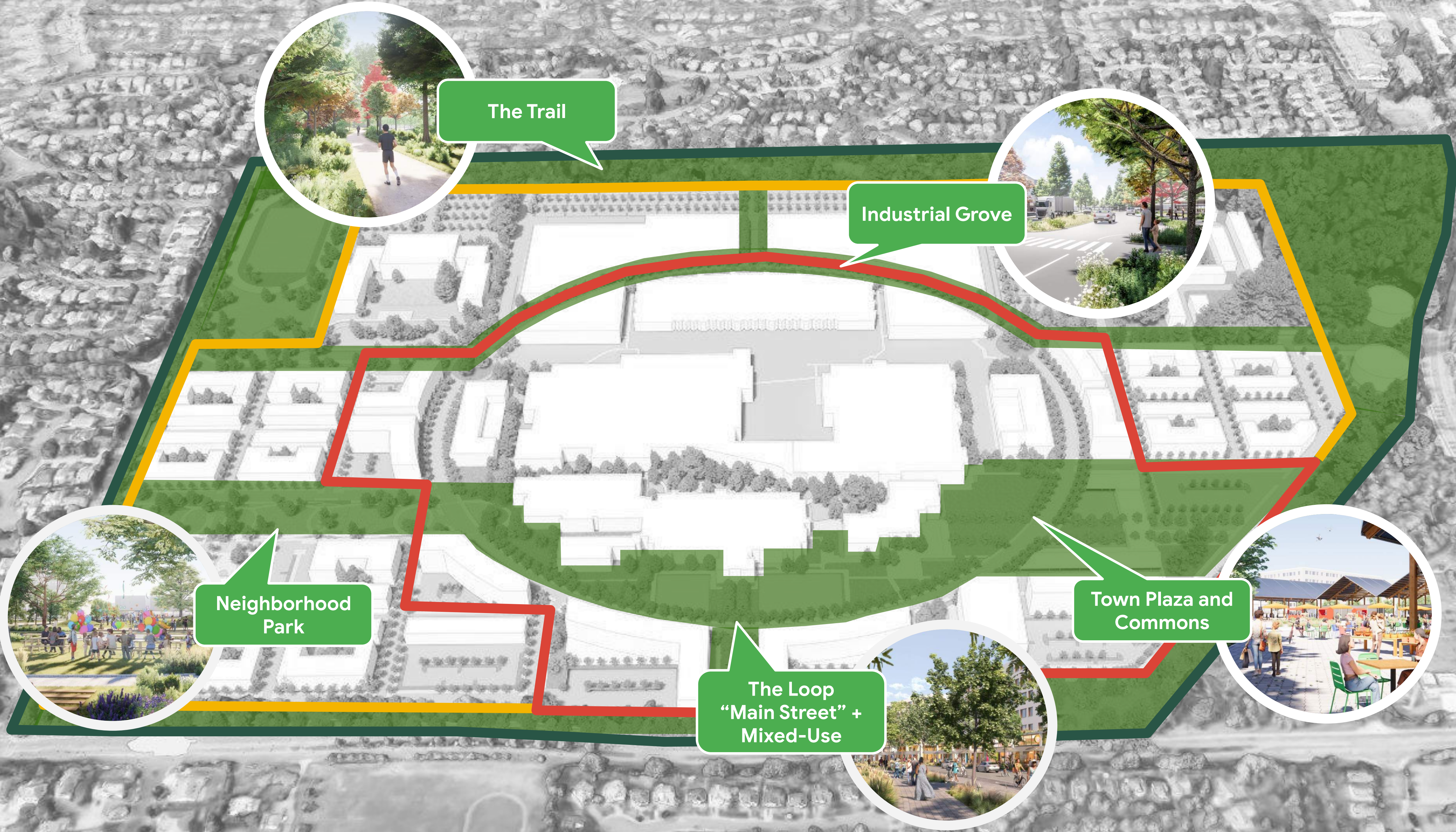
Masterplan 2.0

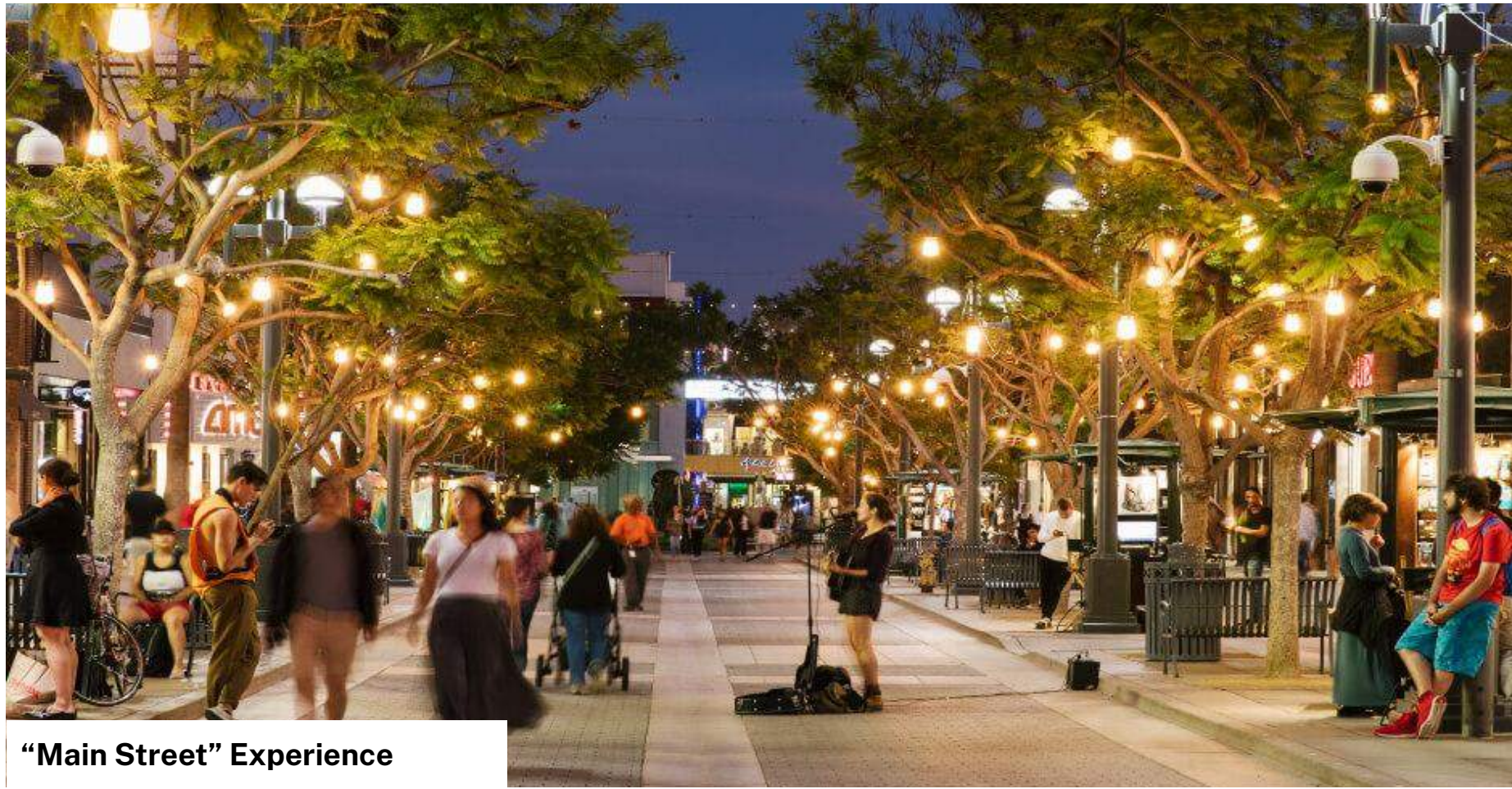
Light Industrial shifted
north to consolidate
Industrial traffic

- + 2 mile multi-use loop trail
- + Trail Connection between School and Forested Tract
- + Better preservation of Forested Tract edge trees
- + 5 additional acres of public Open Space
- 17% reduction in paved street area
- + 1.3 miles of pedestrian- and bicycle-first laneways
- Mixed Use + Denser Multifamily focused around Loop
- + Town Plaza for events + programming
- < 5 min walking distance from any home to mixed use
- Industrial Traffic limited to 29th St**









“Main Street” Experience



Destination Retail and F&B



Natural Features + Seating

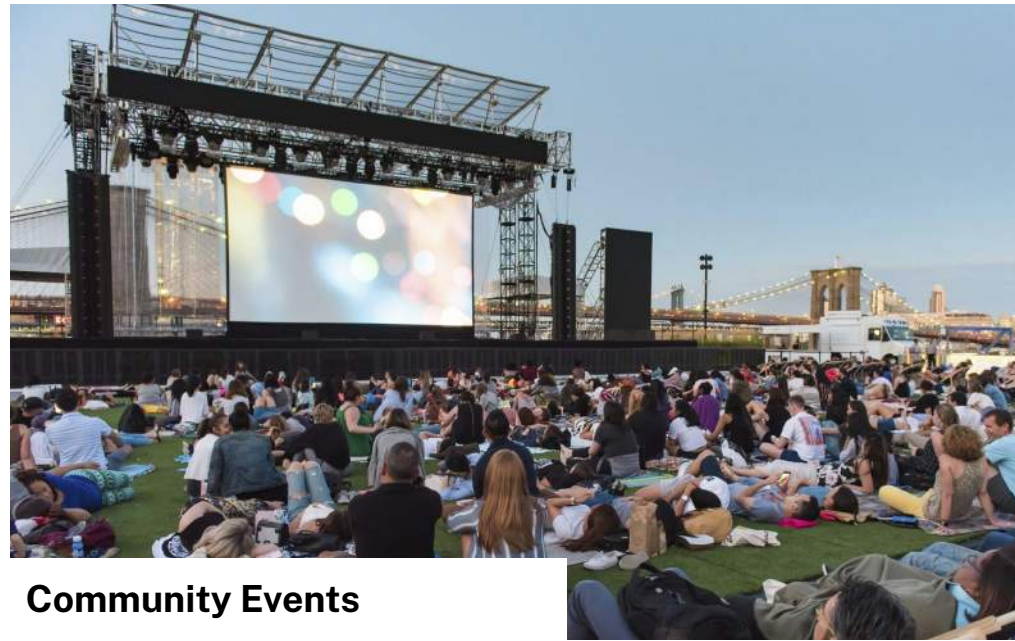


Community Amenities

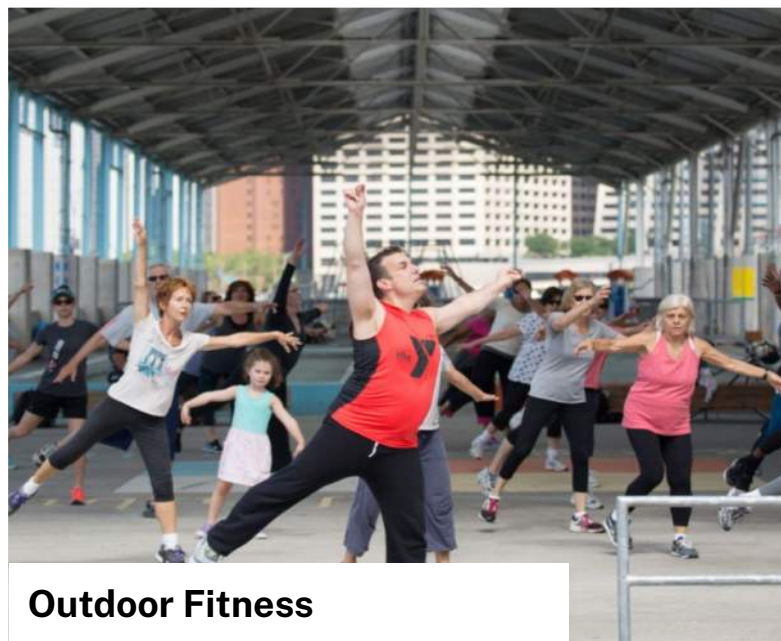


VIC - The Loop

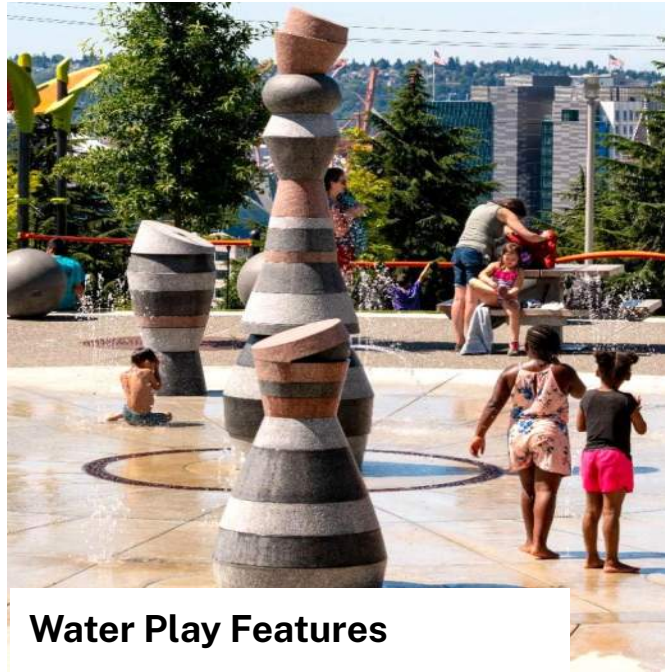
Placemaking // Town Plaza and VIC Commons



Community Events



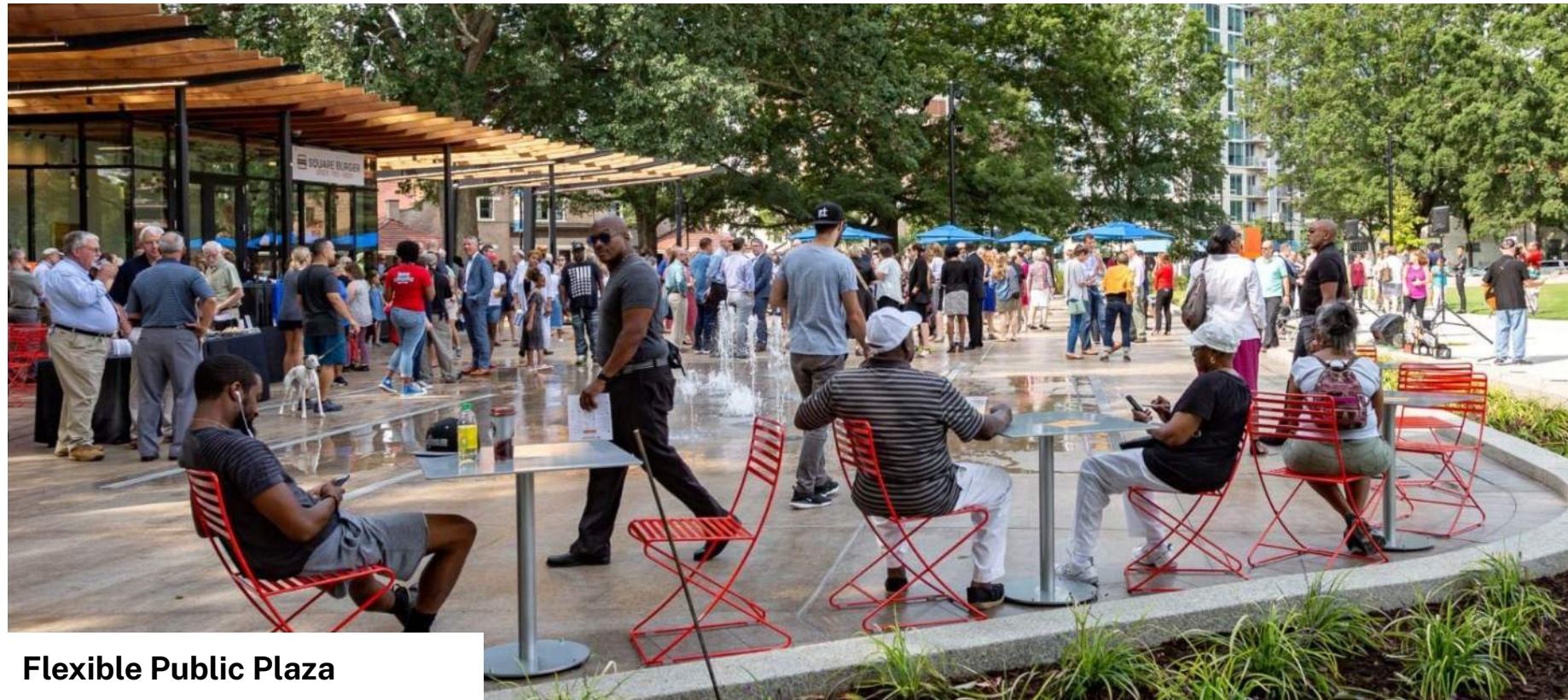
Outdoor Fitness



Water Play Features



Indoor-Outdoor Dining



Flexible Public Plaza

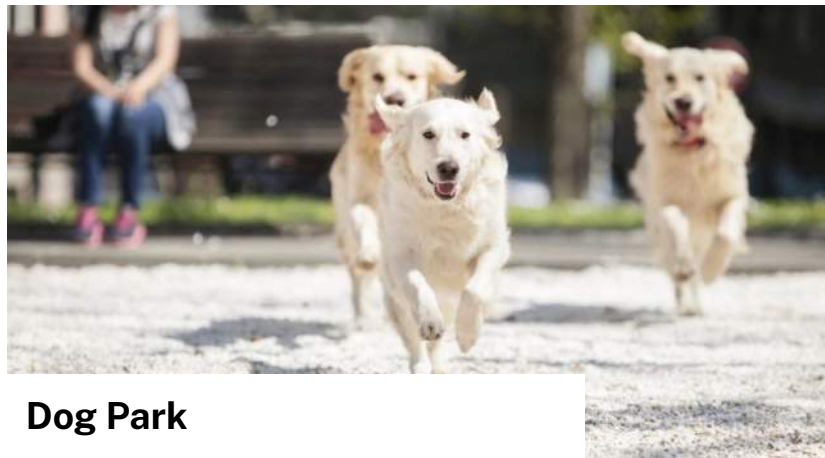


VIC - Town Plaza

Placemaking // Neighborhood Park



Seating + Picnic Areas



Dog Park



Playscapes



Walking Paths

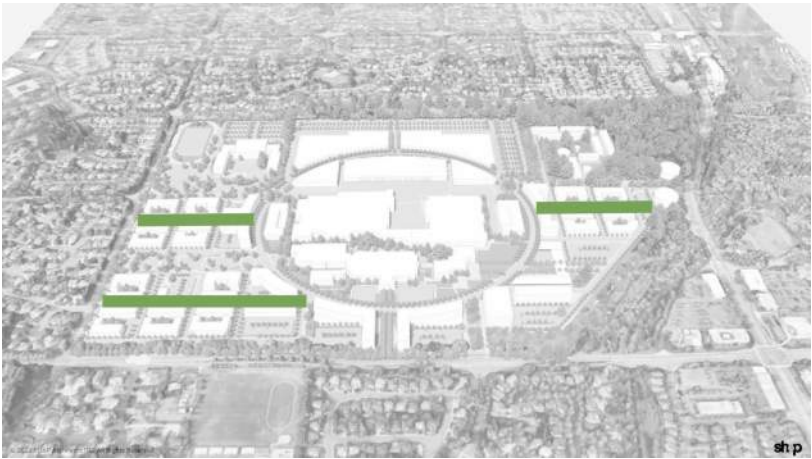


Community Garden



VIC - Neighborhood Park

Placemaking // Pedestrian Laneways



Variety of Residential Types



Bioretention Landscape



Porches + Stoops

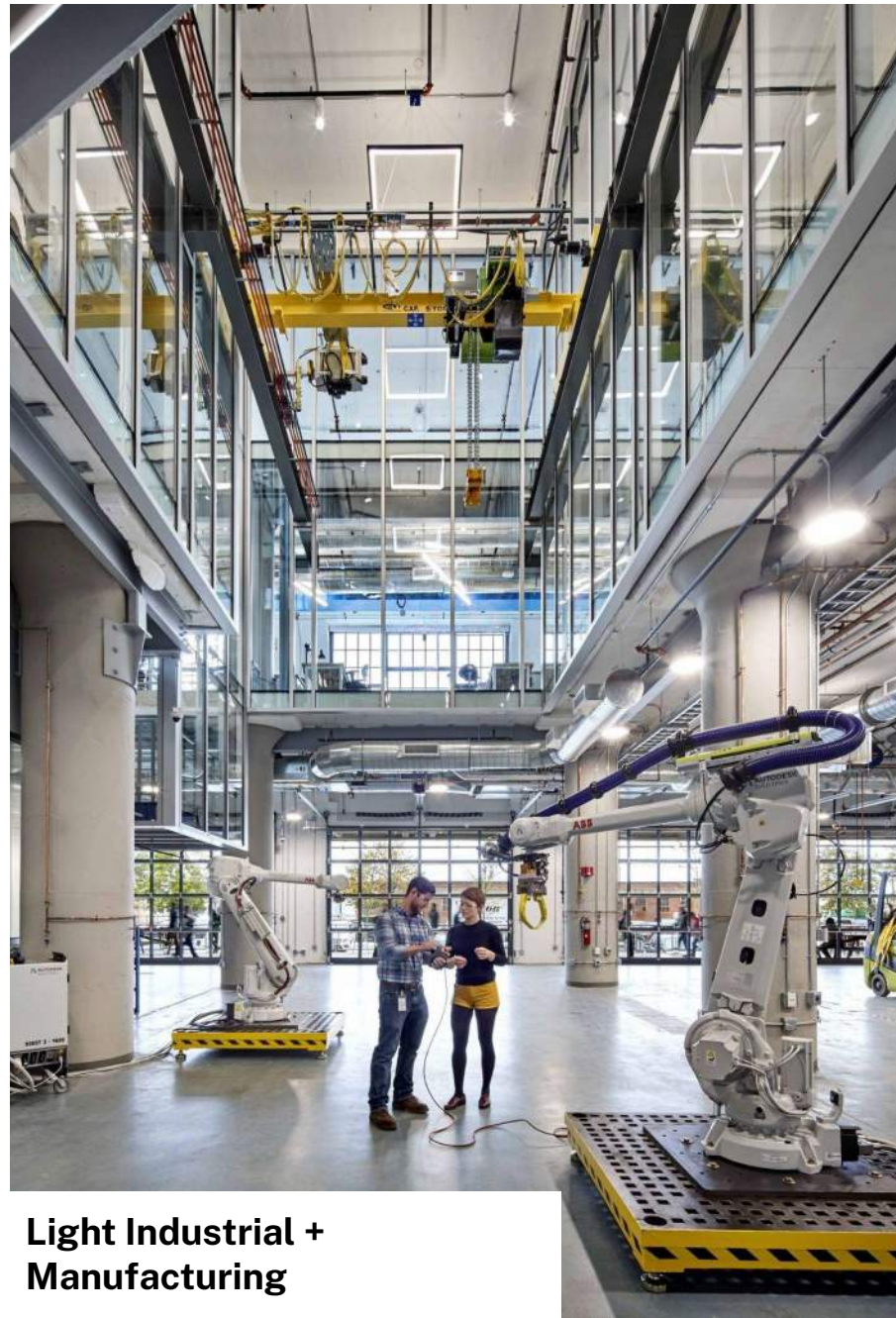


Pedestrian + Bike Laneway



VIC - Pedestrian Laneway

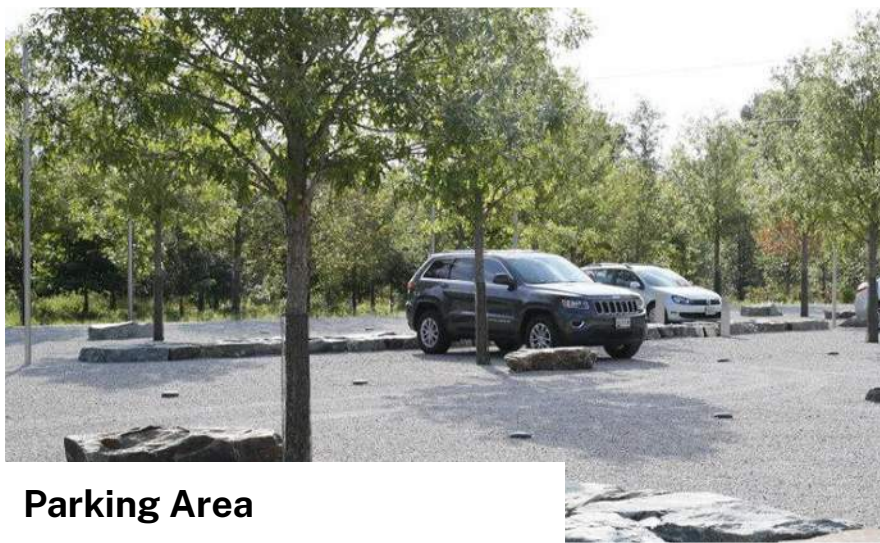
Placemaking // Industrial Grove



Light Industrial + Manufacturing



Pedestrian Pathways



Parking Area



29th St. Parkway



Innovation + Makerspace



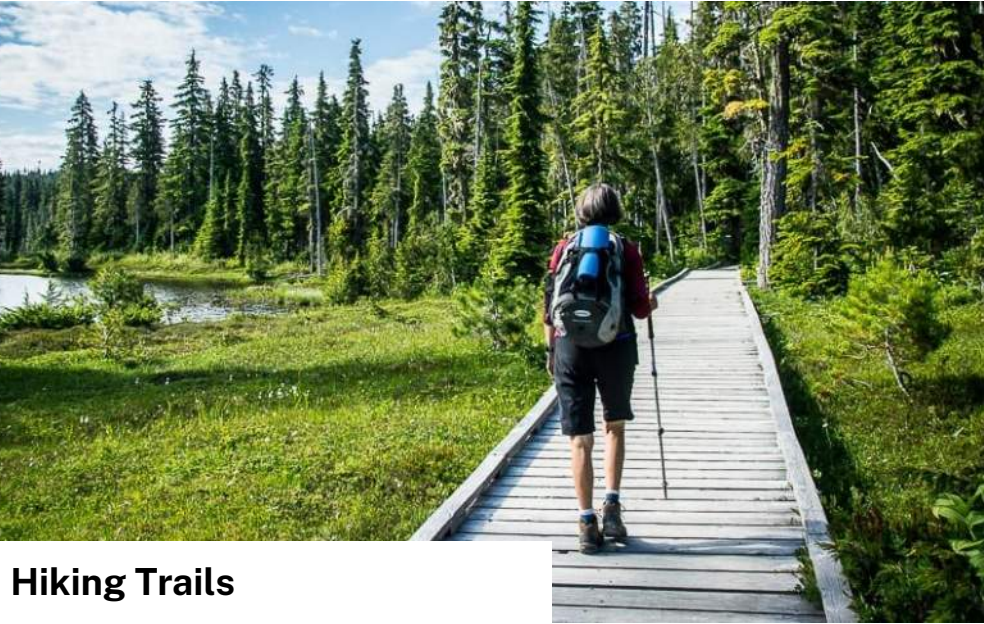
VIC - Industrial Grove



Multi-Use Public Trail



Existing Landscape



Hiking Trails



Connection to Forest Park



VIC - The Trail - North

Placemaking // Summary



Trail - West along 176th Ave.



The Loop



Neighborhood Park



Industrial Grove



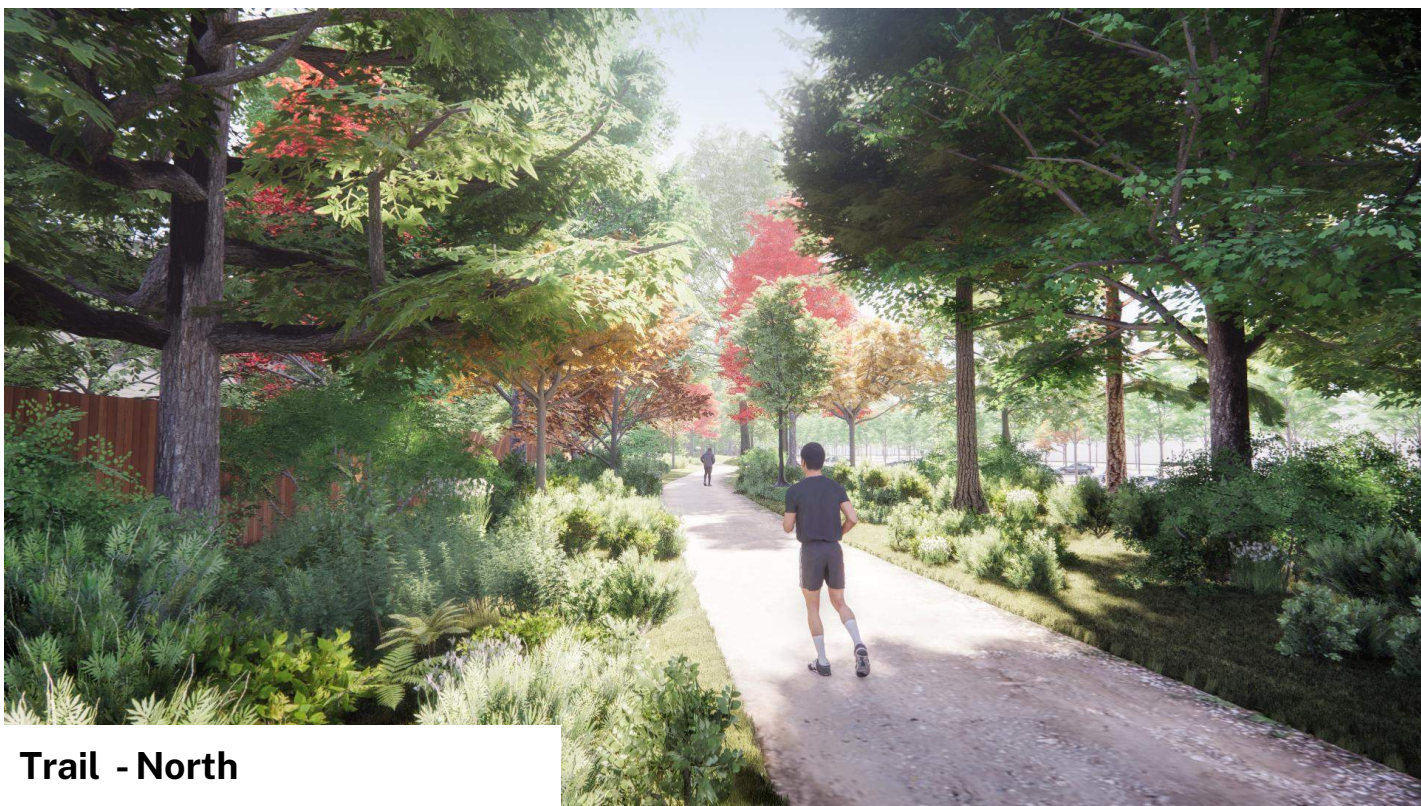
Trail - Southeast



Town Plaza



Pedestrian Laneways



Trail - North

Thank You



STAFF REPORT

DATE: February 13, 2024

TO: Chair Adigweme and Planning Commission members

FROM: Mark Person, Senior Planner, Community Development Department
Patrick Quinton, Director, Economic Prosperity and Housing

RE: **Public Hearing review of the proposed revision to the Vancouver Innovation Center (VIC) master plan and associated development agreement**

CC: Rebecca Kennedy, Deputy Director, Community Development

Introduction

The Planning Commission reviewed and recommended approval of a zone change from IL to MX and associated master plan and development agreement in 2020 and 2021. Staff received an application for master plan and development agreement revisions to the Vancouver Innovation Center (VIC), which was reviewed by the Planning Commission at workshops on September 12 and December 12, 2023.

The VIC encompasses approximately 179 acres and is located at 8110 SE 34th Street. The site consists of parcels 986060362, 986056494, 126455000, and 126816000 within the NE, NW, SW, and SE ¼ of Section 6, Township 1N, Range 3E of the Willamette Meridian.

Background/Overview

The site is located among single family neighborhoods on three sides. SE 34th Street, a four-lane arterial road with a center landscaped median, forms the southern edge of the site and the main access point, and is served by the C-Tran 34 bus to downtown and the Fisher's Landing Transit center. South of 34th Street are master planned single-family subdivisions, and the Fisher's Landing Elementary School. SE 176th Avenue, a two-lane collector road, forms the western edge of the rezone site, and west of SE 176th Avenue are additional master planned single family subdivisions. Single family development is also north of the rezone site, but without any separating roadway. To the east the site is 192nd Avenue and Fisher's Creek. Beyond the creek to the east is a commercial development consisting of a tire store, bank and offices.

The site is located within the Fisher's Landing East Neighborhood Association. The Fisher's Creek Neighborhood Association is directly south of 34th Street.

The site was originally developed by Hewlett-Packard prior to annexation to Vancouver in 1997 and was sold to S-E Incorporated in 2009. New Blueprint Partners purchased the site in 2020. An existing approximately 47-acre light industrial building complex encompasses approximately 715,000 square feet in six linked buildings, surrounded by approximately 2,100 surface parking stalls. The building complex is approximately 80 percent leased, up from 50 percent leased when the development was first proposed, according to the applicant. Since acquiring the site, the applicant has made substantial upgrades to the existing buildings that include energy efficiency and modernization. Most of the undeveloped portion of the rezone is grasslands, except for the northeast area which remains heavily forested.

VMC 20.285 assigns the Vancouver Planning Commission as the review body for Mixed-Use Master Plans greater than 25 acres in size, and Development Agreements accompanying any proposal already before the Commission. The Planning Commission purview is limited to land use matters; budgetary decisions are solely the purview of the City Council. Planning Commission recommendations are forwarded to the Vancouver City Council for further public hearing review and final decision.

The Planning Commission reviewed and recommended approval of a zone change from IL to MX and an associated master plan and development agreement in 2020 and 2021. The proposal was reviewed at six Planning Commission public workshops and approval recommended to the City Council at a public hearing on July 6, 2021. The City Council approved the master plan, zone change and development agreement at a public hearing on August 16, 2021.

The existing master plan and development agreement anticipates 600,000 to 860,000 square feet of new employment buildings and up to 1,200 residential units. Under the existing master plan, the applicant received land use and engineering approval for a 200,981 square foot industrial building north of the existing building onsite.

Community outreach and noticing

As part of the new proposed master plan revision and development agreement update, the applicant held two online open houses open to the community, one on January 30th, 2023, and one on January 31, 2023. In late 2023 and early 2024 the applicant mailed a letter to every household and business within 500 feet of the property and expanded the radius to make sure that no part of a neighborhood was cut off. In total, 1,894 letters were sent. Two identical virtual meetings hosted by the applicant were held on January 29th and January 31st 2024.

Vancouver staff mailed out a notice of public hearing for the February 13 Planning Commission meeting to properties within 500 feet of the site on February 1, 2024. Future

development on the site will be required to comply with the applicable noticing requirements of VMC 20.210.

Summary of Proposal

The applicant applied for master plan revision and associated development agreement in May of 2023.

The applicant requests the following changes to the master plan:

- Central loop/ring road configuration change
- Town center concept, not originally included in the current master plan, is included as a mixed-use commercial corridor
- Increased density and the elimination of detached single-family residential
- Updated phasing of development
- Hotel and community center allowed as a Type II site plan process (staff decision) instead of Type III conditional use process (Hearing Examiner hearing) within mixed use land use area only
- Updated Design Guidelines

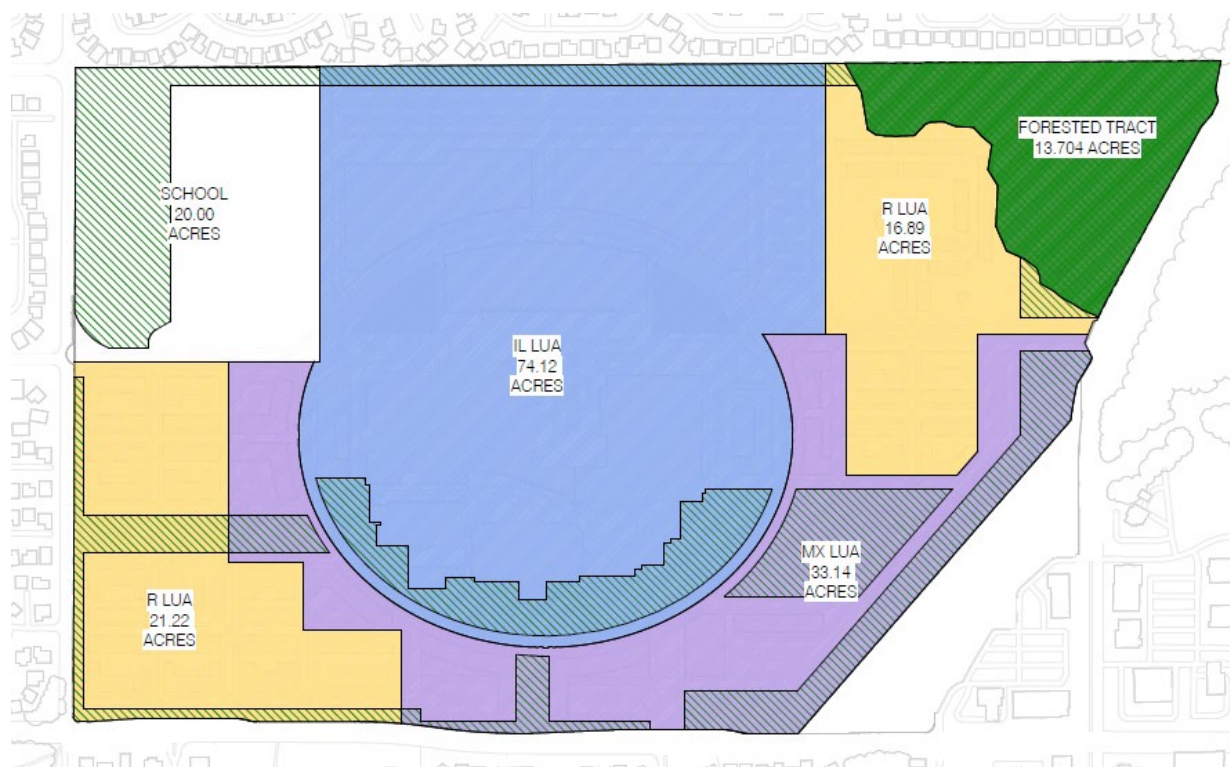


Figure 1 - Revised Master Plan

Section 7 of the development agreement outlines the process for revisions. The proposed changes are subject to a major revision and subject to a Type IV process (initial review and recommendation by Planning Commission for City Council decision). This application is only for a revision to the master plan and associated development agreement. No changes to MX zoning or the comprehensive plan are proposed.

The revised master plan proposes a minimum of 600,000 square feet of employment use and up to 1,800 residential units. Applicant has agreed to make 20% of the units affordable to people making 80% of Area Median Income (AMI) as outlined in the updated development agreement.

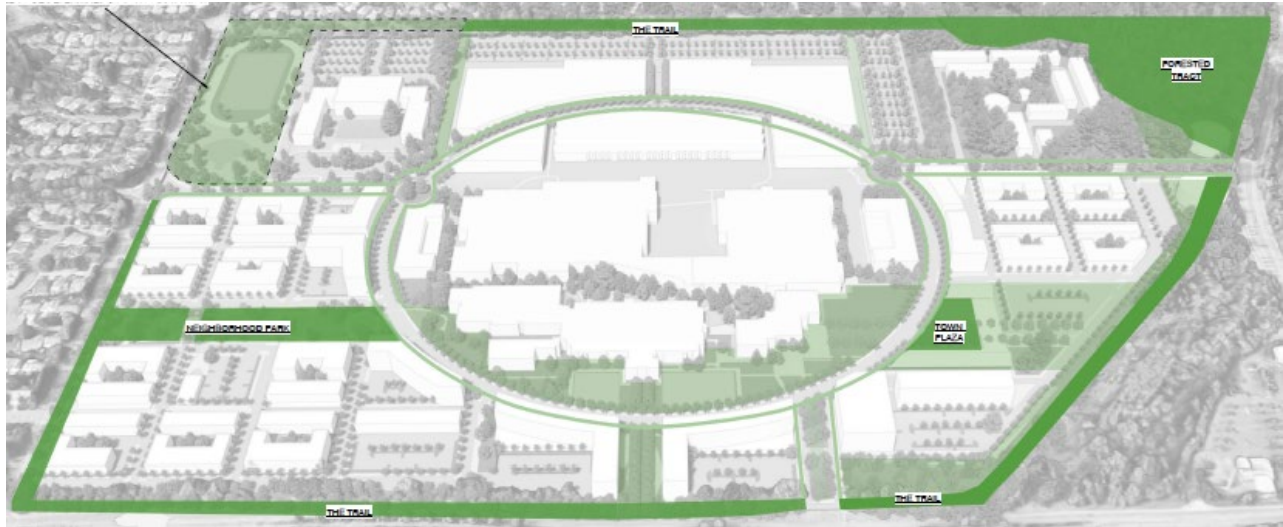


Figure 2 - Revised Open Space

LEGEND

-  OPEN SPACE
-  POTENTIAL OPEN SPACE LINKAGE AREAS
(NOT INCLUDED IN OPEN SPACE CALCULATIONS)
-  POTENTIAL SCHOOL OPEN SPACE
(NOT INCLUDED IN OPEN SPACE CALCULATIONS)

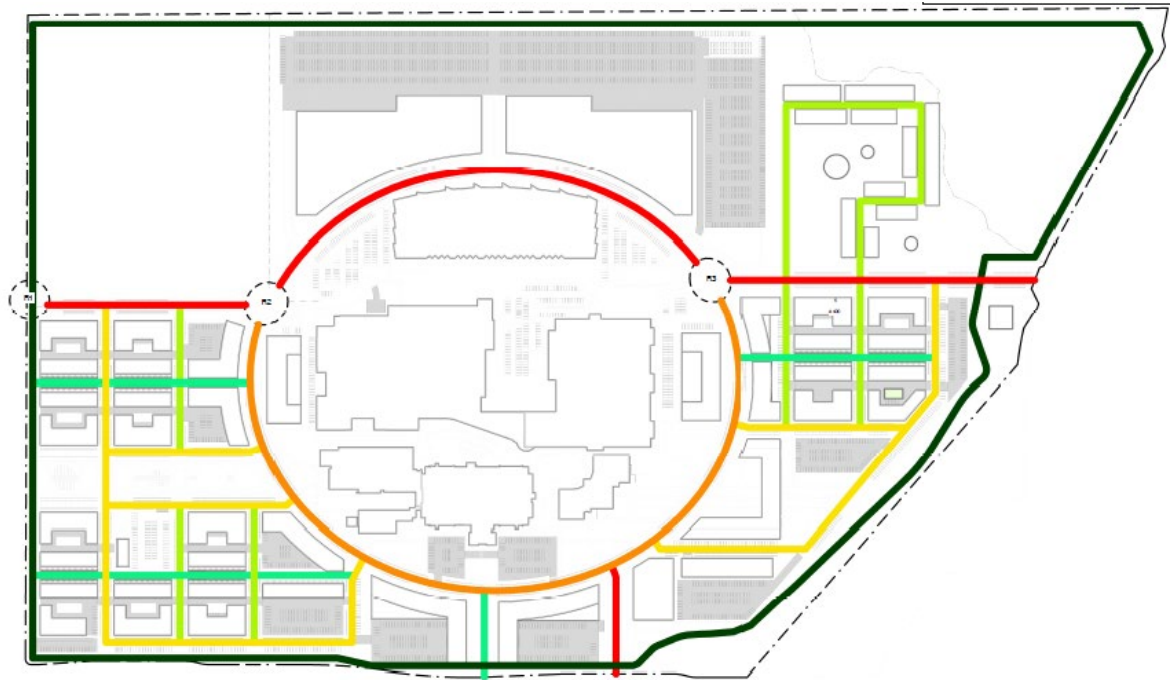


Figure 3 Revised Transportation Plan

MOBILITY LEGEND	
—	STREET TYPE 01 - MAIN STREET ALONG LOOP
—	STREET TYPE 02 - SLOW STREET ALONG LOOP
—	STREET TYPE 03 - LOCAL STREET/NEIGHBORHOOD LOOP
—	STREET TYPE 04 - LOCAL ACCESS CONNECTIONS
—	STREET TYPE 05 - PEDESTRIAN LANEWAYS
- - -	ROUNDBABOUT
 	SURFACE PARKING LOT
—	TRAIL - REFER TO SHEET 008

Review Criteria and Findings

Multiple Building Mixed Use Sites Approval Criteria ([VMC 20.430.060.C.3.a.2](#))

2. *Approval Criteria and Zoning.* proposed Mixed Use Master Plans 25 acres or larger in size shall be reviewed as Type IV application by the Planning Commission. Proposals less than 25 acres shall be reviewed as Type IV applications by the Hearings Examiner. Approvals, or approval with conditions shall be granted upon findings that:

- a. The Master Plan and associated conditions of approval ensure future development will meet all applicable criteria of this chapter; and

Finding: Future development will meet all applicable criteria of this chapter, except as modified by the associated development agreement.

- b. The proposal complies with applicable rezone criteria of VMC [20.285.080](#); and

Finding: No rezone is proposed as part of this revision. The comprehensive plan designation and zone change was completed as part of the original 2021 master plan and development agreement approval.

c. There is or will be sufficient capacity within the transportation system and public sewer, water, police, fire, and stormwater services to adequately serve all portions of the site at the time of development; and

Finding: Vancouver public works staff have completed a preliminary review of the proposal and have determined that services are adequate to serve the site. Future development will go through land use and engineering review.

d. A change in circumstances has occurred since existing zoning designations at the site were originally adopted. For the purposes of a multiple building mixed use plan only, compliance with the development standards of VMC [20.430.060\(C\)\(2\)](#) and the applicable Comprehensive Plan policies shall be sufficient to demonstrate that a change in circumstances has occurred.

Finding: Future development will meet all applicable criteria of VMC 20.430.060(C)(2) except as noted in the development agreement.

Recommended Action

Based upon the findings herein, the criteria for master plan revision approval have been satisfactorily met or shall be met as conditioned. Staff recommends Planning Commission recommend approval of the Vancouver Innovation Master Plan revisions and associated development agreement to City Council subject to the conditions listed below.

CONDITIONS OF APPROVAL RELATED TO SITE DEVELOPMENT

Prior to future land use approvals

1. Demonstrate compliance with the provisions of VMC 20.430.060 as modified by the 2024 Development Agreement and provided in the Master Plan.
2. Show compliance with the Master Plan SEPA checklist or amend or submit a new SEPA checklist to include any unexpected impacts or project changes.

Staff Contact: Mark Person, Senior Planner, Community Development Department,
mark.person@cityofvancouver.us, 360-487-7885

Attachment(s):

1. Application
2. Applicant Narrative
3. Proposed Land Use
4. Existing Plan/Conditions
5. Proposed Open Space
6. Proposed Site Mobility Plan
7. Proposed Streetscape Summary
8. Proposed Trail Sections
9. SEPA Checklist
10. Revised Transportation Impact Analysis
11. Revised Design Guidelines
12. Parking Strategy
13. Phasing Strategy
14. VIC Sustainability Goals
15. VIC Masterplan 2.0 Sustainability Plan
16. Renderings
17. Original versus revised comparison
18. Draft Development Agreement

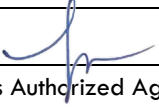


Planning Permit Application

LAND USE PRELIMINARY APPLICATION (LUP)

415 W 6th ST ~ Vancouver, WA 98660, P.O. Box 1995 ~ Vancouver, WA 98668, Phone (360) 487-7800

Email completed application to plans@cityofvancouver.us

REVIEW TYPE (Check one review and one process type)					
Review Type: ☐ Type I ☐ Type II ☐ Type III ☒ Type IV ☐ Tree Removal Only (nuisance or hazard)					
Process Type: ☒ Standard ☐ Streamline (Type I & II applications only. Pre-submittal Meeting required. By selecting streamline process, applicant waives all land use review timelines in VMC Title 20)					
USE					
☐ Single-Family	☐ Commercial	☐ Multi-family	☒ Mixed Use (commercial with multi-family)	☐ Industrial	☐ Residential
☐ Duplex		☐ Wireless Communications Facility (new) see VMC 20.890			
PROJECT INFORMATION					
Site Acres: Approx. 179 acres	Disturbed Acres: Approx. 179 acres	Zoning: Mixed-Use	Sewer: ☐ Septic ☒ Public	Water: ☐ Well ☒ Public	
Proposed # of Lots: N/A		Proposed Dwelling Units: 1,800			
Non-Residential Bldg. Square Footage: N/A		Ground Floor: N/A	Total of All Upper Floors: N/A		
Hard Surface Area Square Feet - New: N/A		Replacement: N/A	Total: N/A		
PROJECT NAME AND LOCATION					
Proposed project name: Vancouver Innovation Center Master Plan Revision					
Project site address: 18110 SE 34th Street			Parcel #(s): 986056-494; 126455-000; 986060-362; 126816-000 Parcel numbers per GIS 4/21/23. VIC Building North Parcel not yet displayed.		
PROJECT DESCRIPTION					
(Briefly describe the proposed project. Provide more detail in project narrative)					
The applicant is requesting major revisions to the original Vancouver Innovation Center (VIC) Mixed Use Master Plan.					
PRIMARY APPLICANT			CONTACT		
Business Name: The VIC Building Owner LLC			Business Name: DOWL		
Contact Name: Jennifer Rabina			Contact Name: Jessica Herceg		
Address: 505 Fifth Avenue, 27th Floor			Address: 7200 NE 41st Street, Suite 204		
City/State/Zip: New York, NY 10017			City/State/Zip: Vancouver, WA 98662		
Phone: (212) 680-4500			Phone: (971) 280-8653		
Email: jrabina@rabina.com			Email: jherceg@dowl.com		
ELECTRONIC PLANS SUBMITTER (required) (responsible for ePlans uploading and correspondence)			OWNER (attached additional sheets for multiple owners)		
Name: Jessica Herceg, DOWL			Name: The VIC Building Owner LLC Attn: Josh Rabina		
Address: 7200 NE 41st Street, Suite 204			Address: 505 Fifth Avenue, 27th Floor		
City/State/Zip: Vancouver, WA 98662			City/State/Zip: New York, NY 10017		
Email (required): jherceg@dowl.com			Email: josh@rabina.com		
Phone: (971) 280-8653			Phone: (212) 398-2030		
ONLINE PAYMENT					
Existing ePermits User Name: Rabina505			Request an ePermits Account		
REQUIRED SIGNATURES					
As evidenced by my signature below, I/we agree that City of Vancouver staff has my/our full permission to enter upon the subject property at any reasonable time to consider the merits of the application, to take photographs and to post public notices.					
Applicant Signature: 			Date: 04/21/2023		
Property Owner or Owner's Authorized Agent Signature: 			Date: 04/21/2023		

LUP APPLICATION SUB TYPES

Please check all applicable applications and information where necessary

☐ Airport Height Overlay District
☐ Archaeological Pre-determination
☐ Binding Site Plan ☐ Conceptual (without Site Plan Review) ☐ Detailed (with Site Plan Review)
☐ Boundary Line Adjustment # of lots to be adjusted:
☐ Comprehensive Plan Amendment (Including Zone Map Amendment with Comp Plan)
☐ Conditional Use Permit ☐ Initial (Type III) (Comm. Centers, Group Meal Service, Shelters) ☐ Major Modification (Type III) ☐ Minor Modification (Type I) Engineering Review Required ☐ Yes ☐ No
☐ Covenant Release
☐ Critical Areas (not used when in Shoreline) Check one → ☐ Duplex/Single Family ☐ All Other Uses Check one → ☐ Permit ☐ Statement of Exemption (No Fee) Check the applicable critical area(s) ☐ Fish & Wildlife ☐ Frequently Flooded ☐ Geological Hazards ☐ Wetlands ☐ Minor Exception (not common) ☐ Reasonable Use (not common)
☐ Design Review ☐ Exterior Modification Only ☐ All Others
☐ Development Agreement ☐ Initial ☐ Modification ☐ Extension
☐ Historic Preservation ☐ Modification ☐ Registry ☐ Historic Preservation – Special Valuation
☐ Legal Lot Determination # of lots to be reviewed:
☒ Master Plan (Mixed Use) ☐ Public Facilities MP ☒ Conceptual (without Site Plan Review) ☐ Detailed (with Site Plan Review) ☐ Hybrid (Some areas with Site Plan Review)
☐ Planned Development ☐ Commercial ☐ Residential ☐ Mixed Use* *Ground Floor SF: Upper Floor SF:
☐ Plat Alteration
☐ Post Decision Review/Modification (Includes Planned Development/Master Plan Modifications) ☐ Type I ☐ Type II ☐ Type III Engineering Review Required ☐ Yes ☐ No

☐ Road Modification ☐ Minor ☐ Technical ☐ Major Submitted: ☐ Before ☐ After Decision (submitted after decision is not common)
☐ Shoreline Permits ☐ Substantial Development Permit ☐ Shoreline Permit - Statement of Exemption (no fee) ☐ Shoreline Conditional Use ☐ Shoreline Variance
☐ Site Plan Review ☐ Type I ☐ Type II <u>Check Use Type below</u> ☐ Residential ☐ Non-Residential ☐ Qualified Planned Action ☐ Unoccupied Commercial/Utility Structure ☐ Commercial Pad ☐ Land Extensive Stormwater ☐ Yes ☐ No Transportation ☐ Yes ☐ No
☒ State Environmental Policy Act (SEPA) ☐ Check if for Single-Family Residential house (only) ☐ Residential Site Plan Review (SPR) ☐ Grading Only ☐ Subdivision or Planned Development ☐ Non-Project Actions (not common) ☒ All Other (Includes Comm/Indust SPR) (When more than one applies check All Other)
☐ Subdivision/Short Subdivision ☐ Short Subdivision (2-9 lots) ☐ Subdivision (10+ Lots)
☐ Temporary Use ☐ Commercial/Industrial ☐ Unforeseen Emergency ☐ Seasonal Event ☐ Model Home ☐ Sales Office
☐ Tree Plan Enter Tree Plan Level (1 to 7): (Tree Removal for nuisance or hazard tree(s) is Level 3)
☐ Variance ☐ Check if for Single Family Residential house ☐ Type I - # requested: ☐ Type II - # requested: Stormwater ☐ Yes ☐ No Transportation ☐ Yes ☐ No
☐ Zoning Map Amendment (Not involving Comprehensive Plan Amendment)

APPENDIX B

NARRATIVE

Vancouver Innovation Center Master Plan Revision

Vancouver, Washington

A Land Use Application For:
**Major Revisions to the
Vancouver Innovation Center Master Plan**

Submitted: May 5, 2023

Prepared for:
The VIC Building Owner LLC
505 Fifth Avenue, 27th Floor
New York, NY 10017
Contact: Jennifer Rabina
Phone: 212-680-4500

Prepared by:
DOWL
7200 NE 41st Street, Suite 204
Vancouver, WA 98662
Contact: Jessica Herceg, Senior Planner
Phone: 971-280-8653



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Figure 5. North Edge Condition with Proposed Open Space – Revised VIC Master Plan

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Table 1. Revised VIC Master Plan Parking Ratio

I. Introduction

General Information

Applicant:	The VIC Building Owner LLC 505 Fifth Avenue, 27 th Floor New York, NY 10017 Contact: Jennifer Rabina Phone: 212-680-4500 Email: jrabina@rabina.com
Prepared by:	DOWL 7200 NE 41 st Street, Suite 204 Vancouver, WA 98662 Contact: Jessica Herceg Phone: 971-280-8653 Email: Jherceg@dowl.com
Property Owner:	The VIC Building Owner LLC 505 Fifth Avenue, 27 th Floor New York, NY 10017 Contact: Josh Rabina Phone: 212-398-2030 Email: josh@rabina.com
Project Location	18110 SE 34 th Street
Parcel ID Numbers:	126455-000; 126816-000; 986056-494 and 986060-362
Zoning:	Mixed Use (MX)
Comprehensive Plan:	Commercial (COM)
Project Site Area:	Approximately 179 acres

II. Mixed Use Master Plan Executive Summary

Existing Conditions

The Vancouver Innovation Center (VIC) is the site of a mixed-use master plan located at the former Hewlett Packard (HP) industrial complex, encompassing an approximately 179-acre site located at 18110 SE 34th Street. The site is bound on the north by the Clearmeadows and Fisher's Grove residential subdivisions, on the south by SE 34th Street, on the east by SE 192nd Avenue and on the west by SE 176th Avenue. The site currently has six (6) existing buildings totaling approximately 715,000 square feet (SF), along with associated surface parking and circulation. These buildings were built in the 1980s and 1990s by Hewlett-Packard. Since Hewlett Packard's departure from the site, the interior of these buildings has been updated and leased to a variety of tenants with operations ranging from research and development, light manufacturing, high-tech machinery repair, and other industrial/commercial employment uses. Access to the site is provided via SE 34th Street. A private vehicle circulation route extends north into the site from the signalized intersection of SE Hiddenbrook Drive and SE 34th Street along the site frontage. The private road loops around the existing VIC building and connects with SE 34th Street at a stop-controlled intersection near the southwest corner of the site.

The former Hewlett Packard campus was subject to a Development Agreement beginning in 2001. A series of amendments occurred prior to the applicant's purchase of the property in 2020. The VIC multiple building employment focused Mixed-Use Master Plan, Comprehensive Plan Amendment (CPA), Zone Change Request and Third Amended and Restated Development Agreement (Restated DA) were approved concurrently by the Vancouver City Council by Ordinance 4346 on August 16, 2021. With the approval of the development agreement and an associated Comprehensive Plan Amendment/Zone Change, the zoning designation changed to Mixed Use (MX) with a Commercial (COM) comprehensive plan designation. See Figure 1 below for the current VIC Master Plan.

Since approval of the current VIC Master Plan, the VIC Building Owner LLC (applicant) has received Site Plan Review and construction document approvals for a new 200,981 square foot industrial building, referred to as VIC Building North, to be located immediately north of the existing buildings. The applicant completed an exempt land division to establish a discrete parcel for VIC Building North on December 6, 2022, however a new parcel number has not yet been assigned by Clark County. The documentation was recorded under Clark County Auditor's File Number 6094243 and is on file with the City of Vancouver under File LUP #82838.

Project Description

The applicant is requesting City of Vancouver (City) approval for master plan revisions to amend elements of the current VIC Master Plan. The revised master plan design consolidates industrial areas to optimize opportunities for employment-generating development without reducing the number of jobs provided for in the current master plan, provides a higher level of integration of uses to allow for greater density, thus creating an opportunity to provide more open space, and introduces a new roadway loop geometry at the center of the VIC that establishes a mixed-use center at the core of the site. The revised master plan is included as Sheet 003 of the Master Plan Design Set (Appendix E) and reflects the proposed land use area configuration.

The land use areas (LUAs) on the site include a school (approximately 20 acres), residential area (approximately 38 acres), light industrial/employment area (approximately 74 acres), mixed use area (approximately 33 acres) and a 13.7-acre forested tract. Potential open space areas are reflected across the Residential LUA (RLUA), Mixed-Use LUA (MX LUA), and Light Industrial LUA (IL LUA), and School LUA (S LUA),

but acreage and boundaries for these future open space areas are conceptual and will be refined at site development.

Noteworthy changes to the master plan include:

- A central right-of-way loop or “ring road” is proposed for main site circulation. The northern arc of the loop will serve as the SE 29th Street collector.
- Reconfiguration and relocation of land use areas to achieve the desired product type mix and scale in each LUA and provide greater integration of uses throughout the site. The consolidation allows for the development of large-footprint light industrial buildings in the IL LUA to optimize opportunities for employment-generating development and is critical to achieve both the Project’s and the City’s employment generation goals.
- The plan improves the integration of the mixed-use elements of the project by changing from the “Town Center District” within the MX LUA to a mixed-use corridor along the proposed ring road which serves as the gravitational center of the revised master plan and contemplates a substantial public plaza opposite the existing VIC Commons. The revised master plan will incorporate all necessary changes for the VIC and will not propose a separate/future master plan revision for a Town Center district within the master plan area.
- Single Family Residential (SFR) and Multi-Family Residential (MFR) land use areas (LUAs) are now consolidated and listed as “Residential Land Use Area (R LUA)” and the applicant has removed detached single family residential use from the plan.
- The master plan anticipates an overall increase in open space and will provide approximately 24 acres of open space across the master plan area including an approximately 13.7-acre forested tract. Open space projections in the revised plan represent a 26% increase over the 19 acres proposed in the current master plan. To allow greater design discretion in the precise limits of open space with future site development, the applicant is proposing to represent open space within the plan as an overlay rather than a discrete Open Space LUA, a common approach with master plan entitlements.
- The forested tract and the school parcel are identified independent of other LUA’s to reflect the separate ownership of the school parcel by the Evergreen School District and the applicant’s establishment of a tract for forest preservation. While the forested tract boundary has been altered in the revised master plan—a project arborist has made recommendations to better preserve key tree stands—the acreage of the tract has been retained.
- As opposed to the current master plan, which segregated rights of way for SE 29th Street and SE 184th Avenue from LUA acreages, the proposed revision plan has assumed that all rights of way will be internal to land use areas, similar to how rights of way would be treated in a zoning context.
- The revised master plan proposes a more fluid approach to phasing, whereby the size, location, and order of development within the property be determined by the applicant so that they may respond in real time to market conditions and demand.

New Employment Square Footage

The master plan revision proposes construction of a minimum of 600,000 square feet of gross floor area for employment uses.

Open Space

The applicant anticipates providing approximately 24 acres of open space, including the approximately 13.7-acre Forested Tract. Sheet 004 of the Master Plan Design Set (Appendix E) illustrates potential open spaces, including a two-mile multi-use trail around the entire perimeter of the property. Distinct cross sections are provided as Sheet 007 (Appendix E) to illustrate the open space design at key locations in the site, including the northern site edge. Other open space features include a neighborhood park within the Residential LUA in the southwest corner of the site and a town plaza in the southeast corner.

Residential Units and Density

The revised master plan will consolidate the Single-Family Residential LUA and Multi-Family Residential LUA into a single, non-contiguous Residential LUA. The revised master plan proposes a maximum of 1,800 dwelling units which can be constructed within either the R LUA, the MX LUA, or the IL LUA, with a maximum of 100 dwelling units allowable within the IL LUA. The proposed increase in residential density is in response to the City's continuing concern about housing availability, as well as to market demands for housing co-located with the future businesses on the site. In addition, rather than specify quantities of distinct housing types (apartments, townhomes, etc.) within each LUA, the revised master plan proposes to build housing types in response to market demand, limited to the residential housing types permitted within the VMC. Single-family detached homes, however, will be removed from the master plan.

The current and revised master plans are classified as "multiple building mixed use master plan" pursuant to VMC 20.430.060.C. Figures 1 and 2 are the Current VIC Master Plan and the proposed Revised VIC Master Plan, respectively. The figures reflect the requested changes to the land use area configuration within the site.

Figure 1. Current VIC Master Plan

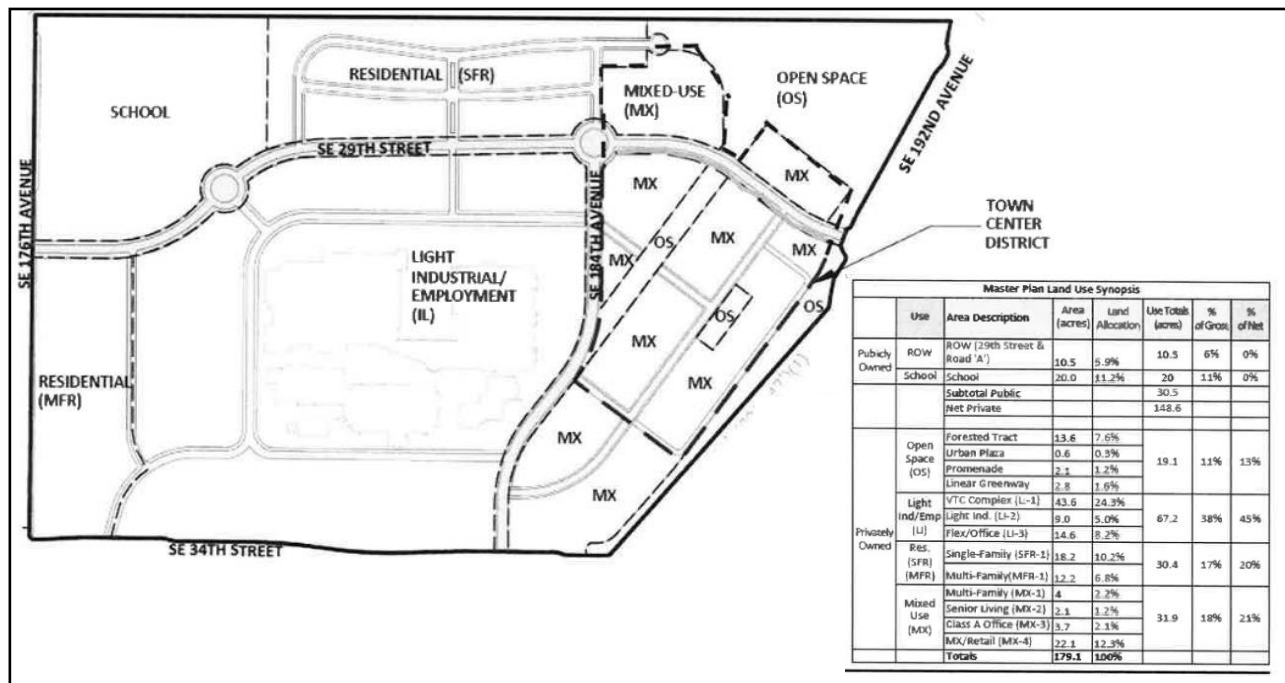
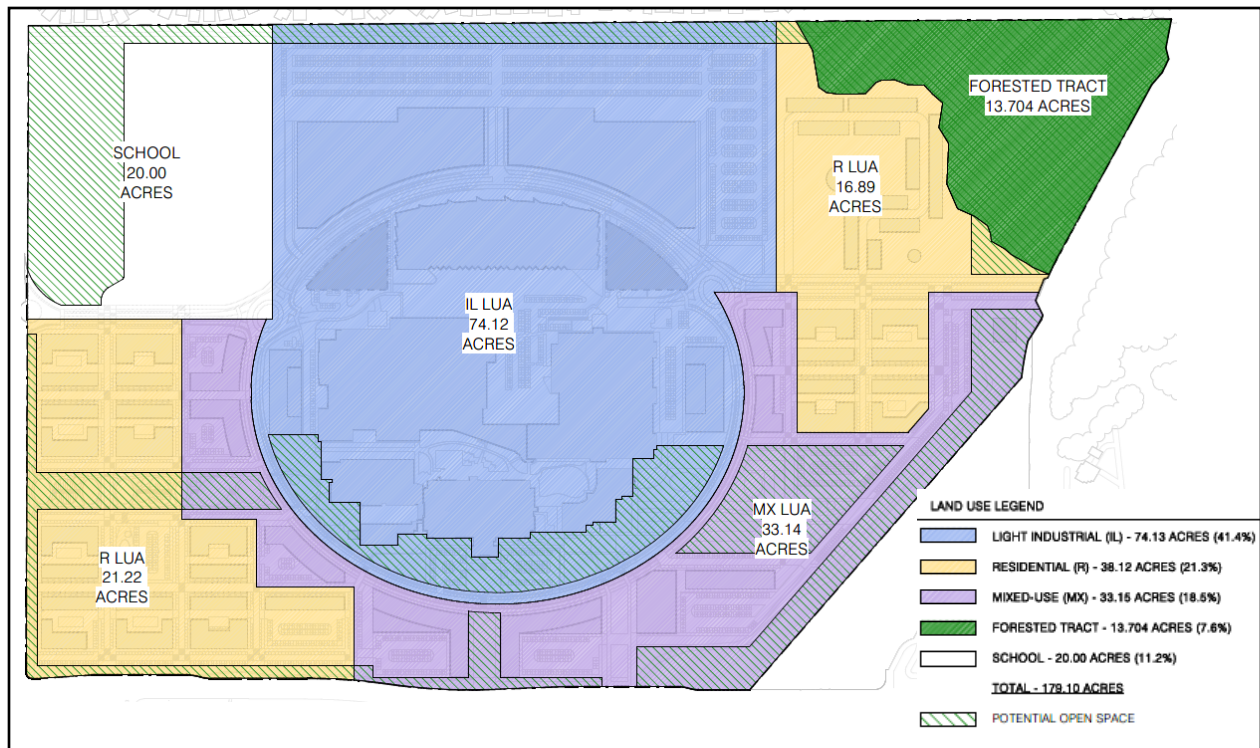


Figure 2. Revised VIC Master Plan



Phasing and Timing of Transportation Improvements

The Revised VIC Master Plan proposes a more fluid approach to phasing to provide flexibility to pursue discrete developments in response to market conditions and needs. Synchronicity standards outlined in Section 6.4 of the Restated DA will be amended to align with updated unit counts but will largely be maintained. It should be noted that a phasing plan is reflected in the Traffic Impact Analysis (TIA), prepared by Kittelson and Associates (Appendix D) to better understand the timing and trigger for transportation improvements. The plan is not intended to suggest that phases must build out in the sequence shown.

III. Applicable Review Criteria

The proposal is subject to the Section 7 Master Plan Revision provisions of the 2021 Vancouver Innovation Center Third Amended and Restated Development Agreement (Restated DA), and applicable goals and policies within the Vancouver Strategic Plan, and Vancouver Comprehensive Plan, respectively and Memorandum of Understanding between the City and the Developer proposing modifications to the Development Agreement currently being finalized. The applicable approval criteria of the Vancouver Municipal Code (VMC) Section 20.430 Mixed Use Standards and District are set forth below with findings demonstrating the project's consistency with these provisions that govern the respective request. Provisions that are not applicable to this proposal are not included.

Vancouver Innovation Center Third Amended and Restated Development Agreement

DA Section 7 Master Plan Revisions

There shall be three categories of Master Plan revisions: Major, Minor, and De Minimis Revision requests. Developer may request Major revisions to the Master Plan (including the Town Center Amendment discussed in section 6.11 of the Restated DA) no more than once in any calendar year, unless mutually agreed to by the City. All proposed revisions shall be considered under the approval criteria identified below.

Response: Pursuant to the Restated DA Section 7, the applicant is requesting a major master plan revision to the current VIC master plan. The primary objectives of the proposed changes to the master plan are to (a) consolidate industrial areas to optimize opportunities for employment-generating development and (b) more substantially integrate development types to allow for greater density, which is a key goal for the City, thus creating an opportunity to provide more open spaces throughout the site to enhance design and placemaking opportunities. As stated in the project summary, the applicant has integrated the "Town Center District" into the mixed-use corridor along the proposed ring road. The Revised VIC Master Plan will incorporate all necessary changes for the VIC and will not propose a separate/future master plan revision for a Town Center district within the master plan area. Responses to the applicable approval criteria for plan revisions are provided below.

DA Section 7.1 Major Revisions

Requests to modify or revise the Master Plan as follows shall be subject to a Type IV review process.

- a. **Greater than 10% increase in total residential units on the Property;**
- b. **A reduction of non-residential square footage on the Property by more than 10%;**
- c. **Reduction or increase of parking square footage by more than 10%;**
- d. **Greater than 10% decrease in the amount of open space approved in the Master Plan;**
- e. **New uses not included in the Master Plan and this Restated DA;**
- f. **Changes in the boundaries between LUAs that alter the total acreage of any LUA by more than 10%;**
- g. **Development of the School LUA for any purpose other than School, to modify the use limitations in Exhibit D and address the requirements of RCW 20.430.060.C.2.e.4;**
- h. **A change from a single family detached home to any other structure, along the northern boundary of the SFR LUA and the abutting neighborhood; and**

i. A reduction in size, change of location, or removal of the open space (treed) area between the SFR LUA and the abutting neighborhood.

Response: As detailed in the project summary above, a series of changes are proposed to the master plan site which meet criteria noted above and thus require a major revision subject to a Type IV process. Specific adjustments which require a major revision include:

- Increasing the maximum residential dwelling unit count from 1,200 units in the current VIC Master Plan, to a maximum of 1,800 residential dwelling units in the Revised VIC Master Plan represents a 50% increase in total residential units on the site.
- The Revised Master Plan proposes removal of the SFR LUA along the northern boundary of the site and the removal of single family detached homes from the master plan.
- The Revised Master Plan proposes significant changes to the street network, most notably the addition of a ring road at the center of the site. Further, the plan does not segregate rights of way for SE 29th and SE 184th Avenue from LUA acreages but rather assumes that all rights of way will be internal to land use areas. The combination of these refinements results in a change to the boundaries and total acreage of the MX, R and IL LUAs beyond 10%.

The applicant presented these changes to City staff through a pre-application conference. Upon review staff concluded that the proposed adjustments to the plan require a major modification subject to a Type IV process and City Council approval.

DA Section 7.4 Approval Criteria

All major, minor, and de minimis changes shall be reviewed according to the following approval criteria:

a. The proposed change meets the intent of the adopted Master Plan;

Response: The intent of the adopted master plan was (a) to reimagine the approximately 179-acre site as a “20-minute” mixed use neighborhood, (b) to meet the growing demand for light industrial, manufacturing, and commercial spaces, (c) to develop a distinct, authentic identity on the site, (d) to create a community with that connects both new and existing neighborhoods and (e) to design sustainably.

The revised master plan continues to achieve the intent of the adopted master plan with the primary objectives being (a) the consolidation of the industrial areas to optimize opportunities for employment-generating development, (b) more substantially integrate uses on campus, including the provision of additional multi-family housing, to align with the City’s density goals, (c) provide a larger, more contiguous open space network throughout the site to enhance design and placemaking opportunities, and (d) streamline the internal street network, and separation of traffic flow to enhance integration of the master plan site and neighboring residential subdivisions.

b. The proposed change will not result in a substantial impact to transportation, water, sewer or storm water management systems, after considering all mitigation plans;

Response: The Revised VIC Master Plan does not anticipate significant impact or demand to transportation, water, sewer or stormwater management systems and infrastructure as further described below.

The Restated DA between the applicant and the City vested trips for the Current VIC Master Plan. Per the Restated DA, vested net new trips include a total of 26,982 average daily trips (ADTs), 2,088 AM peak hour trips, and 1,991 PM peak hour trips. On- and off-site transportation capacity mitigation is predicated on the number of AM and PM peak hour trips while transportation concurrency corridor mitigation is determined based on PM peak hour trips.

The April 28, 2023, Traffic Impact Analysis (TIA) prepared by Kittelson and Associates, Inc. (Appendix D) demonstrates that the proposed uses within the Revised VIC Master Plan will result in a modest increase in weekday AM peak hour trip generation (141 net new trips added) and will not change the total net new PM peak hour trip generation compared to the Current VIC Master Plan. As indicated on Table 4 of the TIA, the Revised VIC Master Plan is estimated to generate 2,229 net new weekday AM peak hour trips and 1,991 net new PM peak hour trips. The TIA updated on- and off-site impacts of the project based upon the revised peak hour trip generation and recalibrated identified mitigation as appropriate. No new off-site traffic mitigation improvements were identified.

As requested by City Transportation staff in the December 1, 2022, Pre-Application Conference Summary, the TIA addresses compatibility and coordination with the City of Vancouver's on-going *SE 34th Street Safety & Mobility Project*. Future conditions in the TIA are modeled to reflect City-anticipated transportation system changes along SE 34th Street to enhance safety-based mitigation needs and mobility for all users on the SE 34th Street corridor. The applicant also coordinated with staff to provide early opportunities to review and offer feedback on the proposed street network and roadway cross sections, including modifications to SE 29th Street, a major east west collector. The proposed Mobility Plan Streetscape Summary sheets included in Appendix B reflect comments offered by staff.

Water utilities are readily available to the overall VIC site and can be feasibly extended to provide potable water for the future phased site buildout. Subsequent site plan approval for future phased development will adhere to applicable regulations and charges as necessary. As noted in the Revised Design Standards (Appendix F), the applicant will prioritize potable water use reductions, and efficiency strategies in its design through water-saving plumbing fixtures with future proposed buildings.

Sewer utilities are readily available to the overall VIC site and can be feasibly extended to provide service connections for the future phased site buildout. Subsequent site plan approval for future phased development will adhere to applicable regulations and charges as necessary.

An existing stormwater facility located in the southeast portion of the site treats surface runoff from the existing building and parking areas. The stormwater pond is designed to overflow to Fisher Creek during severe storm events. The existing facility will be maintained, matching the existing condition. New site development and disturbance of impervious surfaces within the approximately 179-acre VIC master plan site will comply with local and state stormwater management requirements including the implementation of erosion control, and low impact development (LID) Best Management Practices (BMPs) to reduce impacts on surface, ground water, runoff, and drainage patterns on the site.

As noted in the Revised Design Guidelines (Appendix F) the applicant is committing to manage stormwater on-site and promote surface water quality through native and adaptive plant selections to reduce irrigation, minimization of impervious surfaces and implementation of a surface stormwater strategy synopsis describing anticipated collection, treatment, and discharge strategies. This includes the implementation of low impact development (LID) Best Management Practices (BMPs) planned for future

development on the site. Subsequent site plan approval for future phased development will include erosion control mitigation measures during construction and post site buildout.

c. The proposed change will not result in adverse impacts to adjacent properties or uses, after considering all mitigation plans; and

Response: The character of the periphery of the master plan site under the revised master plan will be generally consistent with the approved master plan with the exception of the northern boundary, where the plan has been revised to provide greater buffering and open space adjacent to this edge. Where the current master plan formerly proposed single-family uses at the site's northern boundary adjacent to the existing Clearmeadows and Fisher's Grove residential subdivisions, the proposed plan locates the IL LUA north of proposed SE 29th Street. To ensure compatibility with neighbors to the north, the Revised VIC Master Plan includes a significant approximately 65-foot-wide linear open space trail. Further, the plan contemplates placing parking lots to serve the IL between the open space and buildings, resulting in an approximately 265-foot horizontal separation between industrial buildings and the northern edge. Figures 1 and 2 below illustrate the north edge condition under the current and revised master plans.

Figure 3. North Edge Condition with Single Family Uses – Current VIC Master Plan

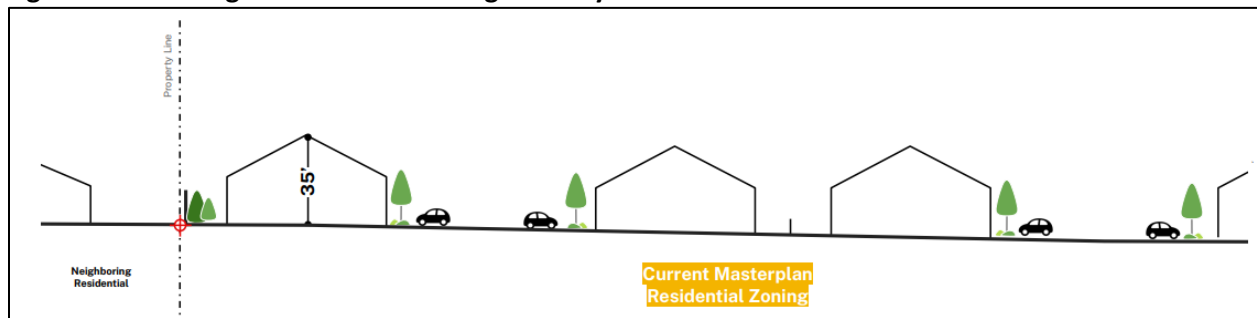


Figure not to scale.

Figure 4. North Edge Condition with Proposed Open Space – Revised VIC Master Plan

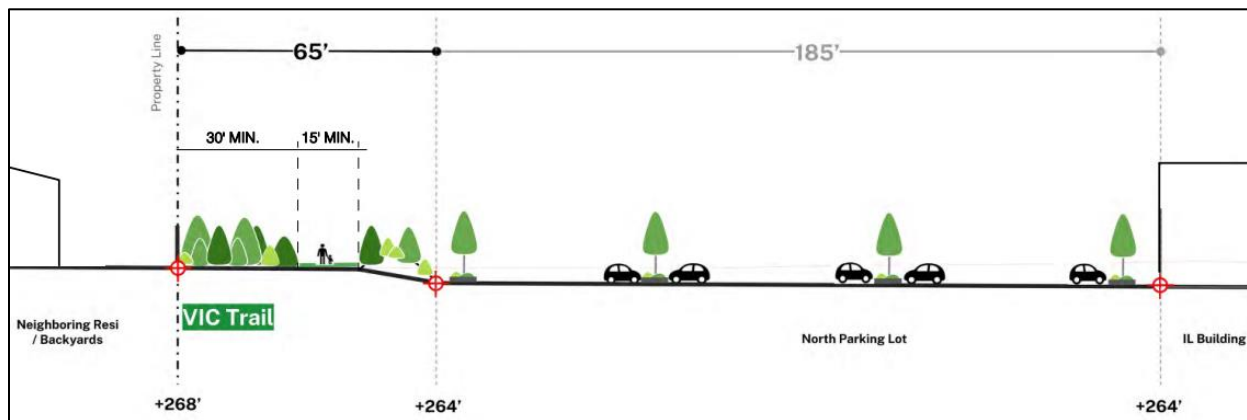


Figure not to scale.

- d. **The proposed change is consistent with Vancouver Municipal Code and Vancouver Comprehensive Plan.**

Response: The applicant demonstrates consistency with applicable criteria of the Vancouver Municipal Code, Vancouver Strategic Plan and Vancouver Comprehensive Plan within this narrative.

Vancouver Municipal Code (VMC)

VMC Title 20 Land Use and Development Code

VMC 20.430.060 Mixed Use Standards and District.

C. Multiple Building Mixed Use Sites

2. Standards – Mixed Use Sites

- a. **Overall uses. Uses shall be allowed as indicated in the MX column of Table 20.430.030-1, except that automobile service stations and drive-through facilities shall be prohibited.**

Response: Similar to the current master plan, the revised master plan envisions employees living and working on the VIC campus within a “20-minute” neighborhood. The revised master plan design creates a better integration of uses whereby those living and/or working on the campus will now be within a five-minute walk of mixed-use opportunities and those living in the nearby neighborhoods will be within a 20-minute walk. Allowed land uses on the site are consistent with those provided in Vancouver Municipal Code for the most-closely analogous land use area. For example, the southwest corner will be designated residential land use area (LUA), near the residential neighborhoods to the west. The northern part of the property, which abuts a residential neighborhood, will have a school land use area, a linear open space that buffers an IL LUA, and an approximately 13.7-acre forested tract to be used as park space. The denser light industrial and mixed-use land use areas (LUAs) will generally be in the core, to the south, and to the east of the property, to ensure a smooth transition toward the more commercial areas along SE 192nd Avenue.

The majority of the proposed land use areas (LUAs) on the site are permitted outright in the MX column of Table 20.430.030-1 (e.g., uses such as general and medical offices, general retail, multi-family housing, parks/open space, and a school) with the exception of light industrial (IL) uses that comprise a large portion of the overall site. Within the IL LUA, the applicant is proposing a variety of light industrial land uses (e.g., research and development, manufacturing, and production) consistent with IL uses in VMC Table 20.440.030-1. These uses are intended to support and attract employment-based businesses on the site, and are consistent with the current tenant mix at the VIC

There are no automobile service stations or drive-through facilities proposed.

- b. **Site Mix. At least 20% of the combined gross floor area of the buildings proposed on the site shall be devoted to residential uses, and at least 20% to nonresidential uses. Parking garages or portions of garages devoted to residential or nonresidential uses may be counted towards this requirement, but surface parking may not.**

Response: The applicant is proposing residential uses throughout the site, primarily within the MX and R LUAs however, as many as 100 residential units may also be constructed within the IL LUA, consistent with

the Current VIC Master Plan. It is anticipated that the revised master plan will include approximately 2,407,798 gross square feet (GSF) of residential uses and 1,703,065 GSF of non-residential uses. Overall, the revised master plan is anticipated to provide a total of 4,110,863 GSF of building area, with approximately 59 percent of total building area for residential uses and approximately 41 percent for non-residential uses. Therefore, this standard is met.

- c. Functional integration of uses. Land uses in mixed use sites shall be selected and designed to encourage interaction among uses. Examples include but are not limited to commercial developments which are significantly used for shopping by on-site or adjacent residents or office workers.**

Response: Like the current approved master plan, the revised master plan has been designed to be a “20-minute neighborhood”, a term used to describe neighborhoods in which all of life’s daily needs—work, recreation, school, commercial services, etc.—are located within a 20-minute walk from home. The reconfigured LUA orientation further integrates uses across the site and as a result has ensured that all residential uses are within a 5-minute walk of a mixed-use site. The design is compatible with on-site and off-site uses while activating the site and optimizing use synergies. Examples of the applicant’s functional integration of uses on the site include:

- *Public schools* – The northwest corner of the development is designated for a 20-acre middle school site for the Evergreen School District. This new site, in combination with the existing Fisher’s Landing Elementary school located on the south side of SE 34th Street opposite the site, will provide K-8 educational services within walking distance of proposed residential uses within the project.
- *Outdoor public spaces* – The applicant has designed the site to provide active and passive recreation including the 13.7-acre forested tract in the northeast corner of the site, and a variable width trail along the perimeter of the project. Other opportunities for open space are contemplated across the site as reflected in the Potential Open Space plan.
- *Shared parking* –Significant expanses of surface parking exist from the former HP facilities. Because the peak parking period for the employment uses and residential uses are not the same, the applicant anticipates that surface parking for the light industrial LUA will be utilized for multiple use areas in an interim basis as the site builds out. As development occurs new parking areas will be constructed in concert with buildings and uses. Shared parking is expected to continue throughout the site including the use of on-street parking as well as the potential development of standalone parking facilities. Note that the City intends to provide dedicated parking for the Forested Tract adjacent to the site on additional land purchased from the applicant.
- *Gradation of use intensity* – The applicant has intentionally located residential-compatible land uses adjacent to the existing single-family residences to the west and north and has located the highest density use, the mixed use towards the center and southeast portion of the site, locations that are substantially shielded from off-site views from the north and from residences farther to the west. The MX LUA and IL LUA are oriented along the loop road and will have convenient access to SE 192nd Avenue, SE 176th Avenue and SE 34th Street which should minimize the need for vehicles to travel through residential areas to exit the site. The northern part of the property, which abuts a residential neighborhood, will have a school land use area, a linear open space feature that buffers IL LUA, and a park. Denser areas of light industrial and mixed-use land use areas are intentionally located in the core, to the south, and to the east of the property, to ensure a smooth transition toward the more commercial areas along SE 192nd Avenue.

d. Physical integration of uses.

- 1. All buildings and improvements on the site shall be located and designed to look and function as an integrated development and to encourage pedestrian travel between buildings and uses. Complete segregation of use types, such as placement of multiple commercial structures all on one side of a mixed use site and multiple residential structures all on the other, shall be prohibited.**

Response: The applicant has planned the project to ensure that uses will look and function as an integrated development. As reflected on the Proposed Land Use plan (Sheet 003) the project features a school site, consolidated IL LUA, two RLUA areas and a MX LUA which is concentrated in the southeast of the site and extends along the south half of the loop road ensuring that residential uses are within a short walk to services. The loop road, coupled with the pedestrian laneways and other proposed infrastructure, provides multi-modal connection between the uses while the Forested Tract, VIC Trail, Town Plaza and other potential open space areas identified on the Potential Open Space plan (Sheet 004) provide alternative connections between LUAs.

The Revised Design Guidelines included in Appendix F provide details regarding the design and character of future buildings to ensure high quality design within the development. In addition, the applicant plans to establish and maintain thematic elements throughout the development to solidify a sense of place throughout the project. These include uniform wayfinding signage, public street furniture elements (benches, waste receptacles, etc.), playground design, bicycle racks, street lighting, street trees and other consistent treatments. The combination of land planning and implementation of district wide design guidelines will produce a well-integrated, cohesive development consistent with this standard.

- 2. Separate buildings shall be connected through pedestrian linkages delineated through landscaping, differentiated surface materials or texture. Delineation through striping alone shall not be considered sufficient.**

Response: Pedestrian linkages through the site will be delineated through designated laneways, landscaping and/or different surface materials. The precise treatments will be defined with future site plan review requests within each LUA.

- 3. One or more similar design characteristics among separate structures shall be provided, including but not limited to similar or complimentary building facades, surface materials, colors, landscaping, or signage.**

Response: The applicant has proposed limited revisions to the design guidelines approved with the current VIC Master Plan, primarily removing references to single-family detached dwellings, and other refinements to better align with the Revised VIC Master Plan. The Revised Design Guidelines are included as Appendix F. With adherence to the revised guidelines structures within the district will have complimentary building facades, surface materials, colors, landscaping, and signage. The Open Space Plan Sheet 004 (Appendix E) and the Mobility Plan Sheet 005 (Appendix E) illustrate the corridors that will facilitate bicycle and pedestrian travel between each development on the property. The applicant will

ensure each site plan, plat or other preliminary entitlement application is consistent with these design standards.

4. **One or more outdoor publicly accessible features shall be provided to encourage interaction among residents or users of the site, including but not limited to courtyards, delineated gathering spaces, or seating areas. These areas may be paved and/or landscaped and must comprise at least 5% of the total site area and be centrally located within the site to fullest extent possible.**

Response: The applicant is proposing numerous outdoor publicly accessible open space areas throughout the project as indicated in the Potential Open Space plan Sheet 004 (Appendix E). Exact dimensions and boundaries of publicly accessible open space areas are not yet known; however, the applicant intends to provide a neighborhood park, town plaza and other open space areas along the south portion of the loop to establish a band of open space and publicly accessible amenities from east to west. A perimeter trail has also been identified and will vary in width and character along different site boundaries as reflected on the Enlarged Trail Sections plan (Sheet 007, Appendix E). The revised plan maintains the 13.7-acre forested tract identified in the prior plan. The applicant is diligently working with the City to negotiate a Purchase and Sale Agreement to sell the Forested Tract to the City to be developed into a municipal park. The applicant previously recorded a deed restriction preserving the Forested Tract and limiting its development as outlined in the current Master Plan. The applicant has committed to providing a minimum of 24 acres of open space features within the master plan site which equates to approximately 13.4 percent thereby exceeding the minimum required.

e. **Development and building density/intensity standards.**

1. **Residential buildings shall achieve a minimum density of at least 12 units per net acre, as measured by the total number of residential units divided by the portion of the site devoted to residential use, not including public or private streets, or critical areas and associated buffers on that portion.**

Response: After subtracting out the school site (20-acres), the proposed forested tract and open space area (24-acres), right of way (21.79-acres) and industrial use area (74.12-acres) from the 179-acre site area total, the net master plan area available for residential use is approximately 39.09 acres and is comprised of both the R LUA and MX LUA. With an anticipated maximum buildout of 1,800 residential dwelling units, the resulting density within residential and/or mixed-use areas is approximately 46.05 units per acre, thereby exceeding the minimum density standard above. Given the availability of the IL LUA for up to 100 dwelling units per this proposed master plan, the density of the residential area may ultimately be slightly below this 46.05 units per acre target but will not affect the project's compliance with this provision. Specific compliance with the 12 units per net acre will be demonstrated with each Site Plan Review request within the master plan.

2. **Non-residential buildings shall achieve a floor area ratio (FAR) of at least .5, as measured by the gross square footage of the nonresidential buildings divided by the site area or areas devoted to nonresidential use. Individual nonresidential buildings and associated attached structures shall be counted as floor space. The site or portion of the site**

devoted to those buildings, not including public right-of-way, parks or pedestrian trails, shall be counted as site area. Parking garages may be counted towards the FAR requirement provided that 60% of the ground floor is devoted to an office or commercial use.

Response: Because the project is planned for highly integrated mixed-use buildings, the only LUAs that will contain minimal to no residential component are the School LUA and the IL LUA. Consistent with the Current VIC Master Plan, the applicant proposes to apply the development standards most analogous to each LUA within each LUA, thus the .5 FAR does not apply to the Residential, School, or Light Industrial LUAs within the Revised VIC Master Plan.

3. Development standards shall be as indicated in the MX column of Table 20.430.040-1.

Response: The applicant is proposing to apply development standards for these areas that align with existing development standards for comparable land use districts in the City as provided for and modified in the Restated DA. For example, the applicant is proposing to apply the light industrial development standards found in VMC 20.440, for intended light industrial uses and R-30 development standards outlined in VMC 20.420 for the RLUA. Limited exceptions to those standards were authorized with the Current VIC Master Plan as detailed in Exhibit D of the Restated DA. Updates to the Restated DA are anticipated to align with the Revised VIC Master Plan proposal.

4. Screening. Non-residential uses, including off-street parking, which directly abut off-site single-family residential zones without an intervening public or private street shall provide screening as per 20.440.030(C)(3).

Response: The only instance in which non-residential uses will abut a single-family zone without an intervening street is along the northern boundary of the VIC site where the School and IL LUA's abut an existing single-family residential neighborhood. As reflected in the Master Plan Design Set (Appendix E) a minimum 65-foot-wide open space area is proposed along the northern boundary of the site and will include a minimum 30-foot-wide vegetative buffer, a minimum 15-foot-wide trail, with an approximate 20-foot transitional area between the trail and future parking areas for buildings within the IL LUA. The combination of buffer and horizontal separation will adequately screen the neighborhood from the non-residential uses proposed within the site.

f. Frontage standards.

1. Buildings shall be placed to encourage pedestrian activity within and along the site. No more than 50% of each site frontage along arterial or collector streets shall be devoted to off-street parking or vehicular access. Portions of site frontages devoted to off-street parking or access shall include design features such as landscaping or columns so as to maintain visual continuity of the street and sidewalk to the fullest extent possible.

Response: All three roads on the perimeter of the site are either a collector (SE 176th Avenue) or an arterial (SE 34th Street and SE 192nd Avenue). In addition, the northern half of the loop road, SE 29th

Street, is proposed as a new urban collector arterial which will run east- through the site. Tentative massing and development diagrams reflected on the Master Plan Design Set (Appendix E) indicate that the use along the site frontages will be predominantly occupied by buildings and will likely incorporate landscaping and pedestrian facilities between buildings and the right of way. While some parking and vehicular access areas will be present, they will not occupy more than 50% of the site frontage. Demonstration of compliance with this provision will be provided at the site plan review stage with each future development request. The applicant has sold the school LUA to Evergreen School District (ESD). ESD will address this frontage requirement as part of its school site development proposal.

- 2. At least one fully functional and visibly identifiable public entrance shall be provided along the frontage of each building adjacent to an arterial or collector street.**

Response: The property will be designed to comply with this provision. The site is bounded by a collector (SE 176th Avenue), and arterial streets (SE 34th Street and SE 192nd Avenue). Due to SE 29th Street's designation as an urban collector arterial, minimal access points have been proposed to facilitate vehicular circulation to the north IL LUA area. Roundabouts along the loop road will provide access to an internal private vehicular accessway to serve the existing VIC and VIC Building North which recently obtained construction plan approval. Buildings fronting these higher classification roadways can incorporate public entrances to comply with this criterion.

- 3. Blank walls longer than 30 feet without windows or an unbroken series of garage doors are not permitted on any street frontage, including frontage to controlled access highways and freeways.**

Response: Per the Revised Design Guidelines (Appendix F), blank walls longer than 20 feet without windows or an unbroken series of garage doors are not to be permitted on any street frontage. Demonstration of compliance with this provision will be provided at the time of site plan review submittal for future developments.

- g. Multiple parcel sites. Mixed use sites may be developed pursuant to this chapter on sites which consist of multiple parcels and internal public or private roads, provided that all applicable standards herein are met. Pedestrian connections required by 20.430.060 (C)(2)(d)(2) crossing internal arterial streets shall not require differentiated surface materials if striping is provided.**

Response: The applicant's request involves a mixed-use master plan on a site with multiple parcels. Demonstration of project compliance with the standards of this chapter is provided throughout this narrative and the remaining application materials.

- h. Parking – The following shall apply in addition to the standards of VMC 20.945.**
 - 1. The maximum number of spaces provided shall be no more than 125% of applicable minimum requirement for sites 10 acres or less, and no more than 115% of the minimum for sites larger than 10 acres.**

Response: The current master plan developed parking strategies centered around utilization of existing surface parking facilities. As reflected in the revised master plan, many of the existing parking facilities

will not be retained. Most of the facilities located to the south, east and west of the existing VIC will be incrementally demolished as development occurs within the site. New parking lots, stalls, and/or facilities will be constructed with each phase of new development. The applicant will provide parking consistent with the ratios specified in the Restated DA with the following exceptions:

- Given that the applicant anticipates having studio apartments on campus, the applicant proposes a parking ratio of 1 stall/studio dwelling unit. The current DA does not specify a parking ratio for studio apartments.
- As noted during the pre-app, there was a scrivener's error in the approved DA stating that parking in the IL LUA was to be at a minimum of 4.5 stalls/1,000 SF. This should have stated that 4.5 stalls/1,000 SF was the maximum allowed. Applicant proposes to adhere to VMC 20.945.070 requirements as the minimum for parking in the IL LUA. The maximum for the light industrial LUA is being removed and not being reinstated as 4.5 stalls/1,000 SF in order to allow the applicant to respond to tenant/market demand
- Uses in all LUAs may count available on-street and off-site parking spaces which are within 1,000-foot walking distance (4 minutes) to the development toward the minimum on-site parking requirement.
- The table below summarizes the proposed parking ratios to be used throughout the Revised VIC Master Plan site.

Table 1. Revised VIC Master Plan Parking Ratio

Program	Prior DA (Masterplan 1.0)	Proposed for Masterplan 2.0	Proposed Change
SFR	1 – 2 stall/DU	1 stall/DU min.	No change
MFR	1.5 - 2 stall/DU	1.5 stall/DU min.	No change
SFR/MFR/MX/IL Senior	0.3 stall/DU	0.3 stall/DU min.	No change
SFR/MFR/MX/IL Studio	N/A	1 stall/DU min.	Masterplan 1.0 did not address parking ratio for studios so proposing to include one
MX Non-residential	2 – 2.5 stalls/1,000 SF	2 – 2.5 stalls/ 1,000 SF	No change
IL Non-Residential	4.5 stalls/1,000 SF	min per VMC 20.945.070; remove maximum	Reduced minimum; removed maximum

2. **The Planning Official may authorize shared or joint use parking among uses which are likely to be visited with a single driving trip and are adequately linked to their parking, provided an adequate legal agreement for the joint parking usage for the duration of the arrangement is recorded.**

Response: The applicant is anticipating the use of shared or joint parking across the site. The variety of uses proposed within the site do not have coinciding peak parking demands and therefore, provide a unique opportunity to allow shared parking. Additionally, as noted above, the applicant is seeking the use

of shared off-site parking facilities and on-street parking to satisfy parking demand for each use. Instances such as these in which the applicant seeks joint parking will be requested in conjunction with site plan review requests for future development actions. As noted previously, the City intends to provide its own dedicated parking for the Forested Tract so shared parking will not be needed for that use.

- 3. The Planning Official may authorize shared or joint use parking among uses which have differing hours of operation or usage, such as residences and offices, provided an adequate legal agreement for the joint parking usage for the duration of the arrangement is recorded.**

Response: As discussed above, the applicant anticipates that joint parking will be utilized in instances where adjoining uses have different peak parking demands.

- 4. The Planning Official may authorize up to a 25% reduction in required parking if transit service is available to the site.**

Response: A request for reduced parking is not anticipated at this time. C-TRAN Route 37 provides loop service between SE 164th Avenue and Mill Plain Boulevard. Bus stops currently exist in both directions on SE 34th Street at SE 189th Avenue and on SE 192nd Avenue at SE 31st Street. The future intersection of SE 29th Street at SE 192nd Avenue is only approximately 800-feet north of the current bus stops at SE 192nd Avenue and SE 31st Street. Pedestrian facilities through the site will facilitate access to these bus stops to encourage the redevelopment of the site, and, in particular, the dense MX LUA at the center of the site. The applicant is interested in facilitating additional bus routes to and through the property, with C-TRAN's concurrence.

- i. Vesting**
Vesting and concurrency provisions shall be as indicated in 20.260.090 and 20.260.100.

Response: Vesting and concurrency has been addressed in previous development agreements for the site. Concurrent with the current VIC Master Plan, the applicant requested City approval of the Restated DA that updated the vesting and transportation concurrency provisions to reflect the specific uses and implemented standards anticipated for future development of the site.

3. Review Process – Mixed Use Sites

- a. Mixed Use Plan. Initial development of a multiple building mixed use site or portions of a mixed use site shall require submittal and approval of a Mixed Use Master Plan, unless already subject to previous Mixed Use or Master Plan approval. The following requirements shall apply:**
 - 2. Approval Criteria and Zoning. Proposed Mixed Use Master Plans 25 acres or larger in size shall be reviewed as Type IV application by the Planning Commission. Proposals less than 25 acres shall be reviewed as Type IV applications by the hearings Examiner. Approvals, or approval with conditions shall be granted upon findings that:**

- a. **The Master Plan and associated conditions of approval ensure future development will meet all applicable criteria of this chapter; and**

Response: Compliance with the provisions of this chapter is demonstrated in the responses provided throughout this narrative and in the associated application materials. Subsequent site plan approval will meet all applicable criteria of the VMC 20.430.060 multiple building mixed use standards unless modified by the Development Agreement and this Master Plan.

- b. **The proposal complies with applicable rezone criteria of VMC 20.285.080; and**

Response: Per Ordinance 4346 on August 6, 2021, the site has been rezoned from Industrial to Mixed Use. Compliance with the rezone criteria found in VMC 20.285.080 is not required to be demonstrated with this application.

- c. **There is or will be sufficient capacity within the transportation system and public sewer, water, police, fire, and stormwater services to adequately serve all portions of the site at the time of development; and**

Response: The revised TIA prepared by Kittelson and Associates, Inc. (Appendix D) demonstrates that the proposed uses within the master plan will generate a modest increase in weekday AM peak hour trips and the same number of weekday PM peak hour trips as compared to those already reserved for the site through the existing development agreement. The combined impact of refinements to the on-site transportation network, closure of one existing VIC campus vehicular access on SE 34th Street and revised site land uses results in changes to off-site proportional share contribution amounts but does not trigger new off-site transportation capacity mitigation construction beyond those measures required of the current VIC Master Plan development agreement. Because the City's transportation planning department has already reserved capacity in the system for the trips associated with the site, sufficient capacity exists within the transportation system with resolution of infrastructure improvements and other mitigation requirements outlined in the revised TIA. Consistent with the current VIC Master Plan, the applicant will improve the long-term capacity of the surrounding road network to address future growth in part by completing a segment of SE 29th Street from SE 192nd Avenue to SE 176th Avenue to provide an alternate east-west corridor to help relieve demands on SE 34th Street between SE 164th and SE 192nd Avenues. The revised TIA finds there will be sufficient capacity within the transportation system to adequately serve all portions of the site at the time of development and identifies implementation timing for each of the recommended mitigation measures associated with project phases. No new off-site mitigation measures were identified in the revised TIA.

Water and sewer utilities are readily available to the site and can be feasibly extended to serve the properties. All stormwater runoff from impervious surfaces on the site will be treated and infiltrated on-site as noted above. Stormwater runoff will be addressed in detail with future development plans and Stormwater Technical Information Report(s) with site plan review requests. Police, fire, and emergency services are generally available to serve the site and project impacts on these services will be incremental over the course of the buildout of the master plan.

- d. **A change in circumstances has occurred since existing zoning designations at the site were originally adopted. For the purposes of a multiple building mixed use plan only, compliance with the development standards of VMC 20.430.060.C.2 and the applicable Comprehensive Plan policies shall be sufficient to demonstrate that a change in circumstances has occurred.**

Response: Per Ordinance 4346 on August 6, 2021, the site has been rezoned from Industrial to Mixed Use. Compliance with the rezone criteria found in VMC 20.285.080 is not required to be demonstrated with this application. The revision to the prior master plan does not change the overall composition of the mixed-use master plan but rather reconfigures land use areas within the boundaries for larger, consolidated industrial sites and increases residential density in response to unprecedented demand for housing.

3. **Proposed modifications to previously approved mixed use concept plans shall require Type I, II or III review depending on the modification required, as specified in VMC 20.260.030.**

Response: The applicant is requesting a modification to an approved mixed use master plan, and pursuant to DA Section 7, the requested changes constitute a major revision thus prompting a Type IV review.

- b. **Development proposals on sites subject to an existing Mixed Use Master Plan or existing mixed use zoning:**

1. **Development on sites or portions of sites subject to Mixed Use Master Plan approval under this chapter, or under equivalent mixed use approval prior to this chapter, shall require site plan approval as Type II review under VMC 20.270. Approval or approval with conditions shall be granted if the proposal is fully consistent with the approved Mixed Use Master Plan or equivalent, applicable portions of this chapter, and VMC 20.270 procedural standards.**

Response: The applicant anticipates site plan review submittals for future development requests within the master plan.

2. **Development on sites or portions of sites zoned MX but not subject to an approved Mixed Use Master Plan under this chapter or other shall submit for master plan review under this chapter as a Type III application for sites less than 25 acres, and a Type IV application for sites 25 acres or larger.**

Response: The entire site area was previously rezoned to Mixed Use (MX) and therefore, will be subject to review under the governing land use entitlements associated with this revised mixed use master plan request.

- 3. No more than 50% of the total square footage envisioned by the Master Plan for any one major use type (commercial, office or residential) can be granted occupancy permit approval until occupancy permit approval is provided for at least 25% of the total square footage of all of the major use types envisioned in the Master Plan. This requirement may be waived by the planning official, if the applicant provides a security or other form of binding assurance that the remaining major use types contemplated in the Master Plan will be built.**

Response: The Restated DA includes “Synchronicity” provisions. These provisions limit the extent of residential uses allowed on the site based on the applicant’s delivery of new employment use square footage within the development. Specifically, Section 6.4(d) of the Restated DA stipulates that the applicant will be unable to construct greater than 50% of the residential units within the project until the developer has built at least 215,000 SF (25%) of the proposed new employment square footage on the site. Refinement of this language is anticipated to address additional housing units proposed with the project. However, as previously stated, the applicant has recently secured final engineering and building permit approvals for a new 200,981 square foot industrial building, VIC Building North, which largely meets this initial obligation for non-residential square footage.

- D. Adjustment to Numerical Standards – Single Building and Mixed Use Sites. Numerical standards contained in this chapter may be adjusted by up to 25% if a clear demonstration is provided that the proposed mixed use development with the adjustment would fully comply with the purpose statement and all other applicable standards of this chapter, and that the proposal would clearly not be able to comply with those standards without the proposed adjustments.**

Response: The applicant proposed land use area-specific development standard adjustments with the Restated DA that was approved by the Vancouver City Council by Ordinance 4346 on August 16, 2021. An adjustment to numerical standards is not proposed as part of the revised master plan request at this time, however, application of this provision may be requested at the time of individual site development.

- E. Incentives – Single Building and Mixed Use Sites. Traffic impact fees for mixes use developments shall be reduced to account for internal trips between uses on the site or building as demonstrated by an approved traffic study.**

Response: The TIA prepared by Kittelson and Associates (Appendix D) has considered an internalization factor for trips that will be retained on site due to the proposed mixture of land uses. It is assumed that any traffic impact fees applicable to future developments within the site would be based on the net increase of trips after this internalization factor is applied.

Vancouver Strategic Plan

GOAL 1: Ensure our built urban environment is one of the safest, most environmentally responsible and well maintained in the Pacific Northwest.

Response: The revision to the VIC mixed use master plan serves Goal 1 as the developer is committed to ensuring a safe, environmentally responsible, and well-maintained property. The applicant demonstrates

this commitment through the Revised Design Guidelines (Appendix F) for the site that promote design principles to incorporate sustainability and energy efficiency measures such as vehicle charging stations, solar panels, low impact development (LID) stormwater management approaches, shared parking strategies, and site design that supports a 20-Minute Neighborhood. The concept of the 20-Minute Neighborhood, and the 5-Minute derivative proposed with the Revised VIC Master Plan is to encourage accessibility, active (walking, cycling) transport and public transport in proximity to housing, employment opportunities, recreational opportunities, and open spaces. The Revised VIC Master Plan proposes a network of passive and active open space areas that utilize existing trees and natural resources, a balance of community gathering spaces and areas, the creation of a compact urban form composed of well-articulated buildings and ample pedestrian areas to encourage multi-modal travel throughout the site between the various on-site uses and open space areas and enable building design that encourages pedestrian access, ground floor visibility and community spaces for socialization and collaboration.

GOAL 4: Ensure that Vancouver's parks and trails system is the highest quality and most complete in the region.

- **Objective 4.1: Increase maintenance levels and accessibility to parks**
- **Objective 4.2: Increase recreational opportunities in our parks**

Response: As demonstrated with the Potential Open Space Site Plan Sheet 004 (Appendix E), the revised master plan serves Goal 4 by promoting a town plaza, neighborhood parks and providing a network of active and passive open space areas on the site including a multi-use trail that connects to 34th Street as part of the City's Complete Streets Program to enhance safety, efficiency, and mobility for all users. The master plan preserves an approximately 13.7-acre designated forested tract at the northeast corner of the site. Additionally, the Mobility Plan Sheet 005 (Appendix E) demonstrates functional connections to the site-wide bicycle and walking path network.

GOAL 6: Facilitate the creation of neighborhoods where residents can walk or bike to essential amenities and services—"20-minute neighborhoods"

- **Objective 6.1: Support a strong, active neighborhood program that enhance livability and community connections**
- **Objective 6.2: Improve amenities and services that allow residents to "age in place"**

Response: As mentioned, the proposed mixed use master plan supports the 20-minute neighborhood concept that encourages accessibility, active (walking, cycling) transport and public transport in proximity to housing, employment opportunities, recreational opportunities, and open spaces. The Mobility Plan Sheet 005 (Appendix E) demonstrates functional connections to the site-wide bicycle and walking path network. This mixed-use community will strengthen east Vancouver's commercial, light industrial, retail and community districts, helping to build a strong, resilient economy.

GOAL 8: Strengthen commercial, retail and community districts throughout the city

- **Objective 8.1: Make downtown Vancouver a vibrant destination for the community and the region**
- **Objective 8.2: Strengthen neighborhood business districts**

Response: The Revised VIC Master Plan proposes a more integrated mixed-use community in east Vancouver in a location where residents can work, shop, go to school and recreate all within a 20-minute walk from home. The diversity of residential housing products will offer a diversity of price points to allow housing opportunities for persons of a wide range of incomes within the community. The increase in residential density within the site will respond to shortages in the market. The additional residential rooftops will help support the neighborhood retail uses within and near the master plan site, supporting the existing and future neighborhood business districts.

GOAL 9: Build the strongest, most resilient economy in the region

- **Objective 9.1: Create infrastructure and policies that support job creation**

Response: The Revised VIC Master Plan reconfigures land use areas to provide greater integration of uses throughout the site including development of large-footprint light industrial buildings which allow for more flexibility to respond to market demands and tenant needs and is critical to achieve both the project and City's employment generation goals. As demonstrated with the Master Plan – Proposed Land Use Sheet 003 (Appendix E), of the approximately 179-acre site, approximately 74 acres of IL land and approximately 33 acres of MX land is proposed to create infrastructure that supports job creation and employment opportunities in research and development, light industrial/manufacturing uses, professional office, medical, retail, education and in the short term, construction and trade industries. The mixed-use environment enhances the experience for residents, employees and patrons by offering a variety of services and amenities which will not only support the immediate businesses within the site but will support other uses in the broader Vancouver area.

In addition, the developer will be constructing a segment of SE 29th Street between SE 192nd Avenue and SE 176th Avenue through the site. The facility is planned as an urban collector arterial and will relieve east-west congestion occurring on SE 34th Street and increase mobility and convenience in east Vancouver. The addition of this facility and other public infrastructure will enhance the marketability and interest in the employment uses on the site. The proposed location for SE 29th Street and the SE 29th Street streetscape will provide a transition between residential, and office/flex uses on the site, provide for truck traffic to and through the IL LUA, and offer safe and convenient pedestrian and bicycle access between the uses on the site.

Vancouver Comprehensive Plan

EC-1 Jobs-housing balance

Increase the ratio of jobs to residents in the City of Vancouver and the region.

Response: The June 30, 2020, Market & Economic Analysis for Vancouver Innovation Center, prepared by Eric Hovee discusses the various market factors influencing the development of the site and the respective benefits of the applicant's proposal to diversify the uses within the site and broaden the array of employment uses allowed. The study estimated that the Current VIC Master Plan could add approximately 3,500 net new jobs at build out. As discussed throughout this narrative and reflected in the various appendices, the Revised VIC Master Plan maintains the nonemployment square footage targets and thus the potential job creation is consistent. The increase in residential density will improve the jobs to residents ratio in the East Vancouver area.

EC-2 Family-wage employment

Promote the formation, recruitment, retention and growth of businesses that provide a wide range of employment opportunities, particularly family-wage employment. Prioritize family-wage employment in land use policies and practices.

Response: New jobs anticipated at build-out will provide a wide range of employment – in tech and light industrial activities, good paying professional/technical office-related occupations, and including entry-level and part-time retail/service employment suited to a range of employee interests and needs.

EC-3 Public revenue enhancement

Promote development that enhances revenue generation for public services.

Response: Per Clark County GIS, from 2006-2019, property taxes paid on the HP property declined by approximately 22%. Re-occupancy of the full existing space should stem this erosion. New development will add substantially to the property values and resulting tax revenues (in amounts not yet estimated). While on-going sales tax potential is greatest for commercial retail, dining and personal service uses (as compared with many industrial or office activities), the City will also generate considerable one-time sales tax revenue from new construction over the course of development to project build-out.

EC-4 Industrial and business park sanctuaries

Provide an adequate supply of industrial and/ or business park areas with opportunities for family-wage employment and revenue generation.

Response: The Revised VIC Master Plan concept can accommodate approximately 5,000 jobs including significant and diverse family-wage employment opportunities consistent with the current master plan. The revised master plan will maintain the mix of residential and commercial uses contemplated in the current plan, uses which yield higher per square foot values than industrial-only uses, resulting in increases to both property and sales tax revenue beyond what would be generated by less-intensely developed industrial-only uses.

EC-5 No net loss of employment capacity

Restrict zone changes or legislative land use approvals that would lessen long-term capacity for high-wage employment unless accompanied by other changes within the same review cycle that would compensate for the lost capacity or unless the proposed change would promote the long-term economic health of the city.

Response: As noted with the current VIC Master Plan, it is expected that a highly integrated mixed-use center that incorporates housing and amenities with employment will result in a greater employment potential on the site and greater business retention. When formerly considering if the property should be zoned from industrial to MX, Jones Lang LaSalle Americas, Inc. prepared a Comparative Valuation Analysis on December 8th, 2020, that concluded: “the property will exceed its current value significantly under the proposed mixed use (MX) zoning due to the added diversity of the asset mix and the construction of retail, lifestyle, and educational amenities for tenants and the surrounding community.” The revised master plan retains the integrity of this assessment and offers an even greater degree of

mixed-use integration, which will further this objective of increasing business and business retention through the creation of place.

EC-6 Efficient use of employment land

Maximize utilization of land designated for employment through more intensive new building construction and redevelopment and intensification of existing sites.

Response: The VIC proposal serves EC-6, efficient use of employment land, by consolidating and reconfiguring the IL LUA and leveraging more shared parking strategies. The Revised VIC Master Plan offers a more efficient overall land plan that provides greater flexibility for site design and development to respond to market drivers.

EC-7 Regional focus

Work with the larger Portland-Vancouver region to leverage opportunities, unique site availability, and marketing to promote the region nationally and globally to attract new business.

Response: The vision of the revised master plan is to honor and build around the innovative roots of the site as a high-tech employment hub, by building around the existing buildings and making that the core of the community. This will create a unique environment unlike others in the region and an environment that can be promoted at both a national and global level. The applicant has already made strides by securing tenants in the existing VIC who have national and international reach in their individual business markets. The implementation of the Revised VIC Master Plan will only improve upon this tenant portfolio.

EC-8 Small business support

Support the growth of new and expanding small business through efficient permitting, incentives, and communication.

Response: The proposed master plan revision will retain the capacity for small business within the site. There is substantial opportunity for new and expanding small businesses to find a home within the existing VIC or one of its future buildings. The variety of spaces provide great flexibility for tenant configurations to meet a wide range of businesses. This is especially critical in the near term as a visible sign that Vancouver is open for business to promote economic recovery over the next 2-3 years. The applicant is interested in collaborating with the City of Vancouver to identify and promote development and employer-based incentives – most ideally with coordination offering features of one-stop permitting that should work with an already approved master plan.

Chapter 4: Housing

H-1 Housing options

Provide for a range of housing types and densities for all economic segments of the population. Encourage equal and fair access to housing for renters and homeowners.

Response: The revised master plan proposes to increase density to a maximum of 1,800 dwelling units and will allow a variety of residential product types including single family attached, garden style apartments and vertical mixed use residential. Considerable effort has been expended to evaluate market needs for the various housing types and building composition including a mix of unit sizes which will serve

demand more efficiently. These product types can provide either rental or ownership opportunities at a variety of price points. This is particularly critical to ensure that housing is available for a variety of workers in various positions within the employment uses on the site and to relieve housing shortage within the broader Vancouver area.

H-2 Affordability

Provide affordable housing by formulating innovative policies, regulations and practices, and establishing secure funding mechanisms. Target affordability programs toward households with incomes below the median.

Response: The Revised VIC Master Plan proposes to increase density to a maximum of 1,800 dwelling units and will allow a variety of residential product types including single family attached, garden style apartments and vertical mixed use residential with a wide range of price points to serve broader economic groups. If the City were to adopt an MFTE zone that included the property, the applicant may seek to participate in the program for some portions of the site.

H-3 Housing improvement

Encourage preservation, rehabilitation and redevelopment of existing housing stock. Support neighborhood based improvement efforts.

Response: There are no existing homes on the master plan site. The Revised VIC Master Plan proposes two non-contiguous R LUAs and anticipates residential uses within the MX LUA. A variety of amenities are proposed throughout the site including publicly accessible open spaces, the perimeter trail, and other pedestrian and bike friendly facilities along roadways within the site. Uses anticipated within the site including office, retail, services, employment and education will add to the nature and feel of the neighborhood and community.

H-4 Innovative zoning

Encourage innovative housing policies that provide for affordable housing and maintain neighborhood character.

Response: The MX master plan allows for higher density housing on the site, thereby increasing housing inventory and allowing new housing at multiple price points. If the City were to adopt an MFTE zone that included the property, the applicant may seek to participate in the program for some portions of the site.

H-5 Housing placement near services and centers

Facilitate siting of higher density housing near public transportation facilities and in designated centers and corridors.

Response: C-TRAN Route 37 provides loop service between SE 164th Avenue and Mill Plain Boulevard. Bus stops currently exist in both directions on SE 34th Street at SE 189th Avenue and on SE 192nd Avenue at SE 31st Street. The future intersection of SE 29th Street at SE 192nd Avenue is only approximately 800-feet north of the current bus stops at SE 192nd Avenue and SE 31st Street. Pedestrian facilities through the site will facilitate access to these bus stops to encourage and will further encourage the redevelopment of the site.

H-6 Special needs housing

Facilitate housing for special needs populations dispersed throughout Vancouver and the region. Such housing may consist of residential-care facilities, shelters, group homes, or low-income housing, and should be located near transportation and other services such as health care, schools, and stores.

Response: While the applicant is not currently planning an affordable housing project on the site, they are willing to explore such a project if the City were to help with incentives such as adopting an MFTE zone for the site.

H-7 Home ownership

Promote opportunities for home ownership and owner occupancy of single- and multifamily housing.

Response: The Revised VIC Master Plan proposes to remove single family detached units from the project and will focus on other housing typologies which will increase housing inventory in the city and will allow for new housing at a variety of price points which may be available for sale or lease.

H-8 Public-private partnerships

Facilitate enhanced partnerships between public, private, and non-profit sectors to address affordable housing.

Response: The applicant is open to pursuing public-private opportunities that would enable an affordable housing project at the site.

H-9 Funding for housing

Pursue funding mechanisms to support affordable housing.

Response: Programs such as the MFTE program, Community Development Block Grants (CDBG), Tax Increment Financing (TIF) and other opportunities exist to help facilitate affordable housing projects. The applicant is open to further dialogue over the course of the development of the Revised VIC Master Plan to develop affordable housing on the site should the City seek to partner to make incentives available for such a project.

Chapter 5: Public Facilities and Services

PFS-1 Service availability

Consider water, sewer, police, transportation, fire, schools, storm water management, and parks as necessary facilities and services. Ensure that facilities are sufficient to support planned development.

Response: The applicant and developer of the VIC will be making significant investments to develop a robust on-site infrastructure system to support the uses on the site. These investments include the development of SE 29th Street to an urban collector arterial standard, and the installation of public water, sanitary sewer, and LID stormwater facilities throughout the project site. In addition, the applicant has sold a 20-acre site to the Evergreen School District for a future middle school. The master plan also calls for significant areas of open space across the campus including the 13.7-acre forested tract identified in the prior plan which the applicant is in negotiations with the City to sell this land to be developed as a

municipal park in the future. Other open space areas are proposed including the VIC Trail which will run along the perimeter of the site, a town plaza and a neighborhood park. In total, the revised master plan proposed 24 acres of open space, approximately five (5) acres more than what was contemplated in the current master plan. Additionally, the payment of system development charges or impact fees applicable for new development as well as property taxes help fund public services including police, fire, emergency management, schools, etc.

PFS-4 Transportation system

Develop and maintain an interconnected and overlapping transportation system grid of pedestrian walkways, bicycle facilities, roadways for automobiles and freight, transit and high-capacity transit service. Include support programs such as traffic operations, transportation demand management, neighborhood traffic management, and the regional trails program. Work towards completing and sustaining individual components and programs to ensure success of the entire system.

Response: Figure 5-3 of the City's Comprehensive Plan illustrates planned connection routes through the City. This map identifies a new east-west route through the VIC site in the alignment of NE 25th Street. Following discussions with the City during the current master plan review, it was determined that this route will be provided in the alignment of NE 29th Street. This route will help ease the number of vehicular trips that have to use SE 34th Street for connectivity between SE 164th Avenue and SE 192nd Avenue so long as the exiting configuration of SE 34th Street is maintained subject to any improvements required for this project. The revised master plan maintains the NE 29th Street extension thus providing of this important link in the regional transportation network.

PFS-5 System balance

Allocate resources to balance transportation choices. Promote development of a broader range of transportation options including pedestrian, bike, and transit systems, rather than focusing all resources on satisfying peak commuting demand with roadway capacity alone.

Response: The revised master plan will include an extensive network of pedestrian pathways or trails, sidewalks, bike lanes, plaza, and promenade areas to help provide alternative routes of travel for pedestrians and bicyclists to travel within the site and to off-site locations, including transit stops located on SE 192nd Avenue at SE 31st Street and on SE 34th Street at SE 189th Avenue.

PFS-8 Transportation circulation and system connectivity

Develop a transportation grid that provides good connections to surrounding land uses and activity centers and allows for multiple circulation routes to/from each location. Close gaps and complete system connections through the development and capital improvement processes.

Response: The applicant's completion of the SE 29th Street link will be an important improvement in the local regional traffic network, which lacks a continuous grid in many areas. The installation of SE 29th Street will relieve the burden currently being placed on existing corridors for vehicular throughput.

PFS-10 Livable streets

Design streets and sidewalks and manage vehicular traffic to encourage livability, interaction, and sense

of neighborhood or district ownership in linkage with adjacent land uses. Encourage multi-modal travel, and provide accessible, human scale opportunities for transferring between travel modes.

Response: The revised master plan will include an extensive network of pedestrian pathways, sidewalks, bike lanes, plaza, and promenade areas to help provide alternative routes of travel for pedestrians and bicyclists to travel within the site and to off-site locations, including transit stops located on SE 192nd Avenue at SE 31st Street and on SE 34th Street at SE 189th Avenue.

PFS-13 Neighborhood traffic

Protect and enhance neighborhoods with an active program that focuses on safety, safe routes to school, traffic calming, education, and enforcement.

Response: The proposed future middle school is located at the northwest corner of the site and near residential uses on the site providing for shorter routes of travel for many of the residents on the site. New public sidewalks and additional trails on the site will further help to facilitate safe pedestrian routes to this school. The Mobility Plan and associated Streetscapes Summary included in the Master Plan Design Set (Appendix E) reflect a thoughtful approach to both vehicular and non-vehicular transportation. For example, the use of laneways in neighborhoods place more emphasis on pedestrian movements and shared space with lower vehicle use, while SE 29th Street is designed for higher volumes of traffic and separated bike and pedestrian facilities to buffer against traffic. The applicant has been working with City staff and has refined the designs to respond to feedback.

PFS-17 Vehicle miles traveled

Use transportation and land use measures to maintain or reduce single occupant motor vehicle miles traveled per capita to increase system efficiency and lower overall environmental impacts.

Response: One of the fundamental goals of the existing master plan was to create a 20-minute community in which residents can fulfill most of their daily trip needs within a 20-minute walk. By establishing a 20-minute community, the applicant can minimize the need for vehicular trips, which in many cases would be conducted in a single-occupant vehicle and with a significantly greater carbon footprint. The revised master plan improves upon the 20-minute community concept and now has mixed use buildings within a five-minute walk for those living and/or working on the campus.

PFS-28 Schools

Work with local school districts to facilitate an adequate supply of schools and associated facilities. Facilitate timely and efficient siting processes which allow for assessment and mitigation of impacts.

Response: The applicant worked with the ESD to reserve an approximately 20-acre site on the property for a future middle school during the entitlement for the current master plan. Since then, ESD has purchased the parcel and the applicant continues to work with them as party and some further boundary adjustments need to be made to the school parcel to align with the proposed roadway network in the revised master plan. ESD staff has indicated that the proposed boundary adjustments provide a more developable parcel for the school district and the total acreage of the parcel remains 20-acres as in the current master plan.

PFS-30 Open spaces and parks

Provide and maintain parks, open spaces, and recreational services for all segments of the community consistent with adopted level-of-service standards. Facilities and services should support recreational activities, environmental or historical resource protection, and should preserve and enhance neighborhood identity and function.

Response: The applicant began discussions with the City to reserve a 13.7-acre location at the northeast corner of the site for a park that will be open to the public during the first master plan entitlement. Discussions have continued as the applicant has refined the master plan. The forested tract is delineated within the Master Plan Design Set and reflects a slightly modified boundary to encapsulate mature and healthy trees which have been surveyed since the current master plan approval.

PFS-31 Trails

Provide a system of trails linking public and private open spaces, parks, recreational uses and transportation facilities within and between jurisdictions. Encourage use of greenspaces and riparian corridors as pedestrian and nonauto-oriented linkages within the urban area, in balance with habitat protection.

Response: The proposed master plan will include an extensive network of pedestrian pathways and trails, sidewalks, a neighborhood park, town plaza, and promenade areas to help provide alternative routes of travel for pedestrians and bicyclists to travel within the site and to off-site locations. See Sheets 004 and 5 of the Master Plan Design Set (Appendix E).

PFS-32 Parks Coordination

Plan for parks, trails, open spaces and recreational services in coordination with other local and regional public agencies and private entities. Facilitate provision of lands and/or impact fees for parks as part of the development review process.

Response: The applicant began discussions with the City during the Current VIC Master Plan entitlement process to reserve an approximately 13.7-acre location at the northeast corner of the site for a park that will be open to the public. The Revised VIC Master Plan reflects the proposed forested tract, and the applicant continues to work with the City to negotiate the terms of this reservation including the potential for additional land which the City will use to provide dedicated off-street parking for the new municipal park.

6.2.2 Coordinate with service providers to identify the land and facility requirements of each and ensure that sufficient land is provided in urban and rural areas to accommodate these uses.

- 2. How the proposal is more consistent than the existing designation with each of the following objectives as applicable:**

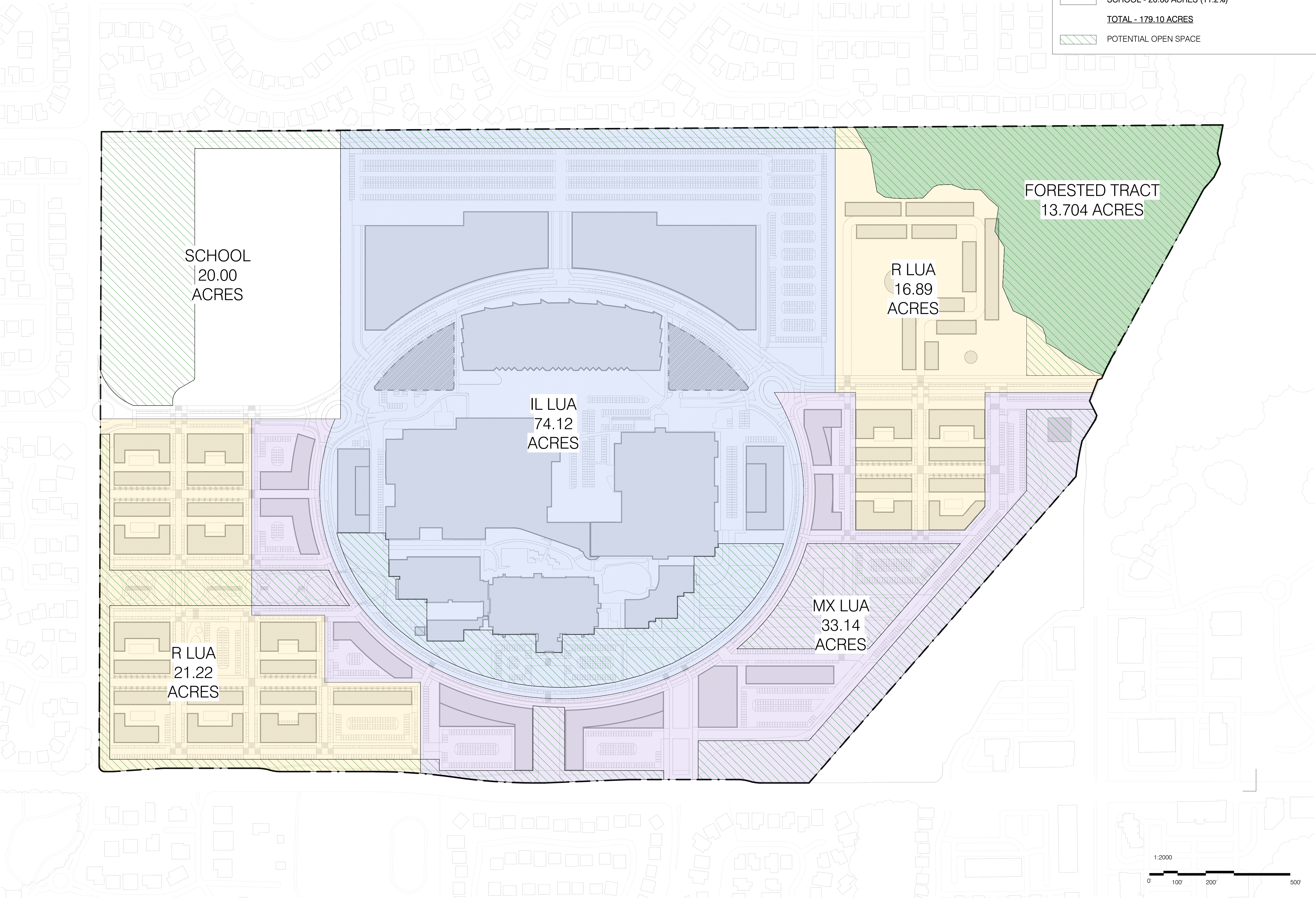
Response: The applicant is not proposing a Comprehensive Plan amendment or rezone application with this revised master plan submittal. This standard does not apply.

IV. Conclusion

As demonstrated in this narrative and in the associated application appendices, the proposed major revisions to the current mixed use master plan will further the goals and policies of the City's Comprehensive and Strategic Plans and facilitate investment in the community. As the proposal has been found to meet the approval criteria governing the request, the applicant respectfully requests City approval of these land use applications.

GENERAL NOTES:

1. BUILDING FOOTPRINTS ARE ILLUSTRATIVE AND SUBJECT TO CHANGE.
2. OPEN SPACE BOUNDARIES ARE CONCEPTUAL. THE LOCATIONS AND SIZE OF EACH OPEN SPACE AREA WILL BE REFINED AT THE SITE DEVELOPMENT STAGE.

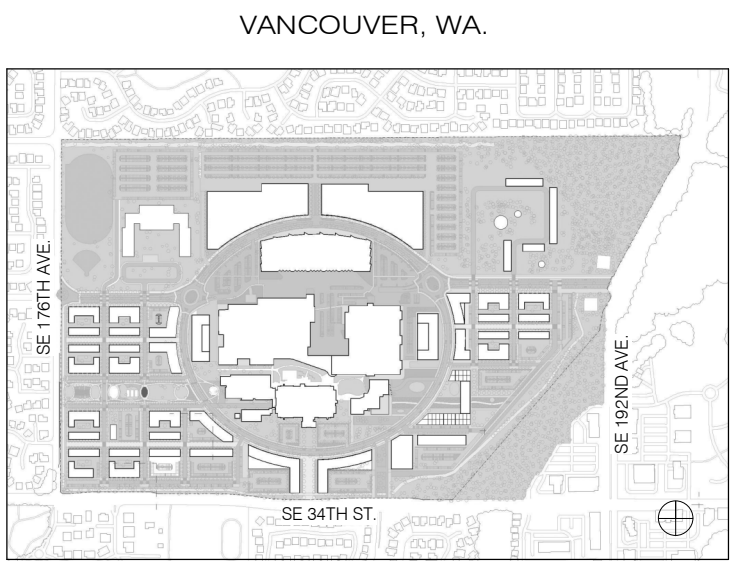


LAND USE LEGEND	
	LIGHT INDUSTRIAL (IL) - 74.13 ACRES (41.4%)
	RESIDENTIAL (R) - 38.12 ACRES (21.3%)
	MIXED-USE (MX) - 33.15 ACRES (18.5%)
	FORESTED TRACT - 13.704 ACRES (7.6%)
	SCHOOL - 20.00 ACRES (11.2%)
TOTAL - 179.10 ACRES	
	POTENTIAL OPEN SPACE

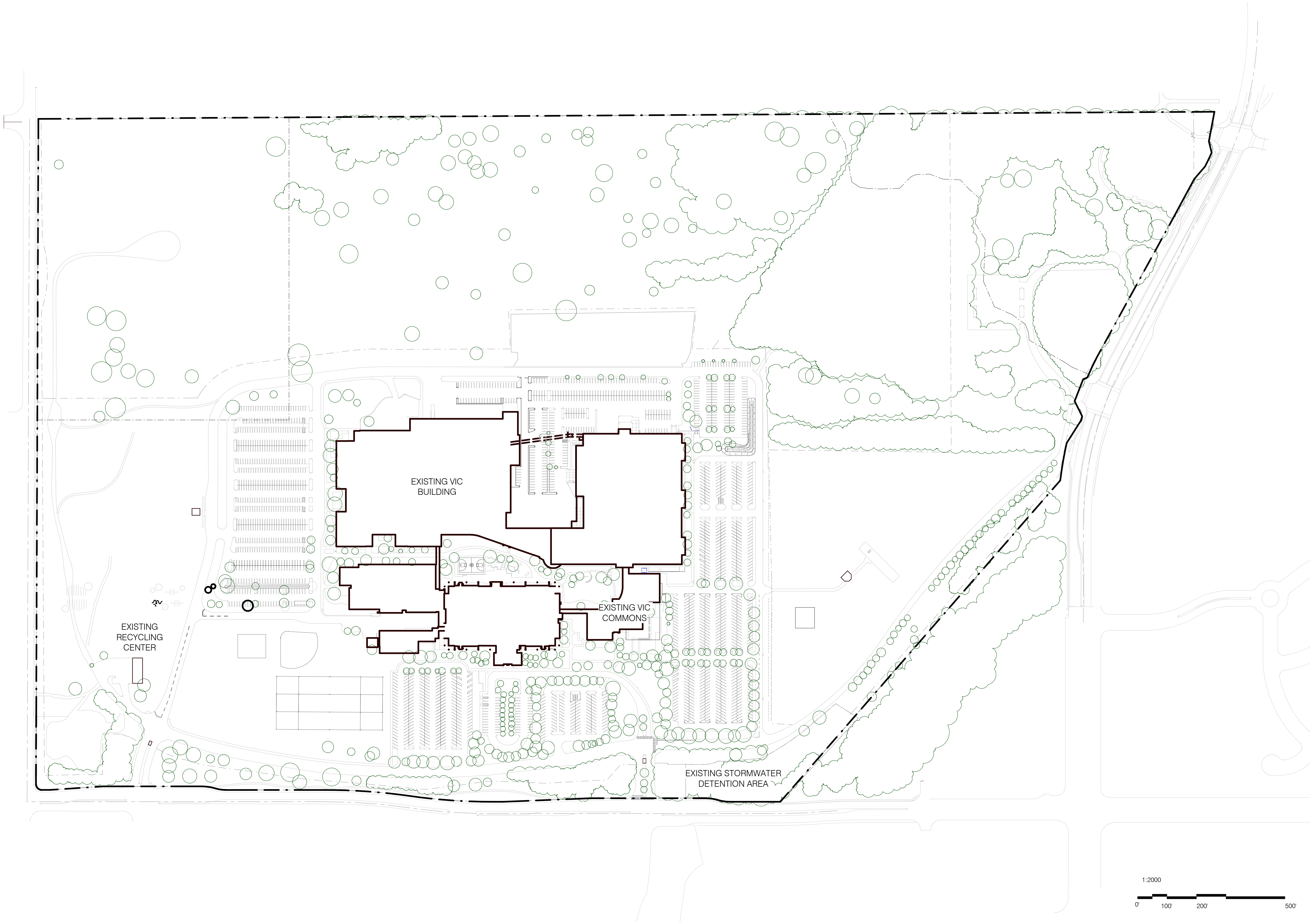
sh p	
CLIENT	CLIENT
RABINA 505 FIFTH AVENUE, 27TH FLOOR NEW YORK, NY 10017 Tel 212.680.4500	NEW BLUEPRINT PARTNERS 44 S. BROADWAY WHITE PLAINS, NY 10601
URBAN DESIGN + MASTERPLAN ARCHITECT ShoP ARCHITECTS 233 BROADWAY 11TH FLOOR NEW YORK, NY 10029 Tel 212.889.9005	MASTERPLAN LOCAL ARCHITECT EL DORADO ARCHITECTS 1623 NW MARSHAL STREET PORTLAND, OR 97209 Tel 971.266.8665
LANDSCAPE ARCHITECT SITEWORKSHOP 3800 WOODLAND PARK AVE. N, SUITE 200 SEATTLE, WA 98103 Tel 206.285.3026	CIVIL ENGINEER KPF 111 SW 5TH AVENUE #2600 PORTLAND, OR 97204 Tel 503.227.3251
TRAFFIC ENGINEER KITTELSON & ASSOCIATES 651 SW 6TH AVE., SUITE 600 PORTLAND, OR 97204 Tel 800.878.5292	LAND USE CONSULTANT DOWL 720 SW WASHINGTON ST., SUITE 750 PORTLAND, OR 97205 Tel 971.280.8641
ENERGY & WATER USE DISTRICT PLANNING PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 Tel 503.226.2921	SUSTAINABILITY PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 Tel 503.226.2921

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SHEET INFORMATION: ARCH D 24"x36"		
DRAWING TITLE		
MASTER PLAN - PROPOSED LAND-USE		
SEAL & SIGNATURE	DATE	
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DRAWING NUMBER		



BOUNDARY LEGEND	
	EXISTING PARCEL BOUNDARY

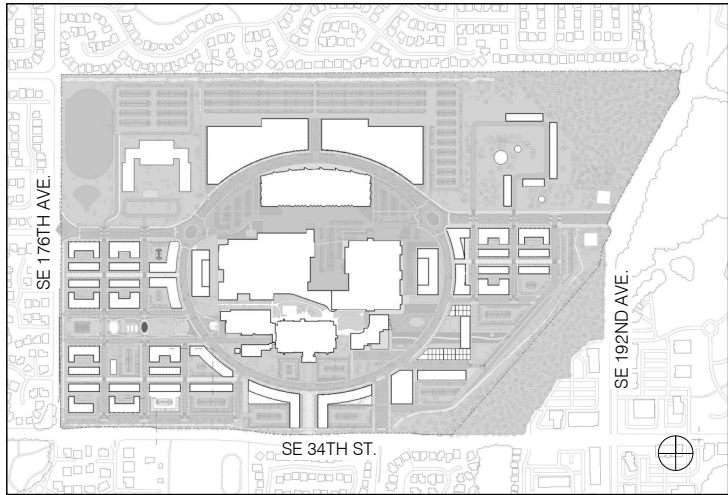


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URBAN DESIGN + MASTERPLAN ARCHITECT SHOP ARCHITECTS 233 BROADWAY 11TH FLOOR NEW YORK, NY 10279 Tel 212.889.9005	MASTERPLAN LOCAL ARCHITECT EL DORADO ARCHITECTS 1623 NW MARSHAL STREET PORTLAND, OR 97209 Tel 971.266.8665
LANDSCAPE ARCHITECT SITEWORKSHOP 3800 WOODLAND PARK AVE. N, SUITE 200 SEATTLE, WA 98103 Tel 206.285.3026	CIVIL ENGINEER KPFF 111 SW 5TH AVENUE #2600 PORTLAND, OR 97204 Tel 503.227.3251
TRAFFIC ENGINEER KITTELSON & ASSOCIATES 851 SW 6TH AVE., SUITE 600 PORTLAND, OR 97204 Tel 800.878.5250	LAND USE CONSULTANT DOWL 720 SW WASHINGTON ST., SUITE 750 PORTLAND, OR 97205 Tel 971.280.8641
ENERGY & WATER USE DISTRICT PLANNING PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 Tel 503.226.2921	SUSTAINABILITY PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 Tel 503.226.2921

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SITE PLAN - EXISTING

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DRAWN BY	PROJECT NO. 210917
CHECKED BY	Author
	Checker

DRAWING NUMBER

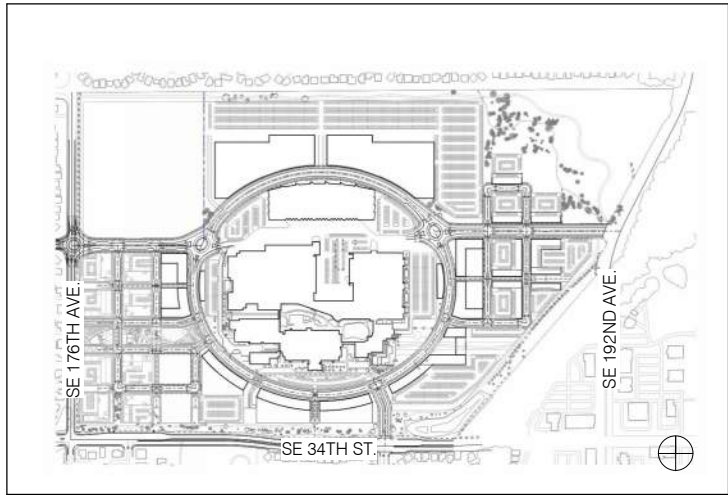
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CLIENT	CLIENT
RABINA 505 FIFTH AVENUE, 27TH FLOOR NEW YORK, NY 10017 tel 212.680.4500	NEW BLUEPRINT PARTNERS 44 S. BROADWAY WHITE PLAINS, NY 10601
URBAN DESIGN + MASTERPLAN ARCHITECT SHOP ARCHITECTS 233 BROADWAY 11TH FLOOR NEW YORK, NY 10029 tel 212.889.9005	MASTERPLAN LOCAL ARCHITECT EL DORADO ARCHITECTS 1623 NW MARSHAL STREET PORTLAND, OR 97209 tel 971.266.8665
LANDSCAPE ARCHITECT SITEWORKSHOP 3800 WOODLAND PARK AVE. N, SUITE 200 SEATTLE, WA 98103 tel 206.285.3026	CIVIL ENGINEER KPFF 111 SW 5TH AVENUE #2600 PORTLAND, OR 97204 tel 503.227.3251
TRAFFIC & STREET LIGHTING ENGINEER KITTELSON & ASSOCIATES 851 SW 6TH AVE., SUITE 600 PORTLAND, OR 97204 tel 800.878.5230	LAND USE CONSULTANT DOWL 720 SW WASHINGTON ST., SUITE 750 PORTLAND, OR 97205 tel 971.280.8541
ENERGY & WATER USE DISTRICT PLANNING PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 tel 503.226.2921	SUSTAINABILITY PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 tel 503.226.2921

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LEGEND

- OPEN SPACE
- POTENTIAL OPEN SPACE LINKAGE AREAS
(NOT INCLUDED IN OPEN SPACE CALCULATIONS)
- POTENTIAL SCHOOL OPEN SPACE
(NOT INCLUDED IN OPEN SPACE CALCULATIONS)

GENERAL NOTES:

- BUILDING FOOTPRINTS ARE ILLUSTRATIVE AND SUBJECT TO CHANGE.
- OPEN SPACE AREAS AND LINKAGE AREAS ARE CONCEPTUAL AND SHOWN TO ILLUSTRATE GENERAL PLANNING INTENT. THE LOCATIONS AND SIZE OF EACH OPEN SPACE AREA WILL BE REFINED AT THE SITE DEVELOPMENT STAGE.

NO. DATE ISSUANCE

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SITE PLAN - OPEN SPACE

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	PROJECT NO.	210917
	DRAWN BY	Author
	CHECKED BY	Checker

DRAWING NUMBER

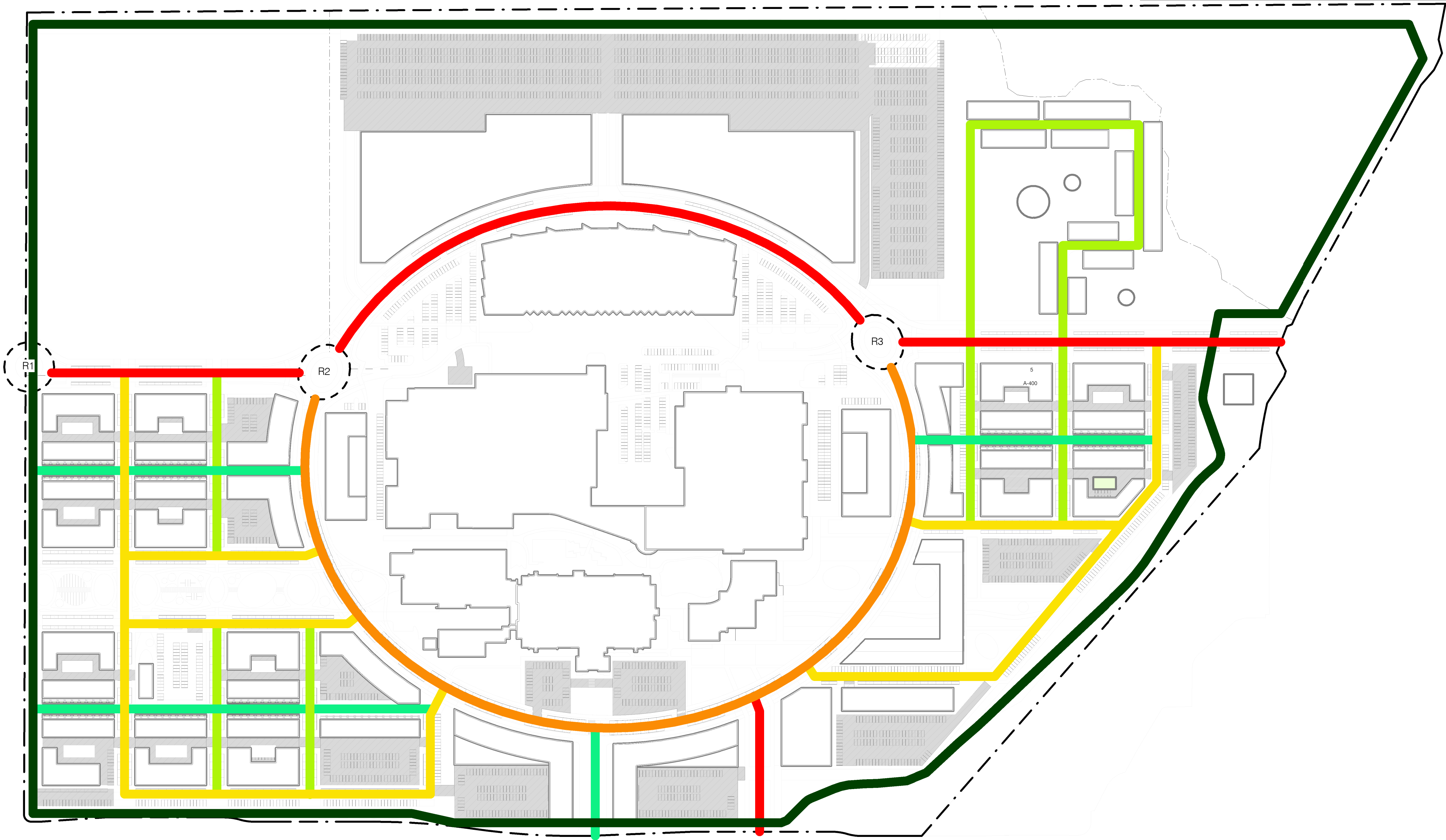
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GENERAL NOTES:

1.
- LOCATION OF STREET TYPES 04 LOCAL ACCESS CONNECTIONS AND 05 PEDESTRIAN LANEWAYS ARE ILLUSTRATIVE AND SUBJECT TO CHANGE.
2.
- BUILDING FOOTPRINTS ARE ILLUSTRATIVE AND SUBJECT TO CHANGE.
3.
- LOCATION OF TRAIL IS ILLUSTRATIVE AND SUBJECT TO CHANGE. TRAIL LOCATION IN SCHOOL PARCEL AND FORESTED TRACT ARE SUBJECT TO COORDINATION WITH EVERGREEN SCHOOL DISTRICT AND CITY OF VANCOUVER.
4.
- REFER TO SHEET 007 FOR CORRESPONDING STREET SECTIONS.

MOBILITY LEGEND

- STREET TYPE 01 - MAIN STREET ALONG LOOP
- STREET TYPE 02 - SLOW STREET ALONG LOOP
- STREET TYPE 03 - LOCAL STREET/NEIGHBORHOOD LOOP
- STREET TYPE 04 - LOCAL ACCESS CONNECTIONS
- STREET TYPE 05 - PEDESTRIAN LANEWAYS
- ROUNDBABOUT
- SURFACE PARKING LOT
- TRAIL - REFER TO SHEET 008



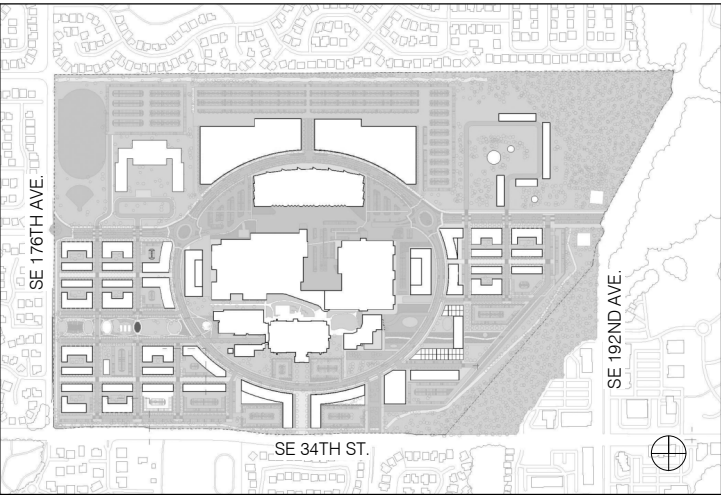
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URBAN DESIGN + MASTERPLAN ARCHITECT SHOP ARCHITECTS 233 BROADWAY 11TH FLOOR NEW YORK, NY 10279 tel 212.889.9005	MASTERPLAN LOCAL ARCHITECT EL DORADO ARCHITECTS 1623 NW MARSHAL STREET PORTLAND, OR 97209 tel 971.266.8665
LANDSCAPE ARCHITECT SITEWORKSHOP 3800 WOODLAND PARK AVE. N, SUITE 200 SEATTLE, WA 98103 tel 206.285.3026	CIVIL ENGINEER KPF 111 SW 5TH AVENUE #2600 PORTLAND, OR 97204 tel 503.227.3251
TRAFFIC ENGINEER KITTELSON & ASSOCIATES 651 SW 6TH AVE., SUITE 600 PORTLAND, OR 97204 tel 800.878.5250	LAND USE CONSULTANT DOWL 720 SW WASHINGTON ST., SUITE 750 PORTLAND, OR 97205 tel 971.280.8641
ENERGY & WATER USE DISTRICT PLANNING PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 tel 503.226.2921	SUSTAINABILITY PAE ENGINEERS 151 SW 1ST AVENUE PORTLAND, OR 97204 tel 503.226.2921

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SITE PLAN - MOBILITY PLAN

SEAL & SIGNATURE

DATE

PROJECT NO.	210917
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CHECKED BY	Checker

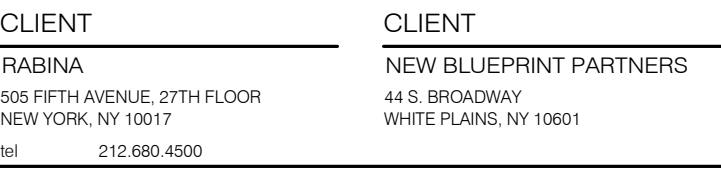
DRAWING NUMBER

MOBILITY PLAN

1 : 2000

1
005

005



URBAN DESIGN + MASTERPLAN ARCHITECT	MASTERPLAN LOCAL ARCHITECT
ShoP ARCHITECTS 2333 BROADWAY 11TH FLOOR NEW YORK, NY 10279 tel 212.889.9005	EL DORADO ARCHITECTS 1623 NW MARSHAL STREET PORTLAND, OR 97209 tel 971.266.8665
LANDSCAPE ARCHITECT	CIVIL ENGINEER

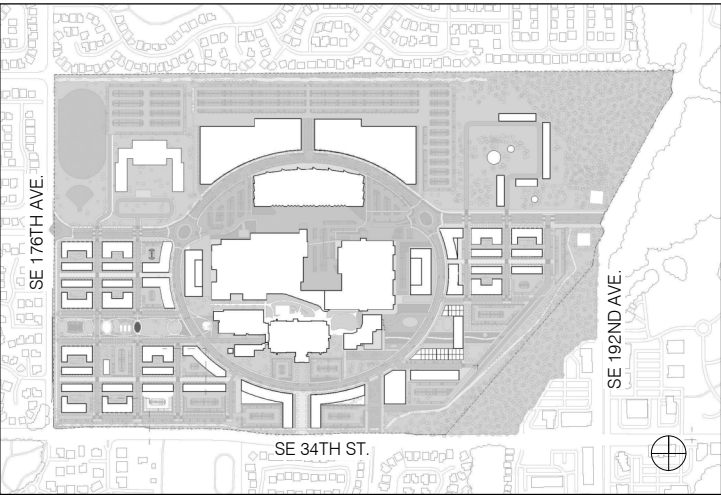
SITESHOP	KPFF
3800 WOODLAND PARK AVE. N, SUITE 200	111 SW 5TH AVENUE #2600
SEATTLE, WA 98103	PORTLAND, OR 97204
tel 206.285.3026	tel 503.227.3251

TRAFFIC ENGINEER KITTELSON & ASSOCIATES 851 SW 6TH AVE., SUITE 600 PORTLAND, OR 97204 tel 800.878.5230	LAND USE CONSULTANT DOWL 720 SW WASHINGTON ST., SUITE 750 PORTLAND, OR 97205 tel 971.280.8641
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ENERGY & WATER USE DISTRICT PLANNING	SUSTAINABILITY
PAE ENGINEERS	PAE ENGINEERS
151 SW 1ST AVENUE PORTLAND, OR 97204	151 SW 1ST AVENUE PORTLAND, OR 97204
tel 503.226.2921	tel 503.226.2921

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SHEET INFORMATION: ARCH D 24"X36"

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STREETSCAPE SUMMARY

SEAL & SIGNATURE _____ DATE _____

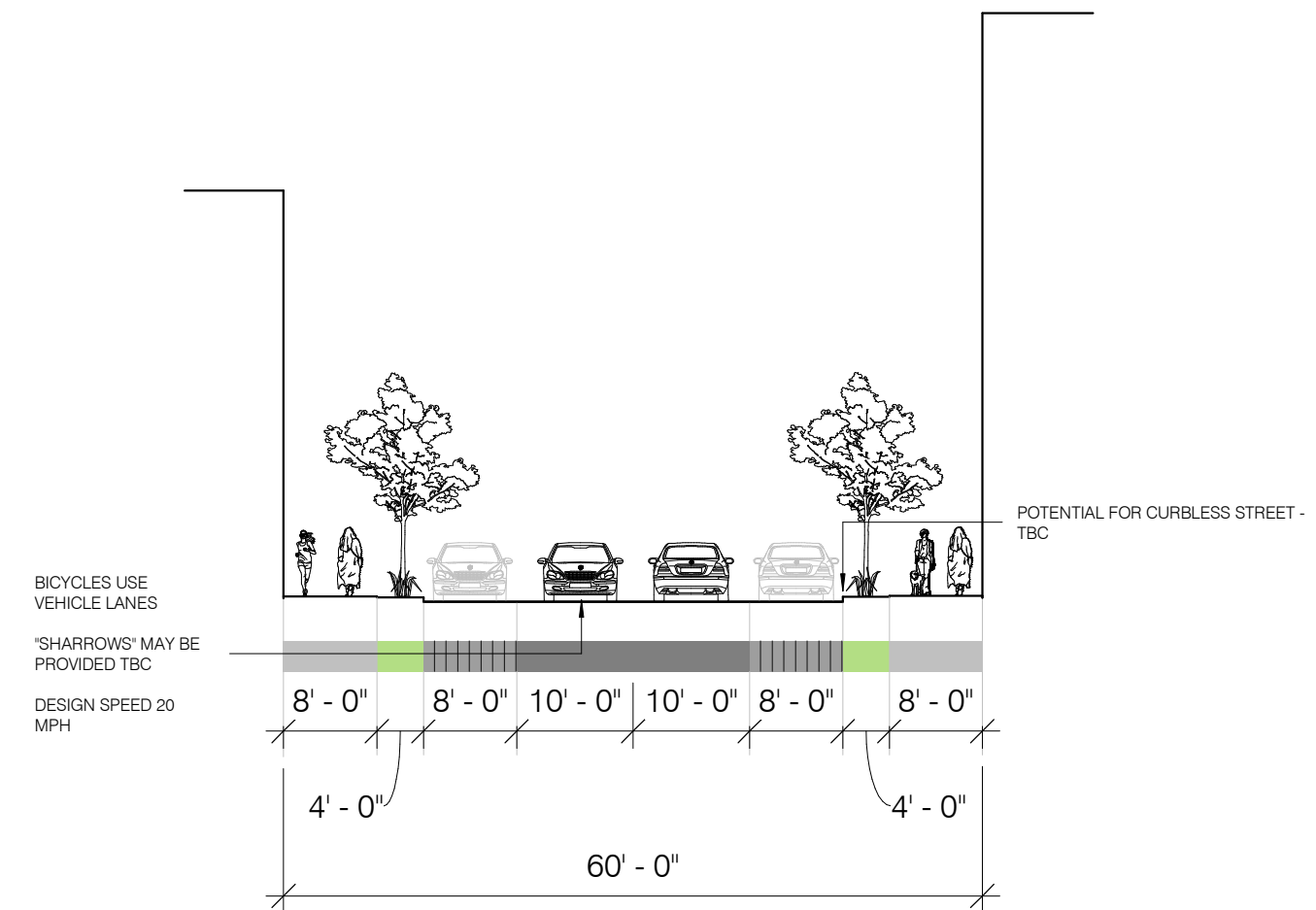
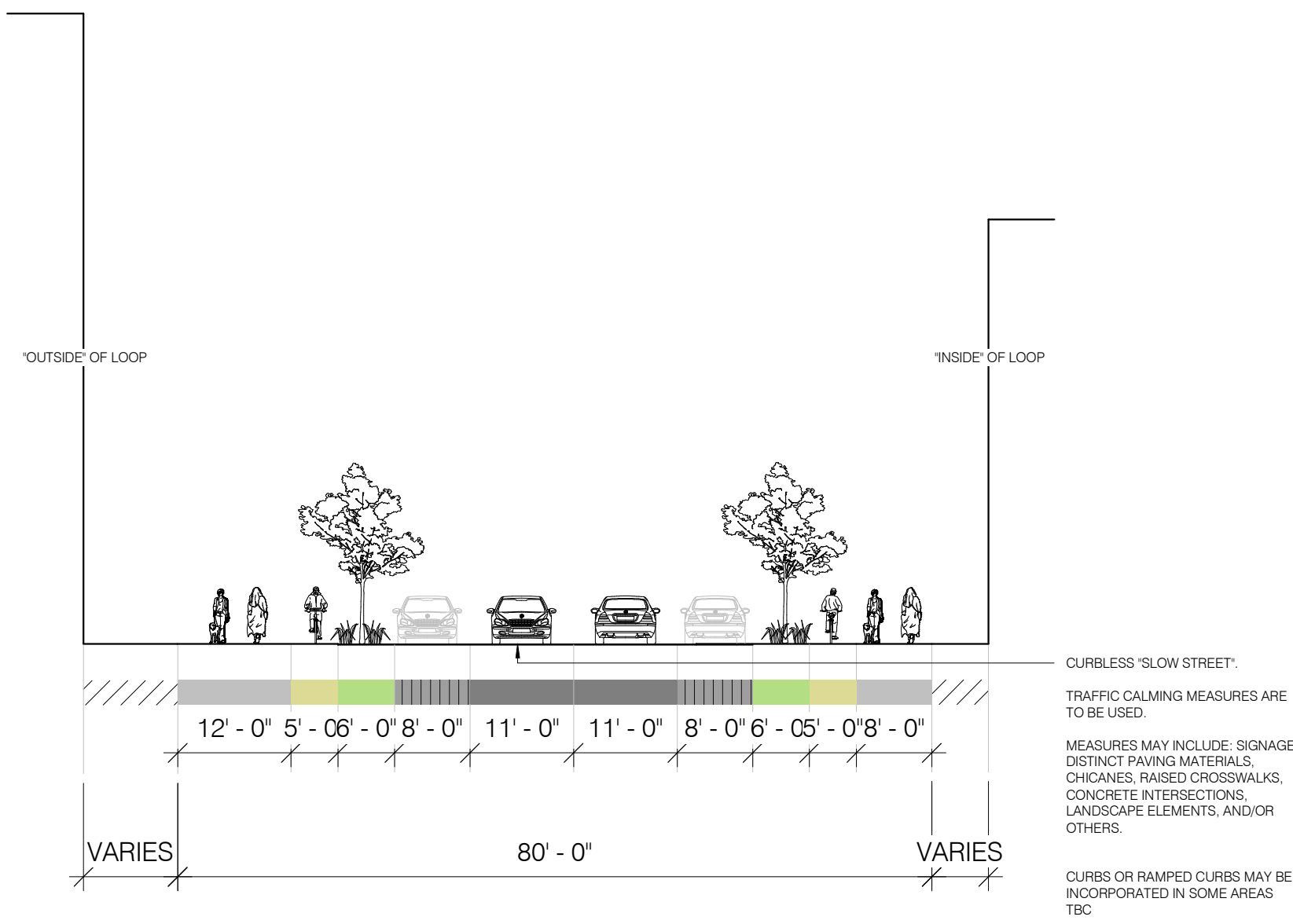
PROJECT NO. 210917

DRAWN BY	Author
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CHECKED BY _____ Checker _____

DRAWING NUMBER

006



STREET TYPE 01 - 29TH ST. COLLECTOR - LOOP ROAD 1/16" = 1'-0"

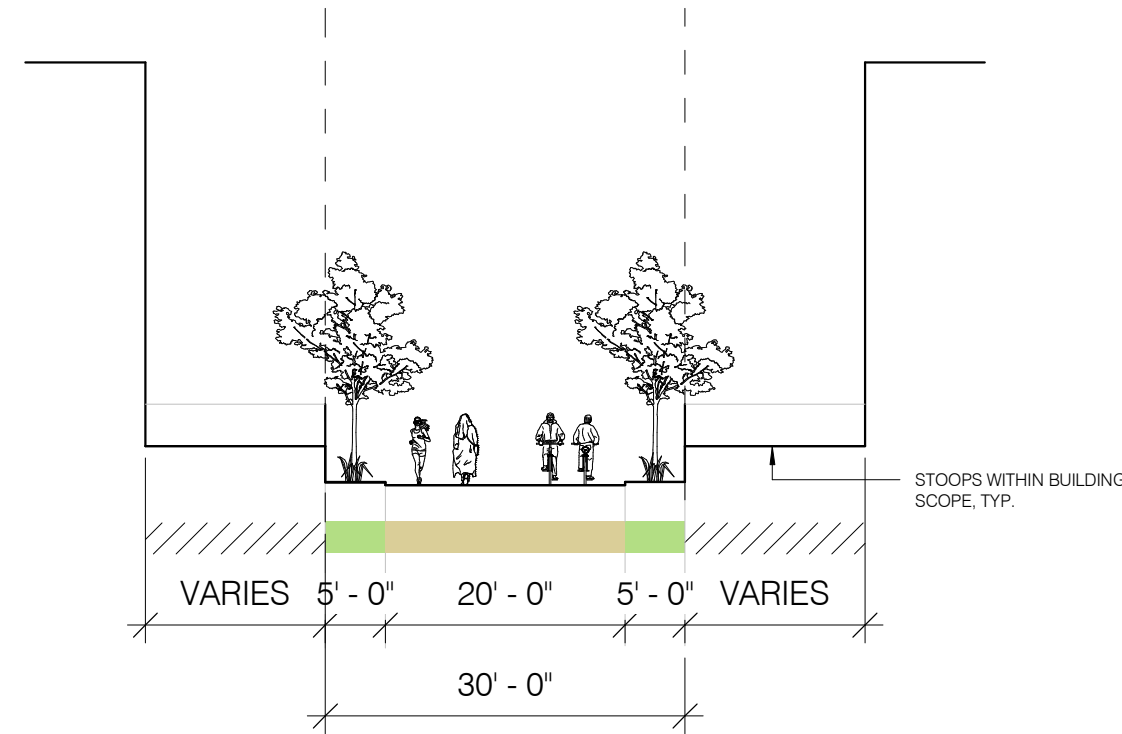
1	
	006

STREET TYPE 02 - SLOW STREET ALONG LOOP

$1/16'' = 1'-0''$	6
	006

STREET TYPE 03 - LOCAL STREET / NEIGHBORHOOD LOOP

$1/16^{\text{th}} = 1 \cdot 0^{\text{th}}$	3	
		005



STREET TYPE 04 - LOCAL ACCESS CONNECTIONS

1/16" = 1'-0"	7	
		006

STREET TYPE 05 - PEDESTRIAN LANEWAYS

1/16" = 1'-0"	5	
		006

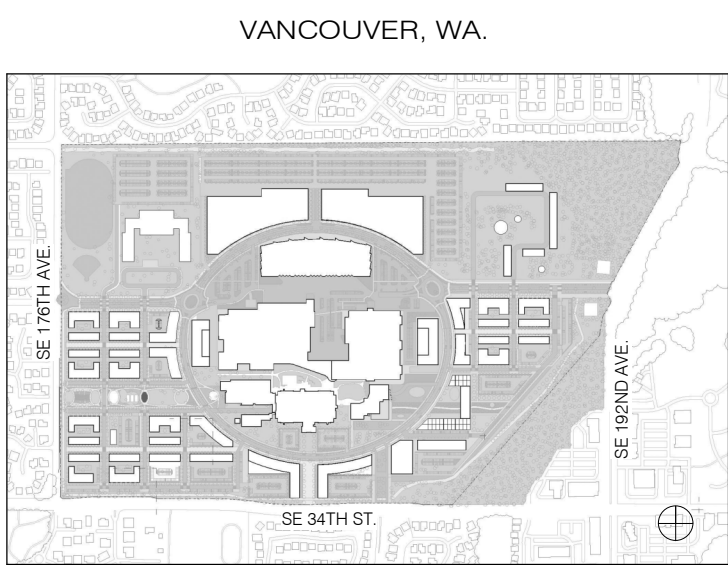
STREET SECTION LEGEND

- | | |
|---|---|
|  | TRAVEL LANE |
|  | ON-STREET PARKING / FLEX LANE
MAY CONTAIN BULB-OUTS AT INTERSECTIONS |
|  | SIDEWALK |
|  | SHARED VEHICULAR/BICYCLE/PEDESTRIAN ACCESS |
|  | MEDIAN/TURN POCKET |
|  | LANDSCAPE ZONE |
|  | CYCLE TRACK |
|  | OUT OF STREET SCOPE, SEE PLAN |

CLIENT	CLIENT
RABINA 505 FIFTH AVENUE, 27TH FLOOR NEW YORK, NY 10017 tel 212.680.4500	NEW BLUEPRINT PARTNERS 44 S. BROADWAY WHITE PLAINS, NY 10601
URBAN DESIGN + MASTERPLAN ARCHITECT ShoP ARCHITECTS 233 BROADWAY 11TH FLOOR NEW YORK, NY 10029 tel 212.889.9005	MASTERPLAN LOCAL ARCHITECT EL DORADO ARCHITECTS 1623 NW MARSHAL STREET PORTLAND, OR 97209 tel 971.266.8665
LANDSCAPE ARCHITECT SITEWORKSHOP 3800 WOODLAND PARK AVE. N, SUITE 200 SEATTLE, WA 98103 tel 206.285.3026	CIVIL ENGINEER KPF 111 SW 5TH AVENUE #2600 PORTLAND, OR 97204 tel 503.227.3251
TRAFFIC ENGINEER KITTELSON & ASSOCIATES 851 SW 6TH AVE., SUITE 600 PORTLAND, OR 97204 tel 800.978.5290	LAND USE CONSULTANT DOWL 720 SW WASHINGTON ST., SUITE 750 PORTLAND, OR 97205 tel 971.280.8641
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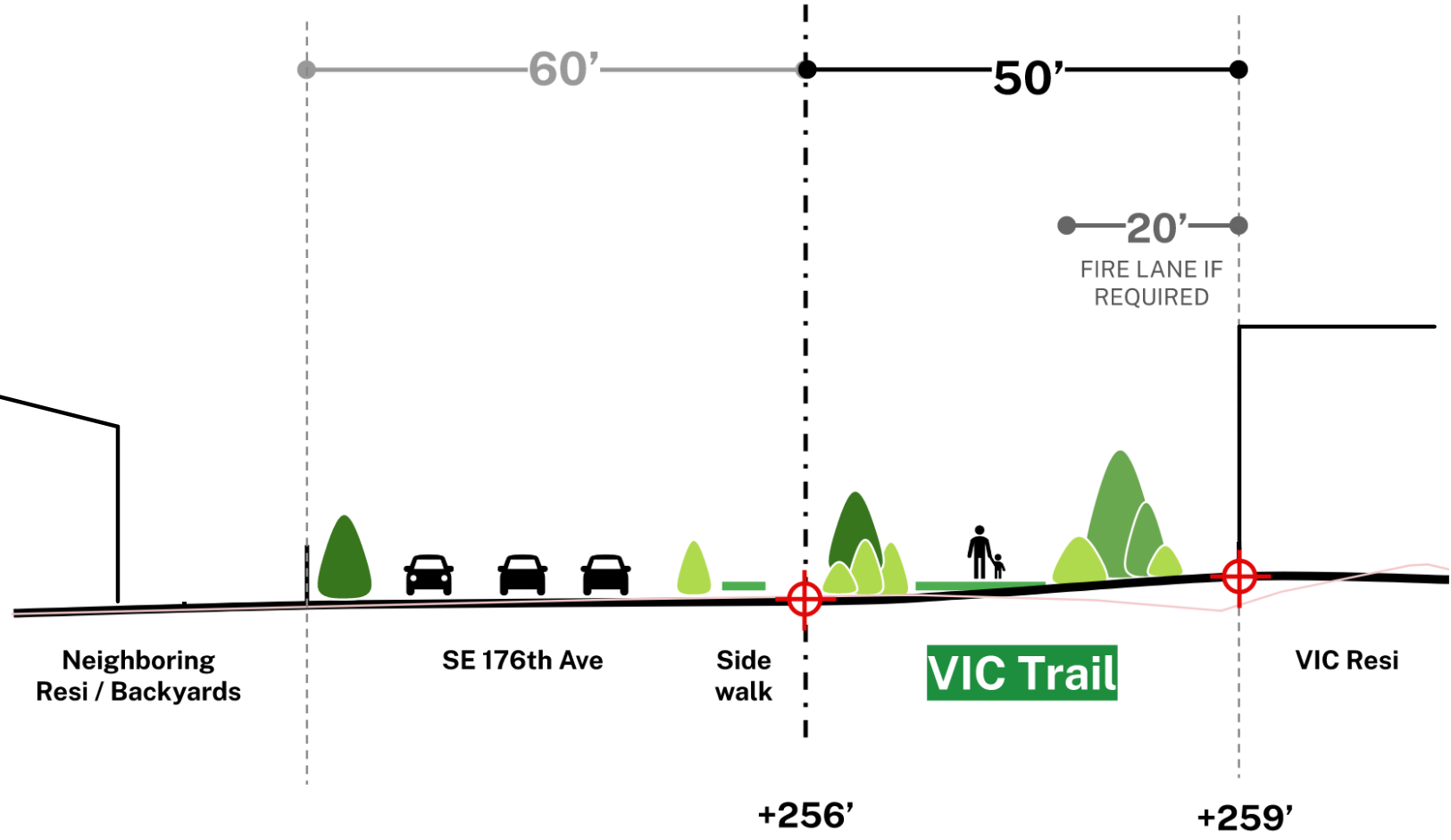
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SHEET INFORMATION: ARCH D 24"x36"
DRAWING TITLE
ENLARGED TRAIL SECTIONS

SEAL & SIGNATURE	DATE
PROJECT NO.	210917
DRAWN BY	Author
CHECKED BY	Checker

DRAWING NUMBER

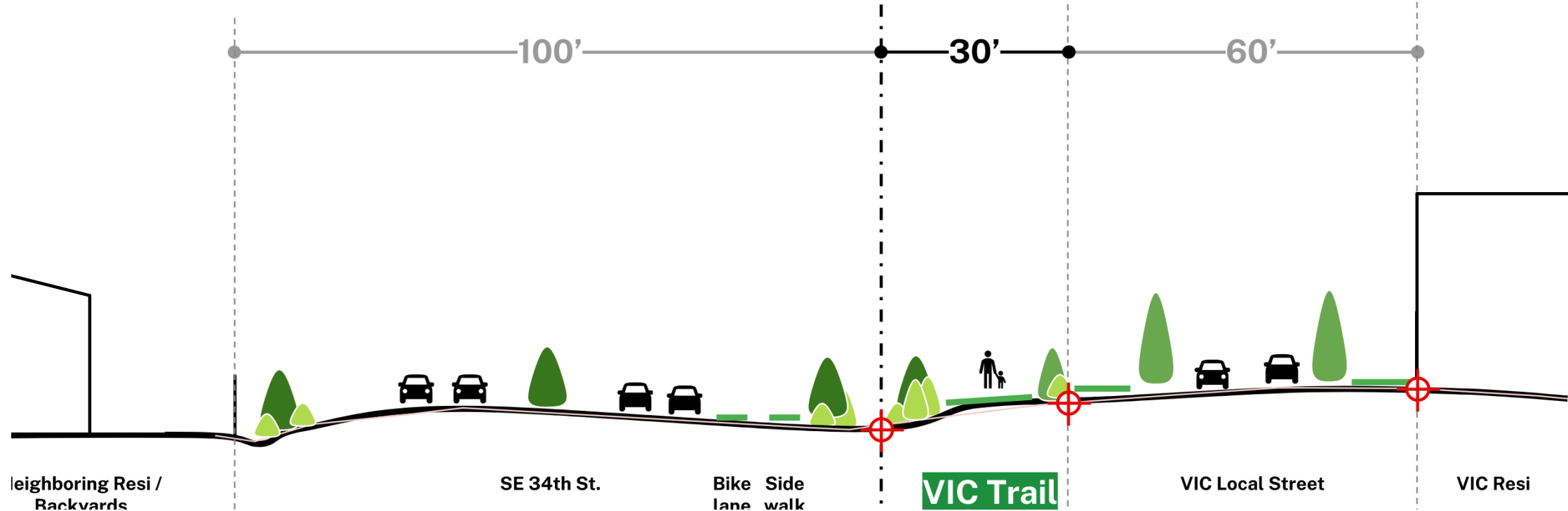
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SECTION 1 ALONG SE 176TH AVE

1 : 250

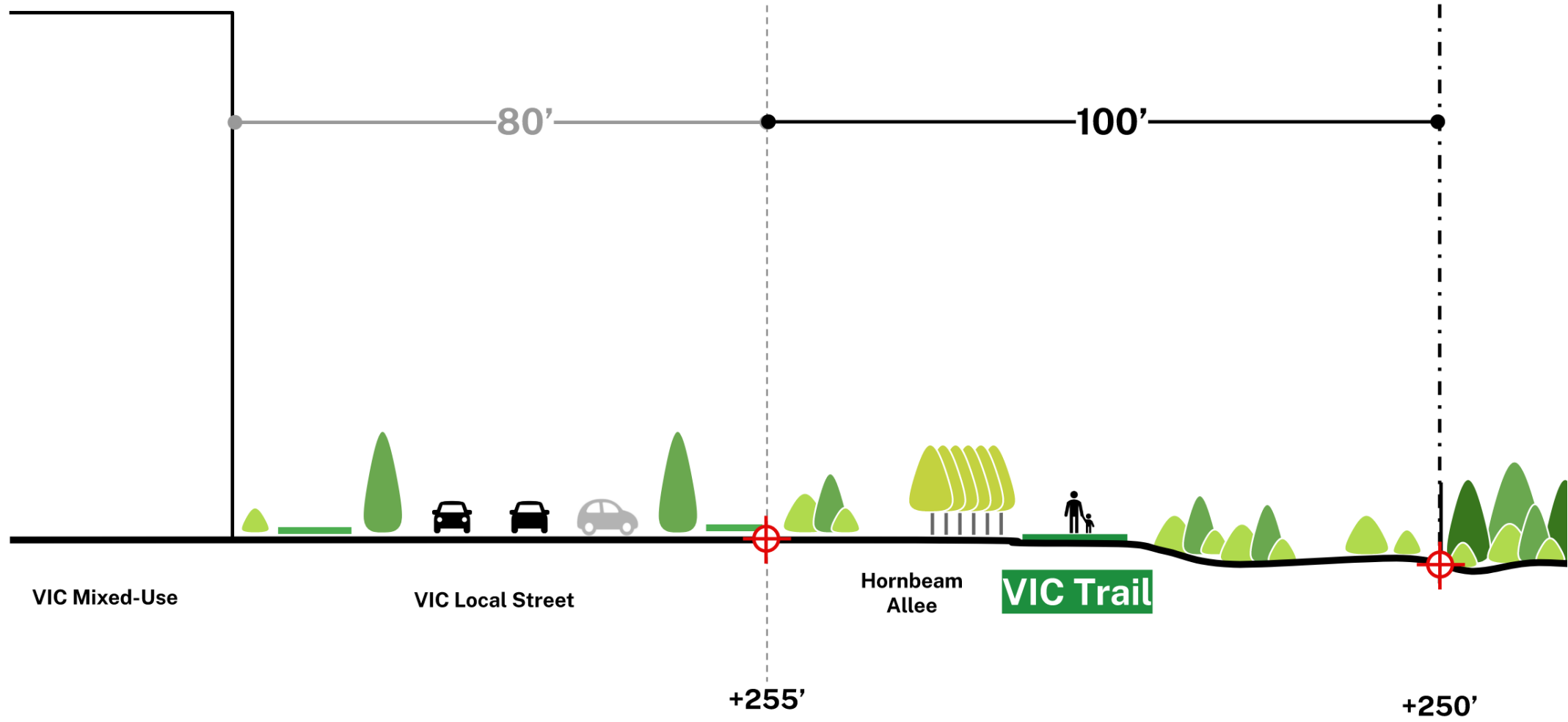
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SECTION 2 ALONG SE 34TH ST

1 : 250

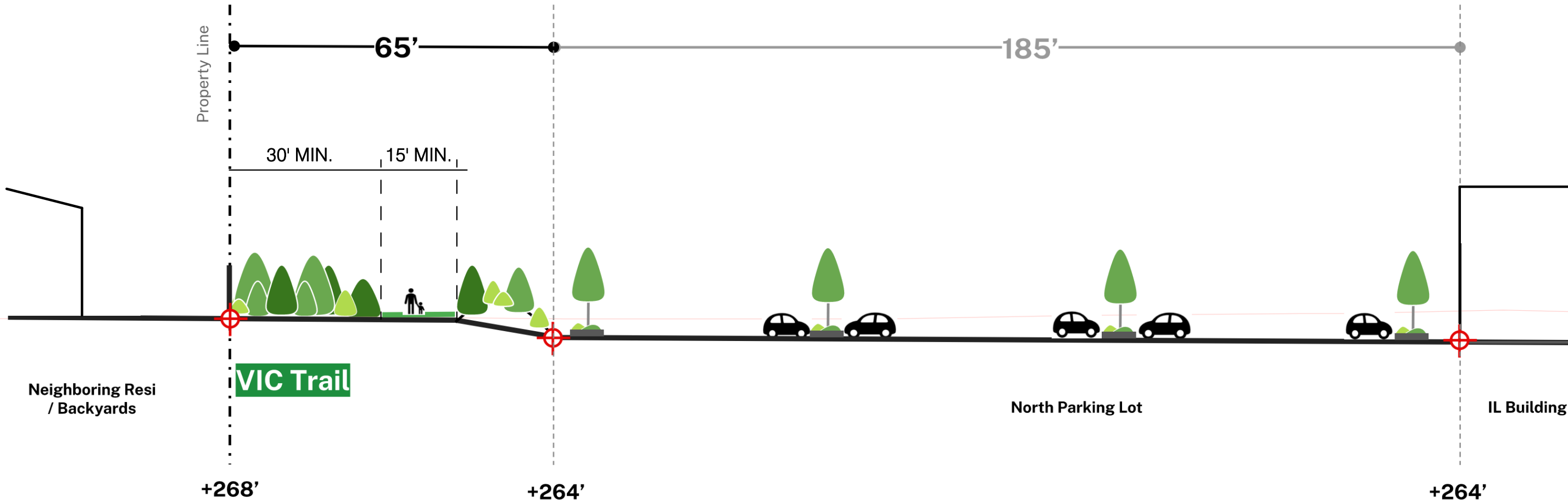
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SECTION 3 ALONG SE HORNBEAM ALLEE

1 : 250

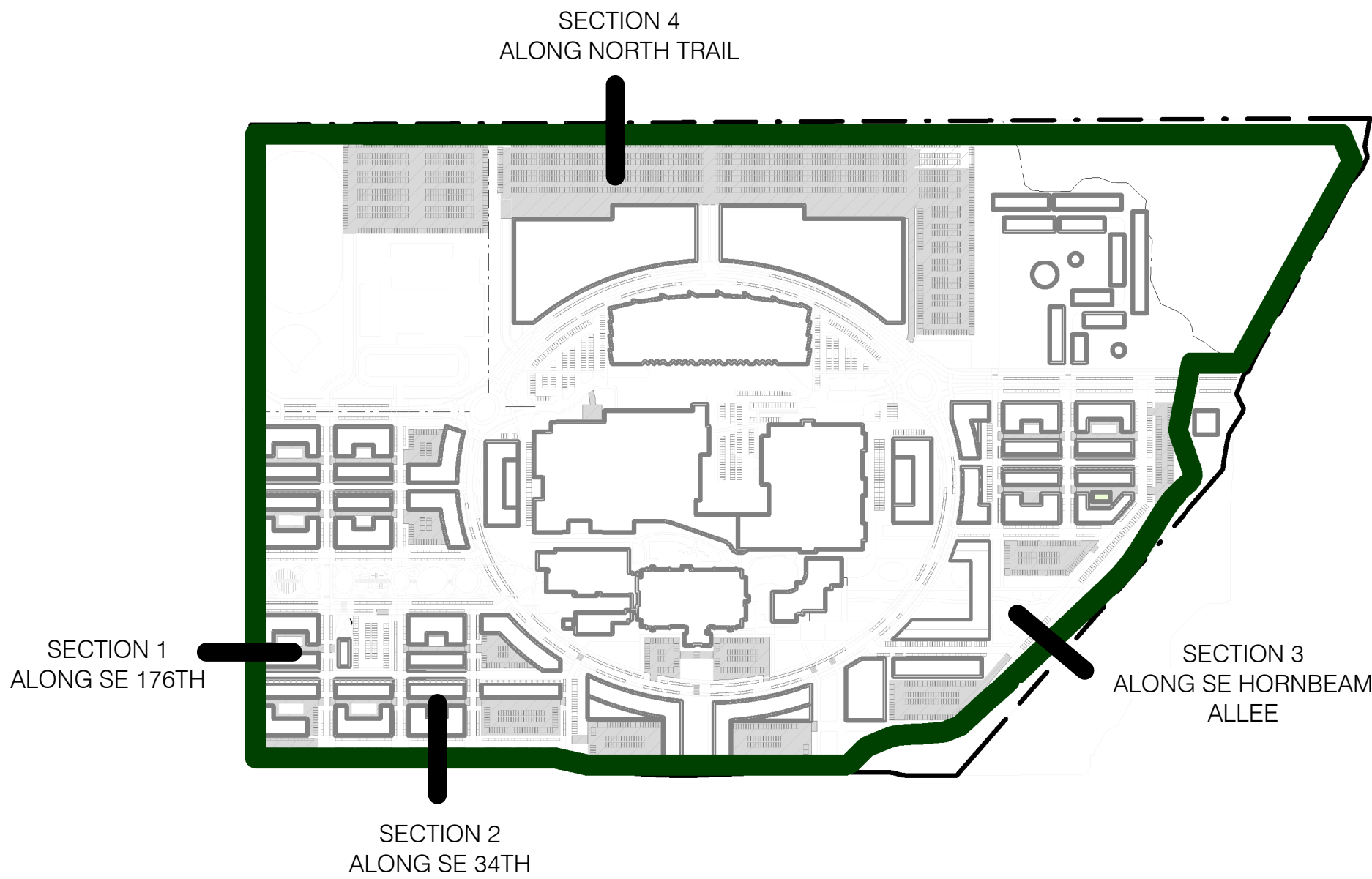
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007



SECTION 4 ALONG NORTH TRAIL

1 : 250

1
007



TRAIL SECTION KEY PLAN

1 : 6000

5
007

APPENDIX C

SEPA CHECKLIST

**SUBMIT TO:**

City of Vancouver
Community & Economic Development
415 W. 6th ST
Vancouver, WA 98660
www.cityofvancouver.us

SEPA ENVIRONMENTAL CHECKLIST**WAC 197-11-960**

Property Owner: The VIC Building Owner LLC; Attn: Jennifer Rabina Telephone: (212) 680-4500
(Print or Type Name)

Mailing Address: 505 Fifth Avenue, 27th Floor, New York, NY 10017
(No., City, State, ZIP)

Applicant: Same Telephone: Same
(Print or Type Name)

Mailing Address: _____
(No., City, State, ZIP)

Relationship to Owner: _____

Tax Assessor Serial Number(s): 126455000, 126816000, 986056-494, and 986060-362
(Parcel numbers per Clark County GIS 4/24/23. VIC Building North parcel number not yet assigned.)

Legal description: Lot(s) See response to Block(s) _____ Plat name N/A
Question A.12 below

(If a Metes and Bounds description, check here **X**, and attach narrative to this application.)

Site Address (if any): 18110 SE 34th Street, Vancouver WA 98683

② Include 8½" x 11" copies of ☐ Quarter Section Map, ☐ Topographic Map, ☐ Scaled Site Plan. Delineate site on maps.
Notice to Applicants: You must use the current revision of this form or your application will not be accepted. If you use our disk version of this form (MS Word 6.0) you may not alter the format. Make sure you have the current version before submittal.

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants: [\[help\]](#)

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [\[help\]](#)

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the [SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS \(part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected

geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. BACKGROUND [\[help\]](#)

1. Name of proposed project, if applicable: [\[help\]](#)
Vancouver Innovation Center Master Plan Revision
2. Name of applicant: [\[help\]](#)
The VIC Building Owner LLC
3. Address and phone number of applicant and contact person: [\[help\]](#)
Applicant/Owner
The VIC Building Owner LLC
505 5th Avenue, 27th Floor
New York, NY 10017
Attn: Jennifer Rabina
Phone: 212-680-4500
Email: jrabina@rabina.com

Applicant Representative (Contact):
DOWL
7200 NW 41st Street, Suite 204
Vancouver, WA 98662
Attn: Jessica Herceg
Phone: 971-280-8653
Email: Jherceg@dowl.com
4. Date checklist prepared: [\[help\]](#)
May 5, 2023
5. Agency requesting checklist: [\[help\]](#)
City of Vancouver
6. Proposed timing or schedule (including phasing, if applicable): [\[help\]](#)
Revised Master Plan Review – Spring/Summer of 2023
Amended and Restated Development Agreement Review – Spring/Summer of 2023
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [\[help\]](#)
The proposed Vancouver Innovation Center Mixed Use Master Plan revision outlines a multi-phase development plan that will be built out over multiple years. Full build-out of the master plan could take 7-15 years, depending on market conditions.
8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [\[help\]](#)
Past Studies related to the Vancouver Innovation Center Master Plan include:
 - **Critical Areas Memo for the Vancouver Innovation Center Phase 1 – VIC Building North, prepared by Pacific Habitat Services, Inc., dated September 12, 2022.**
 - **Archaeological Pre-Determination Report, prepared by Archaeological Investigations Northwest, Inc., dated August 18, 2022.**
 - **Preliminary Geotechnical Engineering Report, prepared by NV5, dated August 25, 2021.**

- **Phase 1 Environmental Site Assessment Vancouver Tech Center – 18110 SE 34th Street Vancouver, Washington, prepared by WSP, dated January 2021**
- **Traffic Impact Study, prepared by Kittelson and Associates Inc., dated April 28, 2023**

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

[\[help\]](#)

The applicant has recently received Type 2 Site Plan Review approval for a 200,981 square foot light industrial building to be located immediately north of the existing building on the site. Site construction and building permit approvals are in the final issuance stage for that project.

10. List any government approvals or permits that will be needed for your proposal, if known. [\[help\]](#)

The proposed master plan revision request and development agreement will require review and approval from the City of Vancouver through a Type IV Master Plan review process, subject to final approval from the Vancouver City Council.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [\[help\]](#)

The applicant is requesting City of Vancouver (City) approval for master plan revisions to amend elements of the current VIC Master Plan. The revised master plan design consolidates industrial areas to optimize opportunities for employment-generating development without reducing the number of jobs provided for in the current master plan, provides a higher level of integration of uses to allow for greater density, thus creating an opportunity to provide more open space, and introduces a new roadway loop geometry at the center of the VIC that establishes a mixed-use center at the core of the site. The revised master plan is included as Sheet 003 of the Master Plan Design Set (Appendix E) and reflects the proposed land use area configuration.

The land use areas (LUAs) on the site include a school (approximately 20 acres), residential area (approximately 38 acres), light industrial/employment area (approximately 74 acres), mixed use area (approximately 33 acres) and a 13.7-acre forested tract. Potential open space areas are reflected across the Residential LUA (RLUA), Mixed-Use LUA (MX LUA), and Light Industrial LUA (IL LUA), and School LUA (S LUA), but acreage and boundaries for these future open space areas are conceptual and will be refined at site development.

Noteworthy changes to the master plan include:

- **A central right-of-way loop or “ring road” is proposed for main site circulation. The northern arc of the loop will serve as the SE 29th Street collector.**
- **Reconfiguration and relocation of land use areas to achieve the desired product type mix and scale in each LUA and provide greater integration of uses throughout the site. The consolidation allows for the development of large-footprint light industrial buildings in the IL LUA to optimize opportunities for employment-generating**

development and is critical to achieve both the Project's and the City's employment generation goals.

- The plan improves the integration of the mixed-use elements of the project by changing from the "Town Center District" within the MX LUA to a mixed-use corridor along the proposed ring road which serves as the gravitational center of the revised master plan and contemplates a substantial public plaza opposite the existing VIC Commons. The revised master plan will incorporate all necessary changes for the VIC and will not propose a separate/future master plan revision for a Town Center district within the master plan area.
- Single Family Residential (SFR) and Multi-Family Residential (MFR) land use areas (LUAs) are now consolidated and listed as "Residential Land Use Area (R LUA)" and the applicant has removed detached single family residential use from the plan.
- The master plan anticipates an overall increase in open space and will provide approximately 24 acres of open space across the master plan area including an approximately 13.7-acre forested tract. Open space projections in the revised plan represent a 26% increase over the 19 acres proposed in the current master plan. To allow greater design discretion in the precise limits of open space with future site development, the applicant is proposing to represent open space within the plan as an overlay rather than a discrete Open Space LUA, a common approach with master plan entitlements.
- The forested tract and the school parcel are identified independent of other LUA's to reflect the separate ownership of the school parcel by the Evergreen School District and the applicant's establishment of a tract for forest preservation. While the forested tract boundary has been altered in the revised master plan—a project arborist has made recommendations to better preserve key tree stands—the acreage of the tract has been retained.
- As opposed to the current master plan, which segregated rights of way for SE 29th Street and SE 184th Avenue from LUA acreages, the proposed revision plan has assumed that all rights of way will be internal to land use areas, similar to how rights of way would be treated in a zoning context.
- The revised main plan proposes a more fluid approach to phasing, whereby the size, location, and order of development within the property be determined by the applicant so that they may respond in real time to market conditions and demand.

New Employment Square Footage

The master plan revision proposes construction of a minimum of 600,000 square feet of gross floor area for employment uses.

Open Space

The applicant anticipates providing approximately 24 acres of open space, including the approximately 13.7-acre Forested Tract. Sheet 004 of the Master Plan Design Set (Appendix E) illustrates potential open spaces, including a two-mile multi-use trail around the entire perimeter of the property. Distinct cross sections are provided as Sheet 007 (Appendix E) to illustrate the open space design at key locations in the site, including the northern site edge. Other open space features include a neighborhood park within the Residential LUA in the southwest corner of the site and a town plaza in the southeast corner.

Residential Units and Density

The revised master plan will consolidate the Single-Family Residential LUA and Multi-Family Residential LUA into a single, non-contiguous Residential LUA. The revised master plan proposes a maximum of 1,800 dwelling units which can be constructed within either the R LUA, the MX LUA, or the IL LUA, with a maximum of 100 dwelling units allowable within the IL LUA. The proposed increase in residential density is in response to the City's continuing concern about housing availability, as well as to market demands for housing co-located with the future businesses on the site. In addition, rather than specify quantities of distinct housing types (apartments, townhomes, etc.) within each LUA, the revised master plan proposes to build housing types in response to market demand, limited to the residential housing types permitted within the VMC. Single-family detached homes, however, will be removed from the master plan.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [\[help\]](#)
- The Vancouver Innovation Center (VIC) Mixed Use Master Plan encompasses an approximately 179-acre site located generally at 18110 SE 34th Street. According to the most recent maps produced by Clark County GIS, the site is composed of four (4) parcels (Parcel IDs 986060362, 986056494, 126455000, and 126816000), however it should be noted that the applicant filed an exempt land division to establish a discrete parcel for a new building, VIC Building North. The documents were recorded December 6, 2022, under Auditor's File Number 6094243 however a parcel number has not yet been assigned. The site is bound on the north by the Clearmeadows and Fisher's Grove Subdivisions, on the south by SE 34th Street, on the east by SE 192nd Avenue and on the west by SE 176th Avenue.**

The abbreviated legal description for each parcel listed in GIS is as follows:

- Parcel 986060362 is Lot #17 Sec 6 T1N R3EWM 20.00A.
- Parcel 986056494 is Lots #5&7 6-1-3E #10 Martin DLC, #22N, 41, 36, 13 Simmons DLC 105.32A.
- Parcel 126455000 is Lots #5&7 6-1-3E #10 Martin DLC, #22N, 41, 36, 13 Simmons DLC 52.65A.
- Parcel 126816000 is #172 WM Simmons DLC 1.24A.

Parcels are located in NE, NW, SE and SW Quarters of Section 6 of Township 1 North, Range 3 East of the Willamette Meridian.

B. ENVIRONMENTAL ELEMENTS [\[help\]](#)

1. Earth

- a. General description of the site [\[help\]](#)
(circle one): Flat, rolling, hilly, steep slopes, mountainous,
other _____

According to Clark County MapsOnline, the site is generally flat with the exception of some rolling berms on the north and northwest portions of the property, which were created from excavation of the site for buildings and from overburden of road building for 176th Avenue.

- b. What is the steepest slope on the site (approximate percent slope)? [\[help\]](#)
The steepest slope on the site is just under an 8 percent grade.
- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [\[help\]](#)
The site contains Hillsboro loam, 0 to 3 percent slopes (H1A), Hillsboro loam, 3 to 8 percent slopes (H1B), and Lauren gravelly loam, 0 to 8 percent slope (LgB). The land is not designated nor identified as agricultural land of long-term commercial significance. The proposal to revise the current VIC Master Plan will not result in any removal of these soils.
- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [\[help\]](#)
There are no indications or history of unstable soils in the immediate vicinity of the project site. The Report of Geotechnical Engineering Services, prepared by NV5 on August 17, 2022, concludes that "based on the mapped groundwater conditions, a non-liquefiable crust at least 30 feet thick is present over the entire site and liquefaction is not a design consideration for the project."
- e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [\[help\]](#)
All anticipated areas of improvement throughout the site will require some degree of cut or fill to construct. The total area and quantities of fill/grade or excavation to be completed with the project are not known at this conceptual Master Plan stage. As each phase of development occurs cut and fill quantities will be defined and addressed with future SEPA reviews.
- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [\[help\]](#)
Erosion could occur as a result of clearing and construction of future projects within the master plan, but this potential will be minimized and/or avoided with the implementation of Best Management Practices (BMPs) for erosion control. Specific erosion control methods will be identified and addressed with each individual site development.
- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [\[help\]](#)
The applicant anticipates approximately 2,433,155 square feet (56 acres) of new and replaced hard surfaces including roadways, pedestrian ways, bikeways, parking lot areas, and building to cover approximately 31.03% (+/-) of the master plan site area.
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [\[help\]](#)
As each phase of development occurs, the developer(s) will employ BMPs to minimize the potential for erosion as a result of clearing and construction. The exact placement of BMPs will be outlined in the Stormwater Pollution Prevention Plans that will be prepared with each site development proposal.

2. Air

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [\[help\]](#)

Site construction may result in dust emissions. During construction of buildings and site improvements, emissions from some heavy equipment such as concrete trucks, pumper trucks, and material delivery trucks is expected. These emissions will be temporary in nature.

In addition, emissions will occur from vehicular trips generated by the site as the VIC develops. However, it is anticipated that the integrated mixed-use orientation of the site and provision of multi-modal options for residents and employees within the master plan will have a reduce vehicle miles traveled (VMT) resulting from site development, compared to a non-mixed use development scenario on the site. Additionally, the use, operation, and maintenance of buildings throughout the site will result in greenhouse gas emissions. However, consistent with a memorandum dated March 27, 2023, prepared by PAE Engineers (Appendix I), the project intends to implement baseline design guidelines for new buildings that will help achieve the city-wide goals for the reduction of greenhouse gas emissions consistent with the City's 2022 Climate Action Framework.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [\[help\]](#)

There are no off-site sources of emissions or odor that affect the proposal.

- c. Proposed measures to reduce or control emissions or other impacts to air, if any: [\[help\]](#)

The applicant will employ air emission BMPs in conjunction with site development activities. Additionally, the applicant will implement baseline design guidelines for GHG reduction that emphasizes electric use for domestic energy needs, efficient heating and cooling systems and other means to help achieve the City's GHG reduction goals of the Climate Action Framework.

3. Water

- a. Surface Water: [\[help\]](#)

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [\[help\]](#)

Fisher's Creek meanders south/southwest of the site and flows into the Columbia River approximately one (1) mile south of State Route 14 (SR-14). A potential wetland associated with Fisher Creek was identified outside of the applicant's property. The existing VIC Stormwater Facility located west of the resource area is designed to overflow to Fisher Creek during severe storm events. No changes are proposed to the existing stormwater system.

A Critical Areas Memorandum prepared by Pacific Habitat Services (PHS) was submitted to the City as part of the VIC Building North site plan application. The intent of the memorandum was to demonstrate that the project would have no effect on the unclassified resource area by applying a maximum 300-foot buffer measured laterally from the estimated outer boundary of the resource.

The revised master plan contemplates activity within 300-feet of this off-site resource therefore further field investigation will be required with future site development land use applications to classify the resource and establish resource boundaries and associated regulatory buffers. With subsequent site plan approval, stormwater generated from new site development associated with the master plan will be treated and detained on site consistent with local and state regulations.

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [\[help\]](#)
The revised master plan contemplates activity within 200-feet of the off-site resource therefore further field investigation will be required with future site development proposals to classify the resource, establish resource boundaries and regulatory buffers and quantify impacts, if any.
- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [\[help\]](#)
No development, including fill or dredge material(s), will be placed in, or removed from surface water or wetlands.
- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [\[help\]](#)
Neither the master plan nor subsequent site development will require surface water withdrawals or diversions.
- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [\[help\]](#)
No portion of the proposal lies within a 100-year floodplain.
- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [\[help\]](#)
The proposed master plan and future developments within it would not discharge waste materials to surface waters.

b. Ground Water:

- 1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [\[help\]](#)
There is an existing well on the site that has been historically used to support the agricultural use of the property. Its use was converted for irrigation purposes and may continue to be used for irrigation of landscaping throughout the buildout of the master plan. No waters will be discharged to groundwater. All stormwater runoff from impervious surfaces on the site will be treated and infiltrated on-site as noted above. Stormwater runoff will be addressed in detail with future development plans and Stormwater Technical Information Report(s) with site plan review requests.
- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if

applicable), or the number of animals or humans the system(s) are expected to serve. [\[help\]](#)

Future buildout of the master plan site will not result in the discharge of wastewater from sewer systems into the groundwater. There will be no septic systems as part of this master plan and subsequent development proposals.

c. Water runoff (including stormwater):

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow?

Will this water flow into other waters? If so, describe. [\[help\]](#)

An existing stormwater facility located in the southeast portion of the site treats surface runoff from the existing building and parking areas. The stormwater pond is designed to overflow to Fisher Creek during severe storm events. The existing facility will be maintained, matching the existing condition.

Upon future buildout of the VIC Master Plan, stormwater runoff from impervious services (e.g., parking lots, building/rooftops, streets, bikeways, and sidewalks) will be treated and infiltrated on-site. Stormwater runoff will be addressed in detail with future development plans and Stormwater Technical Information Report(s) with site plan review requests.

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

[\[help\]](#)

As noted above, the existing stormwater facility serving the building and parking lots is designed to overflow into Fisher Creek during severe storm events.

New development within the revised master plan site is expected to fully infiltrate runoff from pollution generating impervious surfaces following treatment to City of Vancouver standards. No waste material discharge is to occur within any ground waters. Future stormwater systems are not anticipated to discharge to surface waters off-site.

- 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The master plan site will not alter or otherwise affect drainage patterns in the vicinity of the site. Stormwater from the current development flows to the existing stormwater pond and subsequently to Fisher Creek. Existing flows will be maintained.

- 4) Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Current stormwater flows to the existing stormwater pond and subsequently to Fisher Creek will be maintained. The master plan site is designed to fully infiltrate stormwater on-site given the high permeability factor of on-site soils. Upon future site buildout, construction and site improvements will occur in compliance with local and state stormwater management requirements. Implementation of erosion control Best Management Practices (BMPs) will ensure that the project will not have any significant effects on surface or ground waters.

4. Plants [\[help\]](#)

- a. Check the types of vegetation found on the site: [\[help\]](#)
☒ deciduous tree: **alder**, maple, aspen, other
☒ evergreen tree: **fir**, cedar, pine, other
☒ shrubs
☒ grass
☒ pasture
☐ crop or grain
☐ Orchards, vineyards or other permanent crops.
☐ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
☐ water plants: water lily, eelgrass, milfoil, other
☐ other types of vegetation
- b. What kind and amount of vegetation will be removed or altered? [\[help\]](#)
Of the approximately 179-acre master plan site, approximately 24 acres is devoted to open space area including an approximately 13.7-acre forested tract in the northeast portion of the site. Upon future buildout, any required vegetation to be impacted will be reflected on the development plans and limited to the extent feasible.
- c. List threatened and endangered species known to be on or near the site. [\[help\]](#)
As noted in the Critical Areas Memorandum prepared on September 12, 2022, by PHS, no critical habitat for threatened or endangered species has been mapped within the VIC master plan site.
- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [\[help\]](#)
Approximately 24 acres of the VIC Master Plan site is devoted to open space area including an approximately 13.7-acre forested tract in the northeast portion of the site. Future site development will incorporate landscaping consisting of groundcover, shrubs, and trees in compliance with Vancouver Municipal Code (VMC) requirements to provide plant diversity including native plans and tree canopy.
- e. List all noxious weeds and invasive species known to be on or near the site.
There are no noxious weeds or invasive species known to be on or near the site.

5. Animals

- a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include: [\[help\]](#)
 birds: **hawk**, heron, eagle, **songbirds**, other: **osprey**
 mammals: deer, bear, elk, beaver, other: **cows**
 fish: bass, salmon, trout, herring, shellfish, other:
- b. List any threatened and endangered species known to be on or near the site. [\[help\]](#)
As noted in the September 12, 2022, Critical Areas Memorandum prepared by PHS, no critical habitat for threatened or endangered species has been mapped within the Master Plan site.

- c. Is the site part of a migration route? If so, explain. [\[help\]](#)
The Master Plan site is located within the Pacific Flyway but is not known to be used as a critical stopover.
- d. Proposed measures to preserve or enhance wildlife, if any: [\[help\]](#)
As noted in the September 12, 2022, Critical Areas Memorandum prepared by PHS, there are no anticipated impacts to wildlife or wildlife habitat as a result the future buildout of the Master Plan.
- e. List any invasive animal species known to be on or near the site.
There are no invasive animal species known to be on or near the Master Plan site.

6. Energy and natural resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [\[help\]](#)
Energy for future proposed development will include electricity to be used for heating, cooling, and lighting of light industrial buildings, offices, commercial/retail buildings, and residential dwelling units. Use of natural gas within the campus will be limited to commercial and industrial uses.

The applicant has provided Sustainability Goals for City of Vancouver Climate Action Framework (CAF) Alignment, prepared by PAE on March 27, 2023 (Appendix I) for site infrastructure and future phase developments to align to the Vancouver Climate Action Framework (CAF) targeted goals. The memorandum addresses recommended Green House Gas (GHG) reducing measures to be evaluated at the time of each new development project.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [\[help\]](#)
Due to planned setbacks from adjacent properties, the Master Plan site is not anticipated to affect the potential use of solar energy by adjacent properties.
- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [\[help\]](#)
Future proposed buildings will conserve energy through compliance with the Washington State Energy Code, and through the implementation of energy efficiency measures and sustainability goals that closely align with the targeted goals of the recently adopted CAF. As described in the Sustainability Goals for City of Vancouver Climate Action Framework (CAF) Alignment, prepared by PAE on March 27, 2023, included as Appendix I with the Master Plan application, build-out of the master plan is intended to include all-electric systems approach for new domestic use, apart from natural gas implemented for proposed light industrial uses as necessary. PAE has recommended other GHG reducing options that will be evaluated at the time of each subsequent site plan request including measures to increase electric use with proposed commercial/retail uses, increase onsite solar installations, material selections and construction practices to reduce emissions for the buildings and site infrastructure, and increasing electrical vehicle charging stations as necessary with change in demand.

The Mixed-Use Master Plan site has the potential to reduce energy impacts, predominantly through the "20 Minute Neighborhood" concept that encourages active (walking, cycling) transport and public transport in order to reduce

dependency on vehicles and gasoline consumption. As demonstrated on the Mobility Plan Sheet 005 of the Master Plan Design Drawings (Appendix E), non-vehicular routes to the site including bicycle and pedestrian pathways are proposed throughout the site.

7. Environmental health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe. [\[help\]](#)

The proposed master plan allows an array of land uses within the various designated land use areas. As the specific uses and their operational needs are unknown at this time, the proposed master plan will not result in any environmental health hazards. Further evaluation of the potential for any site-specific development to pose environmental health hazards will be addressed with site-specific SEPA evaluations.

- 1) Describe any known or possible contamination at the site from present or past uses.

Per the Phase 1 Environmental Site Assessment Vancouver Tech Center – 18110 SE 34th Street Vancouver, Washington, prepared by WSP, dated January 2021, underground waste solvent lines were previously located south of the South Service Building; however, the former location of the lines is currently within a new corridor, and an acoustic chamber has been built in the vicinity. Therefore, it is likely that the piping was removed during construction and activities and any contamination encountered at that time would have been reported and addressed. No investigation is recommended by WSP because the area has been developed.

- 2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no existing on-site hazardous chemicals or conditions within the master plan site that would affect future site development and design.

- 3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Existing tenants within the VIC may store small quantities of hazardous chemicals used in light manufacturing processes. Existing and future tenants are required to comply with applicable regulations related to the use, storage or production of toxic or hazardous waste. A review of toxic or hazardous chemical storage, use or production will be evaluated and addressed at the time of individual site development for each phase within the Master Plan site.

- 4) Describe special emergency services that might be required.

Fire, emergency medical, and police services will be required with future development of the site.

- 5) Proposed measures to reduce or control environmental health hazards, if any:

There are no environmental health hazards anticipated with this site; therefore, no measures are proposed to reduce or control environmental health hazards.

b. Noise

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [\[help\]](#)

Existing noise around the site includes loading activities at the existing VIC buildings, movement of vehicles throughout the VIC site, and vehicular traffic on the streets that bound the master plan site – SE 34th Street to the south, SE 192nd Avenue to the east, and SE 176th Avenue to the west. These noise sources are typical ambient urban conditions and will not affect the project.

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [\[help\]](#)

Heavy equipment used for site improvements and construction will generate noise on the site and will be of short-term duration. The hours of use for heavy equipment will be governed by the City's noise ordinance. In the long-term, noise from vehicular traffic on new roadways within the site will generate noise similar to traffic on the other adjacent streets.

- 3) Proposed measures to reduce or control noise impacts, if any: [\[help\]](#)

Compliance with the City's noise ordinance will reduce and control any temporary and long-term noise impacts.

8. Land and shoreline use

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [\[help\]](#)

The current VIC Mixed Use Master Plan Site consists of an existing approximately 715,000 square foot (SF) multi-tenant light industrial building.

The Master Plan Site abuts the Clear Meadows and Fisher's Grove master planned single family residential communities to the north, SE 34th Street (a four-lane arterial road with a center landscaped median) which separates the site from other master planned single-family residential neighborhoods (Hiddenbrook, The Village, and The Glen). The site is bounded on the east by Fishers Creek and SE 192nd Avenue, with adjacent commercial development. The site is bounded on the west by SE 176th Avenue and adjacent master planned residential subdivisions (The Firs, 4-5 Town Center, and Heritage Park). All the adjacent master planned communities are within City of Vancouver Neighborhood Associations.

The revised Mixed-Use Master Plan has been designed for compatibility with adjacent properties with the inclusion of trails/open space area, and convenient and accessible bike/pedestrian-oriented pathways to navigate to and from the site.

- b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [\[help\]](#)

Historically, northern portions of the site have had limited agriculture and cattle grazing activity. Outside of this limited use, there is no other known agricultural history on the site or forest land of long-term commercial significance on the property.

- 1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:
There is no working farmland or forestland in the vicinity of the master plan site. Upon future site development, remaining limited cattle grazing activity will be curtailed and/or eliminated from the site.
- c. Describe any structures on the site. [\[help\]](#)
There are six (6) main structures consisting of approximately 715,000 square feet on the property that are connected either through covered, enclosed walkways or interior corridors.
- d. Will any structures be demolished? If so, what? [\[help\]](#)
The vast majority of existing buildings and structures located within the site will remain. Small ancillary structures including the fire pump house and recycling facility are likely to be demolished and replaced during future build out of the master plan.
- e. What is the current zoning classification of the site? [\[help\]](#)
The VIC Master Plan site is zoned Mixed Use (MX).
- f. What is the current comprehensive plan designation of the site? [\[help\]](#)
The VIC Master Plan site's current comprehensive plan designation is Commercial.
- g. If applicable, what is the current shoreline master program designation of the site? [\[help\]](#)
There are no shoreline master program designations for the site.
- h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [\[help\]](#)
As confirmed in the September 12, 2022, Critical Areas Memorandum, Fisher Creek and associated wetlands have been identified off-site to the east. Buffers associated with the creek and wetlands may extend into the Master Plan site. Additional field investigation will be required with future site development land use applications to classify the resource and establish resource boundaries and associated regulatory buffers.
- i. Approximately how many people would reside or work in the completed project? [\[help\]](#)
The revised master plan will consolidate the Single-Family Residential LUA and Multi-Family Residential LUA into a single, non-contiguous Residential LUA. The revised master plan proposes a maximum of 1,800 dwelling units which can be constructed within either the R LUA, the MX LUA or IL LUA. The United States Census Bureau reports that the City of Vancouver had an average of 2.46 persons per household between 2017-2021. Applying this average household size to the project, the development could have an estimated 4,428 residents.

The applicant proposes approximately 1,703,065 square feet of non-residential building square footage for employment uses within the IL and MX LUAs, which includes 715,000 square feet within the existing VIC building. Overall, the new employment square footage contemplated is consistent with the current master plan and is expected to yield approximately 5,000 jobs, including 3,500 net new jobs across the entire campus at project buildout.

- j. Approximately how many people would the completed project displace? [\[help\]](#)
The proposed buildout of the VIC Master Plan will not result in displacement.
- k. Proposed measures to avoid or reduce displacement impacts, if any: [\[help\]](#)
The proposed buildout of the VIC Master Plan will not result in displacement.
- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [\[help\]](#)
The VIC Mixed Use Master Plan site has a comprehensive plan designation of Commercial and is zoned Mixed Use (MX). The proposed land use areas are compatible with the current City comprehensive plan and applicable zoning code standards for the site as amended by the Third Amended and Restated Development Agreement (Restated DA). Therefore, no mitigation measures are necessary to ensure compatibility with existing and projected land uses and plans.
- m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:
There are no nearby agricultural or forest lands of long-term commercial significance, so no mitigation measures are needed.

9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [\[help\]](#)
The VIC Mixed Use Master Plan proposes approximately 1,800 residential dwelling units. The Master Plan proposes a mix of building types including low-rise residential units, studio apartments, multi-family units, and townhomes.
- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [\[help\]](#)
There are no dwelling units to be eliminated with this master plan site.
- c. Proposed measures to reduce or control housing impacts, if any: [\[help\]](#)
There are no dwelling units to be eliminated with this master plan site.

10. Aesthetics

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [\[help\]](#)
Upon future buildout, the applicant anticipates the tallest structure to be approximately six (6) stories, with a maximum height of approximately 75 feet. As noted in the Design Guidelines (Appendix F), a variety of building materials is encouraged throughout the site including weathered wood, rusted steel, singed woods, and other materials that reflect the industrial character of the IL LUA, such as concrete, steel, aluminum, and heavy timber. Additionally, single family attached developments are encouraged to incorporate a variety of natural materials including wood and stone in a range of natural color tones,
- b. What views in the immediate vicinity would be altered or obstructed? [\[help\]](#)
There are no views in the immediate vicinity that would be significantly altered or obstructed. The Master Plan proposes land use areas (LUAs) that are compatible with adjacent property uses. Per the Revised Master Plan Sheet 003 (Appendix E), the southwest corner will be multi-family residential LUA near the adjacent residential neighborhoods to the west. The northern part of the site, which abuts a residential neighborhood, will have a school LUA,

residential LUA, and open space area. The denser, light industrial and mixed-use land use areas will be in the core, to the south, and to the east of the property, to effectively transition to commercial areas along SE 192nd Avenue.

- c. Proposed measures to reduce or control aesthetic impacts, if any: [\[help\]](#)
The orientation of the proposed land uses within the master plan has been designed to mitigate and control potential aesthetic impacts of the project. Light industrial, employment and mixed-use buildings are focused at the center of the property around the existing buildings on the site and residential uses, a school, an open space corridor and forested tract are proposed to the west and northeast closest to the nearest residential subdivisions to ensure the most compatible land uses are adjacent to existing uses.

11. Light and glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [\[help\]](#)
The future development of the Mixed-Use Master Plan site will produce light or glare associated with residential, light industrial, office, commercial/retail, and school uses. Lighting produced on the site will consist of outdoor lighting for building safety, vehicle circulation and maneuvering areas limited to early morning and evening hours. Streetlights will be proposed in accordance with City Standards with the roads that do not presently have street lighting (e.g., 176th Avenue). Streetlights would result in lighting in early morning and evening hours to enhance safety on-site and to the adjacent properties. Future proposed development under the Master Plan will be designed to avoid producing glare to the extent feasible.
- b. Could light or glare from the finished project be a safety hazard or interfere with views? [\[help\]](#)
Future development of the Master Plan site is not anticipated to produce light or glare that will result in a safety hazard or interfere with views.
- c. What existing off-site sources of light or glare may affect your proposal? [\[help\]](#)
There are no known off-site sources of light or glare that would affect this master plan proposal.
- d. Proposed measures to reduce or control light and glare impacts, if any: [\[help\]](#)
Future development of the VIC Master Plan site will propose on-site lighting elements in compliance with applicable VMC requirements, which will include fixtures designed to minimize any significant light trespassing onto off-site properties.

12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity? [\[help\]](#)
The subdivisions to the west and north have 'pocket parks'. Fisher's Landing Elementary School is located to the south of the site across 34th Street and contains a playfield adjacent to 34th Street. Two neighborhood, public parks, Clear Meadows Park and Heritage Park are in the immediate vicinity of the Master Plan site. Approximately one mile away along 192nd Avenue is Fisher Basin community park, which draws from a wider geographic base to include this site. The VIC Master Plan proposes approximately 24-acres of open space LUA which includes designating an approximately 13.7-acre forested tract for

public recreation at the northeast corner of the Master Plan area. Other open space and recreational features include a perimeter multi-use loop trail, pedestrian/bicycle-oriented pathways, a neighborhood park and town plaza area.

- b. Would the proposed project displace any existing recreational uses? If so, describe. [\[help\]](#)
There are no recreational uses to be displaced as a result of future development of the VIC Master Plan.
- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [\[help\]](#)
The VIC Master Plan proposes approximately 24-acres of open space LUA which includes designating an approximately 13.7-acre forested tract for public recreation at the northeast corner of the Master Plan area. Other open space and recreational features include a two-mile multi-use loop trail around the perimeter of the site, pedestrian/bicycle-oriented pathways, a neighborhood park, and town plaza area. Other open space features include a neighborhood park block within the Residential LUA in the southwest corner of the site and a town plaza in the southeast.

13. Historic and cultural preservation

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe. [\[help\]](#)
There are no buildings or structures located on-site that are over 45 years old and that are listed or are eligible for listing in national, state, or local preservation registers.
- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [\[help\]](#)
Archaeological Investigations Northwest (AINW) conducted a cultural resources survey for the revised Vancouver Innovation Center Master Plan site in August of 2022. The report found no known evidence of archaeological or historic resources on the VIC property.
- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [\[help\]](#)
AINW conducted a review of records available on the Department of Archaeological and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD) online database. Historical maps, photographs, and documents were reviewed to assess the potential for pre-contact (Native American) and historic-period archaeological resources. AINW conducted shovel tests distributed across the site. There are no known landmarks or evidence of cultural or historic resources on or near the site.
- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

There are no known archaeological materials identified during AINW's investigation therefore, no measures to avoid, minimize or compensate for loss, changes to, and disturbance to resources are proposed. With future construction activity, the developer will comply with City and State regulations if any archaeological, cultural, and historic resources are discovered.

14. Transportation

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

[\[help\]](#)

The VIC Master Plan site is served on the south by SE 34th Street (a four lane principal arterial with a center median and sidewalk on both sides, with a meandering sidewalk fronting the subject site), on the west by SE 176th Avenue (a two-lane collector with a center turn lane and sidewalks on both sides), and on the east by SE 192nd Avenue (a four lane principal arterial with a center median, meandering sidewalk on both sides and a bike lane on the south leg). Access to the VIC site is provided via SE 34th Street. A private vehicle circulation route extends north into the site from the signalized intersection of SE Hiddenbrook Drive and SE 34th Street along the site frontage. The private road loops around the building and connects with SE 34th Street at a stop-controlled intersection near the southwest corner of the site.

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [\[help\]](#)

C-TRAN bus line Number 37 serves the site along SE 34th Street and SE 192nd Avenue. Bus stops are located at the southeastern corner of the project site at SE 34th Street and Hiddenbrook, and at the intersection of SE 34th Street and 177th Avenue.

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [\[help\]](#)

Several existing parking facilities within the site will be incrementally demolished as development occurs. New parking lots, stalls, and/or facilities will be constructed with each phase of new development. The applicant is anticipating the use of shared or joint parking across the site. The variety of uses proposed within the site do not have coinciding peak parking demands and therefore, provide a unique opportunity to allow shared parking.

Parking capacity requirements are based upon unit type, size and use therefore an estimate of parking capacity is not known at this time. Parking standards will be evaluated at the time of individual site development and will be consistent with applicable regulations.

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [\[help\]](#)

Per the Traffic Impact Analysis (TIA), prepared by Kittelson and Associates Inc., dated April 28, 2023, master plan development is generally anticipated in four phases with phases 2-4 providing new on-site public roadways:

- Phase 1 includes the VIC Building North and up to 300 homes using existing campus access.
- Phase 2 will construct the southwest portion of a new on-site loop road between SE Hiddenbrook Drive and SE 29th Street, SE 29th Street

between the new west loop road roundabout and a new roundabout at SE 176th Avenue and will close the existing VIC campus roadway connection to SE 34th Street aligned with SE 177th Avenue.

- Phase 3 will extend SE 29th Street from the Phase 2 west roundabout terminus east across the VIC campus to a new signalized intersection at SE 192nd Avenue.
- Phase 4 will complete the loop road between a new east roundabout on the loop road and SE Hiddenbrook Drive to the south.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [\[help\]](#)

There are no water, rail, or air transportation facilities located on or in the immediate vicinity of the Master plan site area.

- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [\[help\]](#)

The revised master plan does not anticipate significant impact or demand to transportation, water, sewer or stormwater management systems and infrastructure as further described below.

The VIC Development Agreement (VIC DA) with the City of Vancouver vested trips for the currently approved Master Plan. Per the DA, vested net new trips include a total of 26,982 average daily trips (ADTs), 2,088 AM peak hour trips, and 1,991 PM peak hour trips. On- and off-site transportation capacity mitigation is predicated on the number of AM and PM peak hour trips while transportation concurrency mitigation is determined based on PM peak hour trips.

The April 28, 2023, Traffic Impact Analysis (TIA) prepared by Kittelson and Associates, Inc. (Appendix D) demonstrates that the proposed uses within the revised master plan will result in a modest increase in weekday AM peak hour trip generation (141 net new trips added) and will not change the total net new PM peak hour trip generation compared to the current master plan. As indicated on Table 4 of the TIA, the revised master plan is estimated to generate 2,229 net new weekday AM peak hour trips and 1,991 net new PM peak hour trips. The TIA updated on- and off-site impacts of the project based upon the revised peak hour trip generation and recalibrated identified mitigation as appropriate. No new off-site traffic mitigation improvements were identified.

- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.
- Future buildout of the site is not expected to interfere with, affect or be affected by the movement of agricultural and/or forest products on roads or streets in the area.**
- h. Proposed measures to reduce or control transportation impacts, if any: [\[help\]](#)
- The proposed master plan revision will result in reduced overall traffic impacts when compared to the current master plan, therefore, no new mitigation measures are proposed. However, it is anticipated that the following mitigation measures will be implemented with buildout of the proposed revised master plan as noted in Table 1 on the following page.**

Table 1. Preliminary Transportation Mitigation – VIC Master Plan

Facility	Segment/ Study Intersection ID	Mitigation Recommendation	Needed Pre- VIC Master Plan?	Triggered by VIC Master Plan Trips?	VIC Master Plan Trigger Phase?
On-Site Roadways & Intersections					
SE 29 th Street	<i>Extend collector arterial roadway across the VIC Master Plan site in three segments</i>				
	West Segment	From SE 176 th Avenue to West Loop Road	N/A	Yes	2
	North Segment	From West Loop Road to East Loop Road	N/A	Yes	3
	East Segment	From East Loop Road to SE 192 nd Avenue	N/A	Yes	3
SE 184 th Avenue	N/A	Renovate collector arterial roadway within The VIC Master Plan site from SE 34 th Street to Loop Road	N/A	Yes	2
West Loop Road	N/A	From SE 184 th Avenue to SE 29 th Street	N/A	Yes	2
East Loop Road	N/A	From SE 184 th Avenue to SE 29 th Street	N/A	Yes	4
West Loop Road/ SE 29 th Street	N/A	Construct single lane roundabout	N/A	Yes	2
East Loop Road/ SE 29 th Street	N/A	Construct single lane roundabout	N/A	Yes	3
Site-Access Changes					
West Site Access/ SE 34 th Street	7	Close and vacate motor vehicle site-access (intersection north approach)	No	No	2
SE 29 th Street/ SE 176 th Avenue	9	Reconstruct as a single lane roundabout	No	Yes	2
SE 29 th Street/ SE 192 nd Avenue		Install traffic signal with interconnect Construct and stripe separate eastbound left and right turn lanes with 250 feet of storage each Stripe northbound left-turn lane with 200 feet of storage		Yes	3
Off-site Intersection Mitigations with Master Plan Development					
SE 29 th Street/ SE 164 th Avenue	11	Modify traffic signal to provide east-west protected/permissive left-turn phasing	No	Yes	2
		Extend westbound left-turn lane striping to provide 225 feet of storage (striping only)	No	Yes	2
		Extend southbound left-turn storage to provide 300 feet of storage (reconstruct center median area)	No	Yes	2
SE 192 nd Avenue/ SR- 14 Westbound Ramp Terminal	N/A	Pay proportionate share contribution toward future capacity improvements with each site development application. Estimated total fee of \$430,000 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added
SE 20 th Street/ SE 176 th Avenue	10	Pay proportionate share contribution toward future capacity improvements with each site development application. Estimated total fee of \$33,600 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added
SE 34 th Street/ SE 192 nd Avenue	5	Pay proportional share contribution towards re-constructing streets with a more durable pavement treatment to reduce maintenance needs. Estimated total fee of \$83,400 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added

15. Public Services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [\[help\]](#)

With the VIC Mixed Use Master Plan buildout, residents, employees, and businesses would require fire protection, police protection, public transit, health care, schools, and amenities like parks, open space, and recreational activities.

- b. Proposed measures to reduce or control direct impacts on public services, if any. [\[help\]](#)

No measures are proposed to reduce or control direct impacts on public services as it is anticipated that tax revenues and utility fees generated from the build out of the master plan will address the additional demands created by the project.

16. Utilities

- a. Circle utilities currently available at the site: [\[help\]](#)
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

Electricity, natural gas, water, refuse services, telephone, and sanitary sewer. Cable and data services are also available to the site.

- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [\[help\]](#)

The VIC Mixed Use Master Plan site will require the following utilities:

Electricity	Clark Public Utilities
Natural Gas	NW Natural Gas
Sewer	City of Vancouver
Water	City of Vancouver
Refuse	Waste Management
Communications	Multiple providers available

C. SIGNATURE [\[HELP\]](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:  _____

Name of signee: Jessica Herceg

Position and Agency/Organization: Senior Planner, DOWL

Date Submitted: May 5, 2023

APPENDIX D

REVISED TRAFFIC IMPACT ANALYSIS

April 28, 2023

Project #: 27715.5

Eric Hahn, PE
City of Vancouver Public Works
4500 SE Columbia Way
Vancouver, WA 97668-1995

RE: Traffic Impact Analysis for the Revised Vancouver Innovation Center (The VIC) Mixed Use Master Plan

Dear Eric,

The VIC Building Owner LLC (the Applicant) proposes revisions to The VIC Mixed Use Master Plan and Development Agreement¹. Primary objectives of the revisions are to 1) consolidate industrial areas to optimize opportunities for employment-generating development and 2) more substantially integrate development types to allow for greater density while creating an opportunity to provide more open spaces throughout the site to enhance design and placemaking opportunities.

From a traffic impact perspective, key changes associated with the revised Master Plan include:

- A small reduction in overall daily campus trip generation, a modest increase in AM peak hour trip generation, and no change in the PM peak hour trip generation compared to the current approvals and trip vesting;
- Refinement of the on-site transportation network;
- Elimination of one existing campus vehicular access on SE 34th Street; and
- Refinement of the on and-off site transportation mitigation measures into four distinct project phases.

In addition to the Master Plan changes noted above, this study incorporates transportation system changes anticipated associated with the City of Vancouver's *SE 34th Street Safety & Mobility Project*². The documentation presented in this report is prepared to inform updates to the Development Agreement, in particular memorialization of The VIC trip vesting and transportation mitigation requirements with additional specificity by each of four master plan phases.

BACKGROUND

The VIC is an approximately 179-acre site located at 18110 SE 34th Street and is developed with approximately 715,000 square feet of campus building area supported by surface parking. Today, the

¹ Third Amended and Restated Development Agreement (Restated DA) approved by the Vancouver City Council by Ordinance 4346 on August 16, 2021.

² <https://www.cityofvancouver.us/cdd/page/se-34th-street-safety-and-mobility-project>

campus is accessible at two locations on SE 34th Street including 1) a private vehicle circulation route that extends north into the site from the signalized intersection of SE Hiddenbrook Drive and 2) a private vehicle route that extends north into the site from the stop-controlled intersection near the southwest corner of the site aligned with SE 177th Avenue to the south. Figure 1 shows the site vicinity map and Figure 2 illustrates the revised Master Plan land use areas.

Master Plan development is generally anticipated in four phases that each have different supporting transportation infrastructure, with Phases 2-4 providing new on-site public roadways:

- Phase 1 includes the VIC Building North and up to 300 homes using existing campus access.
- Phase 2 will construct the southwest portion of a new on-site loop road between SE Hiddenbrook Drive and SE 29th Street, SE 29th Street between the new west loop road roundabout and a new roundabout at SE 176th Avenue, and will close the existing The VIC campus roadway connection to SE 34th Street aligned with SE 177th Avenue upon completion of the on-site loop road and Hiddenbrook Drive renovations.
- Phase 3 will extend SE 29th travel from the Phase 2 west roundabout terminus east across the VIC campus to a new signalized intersection at SE 192nd Avenue.
- Phase 4 will complete the loop road between a new east roundabout on the loop road and SE Hiddenbrook Drive to the south. Upon completion of Phase 4 all roadways shall be complete.

Some site development was already underway at the time this report was prepared consistent with the approved master plan and development agreement. Consistent with the prior master plan, full build-out and occupancy is anticipated to occur over a 15-year period. Accordingly, current and future year 2038 transportation conditions were analyzed.

This letter documents the methodology and findings of a traffic impact analysis (TIA) prepared for the proposed revisions to the Master Plan. Consistent with current obligations, future site development applications under the proposed revised Master Plan and Development Agreement will each be required to demonstrate compliance with the Master Plan transportation requirements through preparation of a Transportation Compliance letter.

TRANSPORTATION MITIGATION SUMMARY

In addition to typical roadway frontage improvements along the streets abutting VIC, several transportation improvements are recommended in conjunction with Master Plan site development (subject to City of Vancouver approval). Table 1 summarizes the recommended transportation improvements and reflects which are triggered by the VIC Master Plan versus those needed regardless of any additional development within the campus. Further details on each improvement are described more fully in later sections of this report.

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 Layout Tab: Fig 1_Site Vicinity Map
 Apr 04, 2023 - 2:20pm - ckleyhans



Study Intersections

Site Vicinity Map
 Vancouver, Washington

Figure
 1



Figure
2

Table 1. Summary of Mitigation Recommendations

Facility	Segment/ Study Intersection ID	Mitigation Recommendation	Needed Pre- VIC Master Plan?	Triggered by VIC Master Plan Trips?	VIC Master Plan Trigger Phase?
On-Site Roadways & Intersections					
SE 29 th Street	<i>Extend collector arterial roadway across the VIC Master Plan site in three segments</i>				
	West Segment	From SE 176 th Avenue to West Loop Road	N/A	Yes	2
	North Segment	From West Loop Road to East Loop Road	N/A	Yes	3
	East Segment	From East Loop Road to SE 192 nd Avenue	N/A	Yes	3
SE 184 th Avenue	N/A	Renovate collector arterial roadway within The VIC Master Plan site from SE 34 th Street to Loop Road	N/A	Yes	2
West Loop Road	N/A	From SE 184 th Avenue to SE 29 th Street	N/A	Yes	2
East Loop Road	N/A	From SE 184 th Avenue to SE 29 th Street	N/A	Yes	4
West Loop Road/ SE 29 th Street	N/A	Construct single lane roundabout	N/A	Yes	2
East Loop Road/ SE 29 th Street	N/A	Construct single lane roundabout	N/A	Yes	3
Site-Access Changes					
West Site Access/ SE 34 th Street	7	Close and vacate motor vehicle site-access (intersection north approach)	No	No	2
SE 29 th Street/ SE 176 th Avenue	9	Reconstruct as a single lane roundabout	No	Yes	2
SE 29 th Street/ SE 192 nd Avenue	4	Install traffic signal with interconnect Construct and stripe separate eastbound left and right turn lanes with 250 feet of storage each Stripe northbound left-turn lane with 200 feet of storage	No	Yes	3
Off-site Intersection Mitigations with Master Plan Development					
SE 29 th Street/ SE 164 th Avenue	11	Modify traffic signal to provide east-west protected/permissive left-turn phasing	No	Yes	2
		Extend westbound left-turn lane striping to provide 225 feet of storage (striping only)	No	Yes	2
		Extend southbound left-turn storage to provide 300 feet of storage (reconstruct center median area)	No	Yes	2
SE 192 nd Avenue/ SR-14 Westbound Ramp Terminal	N/A	Pay proportionate share contribution toward future capacity improvements with each site development application. Estimated total fee of \$430,000 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added
SE 20 th Street/ SE 176 th Avenue	10	Pay proportionate share contribution toward future capacity improvements with each site development application. Estimated total fee of \$33,600 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added
SE 34 th Street/ SE 192 nd Avenue	5	Pay proportional share contribution towards re-constructing streets with a more durable pavement treatment to reduce maintenance needs. Estimated total fee of \$83,400 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added

N/A = Not applicable

SCOPE OF THE REPORT

The TIA identifies the transportation-related impacts associated with the proposed development. Per Vancouver Municipal Code (VMC) Section 11.80.130, a TIA is needed given the trips collectively generated by the proposed Master Plan land uses will exceed 20 net new weekday PM peak hour trips.

The study intersections and overall study area for the Master Plan were determined based on a review of the prior master plan, existing travel patterns, TIA requirements pursuant to Vancouver Municipal Code (VMC) Sections 11.80.080 and 11.80.130 as well as scoping direction provided by City staff.

Study Intersections

As coordinated with City staff, the following 12 intersections were analyzed:

- 1) SE 15th Street/SE 192nd Avenue
- 2) SE 20th Street/SE 192nd Avenue
- 3) SE 25th Street/SE 192nd Avenue
- 4) SE 29th Street/SE 192nd Avenue (analyzed in year 2038 with Master Plan development only)
- 5) SE 34th Street/SE 192nd Avenue
- 6) SE 34th Street/SE Hiddenbrook Drive-East Site Access
- 7) SE 34th Street/SE 177th Place-West Site Access
- 8) SE 34th Street/SE 176th Avenue
- 9) SE 29th Street/SE 176th Avenue
- 10) SE 20th Street/SE 176th Avenue
- 11) SE 29th Street/SE 164th Avenue
- 12) SE 34th Street/SE 164th Avenue

Additionally, though not a study intersection, future site-generated trips projected to travel through the SR-14/SE 192nd Avenue westbound ramp terminal are documented to estimate proportional share contributions that will be required of future Master Plan development site plan applications.

Analysis Periods

Weekday AM and PM peak hour conditions were assessed for three analysis periods:

- Existing conditions;
- Future 15-year conditions (year 2038) that do not include any Master Plan build-out; and
- Year 2038 Build Out conditions with full Master Plan development and occupancy.

Report Format

The remaining sections of this report address the following transportation issues:

- Existing land use and transportation system conditions near The VIC;
- Study intersection crash history review;
- Trip generation and distribution estimates for the proposed The VIC land uses;
- Concurrency corridor trip assignment;
- Forecast future year (2038) baseline traffic conditions;
- Forecast future year (2038) Phase 1 to Phase 4 build out traffic conditions;
- A review of potential mitigation options;
- Intersection sight distance considerations; and,
- Findings and recommendations.

ANALYSIS METHODOLOGY

Intersection Levels-of-Service

Study intersection performance was evaluated using Synchro 11 and Sidra 9 software. All level-of-service (LOS) analyses for the intersections described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual 6th Edition* (HCM, Reference 1).

Queuing Analysis

Queuing analyses were prepared by reporting Synchro 95th percentile queues for the peak 15-minute analysis during both the weekday AM and PM peak hours.

Operating Standards

City of Vancouver Municipal Code Section 11.80.130.B states the following:

A proposed development that adds at least five net new peak hour trips to an intersection approach operating at a LOS E or lower within the required traffic impact analysis area may be denied based upon any of the following:

- 1. For signalized intersections, when off-site intersection conditions are at a LOS F, or*
- 2. For signalized intersections, when the LOS E and the volume to capacity ratio is greater than 0.95, or*
- 3. For unsignalized intersections, when the volume to capacity ratio for any lane on any approach is greater than 0.95, and*
- 4. When significant traffic hazards would be caused or materially aggravated by the proposed development.*

The above operating standards are applicable to all study intersections. Existing and year 2038 operational analyses at the study intersections were prepared using Synchro 11 and Sidra 9 software and compared to these standards. Current timing parameters and phasing information for the signalized study intersections was provided by City staff.

Existing Conditions Traffic Volume Development

Turning movement counts were obtained at the study intersections on a mid-week day during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak hour periods. Traffic counts collected at the SE 34th Street corridor study intersections by the City of Vancouver in early December 2022 were used in this study (the December 2022 counts were conducted as part of the City's *SE 34th Street Safety and Mobility Project* to provide consistency in the base existing conditions analyses presented in this report and the City's study). Traffic counts at the remaining study intersection counts were completed on a mid-week day in January 2023 while local schools were in-session when no inclement weather occurred that would alter traffic patterns³. *Appendix "A" provides the traffic count data sheets.*

EXISTING CONDITIONS

The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of roadways within the study area. These conditions are compared with future conditions later in this report.

³ At the time of the traffic counts, a portion of the existing buildings on the VIC campus had been leased but not yet re-occupied. Trips associated with re-occupancy of the vacant space are addressed in the future 2038 baseline analysis.

Site Conditions and Adjacent Land Uses

Today, a portion of the VIC campus is occupied by a total building area of 715,000 square feet and associated surface parking lots. The campus has two gated accesses to SE 34th Street and is bounded by existing residential developments to the north, west and south with a commercial development and SE 192nd Avenue to the east. Fisher's Landing Elementary School is located south across SE 34th Street and is accessed via SE Hiddenbrook Drive.

Adjacent Roadway Facilities

Table 2 summarizes the existing transportation facilities and roadways in the study area.

Table 2: Existing Transportation Facilities and Roadway Designations

Roadway	Functional Classification ¹	Number of Travel Lanes	Posted Speed (mph)	Sidewalks?	Bicycle Lanes?	Median?	On-Street Parking?
SE 15 th Street	Collector Arterial	2	30	Yes ²	Yes ³	No	No
SE 20 th Street	Minor Arterial	2-3	40	Yes	Yes	Striped	No
SE 192 nd Avenue	Principal Arterial	4-5	40	Yes	Yes	Raised	No
SE 34 th Street	Principal Arterial	4-5	40	Yes	No	Raised	No
SE Hiddenbrook Drive	Local Street	2	25	Yes ⁴	Yes	No	No
SE 177 th Place	Local Street	2	25	Yes	No	No	Yes
SE 176 th Avenue	Collector Arterial	2	35	Yes	No	Striped	No
SE 29 th Street	Collector Arterial	2	25	Yes	Yes	No	No
SE 164 th Avenue	Principal Arterial	5-6	40	Yes	No	Raised	No

¹ Source: *City of Vancouver Arterial Street System and Classification Map*, Adopted June 27, 2022 (Reference 2).

² Continuous sidewalks only provided on the south side of SE 15th Street, west of SE 192nd Avenue. Sidewalks terminate approximately 900 feet east of SE 192nd Avenue.

³ Bicycle lanes are only provided west of SE 192nd Avenue.

⁴ Continuous sidewalks only provided on west side on SE Hiddenbrook Drive.

Transit Facilities

C-Tran currently offers multiple fixed transit routes that service the Fisher's Landing Transit Center (Reference 3) located approximately two-thirds of a mile west of the VIC. Route 30 - *Burton* operates daily along the SE 164th Avenue/NE 162nd Avenue corridor and has a stop located between SE 29th Street and SE 34th Street, approximately ½ mile west of the site. Additionally, Route 37 - *Mill Plain/Fisher's* operates along SE 164th Avenue, SE 192nd Avenue and along the site frontage on SE 34th Street, with daily service. A posted westbound transit stop for Route 37 is provided near both existing The VIC site access points on SE 34th Street. No shelter area is provided at either stop location.

Crash Analysis

Table 3 summarizes the crash frequency at the study intersections. Generally, the City of Vancouver considers a crash rate greater than one crash per million entering vehicles (MEV) to be an indicator that a potential geometric or operational issue may exist, and that further evaluation should be considered.

Table 3: Study Intersection Crash Frequency and Severity (January 2018 through December 2022)

Study Intersection		Crash Type ¹						Severity			Total	Crash Rate ³
ID	Location	Angle	Turn	Rear-End	Side Swipe	Fixed Object	Ped/Bike	PDO ²	Injury	Fatal		
1	SE 15 th Street/ SE 192 nd Avenue	4	1	3	-	-	-	5	3	0	8	0.18
2	SE 20 th Street/ SE 192 nd Avenue	2	1	5	1	1	-	6	4	0	10	0.21
3	SE 25 th Street/ SE 192 nd Avenue	-	-	-	-	-	-	0	0	0	0	0.00
4	SE 29 th Street/ SE 192 nd Avenue	No data reported (Future Intersection)										
5	SE 34 th Street/ SE 192 nd Avenue	3	14	-	-	-	-	8	9	0	17	0.34
6	SE 34 th Street/ SE Hiddenbrook Drive (East Site Access)	-	1	-	-	-	-	1	0	0	1	0.06
7	SE 34 th Street/ SE 177 th Place (West Site Access)	1	-	-	-	-	-	1	0	0	1	0.06
8	SE 34 th Street/ SE 176 th Avenue	1	5	-	-	2	-	4	4	0	8	0.38
9	SE 29 th Street/ SE 176 th Avenue	1	-	-	-	-	1	1	1	0	2	0.24
10	SE 20 th Street/ SE 176 th Avenue	1	1	6	-	-	1	7	2	0	9	0.41
11	SE 29 th Street/ SE 164 th Avenue	-	2	-	-	-	-	2	0	0	2	0.04
12	SE 34 th Street/ SE 164 th Avenue	8	4	11	-	-	-	15	8	0	23	0.33

¹ No backing or head-on crashes were reported.

² PDO = Property Damage Only

³ Crash rate is calculated as the number of crashes per million entering vehicles (Crashes/MEV). Average daily traffic volumes were estimated using PM peak hour total entering volume at the intersection.

As shown in Table 3, there were no reported fatal collisions, and each study intersection experienced a crash rate less than 1.0 per million entering vehicles. Three trends were noted in reviewing the crash data. First, the SE 34th Street/SE 176th Avenue intersection was noted to have two fixed object collisions, both of which involved a median placed traffic sign on the east-west intersection approaches. The median on the west approach to the intersection was observed to interface with the marked crosswalk. Considering the crash history and current median placement, regardless of the proposed Master Plan, the City may consider reinstallation/replacement of the median end treatments nearest the intersection on SE 34th Street, additional median nose striping, or reflective bollards to increase the visibility of the narrow median curb and signs (the existing end treatments are shown in Exhibits 1 and 2 for reference).

Such changes could be evaluated and addressed as part of the City's planned *SE 34th Street Safety & Mobility Project*.

Exhibit 1: Facing East at the SE 34th Street/ SE 176th Avenue intersection (image source Google Earth)



Exhibit 2: Facing West at the SE 34th Street / SE 176th Avenue intersection (image source Google Earth)



A second apparent trend amongst the crash data is that 6 of the reported 11 rear-end crashes at the SE 34th Street/SE 164th Avenue intersection involved southbound vehicles. This pattern may be reflective of the tendency for motorists to congregate towards the right-most through lane to reach the single SR-14 westbound on-ramp lane to the south of the intersection.

The third trend amongst the crash data is that 12 of the reported 14 turning crashes at the SE 34th Street/SE 192nd Avenue intersection involved eastbound (6) and westbound (6) vehicles turning left to travel north and south respectively. This pattern may be reflective of the motorists who error in selecting

gaps to complete their turn during the permissive portion of the protected/permissive left-turn phase. The City's 34th Street Safety & Mobility project may be changing the intersection lane configuration as discussed later in this report which would impact gap acceptance.

There were two reported crashes involving a cyclist:

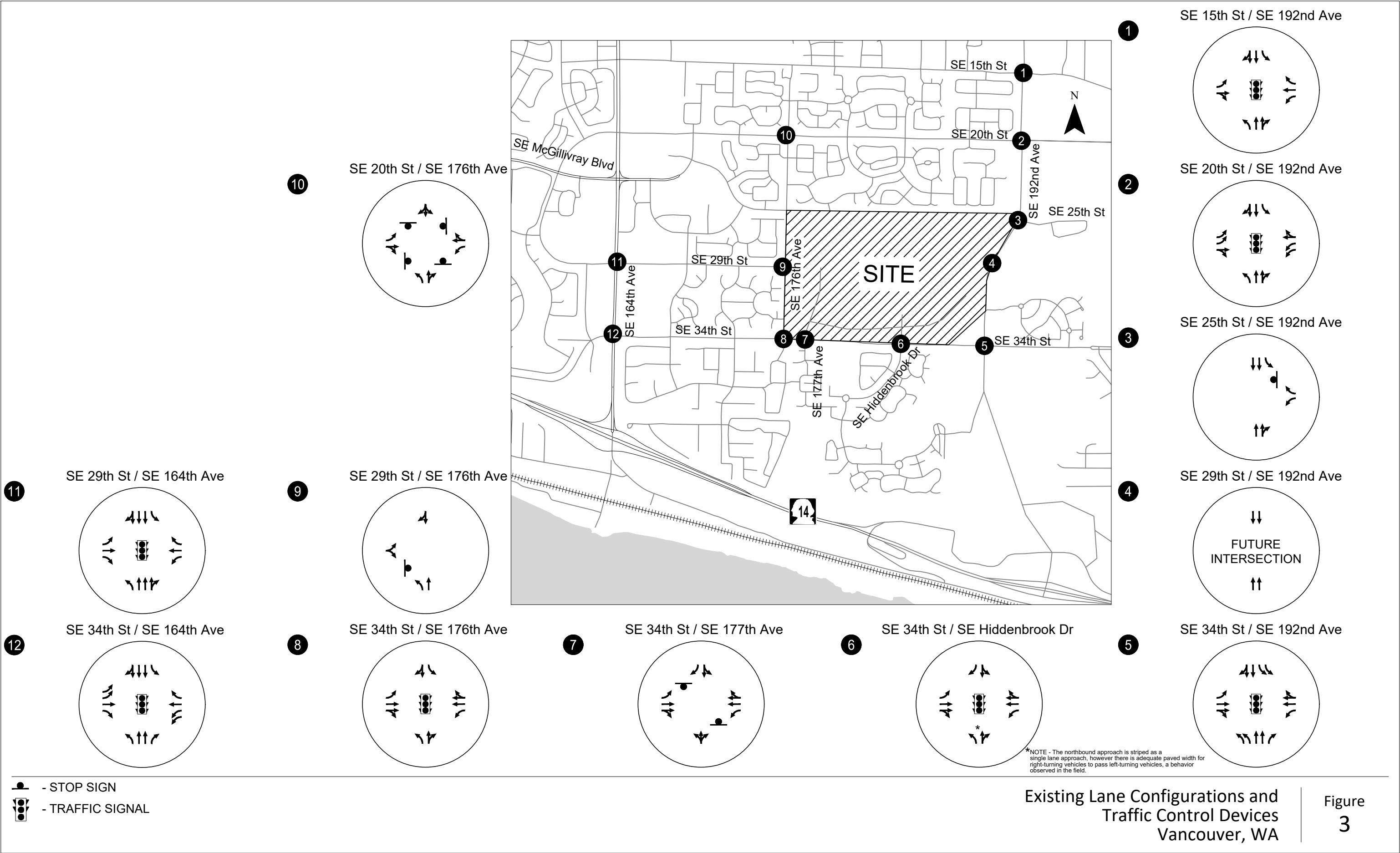
- In July 2020 on a clear dry day, a motorist struck a cyclist at the SE 20th Street/SE 176th Avenue AWSC intersection. No cause of the crash was provided in the crash report.
- In May 2022 on a wet rainy day, a motorist struck a cyclist at the SE 29th Street/SE 176th Avenue TWSC intersection. Per the crash report, the driver was inattentive.

No other safety-based mitigation needs were identified through review of the available crash data. *Appendix "B" includes the crash data provided for each of the study intersections.*

Existing Traffic Conditions

Figure 3 illustrates the existing lane configuration and traffic control devices at each of the study intersections. Figure 4 presents the existing traffic volumes and corresponding intersection operations during the weekday AM and PM peak hours. As shown, all intersections currently satisfy applicable City standards during both peak hours. *Appendix "C" contains the existing conditions operational analysis worksheets.*

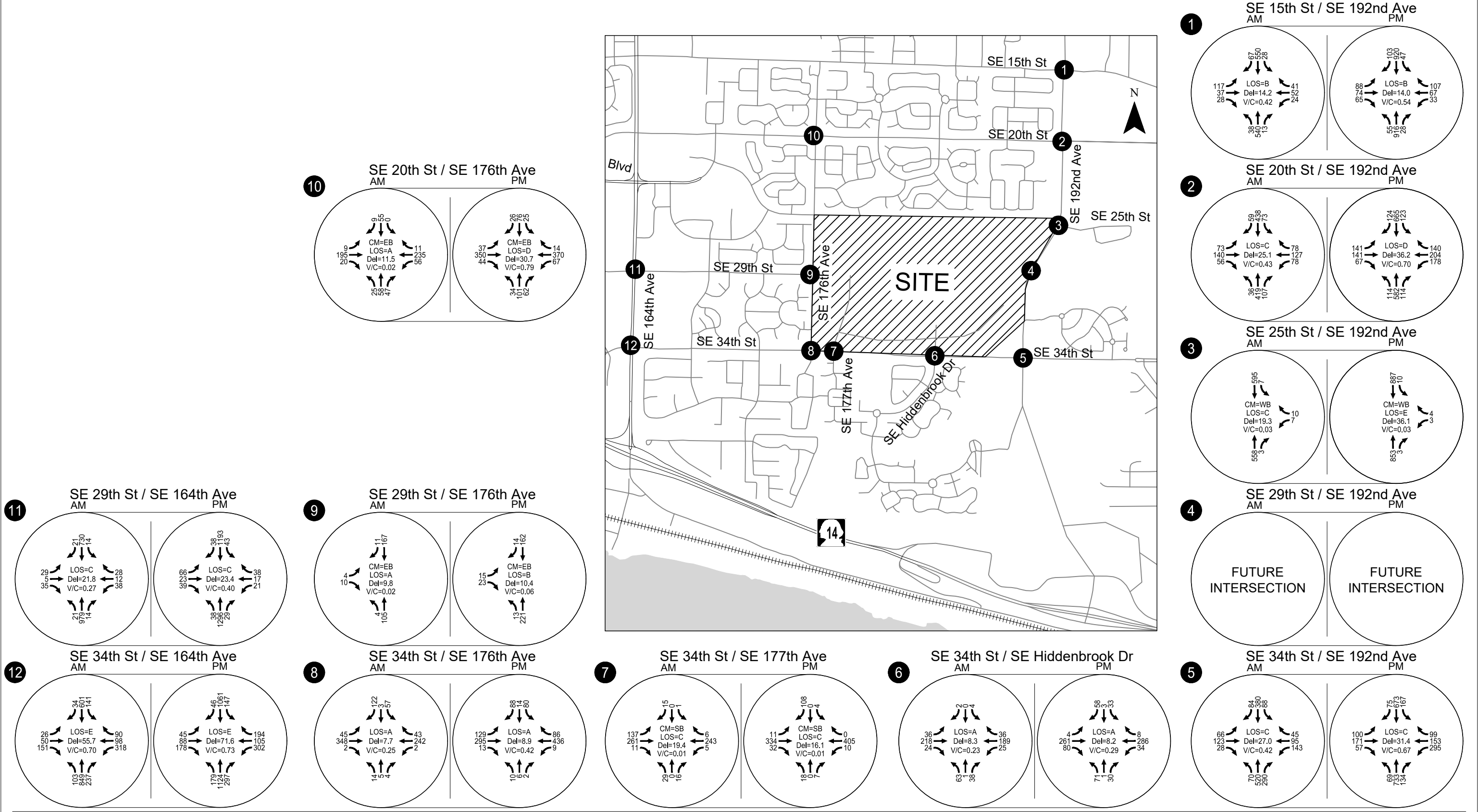
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Existing Lane Configurations and
Traffic Control Devices
Vancouver, WA

Figure
3

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CM = Critical Movement (Unsignalized)
LOS = Intersection Level of Service (Signalized) / Critical Movement Level of Service (Unsignalized)
Del = Intersection Average Control Delay (Signalized) / Critical Movement Control Delay (Unsignalized)
V/C = Intersection Volume-to-Capacity Ratio (Signalized) / Critical Movement Volume-to-Capacity Ratio (Unsignalized)

Existing Year 2023 Traffic Conditions
Weekday AM & PM Peak Hour
Vancouver, WA
Figure 4

PROPOSED MASTER PLAN

The VIC Building Owner LLC is requesting City of Vancouver approval of a major revision to the VIC Mixed Use Master Plan that was approved by the Vancouver City Council by Ordinance 4346 on August 16, 2021. The Revised Master Plan maintains a mixture of uses and land use areas (LUAs) on the site similar to the original plan. The proposed LUAs on the site include a school (approximately 20 acres), residential (approximately 38.12 acres), light industrial/employment area (approximately 74.13 acres), mixed use area (approximately 33.15 acres) and open space (approximately 24 acres) including the approximately 13.7-acre forested tract. The master plan revision proposes a maximum of 1,800 residential dwelling units and a minimum of 1,703,065 square feet of gross floor area for employment uses.

Key transportation elements of the revised Master Plan vision include:

- The east-west extension of SE 29th Street as a new collector arterial across the campus;
- A central right-of-way loop or “ring road” for main site circulation, the northern arc of the loop will serve as the SE 29th Street collector;
- A vibrant and pedestrian friendly mixed-use corridor along the proposed ring road; and
- An enhanced pedestrian and bicycle network.

The SE 29th Street collector arterial extension east-west across the site completes the anticipated network connection identified in the City’s Transportation Plan. The addition of a future traffic signal at the SE 29th Street/SE 192nd Avenue intersection and a single lane roundabout at the SE 29th Street/SE 176th Avenue intersection are planned in conjunction with the new SE 29th Street roadway corridor. SE 29th Street will serve as the designated freight delivery route to and from the campus with trucks entering the campus at SE 192nd Avenue, traveling across SE 29th Street to the industrial areas, completing delivery, and then returning to SE 192nd Avenue across SE 29th Street upon completion of all four phases.

The northern portion of the new ring road will include two single lane roundabouts where the southern segments of the ring road intersect with SE 29th Street. The existing unsignalized western campus access to SE 34th Street aligned with SE 177th Place will be closed and vacated. Vehicular access to SE 34th Street will be via the signalized SE 34th Street/SE Hiddenbrook Drive-East Site Access intersection which will be reconstructed to one travel lane in each direction between SE 34th Street and the loop road on-site with left-turn lanes provided at SE 34th Street and the loop road.

Master Plan development is generally anticipated in four phases. Phase 1, uses by right, will allow for the VIC Building North (previously entitled) and up to 300 homes using the existing site access. Phase 1 access will be via the two existing campus roadway connections to SE 34th Street. Phase 2 will provide the southwest portion of the new on-site loop road between SE Hiddenbrook Drive and SE 29th Street as well as construction of SE 29th Street between the new west loop road roundabout and a new roundabout at SE 176th Avenue. The existing VIC campus roadway connection to SE 34th Street (aligned with SE 177th Avenue to the south) will be closed and vacated with Phase 2 site development. Phase 3 will extend SE 29th Street from the Phase 2 west roundabout terminus east across the VIC campus to a new signalized

intersection at SE 192nd Avenue. Phase 4 will complete the loop road between a new east roundabout on the loop road and SE Hiddenbrook Drive to the south.

Trip Generation Estimates

Trip generation estimates for The VIC Master Plan land uses were developed using trip rates contained within the *Trip Generation Manual, 11th Edition* as published by the Institute of Transportation Engineers (Reference 4)⁴. The trip estimates account for “internal trip-making” that reflects the interaction between the employment, residential, and retail uses within the VIC campus (including the existing VIC buildings but excluding the potential middle school). Table 4 presents the trip estimates. Peak hour trip estimates for the residential uses were developed using the fitted equation trip rates while the average peak hour trip rates were used for the remaining new uses as well as for all the daily trip estimates. Trips associated with the existing VIC buildings are shown for the purpose of tracking internal trip sharing that will occur as a function of the proposed new uses.

Given no new PM peak hour trips are anticipated because of the proposed mater plan revisions, the Applicant requests that the current daily and PM peak hour trip vesting in the VIC Development Agreement be retained to allow maximum flexibility to respond to market conditions over the life of the master plan.

⁴ Weekday AM and PM peak hour trips associated with the 715,000 square feet of existing building at VIC were included in the existing conditions analysis based on trip rates previously measured at the campus when it was in full use.

Table 4: Site Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Existing The VIC Buildings ¹	1996 Traffic Counts	715,000 Square Feet	10,200 ²	382	262	120	444	76	368
Less Trips Internal to the Campus Area			(236)	(24)	(12)	(12)	(26)	(8)	(18)
Net New			9,964	358	250	108	418	68	350
General Light Industrial	110	600,565 Square Feet	2,925	444	391	53	390	55	335
Less Trips Internal to the Campus Area			(198)	(20)	(10)	(10)	(22)	(7)	(15)
Net New			2,727	424	381	43	368	48	320
General Office Building	710	87,500 Square Feet	949	133	117	16	126	21	105
Less Trips Internal to the Campus Area			(29)	(2)	(1)	(1)	(3)	(1)	(2)
Net New			920	131	116	15	123	20	103
Medical Office Building	720	10,000 square feet	360	31	24	7	39	12	27
Less Trips Internal to the Campus Area			(4)	(1)	(1)	(0)	(0)	(0)	(0)
Net New			356	30	23	7	39	12	27
Shopping Center	820	140,000 square feet	5,181	118	73	45	476	228	248
Less Trips Internal to the Campus Area			(1,607)	(45)	(29)	(16)	(110)	(41)	(69)
Less Pass-by Reduction			(1,036)	(21)	(13)	(8)	(106)	(54)	(52)
Net New			2,538	52	31	21	260	133	127
Multifamily Housing (Mid-Rise)	221	1,248 Units	5,666	538	124	414	487	297	190
Less Trips Internal to the Campus Area			(790)	(14)	(2)	(12)	(80)	(56)	(24)
Net New			4,876	524	122	402	407	241	166
Multifamily Housing (Low-Rise)	220	552 Units	3,720	194	47	147	258	163	98
Less Trips Internal to the Campus Area			(350)	(6)	(1)	(5)	(35)	(25)	(10)
Net New			3,370	188	46	142	223	138	85
Middle School ²	522	900 Students	1,917	522	282	240	153	75	78
Total Trips			30,918	2,362	1,320	1,042	2,373	927	1,446
Less Total Trips Internal to the Campus Area			(3,214)	(112)	(56)	(56)	(276)	(138)	(138)
Less Total Pass-by Reduction			(1,036)	(21)	(13)	(8)	(106)	(54)	(52)
Total Net New Trips			26,668	2,229	1,251	978	1,991	735	1,256
The VIC Development Agreement Vested Net New Trips			26,982	2,088	1,343	745	1,991	627	1,364
Proposed Total Net New – The VIC DA Vested Net New			-314	141	-92	233	0	108	-108
Total Net New Trips – Existing The VIC Building Net New Trips			16,704	1,871	1,001	870	1,573	667	906

¹ Source: Traffic Impact Analysis for The VIC Master Plan dated November 20, 2020.

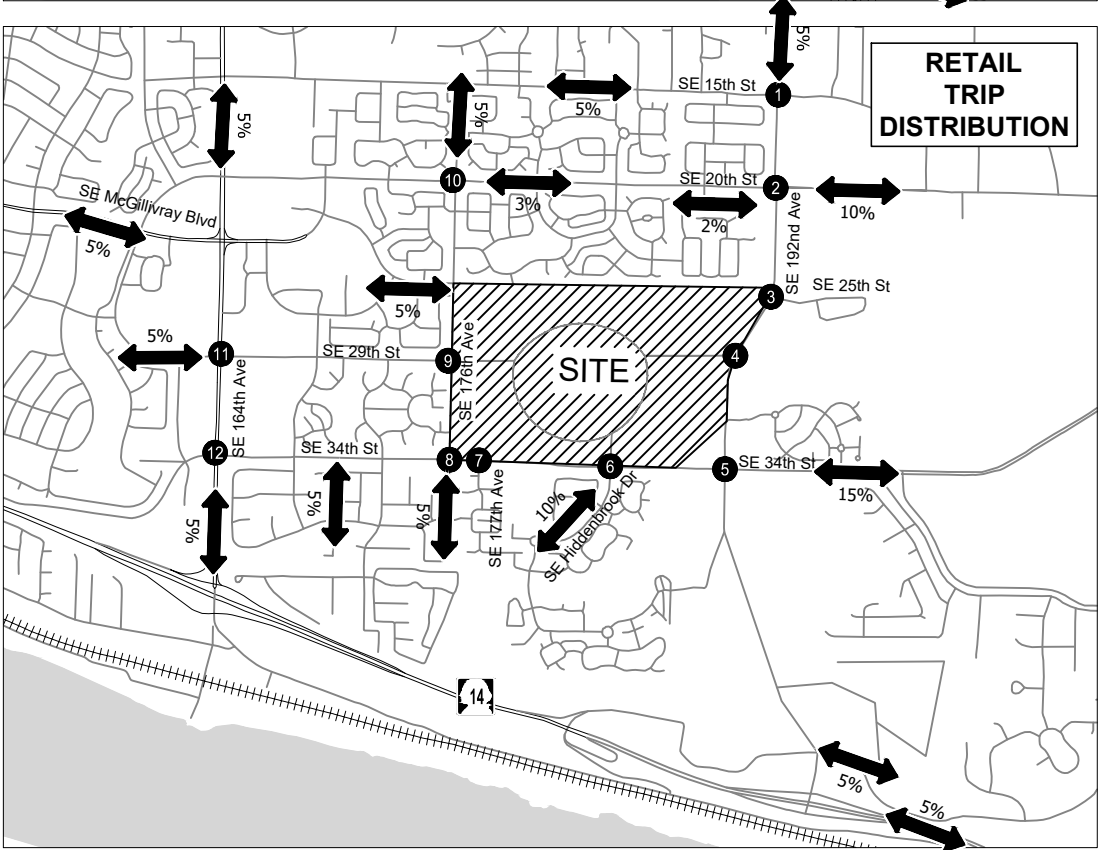
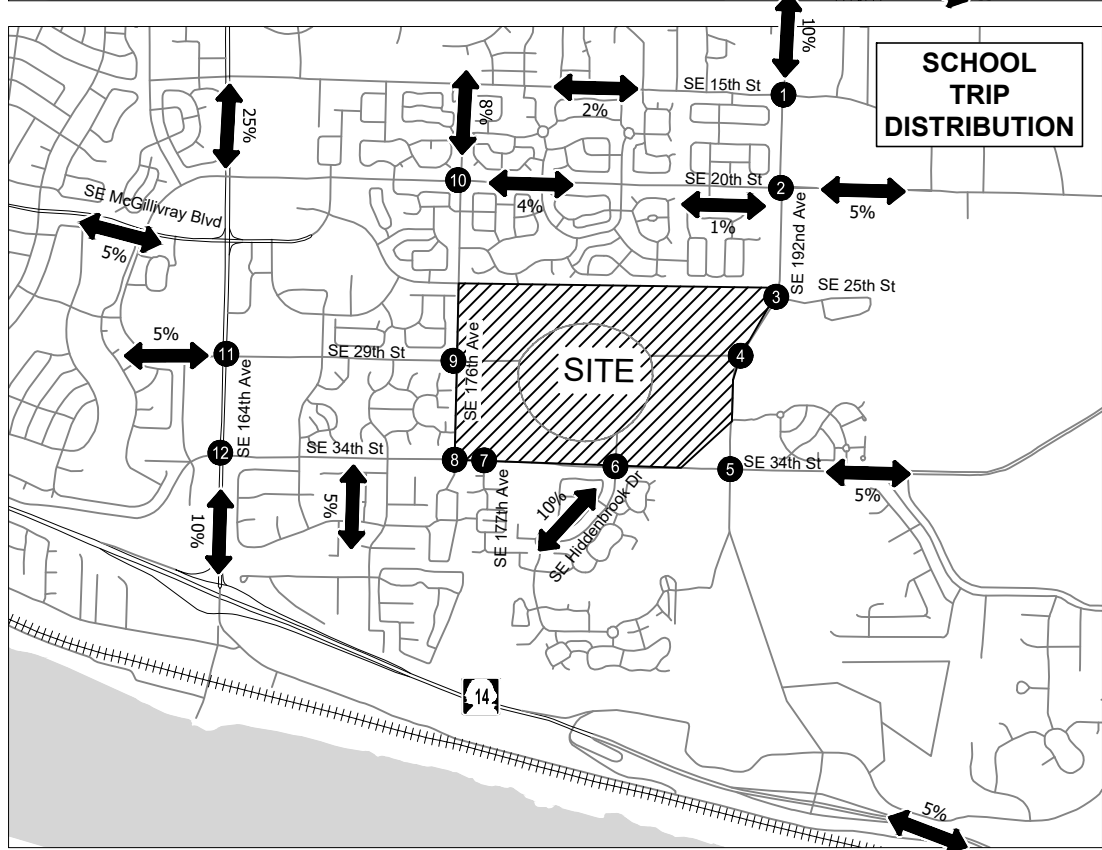
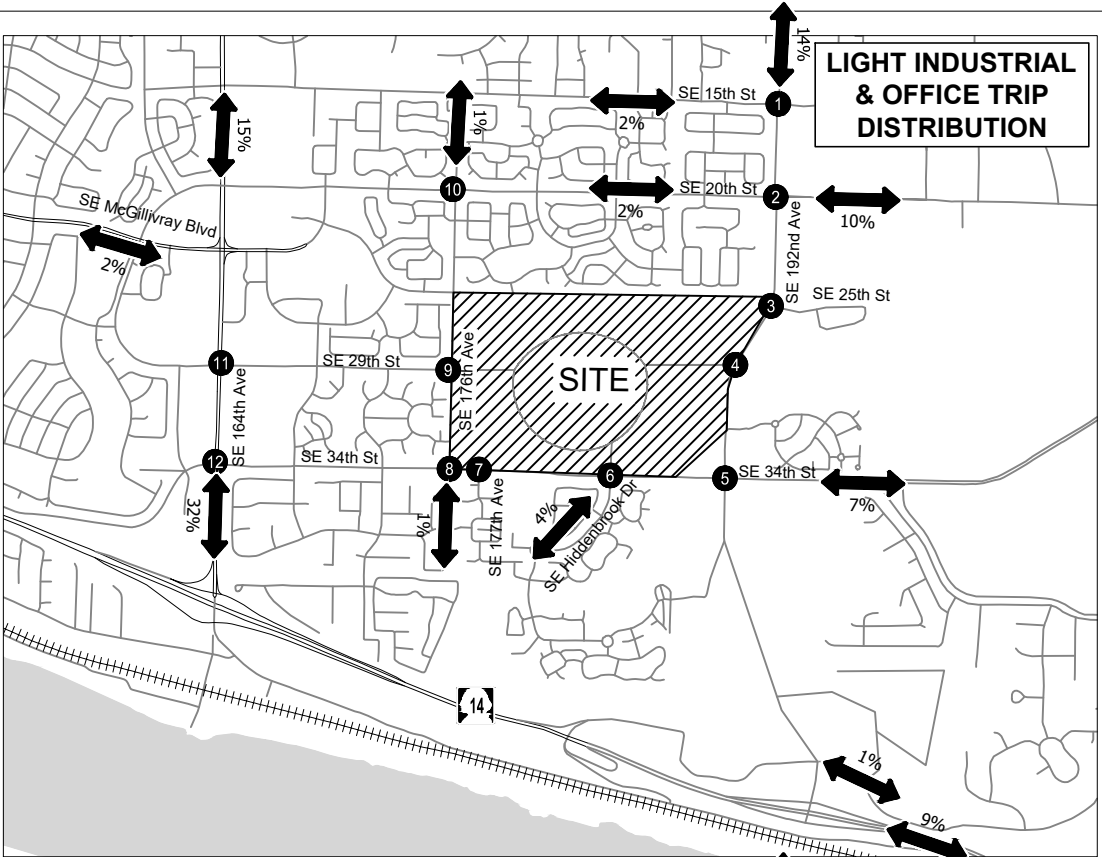
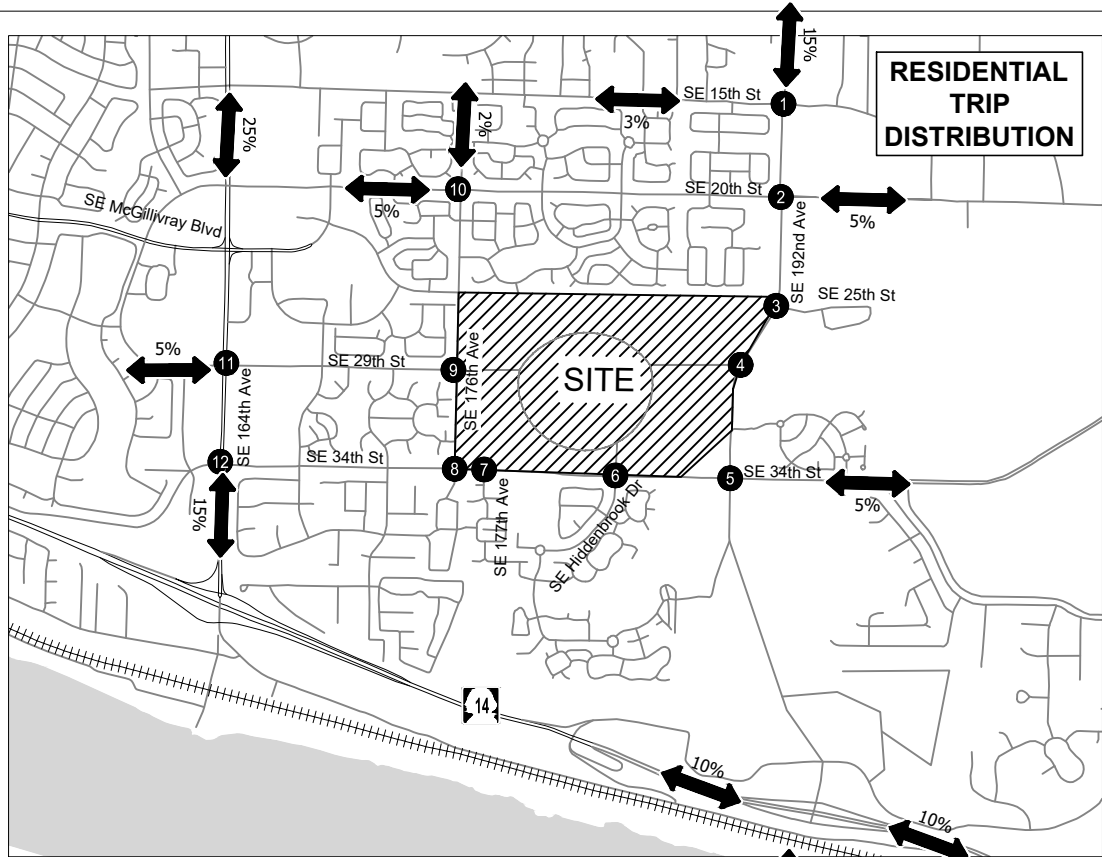
² Trip estimates from approved 2020 The VIC Traffic Impact Analysis. The potential for internal trips associated with a school could be revisited in conjunction with a more specific school development proposal.

Trip Distribution and Assignment

The site-generated trips shown in Table 4 (total net new trips less the existing VIC buildings net new trips along with the pass-by trips) were assigned to the study area roadways based on four trip distribution patterns developed for the VIC campus. The distribution estimates and associated vehicular trips at campus buildout are shown in Figure 5 and Figure 6 and summarized below.

- *On-site employment trip distribution pattern:* applied to office and light industrial uses, this distribution pattern was derived from the Southwest Washington Regional Transportation Council travel demand model transportation analysis zone (TAZ 1758) for the VIC site⁵.
- *Residential trip distribution pattern:* this pattern was estimated based on review of other recent traffic studies prepared for nearby residential areas, review of the surrounding land uses and review of the existing traffic turning movement patterns.
- *Middle school trip distribution pattern:* this pattern was estimated based on review of the existing school district middle schools and boundaries, surrounding residential uses as well as the roadway network (the school distribution estimate is preliminary given there was no specific school proposal or boundary change proposed at the time this study was prepared). No vehicle trips were assigned between the school site and homes within the VIC, rather, these were assumed to be walking trips. The full school site vehicle trip generation was assigned off-site from the VIC.
- *Retail trip distribution pattern:* this pattern was estimated based on the location of other commercial/retail uses in the area and in recognizing that the anticipated retail uses within The VIC are expected to be smaller, locally serving retail type uses (as opposed to destination or “big box” retailers).

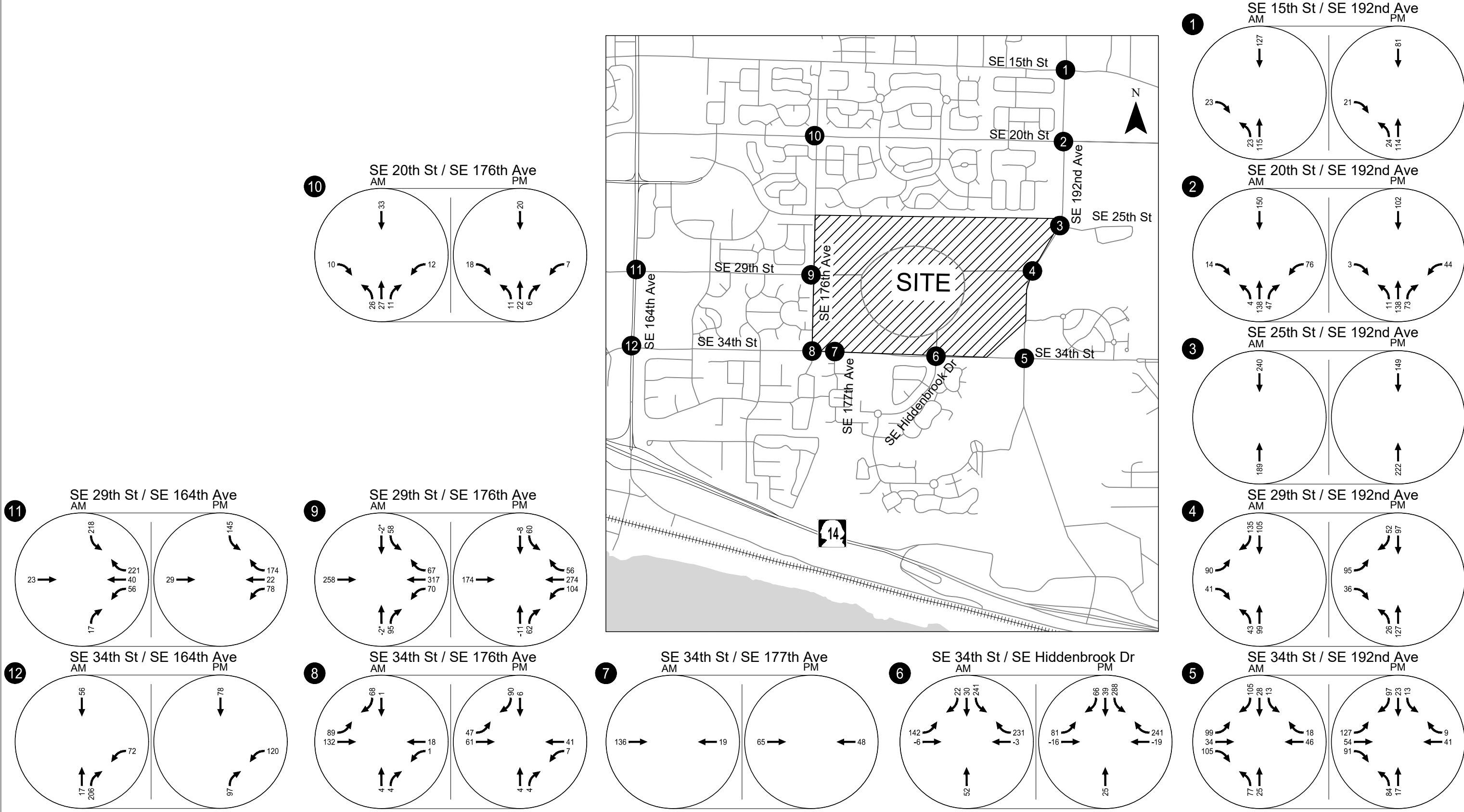
⁵ The land use assumptions in the RTC model for this TAZ were reflective of employment uses only and do not offer insight as to residential or retail use travel patterns.



Estimated Trip Distributions for Future Site Uses
Vancouver, WA

Figure
5

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NOTE - Trips shown include net new trip assignment (all land uses) and pass-by trip assignment (retail use only).
Negative trips represent pass-by trips.

Trip Assignment at Campus Buildout (Phase 1 - 4)
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
6

CONCURRENCY CORRIDOR TRIP ASSIGNMENT

Per City of Vancouver requirements, Table 5 summarizes the estimated number of complete build-out site-generated weekday PM peak hour trips entering each of the City's adopted concurrency corridors per development phase. Assigned trips were recorded counting trips only once along each of the specified corridors. Further concurrency corridor tracking by individual buildings or phases can be provided with subsequent trip compliance letters if needed.

Table 5: Concurrency Corridor Weekday PM Peak Hour Trip Assignment

Corridor Name	Corridor Limit	PM Peak Trips to Corridor
Mill Plain Blvd.	Fourth Plain to I-5	0
	I-5 to Andresen	0
	Andresen to I-205	5
	I-205 to 136 th Ave.	9
	136 th Ave. to 164 th Ave.	86
	164 th Ave. to 192 nd Ave.	10
St. Johns / Ft. Van Way	Mill Plain to 63 rd St.	0
Fourth Plain Blvd.	Mill Plain to I-5	0
	I-5 to Andresen	0
	Andresen to I-205	0
	I-205 to 162 nd Ave.	6
Andresen Road	Mill Plain to SR500	2
	SR500 to 78 th St.	2
112 th Avenue	Mill Plain to 28 th St.	2
	28 th St. to 51 st St.	1
164 th /162 nd Avenue	SR14 to SE 1 st St.	388
	SE 1 st St. to Fourth Plain	250
Burton Road / 28 th Street	18 th St. to 112 th Ave.	3
	112 th Ave. to 138 th Ave.	5
	138 th Ave. to 162 nd Ave.	10
18 th Street	112 th Ave. to 138 th Ave.	1
	138 th Ave. to 164 th Ave.	26
136 th /137 th Avenue	Mill Plain to 28 th St.	6
	28 th St. to Fourth Plain	2
192 nd Avenue	SR14 to NE 18 th St.	498

TRAFFIC IMPACT ANALYSIS

The remainder of this report documents intersection operations under future year conditions without and with phased Master Plan development. Four phases of site development were considered to inform the traffic mitigations analysis. While the site land uses will buildout incrementally over the life of the master plan based on market conditions, the traffic impacts were assessed by phase using a common future horizon year of 2038.

FUTURE YEAR 2038 BASELINE TRAFFIC CONDITIONS

The baseline traffic analysis identifies how the study intersections will operate in the proposed 15-year horizon of the Master Plan Development Agreement after accounting for traffic growth from approved in-process developments within the study area and anticipated regional traffic growth, but only assuming full occupancy of the existing VIC site buildings (no additional Master Plan development assumed).

To reflect the anticipated re-use of the vacant existing building space on-site, previously documented trips associated with typical operations of the site were added to the study intersections to arrive at existing AM and PM peak period traffic volumes.⁶

Study Intersection Changes

The City of Vancouver's *SE 34th Street Safety & Mobility Project* proposes to implement several changes at the study intersections to improve safety and mobility on SE 34th Street between SE 164th Avenue and SE 192nd Avenue. The project anticipates repurposing a travel lane in each direction to add dedicated space for people walking, biking, rolling, and using mobility-assistance devices, and other safety improvements in the corridor for all users. The following changes were assumed at the study intersections by year the 2038 as part of the City project:

- Intersection 5, SE 34th Street/SE 192nd Avenue:
 - Remove 1 northbound left-turn lane
 - Remove 1 eastbound and 1 westbound through lane

⁶ For reference, a total of 382 weekday AM peak hour trips (262 in/120 out) and 444 weekday PM peak hour trips (76 in/368 out) were previously documented to be generated by the existing 715,000 square feet of campus buildings. The traffic volumes measured at the campus access points in December 2022 were increased and the additional trips assigned to the study intersections to reflect full occupancy. Further details of the volume adjustments are presented in Appendix "D".

- Intersection 6), SE 34th Street/SE Hiddenbrook Drive-East Site Access
 - Remove 1 eastbound and 1 westbound through lane
- Intersection 7) SE 34th Street/SE 177th Place-West Site Access
 - Remove 1 eastbound and 1 westbound through lane
 - Add 1 westbound right-turn lane
- Intersection 8) SE 34th Street/SE 176th Avenue
 - Remove 1 eastbound and 1 westbound through lane
- Intersection 12) SE 34th Street/SE 164th Avenue
 - Remove 1 eastbound and 1 westbound left-turn lane

Figure 7 illustrates the assumed lane configurations and traffic control devices at the study intersections under year 2038 baseline conditions.



In-process Developments

Trips from the following approved but not yet constructed (in-process) developments were included in the future baseline traffic volumes estimates per coordination with City Transportation staff.

- 192nd Station West II Lofts (located northwest of the SE 192nd Avenue/SE 34th Street intersection);
- Columbia Palisades Subdivision (located within the Columbia Palisades Master Plan area; 30% of the units were assumed to be sold and occupied at the time of the traffic counts for this study);
- Valley View Estates (located near the intersection of SE Grand Ridge Drive and SE 40th Street);
- The Casey (formerly Kate's Woods located along SE 34th Street to the east of SE Payne Road);
- Dawson's Ridge (located near the intersection of NW Sacajawea Street and NW McIntosh Road);
- First Street Village (located near intersection SE 1st Street/NE 197th Avenue);
- Vancouver Clinic Phase 2 (located within the Columbia Palisades master plan area along SE Columbia Palisades Drive);
- Columbia Palisades Lots 2 & 3 (located within the Columbia Palisades master plan area with access via the west leg of the SE Brady Road/SE Columbia Palisades Drive roundabout);
- Fisher's Creek Subdivision (located at 17700 SE Evergreen Highway);
- Kirkland Car Wash and Medical Building (located on the east side of SE 192nd Avenue and north of SE 20th Street);
- Oak Tree Station (located near the intersection of NW Lake Road/NW Friberg-Strunk Street);
- Lacamas Creek Tech Center (located near the intersection of NE 13th Street/NW Friberg-Strunk Street);
- Panattoni Industrial Building Lot 6 (located near the intersection of NE Goodwin Road/NW Camas Meadows Drive);
- Camas Business Center (located at 4704 NW Lake Road); and,
- Parklands Archery Business Center – Commercial component (located at 542 NW 218th Street); Section 30 (located north of SE 1st Street, including HP);
- PeaceHealth Ambulatory Care Center (located at the southeast corner of the SE 1st Street/SE 192nd Avenue intersection

Regional Traffic Growth

In addition to the in-process development trips, a 0.5 percent annual growth rate was identified along public roadway corridors to account for regional growth over the next 15 years. This growth rate was derived based on review of the Travel Demand Model 2015 and 2040 PM peak hour model outputs provided by the Southwest Washington Regional Transportation Council (RTC) for the study area and in consideration of the numerous in-process development trips identified for inclusion by City staff.

FUTURE YEAR 2038 BASELINE TRAFFIC OPERATIONS

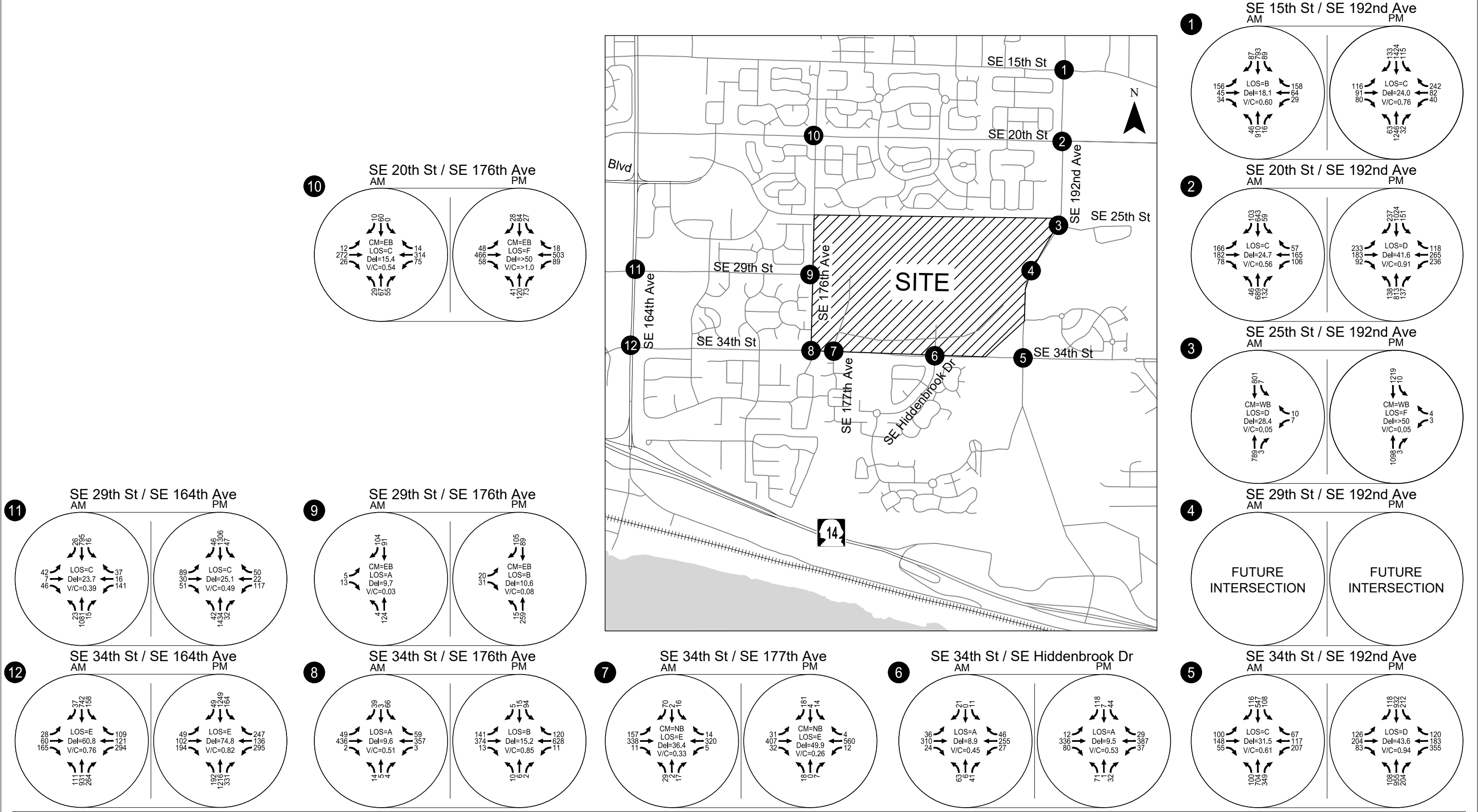
Figure 8 shows the projected 2038 baseline traffic volumes and resulting operations for all study intersections during the weekday AM and PM peak hours. Although the study intersections are projected to operate acceptably per City standards during the AM peak hour, two are projected to exceed City standards during the PM peak hour, including:

- The stop-controlled westbound left-turn movement on SE 25th Street at SE 192nd Avenue (Intersection #3) is projected to operate at LOS F during the PM peak hour but well under capacity (V/C ratio of 0.05). Despite the high delays forecast for this movement, a review of the projected weekday PM peak hour volumes at the intersection confirms that installation of a traffic signal is not warranted.
- The SE 20th Street/SE 176th Avenue intersection (Intersection #10) is forecast to operate at LOS F with the eastbound and westbound approaches over capacity during the weekday PM peak hour. The City of Vancouver is collecting proportional share mitigation fees in the amount of \$400 for each weekday PM peak hour trip added to this intersection.

Note the SE 34th Street/SE 192nd Avenue intersection (Intersection #5) is forecast to operate at an acceptable LOS D with the westbound left-turn lane at capacity (V/C ratio of 1.0). The City of Vancouver is collecting proportional share mitigation fees in the amount of \$150 for each weekday PM peak hour trip added to this intersection. Further, the SE 34th Street/SE 164th Avenue intersection (Intersection #12) is forecast to operate at LOS E during both the AM and PM peak hours. The westbound left-turn V/C ratio is projected to be 1.1 during the AM peak hour and 1.72 with a 35+ vehicle 95th percentile queue during the PM peak hour.

Appendix "E" contains the 2038 baseline operational analysis worksheets and Figure E-1 (a summary of the cumulative in-process trip assignment that was included in the baseline 2038 volumes).

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CM = Critical Movement (Unsignalized)
LOS = Intersection Level of Service (Signalized) / Critical Movement Level of Service (Unsignalized)
Del = Intersection Average Control Delay (Signalized) / Critical Movement Control Delay (Unsignalized)
V/C= Intersection Volume-to-Capacity Ratio (Signalized) / Critical Movement Volume-to-Capacity Ratio (Unsignalized)

Future Year 2038 Baseline Traffic Conditions
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
8

FUTURE YEAR 2038 WITH PROJECT TRAFFIC CONDITIONS

The with project traffic analysis identifies how the study intersections will operate in the proposed 15-year horizon of the Master Plan Development Agreement upon phased development of the VIC. The proposed transportation infrastructure, site trip generation and corresponding traffic impacts associated with each phase of master plan site development were assessed as documented herein.

Master Plan Roadway Network

Multiple roadway network and study intersection changes are anticipated in conjunction with continued The VIC Master Plan development. As previously indicated, implementation is expected to occur in four distinct phases with the following transportation changes anticipated by phase (refer also to Figure 9).

Master Plan Phase 1

- No changes to the transportation system, access to the VIC campus will remain as it exists today.

Master Plan Phase 2

- Construct SE 29th Street between SE 176th Avenue and the west portion of the loop road within the VIC campus;
- Implement the previously identified VIC capacity mitigations at the signalized SE 29th Street/SE 164th Avenue intersection including:
 - Convert the existing east-west left-turn permissive signal phasing on SE 29th Street to protected/permissive left-turn phasing;
 - Extend the westbound left-turn lane striping to provide 225 feet of storage; and
 - Extend the existing southbound left-turn lane on SE 162nd Avenue at SE 29th Street to provide 300 feet of left-turn storage (the existing left-turn storage is approximately 135 feet long; the extension will required reconstruction of the existing median area and drainage facilities within the median).
- Construct the southwest portion of the loop road within the VIC campus between the SE Hiddenbrook site access and SE 29th Street;
- Close and vacate the existing west campus access connection to SE 34th Street (the site access aligned with SE 177th Avenue);
- Reconstruct the existing east campus access connection to SE 34th Street (the site access aligned with SE Hiddenbrook Drive) to have one northbound lane, one southbound left-turn lane and one southbound shared through/right lane at the SE 34th Street traffic signal;
- Construct a new single lane roundabout at SE 29th Street/SE 176th Avenue; and
- Construct a new single lane roundabout at SE 29th Street/west loop road intersection.



Master Plan Phase 3

- Extend SE 29th Street to SE 192nd Avenue, including signalization of the intersection at SE 192nd Avenue.

Master Plan Phase 4

- Construct the southeast portion of the loop road within the VIC campus between the SE Hiddenbrook site access and SE 29th Street, completing the loop road.

Trip Generation

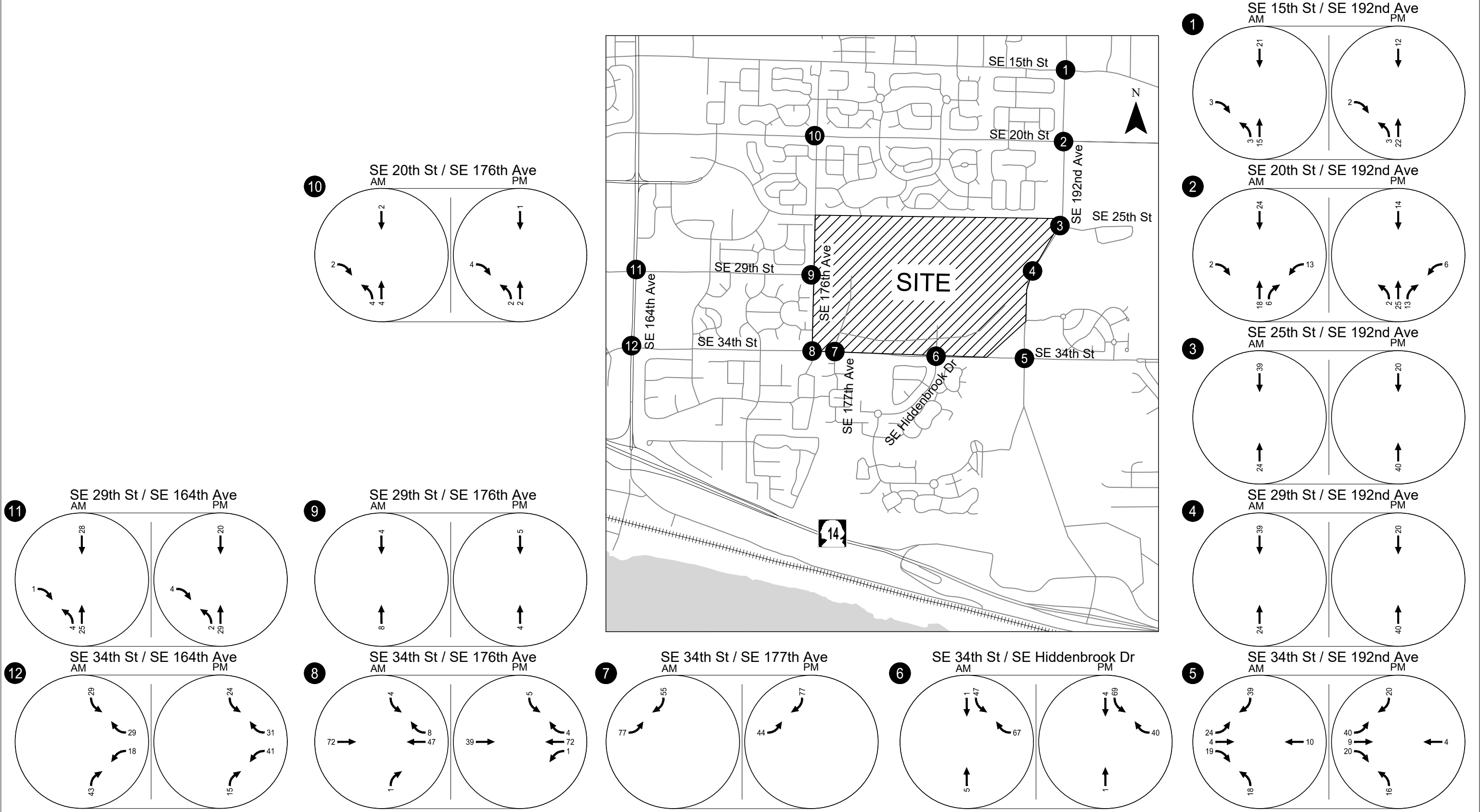
The VIC site trip generation estimates by phase are shown in Tables 6 through 9 and are a subset of the trip generation previously presented in Table 4. Figures 10 through 13 show the corresponding site-generated trip assignment to the study intersections. Note that Master Plan Phase 1 site development reflects uses that are approved “by right” under the current VIC development agreement. The Phase 1 uses and their traffic impacts can be constructed today.

Table 6: Phase 1 Site Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
General Light Industrial ¹	110	200,700 (Square Feet)	995	140	123	17	126	16	110
Less Trips Internal to the Campus Area			(43)	(4)	(2)	(2)	(4)	(0)	(4)
Net New			952	136	121	15	122	16	106
Multifamily Housing (Mid-Rise)	221	134 units	608	58	13	45	52	32	20
Less Trips Internal to the Campus Area			(85)	(1)	(0)	(1)	(9)	(6)	(3)
Net New			523	57	13	44	43	26	17
Multifamily Housing (Low-Rise)	220	174 units	1,173	61	15	46	81	51	30
Less Trips Internal to the Campus Area			(110)	(2)	(0)	(2)	(11)	(8)	(3)
Net New			1,063	59	15	44	70	43	27
Total Trips			2,776	259	151	108	259	99	160
Less Total Trips Internal to the Campus Area			(238)	(7)	(2)	(5)	(24)	(14)	(10)
Total Net New Trips			2,538	252	149	103	235	85	150

¹ Source: Refer to September 2, 2022 VIC Building North Trip Compliance Letter (PRJ-168116, PIR-82415)

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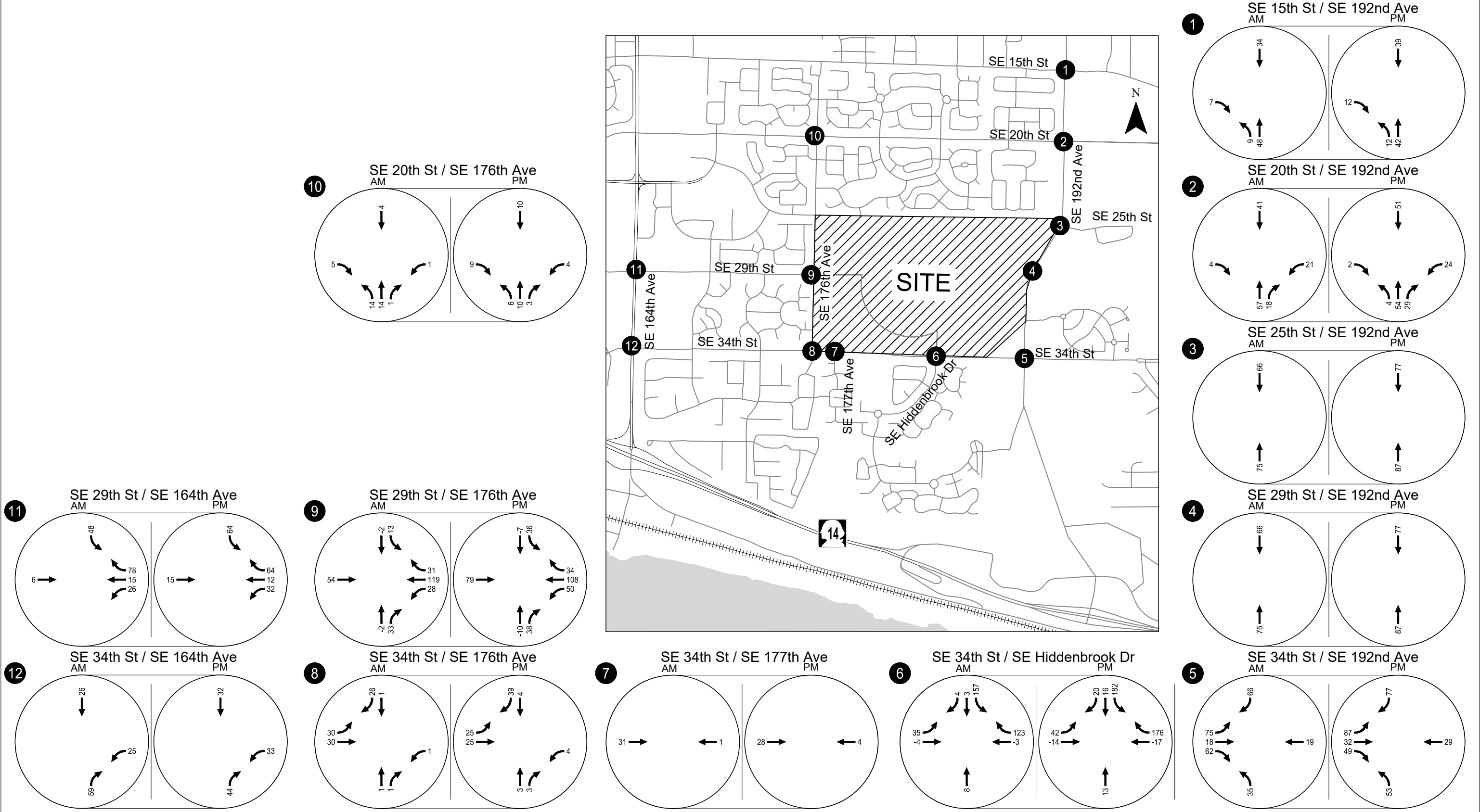
NOTE - Trips shown include net new trip assignment (all land uses) and pass-by trip assignment (retail use only).

Phase 1 Trip Assignment
Weekday AM & PM Peak Hour
Vancouver, WA
Figure 10

Table 7: Phase 2 Site Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
General Light Industrial	110	34,439 Square Feet	166	26	23	3	22	3	19
Less Trips Internal to the Campus Area			(13)	(2)	(1)	(1)	(2)	(1)	(1)
Net New			153	24	22	2	20	2	18
Medical Office Building	720	8,200 Square Feet	295	26	20	6	32	1	22
Less Trips Internal to the Campus Area			(3)	(1)	(1)	(0)	(0)	(0)	(0)
Net New			292	25	19	6	32	10	22
General Office Building	710	71,750 square feet	778	109	96	13	103	17	86
Less Trips Internal to the Campus Area			(24)	(2)	(1)	(1)	(3)	(1)	(2)
Net New			754	107	95	12	100	16	84
Shopping Center	820	123,200 square feet	4,559	103	64	39	419	201	218
Less Trips Internal to the Campus Area			(1,414)	(40)	(26)	(14)	(97)	(36)	(61)
Less Pass-by Reduction			(912)	(18)	(11)	(7)	(94)	(48)	(46)
Net New			2,233	45	27	18	228	117	111
Multifamily Housing (Mid-Rise)	221	824 Units	3,741	355	82	273	322	196	126
Less Trips Internal to the Campus Area			(522)	(9)	(1)	(8)	(53)	(37)	(16)
Net New			763	43	11	32	51	32	19
Multifamily Housing (Low-Rise)	220	125 Units	842	44	11	33	59	38	21
Less Trips Internal to the Campus Area			(79)	(1)	(0)	(1)	(8)	(6)	(2)
Net New			763	43	11	32	51	32	19
Total Phase 2 Trips			10,381	663	296	367	957	465	492
Less Total Trips Internal to the Campus Area			(2,055)	(55)	(30)	(25)	(163)	(81)	(82)
Less Total Pass-by Reduction			(912)	(18)	(11)	(7)	(94)	(48)	(46)
Total Phase 2 Net New Trips			7,414	590	255	335	700	336	364

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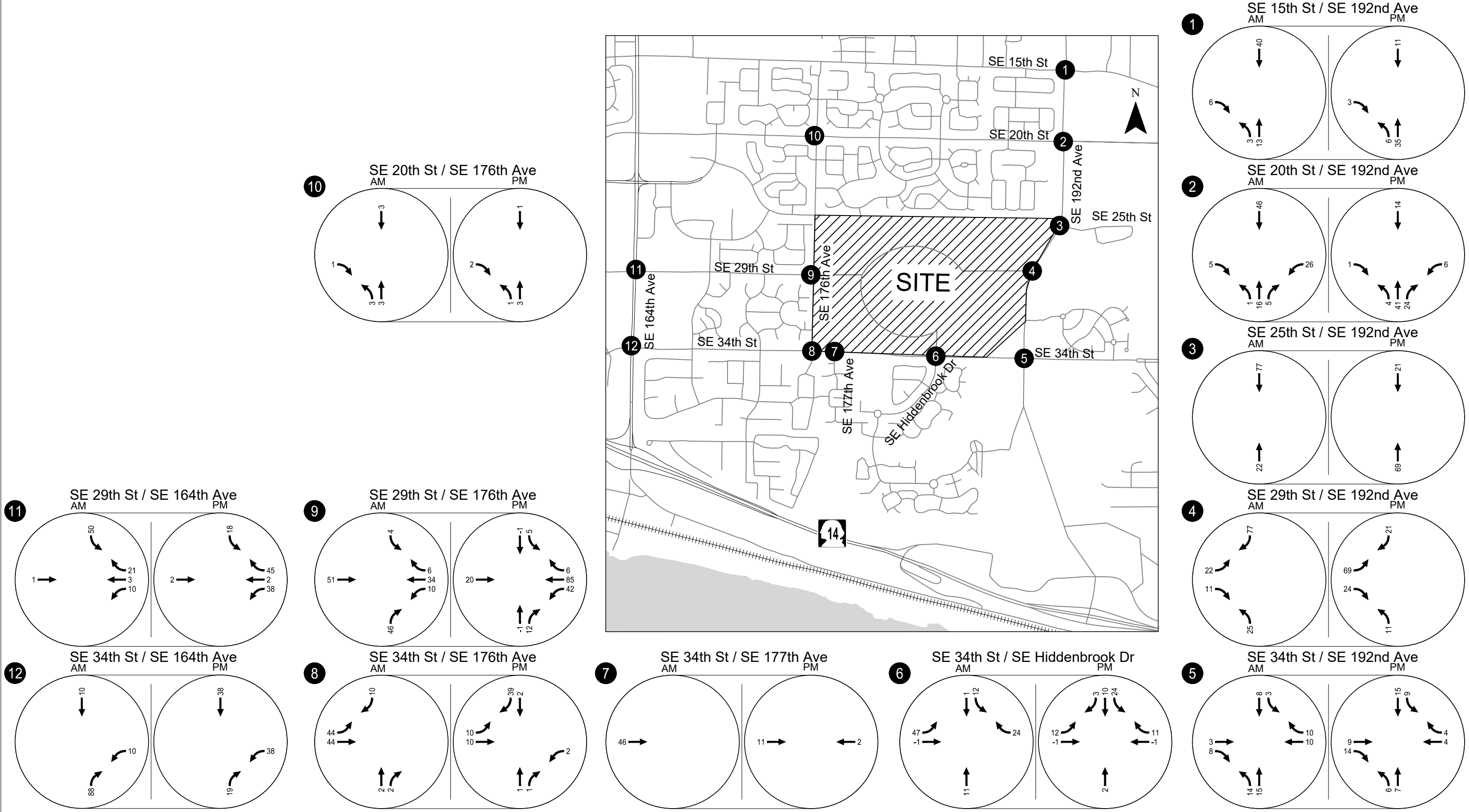
NOTE - Trips shown include net new trip assignment (all land uses) and pass-by trip assignment (retail use only). Negative trips represent pass-by trips.

Phase 2 Trip Assignment
Weekday AM & PM Peak Hour
Vancouver, WA
Figure 11

Table 8: Phase 3 Site Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
General Light Industrial	110	365,426 Square Feet	1,764	278	245	33	242	36	206
Less Trips Internal to the Campus Area			(142)	(14)	(7)	(7)	(16)	(6)	(10)
Net New			1,622	264	238	26	226	30	196
Medical Office Building	720	1,800 Square Feet	65	5	4	1	7	2	5
Less Trips Internal to the Campus Area			(1)	(0)	(0)	(0)	(0)	(0)	(0)
Net New			64	5	4	1	7	2	5
General Office Building	710	15,750 square feet	171	24	21	3	23	4	19
Less Trips Internal to the Campus Area			(5)	(0)	(0)	(0)	(0)	(0)	(0)
Net New			166	24	21	3	23	4	19
Shopping Center	820	11,200 square feet	415	10	6	4	38	18	20
Less Trips Internal to the Campus Area			(129)	(3)	(2)	(1)	(9)	(3)	(6)
Less Pass-by Reduction			(83)	(2)	(1)	(1)	(8)	(4)	(4)
Net New			203	5	3	2	21	11	10
Multifamily Housing (Mid-Rise)	221	154 Units	699	66	15	51	60	37	23
Less Trips Internal to the Campus Area			(97)	(2)	(0)	(2)	(9)	(7)	(2)
Net New			602	64	15	49	51	30	21
Multifamily Housing (Low-Rise)	220	52 Units	350	18	4	14	24	15	9
Less Trips Internal to the Campus Area			(33)	(1)	(1)	(0)	(3)	(2)	(1)
Net New			317	17	3	14	21	13	8
Total Phase 3 Trips			3,464	401	295	106	394	112	282
Less Total Trips Internal to the Campus Area			(407)	(20)	(10)	(10)	(37)	(18)	(19)
Less Total Pass-by Reduction			(83)	(2)	(1)	(1)	(8)	(4)	(4)
Total Phase 3 Net New Trips			2,974	379	284	95	349	90	259

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NOTE - Trips shown include net new trip assignment (all land uses) and pass-by trip assignment (retail use only).
Negative trips represent pass-by trips.

Phase 3 Trip Assignment
Weekday AM & PM Peak Hour
Vancouver, WA
Figure 12

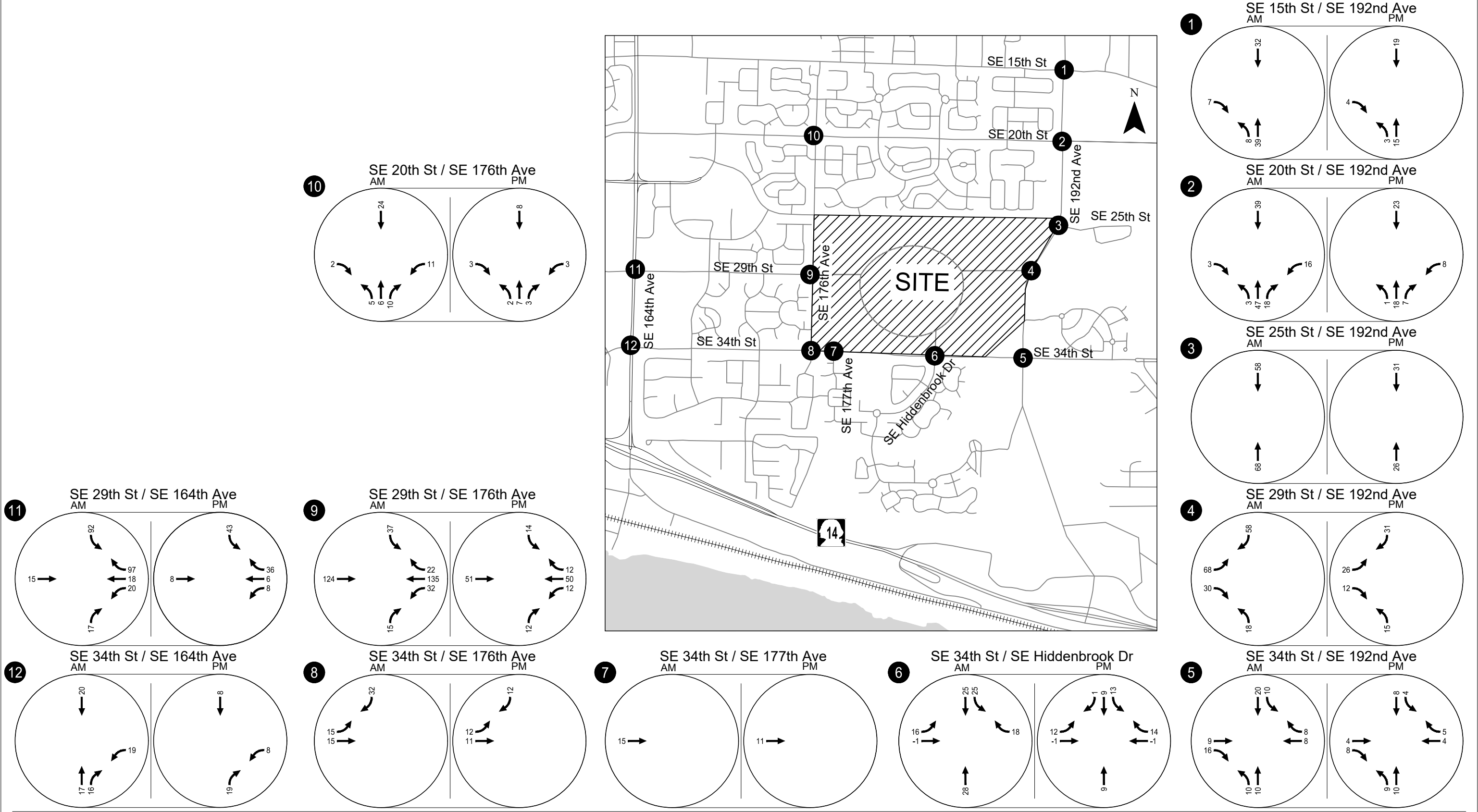
Table 9: Phase 4 Site Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Shopping Center	820	5,600 square feet	207	5	3	2	19	9	10
<i>Less Trips Internal to the Campus Area</i>			(64)	(2)	(1)	(1)	(4)	(2)	(2)
<i>Less Pass-by Reduction</i>			(41)	(1)	(1)	(0)	(4)	(2)	(2)
Net New			102	2	1	1	11	5	6
Multifamily Housing (Mid-Rise)	221	136 Units	618	59	14	45	53	32	21
<i>Less Trips Internal to the Campus Area</i>			(86)	(2)	(1)	(1)	(9)	(6)	(3)
Net New			532	57	13	44	44	26	18
Multifamily Housing (Low-Rise)	220	201 Units	1,355	71	17	54	94	59	35
<i>Less Trips Internal to the Campus Area</i>			(128)	(2)	(0)	(2)	(13)	(9)	(4)
Net New			1,227	69	17	52	81	50	31
Middle School ²	522	900 Students	1,917	522	282	240	153	75	78
Total Phase 4 Trips			4,097	657	316	341	319	175	144
<i>Less Total Trips Internal to the Campus Area</i>			(278)	(6)	(2)	(4)	(26)	(17)	(9)
<i>Less Total Pass-by Reduction</i>			(41)	(69)	(17)	(52)	(81)	(50)	(31)
Total Phase 4 Net New Trips			3,778	582	297	285	212	108	104

¹ Source: Traffic Impact Analysis for VIC Master Plan dated November 20, 2020.

² Trip estimates from approved 2020 VIC Traffic Impact Analysis. The potential for internal trips associated with a school could be revisited in conjunction with a more specific school development proposal.

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NOTE - Trips shown include net new trip assignment (all land uses) and pass-by trip assignment (retail use only).
Negative trips represent pass-by trips.

Phase 4 Trip Assignment
Weekday AM & PM Peak Hour
Vancouver, WA
Figure 13

FUTURE YEAR 2038 MASTER PLAN TRAFFIC CONDITIONS

The site-generated trips associated with each phase were added to the baseline traffic volumes to yield with project traffic volumes that were then analyzed. Re-routing of localized trips was assumed in conjunction with the introduction of new road connections by phase where appropriate. The discussion below summarizes key changes and findings by development phase.

Phase 1 With Project Conditions

Vehicle access to and from the VIC campus will remain the same as it is today under Phase 1 master plan development. As such, the Phase 1 site-generated trips (reflected in Figure 10) were added to the baseline traffic volumes in Figure 8 to result in the Master Plan build-out traffic volumes and intersection operations reflected in Figure 14. Note that actual build-out of Phase 1 is allowed by-right today and is anticipated well before 2028 as previously noted.

Two study intersections are projected to not satisfy City performance standards with buildout of the Phase 1 Master Plan land uses:

- SE 25th Street/SE 192nd Avenue (did not satisfy standards under baseline conditions)
- SE 20th Street/SE 176th Avenue (did not satisfy standards under baseline conditions)

Additional details regarding the operations of the two intersections above and mitigation considerations is described below. *Appendix "F" contains the 2038 With Project Phase 1 operational analysis worksheets.*

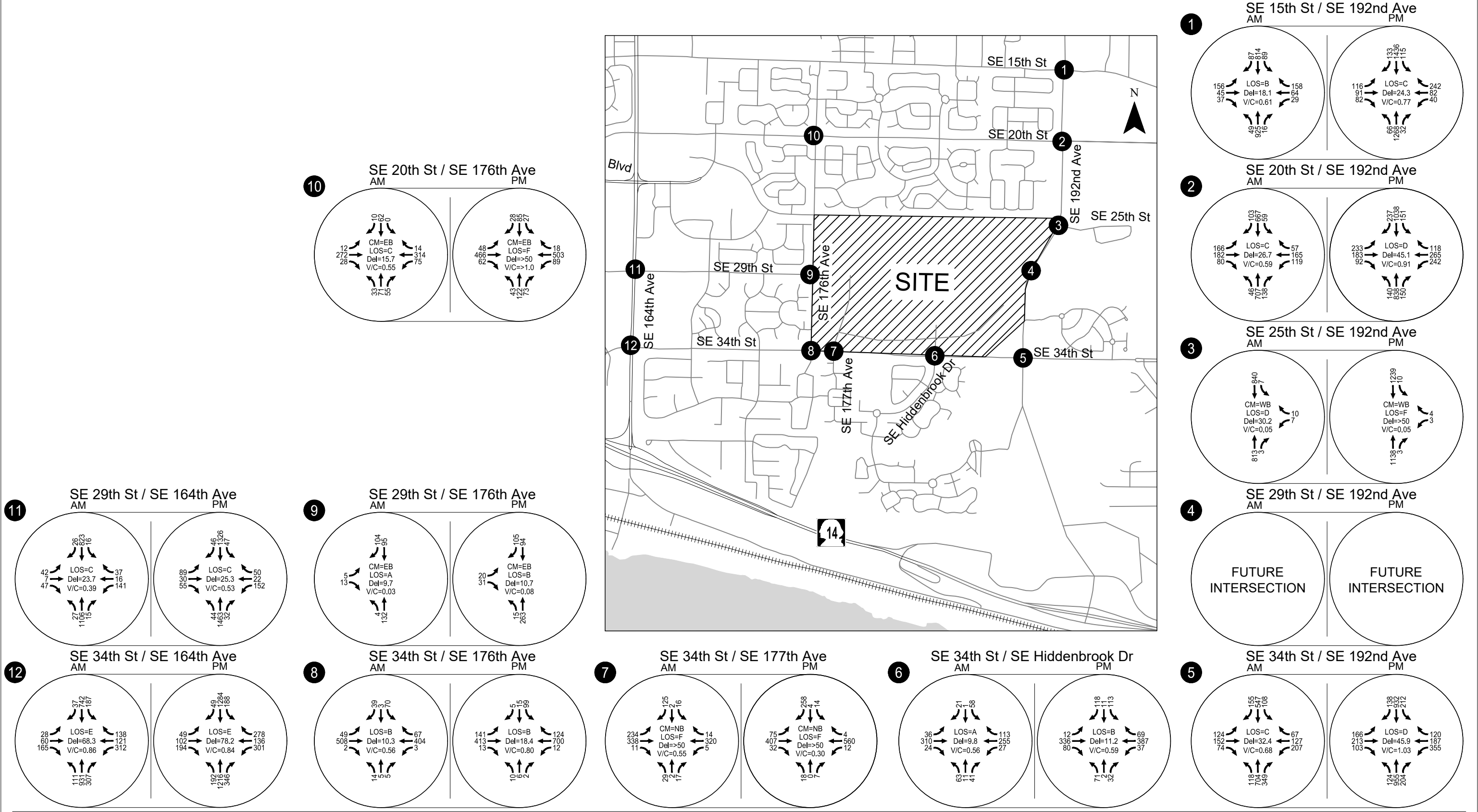
SE 25th Street/SE 192nd Avenue (Study Intersection #3)

The stop-controlled westbound left-turn lane on SE 25th Street is projected to continue to operate at LOS F during the weekday PM peak hour but well under capacity (V/C ratio of 0.05). The proposed The VIC project is not projected to add any turning movements to the westbound approach and therefore does not trigger mitigation per Vancouver Municipal Code Section 11.80.130.B.

SE 20th Street/SE 176th Avenue (Study Intersection #10)

Consistent with 2038 Baseline conditions, intersection is forecast to continue to operate at LOS F with the eastbound and westbound approaches over capacity during the weekday PM peak hour. As previously noted, the City of Vancouver has previously identified capacity mitigation needs at the intersection and is collecting proportional share mitigation fees from new development (current fee of \$400 per weekday PM peak hour trip added to the intersection) to be used to fund the intersection improvements. Accordingly, the proposed development will be required to pay a proportional share contribution to the SE 20th Street/SE 176th Avenue intersection for mitigation purposes. Further details on the proportionate share amounts to be assessed are documented separately in this report.

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CM = Critical Movement (Unsignalized)
LOS = Intersection Level of Service (Signalized) / Critical Movement Level of Service (Unsignalized)
Del = Intersection Average Control Delay (Signalized) / Critical Movement Control Delay (Unsignalized)
V/C = Intersection Volume-to-Capacity Ratio (Signalized) / Critical Movement Volume-to-Capacity Ratio (Unsignalized)

Future Year 2038 Phase 1 With-Project Traffic Conditions
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
14

Phase 2 With Project Conditions

The Phase 2 site-generated volumes shown in Figure 11 were added to the Phase 1 with project volumes to obtain the Phase 2 Master Plan build-out traffic volumes and intersection operations shown in Figure 15. In addition to assigning the new site-generated trips, some existing VIC campus trips destined to the east were re-routed from the existing SE 34th Street campus access to the assumed new SE 29th Street connection to SE 192nd Avenue (re-routing reflects more direct campus connection to SE 192nd Avenue for buildings on the western portion of the VIC campus, refer to Appendix “G” Figure G-1 and Figure G-2).

Upon buildout of the Phase 2 Master Plan transportation network and land uses, study intersections projected to not satisfy City performance standards and/or that experience projected 95th percentile queues that exceed the available queue storage include:

- SE 25th Street/SE 192nd Avenue (did not satisfy standards under baseline conditions)
- SE 34th Street/SE 192nd Avenue
- SE 20th Street/SE 176th Avenue (did not satisfy standards under baseline conditions)

Additional details regarding the operations of the three intersections above and mitigation considerations are described below. *Appendix “G” contains the 2038 With Project Phase 2 operational analysis worksheets.*

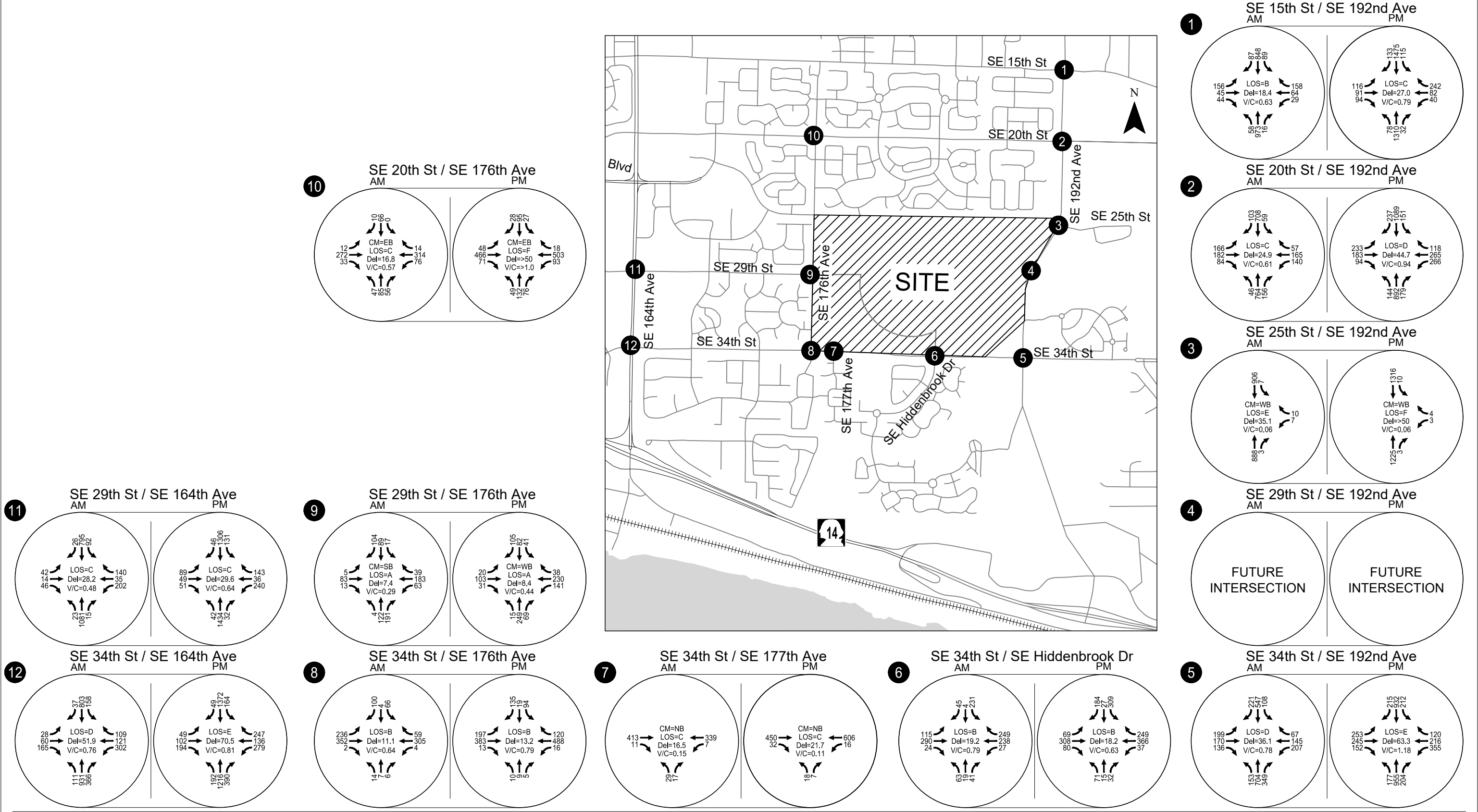
SE 25th Street/SE 192nd Avenue (Study Intersection #3)

The stop-controlled westbound left-turn lane on SE 25th Street is projected to continue to operate at LOS F during the weekday PM peak hour but well under capacity (V/C ratio of 0.06). The proposed The VIC project is not projected to add any turning movements to the westbound approach and therefore does not trigger mitigation per Vancouver Municipal Code Section 11.80.130.B.

SE 34th Street/SE 192nd Avenue (Study Intersection #5)

As shown, the SE 192nd Avenue/SE 34th Street signalized intersection is projected to at LOS E and over capacity during the weekday PM peak hour. The City of Vancouver has previously determined that no additional capacity will be added to the intersection and is collecting proportional share mitigation fees from new development (current fee of \$150 per weekday PM peak hour trip added to the intersection) to be used to reconstruct the intersection with a concrete surface. Accordingly, the proposed development will be required to pay a proportional share contribution to the SE 192nd Avenue/SE 34th Street intersection for mitigation purposes. Further details on the proportionate share amounts to be assessed are documented separately in this report.

H:\27\2715 - VIC Implementation\005 - Master Plan Update TIA\report\figs\2715-Figures_Fig 15 - Phase 2 Total
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CM = Critical Movement (Unsignalized)
LOS = Intersection Level of Service (Signalized) / Critical Movement Level of Service (Unsignalized)
Del = Intersection Average Control Delay (Signalized) / Critical Movement Control Delay (Unsignalized)
V/C = Intersection Volume-to-Capacity Ratio (Signalized) / Critical Movement Volume-to-Capacity Ratio (Unsignalized)

Future Year 2038 Phase 2 With-Project Traffic Conditions
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
15

SE 20th Street/SE 176th Avenue (Study Intersection #10)

The intersection is forecast to continue to operate over capacity during the weekday PM peak hour and the proposed development will be required to pay a proportional share contribution for mitigation purposes.

It is further noted that northbound vehicles on SE 177th Avenue at SE 34th Street experience much less delay due to closure of the opposing VIC west campus access to SE 34th Street with Master Plan Phase 2.

Phase 3 With Project Conditions

The Phase 3 site-generated volumes shown in Figure 12 were added to the 2038 Phase 2 With Project volumes shown in Figure 14 to obtain the Phase 3 Master Plan build-out traffic volumes and intersection operations shown in Figure 16. In addition to assigning the new site-generated trips, previously assigned The VIC trips were re-routed from the existing SE 34th Street campus access to the assumed new SE 29th Street connection to SE 192nd Avenue (re-routing reflects the more direct campus connection to SE 192nd Avenue for buildings on the eastern portion of the VIC campus, refer to Appendix “H” Figure H-1). Further, some local trips were also re-routed, reflecting the new alternative path compared to prior conditions where local trips use the SE 34th Street corridor to travel to and from SE 192nd Avenue.

Upon buildout of the Phase 3 Master Plan transportation network and land uses, study intersections projected to not satisfy City performance standards and/or that experience projected 95th percentile queues that exceed the available queue storage include:

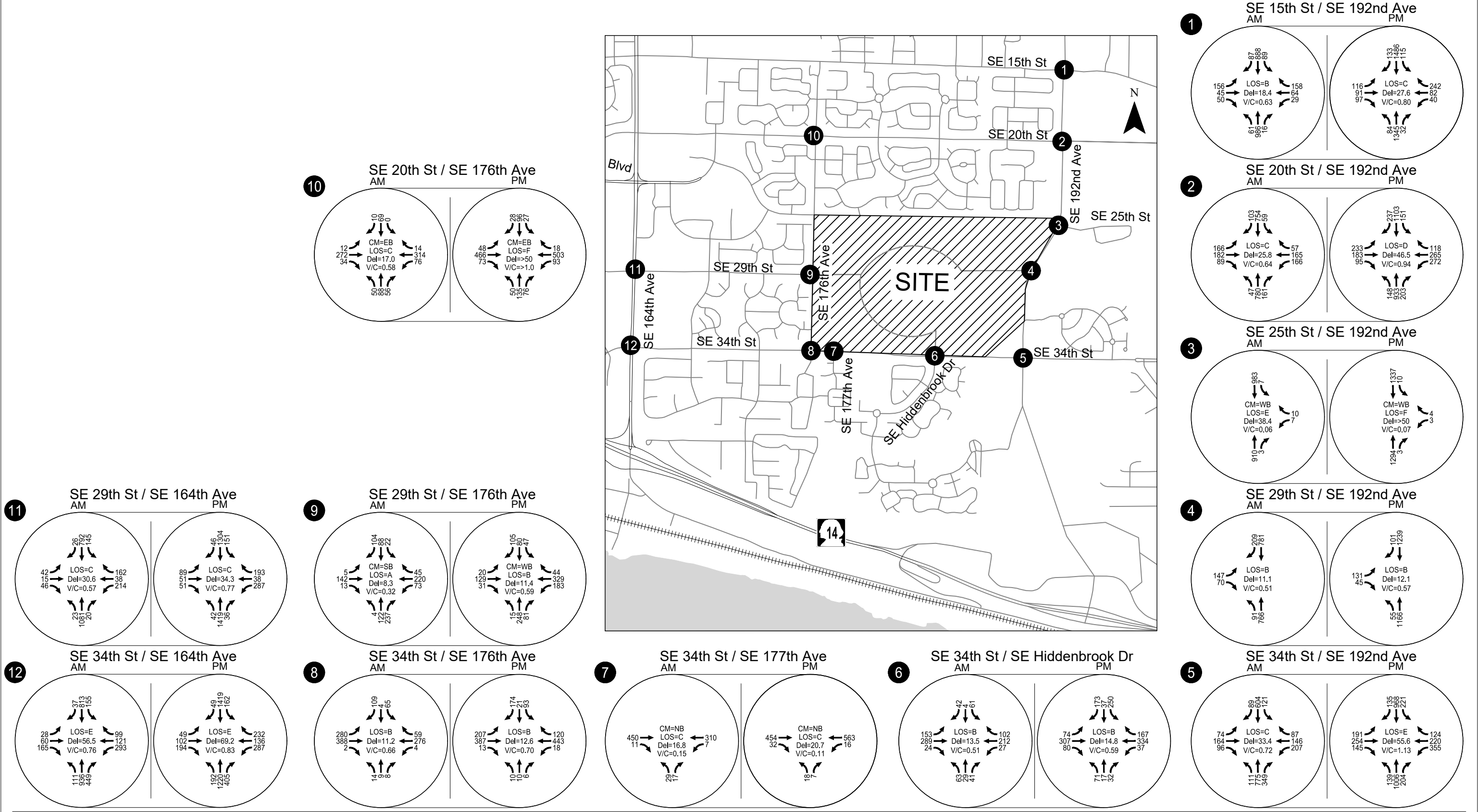
- SE 25th Street/SE 192nd Avenue (did not satisfy standards under baseline conditions)
- SE 34th Street/SE 192nd Avenue (improved compared to Phase 2 conditions)
- SE 20th Street/SE 176th Avenue (did not satisfy standards under baseline conditions)

Additional details regarding the operations of each intersection and mitigation considerations is described below. *Appendix “H” contains the 2038 With Project Phase 3 operational analysis worksheets, the traffic signal warrant analysis worksheets.*

SE 25th Street/SE 192nd Avenue (Study Intersection #3)

The stop-controlled westbound left-turn lane on SE 25th Street is projected to continue to operate at LOS F with a V/C ratio of 0.07 during the weekday PM peak hour. The proposed The VIC project is not projected to add any turning movements to the westbound approach and therefore does not trigger mitigation per Vancouver Municipal Code Section 11.80.130.B.

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CM = Critical Movement (Unsignalized)
LOS = Intersection Level of Service (Signalized) / Critical Movement Level of Service (Unsignalized)
Del = Intersection Average Control Delay (Signalized) / Critical Movement Control Delay (Unsignalized)
V/C= Intersection Volume-to-Capacity Ratio (Signalized) / Critical Movement Volume-to-Capacity Ratio (Unsignalized)

Future Year 2038 Phase 3 With-Project Traffic Conditions
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
16

SE 34th Street/SE 192nd Avenue (Study Intersection #5)

The intersection is forecast to continue to operate over capacity during the weekday PM peak hour but operates comparatively better than under Phase 2 conditions due to the diversion of VIC and local traffic to the new parallel SE 29th Street corridor through the VIC campus. The proposed development will be required to pay a proportional share contribution for mitigation purposes.

SE 20th Street/SE 176th Avenue (Study Intersection #10)

The intersection is forecast to continue to operate over capacity during the weekday PM peak hour and the proposed development will be required to pay a proportional share contribution for mitigation purposes.

Phase 4 With Project Conditions

The Phase 4 site-generated volumes shown in Figure 13 were added to the 2038 Phase 3 With Project volumes shown in Figure 16 to obtain the Phase 4 Master Plan build-out traffic volumes and intersection operations shown in Figure 17.

Upon buildout of the Phase 4 Master Plan (full buildout of the VIC Master Plan uses) transportation network and land uses, study intersections projected to not satisfy City performance standards and/or that experience projected 95th percentile queues that exceed the available queue storage include:

- SE 25th Street/SE 192nd Avenue (did not satisfy standards under baseline conditions)
- SE 34th Street/SE 192nd Avenue
- SE 20th Street/SE 176th Avenue (did not satisfy standards under baseline conditions)

Additional details regarding the operations of each intersection and mitigation considerations is described below. *Appendix "I" contains the 2038 With Project Phase 4 operational analysis worksheets, .*

SE 25th Street/SE 192nd Avenue (Study Intersection #3)

The stop-controlled westbound left-turn lane on SE 25th Street is projected to continue to operate at LOS F with a V/C ratio of 0.08 during the weekday PM peak hour. The proposed The VIC project is not projected to add any turning movements to the westbound approach and therefore does not trigger mitigation per Vancouver Municipal Code Section 11.80.130.B.

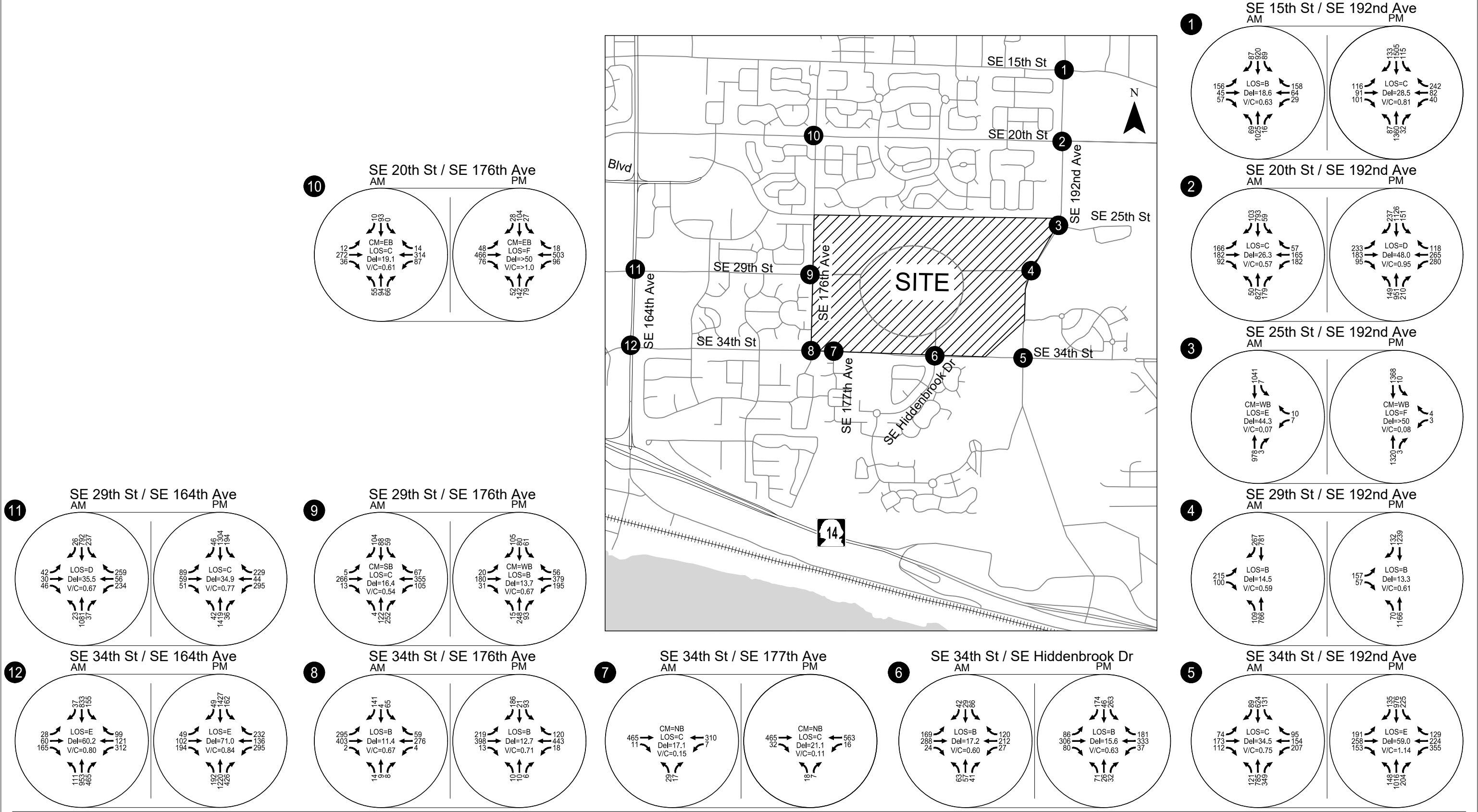
SE 34th Street/SE 192nd Avenue (Study Intersection #5)

The intersection is forecast to continue to operate over capacity during the weekday PM peak hour and proposed development will be required to pay a proportional share contribution for mitigation purposes.

SE 20th Street/SE 176th Avenue (Study Intersection #10)

The intersection is forecast to continue to operate over capacity during the weekday PM peak hour and the proposed development will be required to pay a proportional share contribution for mitigation purposes.

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Future Year 2038 Phase 4 With-Project Traffic Conditions
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
17

PROPORTIONAL SHARE FEE CONTRIBUTIONS

The City of Vancouver is collecting proportional share fee contributions from all future development adding site-generated trips to multiple intersections in the study area. Intersections impacted by the VIC Master Plan that are projected to experience concurrency failures and for mitigation is being required in the form of the proportional share fee include:

- SE 34th Street/SE 192nd Avenue
- SE 20th Street/SE 176th Avenue
- SE 192nd Avenue/SR-14 Westbound

Information about the current applicable fees and anticipated total project impact is documented for each intersection below based on the current site plan and trip estimates previously presented in Table 4. The fee amount due for each new building at The VIC will be determined at the time of site plan application and payment will be paid prior to building permit issuance.

SE 34th Street/SE 192nd Avenue (Study Intersection #5)

- A fee payment of \$150 is currently required by the City for each weekday PM peak hour site-generated trip traveling through the intersection.
- Full Master Plan buildout is projected to add 556 weekday PM peak hour trips to the intersection, resulting in a projected fee of \$83,400.

SE 20th Street/SE 176th Avenue (Study Intersection #10)

- A fee payment of \$400 is currently required by the City for each weekday PM peak hour site-generated trip traveling through the intersection.
- Full Master Plan buildout is projected to add 84 weekday PM peak hour trips to the intersection, resulting in a projected fee of \$33,600.

SE 192nd Avenue & SR-14 Westbound Ramp Terminal Mitigation

- A fee payment of \$2,000 is currently required by the City for each weekday PM peak hour site-generated trip traveling through the intersection. The fee will be used to fund the installation of a traffic signal and a second westbound right-turn lane at the intersection along with related modifications.
- Full Master Plan buildout is projected to add 215 weekday PM peak hour trips to the intersection, resulting in a projected fee of \$430,000 as follows:
 - Light industrial and office uses: 53 trips (\$106,000);
 - Residential uses: 126 trips (\$252,000);
 - Commercial retail uses: 28 trips (\$56,000); and
 - Middle School: 8 trips (\$16,000).

SITE ACCESS SIGHT DISTANCE CONSIDERATIONS

The final VIC Master Plan site plan design should provide intersection sight clear areas at each on-site intersection and connections to the public roadway network surrounding the campus in accordance with City of Vancouver standards. Further, it is recommended that above-ground utilities, monuments, fencing, and vegetation be appropriately located and maintained on-site to preserve adequate intersection sight lines per City of Vancouver standards.

FINDINGS & RECOMMENDATIONS

Based on the results of this Traffic Impact Analysis, the proposed VIC Master Plan can be developed while maintaining acceptable study intersection operations and/or mitigating site development impacts. The analysis developed the findings and recommendations listed below.

Findings

- Each of the study intersections satisfies City operating standards today.
- By the future baseline year 2038, the following study intersections do not satisfy City performance standards:
 - SE 25th Street/SE 192nd Avenue
 - SE 20th Street/SE 176th Avenue
- The VIC project will provide several new roadways and transportation capacity mitigations including construction of:
 - SE 29th Street as a collector between SE 176th Avenue and SE 192nd Avenue;
 - A new loop road within the VIC campus linking SE 34th Street and SE 29th Street;
 - A new single lane roundabout at the SE 29th Street/SE 176th Avenue intersection;
 - A new single lane roundabout at SE 29th Street/west loop road intersection;
 - A new single lane roundabout at SE 29th Street/east loop road intersection;
 - A new signalized intersection at SE 29th Street/SE 192nd Avenue intersection;
 - Capacity mitigations at the signalized SE 29th Street/SE 164th Avenue intersection including:
 - Convert the existing east-west left-turn permissive signal phasing on SE 29th Street to protected/permissive left-turn phasing;
 - Extend the westbound left-turn lane storage on SE 29th Street; and
 - Extend the existing southbound left-turn lane on SE 162nd Avenue.

- Closure of the existing west campus access connection to SE 34th Street (the site access aligned with SE 177th Avenue); and
 - Modify the existing east campus access connection to SE 34th Street (the site access aligned with SE Hiddenbrook Drive) to have one northbound lane, one southbound left-turn lane and one southbound shared through/right lane at the SE 34th Street traffic signal.
- The VIC Master Plan site-generated trips will impact three intersections where the City of Vancouver is collecting proportional share fee contributions including:
 - SE 34th Street/SE 192nd Avenue
 - SE 20th Street/SE 176th Avenue
 - SE 192nd Avenue/SR-14 Westbound

Recommended Off-site Intersection Mitigations with Master Plan Development

SE 29th Street/SE 164th Avenue (Study Intersection #11) With Phase 2 Site Development

- The existing east-west left-turn signal phasing on SE 29th Street at SE 162nd Avenue should be converted from permissive operations to protected/permissive left-turn phasing;
- The westbound left-turn lane striping should be extended to provide 225 feet of storage; and
- The existing southbound left-turn lane on SE 162nd Avenue at SE 29th Street should be extended to provide 300 feet of left-turn storage (the existing left-turn storage is approximately 135 feet long; the extension will required reconstruction of the existing median area and drainage facilities within the median).

SE 29th Street/SE 192nd Avenue (Study Intersection #4) With Master Plan Phase 3

- Construct a traffic signal along with:
 - separate left and right-turn lanes with at least 250 feet of storage on the eastbound SE 29th Street approach;
 - a separate left-turn lane with at least 200 feet of storage on the northbound approach; and
 - protected northbound left-turn phasing on SE 192nd Avenue at the intersection.

Proportional Share Contributions

The VIC should make a proportionate share contribution toward future capacity improvements at each of these three intersections with each site development application. The fee for individual site plan applications will be determined as part of each application and should be paid prior to building permit issuance.

- SE 34th Street/SE 192nd Avenue (Study Intersection #5)
 - A fee payment of \$150 is currently required by the City for each weekday PM peak hour site-generated trip traveling through the intersection.
- SE 192nd Avenue & SR-14 Westbound Ramp Terminal
 - A fee payment of \$2,000 is currently required by the City for each weekday PM peak hour site-generated trip traveling through the intersection.
- SE 20th Street/SE 176th Avenue (Study Intersection #10)
 - The VIC should make a proportionate share contribution toward future capacity improvements at the unsignalized SE 20th Street/SE 176th Avenue intersection with each site development application. A fee payment of \$400 is currently required by the City for each weekday PM peak hour site-generated trip traveling through the intersection.

Other Recommendations

- Above-ground utilities, monuments, fencing, and vegetation should be appropriately located and maintained on-site and at all site access intersections to provide adequate intersection sight lines per City of Vancouver standards.

We trust this letter adequately addresses the traffic impacts associated with the revised The VIC Master Plan proposal. Please contact us if you have any questions or comments.

Sincerely,
KITTELSON & ASSOCIATES, INC.



Chris Brehmer, PE
Senior Principal Engineer



Julia Kuhn, PE
Senior Principal Engineer



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- 1) Transportation Research Board. *Highway Capacity Manual, 6th Edition*. 2016.
- 2) City of Vancouver. Arterial Street System and Classification Map. 2022.
https://www.cityofvancouver.us/sites/default/files/fileattachments/public_works/page/1744/arterial_map_large_2022.pdf
- 3) C-Tran. <http://www.c-tran.com>. Accessed March 2021.
- 4) Institute of Transportation Engineers. *Trip Generation Manual, 11th Edition*. 2021.

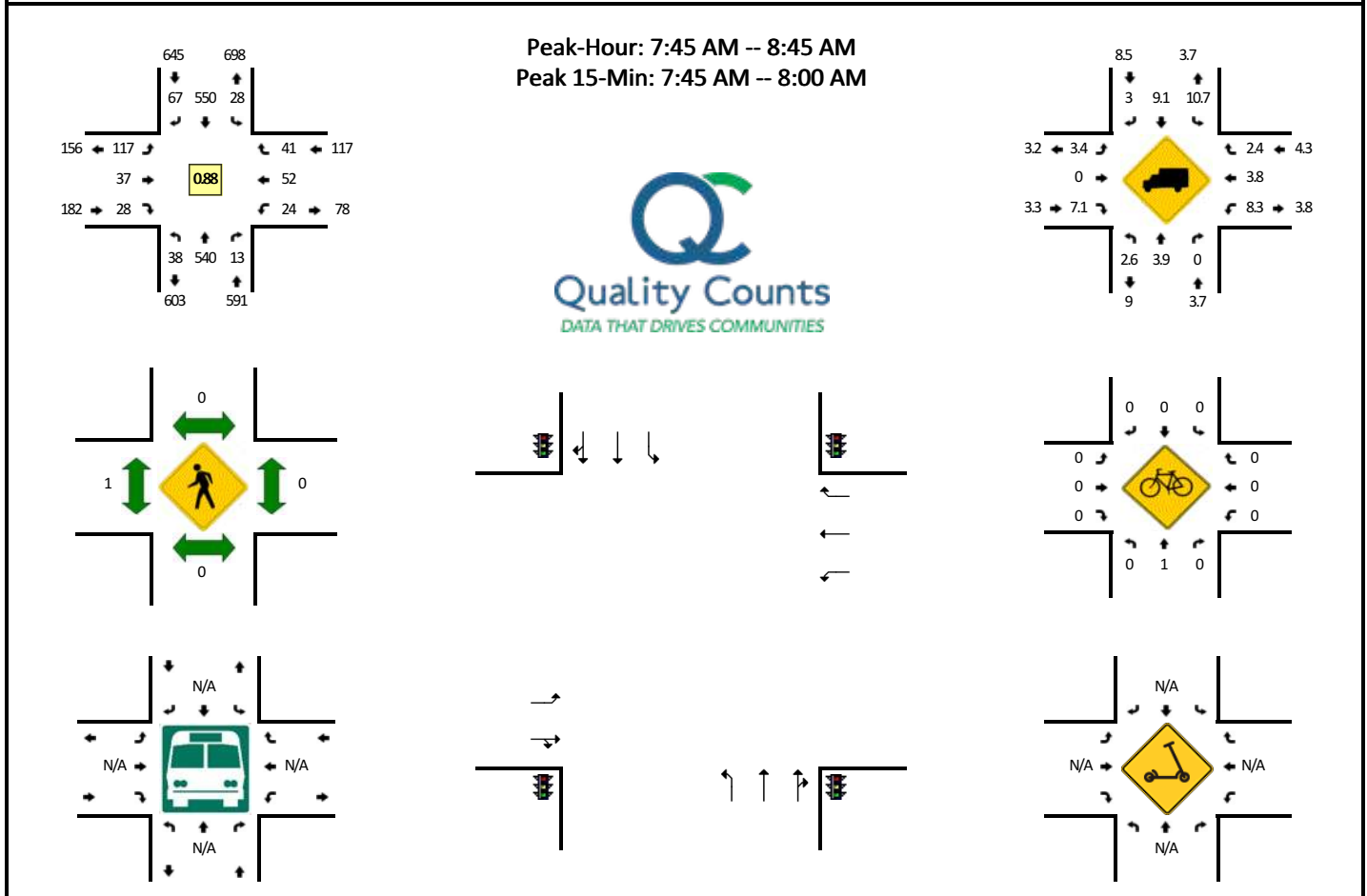
APPENDICES

- Appendix A: Traffic Count Data
- Appendix B: WSDOT Crash Data
- Appendix C: Existing Operations Worksheets
- Appendix D: The VIC Campus Volume Adjustment
- Appendix E: 2038 Baseline Operations Worksheets and Total In-process Trip Assignment
- Appendix F: 2038 With-Project Phase 1 Operations Worksheets
- Appendix G: 2038 With-Project Phase 2 Operations Worksheets and Re-route Trips
- Appendix H: 2038 With-Project Phase 3 Operations Worksheets and Re-route Trips
- Appendix I: 2038 With-Project Phase 4 Operations Worksheets

Appendix A Traffic Count Data

LOCATION: SE 192nd Ave -- SE 15th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050501
DATE: Tue, Jan 10 2023

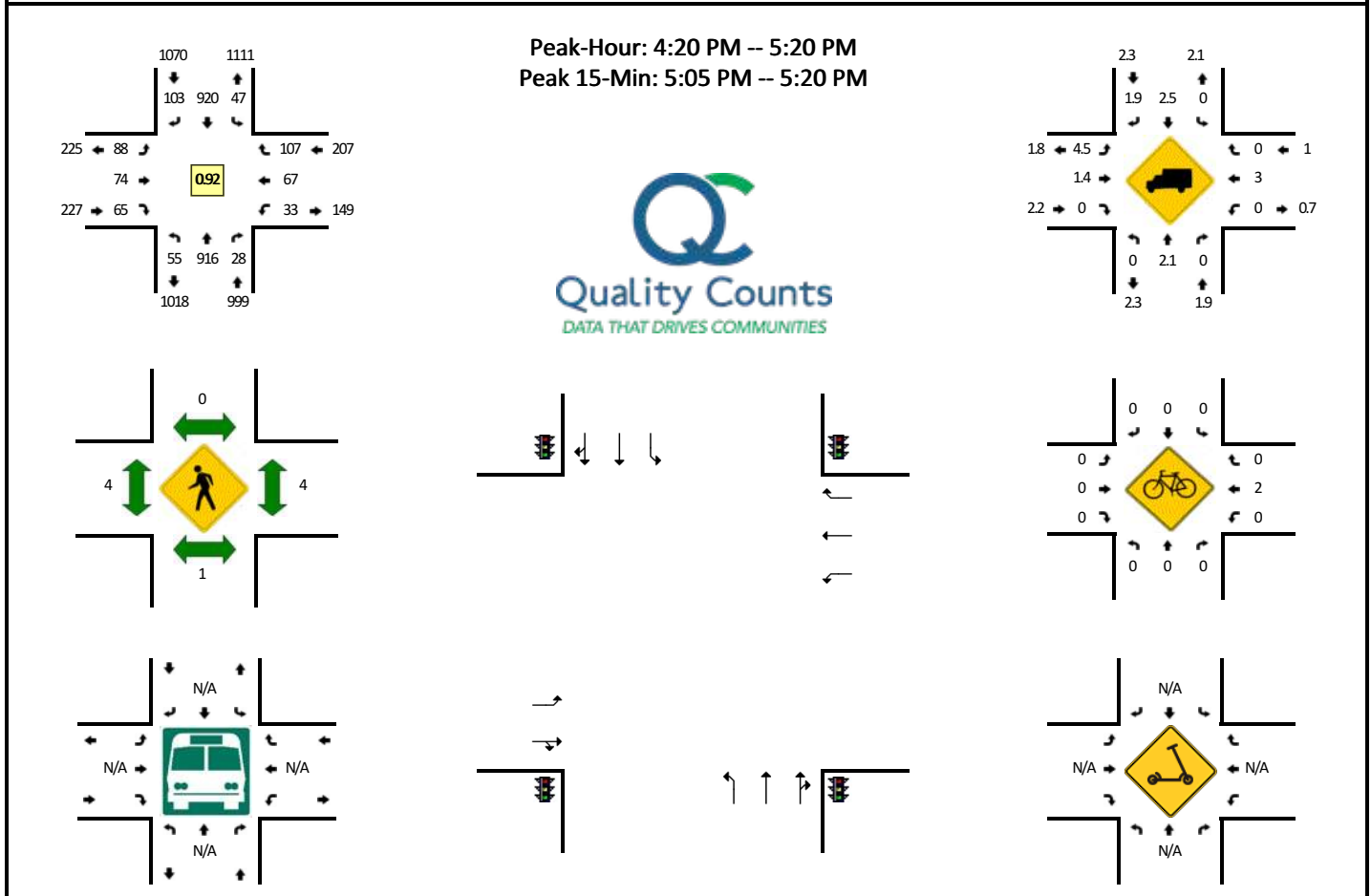


5-Min Count Period Beginning At	SE 192nd Ave (Northbound)				SE 192nd Ave (Southbound)				SE 15th St (Eastbound)				SE 15th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	31	0	0	1	51	4	0	2	2	1	0	0	1	0	0	94	
7:05 AM	0	23	0	0	1	35	4	0	2	1	1	0	2	0	2	0	71	
7:10 AM	2	31	0	0	0	36	3	0	6	2	3	0	1	1	1	0	86	
7:15 AM	2	39	0	0	6	36	1	0	7	6	3	0	1	0	2	0	103	
7:20 AM	4	35	0	0	1	32	3	0	7	2	2	0	1	0	6	0	93	
7:25 AM	2	39	0	1	1	39	4	0	1	2	1	0	2	6	0	0	98	
7:30 AM	1	43	2	0	0	30	4	0	2	5	2	0	2	0	3	0	94	
7:35 AM	3	46	0	0	1	37	2	0	10	1	4	0	3	3	2	0	112	
7:40 AM	1	65	3	0	1	42	2	0	11	5	3	0	3	4	3	0	143	
7:45 AM	5	56	1	0	1	50	4	0	11	4	1	0	2	4	7	0	146	
7:50 AM	2	44	1	1	4	63	4	0	10	5	4	0	3	5	5	0	151	
7:55 AM	0	39	3	0	7	59	12	0	6	3	5	0	1	2	2	0	139	1330
8:00 AM	1	41	1	0	0	43	13	0	8	3	2	0	2	5	1	0	120	1356
8:05 AM	9	39	0	0	1	43	4	0	5	1	6	0	0	6	0	0	114	1399
8:10 AM	0	35	2	0	3	38	5	0	6	4	1	0	1	8	2	0	105	1418
8:15 AM	1	43	0	0	2	27	3	0	8	2	1	0	4	4	5	0	100	1415
8:20 AM	6	43	2	0	1	51	6	0	9	2	0	0	1	4	2	0	127	1449
8:25 AM	4	51	2	0	2	42	5	0	17	3	1	0	1	3	6	0	137	1488
8:30 AM	1	41	1	0	2	31	1	0	19	6	3	0	3	5	6	0	119	1513
8:35 AM	2	57	0	0	3	52	4	0	6	1	1	0	1	4	1	0	132	1533
8:40 AM	6	51	0	0	2	51	6	0	12	3	3	0	5	2	4	0	145	1535
8:45 AM	6	43	2	0	5	47	7	0	3	1	5	0	2	9	3	0	133	1522
8:50 AM	0	62	1	0	0	45	6	0	3	4	2	0	3	3	4	0	133	1504
8:55 AM	3	57	0	0	5	45	2	0	2	5	3	0	2	5	1	0	130	1495
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	556	20	4	48	688	80	0	108	48	40	0	24	44	56	0	1744	
Heavy Trucks	0	4	0		8	56	4		0	0	0		0	0	0		72	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 192nd Ave -- SE 15th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050502
DATE: Tue, Jan 10 2023

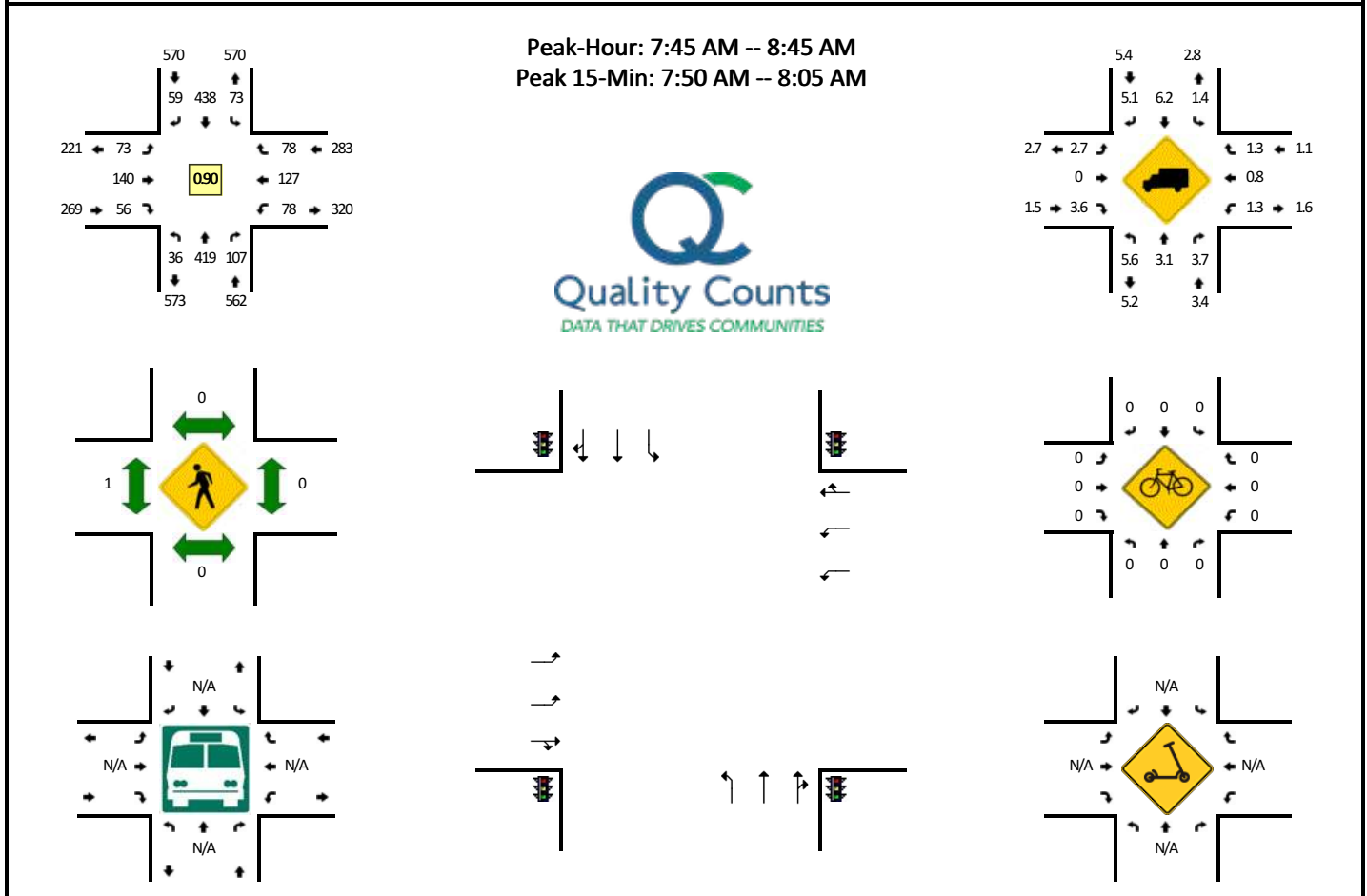


5-Min Count Period Beginning At	SE 192nd Ave (Northbound)				SE 192nd Ave (Southbound)				SE 15th St (Eastbound)				SE 15th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	87	0	0	2	89	14	0	10	3	3	0	4	4	11	0	231	
4:05 PM	8	66	1	0	6	70	15	1	7	6	4	0	4	7	12	0	207	
4:10 PM	13	93	2	0	1	71	9	0	5	3	5	0	1	11	11	0	225	
4:15 PM	7	79	3	0	6	48	8	0	7	8	1	0	1	4	11	0	183	
4:20 PM	1	90	3	0	3	66	9	0	10	6	6	0	5	6	12	0	217	
4:25 PM	6	66	2	0	4	86	7	0	9	3	5	0	2	2	7	0	199	
4:30 PM	7	70	3	0	5	63	8	0	4	7	4	0	2	2	3	0	178	
4:35 PM	5	77	2	0	2	69	8	0	5	6	6	0	5	5	12	0	202	
4:40 PM	4	85	1	0	2	92	9	0	12	4	0	0	2	5	6	0	222	
4:45 PM	4	85	3	0	1	76	13	0	6	9	8	0	1	4	6	0	216	
4:50 PM	10	74	2	0	2	67	4	0	5	7	8	0	3	4	4	0	190	
4:55 PM	3	93	3	0	5	66	13	0	9	5	6	0	2	3	5	0	213	2483
5:00 PM	4	70	1	0	3	74	7	0	8	5	5	0	1	3	8	0	189	2441
5:05 PM	5	47	1	0	3	87	4	0	9	3	8	0	4	9	20	0	200	2434
5:10 PM	4	79	2	0	9	87	11	0	8	9	4	0	3	12	13	0	241	2450
5:15 PM	2	80	5	0	8	87	10	0	3	10	5	0	3	12	11	0	236	2503
5:20 PM	3	78	5	0	5	76	9	0	8	8	7	0	3	4	10	0	216	2502
5:25 PM	4	60	3	0	2	56	7	0	4	10	5	0	3	3	5	0	162	2465
5:30 PM	2	59	0	0	3	68	8	0	6	7	7	0	1	7	7	0	175	2462
5:35 PM	3	72	3	0	5	57	7	0	6	4	5	0	1	3	3	0	169	2429
5:40 PM	5	57	3	0	2	61	8	0	4	4	4	0	2	3	5	0	158	2365
5:45 PM	5	59	4	0	8	66	10	0	8	8	6	0	5	7	9	0	195	2344
5:50 PM	6	72	1	0	7	63	6	0	8	8	1	0	3	9	5	0	189	2343
5:55 PM	2	72	8	0	4	57	7	0	9	6	2	0	4	6	5	0	182	2312
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	44	824	32	0	80	1044	100	0	80	88	68	0	40	132	176	0	2708	
Heavy Trucks	0	8	0	0	0	32	0	0	4	0	0	0	0	4	0	0	48	
Buses																		
Pedestrians		4				0				4				8			16	
Bicycles	0	0	0		0	0	0		0	0	0		0	8	0		8	
Scooters																		

Comments:

LOCATION: SE 192nd Ave -- SE 20th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050503
DATE: Tue, Jan 10 2023

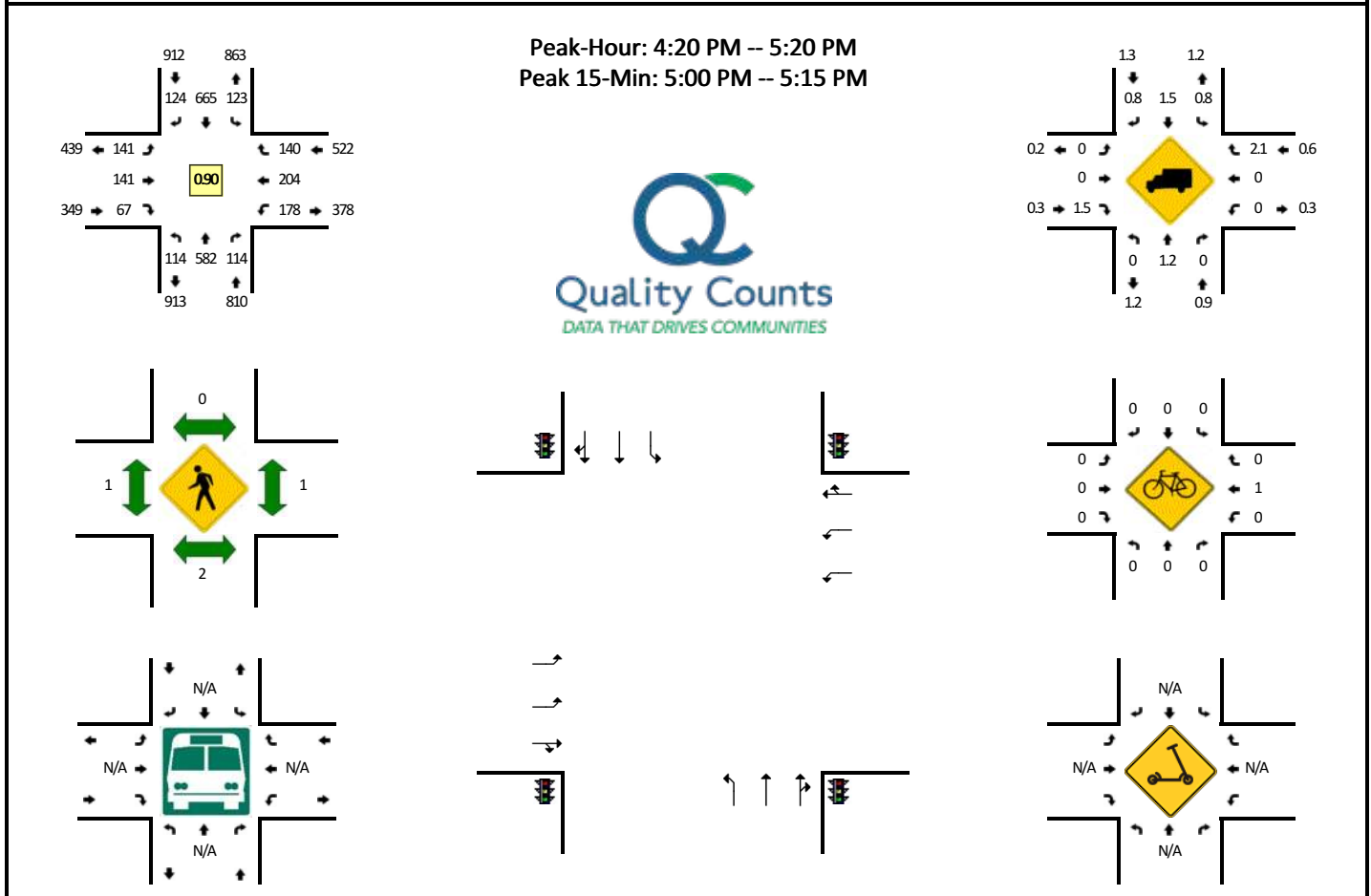


5-Min Count Period Beginning At	SE 192nd Ave (Northbound)				SE 192nd Ave (Southbound)				SE 20th St (Eastbound)				SE 20th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	16	16	0	10	32	9	0	5	9	5	0	8	2	2	0	116	
7:05 AM	2	13	13	0	5	18	5	1	3	10	4	0	8	5	9	0	96	
7:10 AM	3	20	13	0	6	31	2	0	5	6	6	0	8	9	5	0	114	
7:15 AM	1	26	9	0	5	32	4	3	4	15	7	0	6	8	8	0	128	
7:20 AM	2	32	8	0	5	24	4	0	3	11	7	0	8	4	4	0	112	
7:25 AM	3	28	12	0	8	27	2	0	7	13	4	0	8	4	8	0	124	
7:30 AM	3	23	8	0	5	32	4	0	6	13	4	0	5	7	9	0	119	
7:35 AM	0	34	14	0	4	30	1	0	8	11	7	0	6	10	8	0	133	
7:40 AM	1	34	14	0	8	35	6	0	11	13	5	0	5	8	10	0	150	
7:45 AM	3	43	10	1	6	32	8	0	11	12	4	0	7	9	4	0	150	
7:50 AM	3	29	8	0	7	46	10	0	7	20	7	0	6	13	8	0	164	
7:55 AM	5	33	10	0	8	41	7	0	3	14	7	0	8	11	4	0	151	1557
8:00 AM	1	27	18	0	6	42	7	0	2	18	2	0	6	14	10	0	153	1594
8:05 AM	2	31	11	0	6	41	4	0	5	12	7	0	6	13	8	0	146	1644
8:10 AM	2	31	12	0	8	26	2	0	4	9	3	0	7	12	3	0	119	1649
8:15 AM	2	29	5	0	4	24	5	0	6	11	3	0	4	12	9	0	114	1635
8:20 AM	7	39	4	0	10	30	3	0	4	5	4	0	6	6	7	0	125	1648
8:25 AM	1	40	4	0	7	33	4	0	11	9	3	0	6	10	4	0	132	1656
8:30 AM	4	41	10	0	1	39	1	0	8	11	4	0	8	8	5	0	140	1677
8:35 AM	1	30	5	0	5	38	6	0	8	10	4	0	8	10	10	0	135	1679
8:40 AM	4	46	10	0	5	46	2	0	4	9	8	0	6	9	6	0	155	1684
8:45 AM	2	43	4	0	6	35	15	0	4	8	7	0	9	8	5	0	146	1680
8:50 AM	7	43	5	0	3	41	2	0	9	18	3	0	3	15	7	0	156	1672
8:55 AM	4	44	5	0	5	42	6	0	2	5	4	0	11	14	7	0	149	1670
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	36	356	144	0	84	516	96	0	48	208	64	0	80	152	88	0	1872	
Heavy Trucks	0	12	0	0	0	20	4	0	4	0	0	0	0	0	0	0	40	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 192nd Ave -- SE 20th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050504
DATE: Tue, Jan 10 2023

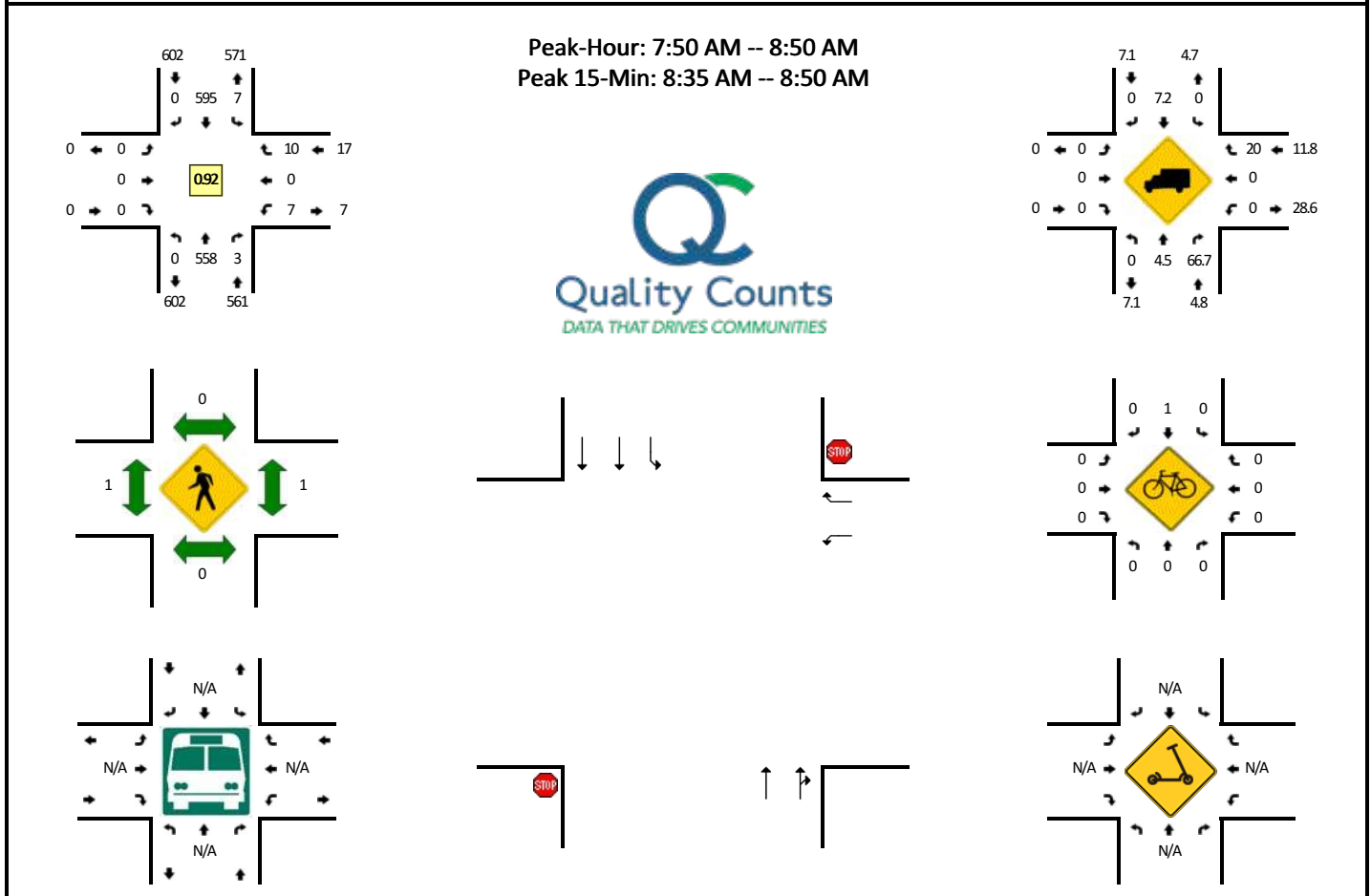


5-Min Count Period Beginning At	SE 192nd Ave (Northbound)				SE 192nd Ave (Southbound)				SE 20th St (Eastbound)				SE 20th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	11	59	5	0	10	51	18	0	12	16	4	0	18	13	8	0	225	
4:05 PM	14	42	7	0	11	55	12	0	19	12	8	0	31	20	16	0	247	
4:10 PM	8	68	10	0	6	64	11	0	10	17	5	0	9	16	16	0	240	
4:15 PM	8	58	8	0	4	44	11	0	15	7	2	0	17	9	8	0	191	
4:20 PM	10	72	7	0	7	48	7	0	18	9	4	0	15	15	10	0	222	
4:25 PM	14	49	8	0	7	62	14	0	17	13	6	0	13	18	6	0	227	
4:30 PM	12	47	5	0	2	56	10	0	9	10	4	0	7	12	11	0	185	
4:35 PM	9	51	6	0	9	51	12	0	8	7	5	0	19	19	11	0	207	
4:40 PM	6	38	6	0	11	58	9	0	10	9	4	0	7	12	15	0	185	
4:45 PM	8	51	9	0	16	54	11	0	14	11	13	0	11	13	10	0	221	
4:50 PM	7	46	9	1	17	47	11	0	9	7	5	0	18	15	12	0	204	
4:55 PM	9	66	10	0	10	50	7	0	10	11	0	0	16	18	12	0	219	2573
5:00 PM	7	40	17	1	9	56	11	0	14	12	7	0	18	13	8	0	213	2561
5:05 PM	8	45	12	0	13	70	9	0	5	19	3	0	20	29	13	0	246	2560
5:10 PM	9	54	18	0	6	68	9	0	14	14	10	0	17	24	15	0	258	2578
5:15 PM	12	23	7	1	16	45	14	0	13	19	6	0	17	16	17	0	206	2593
5:20 PM	10	49	12	0	11	52	15	0	13	21	5	0	7	12	7	0	214	2585
5:25 PM	11	25	7	0	8	44	14	0	6	14	8	0	4	9	11	0	161	2519
5:30 PM	9	29	4	0	11	37	9	0	10	15	5	0	6	11	11	0	157	2491
5:35 PM	7	47	16	0	5	46	9	0	9	17	4	0	7	13	9	0	189	2473
5:40 PM	12	32	8	0	8	26	10	0	10	11	3	0	7	9	7	0	143	2431
5:45 PM	6	44	8	0	13	50	9	0	8	17	5	0	8	20	8	0	196	2406
5:50 PM	4	48	8	0	11	34	7	0	9	7	8	0	6	15	8	0	165	2367
5:55 PM	8	48	13	0	9	39	8	0	12	9	3	0	4	9	9	0	171	2319
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	96	556	188	4	112	776	116	0	132	180	80	0	220	264	144	0	2868	
Heavy Trucks	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	8	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: SE 192nd Ave -- SE 25th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050505
DATE: Thu, Jan 12 2023

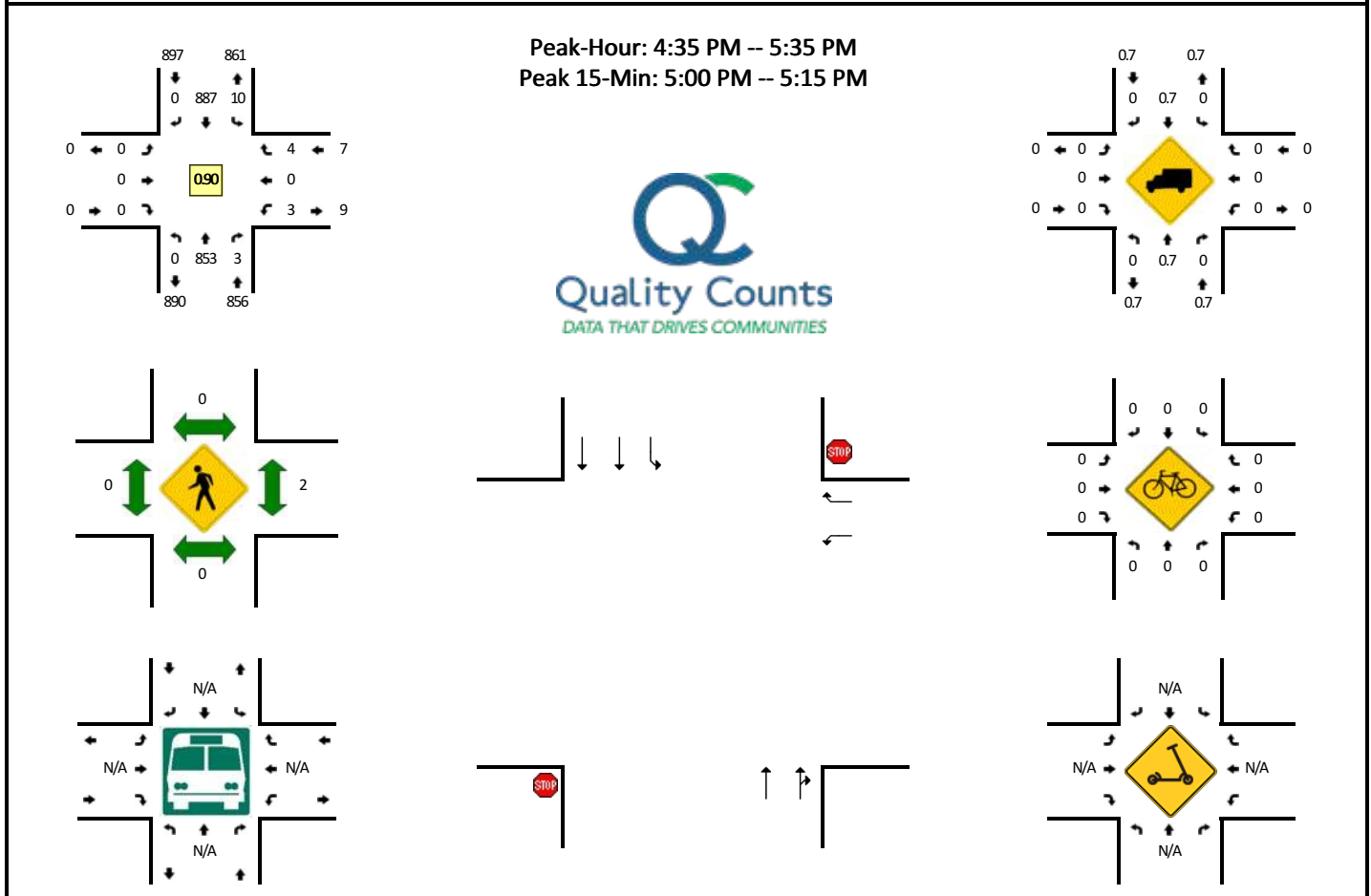


5-Min Count Period Beginning At	SE 192nd Ave (Northbound)				SE 192nd Ave (Southbound)				SE 25th St (Eastbound)				SE 25th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	24	0	0	0	43	0	1	0	0	0	0	1	0	1	0	70	
7:05 AM	0	30	0	0	0	30	0	0	0	0	0	0	0	0	1	0	61	
7:10 AM	0	27	0	0	1	32	0	1	0	0	0	0	0	0	0	0	61	
7:15 AM	0	35	0	0	0	42	0	0	0	0	0	0	0	0	1	0	78	
7:20 AM	0	39	0	0	1	34	0	2	0	0	0	0	0	0	0	0	76	
7:25 AM	0	35	0	0	0	40	0	2	0	0	0	0	1	0	1	0	79	
7:30 AM	0	34	0	0	0	42	0	0	0	0	0	0	0	0	0	0	76	
7:35 AM	0	52	0	0	0	37	0	0	0	0	0	0	0	0	0	0	89	
7:40 AM	0	30	0	0	0	44	0	0	0	0	0	0	0	0	0	0	74	
7:45 AM	0	40	0	0	0	52	0	1	0	0	0	0	0	0	2	0	95	
7:50 AM	0	36	0	0	0	57	0	0	0	0	0	0	1	0	2	0	96	
7:55 AM	0	38	0	0	0	60	0	0	0	0	0	0	0	0	0	0	98	953
8:00 AM	0	51	0	0	1	45	0	1	0	0	0	0	0	0	1	0	99	982
8:05 AM	0	44	1	0	0	48	0	0	0	0	0	0	0	0	1	0	94	1015
8:10 AM	0	45	1	0	0	36	0	0	0	0	0	0	1	0	3	0	86	1040
8:15 AM	0	41	0	0	1	39	0	0	0	0	0	0	0	0	1	0	82	1044
8:20 AM	0	57	0	0	0	46	0	0	0	0	0	0	1	0	0	0	104	1072
8:25 AM	0	39	0	0	1	54	0	0	0	0	0	0	0	0	1	0	95	1088
8:30 AM	0	49	0	0	0	55	0	0	0	0	0	0	1	0	0	0	105	1117
8:35 AM	0	59	1	0	1	50	0	1	0	0	0	0	0	0	1	0	113	1141
8:40 AM	0	38	0	0	0	46	0	0	0	0	0	0	3	0	0	0	87	1154
8:45 AM	0	61	0	0	0	59	0	1	0	0	0	0	0	0	0	0	121	1180
8:50 AM	0	55	1	0	0	33	0	0	0	0	0	0	0	0	0	0	89	1173
8:55 AM	0	37	1	0	1	50	0	0	0	0	0	0	0	0	2	0	91	1166
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	632	4	0	4	620	0	8	0	0	0	0	12	0	4	0	1284	
Heavy Trucks	0	40	0	0	0	48	0	0	0	0	0	0	0	0	0	0	88	
Buses																		
Pedestrians		0				0				4				4			8	
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4	
Scooters																		

Comments:

LOCATION: SE 192nd Ave -- SE 25th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050506
DATE: Thu, Jan 12 2023

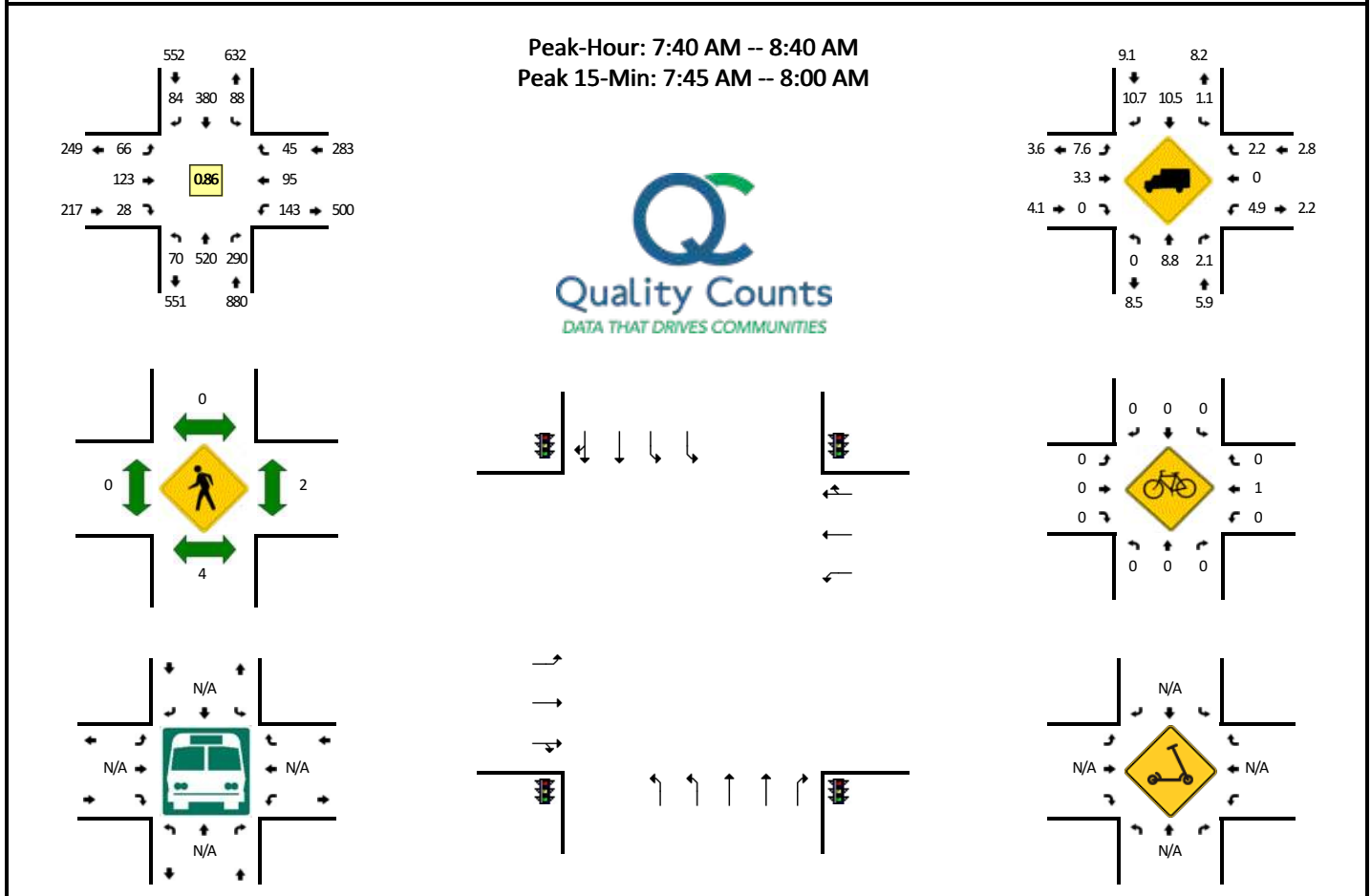


5-Min Count Period Beginning At	SE 192nd Ave (Northbound)				SE 192nd Ave (Southbound)				SE 25th St (Eastbound)				SE 25th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	70	1	0	2	69	0	0	0	0	0	0	0	0	2	0	144	
4:05 PM	0	65	0	0	0	84	0	0	0	0	0	0	0	0	1	0	150	
4:10 PM	0	50	1	0	0	74	0	1	0	0	0	0	0	0	1	0	127	
4:15 PM	0	70	1	0	2	74	0	0	0	0	0	0	0	0	0	0	147	
4:20 PM	0	69	1	0	0	97	0	0	0	0	0	0	1	0	1	0	169	
4:25 PM	0	63	0	0	0	59	0	0	0	0	0	0	2	0	1	0	125	
4:30 PM	0	62	0	0	0	74	0	0	0	0	0	0	0	0	0	0	136	
4:35 PM	0	71	0	0	1	69	0	0	0	0	0	0	0	0	0	0	141	
4:40 PM	0	65	1	0	0	73	0	0	0	0	0	0	0	0	0	0	139	
4:45 PM	0	56	1	0	0	85	0	1	0	0	0	0	0	0	0	0	143	
4:50 PM	0	63	0	0	0	71	0	0	0	0	0	0	1	0	2	0	137	
4:55 PM	0	62	0	0	0	66	0	0	0	0	0	0	0	0	0	0	128	1686
5:00 PM	0	88	0	0	0	70	0	1	0	0	0	0	0	0	0	0	159	1701
5:05 PM	0	84	0	0	1	85	0	0	0	0	0	0	0	0	0	0	170	1721
5:10 PM	0	74	0	0	0	84	0	0	0	0	0	0	0	0	0	0	158	1752
5:15 PM	0	74	1	0	2	75	0	0	0	0	0	0	0	0	1	0	153	1758
5:20 PM	0	69	0	0	0	69	0	2	0	0	0	0	0	0	1	0	141	1730
5:25 PM	0	63	0	0	1	68	0	0	0	0	0	0	0	0	0	0	132	1737
5:30 PM	0	84	0	0	1	72	0	0	0	0	0	0	2	0	0	0	159	1760
5:35 PM	0	52	0	0	1	64	0	0	0	0	0	0	0	0	0	0	117	1736
5:40 PM	0	70	0	0	2	70	0	3	0	0	0	0	0	0	1	0	146	1743
5:45 PM	0	65	0	0	0	45	0	0	0	0	0	0	1	0	0	0	111	1711
5:50 PM	0	68	1	0	2	59	0	0	0	0	0	0	0	0	1	0	131	1705
5:55 PM	0	61	1	0	1	58	0	2	0	0	0	0	0	0	2	0	125	1702
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	984	0	0	4	956	0	4	0	0	0	0	0	0	0	0	1948	
Heavy Trucks	0	20	0	0	0	8	0	0	0	0	0	0	0	0	0	0	28	
Buses																		
Pedestrians		0				0				0				4			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 192nd Ave -- SE 34th St
CITY/STATE: Vancouver, WA

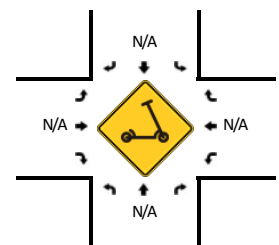
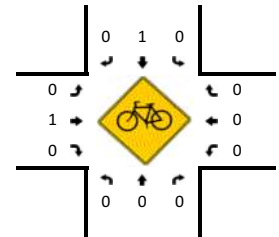
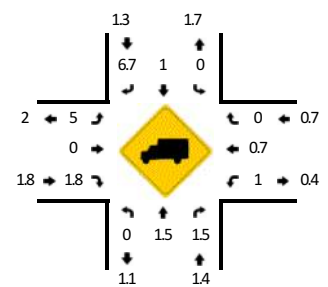
QC JOB #: 16019615
DATE: Tue, Dec 6 2022



5-Min Count Period Beginning At	SE 192nd Ave (Northbound)				SE 192nd Ave (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	28	36	0	5	29	2	0	3	6	2	0	11	4	1	0	130	
7:05 AM	2	30	26	0	12	30	6	0	4	15	3	0	12	3	3	0	146	
7:10 AM	0	30	19	0	5	38	7	0	2	10	2	0	14	5	5	0	137	
7:15 AM	1	30	24	0	2	24	4	0	1	3	1	0	8	7	4	0	109	
7:20 AM	1	43	24	0	11	24	6	0	4	7	0	0	14	6	7	0	147	
7:25 AM	7	42	16	0	8	30	5	0	3	8	1	0	11	4	1	0	136	
7:30 AM	8	40	26	1	6	30	6	0	6	9	2	0	14	9	3	0	160	
7:35 AM	4	36	20	1	7	27	1	0	6	10	3	0	16	7	5	0	143	
7:40 AM	4	51	31	0	3	28	14	0	5	8	4	0	7	7	0	0	162	
7:45 AM	8	57	30	0	8	30	5	0	11	17	1	0	18	7	1	0	193	
7:50 AM	9	50	29	0	10	32	7	0	9	17	3	0	8	8	3	0	185	
7:55 AM	11	49	22	0	13	35	11	0	5	11	1	0	10	15	3	0	186	1834
8:00 AM	4	48	31	0	8	29	11	1	4	7	4	0	6	5	5	0	163	1867
8:05 AM	3	35	23	0	8	36	3	0	2	4	2	0	10	11	5	0	142	1863
8:10 AM	7	38	22	0	7	35	7	0	3	10	1	0	21	12	3	0	166	1892
8:15 AM	2	29	17	0	6	29	4	0	6	6	4	0	16	8	6	0	133	1916
8:20 AM	5	46	20	0	7	30	3	0	7	13	5	0	5	10	5	0	156	1925
8:25 AM	5	41	21	0	4	32	5	0	4	14	0	0	10	2	4	0	142	1931
8:30 AM	3	34	22	0	9	29	9	0	5	7	1	0	9	4	5	0	137	1908
8:35 AM	9	42	22	0	4	35	5	0	5	9	2	0	23	6	5	0	167	1932
8:40 AM	3	38	10	0	9	38	4	0	3	13	1	0	18	12	12	0	161	1931
8:45 AM	9	48	14	1	12	38	4	0	3	12	3	0	17	7	11	0	179	1917
8:50 AM	5	43	17	0	8	29	3	0	1	7	7	0	10	15	3	0	148	1880
8:55 AM	3	46	7	0	13	42	5	0	4	6	1	0	4	9	5	0	145	1839
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	112	624	324	0	124	388	92	0	100	180	20	0	144	120	28	0	2256	
Heavy Trucks	0	72	4		4	40	4		4	8	0		4	0	0		140	
Buses																		
Pedestrians		8				0				0				4			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

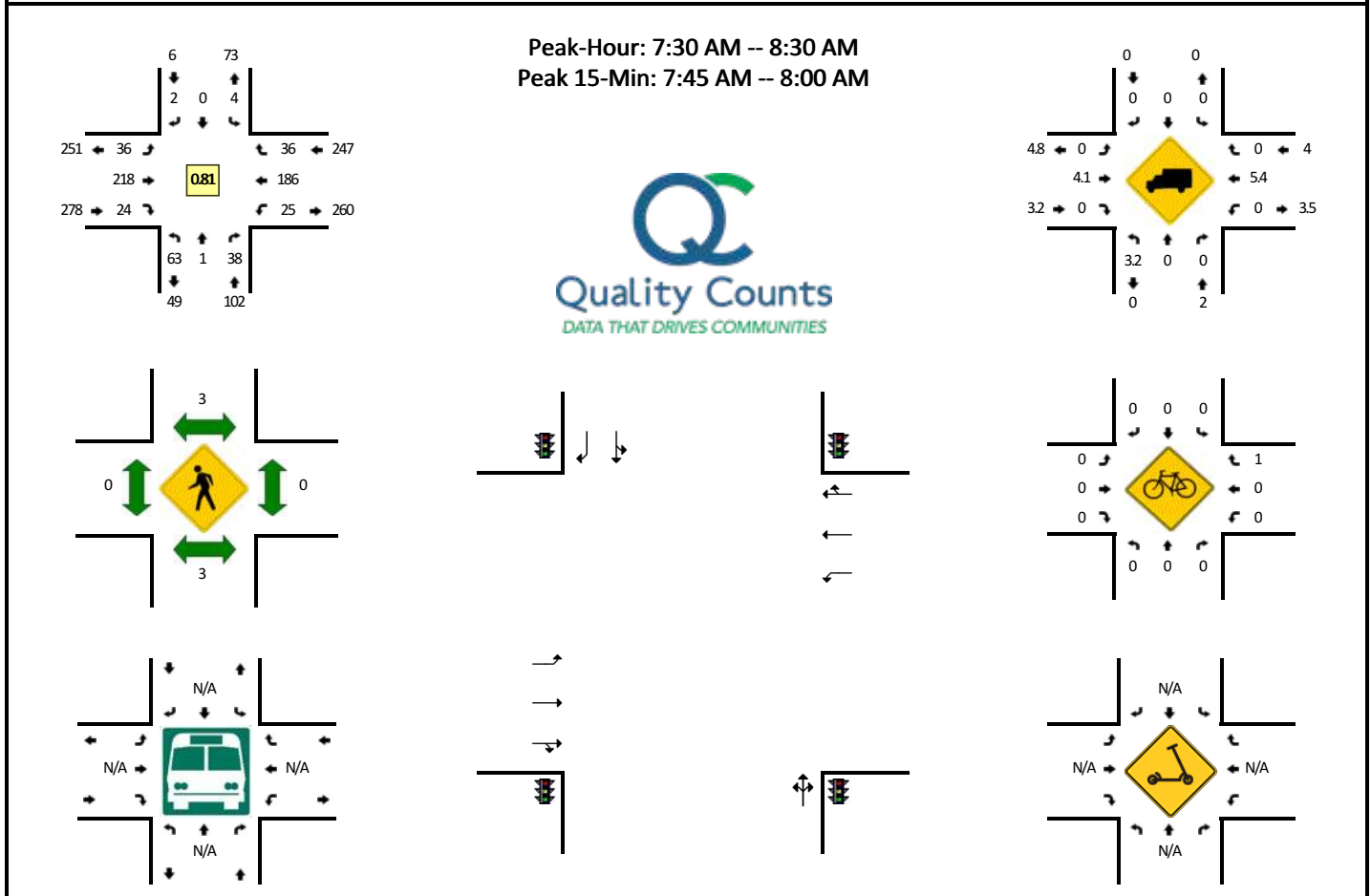
QC JOB #: 16019616
DATE: Tue, Dec 6 2022



Comments:

LOCATION: SE Hiddenbrook Dr -- SE 34th St
CITY/STATE: Vancouver, WA

QC JOB #: 16019613
DATE: Tue, Dec 6 2022

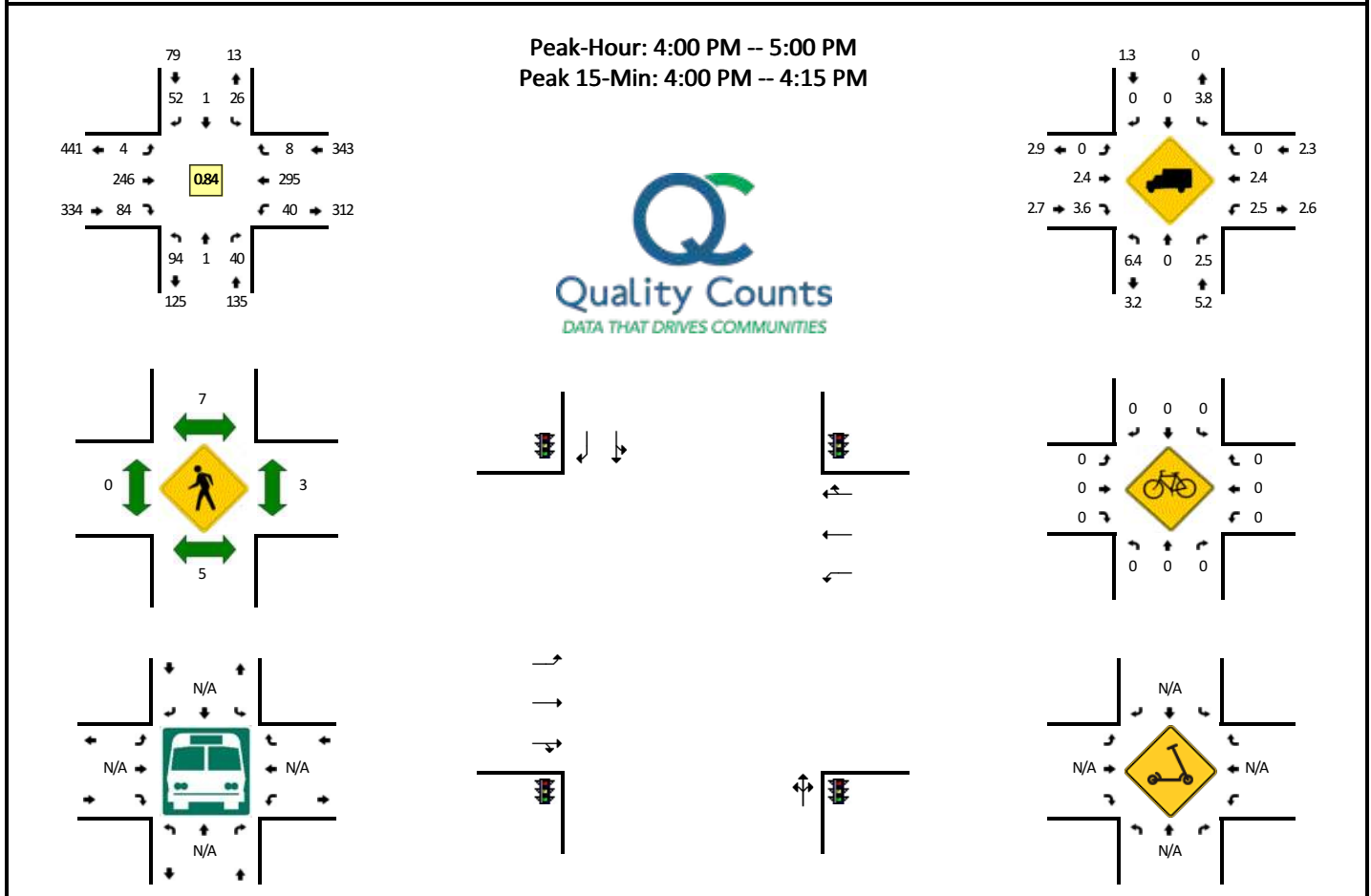


5-Min Count Period Beginning At	SE Hiddenbrook Dr (Northbound)				SE Hiddenbrook Dr (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	3	0	0	0	0	0	1	12	0	0	0	9	0	0	27	
7:05 AM	5	0	0	0	1	0	0	0	3	16	0	0	0	8	3	0	36	
7:10 AM	1	0	1	0	0	0	0	0	1	12	0	0	0	11	2	0	28	
7:15 AM	4	0	2	0	0	0	0	0	3	9	2	0	0	16	1	0	37	
7:20 AM	5	0	0	0	0	0	0	0	3	10	0	0	2	11	2	0	33	
7:25 AM	3	1	2	0	0	0	0	0	1	13	1	0	1	14	2	0	38	
7:30 AM	4	0	3	0	0	0	0	0	1	17	0	0	0	20	3	0	48	
7:35 AM	5	0	2	0	0	0	0	0	4	18	1	0	2	9	2	0	43	
7:40 AM	3	0	4	0	0	0	0	0	2	21	3	0	1	12	6	0	52	
7:45 AM	7	0	6	0	0	0	0	0	2	26	1	0	4	17	4	0	67	
7:50 AM	1	0	2	0	2	0	1	0	5	21	3	0	3	16	2	0	56	
7:55 AM	2	0	3	0	0	0	0	0	4	28	3	0	6	23	4	0	73	538
8:00 AM	7	0	2	0	0	0	0	0	3	14	1	0	2	16	3	0	48	559
8:05 AM	5	1	2	0	1	0	0	0	3	11	3	0	3	15	2	0	46	569
8:10 AM	12	0	1	0	0	0	0	0	3	8	2	0	1	23	4	0	54	595
8:15 AM	7	0	6	0	1	0	0	0	5	21	2	0	0	14	1	0	57	615
8:20 AM	5	0	5	0	0	0	0	0	2	21	2	0	1	12	2	0	50	632
8:25 AM	5	0	2	0	0	0	1	0	2	12	3	0	2	9	3	0	39	633
8:30 AM	4	1	2	0	0	0	0	0	4	16	3	0	4	13	0	0	47	632
8:35 AM	4	0	1	0	0	0	1	0	1	10	6	0	3	13	4	0	43	632
8:40 AM	9	0	0	0	0	0	1	0	2	19	5	0	2	11	2	0	51	631
8:45 AM	2	0	4	0	0	0	0	0	6	17	1	0	4	18	1	0	53	617
8:50 AM	4	0	3	0	0	0	0	0	4	15	5	0	4	19	2	0	56	617
8:55 AM	4	0	1	0	0	0	0	0	1	16	8	0	2	13	1	0	46	590
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	0	44	0	8	0	4	0	44	300	28	0	52	224	40	0	784	
Heavy Trucks	0	0	0	0	0	0	0	0	0	12	0	0	0	8	0	0	20	
Buses																		
Pedestrians		12				0				0				0			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE Hiddenbrook Dr -- SE 34th St
CITY/STATE: Vancouver, WA

QC JOB #: 16019614
DATE: Tue, Dec 6 2022

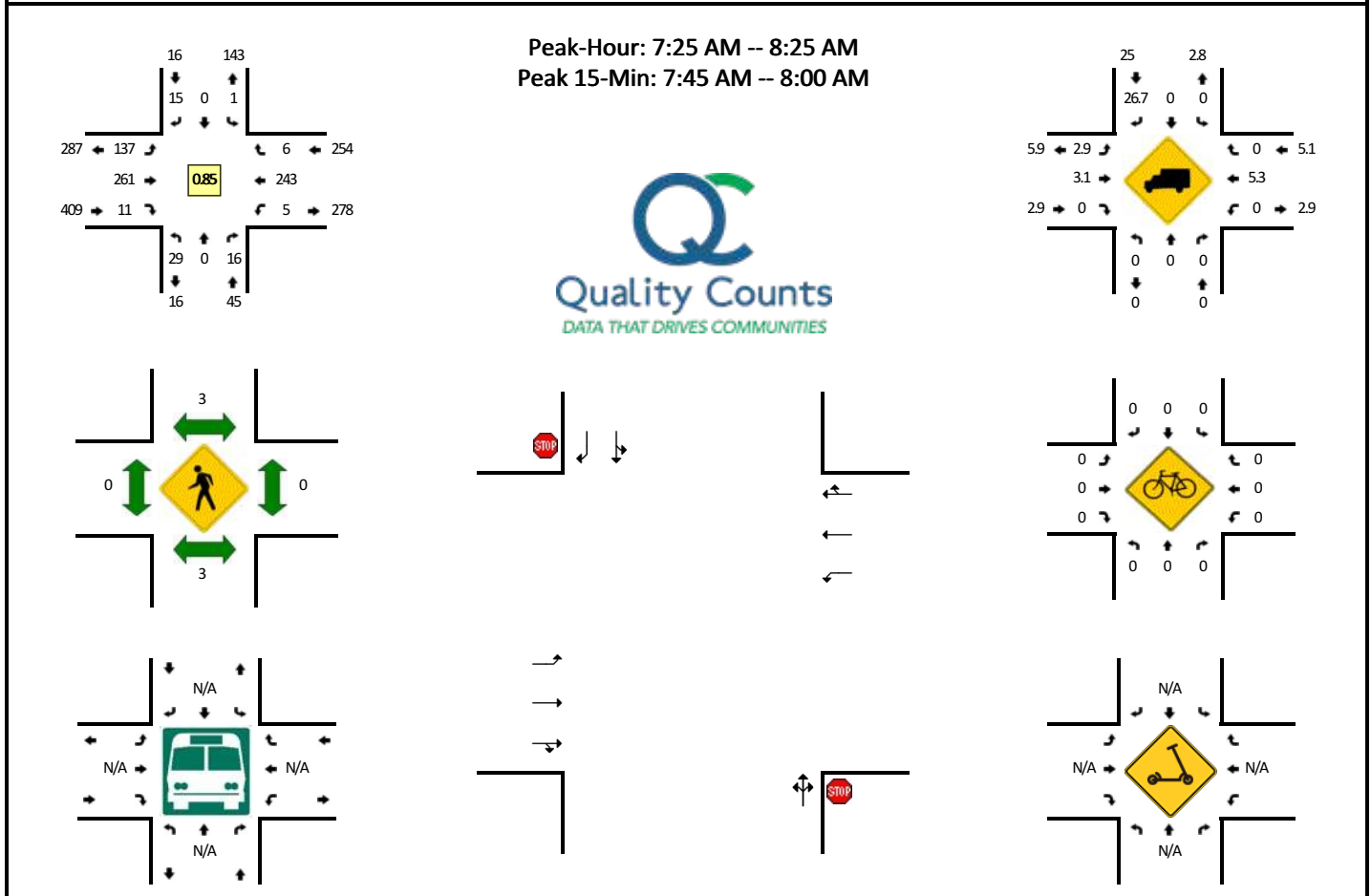


5-Min Count Period Beginning At	SE Hiddenbrook Dr (Northbound)				SE Hiddenbrook Dr (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	21	0	11	0	0	0	5	0	0	24	9	0	4	26	0	0	100	
4:05 PM	10	0	4	0	4	0	4	0	1	11	6	0	3	28	3	0	74	
4:10 PM	4	0	3	0	1	0	3	0	0	27	10	0	4	39	0	0	91	
4:15 PM	6	0	4	0	1	0	3	0	0	15	7	0	2	18	0	0	56	
4:20 PM	8	0	4	0	4	0	4	0	1	25	8	0	1	15	0	0	70	
4:25 PM	13	1	2	0	1	0	4	0	0	17	8	0	3	20	1	0	70	
4:30 PM	3	0	1	0	3	0	1	0	0	20	6	0	3	22	0	0	59	
4:35 PM	10	0	2	0	5	0	12	0	0	21	5	0	5	25	0	0	85	
4:40 PM	2	0	3	0	1	0	6	0	0	23	6	0	3	29	0	0	73	
4:45 PM	1	0	0	0	1	1	2	0	0	24	7	0	4	25	3	0	68	
4:50 PM	13	0	3	0	4	0	4	0	1	22	6	0	4	23	1	0	81	
4:55 PM	3	0	3	0	1	0	4	0	1	17	6	0	4	25	0	0	64	891
5:00 PM	3	0	5	0	1	0	9	0	0	23	6	0	3	33	1	0	84	875
5:05 PM	4	0	3	0	4	1	4	0	0	16	5	0	2	18	2	0	59	860
5:10 PM	4	0	0	0	3	1	6	0	1	30	12	0	1	30	0	0	88	857
5:15 PM	7	0	4	0	5	0	2	0	0	23	5	0	1	21	0	0	68	869
5:20 PM	5	0	1	0	2	0	3	0	0	20	7	0	2	24	0	0	64	863
5:25 PM	6	0	3	0	2	0	2	0	1	24	4	0	4	23	1	0	70	863
5:30 PM	7	0	1	0	0	0	7	0	0	19	2	0	2	19	0	0	57	861
5:35 PM	1	0	2	0	1	0	7	0	1	19	7	0	2	20	0	0	60	836
5:40 PM	1	0	1	0	2	0	8	0	1	29	3	0	1	12	2	0	60	823
5:45 PM	1	0	0	0	1	0	4	0	0	21	4	0	5	14	0	0	50	805
5:50 PM	3	0	0	0	1	0	2	0	0	15	4	0	0	15	0	0	40	764
5:55 PM	2	0	4	0	1	0	1	0	0	10	5	0	4	22	0	0	49	749
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	140	0	72	0	20	0	48	0	4	248	100	0	44	372	12	0	1060	
Heavy Trucks	16	0	4		4	0	0		0	4	4		0	12	0		44	
Buses																		
Pedestrians		4				4				0				4			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 177th Ave -- SE 34th St
CITY/STATE: Vancouver, WA

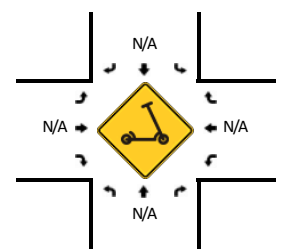
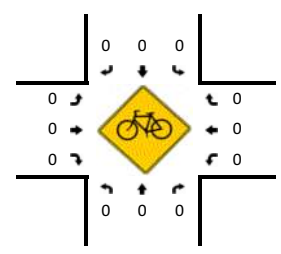
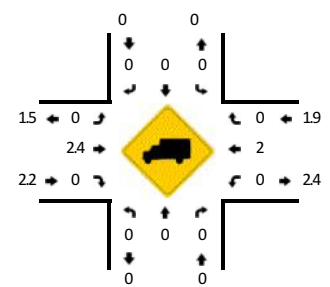
QC JOB #: 16019611
DATE: Tue, Dec 6 2022



5-Min Count Period Beginning At	SE 177th Ave (Northbound)				SE 177th Ave (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	1	0	0	0	0	0	6	13	0	0	1	10	1	0	34	
7:05 AM	2	0	1	0	0	0	0	0	5	18	0	0	0	12	1	0	39	
7:10 AM	1	0	1	0	0	0	0	0	4	11	1	0	0	12	0	0	30	
7:15 AM	4	0	2	0	0	0	0	0	6	13	0	0	1	16	0	0	42	
7:20 AM	1	0	0	0	0	0	0	0	4	13	0	0	0	18	0	0	36	
7:25 AM	4	0	0	0	0	0	1	0	10	17	0	0	0	17	0	0	49	
7:30 AM	4	0	2	0	0	0	3	0	7	13	1	0	0	23	0	0	53	
7:35 AM	5	0	1	0	0	0	1	0	6	21	2	0	0	16	0	0	52	
7:40 AM	1	0	0	0	0	0	1	0	16	28	1	0	0	15	0	0	62	
7:45 AM	3	0	1	0	0	0	0	0	11	31	2	0	1	21	1	0	71	
7:50 AM	1	0	3	0	0	0	0	0	13	28	1	0	0	16	0	0	62	
7:55 AM	2	0	2	0	0	0	2	0	19	27	1	0	1	25	1	0	80	610
8:00 AM	1	0	1	0	1	0	1	0	16	16	0	0	1	22	0	0	59	635
8:05 AM	2	0	1	0	0	0	1	0	10	18	0	0	0	16	2	0	50	646
8:10 AM	2	0	0	0	0	0	3	0	12	15	0	0	1	32	1	0	66	682
8:15 AM	2	0	2	0	0	0	0	0	10	25	1	0	0	23	1	0	64	704
8:20 AM	2	0	3	0	0	0	2	0	7	22	2	0	1	17	0	0	56	724
8:25 AM	0	0	0	0	0	0	0	0	11	16	1	0	0	14	1	0	43	718
8:30 AM	0	0	0	0	1	0	3	0	7	23	2	0	1	14	0	0	51	716
8:35 AM	1	0	0	0	0	0	0	0	4	15	0	0	0	18	0	0	38	702
8:40 AM	4	0	3	0	0	0	1	0	9	22	0	0	0	21	0	0	60	700
8:45 AM	2	0	1	0	0	0	0	0	5	22	0	0	0	14	0	0	44	673
8:50 AM	2	0	1	0	0	0	0	0	7	25	1	0	0	27	2	0	65	676
8:55 AM	1	0	0	0	0	0	1	0	8	27	1	0	1	15	0	0	54	650
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	0	24	0	0	0	8	0	172	344	16	0	8	248	8	0	852	
Heavy Trucks	0	0	0	0	0	0	4	0	0	12	0	0	0	8	0	0	24	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

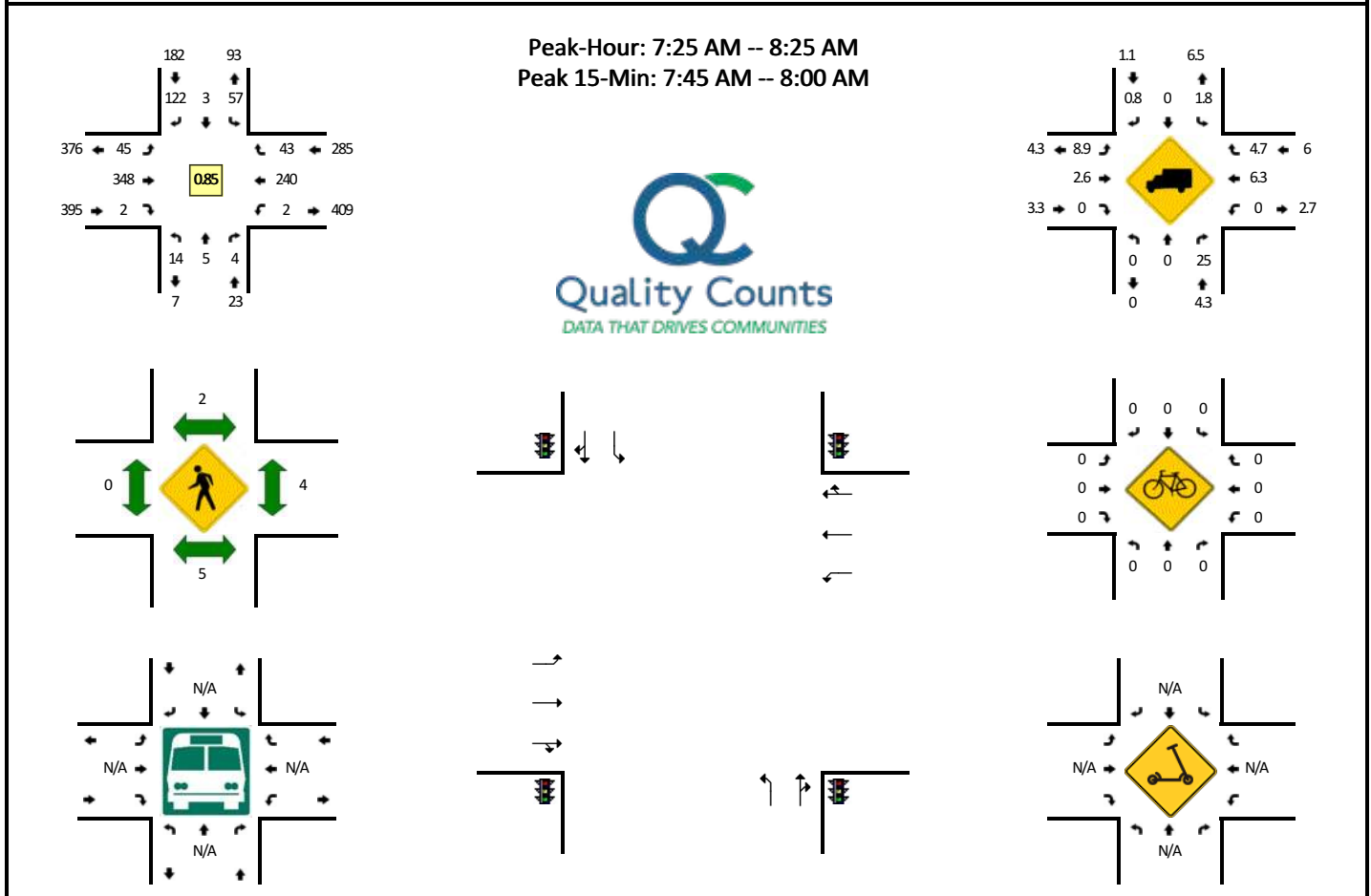
QC JOB #: 16019612
DATE: Tue, Dec 6 2022



Comments:

LOCATION: SE 176th Ave -- SE 34th St
CITY/STATE: Vancouver, WA

QC JOB #: 16019609
DATE: Tue, Dec 6 2022

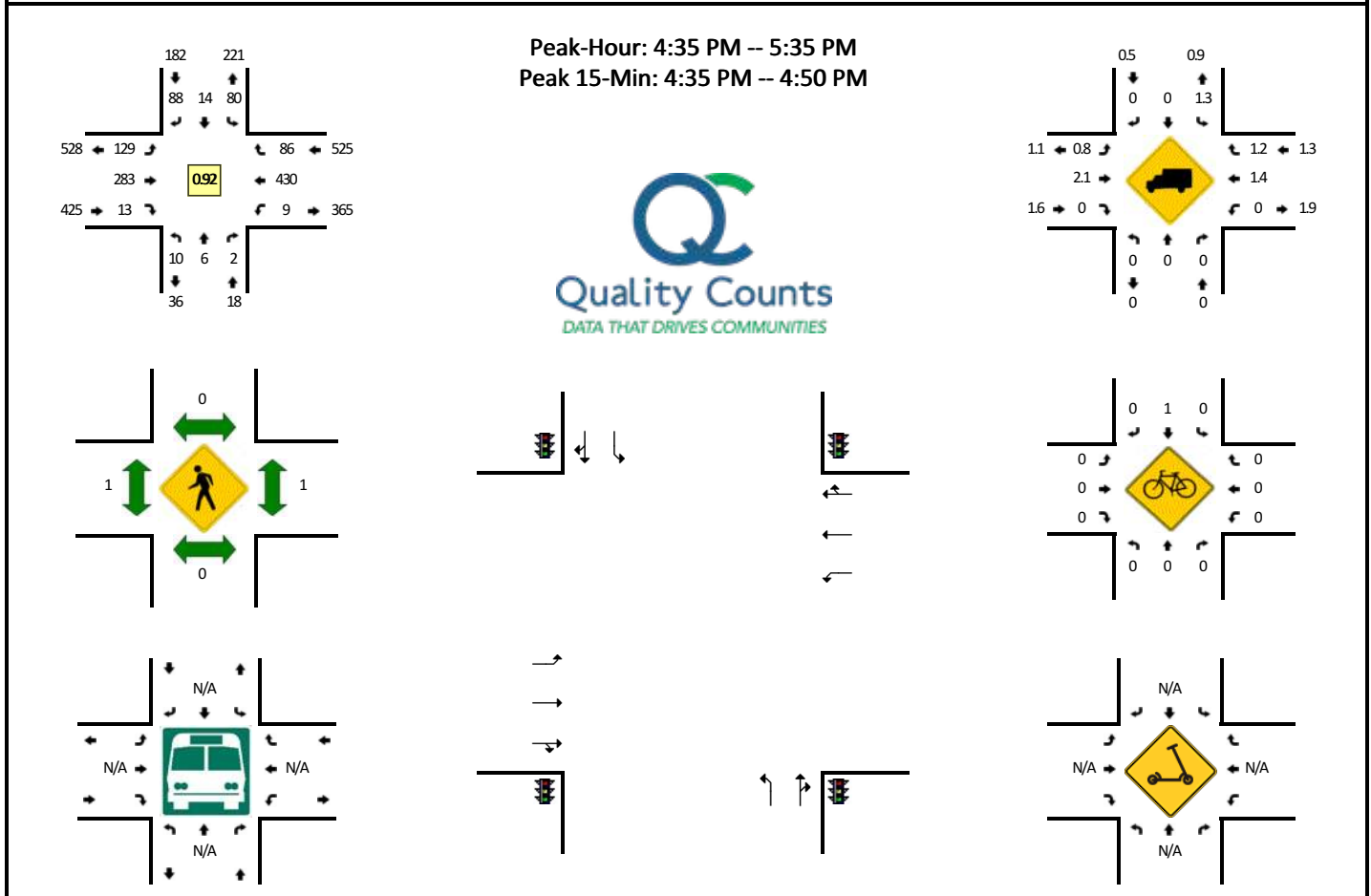


5-Min Count Period Beginning At	SE 176th Ave (Northbound)				SE 176th Ave (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	1	0	0	3	0	6	0	2	15	0	0	1	10	1	0	40	
7:05 AM	3	2	1	0	2	0	10	0	4	20	0	0	0	12	2	0	56	
7:10 AM	2	2	0	0	1	0	11	0	2	15	0	0	0	11	1	0	45	
7:15 AM	2	2	0	0	1	0	7	0	3	18	0	0	0	18	3	0	54	
7:20 AM	1	1	0	0	0	0	8	0	4	16	1	0	0	16	3	0	50	
7:25 AM	1	0	0	0	2	0	10	0	5	25	0	0	0	20	2	0	65	
7:30 AM	1	0	1	0	3	0	10	0	3	20	0	0	0	24	4	0	66	
7:35 AM	2	1	0	0	4	0	10	0	1	23	0	0	0	19	4	0	64	
7:40 AM	2	0	1	0	3	0	13	0	3	41	0	0	0	14	4	0	81	
7:45 AM	0	0	1	0	7	0	14	0	9	35	0	0	0	20	4	0	90	
7:50 AM	2	1	0	0	6	1	8	0	4	37	1	0	0	14	3	0	77	
7:55 AM	1	1	1	0	5	0	10	0	5	42	0	0	2	24	3	0	94	782
8:00 AM	1	0	0	0	3	1	12	0	6	28	0	0	0	21	2	0	74	816
8:05 AM	1	0	0	0	4	0	8	0	3	23	1	0	0	18	3	0	61	821
8:10 AM	1	1	0	0	2	1	10	0	2	27	0	0	0	30	6	0	80	856
8:15 AM	0	0	0	0	10	0	6	0	2	26	0	0	0	22	3	0	69	871
8:20 AM	2	1	0	0	8	0	11	0	2	21	0	0	0	14	5	0	64	885
8:25 AM	2	1	0	0	1	0	8	0	1	27	0	0	0	13	3	0	56	876
8:30 AM	0	0	0	0	7	0	8	0	2	27	0	0	0	10	6	0	60	870
8:35 AM	3	0	0	0	0	0	10	0	2	20	1	0	1	16	3	0	56	862
8:40 AM	0	0	0	0	8	1	20	0	2	21	2	0	0	20	7	0	81	862
8:45 AM	1	1	0	0	3	0	5	0	3	25	1	0	0	14	2	0	55	827
8:50 AM	3	0	0	0	5	1	8	0	4	35	0	0	0	24	5	0	85	835
8:55 AM	0	2	0	0	6	0	4	0	4	23	0	0	1	12	5	0	57	798
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	8	8	0	72	4	128	0	72	456	4	0	8	232	40	0	1044	
Heavy Trucks	0	0	0	0	4	0	0	0	0	8	0	0	0	8	4	0	24	
Buses																		
Pedestrians		8				4				0				4			16	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: SE 176th Ave -- SE 34th St
CITY/STATE: Vancouver, WA

QC JOB #: 16019610
DATE: Tue, Dec 6 2022

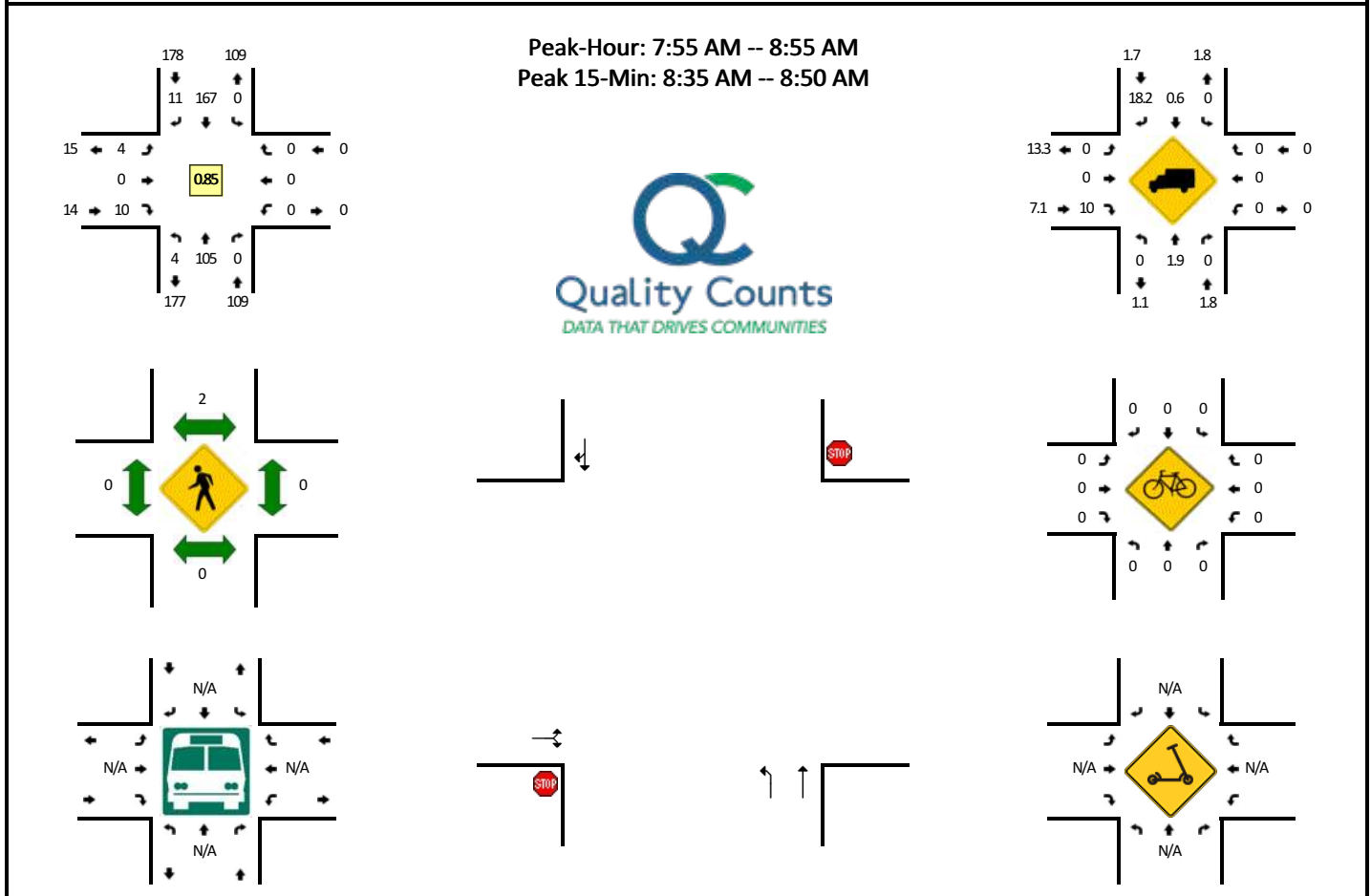


5-Min Count Period Beginning At	SE 176th Ave (Northbound)				SE 176th Ave (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	0	0	11	1	4	0	12	19	0	0	0	46	9	0	103	
4:05 PM	5	2	0	0	6	2	9	0	6	13	4	0	0	36	11	0	94	
4:10 PM	3	0	0	0	7	2	7	0	5	27	2	0	1	45	11	0	110	
4:15 PM	0	1	0	0	9	0	4	0	6	17	0	0	1	29	8	0	75	
4:20 PM	0	1	0	0	7	0	3	0	13	25	0	0	0	29	7	0	85	
4:25 PM	1	0	0	0	7	0	4	0	10	25	0	0	0	33	7	0	87	
4:30 PM	1	0	0	0	6	2	5	0	11	22	1	0	0	18	11	0	77	
4:35 PM	1	0	0	0	7	0	10	0	6	26	1	0	1	51	9	0	112	
4:40 PM	0	1	0	0	8	1	11	0	11	19	0	0	0	46	10	0	107	
4:45 PM	1	0	0	0	5	2	4	0	9	33	2	0	0	36	3	0	95	
4:50 PM	1	2	0	0	5	2	14	0	11	24	2	0	0	32	9	0	102	
4:55 PM	1	0	2	0	5	1	6	0	8	19	2	0	2	36	9	0	91	1138
5:00 PM	1	0	0	0	7	0	9	0	14	24	1	0	0	51	5	0	112	1147
5:05 PM	0	0	0	0	1	1	5	0	9	26	0	0	1	31	8	0	82	1135
5:10 PM	0	1	0	0	19	3	3	0	7	22	1	0	2	37	5	0	100	1125
5:15 PM	0	0	0	0	5	1	3	0	10	24	1	0	2	29	5	0	80	1130
5:20 PM	3	0	0	0	5	2	5	0	17	19	2	0	1	25	8	0	87	1132
5:25 PM	1	1	0	0	5	0	10	0	13	25	1	0	0	33	8	0	97	1142
5:30 PM	1	1	0	0	8	1	8	0	14	22	0	0	0	23	7	0	85	1150
5:35 PM	2	2	0	0	4	1	13	0	14	24	1	0	0	29	8	0	98	1136
5:40 PM	1	2	1	0	11	1	7	0	9	21	3	0	0	25	2	0	83	1112
5:45 PM	4	0	0	0	4	2	6	0	11	26	4	0	0	21	1	0	79	1096
5:50 PM	1	0	0	0	6	2	3	0	14	12	0	0	0	22	9	0	69	1063
5:55 PM	0	1	0	0	7	2	7	0	5	14	1	0	0	15	7	0	59	1031
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	4	0	0	80	12	100	0	104	312	12	0	4	532	88	0	1256	
Heavy Trucks	0	0	0	0	0	0	0	0	0	8	0	0	0	4	0	0	12	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 176th Ave -- SE 29th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050509
DATE: Tue, Jan 10 2023

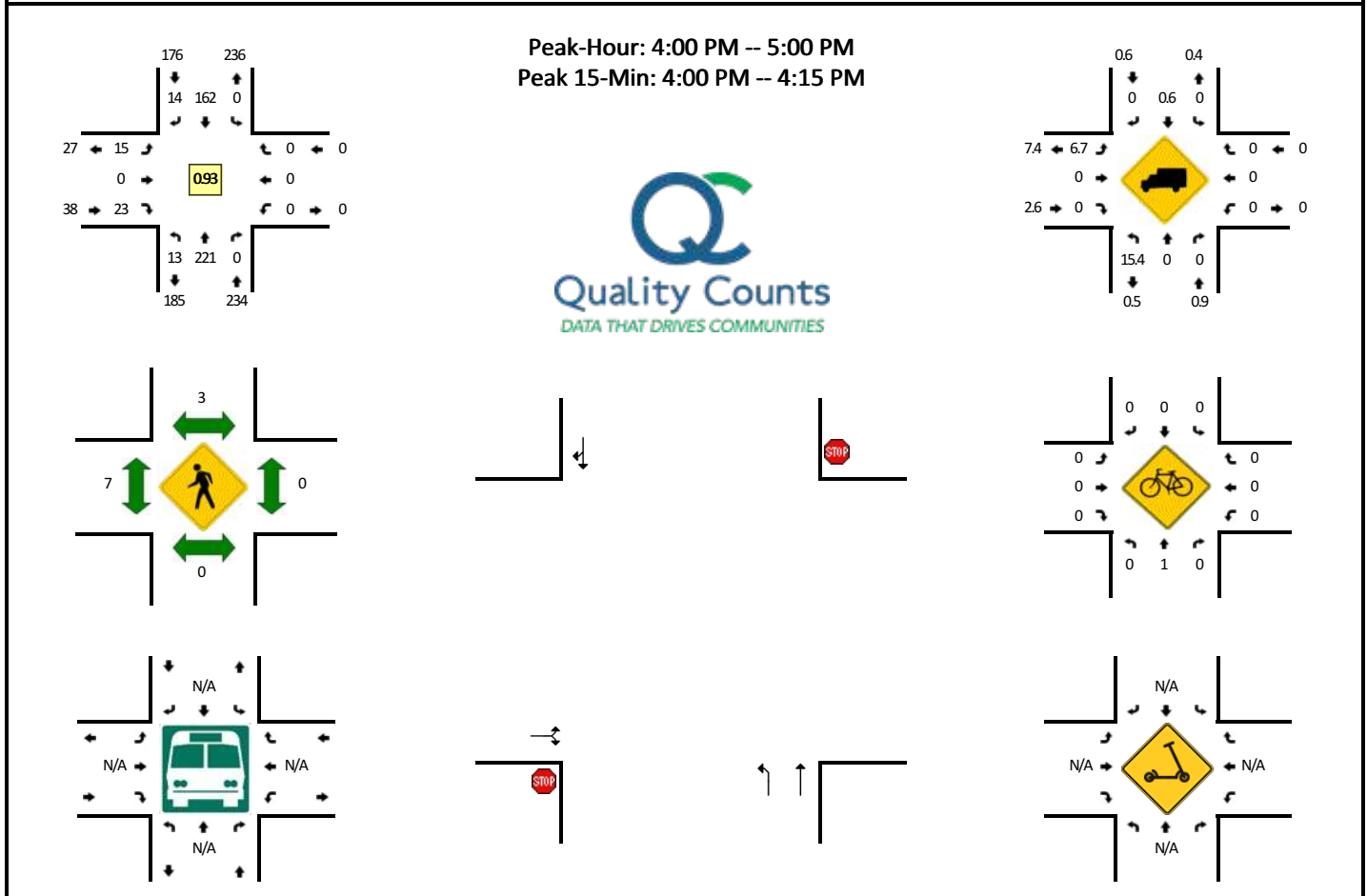


5-Min Count Period Beginning At	SE 176th Ave (Northbound)				SE 176th Ave (Southbound)				SE 29th St (Eastbound)				SE 29th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	6	0	0	0	12	0	0	1	0	0	0	0	0	0	0	20	
7:05 AM	0	3	0	0	0	12	1	0	0	0	0	0	0	0	0	0	16	
7:10 AM	1	9	0	0	0	11	3	0	3	0	1	0	0	0	0	0	28	
7:15 AM	0	7	0	0	0	11	1	0	0	0	0	0	0	0	0	0	19	
7:20 AM	1	7	0	0	0	13	0	0	0	0	0	0	0	0	0	0	21	
7:25 AM	0	8	0	0	0	3	1	0	2	0	0	0	0	0	0	0	14	
7:30 AM	0	4	0	0	0	8	1	0	1	0	0	0	0	0	0	0	14	
7:35 AM	0	7	0	0	0	12	0	0	1	0	0	0	0	0	0	0	20	
7:40 AM	0	6	0	0	0	9	1	0	0	0	2	0	0	0	0	0	18	
7:45 AM	0	4	0	0	0	6	0	0	2	0	1	0	0	0	0	0	13	
7:50 AM	1	7	0	0	0	7	0	0	2	0	0	0	0	0	0	0	17	
7:55 AM	0	7	0	0	0	17	2	0	0	0	1	0	0	0	0	0	27	227
8:00 AM	0	11	0	0	0	13	2	0	0	0	1	0	0	0	0	0	27	234
8:05 AM	0	8	0	0	0	13	1	0	0	0	2	0	0	0	0	0	24	242
8:10 AM	0	6	0	0	0	14	0	0	1	0	0	0	0	0	0	0	21	235
8:15 AM	0	9	0	0	0	14	1	0	0	0	0	0	0	0	0	0	24	240
8:20 AM	0	11	0	0	0	12	0	0	0	0	1	0	0	0	0	0	24	243
8:25 AM	1	7	0	0	0	13	0	0	1	0	0	0	0	0	0	0	22	251
8:30 AM	0	6	0	0	0	12	1	0	0	0	0	0	0	0	0	0	19	256
8:35 AM	0	9	0	0	0	14	0	0	1	0	1	0	0	0	0	0	25	261
8:40 AM	1	13	0	0	0	16	2	0	1	0	2	0	0	0	0	0	35	278
8:45 AM	1	12	0	0	0	12	2	0	0	0	2	0	0	0	0	0	29	294
8:50 AM	1	6	0	0	0	17	0	0	0	0	0	0	0	0	0	0	24	301
8:55 AM	1	6	0	0	0	8	0	0	0	0	3	0	0	0	0	0	18	292
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	136	0	0	0	168	16	0	8	0	20	0	0	0	0	0	356	
Heavy Trucks	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	8	
Buses																		
Pedestrians		0				4				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 176th Ave -- SE 29th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050510
DATE: Tue, Jan 10 2023

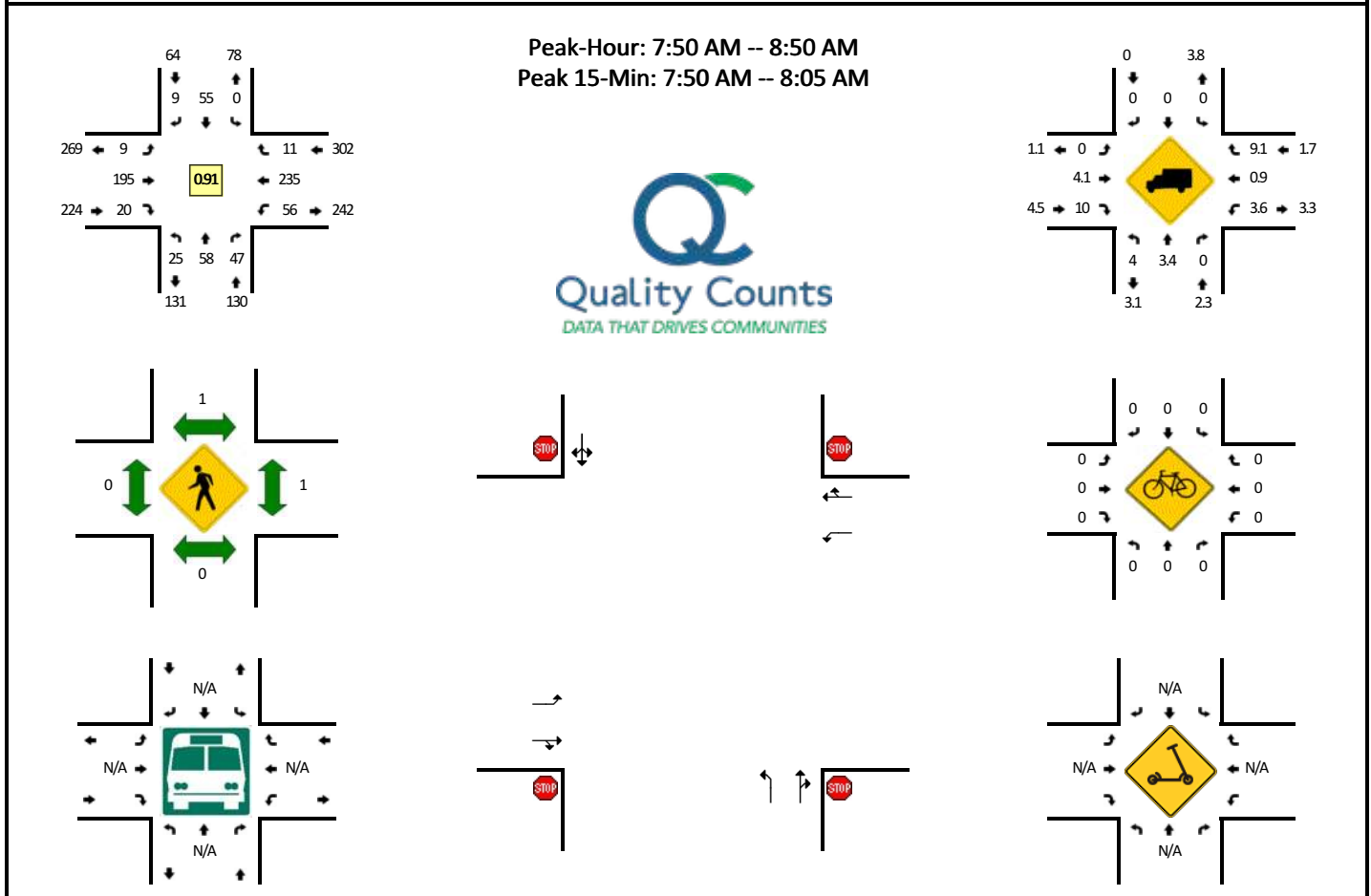


5-Min Count Period Beginning At	SE 176th Ave (Northbound)				SE 176th Ave (Southbound)				SE 29th St (Eastbound)				SE 29th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	21	0	0	0	11	0	0	4	0	2	0	0	0	0	0	40	
4:05 PM	0	21	0	0	0	14	4	0	2	0	2	0	0	0	0	0	43	
4:10 PM	0	19	0	0	0	12	3	0	0	0	3	0	0	0	0	0	37	
4:15 PM	2	18	0	0	0	12	2	0	1	0	1	0	0	0	0	0	36	
4:20 PM	2	18	0	0	0	11	1	0	1	0	1	0	0	0	0	0	34	
4:25 PM	0	18	0	0	0	10	1	0	2	0	0	0	0	0	0	0	31	
4:30 PM	1	24	0	0	0	17	3	0	1	0	3	0	0	0	0	0	49	
4:35 PM	3	15	0	0	0	15	0	0	1	0	4	0	0	0	0	0	38	
4:40 PM	1	11	0	0	0	12	0	0	1	0	3	0	0	0	0	0	28	
4:45 PM	1	22	0	0	0	17	0	0	0	0	4	0	0	0	0	0	44	
4:50 PM	1	14	0	0	0	20	0	0	1	0	0	0	0	0	0	0	36	
4:55 PM	0	20	0	0	0	11	0	0	1	0	0	0	0	0	0	0	32	448
5:00 PM	0	19	0	0	0	13	3	0	2	0	0	0	0	0	0	0	37	445
5:05 PM	0	22	0	0	0	13	1	0	1	0	1	0	0	0	0	0	38	440
5:10 PM	2	12	0	0	0	7	1	0	1	0	1	0	0	0	0	0	24	427
5:15 PM	2	15	0	0	0	10	2	0	2	0	0	0	0	0	0	0	31	422
5:20 PM	1	14	0	0	0	15	2	0	2	0	1	0	0	0	0	0	35	423
5:25 PM	0	18	0	0	0	10	3	0	1	0	1	0	0	0	0	0	33	425
5:30 PM	0	12	0	0	0	12	2	0	3	0	1	0	0	0	0	0	30	406
5:35 PM	0	16	0	0	0	15	1	0	0	0	0	0	0	0	0	0	32	400
5:40 PM	0	15	0	0	0	12	1	0	4	0	2	0	0	0	0	0	34	406
5:45 PM	0	20	0	0	0	10	0	0	1	0	1	0	0	0	0	0	32	394
5:50 PM	0	16	0	0	0	12	1	0	3	0	1	0	0	0	0	0	33	391
5:55 PM	0	19	0	0	0	12	2	0	0	0	0	0	0	0	0	0	33	392
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	244	0	0	0	148	28	0	24	0	28	0	0	0	0	0	480	
Heavy Trucks	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	
Buses																		
Pedestrians	0				0				4				0				4	
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4	
Scooters																		

Comments:

LOCATION: SE 176th Ave -- SE 20th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050507
DATE: Tue, Jan 10 2023

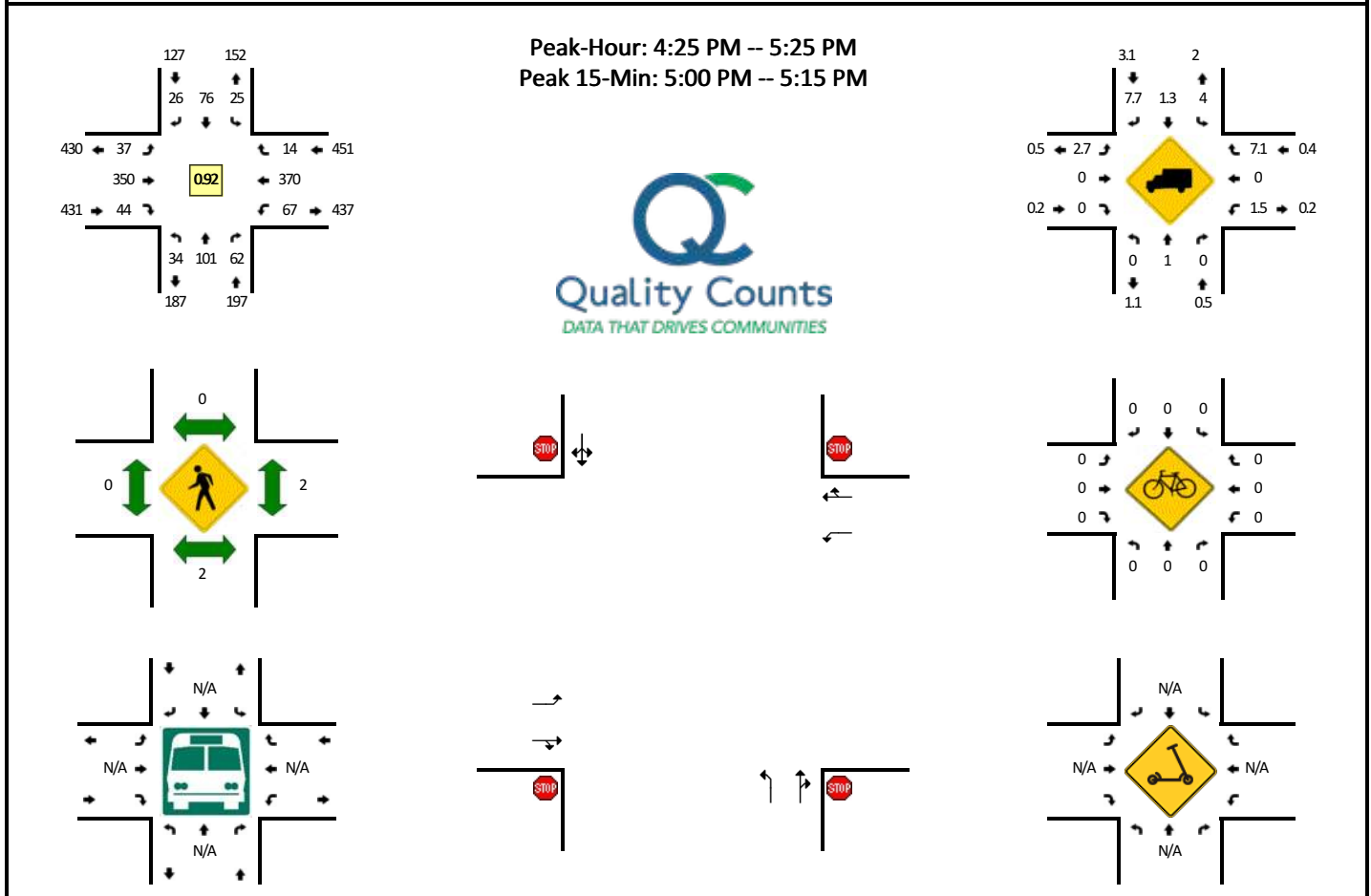


5-Min Count Period Beginning At	SE 176th Ave (Northbound)				SE 176th Ave (Southbound)				SE 20th St (Eastbound)				SE 20th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	2	3	0	0	4	3	0	1	12	1	0	3	8	0	0	38	
7:05 AM	0	0	2	0	1	3	3	0	1	11	2	0	3	10	2	0	38	
7:10 AM	1	2	3	0	0	4	3	0	0	14	1	0	3	14	0	0	45	
7:15 AM	0	2	2	0	0	4	1	0	0	8	1	0	5	12	1	0	36	
7:20 AM	1	2	0	0	0	5	2	0	0	19	1	0	1	18	0	0	49	
7:25 AM	1	4	6	0	0	4	0	0	0	17	2	0	5	10	0	0	49	
7:30 AM	1	2	3	0	0	4	1	0	1	11	1	0	5	18	2	0	49	
7:35 AM	0	6	6	0	0	7	1	0	0	15	0	0	4	8	0	0	47	
7:40 AM	3	3	6	0	1	5	3	0	1	21	1	0	5	22	3	0	74	
7:45 AM	1	1	4	0	1	5	1	0	0	13	0	0	4	15	1	0	46	
7:50 AM	1	7	4	0	0	3	1	0	0	27	3	0	7	19	1	0	73	
7:55 AM	5	5	4	0	0	10	0	0	1	13	1	0	5	18	2	0	64	608
8:00 AM	4	5	1	0	0	6	0	0	0	21	0	0	6	17	1	0	61	631
8:05 AM	1	3	5	0	0	5	2	0	0	13	4	0	1	27	1	0	62	655
8:10 AM	0	1	6	0	0	5	1	0	0	16	1	0	6	18	1	0	55	665
8:15 AM	1	6	2	0	0	2	0	0	1	8	2	0	3	22	1	0	48	677
8:20 AM	3	4	4	0	0	3	2	0	2	13	1	0	6	24	1	0	63	691
8:25 AM	1	7	4	0	0	6	0	0	1	14	2	0	3	20	1	0	59	701
8:30 AM	0	4	5	0	0	4	1	0	2	20	3	0	1	17	1	0	58	710
8:35 AM	2	4	2	0	0	2	1	0	1	18	0	0	3	17	1	0	51	714
8:40 AM	2	6	5	0	0	6	1	0	1	13	2	0	7	15	0	0	58	698
8:45 AM	5	6	5	0	0	3	0	0	0	19	1	0	8	21	0	0	68	720
8:50 AM	3	3	4	0	1	7	2	0	2	12	1	0	3	20	1	0	59	706
8:55 AM	0	2	2	0	1	3	0	0	1	10	4	0	0	22	1	0	46	688
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	68	36	0	0	76	4	0	4	244	16	0	72	216	16	0	792	
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	8	
Buses																		
Pedestrians		0				0				0				4			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: SE 176th Ave -- SE 20th St
CITY/STATE: Vancouver, WA

QC JOB #: 16050508
DATE: Tue, Jan 10 2023

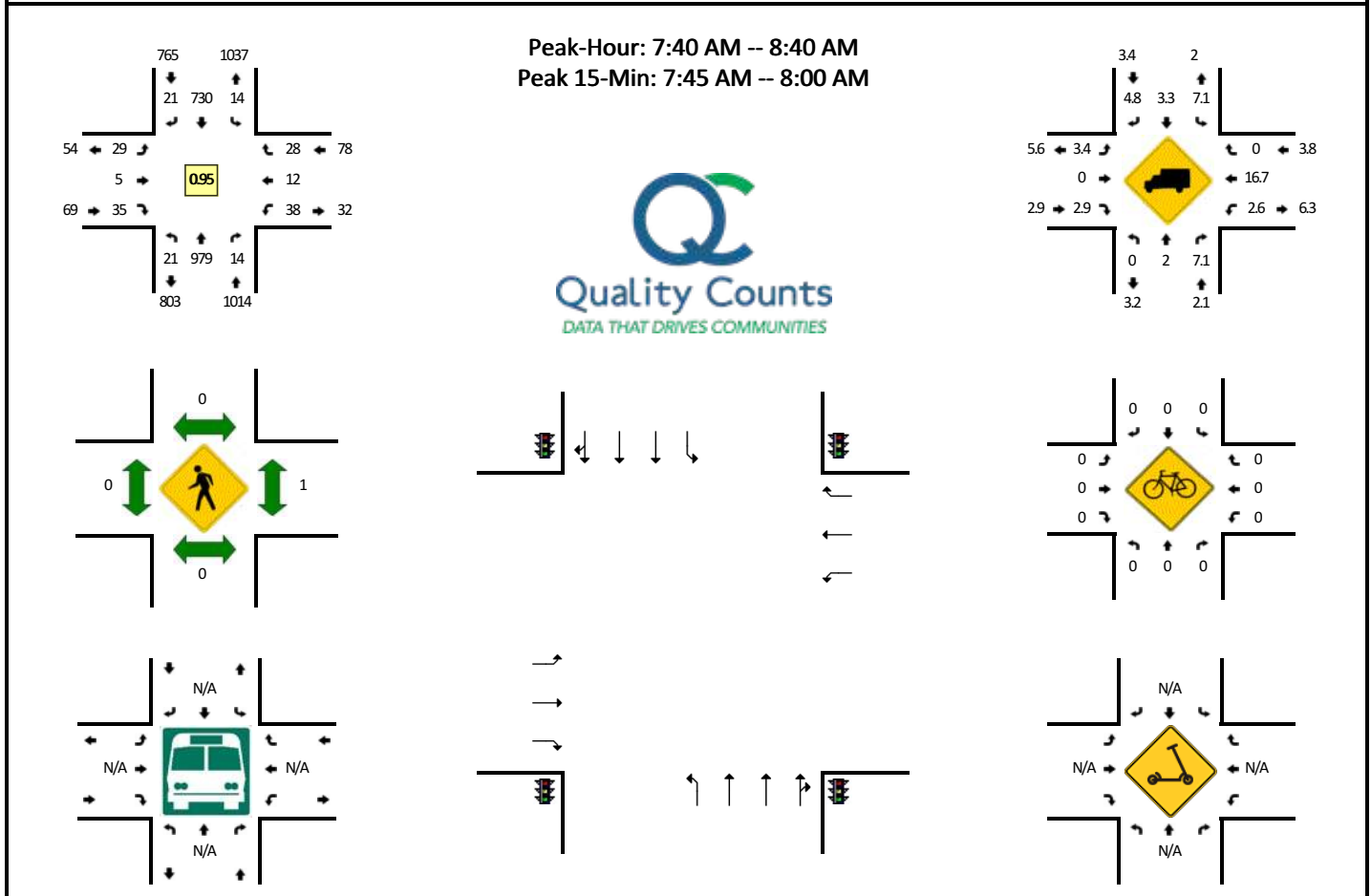


5-Min Count Period Beginning At	SE 176th Ave (Northbound)				SE 176th Ave (Southbound)				SE 20th St (Eastbound)				SE 20th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	6	5	0	3	10	2	0	4	31	0	0	3	32	1	0	99	
4:05 PM	2	9	8	0	1	11	1	0	2	35	1	0	6	37	1	0	114	
4:10 PM	3	3	9	0	4	3	2	0	1	30	2	0	2	33	1	0	93	
4:15 PM	2	5	7	0	0	8	2	0	5	18	2	0	7	23	1	0	80	
4:20 PM	4	3	10	0	0	5	1	0	2	23	2	0	1	27	0	0	78	
4:25 PM	2	3	3	0	1	6	5	0	2	32	5	0	4	36	1	0	100	
4:30 PM	4	12	9	0	2	6	3	0	7	20	2	0	8	30	0	0	103	
4:35 PM	0	9	5	0	2	7	2	0	2	20	3	0	3	35	1	0	89	
4:40 PM	2	10	3	0	3	8	1	0	4	30	2	0	5	24	3	0	95	
4:45 PM	4	8	7	0	2	3	3	0	2	33	6	0	4	21	0	0	93	
4:50 PM	3	10	5	0	1	7	2	0	4	26	4	0	4	38	1	0	105	
4:55 PM	9	12	3	0	3	4	3	0	3	31	2	0	5	29	0	0	104	1153
5:00 PM	3	10	9	0	0	6	0	0	5	23	7	0	7	36	0	0	106	1160
5:05 PM	2	8	5	0	3	13	1	0	1	34	6	0	10	32	2	0	117	1163
5:10 PM	3	6	4	0	2	3	3	0	2	36	3	0	6	35	2	0	105	1175
5:15 PM	2	5	3	0	3	8	1	0	2	34	2	0	5	27	1	0	93	1188
5:20 PM	0	8	6	0	3	5	2	0	3	31	2	0	6	27	3	0	96	1206
5:25 PM	2	11	4	0	1	9	4	0	3	21	2	0	5	29	1	0	92	1198
5:30 PM	2	5	4	0	1	7	1	0	1	26	2	0	5	27	1	0	82	1177
5:35 PM	1	2	5	0	2	8	1	0	1	19	1	0	9	22	2	0	73	1161
5:40 PM	1	7	9	0	2	3	3	0	6	25	2	0	7	21	2	0	88	1154
5:45 PM	2	5	9	0	2	2	2	0	2	28	2	0	4	22	1	0	81	1142
5:50 PM	3	8	8	0	0	4	0	0	2	19	3	0	4	28	1	0	80	1117
5:55 PM	2	6	11	0	1	8	2	0	3	15	2	0	0	22	2	0	74	1087
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	32	96	72	0	20	88	16	0	32	372	64	0	92	412	16	0	1312	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: SE 164th Ave -- SE 29th St
CITY/STATE: Vancouver, WA

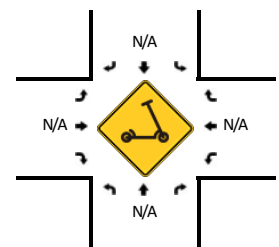
QC JOB #: 16050511
DATE: Tue, Jan 10 2023



5-Min Count Period Beginning At	SE 164th Ave (Northbound)				SE 164th Ave (Southbound)				SE 29th St (Eastbound)				SE 29th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	25	0	0	0	54	1	0	0	1	0	0	5	1	2	0	92	
7:05 AM	1	26	0	0	1	71	2	0	2	0	1	0	3	0	2	0	109	
7:10 AM	0	39	0	0	0	46	1	1	0	0	4	0	10	0	4	0	105	
7:15 AM	2	50	2	0	1	59	1	0	0	1	1	0	5	1	1	0	124	
7:20 AM	0	41	1	0	2	60	1	1	1	0	1	0	7	0	1	0	116	
7:25 AM	1	60	1	0	3	67	5	0	0	0	0	0	3	2	1	0	143	
7:30 AM	1	67	3	0	1	47	3	0	1	0	3	0	2	2	2	0	132	
7:35 AM	1	55	0	0	0	52	2	0	5	0	3	0	1	0	1	0	120	
7:40 AM	2	77	1	0	1	57	2	0	3	0	7	0	5	1	5	0	161	
7:45 AM	1	89	0	0	2	59	1	0	1	2	2	0	3	1	3	0	164	
7:50 AM	2	95	3	0	1	50	2	0	5	0	4	0	4	0	2	0	168	
7:55 AM	3	94	0	0	1	64	4	0	1	0	2	0	3	2	1	0	175	1609
8:00 AM	3	90	1	0	1	45	1	0	1	1	0	0	2	1	3	0	149	1666
8:05 AM	2	63	2	0	1	78	1	0	5	0	4	0	2	0	2	0	160	1717
8:10 AM	2	98	2	0	1	48	1	1	2	1	4	0	2	1	5	0	168	1780
8:15 AM	1	57	2	0	2	70	0	0	2	1	2	0	1	1	4	0	143	1799
8:20 AM	0	95	1	0	0	62	1	0	3	0	1	0	4	2	1	0	170	1853
8:25 AM	3	82	0	0	2	71	1	0	2	0	3	0	2	2	0	0	168	1878
8:30 AM	1	69	2	0	0	48	3	0	2	0	3	0	7	1	1	0	137	1883
8:35 AM	1	70	0	0	1	78	4	0	2	0	3	0	3	0	1	0	163	1926
8:40 AM	2	71	1	0	0	56	1	0	1	1	2	0	3	2	1	0	141	1906
8:45 AM	4	87	1	0	0	67	3	0	2	1	0	0	3	1	1	0	170	1912
8:50 AM	2	91	0	0	0	46	2	0	2	2	1	0	3	1	3	0	153	1897
8:55 AM	3	73	0	0	0	60	0	0	2	1	1	0	2	0	3	0	145	1867
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	1112	12	0	16	692	28	0	28	8	32	0	40	12	24	0	2028	
Heavy Trucks	0	8	0	0	0	28	0	0	0	0	0	0	0	0	0	0	36	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

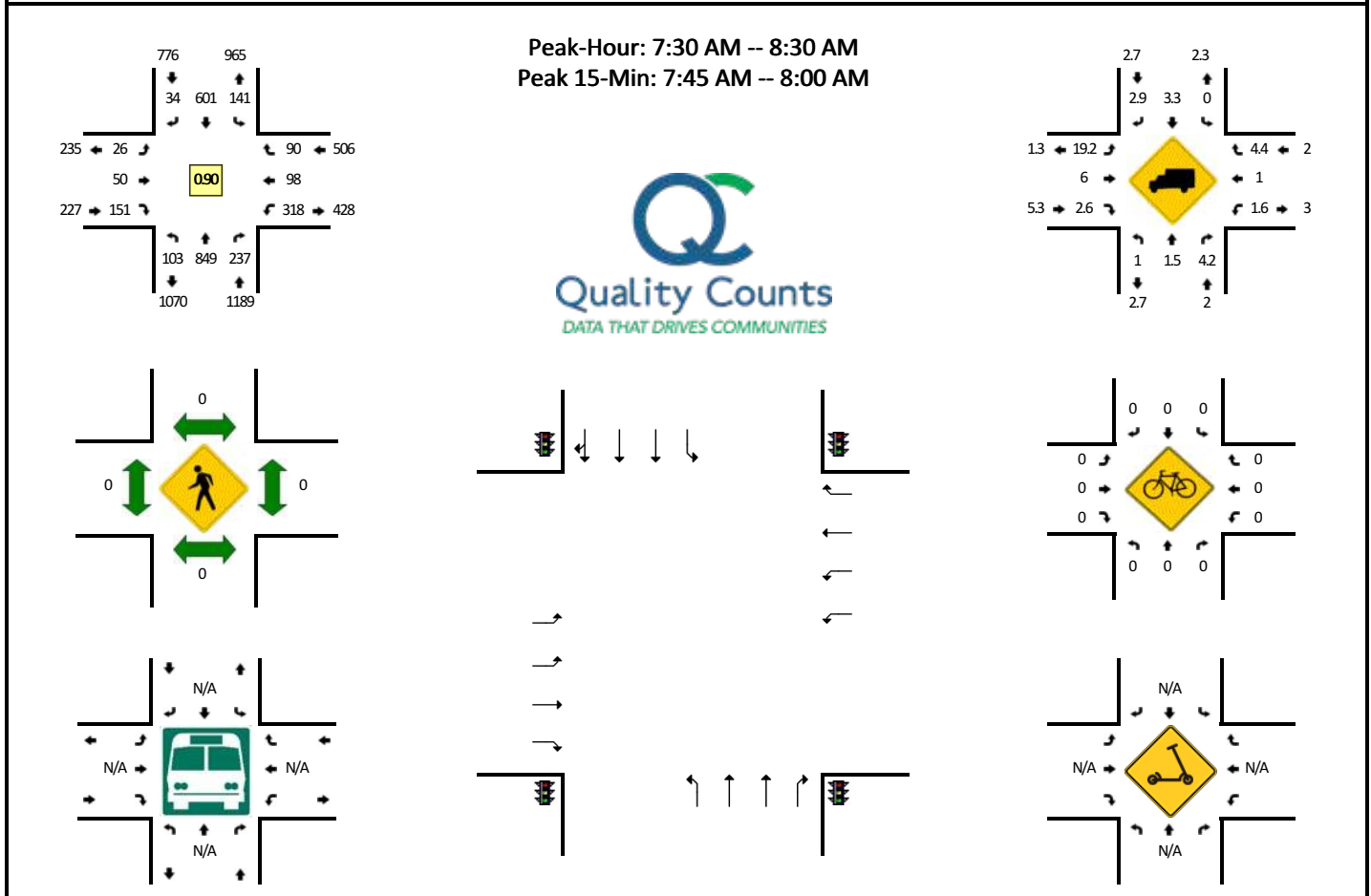
QC JOB #: 16050512
DATE: Tue, Jan 10 2023



Comments:

LOCATION: SE 164th Ave -- SE 34th St
CITY/STATE: Vancouver, WA

QC JOB #: 16019601
DATE: Tue, Dec 6 2022

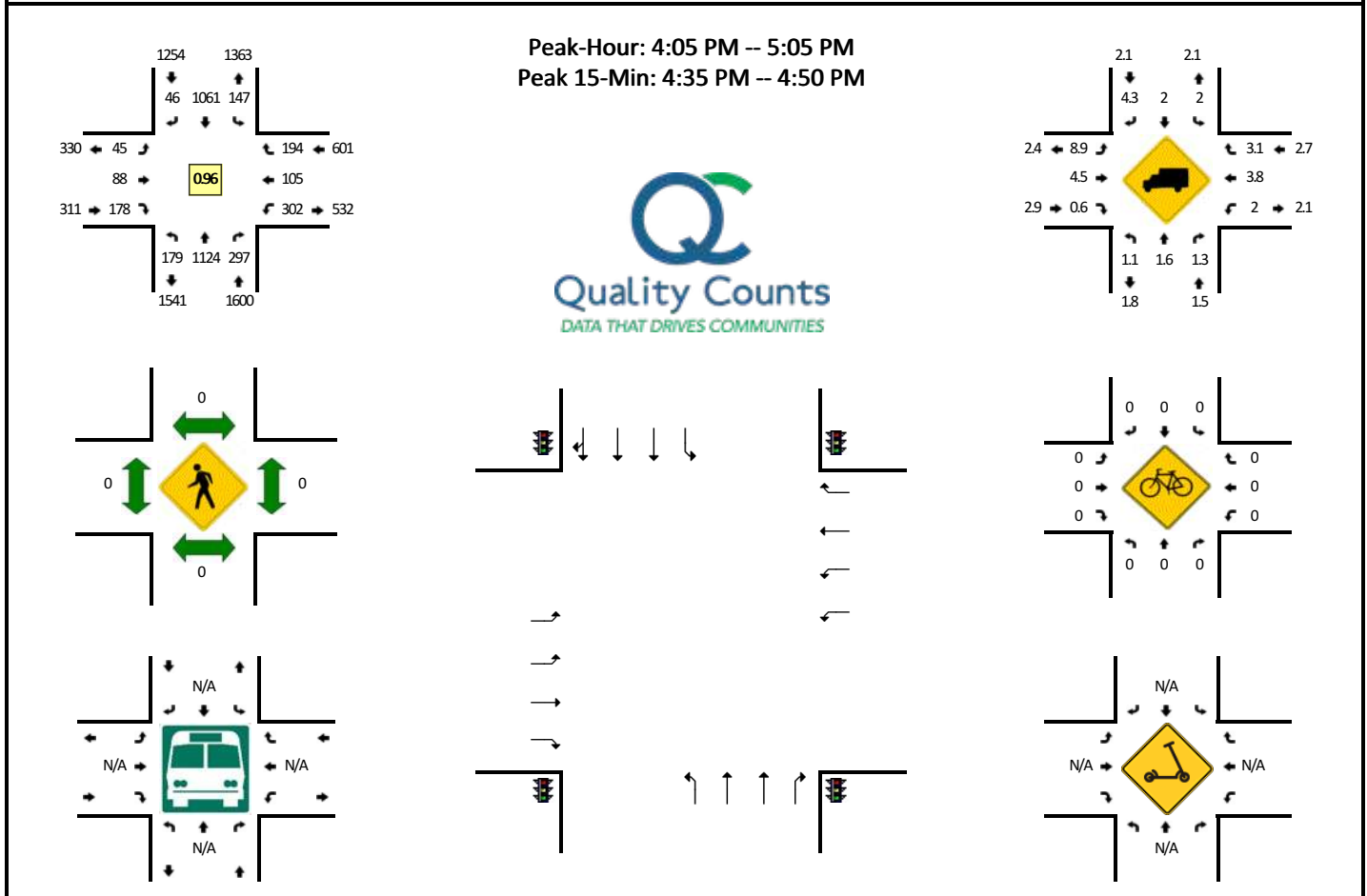


5-Min Count Period Beginning At	SE 164th Ave (Northbound)				SE 164th Ave (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	6	49	8	0	6	31	1	0	3	2	8	0	20	4	1	0	139	
7:05 AM	7	44	10	0	9	46	3	0	1	3	13	0	16	3	4	0	159	
7:10 AM	5	31	7	0	3	48	3	0	0	3	15	0	23	7	2	0	147	
7:15 AM	4	50	18	0	9	46	2	0	4	2	11	0	27	4	6	0	183	
7:20 AM	9	54	11	0	5	41	1	0	0	4	11	0	22	11	5	0	174	
7:25 AM	2	65	12	0	10	58	2	0	3	5	8	0	26	5	8	0	204	
7:30 AM	10	43	10	0	8	47	1	0	1	4	14	0	33	20	7	0	198	
7:35 AM	5	68	21	0	13	59	4	0	2	2	8	0	22	5	10	0	219	
7:40 AM	9	54	19	0	9	58	3	0	3	5	12	0	32	8	5	0	217	
7:45 AM	12	86	27	0	19	57	6	0	1	4	6	0	24	1	9	0	252	
7:50 AM	8	81	23	0	10	46	3	0	2	8	13	0	31	11	3	0	239	
7:55 AM	7	95	24	0	19	55	4	0	0	6	15	0	24	8	4	0	261	2392
8:00 AM	8	56	22	0	13	32	0	0	4	2	9	0	27	10	13	0	196	2449
8:05 AM	8	73	16	0	14	68	3	0	0	4	5	0	32	11	7	0	241	2531
8:10 AM	11	58	25	0	4	34	1	0	3	6	15	0	25	6	9	0	197	2581
8:15 AM	10	93	17	0	14	50	5	0	2	1	19	0	16	7	12	0	246	2644
8:20 AM	9	62	15	0	8	39	3	0	5	4	24	0	30	6	7	0	212	2682
8:25 AM	6	80	18	0	10	56	1	0	3	4	11	0	22	5	4	0	220	2698
8:30 AM	10	50	9	0	11	46	4	0	4	4	12	0	23	1	9	0	183	2683
8:35 AM	5	63	12	0	14	60	1	0	1	4	10	0	20	4	6	0	200	2664
8:40 AM	8	70	16	0	7	47	2	0	2	7	9	0	29	4	12	0	213	2660
8:45 AM	4	68	18	0	15	67	4	0	2	0	8	0	33	4	6	0	229	2637
8:50 AM	9	69	22	0	11	38	0	0	2	8	16	0	17	14	9	0	215	2613
8:55 AM	8	83	21	0	9	57	2	0	2	4	8	0	26	5	4	0	229	2581
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	108	1048	296	0	192	632	52	0	12	72	136	0	316	80	64	0	3008	
Heavy Trucks	0	8	0	0	0	24	4	0	4	8	0	0	12	0	0	0	60	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles																		
Scoters																		

Comments:

LOCATION: SE 164th Ave -- SE 34th St
CITY/STATE: Vancouver, WA

QC JOB #: 16019602
DATE: Tue, Dec 6 2022



5-Min Count Period Beginning At	SE 164th Ave (Northbound)				SE 164th Ave (Southbound)				SE 34th St (Eastbound)				SE 34th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	11	81	26	0	10	70	7	0	5	3	9	0	31	10	11	0	274	
4:05 PM	18	116	26	0	6	79	3	0	3	6	24	0	24	8	15	0	328	
4:10 PM	14	84	23	0	16	94	3	0	1	8	10	0	40	10	18	0	321	
4:15 PM	19	104	31	0	8	89	4	0	1	3	14	0	13	5	15	0	306	
4:20 PM	10	73	31	0	16	106	2	0	3	7	11	0	24	7	13	0	303	
4:25 PM	17	125	23	0	14	75	6	0	1	1	17	0	19	9	12	0	319	
4:30 PM	12	81	26	0	13	80	3	0	3	7	9	0	28	3	13	0	278	
4:35 PM	18	105	22	0	5	84	5	0	6	10	20	0	24	11	13	0	323	
4:40 PM	11	77	26	0	13	96	4	0	10	10	14	0	36	14	28	0	339	
4:45 PM	22	114	21	0	14	77	5	0	2	9	17	0	21	8	12	0	322	
4:50 PM	11	81	20	0	17	80	3	0	8	13	11	0	20	10	21	0	295	
4:55 PM	17	98	26	0	11	94	6	0	2	4	12	0	22	12	16	0	320	3728
5:00 PM	10	66	22	0	14	107	2	0	5	10	19	0	31	8	18	0	312	3766
5:05 PM	16	106	23	0	12	89	4	0	5	9	17	0	23	4	16	0	324	3762
5:10 PM	8	72	24	0	14	107	5	0	4	6	14	0	27	14	21	0	316	3757
5:15 PM	11	114	29	0	10	74	1	0	4	8	14	0	14	6	9	0	294	3745
5:20 PM	11	59	26	0	18	83	0	0	2	5	10	0	22	6	18	0	260	3702
5:25 PM	19	101	32	0	10	88	3	0	6	7	17	0	12	13	15	0	323	3706
5:30 PM	12	63	24	0	21	77	3	0	1	10	16	0	19	8	15	0	269	3697
5:35 PM	15	113	35	0	10	73	2	0	5	3	14	0	26	3	11	0	310	3684
5:40 PM	6	84	23	0	10	104	1	0	8	6	15	0	27	7	9	0	300	3645
5:45 PM	14	89	35	0	5	74	6	0	3	4	10	0	16	1	9	0	266	3589
5:50 PM	11	75	25	0	7	83	3	0	0	3	13	0	22	4	9	0	255	3549
5:55 PM	17	70	21	0	7	57	2	0	3	4	9	0	12	1	10	0	213	3442
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	204	1184	276	0	128	1028	56	0	72	116	204	0	324	132	212	0	3936	
Heavy Trucks	0	28	8		0	12	4		4	8	4		0	12	0		80	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

Appendix B WSDOT Crash Data

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or roadway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION		CITY	COUNTY	PRIMAARY CITY AVENUE	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	COMP DIR FROM REF PT	REFERENCE NAME	MILEPOST	A/B	SOURCE ONLY	REPORT NUMBER	DATE	TIME	TYPE	# IN	# AT	# VEN	# FDS	# BIKES	VEHICLE TYPE	SHIP	WEATHER	N	E	S	W	
ION	CITY	COUNTY	AVENUE	NUMBER	AVENUE	POINT	MI or FT	POINT	NAME	MILEPOST	A/B	SUSPENSE	NUMBER	DATE	TIME	TYPE	# IN	# AT	# VEN	# FDS	# BIKES	VEHICLE TYPE	SHIP	WEATHER	N	E	S	W	
City Street Clark	Vancouver	SE 15TH ST	O	0	SE 192ND AVE				No E748665				2:14 Possible Injury			1	0	1	0	0	0	Pasenger Car	At Intersect Clear or Pa Dry		Dry				
City Street Clark	Vancouver	SE 15TH ST	9900	SE 192ND AVE					No E755332				15:40 Possible Injury			3	0	2	0	0	0	Truck (Flat)Passenger / At Intersect Clear or Pa Dry		Dusk					
City Street Clark	Vancouver	SE 15TH ST	9900	SE 192ND AVE					No E794644				12/20/2000								0	Passenger / Passenger / At Intersect Clear or Pa Dry		Dusk					
City Street Clark	Vancouver	SE 16TH ST	O	0	SE 29TH ST				No E813314				16:4 Unknown					2	0	0	0	Pickup/Pan/Pickup Pan At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 16TH ST	2900			300 F	S	SE 29TH ST	No E634753				21:00 No Appare				0	0	1	0	0	Pickup-Pan/Truck or / Not at Intersect Clear or Pa Wet		Daylight					
City Street Clark	Vancouver	SE 16TH ST	2800			41 F	N	SE 29TH ST	No E790434				9:08 No Appare				0	0	1	0	0	Pickup-Pan/Truck or / Not at Intersect Clear or Pa Wet		Daylight					
City Street Clark	Vancouver	SE 16TH ST	O	0	SE 20TH ST				No E967588				19:17 No Appare				0	0	2	0	0	Pickup-Pan/Passenger / At Intersect Clear or Pa Dry	Standing	W/Dark-Str					
City Street Clark	Vancouver	SE 16TH ST	17500	SE 34TH ST					No E767777				18/20/2005				1	0	1	0	0	Pasenger Car	At Intersect Overcast	Wet	Daylight				
City Street Clark	Vancouver	SE 16TH ST	17500	SE 34TH ST					No E998165				9/6/2019				1	0	1	0	0	Pasenger Car	At Intersect Clear or Pa Dry		Daylight				
City Street Clark	Vancouver	SE 17TH ST	O	0	SE 192ND AVE				No E998164				5/7/2013				0	0	1	0	0	Passenger / Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	1498	SE 15TH ST					No EC52801				6/3/2022				1	0	3	0	0	Pickup/Pan/Pickup Pan At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 192ND	O	0	SE 15TH ST				No E880276				17/7/2019				0	0	2	0	0	Passenger / Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	O	0	SE 15TH ST				No AD70064				16:40 No Appare				0	0	2	0	0	Pickup-Pan/Passenger / At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 192ND	31	SE 15TH ST					No E998165				5/7/2013				0	0	1	0	0	Passenger / Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	O	0	SE 15TH ST				No E908184				4/4/2019				1	0	2	0	0	Passenger / Pickup/Pan At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	9900	SE 20TH ST					No E697125				10:45 No Appare				0	0	2	0	0	Pasenger / Passenger / At Intersect Overcast		Daylight					
City Street Clark	Vancouver	SE 192ND	2000	SE 20TH ST					No E849012				14:21 Possible Injury				1	0	2	0	0	Pasenger / Pickup/Pan At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	O	0	SE 20TH ST				No E423602				9:46 No Appare				0	0	2	0	0	Truck (Flat)Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	O	0	SE 20TH ST				No E995917				12:49 No Appare				0	0	1	0	0	Pasenger Car	At Intersect Clear	Dry	Daylight				
City Street Clark	Vancouver	SE 192ND	O	0	SE 34TH ST				No E944498				7:36 No Appare				0	0	2	0	0	Pickup/Pan/Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	O	0	SE 34TH ST				No E73455				16:18 Possible Injury				1	0	2	0	0	Pickup/Pan/Passenger / At Intersect Clear or Pa Dry	Wet	Daylight					
City Street Clark	Vancouver	SE 192ND AVE	SE 34TH ST						No E841694				9:23 Suspected				1	0	0	0	0	Passenger / Passenger / At Intersect Clear	Dry	Daylight					
City Street Clark	Vancouver	SE 192ND AVE	SE 34TH ST						No EC51178				4:00 No Appare				0	0	2	0	0	Passenger / Pickup/Pan At Intersect Overcast	Dry	Daylight					
City Street Clark	Vancouver	SE 192ND	1400			93 F	N	SE 15TH ST	No E988444				13:40 Possible Injury				1	0	3	0	0	Passenger / Passenger / At Intersect Clear or Pa Dry	Wet	Daylight					
City Street Clark	Vancouver	SE 192ND	1600			318 F	S	SE 15TH ST	No E998165				16:10 No Appare				0	0	2	0	0	Pickup/Pan/Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	2100			334 F	S	SE 20TH ST	No EC0318				11:18 Suspected				1	0	2	0	0	Truck - Do/Pickup/Pan/Not at Intersect Clear		Daylight					
City Street Clark	Vancouver	SE 192ND	2000			250 F	S	SE 20TH ST	No EC57243				13:59 No Appare				0	0	2	0	0	Pickup/Pan/Pickup Pan Intersection/Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 192ND	2000			54 F	SE	SE 20TH ST	No E762873				10:57 Possible Injury				2	0	0	0	0	Passenger / Passenger - Intersection Overcast		Daylight					
City Street Clark	Vancouver	SE 192ND	1900			162 F	N	SE 20TH ST	No E98424				14:52 No Appare				0	0	2	0	0	Pickup-Pan/Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	1900			114 F	N	SE 20TH ST	No E635440				12:40 No Appare				0	0	3	0	0	Truck (Flat)Pickup/Pan At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	1700			492 F	N	SE 20TH ST	No E841909				16:04 No Appare				0	0	2	0	0	Pickup/Pan/Pickup Pan Intersection Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	1600			44 F	N	SE 20TH ST	No E917443				5/3/2019				0	0	2	0	0	Passenger / Passenger - Not at Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	2000			137 F	S	SE 20TH ST	No E768601				4:52 No Appare				0	0	2	0	0	Pickup-Pan/Passenger / At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 192ND	2100			291 F	S	SE 20TH ST	No EC15456				16:02 Possible Injury				1	0	2	0	0	Pasenger / Pickup/Pan At Driveaway Clear	Dry	Dusk					
City Street Clark	Vancouver	SE 192ND	2000			86 F	N	SE 25TH ST	No EA42584				2:52 No Appare				0	0	1	0	0	Pickup-Pan/Truck or / Not at Intersect Clear	Dry	Daylight					
City Street Clark	Vancouver	SE 192ND	2500			53 F	SW	SE 25TH ST	No E771915				22:37 No Appare				0	0	0	0	0	Pasenger Car	Not at Intersecting	Snow/Su	Daylight				
City Street Clark	Vancouver	SE 192ND	2700			0.11 M	SW	SE 25TH ST	No E998165				10:02 No Appare				0	0	2	0	0	Pickup-Pan/Truck or / Not at Intersect Clear	Dry	Daylight					
City Street Clark	Vancouver	SE 192ND	2700			476 F	SW	SE 25TH ST	No E802199				22:00 No Appare				0	0	1	0	0	Pasenger Car	Not at Intersect Clear	Dry	Daylight				
City Street Clark	Vancouver	SE 192ND	2400			200 F	NE	SE 25TH ST	No EA65610				7/5/2020				0	0	1	0	0	Pasenger Car	Not at Intersect Clear	Dry	Daylight				
City Street Clark	Vancouver	SE 192ND	2900			0.25 M	N	SE 34TH ST	No E91056				13:35 Possible Injury				1	0	0	0	0	Pickup-Pan/Truck or / Not at Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 192ND	2900			0.5 M	SE	SE 34TH ST	No E998165				10:02 No Appare				0	0	2	0	0	Passenger / Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16602	SE 176TH AVE					No E869366				20:57 No Appare				0	0	2	0	0	Passenger / Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16602	SE 176TH AVE					No E808364				11:09 Suspected				2	0	2	0	0	Passenger / Pickup/Pan At Intersect Overcast	Dry	Daylight					
City Street Clark	Vancouver	SE 20TH ST	16602	SE 176TH AVE					No E72011				19:35 No Appare				0	0	1	0	0	Pickup/Pan/Truck or / Not at Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16602	SE 176TH AVE					No EA48810				19:53 Suspected				1	0	1	0	0	1-Pickup/Pan/Truck or / At Intersect Clear		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16700	SE 176TH AVE					No EC10568				13:08 No Appare				0	0	2	0	0	Pasenger / Pickup/Pan At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16602	SE 176TH AVE					No EA02843				10:11 No Appare				0	0	2	0	0	Pasenger / Pickup/Pan At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16602	SE 176TH AVE					No E929951				21:50 No Appare				0	0	2	0	0	Truck - From same Going Straight Ahead		Daylight					
City Street Clark	Vancouver	SE 20TH ST	2000	SE 192ND AVE					No EA07782				19:29 Possible Injury				2	0	0	0	0	Passenger / Passenger / At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 20TH ST	O	0	SE 192ND AVE				No E70178				17:38 Suspected				1	0	1	0	0	1-Pasenger Car	At Intersect Clear or Pa Dry	Dry	Daylight				
City Street Clark	Vancouver	SE 20TH ST	16500			76 F	W	SE 176TH AVE	No E953636				15:11 No Appare				0	0	2	0	0	Passenger / Passenger / Not at Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16500			70 F	E	SE 176TH AVE	No E929565				17:23 No Appare				0	0	2	0	0	Passenger / Passenger / At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 20TH ST	16500			300 F	W	SE 176TH AVE	No E923433				8:07 Suspected				1	0	1	0	0	1-School Bus	Not at Intersect Overcast	Dry	Daylight				
City Street Clark	Vancouver	SE 20TH ST	16501	SE 164TH AVE					No EA78387				17:00 Possible Injury				1	0	1	0	0	Pasenger Car	At Intersect Raining	Wet	Daylight				
City Street Clark	Vancouver	SE 20TH ST	O	0	SE 164TH AVE				No EC70778				7/8/2022				0	0	2	0	0	Pickup-Pan/Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	16500			47 F	N	SE 164TH AVE	No E998165				16:10 No Appare				0	0	2	0	0	Pickup-Pan/Passenger / At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 20TH ST	17020	SE 176TH AVE					No EC47000				5/5/2022				1	0	1	0	0	1-Pickup/Pan/Truck or / At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 24TH ST	17308	SE 176TH AVE					No EC08311				14:46 No Appare				0	0	2	0	0	Pasenger / Pickup/Pan At Intersect Overcast	Dry	Daylight					
City Street Clark	Vancouver	SE 24TH ST	O	0	SE 176TH AVE				No E728146				11:12 Suspected				1	0	1	0	0	Pasenger Car	At Intersect Clear or Pa Dry		Daylight				
City Street Clark	Vancouver	SE 24TH ST	17308	SE 176TH AVE					No EC12616				6/2/2022				0	0	1	0	0	Pickup-Pan/Passenger / At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 24TH ST	O	0	SE 176TH AVE				No E757233				17:11 Possible Injury				2	0	2	0	0	Pickup/Pan/Pickup Pan At Intersect Raining	Wet	Daylight					
City Street Clark	Vancouver	SE 24TH ST	O	0	SE 176TH AVE				No E876498				18:46 No Appare				0	0	2	0	0	Pasenger / Pickup/Pan At Intersect Clear or Pa Dry		Daylight					
City Street Clark	Vancouver	SE 24TH ST	17308	SE 176TH AVE																									

VEHICLE 2 COMPASS DIRECTION N FROM	VEHICLE 1 COMPASS DIRECTION N TO	DRIVER CONTRIB CIRCUMS TANCE 1 (UNIT 1)	DRIVER CONTRIB CIRCUMS TANCE 2 (UNIT 1)	DRIVER CONTRIB CIRCUMS TANCE 3 (UNIT 1)	DRIVER CONTRIB CIRCUMS TANCE 1 (UNIT 2)	DRIVER CONTRIB CIRCUMS TANCE 2 (UNIT 2)	DRIVER CONTRIB CIRCUMS TANCE 3 (UNIT 2)	BICYCLIST CONTRIB CIRCUMS TANCE 1 (UNIT 1)	BICYCLIST CONTRIB CIRCUMS TANCE 2 (UNIT 1)	BICYCLIST CONTRIB CIRCUMS TANCE 3 (UNIT 1)	BICYCLIST CONTRIB CIRCUMS TANCE 1 (UNIT 2)	BICYCLIST CONTRIB CIRCUMS TANCE 2 (UNIT 2)	BICYCLIST CONTRIB CIRCUMS TANCE 3 (UNIT 2)	AN CONTRIB CIRCUMS TANCE 1 (UNIT 2)	AN CONTRIB CIRCUMS TANCE 2 (UNIT 2)	AN CONTRIB CIRCUMS TANCE 3 (UNIT 2)	IMPACT LOCATIO N CTRY County & Misc Trafficw D	WA STATE PLANE PLANE 2010 - FORWARD D	WA STATE PLANE PLANE 2010 - FORWARD D
West	East	Under Influence of Alcohol	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1134740	107246
East	West	Disregard Traffic Sign and Signals	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134778	107244.7
South	North	Disregard 1 Inattention	Driver Not Distracted	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134740	107246
Vehicle StoVehicle Stc	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1127533	103833.3
East	West	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1127523	103531.1
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1127534	103903.5
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1120577	106130.2
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Median of	1130488	102486.5
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1120538	102488.5
West	East	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130865	102504.3
West	North	Unknown Distraction	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134740	107247.5
Vehicle StoVehicle Stc	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134740	107246
East	West	Lost in Thought / Day Dreaming	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134740	107246
East	West	Disregard Stop and Go Light	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134777	107244.7
North	East	Inattention	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134777	107244.7
South	North	Operating Defective Equipment	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134750	106040.2
West	East	Disregard Traffic Sign and Signals	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134715	106043.2
South	East	Follow Too Closely	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134715	106044.3
East	West	Under Influence of Alcohol	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1134715	106044.3
East	West	Improper Turn/Merge	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134035	102365.8
North	South	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134082	102401.8
South	North	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134036	102366.8
North	South	Eating or Drinking	Follow Too Closely	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134740	107338.6
Vehicle StoVehicle Stc	Inattention	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134772	106925.8
South	North	Follow Too Closely	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134743	105708.5
South	North	Operating Defective Equipment	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134709	105793.3
South	North	None	Exceeding Reas. Safe Speed	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134749	106002.2
Vehicle StoVehicle Stc	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134754	106201.9
Vehicle StoVehicle Stc	Inattention	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134718	106158.5
North	South	None	Follow Too Closely	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134724	106336.9
North	South	Inattention	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134716	106088
Vehicle StoVehicle Stc	Disregard 1 Inattention	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134748	105927
South	North	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134708	105753
None	None	Apparently Asleep or Fatigued	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1134640	104752.7
None	None	Exceeding Reas. Safe Speed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Median of	1134632	104621.8
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134352	104179.8
None	None	Unknown Distraction	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134391	104249.2
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1134710	104844.9
North	South	Distractions Outside Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134149	103871.6
East	Vehicle Stc	Lost in Thought / Day Dreaming	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134798	99963.43
Vehicle StoVehicle Stc	Operating Handheld Cell Phone	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130576	106107.9
West	North	Unknown Distraction	Unknown Distraction	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130650	105128.4
pped	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130577	106130.2
Vehicle StoVehicle Stc	Operating Defective Equipment	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130576	106107.2
Vehicle StoVehicle Stc	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130642	106110.3
East	West	Under Infl Inattention Did Not Go	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130576	106107.9
East	South	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130577	106130.2
East	West	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134756	106043.6
East	West	Disregard 1 Apparently Asleep or 1 None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134715	106044.3
East	West	Unknown Distraction	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130509	105131.6
None	None	Exceeding Reas. Safe Speed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130643	106128.6
West	East	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Outside Sh	1130276	106136.1
South	North	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1127533	103863.9
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1127535	103831.4
None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Intersectin	1130524	103788.2
East	West	Improper Turn/Merge	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130524	103788.1
East	West	Did Not Gr Distractions Outside Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130488	102508.7
East	West	Improper Turn/Merge	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130488	102509.4
East	West	Disregard 1 Inattention Did Not Gr	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130488	102509.4
North	Southeast	Unknown 1 Disregard Traffic Sign	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130488	102509.4
East	West	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1130488	102509.4
East	South	Inattention	Inattention	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134035	102365.8
West	East	Under Infl Did Not Grant RW to	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134036	102366.8
East	West	Improper Turn/Merge	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134081	102401.8
East	West	Apparently Ill	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134036	102402.6
West	East	Operating Other Electronic Devis	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134035	102365.8
South	South	Disregard 1 Exceeding Operating	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134035	102365.8
West	East	Did Not Grant RW to Vehicle	Exceeding Reas. Safe Speed	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134081	102363.0
East	West	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134079	102401.8
South	North	Disregard 1 Distractions Outside V	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134082	102401.8
East	West	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134036	102366.8
None	None	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1134082	102401.8
West	East	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134035	102365.8
East	West	Inattention	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134035	102365.8
West	East	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134036	102366.8
West	East	Disregard Traffic Sign and Signals	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134036	102366.8
West	South	Exceeding Reas. Safe Speed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1132562	102384.2
East	East	Other Contributing Circ Not Listed	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134549	102354.6
South	North	None	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134558	102354.5
West	East	Under Influence of Alcohol	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Past the Cr	1134792	102350.2
West	East	Did Not Grant RW to Vehicle	None	None	None	None	None	None	None	None	None	None	None	None	None	None	Lane of Pri	1134535	102354.9
None	None																		

Appendix C Existing Operations Worksheets

Timings
1: SE 192nd & SE 15th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	117	37	24	52	41	38	540	28	550
Future Volume (vph)	117	37	24	52	41	38	540	28	550
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	20.0	29.0	20.0	29.0	14.0	15.0	37.0	14.0	36.0
Total Split (%)	20.0%	29.0%	20.0%	29.0%	14.0%	15.0%	37.0%	14.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	10.8	16.9	5.7	9.8	18.8	6.3	57.4	6.0	59.1
Actuated g/C Ratio	0.11	0.17	0.06	0.10	0.19	0.06	0.57	0.06	0.59
v/c Ratio	0.71	0.23	0.28	0.33	0.13	0.39	0.32	0.33	0.36
Control Delay	62.4	21.8	52.5	44.1	2.8	59.1	12.5	53.7	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	21.8	52.5	44.1	2.8	59.1	12.5	53.7	15.3
LOS	E	C	D	D	A	E	B	D	B
Approach Delay		47.9		31.2			15.5		17.0
Approach LOS		D		C			B		B

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 9 (9%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 21.2

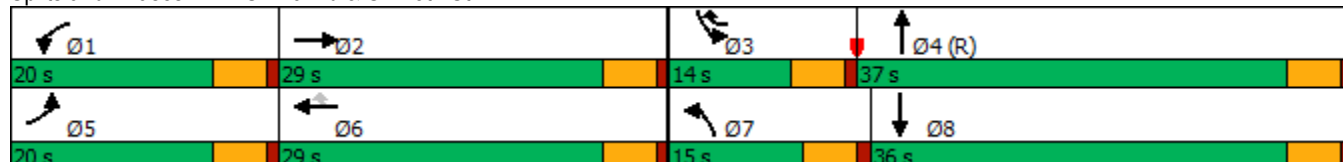
Intersection LOS: C

Intersection Capacity Utilization 49.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	37	28	24	52	41	38	540	13	28	550	67
Future Volume (veh/h)	117	37	28	24	52	41	38	540	13	28	550	67
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1796	1781	1841	1870	1856	1841	1900	1737	1767	1856
Adj Flow Rate, veh/h	133	42	1	27	59	0	43	614	14	32	625	69
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	0	7	8	4	2	3	4	0	11	9	3
Cap, veh/h	162	215	5	45	93	127	62	2194	50	49	1898	209
Arrive On Green	0.09	0.12	0.12	0.03	0.05	0.00	0.07	1.00	1.00	0.03	0.62	0.62
Sat Flow, veh/h	1767	1848	44	1697	1841	1585	1767	3493	80	1654	3048	336
Grp Volume(v), veh/h	133	0	43	27	59	0	43	307	321	32	344	350
Grp Sat Flow(s),veh/h/ln	1767	0	1892	1697	1841	1585	1767	1749	1824	1654	1678	1706
Q Serve(g_s), s	7.4	0.0	2.1	1.6	3.1	0.0	2.4	0.0	0.0	1.9	9.7	9.8
Cycle Q Clear(g_c), s	7.4	0.0	2.1	1.6	3.1	0.0	2.4	0.0	0.0	1.9	9.7	9.8
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.04	1.00		0.20
Lane Grp Cap(c), veh/h	162	0	220	45	93	127	62	1098	1146	49	1045	1062
V/C Ratio(X)	0.82	0.00	0.20	0.60	0.63	0.00	0.70	0.28	0.28	0.66	0.33	0.33
Avail Cap(c_a), veh/h	265	0	454	254	442	427	177	1098	1146	149	1045	1062
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	0.0	40.0	48.2	46.5	0.0	46.0	0.0	0.0	48.0	9.0	9.0
Incr Delay (d2), s/veh	4.0	0.0	0.2	4.8	2.6	0.0	5.0	0.6	0.6	5.5	0.8	0.8
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(95%),veh/ln	6.0	0.0	1.7	1.3	2.7	0.0	1.9	0.3	0.3	1.5	6.0	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	0.0	40.1	52.9	49.2	0.0	51.0	0.6	0.6	53.5	9.8	9.8
LnGrp LOS	D	A	D	D	D	A	D	A	A	D	A	A
Approach Vol, veh/h		176			86			671			726	
Approach Delay, s/veh		46.5			50.3			3.8			11.7	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	16.6	7.9	67.8	14.2	10.1	8.5	67.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	24.0	9.0	32.0	15.0	24.0	10.0	31.0				
Max Q Clear Time (g_c+I1), s	3.6	4.1	3.9	2.0	9.4	5.1	4.4	11.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.1	0.0	0.1	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			14.2									
HCM 6th LOS			B									

Timings
2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Existing AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	73	140	78	127	36	419	73	438
Future Volume (vph)	73	140	78	127	36	419	73	438
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	17.0	29.0	17.0	29.0	15.0	39.0	15.0	39.0
Total Split (%)	17.0%	29.0%	17.0%	29.0%	15.0%	39.0%	15.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	6.8	15.6	6.9	15.7	7.0	52.5	8.9	52.4
Actuated g/C Ratio	0.07	0.16	0.07	0.16	0.07	0.52	0.09	0.52
v/c Ratio	0.35	0.73	0.36	0.75	0.34	0.33	0.51	0.31
Control Delay	48.2	50.7	48.2	50.0	68.1	5.9	54.0	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	50.7	48.2	50.0	68.1	5.9	54.0	20.7
LOS	D	D	D	D	E	A	D	C
Approach Delay		50.0		49.5		9.9		25.0
Approach LOS		D		D		A		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 28.1

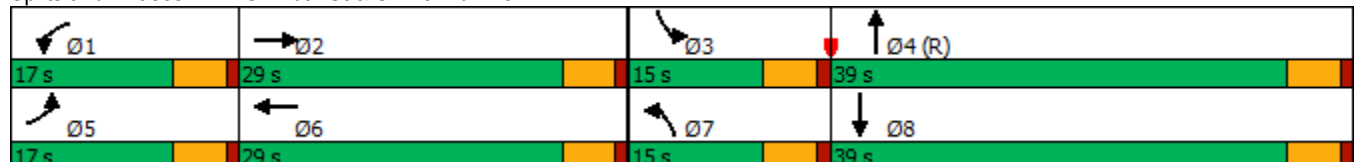
Intersection LOS: C

Intersection Capacity Utilization 54.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: SE 20th St & SE 192nd Ave



HCM 6th Signalized Intersection Summary

2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	140	56	78	127	78	36	419	107	73	438	59
Future Volume (veh/h)	73	140	56	78	127	78	36	419	107	73	438	59
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1841	1885	1885	1885	1811	1856	1841	1885	1811	1826
Adj Flow Rate, veh/h	81	156	44	87	141	60	40	466	100	81	487	57
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	4	1	1	1	6	3	4	1	6	5
Cap, veh/h	153	190	54	159	169	72	86	1628	347	104	1772	207
Arrive On Green	0.04	0.13	0.13	0.05	0.13	0.13	0.05	0.56	0.56	0.06	0.57	0.57
Sat Flow, veh/h	3428	1426	402	3483	1255	534	1725	2890	616	1795	3104	362
Grp Volume(v), veh/h	81	0	200	87	0	201	40	283	283	81	269	275
Grp Sat Flow(s),veh/h/ln	1714	0	1828	1742	0	1789	1725	1763	1744	1795	1721	1746
Q Serve(g_s), s	2.3	0.0	10.6	2.4	0.0	11.0	2.3	8.4	8.5	4.5	8.0	8.0
Cycle Q Clear(g_c), s	2.3	0.0	10.6	2.4	0.0	11.0	2.3	8.4	8.5	4.5	8.0	8.0
Prop In Lane	1.00		0.22	1.00		0.30	1.00		0.35	1.00		0.21
Lane Grp Cap(c), veh/h	153	0	244	159	0	240	86	993	982	104	982	997
V/C Ratio(X)	0.53	0.00	0.82	0.55	0.00	0.84	0.46	0.29	0.29	0.78	0.27	0.28
Avail Cap(c_a), veh/h	411	0	439	418	0	429	172	993	982	180	982	997
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	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	46.7	0.0	42.2	46.7	0.0	42.2	46.2	11.4	11.4	46.5	10.9	10.9
Incr Delay (d2), s/veh	1.0	0.0	2.6	1.1	0.0	3.0	1.4	0.7	0.7	4.4	0.6	0.6
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(95%),veh/ln	1.8	0.0	8.4	1.9	0.0	8.5	1.8	5.7	5.7	3.7	5.3	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	0.0	44.8	47.8	0.0	45.2	47.6	12.1	12.1	50.9	11.6	11.6
LnGrp LOS	D	A	D	D	A	D	D	B	B	D	B	B
Approach Vol, veh/h	281			288			606			625		
Approach Delay, s/veh	45.6			46.0			14.5			16.7		
Approach LOS	D			D			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	18.3	10.8	61.3	9.5	18.4	10.0	62.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	24.0	10.0	34.0	12.0	24.0	10.0	34.0				
Max Q Clear Time (g_c+I1), s	4.4	12.6	6.5	10.5	4.3	13.0	4.3	10.0				
Green Ext Time (p_c), s	0.1	0.5	0.0	2.0	0.1	0.5	0.0	1.9				

Intersection Summary

HCM 6th Ctrl Delay 25.1
HCM 6th LOS C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	10	558	3	7	595
Future Vol, veh/h	7	10	558	3	7	595
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	20	4	67	0	7
Mvmt Flow	8	11	607	3	8	647
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	950	306	0	0	611	0
Stage 1	610	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.8	7.3	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.5	-	-	2.2	-
Pot Cap-1 Maneuver	262	639	-	-	978	-
Stage 1	510	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	260	638	-	-	977	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.2	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)	-	-	260	638	977	-
HCM Lane V/C Ratio	-	-	0.029	0.017	0.008	-
HCM Control Delay (s)	-	-	19.3	10.7	8.7	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	66	123	143	95	70	520	290	88	380
Future Volume (vph)	66	123	143	95	70	520	290	88	380
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6	7	4	1	3	8
Permitted Phases	2		6				4		
Detector Phase	5	2	1	6	7	4	1	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	15.0	36.0	15.0	36.0	15.0	34.0	15.0	15.0	34.0
Total Split (%)	15.0%	36.0%	15.0%	36.0%	15.0%	34.0%	15.0%	15.0%	34.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	None	Max
Act Effect Green (s)	19.0	11.9	24.1	16.2	6.0	51.8	62.1	9.0	54.8
Actuated g/C Ratio	0.19	0.12	0.24	0.16	0.06	0.52	0.62	0.09	0.55
v/c Ratio	0.31	0.41	0.55	0.27	0.38	0.35	0.30	0.33	0.31
Control Delay	29.0	34.7	35.3	24.8	50.2	18.2	1.8	36.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	34.7	35.3	24.8	50.2	18.2	1.8	36.9	11.1
LOS	C	C	D	C	D	B	A	D	B
Approach Delay		33.0		30.1		15.3			15.2
Approach LOS		C		C		B			B

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 19.4

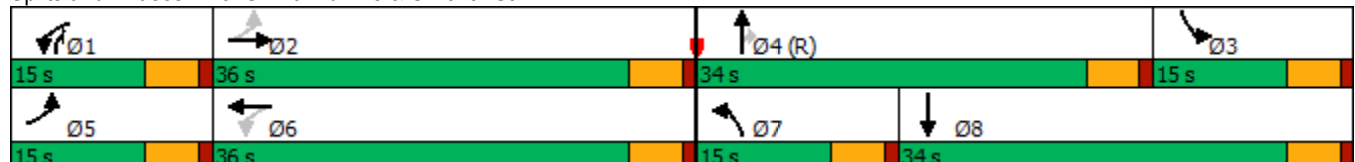
Intersection LOS: B

Intersection Capacity Utilization 56.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	123	28	143	95	45	70	520	290	88	380	84
Future Volume (veh/h)	66	123	28	143	95	45	70	520	290	88	380	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1728	1803	1847	1943	2018	1988	2018	1883	1988	1832	1684	1684
Adj Flow Rate, veh/h	77	143	4	166	110	1	81	605	177	102	442	83
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	8	3	0	5	0	2	0	9	2	1	11	11
Cap, veh/h	266	302	8	315	514	5	167	1037	652	1094	1530	285
Arrive On Green	0.05	0.09	0.09	0.10	0.13	0.13	0.04	0.29	0.29	0.32	0.57	0.57
Sat Flow, veh/h	1646	3402	95	1850	3892	35	3728	3578	1681	3385	2691	502
Grp Volume(v), veh/h	77	72	75	166	54	57	81	605	177	102	262	263
Grp Sat Flow(s),veh/h/ln	1646	1712	1784	1850	1917	2011	1864	1789	1681	1693	1600	1593
Q Serve(g_s), s	4.2	4.0	4.0	7.9	2.5	2.5	2.1	14.5	1.6	2.1	8.4	8.6
Cycle Q Clear(g_c), s	4.2	4.0	4.0	7.9	2.5	2.5	2.1	14.5	1.6	2.1	8.4	8.6
Prop In Lane	1.00		0.05	1.00		0.02	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	266	152	159	315	253	265	167	1037	652	1094	909	906
V/C Ratio(X)	0.29	0.47	0.47	0.53	0.21	0.21	0.49	0.58	0.27	0.09	0.29	0.29
Avail Cap(c_a), veh/h	341	531	553	319	594	623	373	1037	652	1094	909	906
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)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	43.3	43.3	35.3	38.8	38.8	46.6	30.3	8.9	23.6	11.1	11.2
Incr Delay (d2), s/veh	0.2	0.8	0.8	0.7	0.2	0.1	0.8	2.4	1.0	0.0	0.8	0.8
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(95%),veh/ln	3.0	3.0	3.2	6.3	2.1	2.2	1.8	10.4	2.8	1.5	5.2	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.7	44.2	44.1	36.1	38.9	38.9	47.5	32.7	9.9	23.6	11.9	12.0
LnGrp LOS	D	D	D	D	D	D	D	C	A	C	B	B
Approach Vol, veh/h		224			277			863			627	
Approach Delay, s/veh		42.3			37.2			29.4			13.8	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	13.9	37.3	34.0	10.5	18.2	9.5	61.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	31.0	10.0	29.0	10.0	31.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	9.9	6.0	4.1	16.5	6.2	4.5	4.1	10.6				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.3	0.0	0.2	0.0	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			27.0									
HCM 6th LOS			C									

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Existing AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	36	218	25	189	63	1	4	0	2
Future Volume (vph)	36	218	25	189	63	1	4	0	2
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		8		4	
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	10.0	27.0	32.0	32.0	34.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effect Green (s)	5.5	24.3	5.5	22.3	8.8	8.8		8.8	8.8
Actuated g/C Ratio	0.13	0.58	0.13	0.53	0.21	0.21		0.21	0.21
v/c Ratio	0.18	0.15	0.13	0.15	0.27	0.13		0.02	0.01
Control Delay	24.1	8.4	24.0	9.5	16.0	6.1		13.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	24.1	8.4	24.0	9.5	16.0	6.1		13.2	0.0
LOS	C	A	C	A	B	A		B	A
Approach Delay		10.4		10.9		12.2		9.5	
Approach LOS		B		B		B		A	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 41.8

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.27

Intersection Signal Delay: 10.9

Intersection LOS: B

Intersection Capacity Utilization 39.9%

ICU Level of Service A

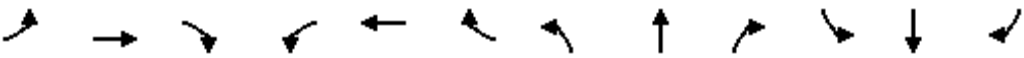
Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

		
10 s	85 s	35 s
		
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary 6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	218	24	25	189	36	63	1	38	4	0	2
Future Volume (veh/h)	36	218	24	25	189	36	63	1	38	4	0	2
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1841	1900	1876	1802	1876	1832	1876	1876	1900	1900	1900
Adj Flow Rate, veh/h	44	269	19	31	233	24	78	1	0	5	0	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	4	0	0	5	0	3	0	0	0	0	0
Cap, veh/h	90	1493	105	67	1374	140	320	150	0	322	0	129
Arrive On Green	0.05	0.45	0.45	0.04	0.44	0.44	0.08	0.08	0.00	0.08	0.00	0.00
Sat Flow, veh/h	1810	3314	233	1787	3136	320	1388	1876	0	1430	0	1610
Grp Volume(v), veh/h	44	141	147	31	126	131	78	1	0	5	0	0
Grp Sat Flow(s),veh/h/ln	1810	1749	1798	1787	1712	1743	1388	1876	0	1430	0	1610
Q Serve(g_s), s	0.8	1.7	1.7	0.6	1.6	1.6	1.7	0.0	0.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.8	1.7	1.7	0.6	1.6	1.6	1.9	0.0	0.0	0.1	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.18	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	90	788	810	67	750	764	320	150	0	322	0	129
V/C Ratio(X)	0.49	0.18	0.18	0.47	0.17	0.17	0.24	0.01	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	261	4031	4144	257	3947	4019	1409	1622	0	1450	0	1392
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.1	5.7	5.7	16.4	5.9	5.9	15.5	14.7	0.0	14.8	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	1.9	0.0	0.0	0.1	0.0	0.0	0.0	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(95%),veh/ln	0.5	0.6	0.6	0.4	0.5	0.5	0.9	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.6	5.7	5.7	18.2	6.0	6.0	15.7	14.7	0.0	14.8	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	B	B	A	B	A	A
Approach Vol, veh/h	332			288			79			5		
Approach Delay, s/veh	7.3			7.3			15.7			14.8		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	20.6		7.8	6.7	20.2		7.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	3.7		2.1	2.8	3.6		3.9				
Green Ext Time (p_c), s	0.0	0.5		0.0	0.0	0.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	8.3											
HCM 6th LOS	A											

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	137	261	11	5	243	6	29	0	16	1	0	15
Future Vol, veh/h	137	261	11	5	243	6	29	0	16	1	0	15
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	95	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	0	0	5	0	0	0	0	0	0	27
Mvmt Flow	161	307	13	6	286	7	34	0	19	1	0	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	296	0	0	323	0	0	794	947	163	781	950	150
Stage 1	-	-	-	-	-	-	639	639	-	305	305	-
Stage 2	-	-	-	-	-	-	155	308	-	476	645	-
Critical Hdwy	4.16	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	7.44
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.23	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.57
Pot Cap-1 Maneuver	1255	-	-	1248	-	-	282	263	859	288	262	796
Stage 1	-	-	-	-	-	-	436	474	-	685	666	-
Stage 2	-	-	-	-	-	-	838	664	-	544	471	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1251	-	-	1244	-	-	247	226	857	252	226	794
Mov Cap-2 Maneuver	-	-	-	-	-	-	247	226	-	252	226	-
Stage 1	-	-	-	-	-	-	379	411	-	595	661	-
Stage 2	-	-	-	-	-	-	815	659	-	464	409	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.8			0.2			17.9			10.2		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	331	1251	-	-	1244	-	-	252	794
HCM Lane V/C Ratio	0.16	0.129	-	-	0.005	-	-	0.005	0.022
HCM Control Delay (s)	17.9	8.3	-	-	7.9	-	-	19.4	9.6
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.6	0.4	-	-	0	-	-	0	0.1

Timings
8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	45	348	2	242	14	5	57	3
Future Volume (vph)	45	348	2	242	14	5	57	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	24.9	22.8	24.7	21.3	8.7	8.7	8.7	8.7
Actuated g/C Ratio	0.61	0.56	0.61	0.53	0.21	0.21	0.21	0.21
v/c Ratio	0.08	0.21	0.00	0.19	0.06	0.03	0.22	0.33
Control Delay	6.7	9.5	7.0	9.5	13.4	10.6	15.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	9.5	7.0	9.5	13.4	10.6	15.0	5.5
LOS	A	A	A	A	B	B	B	A
Approach Delay		9.2		9.5		12.2		8.5
Approach LOS		A		A		B		A

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 40.5

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 9.2

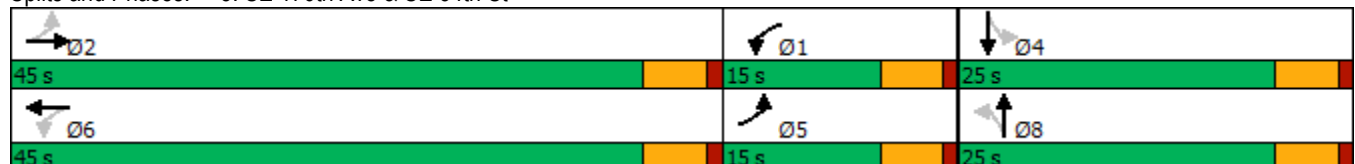
Intersection LOS: A

Intersection Capacity Utilization 41.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	348	2	2	242	43	14	5	4	57	3	122
Future Volume (veh/h)	45	348	2	2	242	43	14	5	4	57	3	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		1.00	0.99		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1856	1900	1900	1811	1826	1900	1900	1530	1870	1900	1885
Adj Flow Rate, veh/h	53	409	1	2	285	30	16	6	0	67	4	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	9	3	0	0	6	5	0	0	25	2	0	1
Cap, veh/h	657	1510	4	648	1321	138	343	199	0	342	105	79
Arrive On Green	0.06	0.42	0.42	0.06	0.42	0.42	0.10	0.10	0.00	0.10	0.10	0.10
Sat Flow, veh/h	1682	3608	9	1810	3142	328	1415	1900	0	1394	1004	753
Grp Volume(v), veh/h	53	200	210	2	155	160	16	6	0	67	0	7
Grp Sat Flow(s), veh/h/ln	1682	1763	1854	1810	1721	1750	1415	1900	0	1394	0	1757
Q Serve(g_s), s	0.0	2.7	2.7	0.0	2.1	2.1	0.4	0.1	0.0	1.6	0.0	0.1
Cycle Q Clear(g_c), s	0.0	2.7	2.7	0.0	2.1	2.1	0.5	0.1	0.0	1.7	0.0	0.1
Prop In Lane	1.00		0.00	1.00		0.19	1.00		0.00	1.00		0.43
Lane Grp Cap(c), veh/h	657	738	776	648	724	736	343	199	0	342	0	184
V/C Ratio(X)	0.08	0.27	0.27	0.00	0.21	0.22	0.05	0.03	0.00	0.20	0.00	0.04
Avail Cap(c_a), veh/h	1030	1964	2065	1044	1917	1949	984	1058	0	973	0	978
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.4	6.8	6.8	6.4	6.6	6.6	14.7	14.4	0.0	15.2	0.0	14.5
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	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(95%),veh/ln	0.3	1.0	1.1	0.0	0.8	0.8	0.2	0.1	0.0	0.8	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	6.9	6.9	6.4	6.7	6.7	14.7	14.5	0.0	15.3	0.0	14.5
LnGrp LOS	A	A	A	A	A	A	B	B	A	B	A	B
Approach Vol, veh/h	463				317				22			
Approach Delay, s/veh	6.9				6.7				14.6			
Approach LOS	A				A				B			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	20.0		8.8	7.1	20.1		8.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	4.7		3.7	2.0	4.1		2.5				
Green Ext Time (p_c), s	0.0	1.4		0.1	0.0	1.1		0.0				

Intersection Summary

HCM 6th Ctrl Delay 7.7
HCM 6th LOS A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	10	4	105	167	11
Future Vol, veh/h	4	10	4	105	167	11
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	10	0	2	1	18
Mvmt Flow	5	12	5	124	196	13
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	337	205	209	0	-	0
Stage 1	203	-	-	-	-	-
Stage 2	134	-	-	-	-	-
Critical Hdwy	6.4	6.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.2	-	-	-
Pot Cap-1 Maneuver	663	816	1374	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	660	814	1374	-	-	-
Mov Cap-2 Maneuver	660	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	0.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1374	-	763	-	-	
HCM Lane V/C Ratio	0.003	-	0.022	-	-	
HCM Control Delay (s)	7.6	-	9.8	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	195	20	56	235	11	25	58	47	0	55	9
Future Vol, veh/h	9	195	20	56	235	11	25	58	47	0	55	9
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	4	10	4	1	9	4	3	0	0	0	0
Mvmt Flow	10	214	22	62	258	12	27	64	52	0	60	10
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	11.4	11.5	10	10.1
HCM LOS	B	B	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	55%	0%	91%	0%	96%	86%
Vol Right, %	0%	45%	0%	9%	0%	4%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	105	9	215	56	246	64
LT Vol	25	0	9	0	56	0	0
Through Vol	0	58	0	195	0	235	55
RT Vol	0	47	0	20	0	11	9
Lane Flow Rate	27	115	10	236	62	270	70
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.051	0.189	0.017	0.366	0.103	0.41	0.122
Departure Headway (Hd)	6.732	5.892	6.086	5.584	6.049	5.461	6.224
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	533	609	591	647	595	662	576
Service Time	4.463	3.623	3.794	3.291	3.756	3.168	4.258
HCM Lane V/C Ratio	0.051	0.189	0.017	0.365	0.104	0.408	0.122
HCM Control Delay	9.8	10	8.9	11.5	9.5	11.9	10.1
HCM Lane LOS	A	A	A	B	A	B	B
HCM 95th-tile Q	0.2	0.7	0.1	1.7	0.3	2	0.4

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations											
Traffic Volume (vph)	29	5	35	38	12	28	21	979	14	730	
Future Volume (vph)	29	5	35	38	12	28	21	979	14	730	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Prot	NA	
Protected Phases	2				6		7		4	3	8
Permitted Phases	2		2		6						
Detector Phase	2	2	2	6	6	6	7	4	3	8	
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	15.0	5.0	15.0	
Minimum Split (s)	39.0	39.0	39.0	38.0	38.0	38.0	10.0	32.0	10.0	32.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	17.0	64.0	17.0	64.0	
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	14.2%	53.3%	14.2%	53.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lead	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max	
Act Effct Green (s)	14.6	14.6	14.6	14.6	14.6	14.6	5.6	95.1	5.3	92.8	
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12	0.12	0.05	0.79	0.04	0.77	
v/c Ratio	0.18	0.02	0.15	0.24	0.07	0.12	0.26	0.26	0.20	0.20	
Control Delay	46.2	40.2	3.9	47.7	42.3	1.5	39.6	18.0	61.4	6.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.2	40.2	3.9	47.7	42.3	1.5	39.6	18.0	61.4	6.3	
LOS	D	D	A	D	D	A	D	B	E	A	
Approach Delay	24.4				30.5			18.4		7.3	
Approach LOS	C				C			B		A	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 85 (71%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.26

Intersection Signal Delay: 14.7

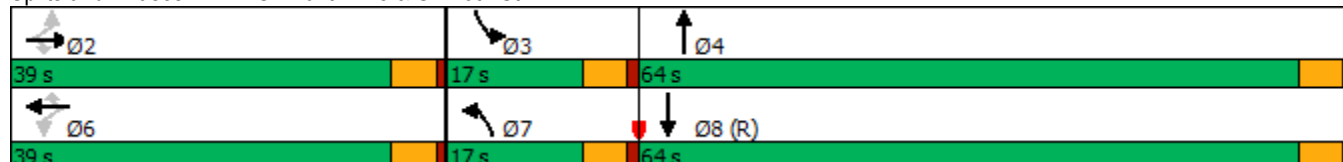
Intersection LOS: B

Intersection Capacity Utilization 51.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	5	35	38	12	28	21	979	14	14	730	21
Future Volume (veh/h)	29	5	35	38	12	28	21	979	14	14	730	21
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1856	1856	1648	1900	1900	1870	1796	1796	1856	1826
Adj Flow Rate, veh/h	31	5	2	40	13	2	22	1031	15	15	768	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	3	3	17	0	0	2	7	7	3	5
Cap, veh/h	160	151	125	168	131	128	39	2577	37	28	2492	68
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.02	0.50	0.50	0.02	0.49	0.49
Sat Flow, veh/h	1387	1900	1572	1397	1648	1610	1810	5185	75	1711	5069	138
Grp Volume(v), veh/h	31	5	2	40	13	2	22	677	369	15	511	278
Grp Sat Flow(s),veh/h/ln	1387	1900	1572	1397	1648	1610	1810	1702	1857	1711	1689	1830
Q Serve(g_s), s	2.5	0.3	0.1	3.3	0.9	0.1	1.4	15.0	15.0	1.0	10.9	10.9
Cycle Q Clear(g_c), s	3.4	0.3	0.1	3.6	0.9	0.1	1.4	15.0	15.0	1.0	10.9	10.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.08
Lane Grp Cap(c), veh/h	160	151	125	168	131	128	39	1692	923	28	1660	900
V/C Ratio(X)	0.19	0.03	0.02	0.24	0.10	0.02	0.56	0.40	0.40	0.53	0.31	0.31
Avail Cap(c_a), veh/h	443	538	446	453	467	456	181	1692	923	171	1660	900
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	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	51.0	50.9	52.6	51.2	50.9	58.1	19.0	19.0	58.6	18.3	18.3
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.1	0.0	3.9	0.6	1.1	5.7	0.5	0.9
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(95%),veh/ln	1.6	0.3	0.1	2.1	0.7	0.1	1.3	9.5	10.3	0.9	7.6	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.0	51.0	50.9	52.9	51.4	50.9	62.1	19.6	20.1	64.3	18.8	19.2
LnGrp LOS	D	D	D	D	D	D	E	B	C	E	B	B
Approach Vol, veh/h	38			55			1068			804		
Approach Delay, s/veh	52.7			52.4			20.6			19.7		
Approach LOS	D			D			C			B		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	14.5			7.0			64.6			14.5		
Change Period (Y+Rc), s	5.0			5.0			5.0			5.0		
Max Green Setting (Gmax), s	34.0			12.0			59.0			34.0		
Max Q Clear Time (g_c+I1), s	5.4			3.0			17.0			5.6		
Green Ext Time (p_c), s	0.0			0.0			4.7			0.1		
Intersection Summary												
HCM 6th Ctrl Delay	21.8											
HCM 6th LOS	C											

Timings
12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Existing AM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 			 				 			  
Traffic Volume (vph)	26	50	151	318	98	90	103	849	237	141	601
Future Volume (vph)	26	50	151	318	98	90	103	849	237	141	601
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	22.5	32.0	10.0	10.0	31.0	22.5	10.0	28.0
Total Split (s)	20.0	33.0	20.0	25.0	38.0	17.0	20.0	45.0	25.0	17.0	42.0
Total Split (%)	16.7%	27.5%	16.7%	20.8%	31.7%	14.2%	16.7%	37.5%	20.8%	14.2%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	5.3	7.5	21.7	20.0	24.2	45.6	11.2	58.1	83.1	16.4	63.3
Actuated g/C Ratio	0.04	0.06	0.18	0.17	0.20	0.38	0.09	0.48	0.69	0.14	0.53
v/c Ratio	0.23	0.51	0.51	1.07	0.29	0.15	0.70	0.56	0.23	0.65	0.27
Control Delay	59.5	69.5	30.2	116.8	42.9	4.8	74.0	25.2	1.6	55.1	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	69.5	30.2	116.8	42.9	4.8	74.0	25.2	1.6	55.1	15.7
LOS	E	E	C	F	D	A	E	C	A	E	B
Approach Delay		42.3			82.5			24.7			22.9
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 36.5

Intersection LOS: D

Intersection Capacity Utilization 59.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave/SE164th Ave & SE 34th Street

 Ø1	 Ø2	 Ø3	 Ø4
25 s	33 s	17 s	45 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
20 s	38 s	20 s	42 s

HCM 6th Signalized Intersection Summary

12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	50	151	318	98	90	103	849	237	141	601	34
Future Volume (veh/h)	26	50	151	318	98	90	103	849	237	141	601	34
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1565	1758	1803	1870	1885	1841	1791	1776	1746	1806	1761	1761
Adj Flow Rate, veh/h	29	56	108	353	109	22	114	943	157	157	668	35
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	19	6	3	2	1	4	1	2	4	0	3	3
Cap, veh/h	75	143	248	333	419	503	138	1125	740	172	1649	86
Arrive On Green	0.03	0.08	0.08	0.17	0.22	0.22	0.08	0.33	0.33	0.03	0.12	0.12
Sat Flow, veh/h	2892	1758	1528	1995	1885	1560	1706	3375	1480	1720	4679	244
Grp Volume(v), veh/h	29	56	108	353	109	22	114	943	157	157	457	246
Grp Sat Flow(s),veh/h/ln	1446	1758	1528	998	1885	1560	1706	1687	1480	1720	1603	1717
Q Serve(g_s), s	1.2	3.6	7.6	20.0	5.7	1.2	7.9	31.0	7.1	10.9	15.9	16.0
Cycle Q Clear(g_c), s	1.2	3.6	7.6	20.0	5.7	1.2	7.9	31.0	7.1	10.9	15.9	16.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	75	143	248	333	419	503	138	1125	740	172	1130	605
V/C Ratio(X)	0.39	0.39	0.44	1.06	0.26	0.04	0.83	0.84	0.21	0.91	0.40	0.41
Avail Cap(c_a), veh/h	362	410	480	333	518	585	213	1125	740	172	1130	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	57.5	52.3	45.3	50.0	38.5	28.0	54.3	37.0	16.8	57.5	41.3	41.4
Incr Delay (d2), s/veh	1.2	0.6	0.4	66.6	0.1	0.0	8.1	7.5	0.7	43.3	1.1	2.0
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(95%),veh/ln	0.8	2.9	5.2	12.9	4.7	0.8	6.6	19.5	4.4	11.4	11.3	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	52.9	45.8	116.6	38.6	28.0	62.5	44.5	17.4	100.8	42.4	43.4
LnGrp LOS	E	D	D	F	D	C	E	D	B	F	D	D
Approach Vol, veh/h		193			484			1214			860	
Approach Delay, s/veh		49.8			95.0			42.7			53.3	
Approach LOS		D			F			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	14.8	17.0	45.0	8.1	31.7	14.7	47.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	28.0	12.0	40.0	15.0	33.0	15.0	37.0				
Max Q Clear Time (g_c+I1), s	22.0	9.6	12.9	33.0	3.2	7.7	9.9	18.0				
Green Ext Time (p_c), s	0.0	0.1	0.0	2.7	0.0	0.2	0.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay				55.7								
HCM 6th LOS				E								

Timings

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Existing PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	88	74	33	67	107	55	916	47	920
Future Volume (vph)	88	74	33	67	107	55	916	47	920
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	15.0	29.0	15.0	29.0	16.0	14.0	40.0	16.0	42.0
Total Split (%)	15.0%	29.0%	15.0%	29.0%	16.0%	14.0%	40.0%	16.0%	42.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effect Green (s)	8.2	14.5	6.0	10.2	16.9	6.8	56.9	6.6	58.7
Actuated g/C Ratio	0.08	0.14	0.06	0.10	0.17	0.07	0.57	0.07	0.59
v/c Ratio	0.68	0.52	0.33	0.39	0.34	0.49	0.51	0.43	0.54
Control Delay	67.9	33.3	53.1	45.3	11.9	54.2	14.8	55.3	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	33.3	53.1	45.3	11.9	54.2	14.8	55.3	17.5
LOS	E	C	D	D	B	D	B	E	B
Approach Delay		46.8		29.3			16.9		19.2
Approach LOS		D		C			B		B

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 21.6

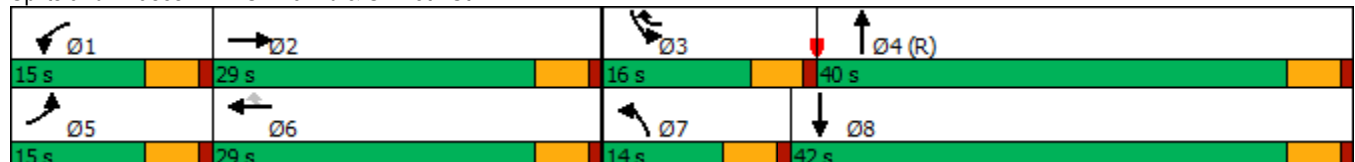
Intersection LOS: C

Intersection Capacity Utilization 61.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	74	65	33	67	107	55	916	28	47	920	103
Future Volume (veh/h)	88	74	65	33	67	107	55	916	28	47	920	103
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		0.98	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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1885	1900	1900	1856	1900	1900	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	96	80	32	36	73	13	60	996	29	51	1000	105
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, %	5	1	0	0	3	0	0	2	0	0	2	2
Cap, veh/h	120	131	52	57	119	162	77	2216	65	69	2024	212
Arrive On Green	0.07	0.10	0.10	0.03	0.06	0.06	0.09	1.00	1.00	0.04	0.62	0.62
Sat Flow, veh/h	1739	1279	512	1810	1856	1572	1810	3526	103	1810	3244	341
Grp Volume(v), veh/h	96	0	112	36	73	13	60	502	523	51	548	557
Grp Sat Flow(s),veh/h/ln	1739	0	1791	1810	1856	1572	1810	1777	1851	1810	1777	1808
Q Serve(g_s), s	5.4	0.0	6.0	2.0	3.8	0.7	3.2	0.0	0.0	2.8	16.8	16.8
Cycle Q Clear(g_c), s	5.4	0.0	6.0	2.0	3.8	0.7	3.2	0.0	0.0	2.8	16.8	16.8
Prop In Lane	1.00		0.29	1.00		1.00	1.00		0.06	1.00		0.19
Lane Grp Cap(c), veh/h	120	0	183	57	119	162	77	1117	1164	69	1108	1128
V/C Ratio(X)	0.80	0.00	0.61	0.63	0.61	0.08	0.78	0.45	0.45	0.74	0.49	0.49
Avail Cap(c_a), veh/h	174	0	430	181	445	438	163	1117	1164	199	1108	1128
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	0.0	43.0	47.8	45.6	40.6	45.3	0.0	0.0	47.6	10.2	10.2
Incr Delay (d2), s/veh	9.3	0.0	1.2	4.2	1.9	0.1	4.8	1.0	1.0	5.8	1.6	1.5
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(95%),veh/ln	4.7	0.0	4.8	1.7	3.3	0.5	2.7	0.6	0.6	2.4	10.2	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.2	0.0	44.2	52.0	47.4	40.7	50.1	1.0	1.0	53.4	11.8	11.8
LnGrp LOS	E	A	D	D	D	D	D	A	A	D	B	B
Approach Vol, veh/h	208			122			1085			1156		
Approach Delay, s/veh	49.3			48.1			3.7			13.6		
Approach LOS	D			D			A			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	15.2	8.8	67.9	11.9	11.4	9.3	67.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	24.0	11.0	35.0	10.0	24.0	9.0	37.0				
Max Q Clear Time (g_c+I1), s	4.0	8.0	4.8	2.0	7.4	5.8	5.2	18.8				
Green Ext Time (p_c), s	0.0	0.1	0.0	2.0	0.0	0.1	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay	14.0											
HCM 6th LOS	B											

Timings
2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	141	141	178	204	114	582	123	665
Future Volume (vph)	141	141	178	204	114	582	123	665
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	20.0	27.0	20.0	27.0	15.0	35.0	18.0	38.0
Total Split (%)	20.0%	27.0%	20.0%	27.0%	15.0%	35.0%	18.0%	38.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	8.9	16.0	17.7	24.7	9.6	35.4	11.0	36.8
Actuated g/C Ratio	0.09	0.16	0.18	0.25	0.10	0.35	0.11	0.37
v/c Ratio	0.50	0.75	0.32	0.83	0.74	0.62	0.70	0.68
Control Delay	48.8	51.4	37.8	49.4	84.4	17.2	67.9	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	51.4	37.8	49.4	84.4	17.2	67.9	28.7
LOS	D	D	D	D	F	B	E	C
Approach Delay		50.3		45.5		26.7		34.0
Approach LOS		D		D		C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 93 (93%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 36.2

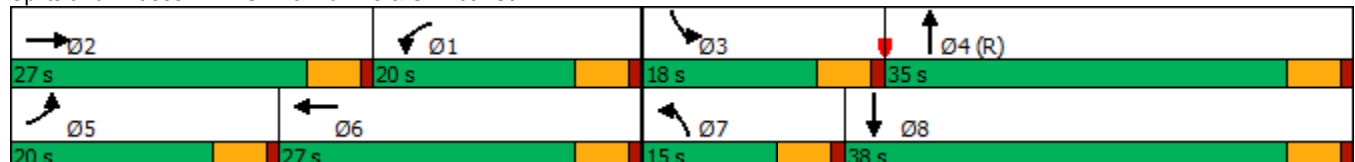
Intersection LOS: D

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: SE 192nd Ave & SE 20th St



HCM 6th Signalized Intersection Summary

2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center

Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	141	67	178	204	140	114	582	114	123	665	124
Future Volume (veh/h)	141	141	67	178	204	140	114	582	114	123	665	124
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		0.98	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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1870	1900	1885	1900	1885	1870	1885
Adj Flow Rate, veh/h	157	157	54	198	227	129	127	647	110	137	739	121
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	1	0	0	2	0	1	0	1	2	1
Cap, veh/h	229	191	66	495	246	140	161	1292	219	171	1309	214
Arrive On Green	0.07	0.14	0.14	0.14	0.22	0.22	0.09	0.42	0.42	0.10	0.43	0.43
Sat Flow, veh/h	3510	1350	464	3510	1130	642	1810	3062	520	1795	3056	500
Grp Volume(v), veh/h	157	0	211	198	0	356	127	378	379	137	430	430
Grp Sat Flow(s),veh/h/ln	1755	0	1814	1755	0	1772	1810	1791	1791	1795	1777	1780
Q Serve(g_s), s	4.4	0.0	11.3	5.1	0.0	19.7	6.9	15.5	15.5	7.5	18.2	18.2
Cycle Q Clear(g_c), s	4.4	0.0	11.3	5.1	0.0	19.7	6.9	15.5	15.5	7.5	18.2	18.2
Prop In Lane	1.00		0.26	1.00		0.36	1.00		0.29	1.00		0.28
Lane Grp Cap(c), veh/h	229	0	257	495	0	385	161	756	756	171	761	762
V/C Ratio(X)	0.68	0.00	0.82	0.40	0.00	0.92	0.79	0.50	0.50	0.80	0.56	0.56
Avail Cap(c_a), veh/h	527	0	399	527	0	390	181	756	756	233	761	762
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	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	45.7	0.0	41.7	39.1	0.0	38.3	44.6	21.2	21.2	44.3	21.5	21.6
Incr Delay (d2), s/veh	1.4	0.0	4.0	0.2	0.0	26.8	16.2	2.4	2.4	7.8	2.5	2.5
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(95%),veh/ln	3.4	0.0	8.9	3.9	0.0	16.5	6.7	10.8	10.8	6.4	11.8	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	0.0	45.7	39.3	0.0	65.1	60.8	23.5	23.6	52.1	24.1	24.1
LnGrp LOS	D	A	D	D	A	E	E	C	C	D	C	C
Approach Vol, veh/h	368			554			884			997		
Approach Delay, s/veh	46.3			55.9			28.9			27.9		
Approach LOS	D			E			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.1	19.2	14.5	47.2	11.5	26.7	13.9	47.8				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	22.0	13.0	30.0	15.0	22.0	10.0	33.0				
Max Q Clear Time (g_c+l1), s	7.1	13.3	9.5	17.5	6.4	21.7	8.9	20.2				
Green Ext Time (p_c), s	0.2	0.4	0.1	2.4	0.2	0.1	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay	36.2											
HCM 6th LOS	D											

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	853	3	10	887
Future Vol, veh/h	3	4	853	3	10	887
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	948	3	11	986
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1465	476	0	0	951	0
Stage 1	950	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	121	541	-	-	730	-
Stage 1	341	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	119	541	-	-	730	-
Mov Cap-2 Maneuver	119	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	22.2	0	0.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 119 541	730	-		
HCM Lane V/C Ratio	-	- 0.028 0.008	0.015	-		
HCM Control Delay (s)	-	- 36.1 11.7	10	-		
HCM Lane LOS	-	- E B	B	-		
HCM 95th %tile Q(veh)	-	- 0.1 0	0	-		

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	100	171	295	153	69	733	134	167	673
Future Volume (vph)	100	171	295	153	69	733	134	167	673
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6	7	4	1	3	8
Permitted Phases	2		6				4		
Detector Phase	5	2	1	6	7	4	1	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	14.0	32.0	19.0	37.0	13.0	34.0	19.0	15.0	36.0
Total Split (%)	14.0%	32.0%	19.0%	37.0%	13.0%	34.0%	19.0%	15.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	20.0	12.3	31.0	18.3	5.8	44.0	57.7	10.0	50.2
Actuated g/C Ratio	0.20	0.12	0.31	0.18	0.06	0.44	0.58	0.10	0.50
v/c Ratio	0.42	0.54	0.87	0.38	0.36	0.50	0.15	0.53	0.47
Control Delay	29.3	36.8	52.7	21.8	50.0	23.3	1.7	36.3	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	36.8	52.7	21.8	50.0	23.3	1.7	36.3	13.2
LOS	C	D	D	C	D	C	A	D	B
Approach Delay		34.5		38.4		22.1			17.4
Approach LOS		C		D		C			B

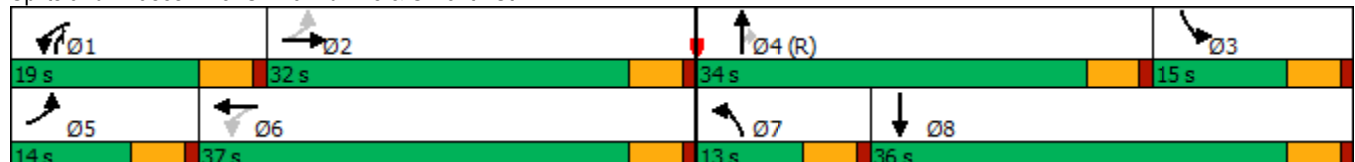
Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 36 (36%), Referenced to phase 4:NBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 25.3
 Intersection Capacity Utilization 67.7%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	171	57	295	153	99	69	733	134	167	673	75
Future Volume (veh/h)	100	171	57	295	153	99	69	733	134	167	673	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.99	1.00		0.99	1.00		0.98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1773	1847	1817	2003	2003	2018	2018	1988	2003	1847	1832	1743
Adj Flow Rate, veh/h	109	186	20	321	166	12	75	797	78	182	732	75
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, %	5	0	2	1	1	0	0	2	1	0	1	7
Cap, veh/h	305	304	32	387	582	42	163	1095	727	937	1658	170
Arrive On Green	0.07	0.10	0.10	0.14	0.16	0.16	0.04	0.29	0.29	0.27	0.52	0.52
Sat Flow, veh/h	1688	3192	339	1908	3600	258	3728	3777	1689	3413	3182	326
Grp Volume(v), veh/h	109	101	105	321	87	91	75	797	78	182	400	407
Grp Sat Flow(s), veh/h/ln	1688	1755	1776	1908	1903	1955	1864	1889	1689	1706	1741	1768
Q Serve(g_s), s	5.7	5.5	5.7	14.0	4.0	4.1	2.0	19.0	0.7	4.1	14.3	14.3
Cycle Q Clear(g_c), s	5.7	5.5	5.7	14.0	4.0	4.1	2.0	19.0	0.7	4.1	14.3	14.3
Prop In Lane	1.00		0.19	1.00		0.13	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	305	167	169	387	308	316	163	1095	727	937	907	921
V/C Ratio(X)	0.36	0.60	0.62	0.83	0.28	0.29	0.46	0.73	0.11	0.19	0.44	0.44
Avail Cap(c_a), veh/h	332	474	480	387	609	626	298	1095	727	937	907	921
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)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	43.4	43.5	34.3	36.8	36.9	46.7	31.9	6.6	27.8	14.9	14.9
Incr Delay (d2), s/veh	0.3	1.3	1.4	13.1	0.2	0.2	0.7	4.2	0.3	0.0	1.6	1.5
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(95%),veh/ln	4.2	4.3	4.5	12.8	3.3	3.5	1.6	13.8	0.9	2.9	9.4	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	44.7	44.8	47.4	37.0	37.0	47.4	36.2	6.9	27.8	16.5	16.4
LnGrp LOS	D	D	D	D	D	D	D	D	A	C	B	B
Approach Vol, veh/h		315			499			950			989	
Approach Delay, s/veh		42.1			43.7			34.7			18.5	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	14.5	32.5	34.0	12.4	21.2	9.4	57.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.0	27.0	10.0	29.0	9.0	32.0	8.0	31.0				
Max Q Clear Time (g_c+I1), s	16.0	7.7	6.1	21.0	7.7	6.1	4.0	16.3				
Green Ext Time (p_c), s	0.0	0.3	0.0	1.5	0.0	0.3	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay			31.4									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Existing PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	4	261	34	286	71	1	33	3	58
Future Volume (vph)	4	261	34	286	71	1	33	3	58
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		8		4	
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	30.0	10.0	30.0	32.0	32.0	34.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effect Green (s)	5.5	22.0	5.5	24.0	8.6	8.6		8.6	8.6
Actuated g/C Ratio	0.13	0.53	0.13	0.58	0.21	0.21		0.21	0.21
v/c Ratio	0.02	0.20	0.16	0.15	0.28	0.10		0.13	0.16
Control Delay	23.5	8.8	23.6	8.4	16.4	6.8		14.6	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	23.5	8.8	23.6	8.4	16.4	6.8		14.6	5.8
LOS	C	A	C	A	B	A		B	A
Approach Delay		8.9		10.0		13.5		9.1	
Approach LOS		A		A		B		A	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 41.2

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.28

Intersection Signal Delay: 9.9

Intersection LOS: A

Intersection Capacity Utilization 41.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

		
10 s	85 s	35 s
		
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary 6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	261	80	34	286	8	71	1	30	33	3	58
Future Volume (veh/h)	4	261	80	34	286	8	71	1	30	33	3	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	0.99		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1870	1841	1832	1847	1876	1817	1876	1832	1900	1900	1900
Adj Flow Rate, veh/h	4	278	53	36	304	7	76	1	3	35	3	7
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, %	0	2	4	3	2	0	4	0	3	0	0	0
Cap, veh/h	10	1276	240	73	1629	37	324	47	140	338	21	182
Arrive On Green	0.01	0.43	0.43	0.04	0.46	0.46	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1810	2982	560	1745	3506	81	1358	412	1236	1285	189	1603
Grp Volume(v), veh/h	4	164	167	36	152	159	76	0	4	38	0	7
Grp Sat Flow(s),veh/h/ln	1810	1777	1765	1745	1754	1832	1358	0	1648	1474	0	1603
Q Serve(g_s), s	0.1	2.1	2.2	0.7	1.8	1.8	1.9	0.0	0.1	0.6	0.0	0.1
Cycle Q Clear(g_c), s	0.1	2.1	2.2	0.7	1.8	1.8	2.7	0.0	0.1	0.8	0.0	0.1
Prop In Lane	1.00		0.32	1.00		0.04	1.00		0.75	0.92		1.00
Lane Grp Cap(c), veh/h	10	761	756	73	815	851	324	0	187	359	0	182
V/C Ratio(X)	0.41	0.22	0.22	0.49	0.19	0.19	0.23	0.00	0.02	0.11	0.00	0.04
Avail Cap(c_a), veh/h	251	3948	3921	242	3898	4069	1301	0	1373	1407	0	1336
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	6.5	6.5	16.9	5.6	5.7	15.8	0.0	14.2	14.5	0.0	14.2
Incr Delay (d2), s/veh	9.6	0.1	0.1	1.9	0.0	0.0	0.1	0.0	0.0	0.0	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(95%),veh/ln	0.1	0.8	0.8	0.5	0.6	0.6	1.0	0.0	0.0	0.4	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	6.5	6.6	18.8	5.7	5.7	15.9	0.0	14.2	14.5	0.0	14.2
LnGrp LOS	C	A	A	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h	335			347			80			45		
Approach Delay, s/veh	6.8			7.0			15.8			14.5		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	20.4		9.1	5.2	21.7		9.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	2.7	4.2		2.8	2.1	3.8		4.7				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				8.2								
HCM 6th LOS				A								

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	334	32	10	405	0	18	0	7	4	0	108
Future Vol, veh/h	11	334	32	10	405	0	18	0	7	4	0	108
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	95	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	12	367	35	11	445	0	20	0	8	4	0	119
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	451	0	0	402	0	0	654	882	202	682	899	229
Stage 1	-	-	-	-	-	-	409	409	-	473	473	-
Stage 2	-	-	-	-	-	-	245	473	-	209	426	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1120	-	-	1168	-	-	356	287	811	340	281	780
Stage 1	-	-	-	-	-	-	596	600	-	546	562	-
Stage 2	-	-	-	-	-	-	743	562	-	779	589	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1114	-	-	1168	-	-	297	280	810	329	274	776
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	280	-	329	274	-
Stage 1	-	-	-	-	-	-	589	593	-	537	554	-
Stage 2	-	-	-	-	-	-	623	554	-	763	583	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			15.8			10.7		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	361	1114	-	-	1168	-	-	329	776			
HCM Lane V/C Ratio	0.076	0.011	-	-	0.009	-	-	0.013	0.153			
HCM Control Delay (s)	15.8	8.3	-	-	8.1	-	-	16.1	10.5			
HCM Lane LOS	C	A	-	-	A	-	-	C	B			
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0	0.5			

Timings
8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	129	295	9	436	10	6	80	14
Future Volume (vph)	129	295	9	436	10	6	80	14
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	27.0	27.4	24.6	21.4	9.2	9.2	9.2	9.2
Actuated g/C Ratio	0.60	0.61	0.54	0.47	0.20	0.20	0.20	0.20
v/c Ratio	0.24	0.16	0.02	0.34	0.04	0.02	0.30	0.27
Control Delay	9.1	9.2	7.1	12.2	13.9	12.4	17.7	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	9.2	7.1	12.2	13.9	12.4	17.7	6.7
LOS	A	A	A	B	B	B	B	A
Approach Delay		9.2		12.2		13.2		11.5
Approach LOS		A		B		B		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 45.2

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 11.0

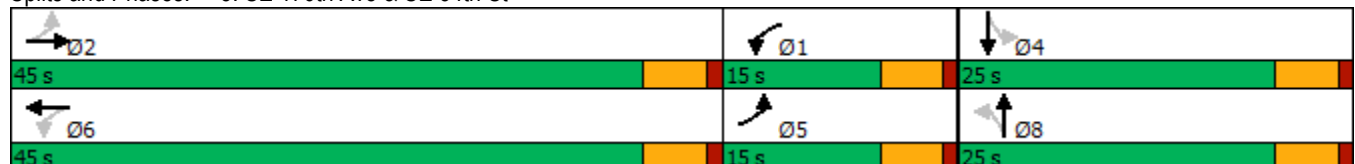
Intersection LOS: B

Intersection Capacity Utilization 45.9%

ICU Level of Service A

Analysis Period (min) 15

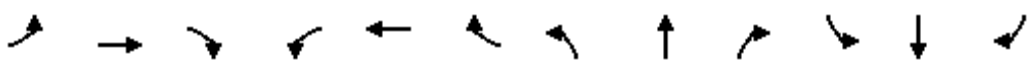
Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	295	13	9	436	86	10	6	2	80	14	88
Future Volume (veh/h)	129	295	13	9	436	86	10	6	2	80	14	88
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		0.98
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1870	1900	1900	1885	1885	1900	1900	1900	1885	1900	1900
Adj Flow Rate, veh/h	140	321	11	10	474	69	11	7	0	87	15	8
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, %	1	2	0	0	1	1	0	0	0	1	0	0
Cap, veh/h	626	1394	48	734	1249	181	319	195	0	331	119	63
Arrive On Green	0.10	0.40	0.40	0.10	0.40	0.40	0.10	0.10	0.00	0.10	0.10	0.10
Sat Flow, veh/h	1795	3506	120	1810	3139	455	1407	1900	0	1416	1159	618
Grp Volume(v), veh/h	140	162	170	10	269	274	11	7	0	87	0	23
Grp Sat Flow(s),veh/h/ln	1795	1777	1849	1810	1791	1803	1407	1900	0	1416	0	1777
Q Serve(g_s), s	0.0	2.3	2.3	0.0	4.0	4.1	0.3	0.1	0.0	2.2	0.0	0.4
Cycle Q Clear(g_c), s	0.0	2.3	2.3	0.0	4.0	4.1	0.7	0.1	0.0	2.3	0.0	0.4
Prop In Lane	1.00		0.06	1.00		0.25	1.00		0.00	1.00		0.35
Lane Grp Cap(c), veh/h	626	707	735	734	712	717	319	195	0	331	0	182
V/C Ratio(X)	0.22	0.23	0.23	0.01	0.38	0.38	0.03	0.04	0.00	0.26	0.00	0.13
Avail Cap(c_a), veh/h	919	1885	1961	1029	1900	1913	920	1008	0	937	0	942
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	7.5	7.5	6.0	8.0	8.1	15.7	15.2	0.0	16.3	0.0	15.4
Incr Delay (d2), s/veh	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.1
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(95%),veh/ln	0.9	1.0	1.0	0.0	1.7	1.8	0.1	0.1	0.0	1.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.4	7.6	7.6	6.0	8.2	8.2	15.7	15.3	0.0	16.5	0.0	15.5
LnGrp LOS	A	A	A	A	A	A	B	B	A	B	A	B
Approach Vol, veh/h	472			553			18			110		
Approach Delay, s/veh	7.8			8.1			15.6			16.3		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	20.0		8.9	8.8	20.0		8.9				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	4.3		4.3	2.0	6.1		2.7				
Green Ext Time (p_c), s	0.0	1.1		0.1	0.1	2.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 8.9
HCM 6th LOS A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	23	13	221	162	14
Future Vol, veh/h	15	23	13	221	162	14
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	7	0	15	0	1	0
Mvmt Flow	16	25	14	238	174	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	448	185	189	0	-	0
Stage 1	182	-	-	-	-	-
Stage 2	266	-	-	-	-	-
Critical Hdwy	6.47	6.2	4.25	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.3	2.335	-	-	-
Pot Cap-1 Maneuver	559	862	1311	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	553	860	1311	-	-	-
Mov Cap-2 Maneuver	553	-	-	-	-	-
Stage 1	828	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.4	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1311	-	705	-	-	
HCM Lane V/C Ratio	0.011	-	0.058	-	-	
HCM Control Delay (s)	7.8	-	10.4	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

Intersection	
Intersection Delay, s/veh	24.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	350	44	67	370	14	34	101	62	25	76	26
Future Vol, veh/h	37	350	44	67	370	14	34	101	62	25	76	26
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
Heavy Vehicles, %	3	0	0	1	0	7	0	1	0	4	1	8
Mvmt Flow	40	380	48	73	402	15	37	110	67	27	83	28
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	29	26.6	14.2	14.7
HCM LOS	D	D	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	20%
Vol Thru, %	0%	62%	0%	89%	0%	96%	60%
Vol Right, %	0%	38%	0%	11%	0%	4%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	34	163	37	394	67	384	127
LT Vol	34	0	37	0	67	0	25
Through Vol	0	101	0	350	0	370	76
RT Vol	0	62	0	44	0	14	26
Lane Flow Rate	37	177	40	428	73	417	138
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.085	0.37	0.082	0.795	0.147	0.778	0.309
Departure Headway (Hd)	8.289	7.518	7.33	6.686	7.266	6.711	8.057
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	477	488	540	493	538	444
Service Time	6.053	5.282	5.085	4.441	5.022	4.466	6.133
HCM Lane V/C Ratio	0.086	0.371	0.082	0.793	0.148	0.775	0.311
HCM Control Delay	11.8	14.7	10.7	30.7	11.3	29.3	14.7
HCM Lane LOS	B	B	B	D	B	D	B
HCM 95th-tile Q	0.3	1.7	0.3	7.5	0.5	7.1	1.3

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	66	23	39	21	17	38	38	1296	43	1193
Future Volume (vph)	66	23	39	21	17	38	38	1296	43	1193
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		2			6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	2	2	2	6	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	39.0	39.0	39.0	38.0	38.0	38.0	10.0	32.0	19.5	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	15.0	66.0	15.0	66.0
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	12.5%	55.0%	12.5%	55.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	14.7	14.7	14.7	14.7	14.7	14.7	6.1	87.3	9.0	90.2
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.12	0.12	0.05	0.73	0.08	0.75
v/c Ratio	0.40	0.10	0.14	0.13	0.09	0.14	0.46	0.38	0.34	0.34
Control Delay	52.8	43.6	1.0	44.5	43.1	1.0	52.3	18.3	59.3	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	43.6	1.0	44.5	43.1	1.0	52.3	18.3	59.3	8.0
LOS	D	D	A	D	D	A	D	B	E	A
Approach Delay		35.3			22.4			19.3		9.7
Approach LOS		D			C			B		A

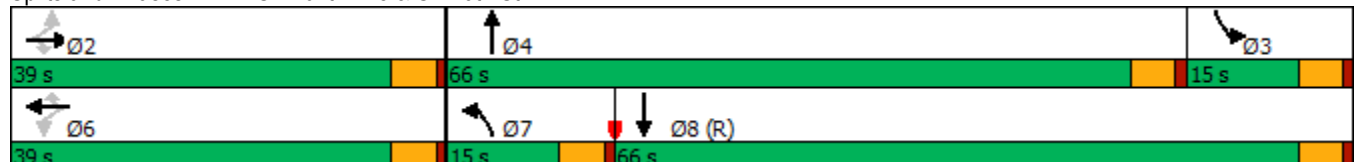
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 112 (93%), Referenced to phase 8:SBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.46
 Intersection Signal Delay: 15.8
 Intersection Capacity Utilization 54.9%
 Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	23	39	21	17	38	38	1296	29	43	1193	38
Future Volume (veh/h)	66	23	39	21	17	38	38	1296	29	43	1193	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1826	1633	1856	1826	1870	1752	1870	1885	1900
Adj Flow Rate, veh/h	69	24	2	22	18	2	40	1364	30	45	1256	38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	5	18	3	5	2	10	2	1	0
Cap, veh/h	180	182	153	173	156	150	53	2613	57	58	2618	79
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.51	0.51	0.03	0.51	0.51
Sat Flow, veh/h	1406	1900	1600	1344	1633	1563	1739	5141	113	1781	5133	155
Grp Volume(v), veh/h	69	24	2	22	18	2	40	903	491	45	840	454
Grp Sat Flow(s),veh/h/ln	1406	1900	1600	1344	1633	1563	1739	1702	1850	1781	1716	1857
Q Serve(g_s), s	5.7	1.4	0.1	1.8	1.2	0.1	2.7	21.3	21.3	3.0	19.0	19.0
Cycle Q Clear(g_c), s	6.9	1.4	0.1	3.2	1.2	0.1	2.7	21.3	21.3	3.0	19.0	19.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.08
Lane Grp Cap(c), veh/h	180	182	153	173	156	150	53	1730	940	58	1750	947
V/C Ratio(X)	0.38	0.13	0.01	0.13	0.12	0.01	0.75	0.52	0.52	0.78	0.48	0.48
Avail Cap(c_a), veh/h	444	538	453	425	463	443	145	1730	940	148	1750	947
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	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	49.7	49.1	51.2	49.6	49.1	57.7	19.7	19.7	57.6	19.1	19.1
Incr Delay (d2), s/veh	0.5	0.1	0.0	0.1	0.1	0.0	6.1	0.9	1.6	8.1	0.9	1.7
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(95%),veh/ln	3.7	1.2	0.1	1.1	0.9	0.1	2.3	12.4	13.5	2.6	11.9	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.3	49.8	49.1	51.3	49.7	49.1	63.8	20.6	21.4	65.7	20.0	20.8
LnGrp LOS	D	D	D	D	D	D	E	C	C	E	C	C
Approach Vol, veh/h		95			42			1434			1339	
Approach Delay, s/veh		52.3			50.5			22.1			21.8	
Approach LOS		D			D			C			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		16.5	8.9	66.0		16.5	8.7	66.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		34.0	10.0	61.0		34.0	10.0	61.0				
Max Q Clear Time (g_c+I1), s		8.9	5.0	23.3		5.2	4.7	21.0				
Green Ext Time (p_c), s		0.0	0.0	1.5		0.0	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay			23.4									
HCM 6th LOS			C									

Timings
12: SE 164th Ave & SE 34th Street

Vancouver Innovation Center
Existing PM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 		 	 		 		 		 	  
Traffic Volume (vph)	45	88	178	302	105	194	179	1124	297	147	1061
Future Volume (vph)	45	88	178	302	105	194	179	1124	297	147	1061
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	15.0	33.0	20.0	17.0	35.0	20.0	20.0	50.0	17.0	20.0	50.0
Total Split (%)	12.5%	27.5%	16.7%	14.2%	29.2%	16.7%	16.7%	41.7%	14.2%	16.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	5.6	9.7	31.9	12.0	18.0	37.3	17.2	64.1	81.1	14.3	61.1
Actuated g/C Ratio	0.05	0.08	0.27	0.10	0.15	0.31	0.14	0.53	0.68	0.12	0.51
v/c Ratio	0.32	0.64	0.40	1.59	0.40	0.36	0.74	0.63	0.27	0.74	0.46
Control Delay	60.7	72.8	24.2	323.8	51.2	15.7	66.6	23.0	2.7	69.4	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	72.8	24.2	323.8	51.2	15.7	66.6	23.0	2.7	69.4	18.7
LOS	E	E	C	F	D	B	E	C	A	E	B
Approach Delay		43.3			176.9			24.1			24.6
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.59

Intersection Signal Delay: 50.2

Intersection LOS: D

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave & SE 34th Street

			
Ø1	Ø2	Ø3	Ø4
17 s	33 s	20 s	50 s
			
Ø5	Ø6	Ø7	Ø8 (R)
15 s	35 s	20 s	50 s

HCM 6th Signalized Intersection Summary

12: SE 164th Ave & SE 34th Street

Vancouver Innovation Center
Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	88	178	302	105	194	179	1124	297	147	1061	46
Future Volume (veh/h)	45	88	178	302	105	194	179	1124	297	147	1061	46
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1714	1773	1832	1870	1841	1856	1791	1776	1791	1776	1776	1746
Adj Flow Rate, veh/h	47	92	134	315	109	120	186	1171	210	153	1105	45
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	5	1	2	4	3	1	2	1	2	2	4
Cap, veh/h	104	164	335	200	293	417	211	1325	748	179	1792	73
Arrive On Green	0.03	0.09	0.09	0.10	0.16	0.16	0.12	0.39	0.39	0.04	0.12	0.12
Sat Flow, veh/h	3166	1773	1553	1995	1841	1572	1706	3375	1518	1692	4779	195
Grp Volume(v), veh/h	47	92	134	315	109	120	186	1171	210	153	747	403
Grp Sat Flow(s),veh/h/ln	1583	1773	1553	998	1841	1572	1706	1687	1518	1692	1616	1741
Q Serve(g_s), s	1.7	6.0	8.9	12.0	6.3	7.3	12.9	38.7	9.8	10.8	26.3	26.3
Cycle Q Clear(g_c), s	1.7	6.0	8.9	12.0	6.3	7.3	12.9	38.7	9.8	10.8	26.3	26.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	104	164	335	200	293	417	211	1325	748	179	1212	653
V/C Ratio(X)	0.45	0.56	0.40	1.58	0.37	0.29	0.88	0.88	0.28	0.85	0.62	0.62
Avail Cap(c_a), veh/h	264	414	554	200	460	560	213	1325	748	211	1212	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	57.0	52.1	40.4	54.0	45.1	35.1	51.7	33.9	17.9	57.0	44.4	44.4
Incr Delay (d2), s/veh	1.1	1.1	0.3	283.1	0.3	0.1	30.8	8.8	0.9	20.6	2.2	4.1
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(95%),veh/ln	1.3	4.8	6.1	18.5	5.2	5.0	11.6	23.5	6.3	9.7	17.2	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	53.3	40.7	337.1	45.4	35.2	82.5	42.7	18.9	77.6	46.6	48.5
LnGrp LOS	E	D	D	F	D	D	F	D	B	E	D	D
Approach Vol, veh/h	273			544			1567			1303		
Approach Delay, s/veh	47.9			212.1			44.3			50.8		
Approach LOS	D			F			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	16.1	17.7	52.1	9.0	24.1	19.8	50.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	28.0	15.0	45.0	10.0	30.0	15.0	45.0				
Max Q Clear Time (g_c+I1), s	14.0	10.9	12.8	40.7	3.7	9.3	14.9	28.3				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.6	0.0	0.2	0.0	2.5				
Intersection Summary												
HCM 6th Ctrl Delay	71.6											
HCM 6th LOS	E											

Appendix D VIC Campus Volume Adjustment

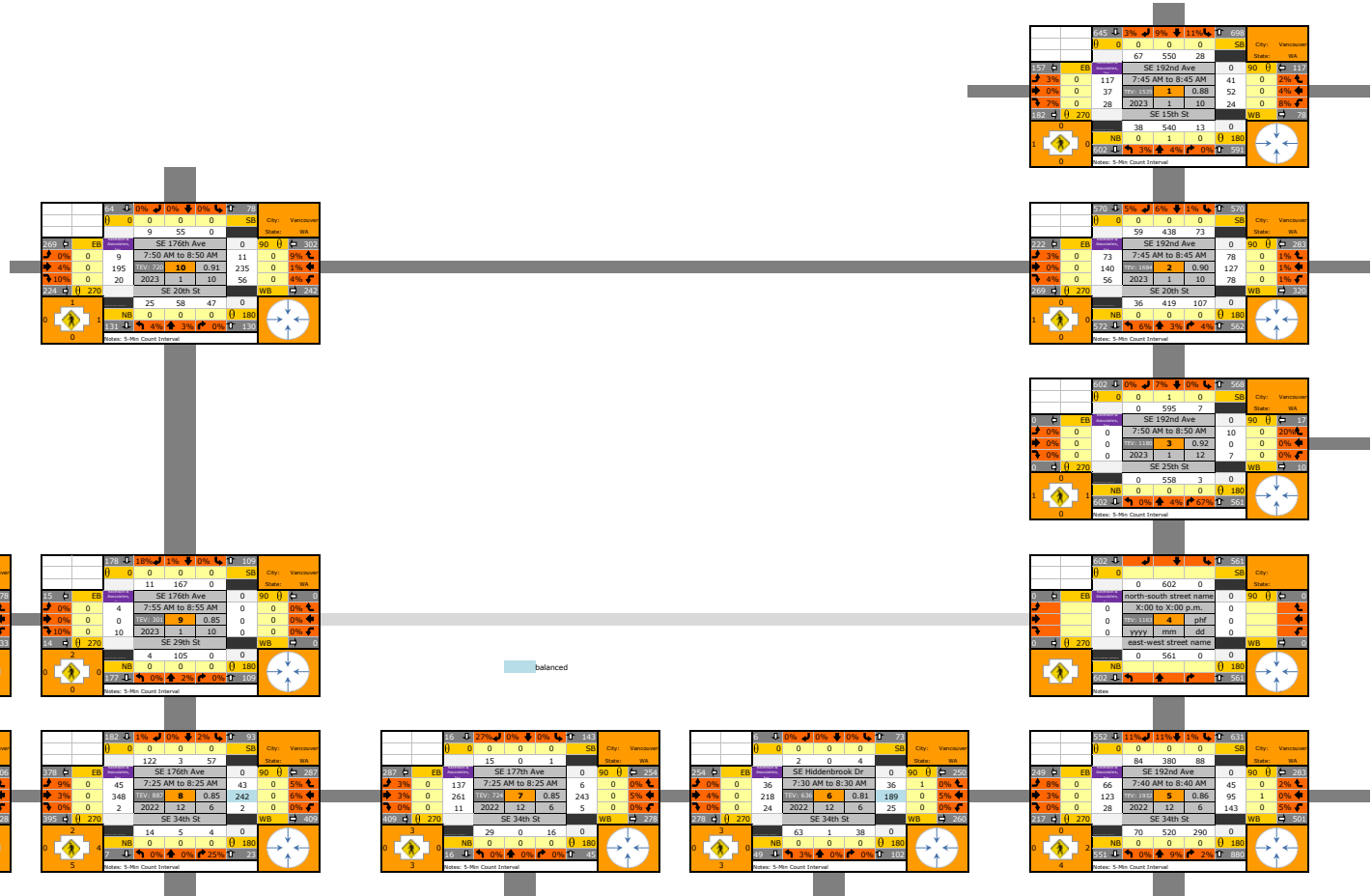


Table 1 summarizes the combined traffic counts at 10th s main and west gates during the time intervals determined by the County in 1994. Table 1 also indicates the specific trip generation rates derived from these counts according to the actual development on HP's South Campus.

Impact of HP North Campus Development on 10th S Avenue
Page 1 of 2



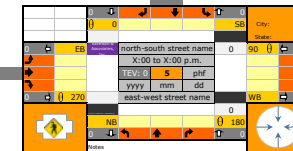
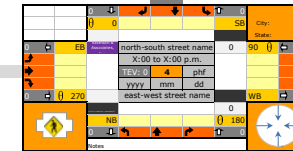
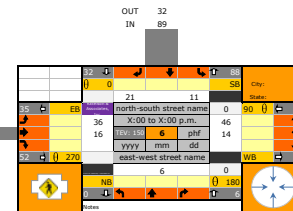
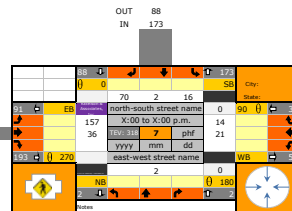
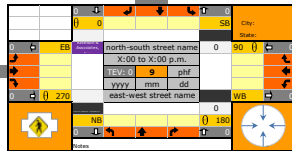
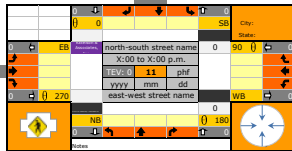
	Traffic Counts	Trip Rate per Thousand Gross Square Feet
AM Peak (7:45 AM - 8:45 AM)		
Entering	261	0.37
Exiting	119	0.17
Total	380	0.53
PM Peak (4:35 PM - 5:35 PM)		
Entering	76	0.11
Exiting	146	0.21
Total	222	0.32

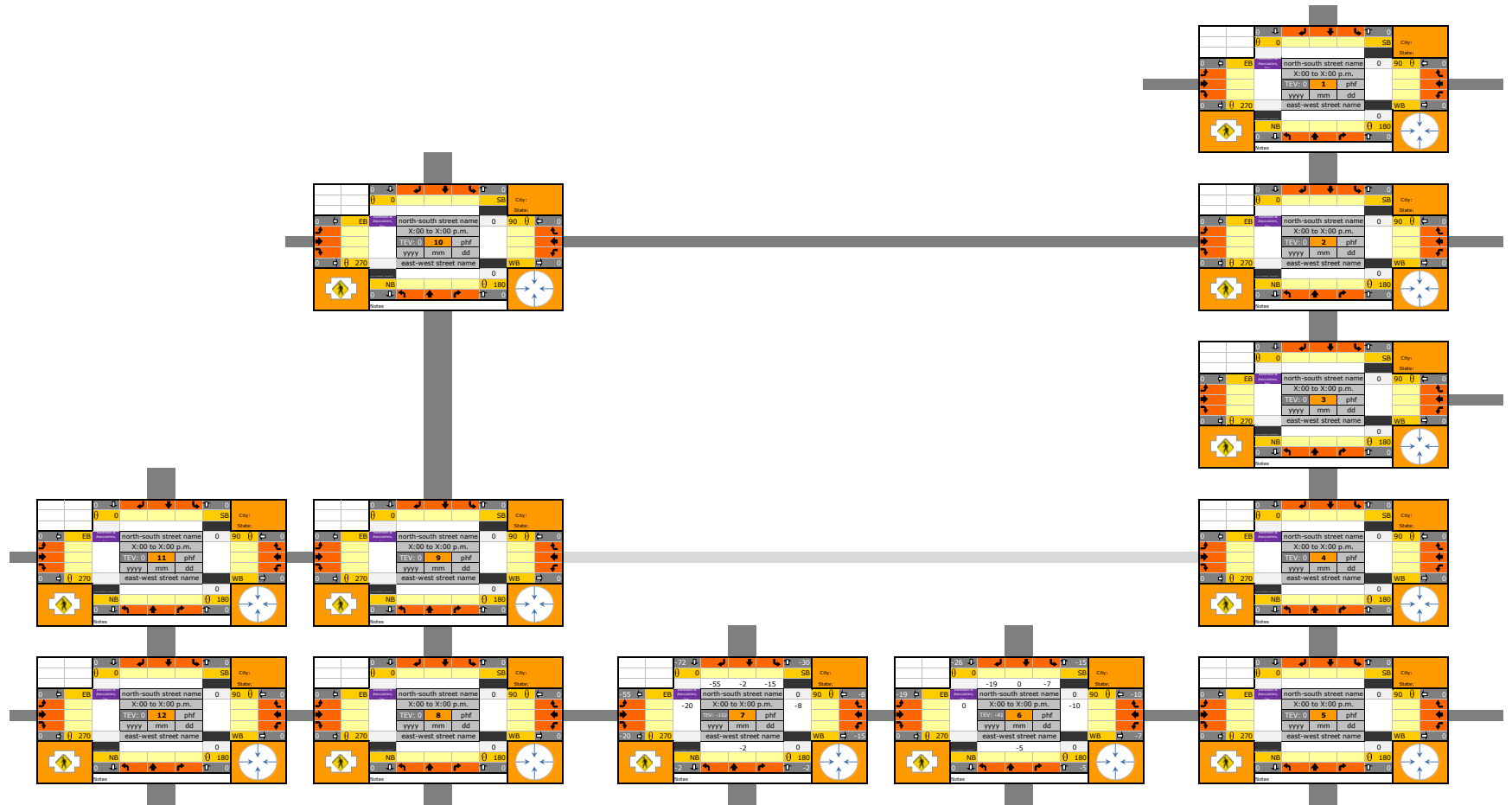
Total for 712,000K
+3,000 K since 1996 count' #####
TOTAL IN OUT
380 261 119
2 1 1
382 262 120

OUT 0.65 IN 0.60 IN 0.35	OUT 0.35 IN 0.37 IN 0.41	OUT 0.15 IN 0.65 IN 0.36	OUT 0.34 IN 0.09 IN 0.04	OUT 0.27 IN 0.34 IN 0.43	OUT 0.07 IN 0.00 IN 0.43
--------------------------------	--------------------------------	--------------------------------	--------------------------------	--------------------------------	--------------------------------

Note: the outward distribution percentages programmed in the spreadsheet for intersection 7 is slightly different to what was calculated above . I kept to what was programmed in the spreadsheet.

TOTAL IN OUT
262 120
2020 Site Driveway Count Distribution - Same Pattern used for Assignment of Historic Trips





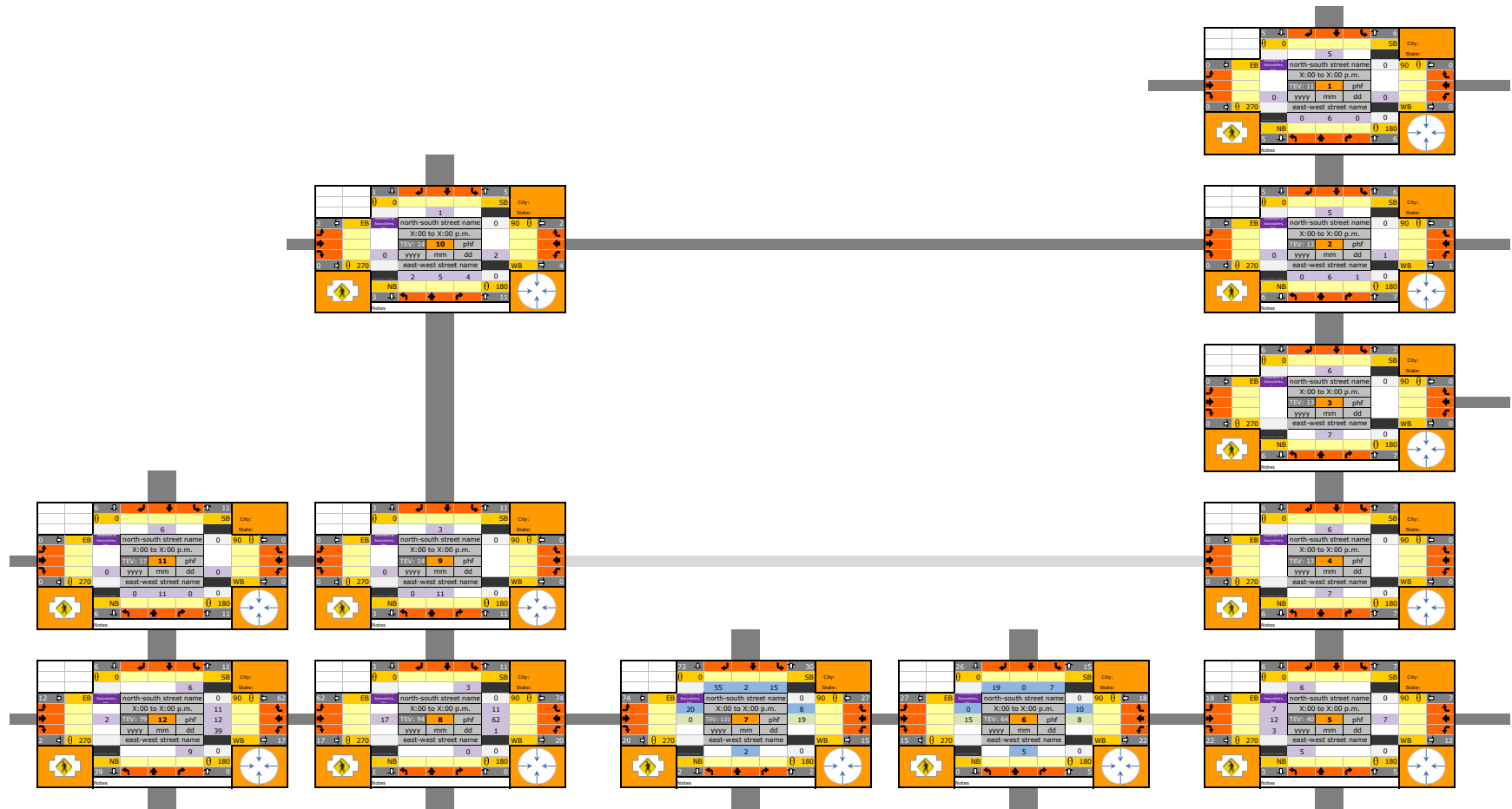


Table 1 summarizes the combined traffic counts at HP's east and west gates during the time intervals determined by the County in 1996. Table 1 also indicates the specific trip generation rates derived from these counts according to the actual development on HP's South Campus.

Report of HP South Campus Development on 104th Avenue
Page 1 of 3

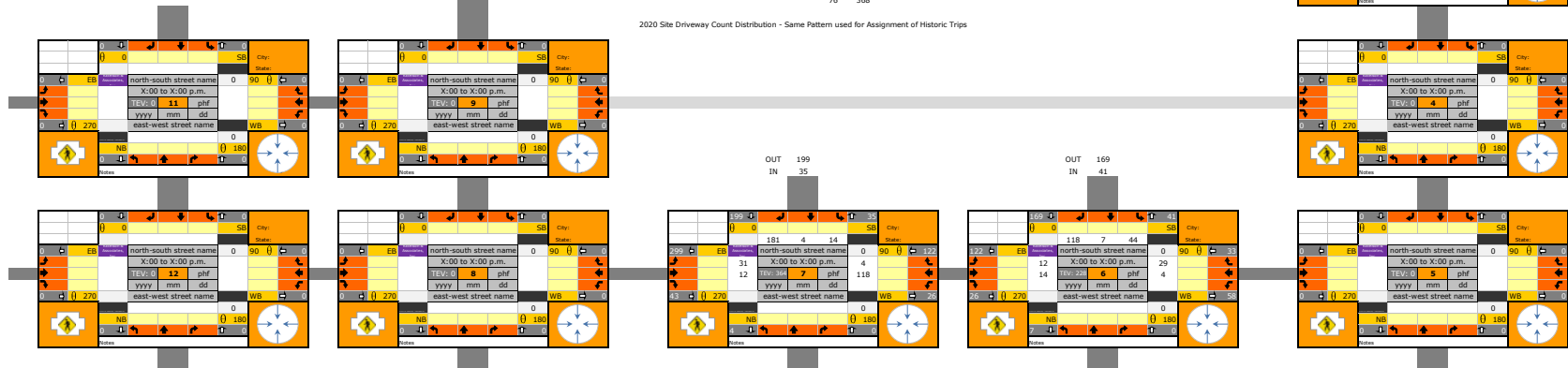


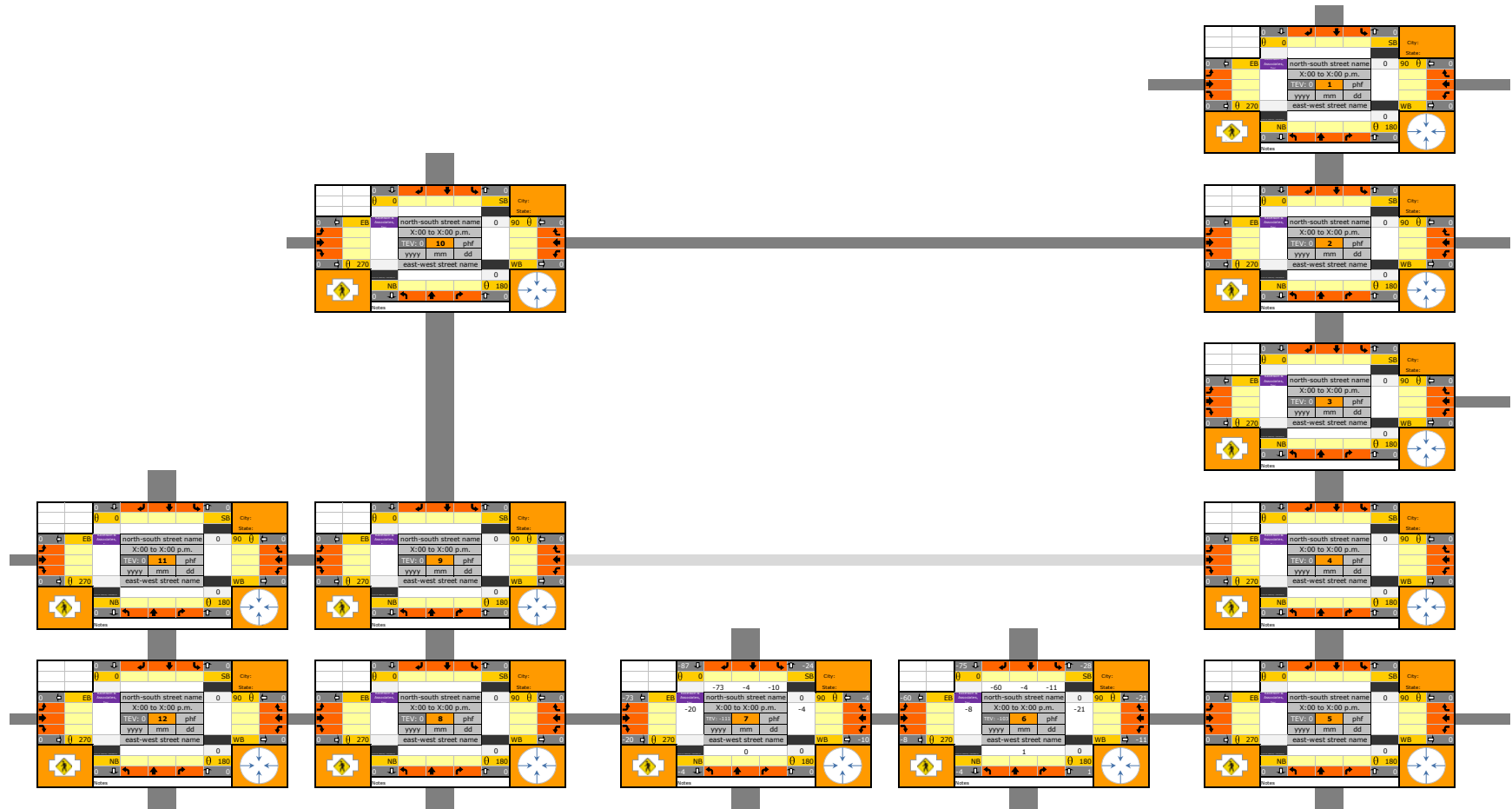
	Traffic Counts	Trip Rate per Thousand Gross Square Feet
AM Peak (7:05 AM - 8:05 AM)		
Entering	261	0.37
Exiting	119	0.17
Total	380	0.53
PM Peak (4:35 PM - 5:35 PM)		
Entering	76	0.11
Exiting	366	0.51
Total	442	0.62

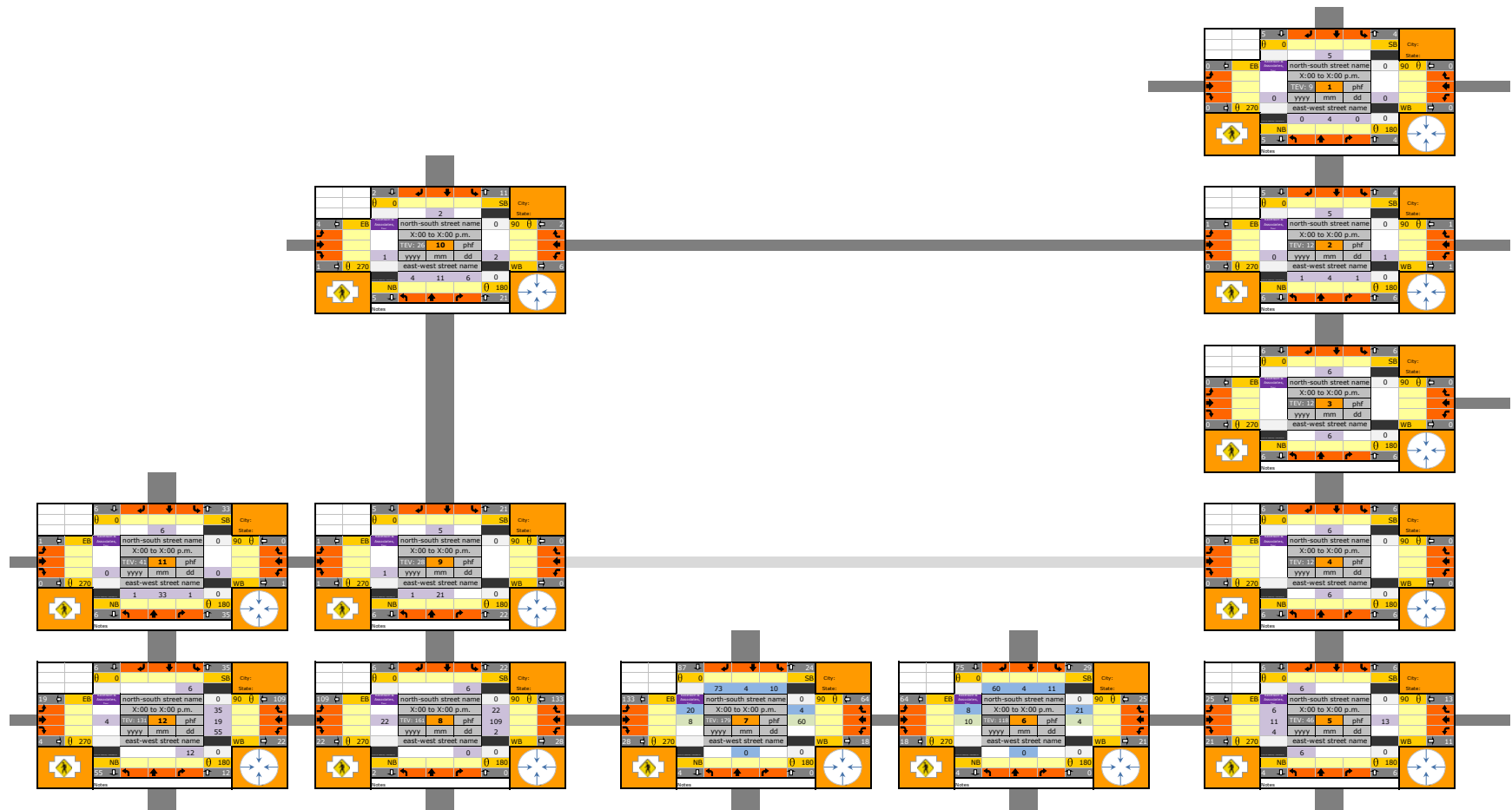
Total for 712,000K
+3,000 K since 1996 count
###

OUT 0.47 IN 0.56 OUT 0.91 0.02 0.07 IN 0.89 0.11	Previous version - use	OUT 0.53 IN 0.44 OUT 0.70 0.04 0.25 IN 0.29 0.71	OUT 0.54 IN 0.46 OUT 0.86 0.00 0.04 IN 1.00 0.00	Latest version - in/out split	OUT 0.46 IN 0.54 OUT 0.62 0.03 0.35 IN 0.31 0.62
TOTAL 76 368		TOTAL 76 368	TOTAL 100 0.00		TOTAL 0.91 1.17

2020 Site Driveway Count Distribution - Same Pattern used for Assignment of Historic Trips







■ Calculated as difference of 2023 count trips and historical (1996) site trips
■ Carried through
■ Back distributed to system based on 2023 volume ratios (see previous network tool versions for volume ratios)

Appendix E 2038 Baseline Operations
Worksheets & Total In-process
Trip Assignment

Timings

1: SE 192nd & SE 15th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	156	45	29	64	158	46	910	89	793
Future Volume (vph)	156	45	29	64	158	46	910	89	793
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	20.0	29.0	20.0	29.0	14.0	15.0	37.0	14.0	36.0
Total Split (%)	20.0%	29.0%	20.0%	29.0%	14.0%	15.0%	37.0%	14.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	12.4	18.7	5.9	10.2	22.0	6.7	50.6	8.8	54.7
Actuated g/C Ratio	0.12	0.19	0.06	0.10	0.22	0.07	0.51	0.09	0.55
v/c Ratio	0.80	0.25	0.32	0.38	0.42	0.44	0.59	0.69	0.54
Control Delay	67.8	21.5	53.4	45.3	17.3	59.9	18.2	69.1	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	21.5	53.4	45.3	17.3	59.9	18.2	69.1	20.4
LOS	E	C	D	D	B	E	B	E	C
Approach Delay		52.2		28.6			20.1		24.8
Approach LOS		D		C			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 9 (9%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 26.0

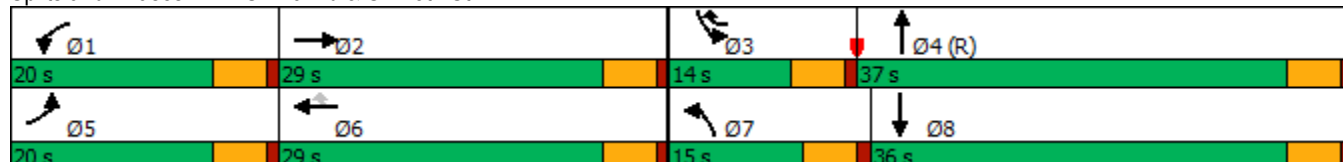
Intersection LOS: C

Intersection Capacity Utilization 58.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Baseline 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	45	34	29	64	158	46	910	16	89	793	87
Future Volume (veh/h)	156	45	34	29	64	158	46	910	16	89	793	87
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1796	1781	1841	1870	1856	1841	1900	1737	1767	1856
Adj Flow Rate, veh/h	173	50	6	32	71	97	51	1011	17	99	881	90
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	7	8	4	2	3	4	0	11	9	3
Cap, veh/h	204	271	32	50	141	239	88	1878	32	122	1715	175
Arrive On Green	0.12	0.16	0.16	0.03	0.08	0.08	0.10	1.00	1.00	0.07	0.56	0.56
Sat Flow, veh/h	1767	1664	200	1697	1841	1585	1767	3518	59	1654	3074	314
Grp Volume(v), veh/h	173	0	56	32	71	97	51	503	525	99	481	490
Grp Sat Flow(s),veh/h/ln	1767	0	1864	1697	1841	1585	1767	1749	1829	1654	1678	1710
Q Serve(g_s), s	9.6	0.0	2.6	1.9	3.7	5.5	2.8	0.0	0.0	5.9	17.8	17.8
Cycle Q Clear(g_c), s	9.6	0.0	2.6	1.9	3.7	5.5	2.8	0.0	0.0	5.9	17.8	17.8
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.03	1.00		0.18
Lane Grp Cap(c), veh/h	204	0	303	50	141	239	88	934	976	122	936	954
V/C Ratio(X)	0.85	0.00	0.18	0.64	0.50	0.41	0.58	0.54	0.54	0.81	0.51	0.51
Avail Cap(c_a), veh/h	265	0	447	254	442	498	177	934	976	149	936	954
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	0.0	36.1	48.0	44.3	38.4	44.0	0.0	0.0	45.6	13.7	13.7
Incr Delay (d2), s/veh	14.7	0.0	0.1	5.0	1.0	0.4	1.9	1.9	1.8	19.5	2.0	2.0
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(95%),veh/ln	8.5	0.0	2.1	1.5	3.1	3.8	2.1	0.9	0.9	5.4	10.8	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	0.0	36.2	53.0	45.3	38.8	45.8	1.9	1.8	65.1	15.7	15.7
LnGrp LOS	E	A	D	D	D	D	D	A	A	E	B	B
Approach Vol, veh/h		229			200			1079			1070	
Approach Delay, s/veh		52.8			43.4			3.9			20.3	
Approach LOS		D			D			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	21.3	12.4	58.4	16.5	12.7	10.0	60.8				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	24.0	9.0	32.0	15.0	24.0	10.0	31.0				
Max Q Clear Time (g_c+I1), s	3.9	4.6	7.9	2.0	11.6	7.5	4.8	19.8				
Green Ext Time (p_c), s	0.0	0.1	0.0	2.0	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			18.1									
HCM 6th LOS			B									

Timings
2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	166	182	106	165	46	689	59	643
Future Volume (vph)	166	182	106	165	46	689	59	643
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	17.0	29.0	17.0	29.0	15.0	39.0	15.0	39.0
Total Split (%)	17.0%	29.0%	17.0%	29.0%	15.0%	39.0%	15.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	9.4	18.6	7.6	16.8	7.4	48.0	7.9	46.4
Actuated g/C Ratio	0.09	0.19	0.08	0.17	0.07	0.48	0.08	0.46
v/c Ratio	0.55	0.79	0.42	0.74	0.38	0.52	0.44	0.50
Control Delay	49.5	51.4	48.6	50.4	68.6	8.1	51.7	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	51.4	48.6	50.4	68.6	8.1	51.7	26.3
LOS	D	D	D	D	E	A	D	C
Approach Delay		50.6		49.8		11.3		28.2
Approach LOS		D		D		B		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.0

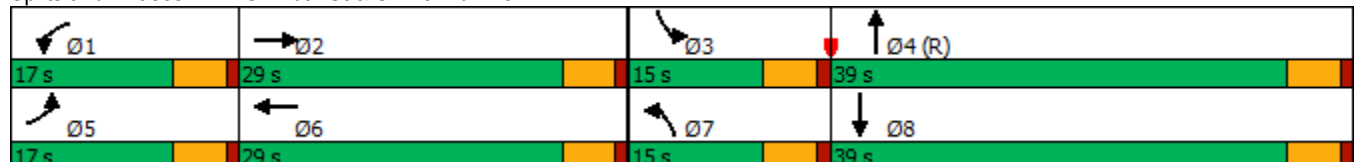
Intersection LOS: C

Intersection Capacity Utilization 62.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: SE 20th St & SE 192nd Ave



HCM 6th Signalized Intersection Summary

2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	182	78	106	165	57	46	689	132	59	643	103
Future Volume (veh/h)	166	182	78	106	165	57	46	689	132	59	643	103
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1841	1885	1885	1885	1811	1856	1841	1885	1811	1826
Adj Flow Rate, veh/h	175	192	65	112	174	46	48	725	125	62	677	97
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	4	1	1	1	6	3	4	1	6	5
Cap, veh/h	242	222	75	174	206	54	86	1629	281	80	1620	232
Arrive On Green	0.07	0.16	0.16	0.05	0.14	0.14	0.05	0.54	0.54	0.06	0.71	0.71
Sat Flow, veh/h	3428	1358	460	3483	1437	380	1725	3006	518	1795	3021	432
Grp Volume(v), veh/h	175	0	257	112	0	220	48	425	425	62	385	389
Grp Sat Flow(s),veh/h/ln	1714	0	1817	1742	0	1817	1725	1763	1762	1795	1721	1733
Q Serve(g_s), s	5.0	0.0	13.8	3.2	0.0	11.8	2.7	14.6	14.6	3.4	9.1	9.2
Cycle Q Clear(g_c), s	5.0	0.0	13.8	3.2	0.0	11.8	2.7	14.6	14.6	3.4	9.1	9.2
Prop In Lane	1.00		0.25	1.00		0.21	1.00		0.29	1.00		0.25
Lane Grp Cap(c), veh/h	242	0	298	174	0	260	86	955	954	80	923	929
V/C Ratio(X)	0.72	0.00	0.86	0.64	0.00	0.85	0.56	0.45	0.45	0.78	0.42	0.42
Avail Cap(c_a), veh/h	411	0	436	418	0	436	172	955	954	180	923	929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	45.5	0.0	40.7	46.6	0.0	41.8	46.4	13.8	13.8	46.5	8.0	8.0
Incr Delay (d2), s/veh	1.5	0.0	8.3	1.5	0.0	3.2	2.1	1.5	1.5	4.9	1.2	1.2
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(95%),veh/ln	3.8	0.0	10.9	2.5	0.0	9.1	2.1	9.6	9.6	2.8	5.3	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	0.0	49.0	48.1	0.0	45.0	48.5	15.3	15.3	51.5	9.1	9.1
LnGrp LOS	D	A	D	D	A	D	D	B	B	D	A	A
Approach Vol, veh/h	432			332			898			836		
Approach Delay, s/veh	48.2			46.0			17.1			12.3		
Approach LOS	D			D			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	21.4	9.5	59.2	12.1	19.3	10.0	58.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	24.0	10.0	34.0	12.0	24.0	10.0	34.0				
Max Q Clear Time (g_c+I1), s	5.2	15.8	5.4	16.6	7.0	13.8	4.7	11.2				
Green Ext Time (p_c), s	0.1	0.5	0.0	3.1	0.1	0.5	0.0	2.9				

Intersection Summary

HCM 6th Ctrl Delay 24.7
HCM 6th LOS C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	10	789	3	7	801
Future Vol, veh/h	7	10	789	3	7	801
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	20	4	67	0	7
Mvmt Flow	7	11	831	3	7	843
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1270	418	0	0	835	0
Stage 1	834	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Critical Hdwy	6.8	7.3	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.5	-	-	2.2	-
Pot Cap-1 Maneuver	163	536	-	-	807	-
Stage 1	392	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	161	535	-	-	806	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	18.7	0	0.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 161 535	806	-		
HCM Lane V/C Ratio	-	- 0.046 0.02	0.009	-		
HCM Control Delay (s)	-	- 28.4 11.9	9.5	-		
HCM Lane LOS	-	- D B	A	-		
HCM 95th %tile Q(veh)	-	- 0.1 0.1	0	-		

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	100	148	207	117	67	100	704	349	108	547
Future Volume (vph)	100	148	207	117	67	100	704	349	108	547
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	15.0	36.0	15.0	36.0	36.0	15.0	34.0	15.0	15.0	34.0
Total Split (%)	15.0%	36.0%	15.0%	36.0%	36.0%	15.0%	34.0%	15.0%	15.0%	34.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	25.3	17.2	28.8	19.0	19.0	8.8	43.0	52.8	10.0	44.2
Actuated g/C Ratio	0.25	0.17	0.29	0.19	0.19	0.09	0.43	0.53	0.10	0.44
v/c Ratio	0.33	0.71	0.80	0.36	0.16	0.69	0.54	0.38	0.35	0.53
Control Delay	25.6	46.7	46.5	36.3	0.8	66.1	24.8	2.2	41.1	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	46.7	46.5	36.3	0.8	66.1	24.8	2.2	41.1	21.1
LOS	C	D	D	D	A	E	C	A	D	C
Approach Delay		39.7		35.6			21.6			23.9
Approach LOS		D		D			C			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 26.5

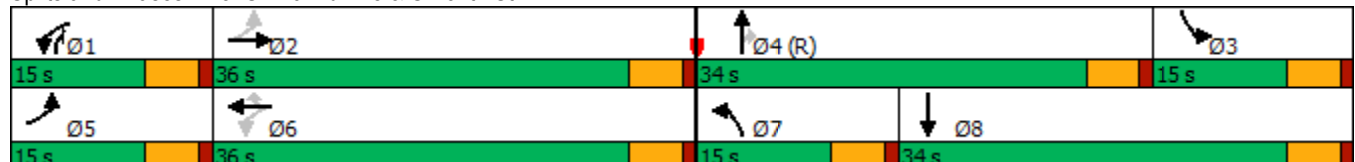
Intersection LOS: C

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	148	55	207	117	67	100	704	349	108	547	116
Future Volume (veh/h)	100	148	55	207	117	67	100	704	349	108	547	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1728	1803	1847	1943	2018	1988	2018	1883	1988	1832	1684	1684
Adj Flow Rate, veh/h	111	164	43	230	130	4	111	782	172	120	608	113
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	3	0	5	0	2	0	9	2	1	11	11
Cap, veh/h	338	214	56	308	371	303	141	1037	655	860	1267	235
Arrive On Green	0.07	0.16	0.16	0.10	0.18	0.18	0.07	0.29	0.29	0.25	0.47	0.47
Sat Flow, veh/h	1646	1374	360	1850	2018	1652	1922	3578	1679	3385	2694	500
Grp Volume(v), veh/h	111	0	207	230	130	4	111	782	172	120	361	360
Grp Sat Flow(s),veh/h/ln	1646	0	1734	1850	2018	1652	1922	1789	1679	1693	1600	1593
Q Serve(g_s), s	5.6	0.0	11.4	10.0	5.6	0.1	5.7	19.9	2.4	2.7	15.4	15.5
Cycle Q Clear(g_c), s	5.6	0.0	11.4	10.0	5.6	0.1	5.7	19.9	2.4	2.7	15.4	15.5
Prop In Lane	1.00		0.21	1.00		1.00	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	338	0	271	308	371	303	141	1037	655	860	753	750
V/C Ratio(X)	0.33	0.00	0.76	0.75	0.35	0.01	0.79	0.75	0.26	0.14	0.48	0.48
Avail Cap(c_a), veh/h	384	0	538	308	626	512	192	1037	655	860	753	750
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)	0.92	0.00	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	0.0	40.4	33.0	35.6	10.7	45.6	32.3	7.5	28.9	18.1	18.1
Incr Delay (d2), s/veh	0.2	0.0	1.6	8.6	0.2	0.0	9.6	5.1	1.0	0.0	2.2	2.2
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(95%),veh/ln	3.9	0.0	8.3	9.0	4.9	0.1	5.4	13.8	2.1	2.0	9.7	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	42.0	41.6	35.8	10.7	55.1	37.3	8.5	28.9	20.3	20.3
LnGrp LOS	C	A	D	D	D	B	E	D	A	C	C	C
Approach Vol, veh/h		318			364			1065			841	
Approach Delay, s/veh		38.6			39.2			34.5			21.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	20.6	30.4	34.0	12.2	23.4	12.3	52.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	31.0	10.0	29.0	10.0	31.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	12.0	13.4	4.7	21.9	7.6	7.6	7.7	17.5				
Green Ext Time (p_c), s	0.0	0.3	0.0	1.4	0.0	0.2	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			31.5									
HCM 6th LOS			C									

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Baseline 2038 AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	36	310	27	255	63	6	11	0	21
Future Volume (vph)	36	310	27	255	63	6	11	0	21
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		8		4	
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	10.0	27.0	32.0	32.0	34.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effect Green (s)	5.5	25.1	5.5	22.9	9.0	9.0		9.0	9.0
Actuated g/C Ratio	0.12	0.56	0.12	0.51	0.20	0.20		0.20	0.20
v/c Ratio	0.20	0.40	0.15	0.41	0.28	0.16		0.05	0.07
Control Delay	26.3	12.8	26.0	13.8	18.0	7.1		15.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.3	12.8	26.0	13.8	18.0	7.1		15.1	1.5
LOS	C	B	C	B	B	A		B	A
Approach Delay		14.1		14.8		13.4		6.2	
Approach LOS		B		B		B		A	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 44.6

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 14.0

Intersection LOS: B

Intersection Capacity Utilization 44.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

		
10 s	85 s	35 s
		
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	310	24	27	255	46	63	6	41	11	0	21
Future Volume (veh/h)	36	310	24	27	255	46	63	6	41	11	0	21
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1841	1900	1876	1802	1876	1832	1876	1876	1900	1900	1900
Adj Flow Rate, veh/h	44	383	26	33	315	48	78	7	0	14	0	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	4	0	0	5	0	3	0	0	0	0	0
Cap, veh/h	90	757	51	70	663	101	332	166	0	327	0	142
Arrive On Green	0.05	0.44	0.44	0.04	0.43	0.43	0.09	0.09	0.00	0.09	0.00	0.00
Sat Flow, veh/h	1810	1704	116	1787	1527	233	1388	1876	0	1376	0	1610
Grp Volume(v), veh/h	44	0	409	33	0	363	78	7	0	14	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1819	1787	0	1760	1388	1876	0	1376	0	1610
Q Serve(g_s), s	0.8	0.0	5.6	0.6	0.0	5.2	1.3	0.1	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	5.6	0.6	0.0	5.2	1.8	0.1	0.0	0.4	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.13	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	90	0	809	70	0	764	332	166	0	327	0	142
V/C Ratio(X)	0.49	0.00	0.51	0.47	0.00	0.48	0.23	0.04	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	258	0	4154	255	0	4017	1399	1607	0	1426	0	1379
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	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.2	0.0	7.0	16.5	0.0	7.1	15.3	14.6	0.0	14.8	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.2	1.8	0.0	0.2	0.1	0.0	0.0	0.0	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(95%),veh/ln	0.5	0.0	2.0	0.4	0.0	1.8	0.9	0.1	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	0.0	7.2	18.3	0.0	7.2	15.5	14.7	0.0	14.8	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	B	B	A	B	A	A
Approach Vol, veh/h	453				396				85			
Approach Delay, s/veh	8.2				8.2				15.4			
Approach LOS	A				A				B			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	20.6		8.1	6.7	20.2		8.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	7.6		2.4	2.8	7.2		3.8				
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	0.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	8.9											
HCM 6th LOS	A											

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	157	338	11	5	320	14	29	2	17	16	2	70
Future Vol, veh/h	157	338	11	5	320	14	29	2	17	16	2	70
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	95	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	0	0	5	0	0	0	0	0	0	27
Mvmt Flow	185	398	13	6	376	16	34	2	20	19	2	82

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	414	0	0	1216	1185	408	1177	1175	379
Stage 1	-	-	-	-	-	-	778	778	-	391	391	-
Stage 2	-	-	-	-	-	-	438	407	-	786	784	-
Critical Hdwy	4.13	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.227	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.543
Pot Cap-1 Maneuver	1158	-	-	1156	-	-	159	191	648	169	193	616
Stage 1	-	-	-	-	-	-	392	410	-	637	611	-
Stage 2	-	-	-	-	-	-	601	601	-	388	407	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1155	-	-	1153	-	-	119	159	646	141	160	614
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	159	-	141	160	-
Stage 1	-	-	-	-	-	-	328	343	-	533	606	-
Stage 2	-	-	-	-	-	-	516	596	-	314	341	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.7			0.1			36.4			16.4		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	170	1155	-	-	1153	-	-	143	614
HCM Lane V/C Ratio	0.332	0.16	-	-	0.005	-	-	0.148	0.134
HCM Control Delay (s)	36.4	8.7	-	-	8.1	-	-	34.5	11.8
HCM Lane LOS	E	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	1.4	0.6	-	-	0	-	-	0.5	0.5

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	49	436	3	357	14	5	66	3
Future Volume (vph)	49	436	3	357	14	5	66	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	31.7	34.1	29.6	30.0	9.2	9.2	9.4	9.4
Actuated g/C Ratio	0.68	0.73	0.63	0.64	0.20	0.20	0.20	0.20
v/c Ratio	0.10	0.38	0.01	0.43	0.06	0.04	0.28	0.14
Control Delay	6.3	9.0	6.7	12.5	18.3	14.7	20.5	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	9.0	6.7	12.5	18.3	14.7	20.5	8.3
LOS	A	A	A	B	B	B	C	A
Approach Delay		8.8		12.5		16.8		15.7
Approach LOS		A		B		B		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 46.7

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 11.2

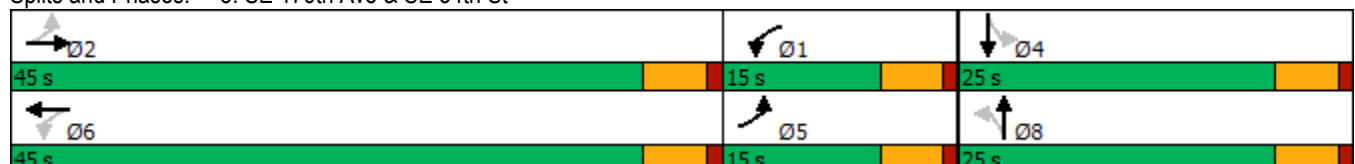
Intersection LOS: B

Intersection Capacity Utilization 50.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	436	2	3	357	59	14	5	4	66	3	39
Future Volume (veh/h)	49	436	2	3	357	59	14	5	4	66	3	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.98		1.00	0.98		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1856	1900	1900	1811	1826	1900	1900	1530	1870	1900	1885
Adj Flow Rate, veh/h	58	513	2	4	420	62	16	6	0	78	4	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	9	3	0	0	6	5	0	0	25	2	0	1
Cap, veh/h	470	766	3	483	642	95	348	205	0	345	205	0
Arrive On Green	0.06	0.41	0.41	0.06	0.42	0.42	0.11	0.11	0.00	0.11	0.11	0.00
Sat Flow, veh/h	1682	1847	7	1810	1541	227	1409	1900	0	1384	1900	0
Grp Volume(v), veh/h	58	0	515	4	0	482	16	6	0	78	4	0
Grp Sat Flow(s),veh/h/ln	1682	0	1854	1810	0	1769	1409	1900	0	1384	1900	0
Q Serve(g_s), s	0.0	0.0	8.2	0.0	0.0	7.9	0.4	0.1	0.0	1.9	0.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.2	0.0	0.0	7.9	0.4	0.1	0.0	2.0	0.1	0.0
Prop In Lane	1.00		0.00	1.00		0.13	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	470	0	769	483	0	737	348	205	0	345	205	0
V/C Ratio(X)	0.12	0.00	0.67	0.01	0.00	0.65	0.05	0.03	0.00	0.23	0.02	0.00
Avail Cap(c_a), veh/h	832	0	2047	868	0	1952	974	1049	0	959	1049	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	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.7	0.0	8.6	10.2	0.0	8.5	14.6	14.5	0.0	15.4	14.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.1	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(95%),veh/ln	0.5	0.0	3.4	0.0	0.0	3.1	0.2	0.1	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.8	0.0	9.0	10.2	0.0	8.8	14.7	14.5	0.0	15.5	14.5	0.0
LnGrp LOS	B	A	A	B	A	A	B	B	A	B	B	A
Approach Vol, veh/h	573			486			22			82		
Approach Delay, s/veh	9.2			8.8			14.6			15.4		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	20.0		8.9	7.2	20.1		8.9				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	10.2		4.0	2.0	9.9		2.4				
Green Ext Time (p_c), s	0.0	2.0		0.1	0.0	1.9		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	9.6											
HCM 6th LOS	A											

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	13	4	124	91	104
Future Vol, veh/h	5	13	4	124	91	104
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	10	0	2	1	18
Mvmt Flow	6	15	5	146	107	122
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	326	168	229	0	-	0
Stage 1	168	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.4	6.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.2	-	-	-
Pot Cap-1 Maneuver	672	856	1351	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	669	856	1351	-	-	-
Mov Cap-2 Maneuver	669	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.7	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1351	-	794	-	-	
HCM Lane V/C Ratio	0.003	-	0.027	-	-	
HCM Control Delay (s)	7.7	-	9.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	272	26	75	314	14	29	67	55	0	60	10
Future Vol, veh/h	12	272	26	75	314	14	29	67	55	0	60	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	4	10	4	1	9	4	3	0	0	0	0
Mvmt Flow	13	299	29	82	345	15	32	74	60	0	66	11
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	15.2	15.1	11.2	11.2
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	55%	0%	91%	0%	96%	86%
Vol Right, %	0%	45%	0%	9%	0%	4%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	122	12	298	75	328	70
LT Vol	29	0	12	0	75	0	0
Through Vol	0	67	0	272	0	314	60
RT Vol	0	55	0	26	0	14	10
Lane Flow Rate	32	134	13	327	82	360	77
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.065	0.242	0.024	0.539	0.146	0.578	0.148
Departure Headway (Hd)	7.343	6.496	6.42	5.92	6.357	5.768	6.911
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	487	551	557	609	564	624	517
Service Time	5.107	4.26	4.168	3.667	4.101	3.513	4.985
HCM Lane V/C Ratio	0.066	0.243	0.023	0.537	0.145	0.577	0.149
HCM Control Delay	10.6	11.3	9.3	15.4	10.2	16.2	11.2
HCM Lane LOS	B	B	A	C	B	C	B
HCM 95th-tile Q	0.2	0.9	0.1	3.2	0.5	3.7	0.5

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations											
Traffic Volume (vph)	42	7	46	141	16	37	23	1081	16	795	
Future Volume (vph)	42	7	46	141	16	37	23	1081	16	795	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Prot	NA	
Protected Phases		2			6		7	4	3	8	
Permitted Phases	2		2	6		6					
Detector Phase	2	2	2	6	6	6	7	4	3	8	
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	15.0	5.0	15.0	
Minimum Split (s)	39.0	39.0	39.0	38.0	38.0	38.0	10.0	32.0	10.0	32.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	17.0	64.0	17.0	64.0	
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	14.2%	53.3%	14.2%	53.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lead	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max	
Act Effct Green (s)	18.7	18.7	18.7	18.7	18.7	18.7	5.7	86.9	5.4	84.6	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.05	0.72	0.04	0.70	
v/c Ratio	0.21	0.02	0.16	0.69	0.07	0.13	0.28	0.31	0.22	0.24	
Control Delay	42.7	37.1	6.3	62.4	38.9	3.9	37.5	22.3	61.9	8.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	42.7	37.1	6.3	62.4	38.9	3.9	37.5	22.3	61.9	8.2	
LOS	D	D	A	E	D	A	D	C	E	A	
Approach Delay		24.6			49.2			22.6		9.2	
Approach LOS		C			D			C		A	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 85 (71%), Referenced to phase 8: SBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 20.0

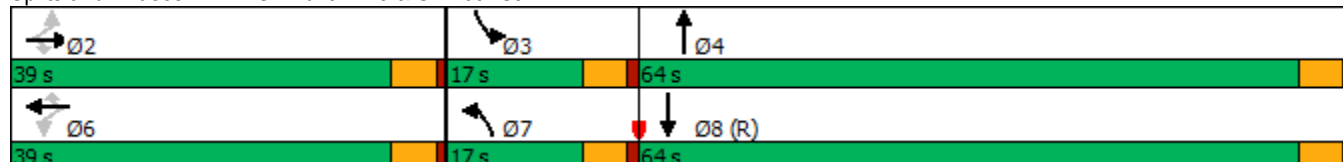
Intersection LOS: B

Intersection Capacity Utilization 51.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	7	46	141	16	37	23	1081	15	16	795	26
Future Volume (veh/h)	42	7	46	141	16	37	23	1081	15	16	795	26
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1856	1856	1648	1900	1900	1870	1796	1796	1856	1826
Adj Flow Rate, veh/h	44	7	5	148	17	4	24	1138	15	17	837	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	3	3	17	0	0	2	7	7	3	5
Cap, veh/h	221	239	198	230	207	202	42	2579	34	31	2485	74
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.02	0.50	0.50	0.02	0.49	0.49
Sat Flow, veh/h	1380	1900	1572	1391	1648	1610	1810	5194	68	1711	5055	151
Grp Volume(v), veh/h	44	7	5	148	17	4	24	746	407	17	559	303
Grp Sat Flow(s),veh/h/ln	1380	1900	1572	1391	1648	1610	1810	1702	1858	1711	1689	1828
Q Serve(g_s), s	3.5	0.4	0.3	12.5	1.1	0.3	1.6	16.9	17.0	1.2	12.1	12.1
Cycle Q Clear(g_c), s	4.6	0.4	0.3	12.9	1.1	0.3	1.6	16.9	17.0	1.2	12.1	12.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.08
Lane Grp Cap(c), veh/h	221	239	198	230	207	202	42	1690	923	31	1660	899
V/C Ratio(X)	0.20	0.03	0.03	0.64	0.08	0.02	0.58	0.44	0.44	0.55	0.34	0.34
Avail Cap(c_a), veh/h	438	538	446	450	467	456	181	1690	923	171	1660	899
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	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	46.0	46.0	51.7	46.4	46.0	58.0	19.5	19.5	58.4	18.6	18.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	1.1	0.1	0.0	3.6	0.7	1.2	5.6	0.5	1.0
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(95%),veh/ln	2.2	0.3	0.2	7.9	0.8	0.2	1.4	10.3	11.2	1.0	8.2	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	46.1	46.0	52.8	46.4	46.0	61.7	20.1	20.7	64.0	19.1	19.6
LnGrp LOS	D	D	D	D	D	D	E	C	C	E	B	B
Approach Vol, veh/h	56			169			1177			879		
Approach Delay, s/veh	48.0			52.0			21.2			20.2		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	20.1		7.2	64.6		20.1		7.8	64.0			
Change Period (Y+Rc), s	5.0		5.0	5.0		5.0		5.0	5.0			
Max Green Setting (Gmax), s	34.0		12.0	59.0		34.0		12.0	59.0			
Max Q Clear Time (g_c+I1), s	6.6		3.2	19.0		14.9		3.6	14.1			
Green Ext Time (p_c), s	0.0		0.0	5.3		0.2		0.0	3.7			
Intersection Summary												
HCM 6th Ctrl Delay	23.7											
HCM 6th LOS	C											

Timings
12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	28	60	165	294	121	109	111	931	264	158	742
Future Volume (vph)	28	60	165	294	121	109	111	931	264	158	742
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	20.0	33.0	20.0	25.0	38.0	17.0	20.0	45.0	25.0	17.0	42.0
Total Split (%)	16.7%	27.5%	16.7%	20.8%	31.7%	14.2%	16.7%	37.5%	20.8%	14.2%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	6.4	8.2	23.0	20.0	23.8	47.0	11.8	55.6	80.6	18.2	62.0
Actuated g/C Ratio	0.05	0.07	0.19	0.17	0.20	0.39	0.10	0.46	0.67	0.15	0.52
v/c Ratio	0.39	0.56	0.53	1.11	0.36	0.18	0.72	0.64	0.26	0.66	0.34
Control Delay	68.3	70.9	31.3	130.9	45.0	4.6	74.0	28.4	1.8	52.0	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	70.9	31.3	130.9	45.0	4.6	74.0	28.4	1.8	52.0	20.8
LOS	E	E	C	F	D	A	E	C	A	D	C
Approach Delay		44.8			84.9			26.9			26.1
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 38.2

Intersection LOS: D

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave/SE164th Ave & SE 34th Street

Ø1	Ø2	Ø3	Ø4
25 s	33 s	17 s	45 s
Ø5	Ø6	Ø7	Ø8 (R)
20 s	38 s	20 s	42 s

HCM 6th Signalized Intersection Summary

12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Baseline 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	60	165	294	121	109	111	931	264	158	742	37
Future Volume (veh/h)	28	60	165	294	121	109	111	931	264	158	742	37
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1565	1758	1803	1870	1885	1841	1791	1776	1746	1806	1761	1761
Adj Flow Rate, veh/h	31	67	124	327	134	33	123	1034	169	176	824	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	19	6	3	2	1	4	1	2	4	0	3	3
Cap, veh/h	40	159	270	297	434	515	147	1125	740	172	1635	75
Arrive On Green	0.03	0.09	0.09	0.17	0.23	0.23	0.09	0.33	0.33	0.03	0.11	0.11
Sat Flow, veh/h	1491	1758	1528	1781	1885	1560	1706	3375	1480	1720	4711	217
Grp Volume(v), veh/h	31	67	124	327	134	33	123	1034	169	176	560	302
Grp Sat Flow(s),veh/h/ln	1491	1758	1528	1781	1885	1560	1706	1687	1480	1720	1603	1722
Q Serve(g_s), s	2.5	4.3	8.7	20.0	7.1	1.7	8.5	35.3	7.7	12.0	19.7	19.8
Cycle Q Clear(g_c), s	2.5	4.3	8.7	20.0	7.1	1.7	8.5	35.3	7.7	12.0	19.7	19.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	40	159	270	297	434	515	147	1125	740	172	1112	598
V/C Ratio(X)	0.77	0.42	0.46	1.10	0.31	0.06	0.84	0.92	0.23	1.02	0.50	0.51
Avail Cap(c_a), veh/h	186	410	488	297	518	585	213	1125	740	172	1112	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	58.0	51.6	44.2	50.0	38.3	27.5	54.0	38.4	16.9	58.0	43.4	43.5
Incr Delay (d2), s/veh	11.1	0.7	0.5	82.2	0.1	0.0	11.8	13.3	0.7	73.5	1.6	2.9
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(95%),veh/ln	1.9	3.4	5.9	23.0	5.8	1.2	7.3	22.7	4.8	14.0	13.4	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	52.2	44.7	132.2	38.4	27.5	65.8	51.8	17.7	131.5	45.0	46.4
LnGrp LOS	E	D	D	F	D	C	E	D	B	F	D	D
Approach Vol, veh/h	222				494				1326			
Approach Delay, s/veh	50.4				99.8				48.7			
Approach LOS	D				F				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	15.9	17.0	45.0	8.2	32.7	15.4	46.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	28.0	12.0	40.0	15.0	33.0	15.0	37.0				
Max Q Clear Time (g_c+I1), s	22.0	10.7	14.0	37.3	4.5	9.1	10.5	21.8				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.0	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay	60.8											
HCM 6th LOS	E											

Timings 1: SE 192nd & SE 15th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	116	91	40	82	242	63	1246	115	1424
Future Volume (vph)	116	91	40	82	242	63	1246	115	1424
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	15.0	29.0	15.0	29.0	16.0	14.0	40.0	16.0	42.0
Total Split (%)	15.0%	29.0%	15.0%	29.0%	16.0%	14.0%	40.0%	16.0%	42.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	9.0	15.7	6.2	10.9	19.7	7.0	52.3	9.7	57.0
Actuated g/C Ratio	0.09	0.16	0.06	0.11	0.20	0.07	0.52	0.10	0.57
v/c Ratio	0.79	0.58	0.38	0.43	0.68	0.52	0.73	0.69	0.82
Control Delay	78.1	36.7	54.0	45.8	30.8	52.8	23.8	63.7	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.1	36.7	54.0	45.8	30.8	52.8	23.8	63.7	25.9
LOS	E	D	D	D	C	D	C	E	C
Approach Delay		53.4		36.7			25.2		28.5
Approach LOS		D		D			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 30.1

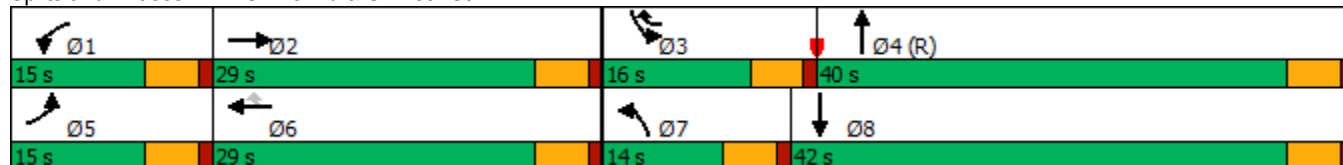
Intersection LOS: C

Intersection Capacity Utilization 78.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Baseline 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	91	80	40	82	242	63	1246	32	115	1424	133
Future Volume (veh/h)	116	91	80	40	82	242	63	1246	32	115	1424	133
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1885	1900	1900	1856	1900	1900	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	122	96	47	42	86	192	66	1312	33	121	1499	135
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	1	0	0	3	0	0	2	0	0	2	2
Cap, veh/h	150	221	108	62	248	345	100	1762	44	150	1733	155
Arrive On Green	0.09	0.19	0.19	0.03	0.13	0.13	0.11	1.00	1.00	0.08	0.53	0.53
Sat Flow, veh/h	1739	1194	585	1810	1856	1582	1810	3542	89	1810	3298	295
Grp Volume(v), veh/h	122	0	143	42	86	192	66	658	687	121	803	831
Grp Sat Flow(s),veh/h/ln	1739	0	1779	1810	1856	1582	1810	1777	1854	1810	1777	1816
Q Serve(g_s), s	6.9	0.0	7.1	2.3	4.2	10.8	3.5	0.7	0.7	6.6	39.1	40.1
Cycle Q Clear(g_c), s	6.9	0.0	7.1	2.3	4.2	10.8	3.5	0.7	0.7	6.6	39.1	40.1
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.05	1.00		0.16
Lane Grp Cap(c), veh/h	150	0	329	62	248	345	100	884	923	150	934	954
V/C Ratio(X)	0.82	0.00	0.43	0.67	0.35	0.56	0.66	0.74	0.74	0.81	0.86	0.87
Avail Cap(c_a), veh/h	174	0	427	181	445	513	163	884	923	199	934	954
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.48	0.48	0.48	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	36.1	47.7	39.4	34.9	43.6	0.1	0.1	45.1	20.5	20.8
Incr Delay (d2), s/veh	19.5	0.0	0.3	4.6	0.3	0.5	1.3	2.8	2.7	12.3	10.2	10.8
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(95%),veh/ln	6.7	0.0	5.5	2.0	3.5	7.3	2.7	1.3	1.4	6.1	23.8	24.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	36.4	52.4	39.7	35.5	45.0	2.9	2.8	57.3	30.7	31.5
LnGrp LOS	E	A	D	D	D	D	D	A	A	E	C	C
Approach Vol, veh/h		265			320			1411			1755	
Approach Delay, s/veh		49.3			38.8			4.8			32.9	
Approach LOS		D			D			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	23.5	13.3	54.8	13.6	18.4	10.5	57.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	24.0	11.0	35.0	10.0	24.0	9.0	37.0				
Max Q Clear Time (g_c+I1), s	4.3	9.1	8.6	2.7	8.9	12.8	5.5	42.1				
Green Ext Time (p_c), s	0.0	0.2	0.0	2.9	0.0	0.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			24.0									
HCM 6th LOS			C									

Timings
2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	233	183	236	265	138	813	151	1024
Future Volume (vph)	233	183	236	265	138	813	151	1024
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	20.0	27.0	20.0	27.0	14.0	35.0	18.0	39.0
Total Split (%)	20.0%	27.0%	20.0%	27.0%	14.0%	35.0%	18.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effect Green (s)	11.3	24.3	11.4	24.4	9.1	32.6	11.7	35.2
Actuated g/C Ratio	0.11	0.24	0.11	0.24	0.09	0.33	0.12	0.35
v/c Ratio	0.62	0.63	0.62	0.88	0.88	0.86	0.75	1.07
Control Delay	49.0	38.5	48.9	56.7	96.7	22.6	63.9	76.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	38.5	48.9	56.7	96.7	22.6	63.9	76.2
LOS	D	D	D	E	F	C	E	E
Approach Delay		43.3		53.7		32.0		74.9
Approach LOS		D		D		C		E

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 93 (93%), Referenced to phase 4:NBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 54.0
Intersection Capacity Utilization 88.0%
Analysis Period (min) 15
Intersection LOS: D
ICU Level of Service E

Splits and Phases: 2: SE 192nd Ave & SE 20th St

 Ø1	 Ø2	 Ø3	 Ø4 (R)
20 s	27 s	18 s	35 s
 Ø5	 Ø6	 Ø7	 Ø8
20 s	27 s	14 s	39 s

HCM 6th Signalized Intersection Summary

2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	183	92	236	265	118	138	813	137	151	1024	237
Future Volume (veh/h)	233	183	92	236	265	118	138	813	137	151	1024	237
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1870	1900	1885	1900	1885	1870	1885
Adj Flow Rate, veh/h	243	191	78	246	276	106	144	847	129	157	1067	227
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	1	0	0	2	0	1	0	1	2	1
Cap, veh/h	316	281	115	319	286	110	163	1198	182	189	1167	247
Arrive On Green	0.09	0.22	0.22	0.09	0.22	0.22	0.09	0.38	0.38	0.14	0.53	0.53
Sat Flow, veh/h	3510	1281	523	3510	1301	500	1810	3115	474	1795	2917	618
Grp Volume(v), veh/h	243	0	269	246	0	382	144	487	489	157	648	646
Grp Sat Flow(s),veh/h/ln	1755	0	1804	1755	0	1801	1810	1791	1799	1795	1777	1758
Q Serve(g_s), s	6.8	0.0	13.7	6.9	0.0	21.0	7.9	23.0	23.0	8.5	33.2	33.6
Cycle Q Clear(g_c), s	6.8	0.0	13.7	6.9	0.0	21.0	7.9	23.0	23.0	8.5	33.2	33.6
Prop In Lane	1.00		0.29	1.00		0.28	1.00		0.26	1.00		0.35
Lane Grp Cap(c), veh/h	316	0	396	319	0	396	163	689	692	189	711	703
V/C Ratio(X)	0.77	0.00	0.68	0.77	0.00	0.96	0.88	0.71	0.71	0.83	0.91	0.92
Avail Cap(c_a), veh/h	527	0	397	527	0	396	163	689	692	233	711	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.48	0.48	0.48
Uniform Delay (d), s/veh	44.5	0.0	35.8	44.5	0.0	38.6	45.0	26.0	26.0	42.1	21.8	21.9
Incr Delay (d2), s/veh	1.5	0.0	3.8	1.5	0.0	35.6	38.3	6.0	6.0	7.9	10.1	10.7
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(95%),veh/ln	5.3	0.0	10.3	5.3	0.0	18.7	8.9	15.6	15.7	6.2	16.8	17.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	39.7	46.0	0.0	74.2	83.3	32.1	32.0	50.1	31.9	32.6
LnGrp LOS	D	A	D	D	A	E	F	C	C	D	C	C
Approach Vol, veh/h		512			628			1120			1451	
Approach Delay, s/veh		42.7			63.2			38.6			34.2	
Approach LOS		D			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	26.9	15.6	43.4	14.0	27.0	14.0	45.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	22.0	13.0	30.0	15.0	22.0	9.0	34.0				
Max Q Clear Time (g_c+I1), s	8.9	15.7	10.5	25.0	8.8	23.0	9.9	35.6				
Green Ext Time (p_c), s	0.2	0.5	0.0	1.9	0.2	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			41.6									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	1098	3	10	1219
Future Vol, veh/h	3	4	1098	3	10	1219
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	1156	3	11	1283
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1824	582	0	0	1161	0
Stage 1	1160	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	70	461	-	-	609	-
Stage 1	265	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	69	460	-	-	608	-
Mov Cap-2 Maneuver	69	-	-	-	-	-
Stage 1	264	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	33	0	0.1			
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 69 460	608	-		
HCM Lane V/C Ratio	-	- 0.046 0.009	0.017	-		
HCM Control Delay (s)	-	- 59.7 12.9	11	-		
HCM Lane LOS	-	- F B	B	-		
HCM 95th %tile Q(veh)	-	- 0.1 0	0.1	-		

Timings 5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	126	204	355	183	120	108	955	204	212	932
Future Volume (vph)	126	204	355	183	120	108	955	204	212	932
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	14.0	32.0	19.0	37.0	37.0	13.0	34.0	19.0	15.0	36.0
Total Split (%)	14.0%	32.0%	19.0%	37.0%	37.0%	13.0%	34.0%	19.0%	15.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	27.5	19.6	38.6	25.7	25.7	9.1	36.4	50.4	10.0	37.3
Actuated g/C Ratio	0.28	0.20	0.39	0.26	0.26	0.09	0.36	0.50	0.10	0.37
v/c Ratio	0.37	0.83	1.08	0.39	0.23	0.69	0.77	0.24	0.65	0.86
Control Delay	22.9	54.8	98.0	32.3	2.0	65.7	34.3	1.9	40.7	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	54.8	98.0	32.3	2.0	65.7	34.3	1.9	40.7	29.1
LOS	C	D	F	C	A	E	C	A	D	C
Approach Delay		45.0		62.2			31.8			31.0
Approach LOS		D		E			C			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 36 (36%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 38.6

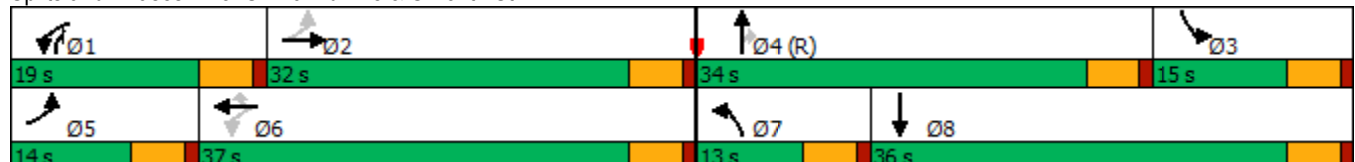
Intersection LOS: D

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	204	83	355	183	120	108	955	204	212	932	118
Future Volume (veh/h)	126	204	83	355	183	120	108	955	204	212	932	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1773	1847	1817	2003	2003	2018	2018	1988	2003	1847	1832	1743
Adj Flow Rate, veh/h	133	215	70	374	193	25	114	1005	98	223	981	115
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	0	2	1	1	0	0	2	1	0	1	7
Cap, veh/h	392	250	81	375	496	422	144	1095	726	621	1244	146
Arrive On Green	0.08	0.19	0.19	0.14	0.25	0.25	0.08	0.29	0.29	0.18	0.40	0.40
Sat Flow, veh/h	1688	1328	432	1908	2003	1704	1922	3777	1683	3413	3132	367
Grp Volume(v), veh/h	133	0	285	374	193	25	114	1005	98	223	545	551
Grp Sat Flow(s),veh/h/ln	1688	0	1760	1908	2003	1704	1922	1889	1683	1706	1741	1759
Q Serve(g_s), s	6.3	0.0	15.7	14.0	8.0	0.7	5.8	25.7	1.5	5.7	27.5	27.5
Cycle Q Clear(g_c), s	6.3	0.0	15.7	14.0	8.0	0.7	5.8	25.7	1.5	5.7	27.5	27.5
Prop In Lane	1.00		0.25	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	392	0	331	375	496	422	144	1095	726	621	691	698
V/C Ratio(X)	0.34	0.00	0.86	1.00	0.39	0.06	0.79	0.92	0.14	0.36	0.79	0.79
Avail Cap(c_a), veh/h	408	0	475	375	641	545	154	1095	726	621	691	698
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)	0.89	0.00	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	39.3	30.0	31.3	11.2	45.5	34.3	5.9	35.8	26.5	26.5
Incr Delay (d2), s/veh	0.2	0.0	7.1	45.4	0.2	0.0	20.3	13.4	0.4	0.1	8.9	8.8
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(95%),veh/ln	4.4	0.0	11.3	17.2	6.8	0.8	6.3	19.2	1.2	4.2	18.1	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.2	0.0	46.5	75.4	31.5	11.3	65.8	47.8	6.3	35.9	35.4	35.3
LnGrp LOS	C	A	D	E	C	B	E	D	A	D	D	D
Approach Vol, veh/h	418			592			1217			1319		
Approach Delay, s/veh	41.0			58.4			46.1			35.4		
Approach LOS	D			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	23.8	23.2	34.0	13.1	29.7	12.5	44.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.0	27.0	10.0	29.0	9.0	32.0	8.0	31.0				
Max Q Clear Time (g_c+I1), s	16.0	17.7	7.7	27.7	8.3	10.0	7.8	29.5				
Green Ext Time (p_c), s	0.0	0.4	0.0	0.5	0.0	0.3	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	43.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Baseline 2038 PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	12	336	37	387	71	1	44	7	118
Future Volume (vph)	12	336	37	387	71	1	44	7	118
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		8		4	
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	30.0	10.0	30.0	32.0	32.0	34.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effect Green (s)	5.6	22.8	5.6	24.8	8.4	8.4		8.4	8.4
Actuated g/C Ratio	0.13	0.54	0.13	0.59	0.20	0.20		0.20	0.20
v/c Ratio	0.05	0.45	0.17	0.41	0.29	0.11		0.20	0.30
Control Delay	24.1	12.7	24.5	10.8	17.6	7.2		16.3	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	24.1	12.7	24.5	10.8	17.6	7.2		16.3	5.8
LOS	C	B	C	B	B	A		B	A
Approach Delay		13.1		11.9		14.3		8.9	
Approach LOS		B		B		B		A	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 41.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 12.1

Intersection LOS: B

Intersection Capacity Utilization 50.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

		
Ø1	Ø2	Ø4
10 s	85 s	35 s
		
Ø5	Ø6	Ø8
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary 6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	336	80	37	387	29	71	1	32	44	7	118
Future Volume (veh/h)	12	336	80	37	387	29	71	1	32	44	7	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	0.99		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1870	1841	1832	1847	1876	1817	1876	1832	1841	1900	1900
Adj Flow Rate, veh/h	13	357	75	39	412	29	76	1	4	47	7	14
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, %	0	2	4	3	2	0	4	0	3	4	0	0
Cap, veh/h	31	632	133	78	767	54	320	40	160	331	37	196
Arrive On Green	0.02	0.42	0.42	0.04	0.45	0.45	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1810	1497	314	1745	1704	120	1346	326	1304	1195	303	1603
Grp Volume(v), veh/h	13	0	432	39	0	441	76	0	5	54	0	14
Grp Sat Flow(s),veh/h/ln	1810	0	1811	1745	0	1824	1346	0	1630	1498	0	1603
Q Serve(g_s), s	0.3	0.0	6.6	0.8	0.0	6.4	2.0	0.0	0.1	0.8	0.0	0.3
Cycle Q Clear(g_c), s	0.3	0.0	6.6	0.8	0.0	6.4	3.1	0.0	0.1	1.1	0.0	0.3
Prop In Lane	1.00		0.17	1.00		0.07	1.00		0.80	0.87		1.00
Lane Grp Cap(c), veh/h	31	0	765	78	0	821	320	0	200	368	0	196
V/C Ratio(X)	0.42	0.00	0.57	0.50	0.00	0.54	0.24	0.00	0.03	0.15	0.00	0.07
Avail Cap(c_a), veh/h	248	0	3966	239	0	3995	1261	0	1339	1395	0	1317
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	17.8	0.0	8.0	17.0	0.0	7.3	16.0	0.0	14.1	14.5	0.0	14.2
Incr Delay (d2), s/veh	3.4	0.0	0.2	1.8	0.0	0.2	0.1	0.0	0.0	0.1	0.0	0.1
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(95%),veh/ln	0.2	0.0	2.7	0.5	0.0	2.4	1.0	0.0	0.1	0.6	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	0.0	8.3	18.9	0.0	7.5	16.1	0.0	14.1	14.6	0.0	14.2
LnGrp LOS	C	A	A	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h	445			480			81			68		
Approach Delay, s/veh	8.6			8.4			16.0			14.5		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	6.6	20.4	9.5		5.6	21.4	9.5					
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0					
Max Green Setting (Gmax), s	5.0	80.0	30.0		5.0	80.0	30.0					
Max Q Clear Time (g_c+I1), s	2.8	8.6	3.1		2.3	8.4	5.1					
Green Ext Time (p_c), s	0.0	0.4	0.0		0.0	0.4	0.0					
Intersection Summary												
HCM 6th Ctrl Delay	9.5											
HCM 6th LOS	A											

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	407	32	12	560	4	18	0	7	14	4	181
Future Vol, veh/h	31	407	32	12	560	4	18	0	7	14	4	181
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	95	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	34	447	35	13	615	4	20	0	8	15	4	199

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	625	0	0	482	0	0	1278	1184	466	1185	1197	621
Stage 1	-	-	-	-	-	-	533	533	-	647	647	-
Stage 2	-	-	-	-	-	-	745	651	-	538	550	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	966	-	-	1091	-	-	144	191	601	167	187	491
Stage 1	-	-	-	-	-	-	534	528	-	463	470	-
Stage 2	-	-	-	-	-	-	409	468	-	531	519	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	960	-	-	1091	-	-	81	181	600	158	177	488
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	181	-	158	177	-
Stage 1	-	-	-	-	-	-	515	510	-	444	462	-
Stage 2	-	-	-	-	-	-	237	460	-	505	501	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	49.9	18.6
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	107	960	-	-	1091	-	-	162	488
HCM Lane V/C Ratio	0.257	0.035	-	-	0.012	-	-	0.122	0.408
HCM Control Delay (s)	49.9	8.9	-	-	8.3	-	-	30.3	17.4
HCM Lane LOS	E	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.4	2

Timings
8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	141	374	11	628	10	6	94	15
Future Volume (vph)	141	374	11	628	10	6	94	15
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	49.2	49.1	41.1	37.3	11.0	11.0	11.0	11.0
Actuated g/C Ratio	0.71	0.71	0.59	0.54	0.16	0.16	0.16	0.16
v/c Ratio	0.42	0.32	0.02	0.82	0.05	0.03	0.46	0.07
Control Delay	17.6	9.9	7.9	25.0	26.2	23.2	34.6	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	9.9	7.9	25.0	26.2	23.2	34.6	22.6
LOS	B	A	A	C	C	C	C	C
Approach Delay		11.9		24.7		24.9		32.5
Approach LOS		B		C		C		C

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 69.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.6

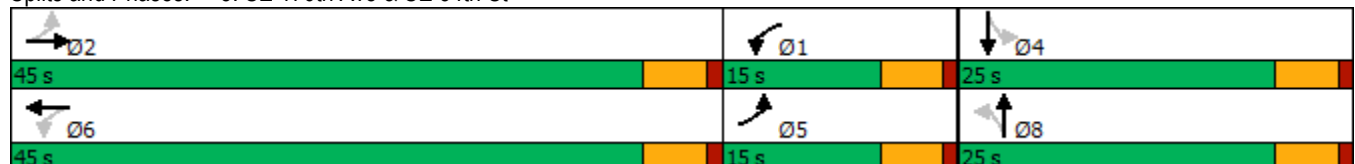
Intersection LOS: C

Intersection Capacity Utilization 72.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	374	13	11	628	120	10	6	2	94	15	5
Future Volume (veh/h)	141	374	13	11	628	120	10	6	2	94	15	5
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		0.97
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1870	1900	1900	1885	1885	1900	1900	1900	1885	1900	1900
Adj Flow Rate, veh/h	153	407	13	12	683	122	11	7	0	102	16	1
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, %	1	2	0	0	1	1	0	0	0	1	0	0
Cap, veh/h	307	552	18	724	781	139	281	196	0	288	182	11
Arrive On Green	0.09	0.31	0.31	0.28	0.50	0.50	0.10	0.10	0.00	0.10	0.10	0.10
Sat Flow, veh/h	1795	1802	58	1810	1557	278	1412	1900	0	1413	1766	110
Grp Volume(v), veh/h	153	0	420	12	0	805	11	7	0	102	0	17
Grp Sat Flow(s),veh/h/ln	1795	0	1860	1810	0	1835	1412	1900	0	1413	0	1876
Q Serve(g_s), s	0.0	0.0	9.9	0.0	0.0	19.1	0.3	0.2	0.0	3.4	0.0	0.4
Cycle Q Clear(g_c), s	0.0	0.0	9.9	0.0	0.0	19.1	0.7	0.2	0.0	3.6	0.0	0.4
Prop In Lane	1.00		0.03	1.00		0.15	1.00		0.00	1.00		0.06
Lane Grp Cap(c), veh/h	307	0	569	724	0	920	281	196	0	288	0	194
V/C Ratio(X)	0.50	0.00	0.74	0.02	0.00	0.87	0.04	0.04	0.00	0.35	0.00	0.09
Avail Cap(c_a), veh/h	513	0	1519	724	0	1498	712	776	0	719	0	766
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	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	15.2	10.6	0.0	10.9	20.2	19.8	0.0	21.4	0.0	19.9
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.0	0.0	2.0	0.0	0.0	0.0	0.3	0.0	0.1
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(95%),veh/ln	2.6	0.0	6.2	0.1	0.0	9.3	0.2	0.1	0.0	1.9	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	0.0	15.9	10.6	0.0	12.8	20.2	19.8	0.0	21.7	0.0	20.0
LnGrp LOS	C	A	B	B	A	B	C	B	A	C	A	B
Approach Vol, veh/h	573			817			18			119		
Approach Delay, s/veh	17.2			12.8			20.1			21.4		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.9	20.0		10.1	9.4	29.6		10.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	11.9		5.6	2.0	21.1		2.7				
Green Ext Time (p_c), s	0.0	1.5		0.1	0.1	3.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay 15.2
HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	31	15	259	89	105
Future Vol, veh/h	20	31	15	259	89	105
Conflicting Peds, #/hr	3	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	7	0	15	0	1	0
Mvmt Flow	22	33	16	278	96	113
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	473	160	216	0	-	0
Stage 1	160	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Critical Hdwy	6.47	6.2	4.25	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.3	2.335	-	-	-
Pot Cap-1 Maneuver	541	890	1280	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	526	884	1271	-	-	-
Mov Cap-2 Maneuver	526	-	-	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.6	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1271	-	698	-	-	
HCM Lane V/C Ratio	0.013	-	0.079	-	-	
HCM Control Delay (s)	7.9	-	10.6	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.3	-	-	

Intersection	
Intersection Delay, s/veh	79.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	466	58	89	503	18	41	120	73	27	84	28
Future Vol, veh/h	48	466	58	89	503	18	41	120	73	27	84	28
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
Heavy Vehicles, %	3	0	0	1	0	7	0	1	0	4	1	8
Mvmt Flow	52	507	63	97	547	20	45	130	79	29	91	30
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	102.9	95.5	18	18.2
HCM LOS	F	F	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	19%
Vol Thru, %	0%	62%	0%	89%	0%	97%	60%
Vol Right, %	0%	38%	0%	11%	0%	3%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	41	193	48	524	89	521	139
LT Vol	41	0	48	0	89	0	27
Through Vol	0	120	0	466	0	503	84
RT Vol	0	73	0	58	0	18	28
Lane Flow Rate	45	210	52	570	97	566	151
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.11	0.474	0.114	1.139	0.208	1.134	0.373
Departure Headway (Hd)	9.497	8.717	8.213	7.564	8.147	7.588	9.62
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	380	415	439	484	443	481	376
Service Time	7.197	6.417	5.913	5.264	5.847	5.288	7.62
HCM Lane V/C Ratio	0.118	0.506	0.118	1.178	0.219	1.177	0.402
HCM Control Delay	13.4	19	12	111.2	13	109.6	18.2
HCM Lane LOS	B	C	B	F	B	F	C
HCM 95th-tile Q	0.4	2.5	0.4	19	0.8	18.7	1.7

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	89	30	51	117	22	50	42	1434	47	1306
Future Volume (vph)	89	30	51	117	22	50	42	1434	47	1306
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		2			6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	2	2	2	6	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	39.0	39.0	39.0	38.0	38.0	38.0	10.0	32.0	19.5	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	15.0	66.0	15.0	66.0
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	12.5%	55.0%	12.5%	55.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	16.9	16.9	16.9	16.9	16.9	16.9	6.3	83.5	6.5	83.7
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.70	0.05	0.70
v/c Ratio	0.47	0.12	0.19	0.65	0.10	0.19	0.49	0.44	0.51	0.40
Control Delay	53.0	41.8	8.4	63.3	41.2	8.2	51.4	21.4	73.1	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	41.8	8.4	63.3	41.2	8.2	51.4	21.4	73.1	9.7
LOS	D	D	A	E	D	A	D	C	E	A
Approach Delay		37.6			46.1			22.2		11.8
Approach LOS		D			D			C		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 112 (93%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 20.0

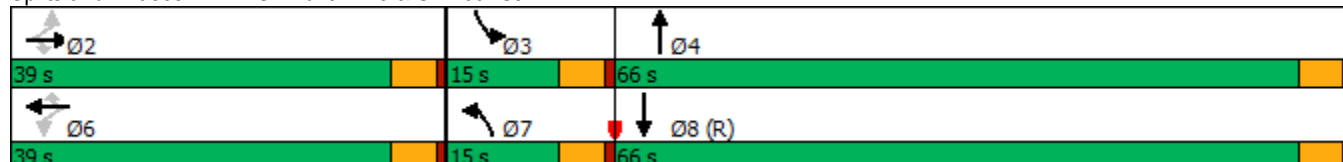
Intersection LOS: B

Intersection Capacity Utilization 59.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	30	51	117	22	50	42	1434	32	47	1306	46
Future Volume (veh/h)	89	30	51	117	22	50	42	1434	32	47	1306	46
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1826	1633	1856	1826	1870	1752	1870	1885	1900
Adj Flow Rate, veh/h	94	32	6	123	23	5	44	1509	33	49	1375	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	5	18	3	5	2	10	2	1	0
Cap, veh/h	227	250	211	216	215	206	56	2614	57	63	2616	88
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.51	0.51	0.04	0.51	0.51
Sat Flow, veh/h	1398	1900	1603	1332	1633	1565	1739	5142	112	1781	5114	171
Grp Volume(v), veh/h	94	32	6	123	23	5	44	999	543	49	922	499
Grp Sat Flow(s),veh/h/ln	1398	1900	1603	1332	1633	1565	1739	1702	1850	1781	1716	1854
Q Serve(g_s), s	7.6	1.8	0.4	10.8	1.5	0.3	3.0	24.5	24.5	3.3	21.6	21.6
Cycle Q Clear(g_c), s	9.1	1.8	0.4	12.6	1.5	0.3	3.0	24.5	24.5	3.3	21.6	21.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.09
Lane Grp Cap(c), veh/h	227	250	211	216	215	206	56	1730	940	63	1755	949
V/C Ratio(X)	0.41	0.13	0.03	0.57	0.11	0.02	0.79	0.58	0.58	0.78	0.53	0.53
Avail Cap(c_a), veh/h	439	538	454	418	463	444	145	1730	940	148	1755	949
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	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	46.0	45.4	51.6	45.9	45.4	57.7	20.5	20.5	57.4	19.6	19.6
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.9	0.1	0.0	6.3	1.0	1.8	7.4	1.1	2.1
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(95%),veh/ln	4.9	1.5	0.3	6.6	1.1	0.2	2.5	13.7	15.0	2.8	13.2	14.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.3	46.1	45.4	52.4	46.0	45.4	64.0	21.5	22.4	64.8	20.7	21.7
LnGrp LOS	D	D	D	D	D	D	E	C	C	E	C	C
Approach Vol, veh/h		132			151			1586			1470	
Approach Delay, s/veh		49.1			51.2			23.0			22.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		20.8	9.2	66.0		20.8	8.9	66.4				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		34.0	10.0	61.0		34.0	10.0	61.0				
Max Q Clear Time (g_c+I1), s		11.1	5.3	26.5		14.6	5.0	23.6				
Green Ext Time (p_c), s		0.0	0.0	1.7		0.0	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			25.1									
HCM 6th LOS			C									

Timings
12: SE 164th Ave & SE 34th Street

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	49	102	194	295	136	247	192	1216	331	164	1249
Future Volume (vph)	49	102	194	295	136	247	192	1216	331	164	1249
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	15.0	33.0	20.0	17.0	35.0	20.0	20.0	50.0	17.0	20.0	50.0
Total Split (%)	12.5%	27.5%	16.7%	14.2%	29.2%	16.7%	16.7%	41.7%	14.2%	16.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	7.3	10.7	34.0	12.0	17.5	38.0	18.3	61.8	78.8	15.5	59.0
Actuated g/C Ratio	0.06	0.09	0.28	0.10	0.15	0.32	0.15	0.52	0.66	0.13	0.49
v/c Ratio	0.51	0.66	0.41	1.73	0.54	0.46	0.74	0.70	0.30	0.75	0.54
Control Delay	71.7	71.0	24.2	385.6	56.2	21.9	64.4	26.2	3.6	64.7	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	71.0	24.2	385.6	56.2	21.9	64.4	26.2	3.6	64.7	22.4
LOS	E	E	C	F	E	C	E	C	A	E	C
Approach Delay		44.8			186.9			26.1			27.2
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.73

Intersection Signal Delay: 53.8

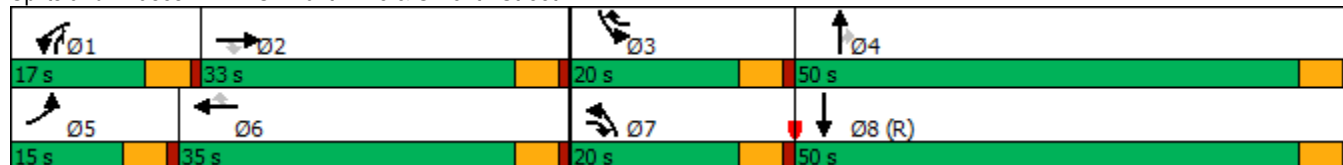
Intersection LOS: D

Intersection Capacity Utilization 81.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave & SE 34th Street

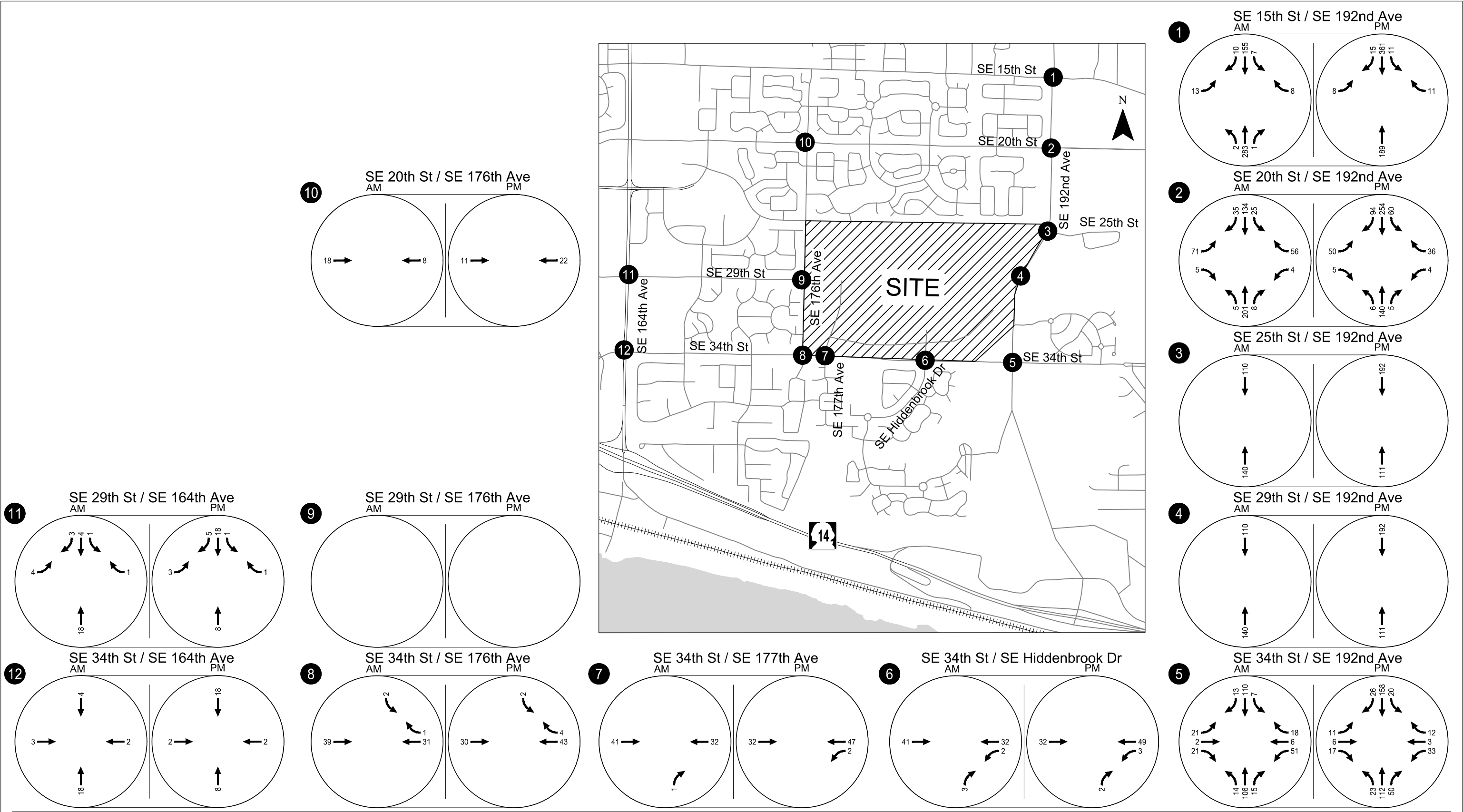


HCM 6th Signalized Intersection Summary

12: SE 164th Ave & SE 34th Street

Vancouver Innovation Center
Baseline 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	102	194	295	136	247	192	1216	331	164	1249	49
Future Volume (veh/h)	49	102	194	295	136	247	192	1216	331	164	1249	49
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1826	1885	1870	1841	1856	1885	1870	1885	1870	1870	1841
Adj Flow Rate, veh/h	51	106	152	307	142	182	200	1267	237	171	1301	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	5	1	2	4	3	1	2	1	2	2	4
Cap, veh/h	64	183	359	178	298	430	224	1379	780	199	1895	70
Arrive On Green	0.04	0.10	0.10	0.10	0.16	0.16	0.13	0.39	0.39	0.04	0.12	0.12
Sat Flow, veh/h	1682	1826	1598	1781	1841	1572	1795	3554	1598	1781	5054	186
Grp Volume(v), veh/h	51	106	152	307	142	182	200	1267	237	171	876	473
Grp Sat Flow(s),veh/h/ln	1682	1826	1598	1781	1841	1572	1795	1777	1598	1781	1702	1837
Q Serve(g_s), s	3.6	6.7	9.8	12.0	8.4	11.4	13.2	40.7	10.7	11.5	29.6	29.6
Cycle Q Clear(g_c), s	3.6	6.7	9.8	12.0	8.4	11.4	13.2	40.7	10.7	11.5	29.6	29.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	64	183	359	178	298	430	224	1379	780	199	1277	689
V/C Ratio(X)	0.79	0.58	0.42	1.72	0.48	0.42	0.89	0.92	0.30	0.86	0.69	0.69
Avail Cap(c_a), veh/h	140	426	572	178	460	569	224	1379	780	223	1277	689
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	57.2	51.6	39.8	54.0	45.7	35.8	51.7	34.9	18.5	56.8	45.8	45.8
Incr Delay (d2), s/veh	7.9	1.1	0.3	348.1	0.4	0.2	31.8	11.3	1.0	21.5	2.8	5.1
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(95%),veh/ln	3.0	5.5	6.9	35.7	6.9	7.7	12.4	26.1	7.3	10.7	19.8	21.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	52.7	40.1	402.1	46.1	36.0	83.5	46.2	19.5	78.4	48.6	50.9
LnGrp LOS	E	D	D	F	D	D	F	D	B	E	D	D
Approach Vol, veh/h	309			631			1704			1520		
Approach Delay, s/veh	48.6			216.4			46.8			52.7		
Approach LOS	D			F			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	17.0	18.4	51.6	9.6	24.4	20.0	50.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	28.0	15.0	45.0	10.0	30.0	15.0	45.0				
Max Q Clear Time (g_c+I1), s	14.0	11.8	13.5	42.7	5.6	13.4	15.2	31.6				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.1	0.0	0.3	0.0	2.9				
Intersection Summary												
HCM 6th Ctrl Delay	74.8											
HCM 6th LOS	E											



In-Process Trip Assignment
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
E-1

Appendix F 2038 With-Project Phase 1
Buildout Operations
Worksheets

Timings 1: SE 192nd & SE 15th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	156	45	29	64	158	49	925	89	814
Future Volume (vph)	156	45	29	64	158	49	925	89	814
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	20.0	29.0	20.0	29.0	14.0	15.0	37.0	14.0	36.0
Total Split (%)	20.0%	29.0%	20.0%	29.0%	14.0%	15.0%	37.0%	14.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	12.4	18.7	5.9	10.2	22.0	6.8	50.6	8.8	54.5
Actuated g/C Ratio	0.12	0.19	0.06	0.10	0.22	0.07	0.51	0.09	0.54
v/c Ratio	0.80	0.26	0.32	0.38	0.42	0.45	0.60	0.69	0.56
Control Delay	67.8	21.0	53.4	45.3	17.3	60.3	18.0	69.1	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	21.0	53.4	45.3	17.3	60.3	18.0	69.1	20.8
LOS	E	C	D	D	B	E	B	E	C
Approach Delay		51.7		28.6			20.1		25.1
Approach LOS		D		C			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 9 (9%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 26.0

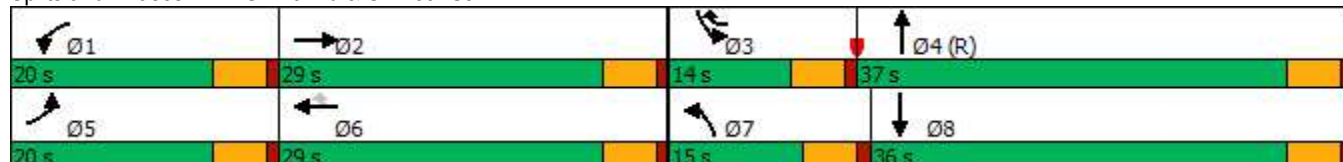
Intersection LOS: C

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Baseline 2036 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	45	37	29	64	158	49	925	16	89	814	87
Future Volume (veh/h)	156	45	37	29	64	158	49	925	16	89	814	87
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1796	1781	1841	1870	1856	1841	1900	1737	1767	1856
Adj Flow Rate, veh/h	173	50	5	32	71	97	54	1028	17	99	904	90
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	7	8	4	2	3	4	0	11	9	3
Cap, veh/h	204	276	28	50	141	239	88	1879	31	122	1720	171
Arrive On Green	0.12	0.16	0.16	0.03	0.08	0.08	0.10	1.00	1.00	0.07	0.56	0.56
Sat Flow, veh/h	1767	1699	170	1697	1841	1585	1767	3519	58	1654	3082	307
Grp Volume(v), veh/h	173	0	55	32	71	97	54	511	534	99	492	502
Grp Sat Flow(s),veh/h/ln	1767	0	1869	1697	1841	1585	1767	1749	1829	1654	1678	1711
Q Serve(g_s), s	9.6	0.0	2.5	1.9	3.7	5.5	2.9	0.0	0.0	5.9	18.3	18.3
Cycle Q Clear(g_c), s	9.6	0.0	2.5	1.9	3.7	5.5	2.9	0.0	0.0	5.9	18.3	18.3
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.03	1.00		0.18
Lane Grp Cap(c), veh/h	204	0	304	50	141	239	88	934	976	122	936	955
V/C Ratio(X)	0.85	0.00	0.18	0.64	0.50	0.41	0.61	0.55	0.55	0.81	0.53	0.53
Avail Cap(c_a), veh/h	265	0	449	254	442	498	177	934	976	149	936	955
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.82	0.82	0.82	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	0.0	36.1	48.0	44.3	38.4	44.1	0.0	0.0	45.6	13.8	13.8
Incr Delay (d2), s/veh	14.7	0.0	0.1	5.0	1.0	0.4	2.1	1.9	1.8	19.5	2.1	2.1
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(95%),veh/ln	8.5	0.0	2.0	1.5	3.1	3.8	2.3	0.9	0.9	5.4	11.1	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	0.0	36.2	53.0	45.3	38.8	46.1	1.9	1.8	65.1	15.9	15.9
LnGrp LOS	E	A	D	D	D	D	D	A	A	E	B	B
Approach Vol, veh/h		228			200			1099			1093	
Approach Delay, s/veh		52.8			43.4			4.0			20.4	
Approach LOS		D			D			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	21.3	12.4	58.4	16.5	12.7	10.0	60.8				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	24.0	9.0	32.0	15.0	24.0	10.0	31.0				
Max Q Clear Time (g_c+I1), s	3.9	4.5	7.9	2.0	11.6	7.5	4.9	20.3				
Green Ext Time (p_c), s	0.0	0.1	0.0	2.1	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			18.1									
HCM 6th LOS			B									

Timings
2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	 		 			 		 
Traffic Volume (vph)	166	182	119	165	46	707	59	667
Future Volume (vph)	166	182	119	165	46	707	59	667
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	17.0	29.0	17.0	29.0	15.0	39.0	15.0	39.0
Total Split (%)	17.0%	29.0%	17.0%	29.0%	15.0%	39.0%	15.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	9.4	18.7	8.0	17.2	7.3	47.6	7.7	46.0
Actuated g/C Ratio	0.09	0.19	0.08	0.17	0.07	0.48	0.08	0.46
v/c Ratio	0.55	0.79	0.45	0.72	0.39	0.54	0.45	0.52
Control Delay	49.5	51.2	48.7	48.4	67.5	8.7	52.3	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	51.2	48.7	48.4	67.5	8.7	52.3	27.1
LOS	D	D	D	D	E	A	D	C
Approach Delay		50.5		48.5		11.7		28.9
Approach LOS		D		D		B		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.2

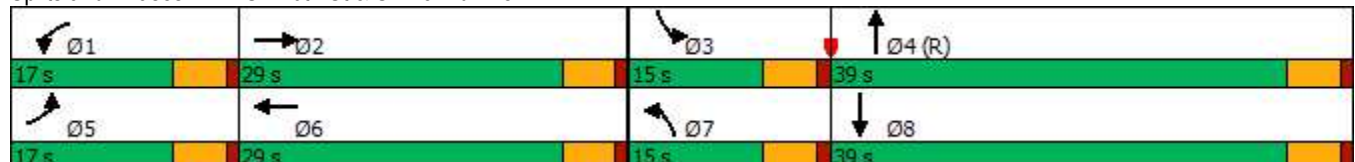
Intersection LOS: C

Intersection Capacity Utilization 63.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: SE 20th St & SE 192nd Ave



HCM 6th Signalized Intersection Summary

2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	182	80	119	165	57	46	707	138	59	667	103
Future Volume (veh/h)	166	182	80	119	165	57	46	707	138	59	667	103
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1841	1885	1885	1885	1811	1856	1841	1885	1811	1826
Adj Flow Rate, veh/h	175	192	66	125	174	46	48	744	131	62	702	97
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	4	1	1	1	6	3	4	1	6	5
Cap, veh/h	242	222	76	189	212	56	86	1609	283	80	1615	223
Arrive On Green	0.07	0.16	0.16	0.05	0.15	0.15	0.05	0.54	0.54	0.04	0.53	0.53
Sat Flow, veh/h	3428	1352	465	3483	1437	380	1725	2996	527	1795	3036	419
Grp Volume(v), veh/h	175	0	258	125	0	220	48	438	437	62	398	401
Grp Sat Flow(s),veh/h/ln	1714	0	1816	1742	0	1817	1725	1763	1760	1795	1721	1735
Q Serve(g_s), s	5.0	0.0	13.8	3.5	0.0	11.7	2.7	15.3	15.3	3.4	14.1	14.1
Cycle Q Clear(g_c), s	5.0	0.0	13.8	3.5	0.0	11.7	2.7	15.3	15.3	3.4	14.1	14.1
Prop In Lane	1.00		0.26	1.00		0.21	1.00		0.30	1.00		0.24
Lane Grp Cap(c), veh/h	242	0	298	189	0	268	86	947	945	80	915	923
V/C Ratio(X)	0.72	0.00	0.87	0.66	0.00	0.82	0.56	0.46	0.46	0.77	0.43	0.44
Avail Cap(c_a), veh/h	411	0	436	418	0	436	172	947	945	180	915	923
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	1.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	45.5	0.0	40.7	46.4	0.0	41.3	46.4	14.3	14.3	47.3	14.3	14.3
Incr Delay (d2), s/veh	1.5	0.0	8.6	1.5	0.0	2.6	2.1	1.6	1.6	4.8	1.2	1.2
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(95%),veh/ln	3.8	0.0	10.9	2.7	0.0	9.1	2.1	10.0	10.0	2.9	8.7	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	0.0	49.3	47.8	0.0	44.0	48.5	15.9	15.9	52.0	15.5	15.5
LnGrp LOS	D	A	D	D	A	D	D	B	B	D	B	B
Approach Vol, veh/h	433			345			923			861		
Approach Delay, s/veh	48.4			45.4			17.6			18.1		
Approach LOS	D			D			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	21.4	9.5	58.7	12.1	19.8	10.0	58.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	24.0	10.0	34.0	12.0	24.0	10.0	34.0				
Max Q Clear Time (g_c+I1), s	5.5	15.8	5.4	17.3	7.0	13.7	4.7	16.1				
Green Ext Time (p_c), s	0.1	0.5	0.0	3.1	0.1	0.5	0.0	2.9				

Intersection Summary

HCM 6th Ctrl Delay 26.7
HCM 6th LOS C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection							
Int Delay, s/veh	0.2						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Vol, veh/h	7	10	813	3	7	840	
Future Vol, veh/h	7	10	813	3	7	840	
Conflicting Peds, #/hr	0	0	0	1	1	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	125	0	-	-	230	-	
Veh in Median Storage, #	0	-	0	-	-	0	
Grade, %	0	-	0	-	-	0	
Peak Hour Factor	95	95	95	95	95	95	
Heavy Vehicles, %	0	20	4	67	0	7	
Mvmt Flow	7	11	856	3	7	884	
Major/Minor	Minor1	Major1		Major2			
Conflicting Flow All	1315	431	0	0	860	0	
Stage 1	859	-	-	-	-	-	
Stage 2	456	-	-	-	-	-	
Critical Hdwy	6.8	7.3	-	-	4.1	-	
Critical Hdwy Stg 1	5.8	-	-	-	-	-	
Critical Hdwy Stg 2	5.8	-	-	-	-	-	
Follow-up Hdwy	3.5	3.5	-	-	2.2	-	
Pot Cap-1 Maneuver	152	525	-	-	790	-	
Stage 1	380	-	-	-	-	-	
Stage 2	611	-	-	-	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	150	525	-	-	789	-	
Mov Cap-2 Maneuver	150	-	-	-	-	-	
Stage 1	380	-	-	-	-	-	
Stage 2	606	-	-	-	-	-	
Approach	WB	NB		SB			
HCM Control Delay, s	19.5	0		0.1			
HCM LOS	C						
Minor Lane/Major Mvmt		NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)		-	-	150	525	789	-
HCM Lane V/C Ratio		-	-	0.049	0.02	0.009	-
HCM Control Delay (s)		-	-	30.2	12	9.6	-
HCM Lane LOS		-	-	D	B	A	-
HCM 95th %tile Q(veh)		-	-	0.2	0.1	0	-

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	124	152	207	127	67	118	704	349	108	547
Future Volume (vph)	124	152	207	127	67	118	704	349	108	547
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	15.0	36.0	15.0	36.0	36.0	15.0	34.0	15.0	15.0	34.0
Total Split (%)	15.0%	36.0%	15.0%	36.0%	36.0%	15.0%	34.0%	15.0%	15.0%	34.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	27.0	18.3	29.2	19.4	19.4	9.9	41.9	51.7	10.0	42.1
Actuated g/C Ratio	0.27	0.18	0.29	0.19	0.19	0.10	0.42	0.52	0.10	0.42
v/c Ratio	0.40	0.74	0.82	0.38	0.16	0.73	0.55	0.38	0.35	0.59
Control Delay	26.3	47.2	48.4	36.4	0.8	66.8	25.7	2.3	42.0	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	47.2	48.4	36.4	0.8	66.8	25.7	2.3	42.0	23.6
LOS	C	D	D	D	A	E	C	A	D	C
Approach Delay		39.8		36.7			22.8			26.1
Approach LOS		D		D			C			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 28.0

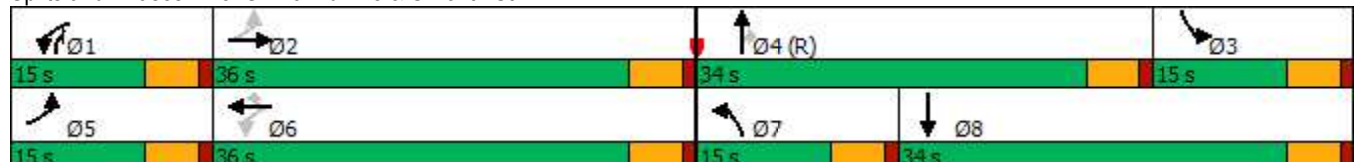
Intersection LOS: C

Intersection Capacity Utilization 69.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	152	74	207	127	67	118	704	349	108	547	155
Future Volume (veh/h)	124	152	74	207	127	67	118	704	349	108	547	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1728	1803	1847	1943	2018	1988	2018	1883	1988	1832	1684	1684
Adj Flow Rate, veh/h	138	169	60	230	141	7	131	782	179	120	608	149
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	3	0	5	0	2	0	9	2	1	11	11
Cap, veh/h	352	214	76	305	368	301	163	1037	655	818	1138	278
Arrive On Green	0.09	0.17	0.17	0.10	0.18	0.18	0.08	0.29	0.29	0.24	0.45	0.45
Sat Flow, veh/h	1646	1268	450	1850	2018	1652	1922	3578	1679	3385	2548	623
Grp Volume(v), veh/h	138	0	229	230	141	7	131	782	179	120	381	376
Grp Sat Flow(s),veh/h/ln	1646	0	1718	1850	2018	1652	1922	1789	1679	1693	1600	1571
Q Serve(g_s), s	6.8	0.0	12.8	10.0	6.1	0.2	6.7	19.9	2.6	2.8	17.3	17.4
Cycle Q Clear(g_c), s	6.8	0.0	12.8	10.0	6.1	0.2	6.7	19.9	2.6	2.8	17.3	17.4
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		0.40
Lane Grp Cap(c), veh/h	352	0	289	305	368	301	163	1037	655	818	715	702
V/C Ratio(X)	0.39	0.00	0.79	0.75	0.38	0.02	0.80	0.75	0.27	0.15	0.53	0.54
Avail Cap(c_a), veh/h	374	0	532	305	626	512	192	1037	655	818	715	702
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)	0.92	0.00	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	0.0	39.9	32.0	36.0	11.4	44.9	32.3	7.4	29.8	20.1	20.1
Incr Delay (d2), s/veh	0.2	0.0	1.7	9.1	0.2	0.0	15.9	5.1	1.0	0.0	2.8	2.9
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(95%),veh/ln	4.7	0.0	9.0	9.0	5.3	0.2	6.9	13.8	2.2	2.0	10.8	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	0.0	41.6	41.1	36.2	11.4	60.9	37.3	8.5	29.9	22.9	23.0
LnGrp LOS	C	A	D	D	D	B	E	D	A	C	C	C
Approach Vol, veh/h		367			378			1092			877	
Approach Delay, s/veh		37.5			38.7			35.4			23.9	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	21.8	29.2	34.0	13.6	23.2	13.5	49.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	31.0	10.0	29.0	10.0	31.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	12.0	14.8	4.8	21.9	8.8	8.1	8.7	19.4				
Green Ext Time (p_c), s	0.0	0.4	0.0	1.4	0.0	0.2	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			32.4									
HCM 6th LOS			C									

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Baseline 2036 AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	36	310	27	255	63	11	58	1	21
Future Volume (vph)	36	310	27	255	63	11	58	1	21
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		8		4	
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	10.0	27.0	32.0	32.0	34.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effect Green (s)	5.6	26.3	5.6	24.1	9.2	9.2		9.2	9.2
Actuated g/C Ratio	0.12	0.57	0.12	0.53	0.20	0.20		0.20	0.20
v/c Ratio	0.20	0.40	0.15	0.50	0.30	0.17		0.28	0.07
Control Delay	27.7	12.3	27.4	14.3	19.5	8.4		19.2	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	27.7	12.3	27.4	14.3	19.5	8.4		19.2	1.5
LOS	C	B	C	B	B	A		B	A
Approach Delay		13.8		15.2		14.4		14.5	
Approach LOS		B		B		B		B	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 45.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 14.5

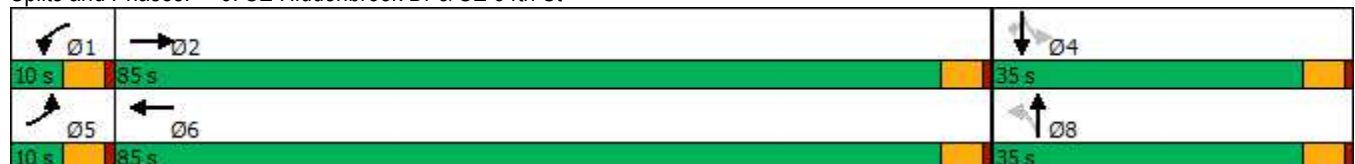
Intersection LOS: B

Intersection Capacity Utilization 47.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St



HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	310	24	27	255	113	63	11	41	58	1	21
Future Volume (veh/h)	36	310	24	27	255	113	63	11	41	58	1	21
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1841	1900	1876	1802	1876	1832	1876	1876	1900	1900	1900
Adj Flow Rate, veh/h	44	383	26	33	315	119	78	14	0	72	1	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	4	0	0	5	0	3	0	0	0	0	0
Cap, veh/h	89	737	50	70	526	199	375	210	0	347	3	181
Arrive On Green	0.05	0.43	0.43	0.04	0.42	0.42	0.11	0.11	0.00	0.11	0.11	0.00
Sat Flow, veh/h	1810	1704	116	1787	1245	470	1387	1876	0	1324	24	1610
Grp Volume(v), veh/h	44	0	409	33	0	434	78	14	0	73	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1819	1787	0	1716	1387	1876	0	1348	0	1610
Q Serve(g_s), s	0.9	0.0	5.9	0.7	0.0	7.1	0.0	0.2	0.0	1.7	0.0	0.0
Cycle Q Clear(g_c), s	0.9	0.0	5.9	0.7	0.0	7.1	1.5	0.2	0.0	2.0	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.27	1.00		0.00	0.99		1.00
Lane Grp Cap(c), veh/h	89	0	787	70	0	724	375	210	0	350	0	181
V/C Ratio(X)	0.49	0.00	0.52	0.47	0.00	0.60	0.21	0.07	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	251	0	4039	248	0	3809	1374	1562	0	1377	0	1341
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	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.7	0.0	7.5	17.0	0.0	8.1	14.9	14.3	0.0	15.2	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.2	1.8	0.0	0.3	0.1	0.0	0.0	0.1	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(95%),veh/ln	0.6	0.0	2.3	0.4	0.0	2.7	0.9	0.2	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	0.0	7.7	18.8	0.0	8.4	15.0	14.4	0.0	15.3	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	B	B	A	B	A	A
Approach Vol, veh/h	453				467				92			
Approach Delay, s/veh	8.7				9.1				14.9			
Approach LOS	A				A				B			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	20.6		9.0	6.8	20.2		9.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	2.7	7.9		4.0	2.9	9.1		3.5				
Green Ext Time (p_c), s	0.0	0.8		0.1	0.0	0.9		0.1				
Intersection Summary												
HCM 6th Ctrl Delay	9.8											
HCM 6th LOS	A											

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	234	338	11	5	320	14	29	2	17	16	2	125
Future Vol, veh/h	234	338	11	5	320	14	29	2	17	16	2	125
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	95	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	0	0	5	0	0	0	0	0	0	27
Mvmt Flow	275	398	13	6	376	16	34	2	20	19	2	147

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	414	0	0	1429	1365	408	1357	1355	379
Stage 1	-	-	-	-	-	-	958	958	-	391	391	-
Stage 2	-	-	-	-	-	-	471	407	-	966	964	-
Critical Hdwy	4.13	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.227	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.543
Pot Cap-1 Maneuver	1158	-	-	1156	-	-	114	149	648	127	151	616
Stage 1	-	-	-	-	-	-	312	338	-	637	611	-
Stage 2	-	-	-	-	-	-	577	601	-	309	336	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1155	-	-	1153	-	-	69	112	646	98	114	614
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	112	-	98	114	-
Stage 1	-	-	-	-	-	-	237	257	-	484	606	-
Stage 2	-	-	-	-	-	-	435	596	-	226	255	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.6	0.1	76	17.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	103	1155	-	-	1153	-	-	100	614
HCM Lane V/C Ratio	0.548	0.238	-	-	0.005	-	-	0.212	0.24
HCM Control Delay (s)	76	9.1	-	-	8.1	-	-	50.4	12.7
HCM Lane LOS	F	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	2.5	0.9	-	-	0	-	-	0.7	0.9

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	49	508	3	404	14	5	70	3
Future Volume (vph)	49	508	3	404	14	5	70	3
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	32.7	32.0	30.7	27.9	9.6	9.6	9.6	9.6
Actuated g/C Ratio	0.66	0.64	0.62	0.56	0.19	0.19	0.19	0.19
v/c Ratio	0.11	0.51	0.01	0.56	0.06	0.04	0.31	0.14
Control Delay	6.4	10.8	6.7	14.4	20.1	15.6	22.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	10.8	6.7	14.4	20.1	15.6	22.8	9.0
LOS	A	B	A	B	C	B	C	A
Approach Delay		10.4		14.4		18.2		17.6
Approach LOS		B		B		B		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 49.8

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 12.9

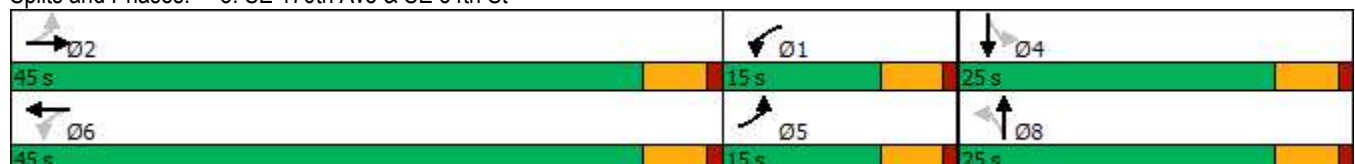
Intersection LOS: B

Intersection Capacity Utilization 54.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	508	2	3	404	67	14	5	5	70	3	39
Future Volume (veh/h)	49	508	2	3	404	67	14	5	5	70	3	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.98		1.00	0.98		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1856	1900	1900	1811	1826	1900	1900	1530	1870	1900	1885
Adj Flow Rate, veh/h	58	598	2	4	475	71	16	6	0	82	4	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	9	3	0	0	6	5	0	0	25	2	0	1
Cap, veh/h	425	765	3	423	640	96	351	209	0	347	209	0
Arrive On Green	0.06	0.41	0.41	0.06	0.42	0.42	0.11	0.11	0.00	0.11	0.11	0.00
Sat Flow, veh/h	1682	1848	6	1810	1538	230	1409	1900	0	1385	1900	0
Grp Volume(v), veh/h	58	0	600	4	0	546	16	6	0	82	4	0
Grp Sat Flow(s),veh/h/ln	1682	0	1854	1810	0	1768	1409	1900	0	1385	1900	0
Q Serve(g_s), s	0.0	0.0	10.2	0.0	0.0	9.5	0.4	0.1	0.0	2.0	0.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.2	0.0	0.0	9.5	0.4	0.1	0.0	2.1	0.1	0.0
Prop In Lane	1.00		0.00	1.00		0.13	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	425	0	767	423	0	735	351	209	0	347	209	0
V/C Ratio(X)	0.14	0.00	0.78	0.01	0.00	0.74	0.05	0.03	0.00	0.24	0.02	0.00
Avail Cap(c_a), veh/h	786	0	2043	808	0	1948	972	1047	0	957	1047	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	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.1	0.0	9.2	11.8	0.0	9.0	14.6	14.4	0.0	15.4	14.4	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	0.0	0.6	0.0	0.0	0.0	0.1	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(95%),veh/ln	0.5	0.0	4.3	0.0	0.0	3.8	0.2	0.1	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.1	0.0	9.9	11.8	0.0	9.5	14.6	14.4	0.0	15.5	14.4	0.0
LnGrp LOS	B	A	A	B	A	A	B	B	A	B	B	A
Approach Vol, veh/h	658				550				22			
Approach Delay, s/veh	10.1				9.5				14.6			
Approach LOS	B				A				B			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	20.0		9.0	7.2	20.1		9.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	12.2		4.1	2.0	11.5		2.4				
Green Ext Time (p_c), s	0.0	2.4		0.1	0.0	2.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	13	4	132	95	104
Future Vol, veh/h	5	13	4	132	95	104
Conflicting Peds, #/hr	2	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	10	0	2	1	18
Mvmt Flow	6	15	5	155	112	122
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	340	173	234	0	-	0
Stage 1	173	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.4	6.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.2	-	-	-
Pot Cap-1 Maneuver	660	850	1345	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	657	850	1345	-	-	-
Mov Cap-2 Maneuver	657	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.7	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1345	-	786	-	-	
HCM Lane V/C Ratio	0.003	-	0.027	-	-	
HCM Control Delay (s)	7.7	-	9.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	272	28	75	314	14	33	71	55	0	62	10
Future Vol, veh/h	12	272	28	75	314	14	33	71	55	0	62	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	4	10	4	1	9	4	3	0	0	0	0
Mvmt Flow	13	299	31	82	345	15	36	78	60	0	68	11
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	15.5	15.3	11.3	11.3
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	56%	0%	91%	0%	96%	86%
Vol Right, %	0%	44%	0%	9%	0%	4%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	126	12	300	75	328	72
LT Vol	33	0	12	0	75	0	0
Through Vol	0	71	0	272	0	314	62
RT Vol	0	55	0	28	0	14	10
Lane Flow Rate	36	138	13	330	82	360	79
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.074	0.251	0.024	0.546	0.147	0.583	0.153
Departure Headway (Hd)	7.371	6.533	6.47	5.965	6.408	5.819	6.959
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	485	548	552	603	559	620	513
Service Time	5.134	4.297	4.22	3.715	4.154	3.565	5.035
HCM Lane V/C Ratio	0.074	0.252	0.024	0.547	0.147	0.581	0.154
HCM Control Delay	10.7	11.5	9.4	15.7	10.3	16.4	11.3
HCM Lane LOS	B	B	A	C	B	C	B
HCM 95th-tile Q	0.2	1	0.1	3.3	0.5	3.8	0.5

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	42	7	47	141	16	37	27	1106	16	823
Future Volume (vph)	42	7	47	141	16	37	27	1106	16	823
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		2			6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	2	2	2	6	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	39.0	39.0	39.0	38.0	38.0	38.0	10.0	32.0	10.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	17.0	64.0	17.0	64.0
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	14.2%	53.3%	14.2%	53.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lead	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	18.7	18.7	18.7	18.7	18.7	18.7	5.9	86.9	5.4	84.4
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.05	0.72	0.04	0.70
v/c Ratio	0.21	0.02	0.16	0.69	0.07	0.13	0.32	0.32	0.22	0.25
Control Delay	42.7	37.1	6.5	62.4	38.9	3.9	36.9	23.3	61.9	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	37.1	6.5	62.4	38.9	3.9	36.9	23.3	61.9	8.3
LOS	D	D	A	E	D	A	D	C	E	A
Approach Delay		24.6			49.2			23.6		9.3
Approach LOS		C			D			C		A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 85 (71%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 20.4

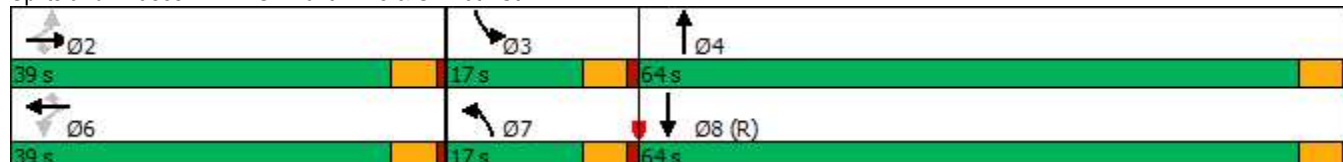
Intersection LOS: C

Intersection Capacity Utilization 51.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	7	47	141	16	37	27	1106	15	16	823	26
Future Volume (veh/h)	42	7	47	141	16	37	27	1106	15	16	823	26
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1856	1856	1648	1900	1900	1870	1796	1796	1856	1826
Adj Flow Rate, veh/h	44	7	6	148	17	4	28	1164	15	17	866	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	3	3	17	0	0	2	7	7	3	5
Cap, veh/h	221	239	198	230	207	202	46	2592	33	31	2488	72
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.50	0.50	0.02	0.49	0.49
Sat Flow, veh/h	1380	1900	1572	1390	1648	1610	1810	5195	67	1711	5060	146
Grp Volume(v), veh/h	44	7	6	148	17	4	28	763	416	17	578	313
Grp Sat Flow(s),veh/h/ln	1380	1900	1572	1390	1648	1610	1810	1702	1858	1711	1689	1829
Q Serve(g_s), s	3.5	0.4	0.4	12.5	1.1	0.3	1.8	17.4	17.4	1.2	12.6	12.6
Cycle Q Clear(g_c), s	4.6	0.4	0.4	12.9	1.1	0.3	1.8	17.4	17.4	1.2	12.6	12.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.08
Lane Grp Cap(c), veh/h	221	239	198	230	207	202	46	1698	927	31	1660	899
V/C Ratio(X)	0.20	0.03	0.03	0.64	0.08	0.02	0.61	0.45	0.45	0.55	0.35	0.35
Avail Cap(c_a), veh/h	438	538	446	449	467	456	181	1698	927	171	1660	899
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	1.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	46.0	46.0	51.7	46.3	46.0	57.9	19.4	19.4	58.4	18.7	18.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	1.1	0.1	0.0	3.6	0.6	1.2	5.6	0.6	1.1
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(95%),veh/ln	2.2	0.3	0.3	7.9	0.8	0.2	1.6	10.3	11.3	1.0	8.5	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	46.1	46.1	52.8	46.4	46.0	61.5	20.0	20.6	64.0	19.3	19.8
LnGrp LOS	D	D	D	D	D	D	E	C	C	E	B	B
Approach Vol, veh/h	57			169			1207			908		
Approach Delay, s/veh	48.0			52.0			21.2			20.3		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	20.1			7.2			64.9			20.1		
Change Period (Y+Rc), s	5.0			5.0			5.0			5.0		
Max Green Setting (Gmax), s	34.0			12.0			59.0			34.0		
Max Q Clear Time (g_c+I1), s	6.6			3.2			19.4			14.9		
Green Ext Time (p_c), s	0.0			0.0			5.5			0.2		
Intersection Summary												
HCM 6th Ctrl Delay	23.7											
HCM 6th LOS	C											

Timings 12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	28	60	165	312	121	138	111	931	307	187	742
Future Volume (vph)	28	60	165	312	121	138	111	931	307	187	742
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	20.0	33.0	20.0	25.0	38.0	17.0	20.0	45.0	25.0	17.0	42.0
Total Split (%)	16.7%	27.5%	16.7%	20.8%	31.7%	14.2%	16.7%	37.5%	20.8%	14.2%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	6.4	8.2	23.0	20.0	23.8	52.1	11.8	50.5	75.5	23.3	62.0
Actuated g/C Ratio	0.05	0.07	0.19	0.17	0.20	0.43	0.10	0.42	0.63	0.19	0.52
v/c Ratio	0.39	0.56	0.53	1.18	0.36	0.20	0.72	0.71	0.32	0.61	0.34
Control Delay	68.3	70.9	31.3	152.9	45.0	4.0	74.0	32.9	2.1	45.5	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	70.9	31.3	152.9	45.0	4.0	74.0	32.9	2.1	45.5	20.5
LOS	E	E	C	F	D	A	E	C	A	D	C
Approach Delay		44.8			94.1			29.3			25.4
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 41.1

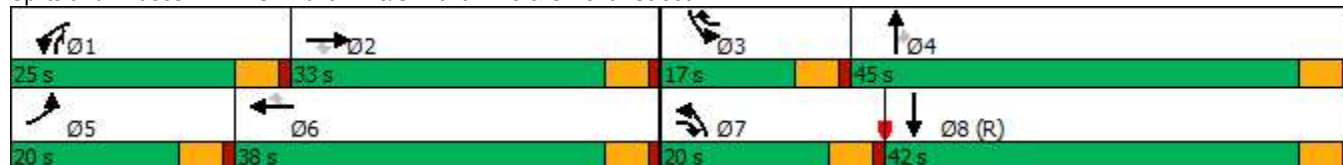
Intersection LOS: D

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave/SE164th Ave & SE 34th Street



HCM 6th Signalized Intersection Summary

12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Baseline 2036 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	60	165	312	121	138	111	931	307	187	742	37
Future Volume (veh/h)	28	60	165	312	121	138	111	931	307	187	742	37
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1565	1758	1803	1870	1885	1841	1791	1776	1746	1806	1761	1761
Adj Flow Rate, veh/h	31	67	124	347	134	50	123	1034	181	208	824	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	19	6	3	2	1	4	1	2	4	0	3	3
Cap, veh/h	40	159	270	297	434	515	147	1125	740	172	1635	75
Arrive On Green	0.03	0.09	0.09	0.17	0.23	0.23	0.09	0.33	0.33	0.03	0.11	0.11
Sat Flow, veh/h	1491	1758	1528	1781	1885	1560	1706	3375	1480	1720	4711	217
Grp Volume(v), veh/h	31	67	124	347	134	50	123	1034	181	208	560	302
Grp Sat Flow(s),veh/h/ln	1491	1758	1528	1781	1885	1560	1706	1687	1480	1720	1603	1722
Q Serve(g_s), s	2.5	4.3	8.7	20.0	7.1	2.7	8.5	35.3	8.4	12.0	19.7	19.8
Cycle Q Clear(g_c), s	2.5	4.3	8.7	20.0	7.1	2.7	8.5	35.3	8.4	12.0	19.7	19.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	40	159	270	297	434	515	147	1125	740	172	1112	598
V/C Ratio(X)	0.77	0.42	0.46	1.17	0.31	0.10	0.84	0.92	0.24	1.21	0.50	0.51
Avail Cap(c_a), veh/h	186	410	488	297	518	585	213	1125	740	172	1112	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	58.0	51.6	44.2	50.0	38.3	27.8	54.0	38.4	17.1	58.0	43.4	43.5
Incr Delay (d2), s/veh	11.1	0.7	0.5	106.0	0.1	0.0	11.8	13.3	0.8	134.8	1.6	2.9
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(95%),veh/ln	1.9	3.4	5.9	26.2	5.8	1.8	7.3	22.7	5.2	18.8	13.4	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	52.2	44.7	156.0	38.4	27.8	65.8	51.8	17.9	192.8	45.0	46.4
LnGrp LOS	E	D	D	F	D	C	E	D	B	F	D	D
Approach Vol, veh/h		222			531			1338			1070	
Approach Delay, s/veh		50.4			114.3			48.5			74.1	
Approach LOS		D			F			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	15.9	17.0	45.0	8.2	32.7	15.4	46.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	28.0	12.0	40.0	15.0	33.0	15.0	37.0				
Max Q Clear Time (g_c+I1), s	22.0	10.7	14.0	37.3	4.5	9.1	10.5	21.8				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.0	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			68.3									
HCM 6th LOS			E									

Timings

1: SE 192nd & SE 15th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	116	91	40	82	242	66	1268	115	1436
Future Volume (vph)	116	91	40	82	242	66	1268	115	1436
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	15.0	29.0	15.0	29.0	16.0	14.0	40.0	16.0	42.0
Total Split (%)	15.0%	29.0%	15.0%	29.0%	16.0%	14.0%	40.0%	16.0%	42.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effect Green (s)	9.0	15.7	6.2	10.9	19.7	7.1	52.3	9.7	56.9
Actuated g/C Ratio	0.09	0.16	0.06	0.11	0.20	0.07	0.52	0.10	0.57
v/c Ratio	0.79	0.59	0.38	0.43	0.68	0.54	0.74	0.69	0.83
Control Delay	78.1	36.7	54.0	45.7	30.8	52.8	24.3	63.7	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.1	36.7	54.0	45.7	30.8	52.8	24.3	63.7	26.4
LOS	E	D	D	D	C	D	C	E	C
Approach Delay		53.3		36.7			25.7		28.9
Approach LOS		D		D			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 30.4

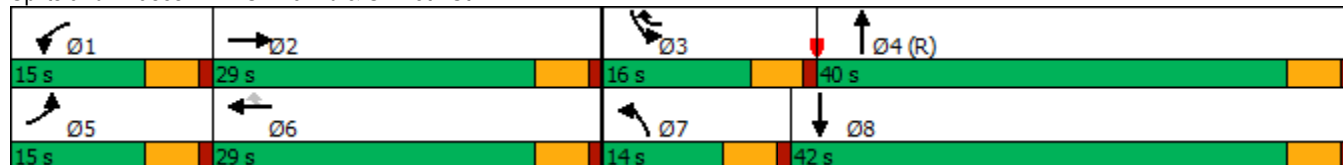
Intersection LOS: C

Intersection Capacity Utilization 79.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	91	82	40	82	242	66	1268	32	115	1436	133
Future Volume (veh/h)	116	91	82	40	82	242	66	1268	32	115	1436	133
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1885	1900	1900	1856	1900	1900	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	122	96	49	42	86	192	69	1335	33	121	1512	135
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	1	0	0	3	0	0	2	0	0	2	2
Cap, veh/h	150	218	111	62	248	345	103	1763	44	150	1729	153
Arrive On Green	0.09	0.19	0.19	0.03	0.13	0.13	0.11	1.00	1.00	0.08	0.52	0.52
Sat Flow, veh/h	1739	1176	600	1810	1856	1582	1810	3544	88	1810	3301	293
Grp Volume(v), veh/h	122	0	145	42	86	192	69	669	699	121	809	838
Grp Sat Flow(s),veh/h/ln	1739	0	1776	1810	1856	1582	1810	1777	1854	1810	1777	1816
Q Serve(g_s), s	6.9	0.0	7.2	2.3	4.2	10.8	3.7	0.7	0.7	6.6	39.8	40.8
Cycle Q Clear(g_c), s	6.9	0.0	7.2	2.3	4.2	10.8	3.7	0.7	0.7	6.6	39.8	40.8
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.05	1.00		0.16
Lane Grp Cap(c), veh/h	150	0	329	62	248	345	103	884	923	150	931	951
V/C Ratio(X)	0.82	0.00	0.44	0.67	0.35	0.56	0.67	0.76	0.76	0.81	0.87	0.88
Avail Cap(c_a), veh/h	174	0	426	181	445	513	163	884	923	199	931	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.43	0.43	0.43	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	36.2	47.7	39.4	34.9	43.4	0.1	0.1	45.1	20.8	21.1
Incr Delay (d2), s/veh	19.5	0.0	0.3	4.6	0.3	0.5	1.2	2.7	2.6	12.3	10.8	11.5
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(95%),veh/ln	6.7	0.0	5.5	2.0	3.5	7.3	2.8	1.3	1.3	6.1	24.3	25.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	36.5	52.4	39.7	35.5	44.7	2.8	2.7	57.3	31.6	32.6
LnGrp LOS	E	A	D	D	D	D	D	A	A	E	C	C
Approach Vol, veh/h		267			320			1437			1768	
Approach Delay, s/veh		49.2			38.8			4.7			33.8	
Approach LOS		D			D			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	23.5	13.3	54.8	13.6	18.4	10.7	57.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	24.0	11.0	35.0	10.0	24.0	9.0	37.0				
Max Q Clear Time (g_c+I1), s	4.3	9.2	8.6	2.7	8.9	12.8	5.7	42.8				
Green Ext Time (p_c), s	0.0	0.2	0.0	3.0	0.0	0.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			24.3									
HCM 6th LOS			C									

Timings 2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	 		 			 		 
Traffic Volume (vph)	233	183	242	265	140	838	151	1038
Future Volume (vph)	233	183	242	265	140	838	151	1038
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	20.0	27.0	20.0	27.0	15.0	35.0	18.0	38.0
Total Split (%)	20.0%	27.0%	20.0%	27.0%	15.0%	35.0%	18.0%	38.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effect Green (s)	11.3	24.2	11.5	24.4	9.7	32.6	11.7	34.6
Actuated g/C Ratio	0.11	0.24	0.12	0.24	0.10	0.33	0.12	0.35
v/c Ratio	0.62	0.64	0.63	0.88	0.83	0.89	0.75	1.10
Control Delay	49.0	38.8	49.0	56.7	86.6	25.9	63.5	88.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	38.8	49.0	56.7	86.6	25.9	63.5	88.4
LOS	D	D	D	E	F	C	E	F
Approach Delay		43.4		53.7		33.5		85.7
Approach LOS		D		D		C		F

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 93 (93%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 58.5

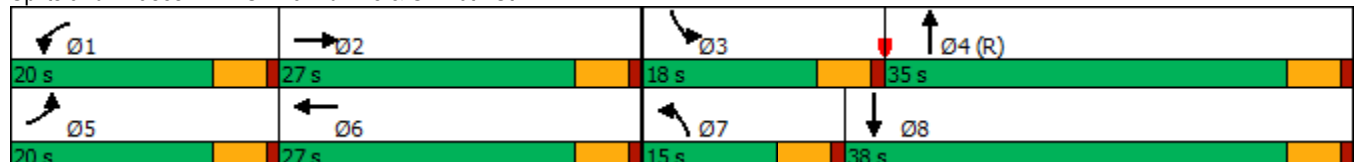
Intersection LOS: E

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: SE 192nd Ave & SE 20th St



HCM 6th Signalized Intersection Summary

2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	183	92	242	265	118	140	838	150	151	1038	237
Future Volume (veh/h)	233	183	92	242	265	118	140	838	150	151	1038	237
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1870	1900	1885	1900	1885	1870	1885
Adj Flow Rate, veh/h	243	191	78	252	276	106	146	873	141	157	1081	227
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	1	0	0	2	0	1	0	1	2	1
Cap, veh/h	316	279	114	325	286	110	179	1185	191	191	1143	239
Arrive On Green	0.09	0.22	0.22	0.09	0.22	0.22	0.10	0.38	0.38	0.11	0.39	0.39
Sat Flow, veh/h	3510	1281	523	3510	1301	500	1810	3087	499	1795	2925	612
Grp Volume(v), veh/h	243	0	269	252	0	382	146	506	508	157	655	653
Grp Sat Flow(s),veh/h/ln	1755	0	1804	1755	0	1801	1810	1791	1795	1795	1777	1759
Q Serve(g_s), s	6.8	0.0	13.7	7.0	0.0	21.0	7.9	24.3	24.3	8.6	35.6	36.0
Cycle Q Clear(g_c), s	6.8	0.0	13.7	7.0	0.0	21.0	7.9	24.3	24.3	8.6	35.6	36.0
Prop In Lane	1.00		0.29	1.00		0.28	1.00		0.28	1.00		0.35
Lane Grp Cap(c), veh/h	316	0	392	325	0	396	179	688	689	191	695	688
V/C Ratio(X)	0.77	0.00	0.69	0.78	0.00	0.96	0.81	0.74	0.74	0.82	0.94	0.95
Avail Cap(c_a), veh/h	527	0	397	527	0	396	181	688	689	233	695	688
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	1.00	1.00	0.47	0.47	0.47
Uniform Delay (d), s/veh	44.5	0.0	36.0	44.4	0.0	38.6	44.1	26.5	26.5	43.8	29.4	29.5
Incr Delay (d2), s/veh	1.5	0.0	4.0	1.5	0.0	35.6	22.4	6.9	6.9	7.6	13.3	14.2
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(95%),veh/ln	5.3	0.0	10.3	5.5	0.0	18.7	8.1	16.5	16.5	6.4	21.2	21.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	39.9	45.9	0.0	74.2	66.5	33.4	33.4	51.3	42.6	43.7
LnGrp LOS	D	A	D	D	A	E	E	C	C	D	D	D
Approach Vol, veh/h		512			634			1160			1465	
Approach Delay, s/veh		42.8			63.0			37.5			44.1	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	26.8	15.6	43.4	14.0	27.0	14.9	44.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	22.0	13.0	30.0	15.0	22.0	10.0	33.0				
Max Q Clear Time (g_c+I1), s	9.0	15.7	10.6	26.3	8.8	23.0	9.9	38.0				
Green Ext Time (p_c), s	0.2	0.5	0.0	1.6	0.2	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			45.1									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	1138	3	10	1239
Future Vol, veh/h	3	4	1138	3	10	1239
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	1198	3	11	1304
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1876	603	0	0	1203	0
Stage 1	1202	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	65	447	-	-	587	-
Stage 1	251	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	64	446	-	-	586	-
Mov Cap-2 Maneuver	64	-	-	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	35	0		0.1		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	64	446	586	-
HCM Lane V/C Ratio	-	-	0.049	0.009	0.018	-
HCM Control Delay (s)	-	-	64.2	13.1	11.3	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0	0.1	-

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	166	213	355	187	120	124	955	204	212	932
Future Volume (vph)	166	213	355	187	120	124	955	204	212	932
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	14.0	32.0	19.0	37.0	37.0	13.0	34.0	19.0	15.0	36.0
Total Split (%)	14.0%	32.0%	19.0%	37.0%	37.0%	13.0%	34.0%	19.0%	15.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	29.3	20.8	39.8	26.3	26.3	9.9	35.2	49.2	10.0	35.3
Actuated g/C Ratio	0.29	0.21	0.40	0.26	0.26	0.10	0.35	0.49	0.10	0.35
v/c Ratio	0.46	0.86	1.11	0.39	0.22	0.73	0.80	0.24	0.65	0.92
Control Delay	24.3	56.6	106.9	31.8	1.9	67.9	36.2	2.0	40.5	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	56.6	106.9	31.8	1.9	67.9	36.2	2.0	40.5	32.9
LOS	C	E	F	C	A	E	D	A	D	C
Approach Delay		45.4		66.7			33.8			34.1
Approach LOS		D		E			C			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 36 (36%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 41.3

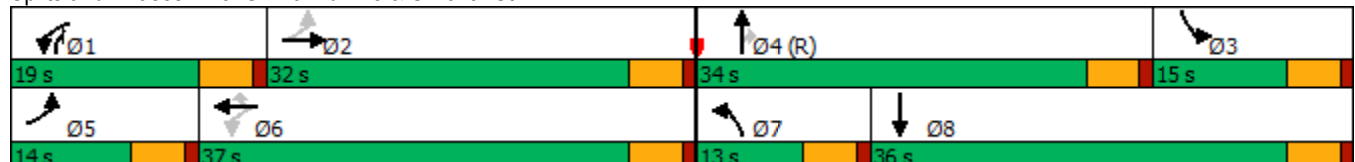
Intersection LOS: D

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	213	103	355	187	120	124	955	204	212	932	138
Future Volume (veh/h)	166	213	103	355	187	120	124	955	204	212	932	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1773	1847	1817	2003	2003	2018	2018	1988	2003	1847	1832	1743
Adj Flow Rate, veh/h	175	224	88	374	197	28	131	1005	100	223	981	133
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	0	2	1	1	0	0	2	1	0	1	7
Cap, veh/h	411	255	100	373	507	431	154	1095	726	570	1159	157
Arrive On Green	0.09	0.20	0.20	0.14	0.25	0.25	0.08	0.29	0.29	0.17	0.38	0.38
Sat Flow, veh/h	1688	1255	493	1908	2003	1704	1922	3777	1683	3413	3073	416
Grp Volume(v), veh/h	175	0	312	374	197	28	131	1005	100	223	555	559
Grp Sat Flow(s),veh/h/ln	1688	0	1748	1908	2003	1704	1922	1889	1683	1706	1741	1749
Q Serve(g_s), s	8.2	0.0	17.3	14.0	8.1	0.8	6.7	25.7	1.6	5.8	29.2	29.2
Cycle Q Clear(g_c), s	8.2	0.0	17.3	14.0	8.1	0.8	6.7	25.7	1.6	5.8	29.2	29.2
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	411	0	355	373	507	431	154	1095	726	570	656	659
V/C Ratio(X)	0.43	0.00	0.88	1.00	0.39	0.06	0.85	0.92	0.14	0.39	0.85	0.85
Avail Cap(c_a), veh/h	411	0	472	373	641	545	154	1095	726	570	656	659
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)	0.81	0.00	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	38.7	28.9	30.9	11.7	45.4	34.3	5.9	37.1	28.5	28.5
Incr Delay (d2), s/veh	0.2	0.0	9.6	47.2	0.2	0.0	32.8	13.4	0.4	0.2	12.8	12.8
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(95%),veh/ln	5.8	0.0	12.3	17.2	6.9	0.9	8.0	19.2	1.3	4.3	19.8	19.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	0.0	48.2	76.1	31.1	11.7	78.3	47.8	6.3	37.3	41.3	41.3
LnGrp LOS	C	A	D	F	C	B	E	D	A	D	D	D
Approach Vol, veh/h	487			599			1236			1337		
Approach Delay, s/veh	41.0			58.3			47.6			40.6		
Approach LOS	D			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	25.3	21.7	34.0	14.0	30.3	13.0	42.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.0	27.0	10.0	29.0	9.0	32.0	8.0	31.0				
Max Q Clear Time (g_c+I1), s	16.0	19.3	7.8	27.7	10.2	10.1	8.7	31.2				
Green Ext Time (p_c), s	0.0	0.4	0.0	0.5	0.0	0.3	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Phase 1 2038 PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	12	336	37	387	71	2	113	11	118
Future Volume (vph)	12	336	37	387	71	2	113	11	118
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		8		4	
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	30.0	10.0	30.0	32.0	32.0	34.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effct Green (s)	5.7	19.1	5.7	21.0	9.9	9.9		9.9	9.9
Actuated g/C Ratio	0.13	0.44	0.13	0.48	0.23	0.23		0.23	0.23
v/c Ratio	0.06	0.55	0.17	0.55	0.27	0.10		0.44	0.27
Control Delay	26.1	14.6	26.4	13.0	17.8	7.6		20.6	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.1	14.6	26.4	13.0	17.8	7.6		20.6	5.6
LOS	C	B	C	B	B	A		C	A
Approach Delay		14.9		14.0		14.5		13.3	
Approach LOS		B		B		B		B	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 43.3

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 52.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

		
Ø1	Ø2	Ø4
10 s	85 s	35 s
		
Ø5	Ø6	Ø8
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	336	80	37	387	69	71	2	32	113	11	118
Future Volume (veh/h)	12	336	80	37	387	69	71	2	32	113	11	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	0.99		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1870	1841	1832	1847	1876	1817	1876	1832	1841	1900	1900
Adj Flow Rate, veh/h	13	357	74	39	412	66	76	2	5	120	12	21
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, %	0	2	4	3	2	0	4	0	3	4	0	0
Cap, veh/h	30	589	122	77	651	104	320	86	216	410	33	293
Arrive On Green	0.02	0.39	0.39	0.04	0.42	0.42	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1810	1501	311	1745	1551	249	1333	473	1183	1287	182	1605
Grp Volume(v), veh/h	13	0	431	39	0	478	76	0	7	132	0	21
Grp Sat Flow(s),veh/h/ln	1810	0	1812	1745	0	1800	1333	0	1656	1469	0	1605
Q Serve(g_s), s	0.3	0.0	7.5	0.9	0.0	8.3	2.1	0.0	0.1	2.9	0.0	0.4
Cycle Q Clear(g_c), s	0.3	0.0	7.5	0.9	0.0	8.3	5.3	0.0	0.1	3.1	0.0	0.4
Prop In Lane	1.00		0.17	1.00		0.14	1.00		0.71	0.91		1.00
Lane Grp Cap(c), veh/h	30	0	711	77	0	755	320	0	302	443	0	293
V/C Ratio(X)	0.43	0.00	0.61	0.51	0.00	0.63	0.24	0.00	0.02	0.30	0.00	0.07
Avail Cap(c_a), veh/h	230	0	3680	222	0	3657	1092	0	1262	1286	0	1223
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	19.2	0.0	9.5	18.4	0.0	9.0	16.8	0.0	13.2	14.4	0.0	13.3
Incr Delay (d2), s/veh	3.5	0.0	0.3	1.9	0.0	0.3	0.1	0.0	0.0	0.1	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(95%),veh/ln	0.2	0.0	3.5	0.6	0.0	3.7	1.1	0.0	0.1	1.7	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	0.0	9.8	20.3	0.0	9.4	16.9	0.0	13.2	14.6	0.0	13.4
LnGrp LOS	C	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h	444			517			83			153		
Approach Delay, s/veh	10.2			10.2			16.6			14.4		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	20.5		12.2	5.7	21.5		12.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	2.9	9.5		5.1	2.3	10.3		7.3				
Green Ext Time (p_c), s	0.0	0.4		0.1	0.0	0.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				11.2								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	407	32	12	560	4	18	0	7	14	4	258
Future Vol, veh/h	75	407	32	12	560	4	18	0	7	14	4	258
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	95	-	0	0	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	82	447	35	13	615	4	20	0	8	15	4	284
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	625	0	0	482	0	0	1416	1280	466	1281	1293	621
Stage 1	-	-	-	-	-	-	629	629	-	647	647	-
Stage 2	-	-	-	-	-	-	787	651	-	634	646	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	966	-	-	1091	-	-	116	167	601	144	164	491
Stage 1	-	-	-	-	-	-	474	478	-	463	470	-
Stage 2	-	-	-	-	-	-	388	468	-	471	470	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	960	-	-	1091	-	-	44	150	600	131	147	488
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	150	-	131	147	-
Stage 1	-	-	-	-	-	-	434	437	-	421	462	-
Stage 2	-	-	-	-	-	-	159	460	-	425	430	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.2			84.9			23		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	44	88	960	-	-	1091	-	-	134	488		
HCM Lane V/C Ratio	0.3	0.162	0.086	-	-	0.012	-	-	0.148	0.581		
HCM Control Delay (s)	118.6	53.7	9.1	-	-	8.3	-	-	36.5	22.1		
HCM Lane LOS	F	F	A	-	-	A	-	-	E	C		
HCM 95th %tile Q(veh)	1	0.5	0.3	-	-	0	-	-	0.5	3.6		

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	141	413	12	700	10	6	99	15
Future Volume (vph)	141	413	12	700	10	6	99	15
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	55.4	54.8	45.4	43.4		11.5	11.6	11.6
Actuated g/C Ratio	0.73	0.72	0.60	0.57		0.15	0.15	0.15
v/c Ratio	0.48	0.35	0.02	0.85		0.08	0.51	0.07
Control Delay	21.9	9.4	8.0	27.2		24.9	37.5	22.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	21.9	9.4	8.0	27.2		24.9	37.5	22.4
LOS	C	A	A	C		C	D	C
Approach Delay		12.5		26.9		24.9		35.0
Approach LOS		B		C		C		C

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 76

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.2

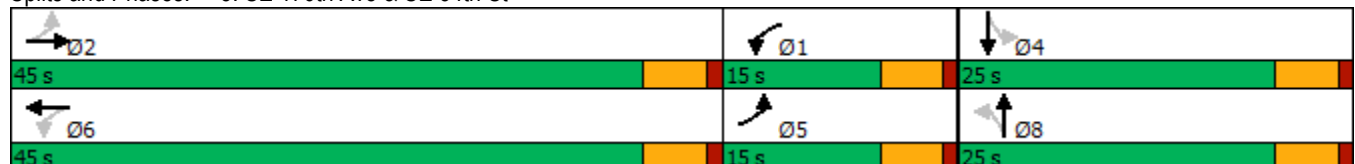
Intersection LOS: C

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	413	13	12	700	124	10	6	2	99	15	5
Future Volume (veh/h)	141	413	13	12	700	124	10	6	2	99	15	5
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		0.97
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1870	1900	1900	1885	1885	1900	1900	1900	1885	1900	1900
Adj Flow Rate, veh/h	153	449	13	13	761	127	11	7	0	108	16	1
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, %	1	2	0	0	1	1	0	0	0	1	0	0
Cap, veh/h	282	542	16	743	846	141	185	91	0	281	181	11
Arrive On Green	0.08	0.30	0.30	0.32	0.54	0.54	0.10	0.10	0.00	0.10	0.10	0.10
Sat Flow, veh/h	1795	1809	52	1810	1575	263	755	884	0	1413	1766	110
Grp Volume(v), veh/h	153	0	462	13	0	888	18	0	0	108	0	17
Grp Sat Flow(s),veh/h/ln	1795	0	1861	1810	0	1838	1639	0	0	1413	0	1876
Q Serve(g_s), s	0.2	0.0	12.5	0.0	0.0	23.4	0.0	0.0	0.0	3.4	0.0	0.4
Cycle Q Clear(g_c), s	0.2	0.0	12.5	0.0	0.0	23.4	0.5	0.0	0.0	3.9	0.0	0.4
Prop In Lane	1.00		0.03	1.00		0.14	0.61		0.00	1.00		0.06
Lane Grp Cap(c), veh/h	282	0	557	743	0	988	275	0	0	281	0	192
V/C Ratio(X)	0.54	0.00	0.83	0.02	0.00	0.90	0.07	0.00	0.00	0.38	0.00	0.09
Avail Cap(c_a), veh/h	464	0	1374	743	0	1357	693	0	0	658	0	693
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.8	0.0	17.7	11.5	0.0	11.2	22.0	0.0	0.0	23.5	0.0	22.0
Incr Delay (d2), s/veh	0.6	0.0	1.2	0.0	0.0	5.3	0.0	0.0	0.0	0.3	0.0	0.1
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(95%),veh/ln	3.0	0.0	8.1	0.2	0.0	12.2	0.4	0.0	0.0	2.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.4	0.0	18.9	11.5	0.0	16.5	22.1	0.0	0.0	23.8	0.0	22.1
LnGrp LOS	C	A	B	B	A	B	C	A	A	C	A	C
Approach Vol, veh/h	615			901			18			125		
Approach Delay, s/veh	20.0			16.4			22.1			23.6		
Approach LOS	C			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.4	21.2		10.6	9.5	34.1		10.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	14.5		5.9	2.2	25.4		2.5				
Green Ext Time (p_c), s	0.0	1.7		0.1	0.1	3.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay 18.4

HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	31	15	263	94	105
Future Vol, veh/h	20	31	15	263	94	105
Conflicting Peds, #/hr	3	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	7	0	15	0	1	0
Mvmt Flow	22	33	16	283	101	113
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	483	165	221	0	-	0
Stage 1	165	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Critical Hdwy	6.47	6.2	4.25	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.3	2.335	-	-	-
Pot Cap-1 Maneuver	534	885	1275	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	520	879	1267	-	-	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1267	-	692	-	-	
HCM Lane V/C Ratio	0.013	-	0.079	-	-	
HCM Control Delay (s)	7.9	-	10.7	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.3	-	-	

Intersection	
Intersection Delay, s/veh	81.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	466	62	89	503	18	43	122	73	27	85	28
Future Vol, veh/h	48	466	62	89	503	18	43	122	73	27	85	28
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
Heavy Vehicles, %	3	0	0	1	0	7	0	1	0	4	1	8
Mvmt Flow	52	507	67	97	547	20	47	133	79	29	92	30
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	107.3	97.1	18.3	18.4
HCM LOS	F	F	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	19%
Vol Thru, %	0%	63%	0%	88%	0%	97%	61%
Vol Right, %	0%	37%	0%	12%	0%	3%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	195	48	528	89	521	140
LT Vol	43	0	48	0	89	0	27
Through Vol	0	122	0	466	0	503	85
RT Vol	0	73	0	62	0	18	28
Lane Flow Rate	47	212	52	574	97	566	152
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.116	0.48	0.114	1.152	0.209	1.139	0.377
Departure Headway (Hd)	9.531	8.753	8.25	7.596	8.194	7.635	9.678
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	379	415	437	482	441	481	374
Service Time	7.231	6.453	5.95	5.296	5.894	5.335	7.678
HCM Lane V/C Ratio	0.124	0.511	0.119	1.191	0.22	1.177	0.406
HCM Control Delay	13.5	19.3	12	116	13	111.5	18.4
HCM Lane LOS	B	C	B	F	B	F	C
HCM 95th-tile Q	0.4	2.5	0.4	19.5	0.8	18.9	1.7

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations											
Traffic Volume (vph)	89	30	55	152	22	50	44	1463	47	1326	
Future Volume (vph)	89	30	55	152	22	50	44	1463	47	1326	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Prot	NA	
Protected Phases		2			6		7	4	3	8	
Permitted Phases	2		2	6		6					
Detector Phase	2	2	2	6	6	6	7	4	3	8	
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	15.0	5.0	15.0	
Minimum Split (s)	39.0	39.0	39.0	38.0	38.0	38.0	10.0	32.0	19.5	32.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	15.0	66.0	15.0	66.0	
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	32.5%	12.5%	55.0%	12.5%	55.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lead	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max	
Act Effct Green (s)	19.0	19.0	19.0	19.0	19.0	19.0	6.5	81.5	6.5	81.5	
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.05	0.68	0.05	0.68	
v/c Ratio	0.42	0.11	0.19	0.76	0.09	0.18	0.50	0.46	0.51	0.42	
Control Delay	48.9	39.8	8.9	68.9	39.3	7.7	50.5	23.7	73.1	10.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	48.9	39.8	8.9	68.9	39.3	7.7	50.5	23.7	73.1	10.8	
LOS	D	D	A	E	D	A	D	C	E	B	
Approach Delay		34.7			52.3			24.5		12.9	
Approach LOS		C			D			C		B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 112 (93%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 21.9

Intersection LOS: C

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St

 Ø2	 Ø3	 Ø4
39 s	15 s	66 s
 Ø6	 Ø7	 Ø8 (R)
39 s	15 s	66 s

HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	30	55	152	22	50	44	1463	32	47	1326	46
Future Volume (veh/h)	89	30	55	152	22	50	44	1463	32	47	1326	46
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1826	1633	1856	1826	1870	1752	1870	1885	1900
Adj Flow Rate, veh/h	94	32	5	160	23	5	46	1540	33	49	1396	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	5	18	3	5	2	10	2	1	0
Cap, veh/h	262	298	251	250	256	245	59	2615	56	63	2610	86
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.03	0.51	0.51	0.04	0.51	0.51
Sat Flow, veh/h	1399	1900	1604	1334	1633	1566	1739	5144	110	1781	5117	169
Grp Volume(v), veh/h	94	32	5	160	23	5	46	1019	554	49	936	506
Grp Sat Flow(s),veh/h/ln	1399	1900	1604	1334	1633	1566	1739	1702	1850	1781	1716	1855
Q Serve(g_s), s	7.4	1.7	0.3	14.0	1.4	0.3	3.2	25.2	25.2	3.3	22.1	22.1
Cycle Q Clear(g_c), s	8.8	1.7	0.3	15.8	1.4	0.3	3.2	25.2	25.2	3.3	22.1	22.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.09
Lane Grp Cap(c), veh/h	262	298	251	250	256	245	59	1730	941	63	1750	946
V/C Ratio(X)	0.36	0.11	0.02	0.64	0.09	0.02	0.79	0.59	0.59	0.78	0.53	0.53
Avail Cap(c_a), veh/h	440	538	454	419	463	444	145	1730	941	148	1750	946
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	1.00	1.00	1.00	1.00	1.00	0.68	0.68	0.68	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.1	43.4	42.8	50.2	43.3	42.8	57.5	20.7	20.7	57.4	19.8	19.8
Incr Delay (d2), s/veh	0.3	0.1	0.0	1.0	0.1	0.0	5.8	1.0	1.8	7.4	1.2	2.2
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(95%),veh/ln	4.7	1.5	0.2	8.4	1.1	0.2	2.6	13.9	15.2	2.8	13.5	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.4	43.5	42.8	51.2	43.3	42.8	63.3	21.7	22.5	64.8	21.0	22.0
LnGrp LOS	D	D	D	D	D	D	E	C	C	E	C	C
Approach Vol, veh/h		131			188			1619			1491	
Approach Delay, s/veh		46.2			50.0			23.2			22.8	
Approach LOS		D			D			C			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.8	9.2	66.0		23.8	9.0	66.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		34.0	10.0	61.0		34.0	10.0	61.0				
Max Q Clear Time (g_c+I1), s		10.8	5.3	27.2		17.8	5.2	24.1				
Green Ext Time (p_c), s		0.0	0.0	1.8		0.0	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			25.3									
HCM 6th LOS			C									

Timings
12: SE 164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	49	102	194	301	136	278	192	1216	346	188	1284
Future Volume (vph)	49	102	194	301	136	278	192	1216	346	188	1284
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	15.0	33.0	20.0	17.0	35.0	20.0	20.0	50.0	17.0	20.0	50.0
Total Split (%)	12.5%	27.5%	16.7%	14.2%	29.2%	16.7%	16.7%	41.7%	14.2%	16.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	7.3	10.7	34.0	12.0	17.5	40.5	18.3	59.2	76.2	18.0	59.0
Actuated g/C Ratio	0.06	0.09	0.28	0.10	0.15	0.34	0.15	0.49	0.64	0.15	0.49
v/c Ratio	0.51	0.66	0.41	1.77	0.54	0.49	0.74	0.73	0.32	0.74	0.56
Control Delay	71.7	71.0	24.2	402.1	56.2	22.8	64.4	28.5	3.9	58.4	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	71.0	24.2	402.1	56.2	22.8	64.4	28.5	3.9	58.4	22.9
LOS	E	E	C	F	E	C	E	C	A	E	C
Approach Delay		44.8			188.8			27.6			27.3
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 8: SBT, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.77

Intersection Signal Delay: 55.5

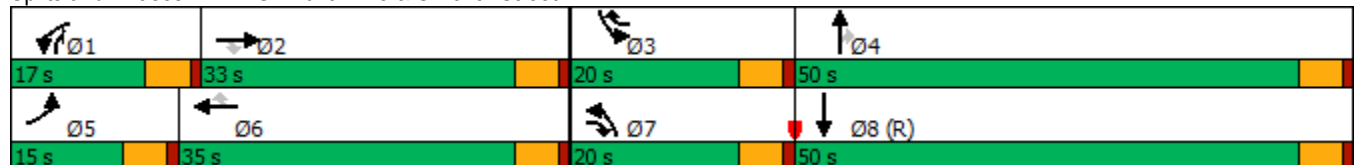
Intersection LOS: E

Intersection Capacity Utilization 82.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave & SE 34th Street



HCM 6th Signalized Intersection Summary

12: SE 164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 1 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	102	194	301	136	278	192	1216	346	188	1284	49
Future Volume (veh/h)	49	102	194	301	136	278	192	1216	346	188	1284	49
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1826	1885	1870	1841	1856	1885	1870	1885	1870	1870	1841
Adj Flow Rate, veh/h	51	106	152	314	142	217	200	1267	241	196	1338	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	5	1	2	4	3	1	2	1	2	2	4
Cap, veh/h	64	183	359	178	298	451	224	1333	759	223	1898	68
Arrive On Green	0.04	0.10	0.10	0.10	0.16	0.16	0.13	0.38	0.38	0.04	0.12	0.12
Sat Flow, veh/h	1682	1826	1598	1781	1841	1572	1795	3554	1598	1781	5060	182
Grp Volume(v), veh/h	51	106	152	314	142	217	200	1267	241	196	900	486
Grp Sat Flow(s),veh/h/ln	1682	1826	1598	1781	1841	1572	1795	1777	1598	1781	1702	1838
Q Serve(g_s), s	3.6	6.7	9.8	12.0	8.4	13.7	13.2	41.6	11.2	13.1	30.5	30.5
Cycle Q Clear(g_c), s	3.6	6.7	9.8	12.0	8.4	13.7	13.2	41.6	11.2	13.1	30.5	30.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	64	183	359	178	298	451	224	1333	759	223	1277	689
V/C Ratio(X)	0.79	0.58	0.42	1.76	0.48	0.48	0.89	0.95	0.32	0.88	0.71	0.71
Avail Cap(c_a), veh/h	140	426	572	178	460	590	224	1333	759	223	1277	689
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	57.2	51.6	39.8	54.0	45.7	35.4	51.7	36.4	19.5	56.6	46.2	46.2
Incr Delay (d2), s/veh	7.9	1.1	0.3	365.2	0.4	0.3	31.8	15.4	1.1	27.6	3.0	5.4
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(95%),veh/ln	3.0	5.5	6.9	37.0	6.9	8.9	12.4	27.4	7.6	12.4	20.3	22.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	52.7	40.1	419.2	46.1	35.7	83.5	51.8	20.6	84.2	49.2	51.6
LnGrp LOS	E	D	D	F	D	D	F	D	C	F	D	D
Approach Vol, veh/h	309			673			1708			1582		
Approach Delay, s/veh	48.6			216.8			51.1			54.3		
Approach LOS	D			F			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	17.0	20.0	50.0	9.6	24.4	20.0	50.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	28.0	15.0	45.0	10.0	30.0	15.0	45.0				
Max Q Clear Time (g_c+I1), s	14.0	11.8	15.1	43.6	5.6	15.7	15.2	32.5				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.7	0.0	0.3	0.0	2.9				
Intersection Summary												
HCM 6th Ctrl Delay	78.2											
HCM 6th LOS	E											

Appendix G 2038 With-Project Phase 2
Buildout Operations
Worksheets & Re-routed trips

Timings
1: SE 192nd & SE 15th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	156	45	29	64	158	58	973	89	848
Future Volume (vph)	156	45	29	64	158	58	973	89	848
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	20.0	29.0	20.0	29.0	14.0	15.0	37.0	14.0	36.0
Total Split (%)	20.0%	29.0%	20.0%	29.0%	14.0%	15.0%	37.0%	14.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	12.4	18.7	5.9	10.2	22.0	7.3	50.6	8.8	54.1
Actuated g/C Ratio	0.12	0.19	0.06	0.10	0.22	0.07	0.51	0.09	0.54
v/c Ratio	0.80	0.28	0.32	0.38	0.42	0.50	0.63	0.69	0.58
Control Delay	67.8	20.2	53.4	45.3	17.7	61.3	18.5	69.1	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	20.2	53.4	45.3	17.7	61.3	18.5	69.1	21.6
LOS	E	C	D	D	B	E	B	E	C
Approach Delay		50.5		28.8			20.8		25.7
Approach LOS		D		C			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 9 (9%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 26.4

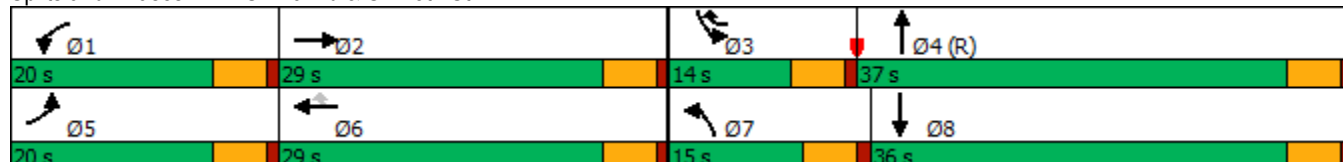
Intersection LOS: C

Intersection Capacity Utilization 60.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 2 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	45	44	29	64	158	58	973	16	89	848	87
Future Volume (veh/h)	156	45	44	29	64	158	58	973	16	89	848	87
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1796	1781	1841	1870	1856	1841	1900	1737	1767	1856
Adj Flow Rate, veh/h	173	50	8	32	71	103	64	1081	17	99	942	91
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	7	8	4	2	3	4	0	11	9	3
Cap, veh/h	204	266	42	50	148	244	97	1869	29	122	1699	164
Arrive On Green	0.12	0.17	0.17	0.03	0.08	0.08	0.11	1.00	1.00	0.07	0.55	0.55
Sat Flow, veh/h	1767	1598	256	1697	1841	1585	1767	3523	55	1654	3092	299
Grp Volume(v), veh/h	173	0	58	32	71	103	64	537	561	99	511	522
Grp Sat Flow(s),veh/h/ln	1767	0	1854	1697	1841	1585	1767	1749	1829	1654	1678	1713
Q Serve(g_s), s	9.6	0.0	2.7	1.9	3.7	5.9	3.5	0.0	0.0	5.9	19.7	19.7
Cycle Q Clear(g_c), s	9.6	0.0	2.7	1.9	3.7	5.9	3.5	0.0	0.0	5.9	19.7	19.7
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	204	0	308	50	148	244	97	928	970	122	922	941
V/C Ratio(X)	0.85	0.00	0.19	0.64	0.48	0.42	0.66	0.58	0.58	0.81	0.55	0.55
Avail Cap(c_a), veh/h	265	0	445	254	442	498	177	928	970	149	922	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	0.0	35.9	48.0	44.0	38.3	43.6	0.0	0.0	45.6	14.6	14.6
Incr Delay (d2), s/veh	14.7	0.0	0.1	5.0	0.9	0.4	2.2	2.1	2.0	19.5	2.4	2.4
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(95%),veh/ln	8.5	0.0	2.2	1.5	3.1	4.0	2.7	1.0	1.0	5.4	11.8	12.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	0.0	36.0	53.0	44.9	38.7	45.8	2.1	2.0	65.1	17.0	16.9
LnGrp LOS	E	A	D	D	D	D	D	A	A	E	B	B
Approach Vol, veh/h		231			206			1162			1132	
Approach Delay, s/veh		52.6			43.0			4.4			21.2	
Approach LOS		D			D			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	21.6	12.4	58.0	16.5	13.0	10.5	60.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	24.0	9.0	32.0	15.0	24.0	10.0	31.0				
Max Q Clear Time (g_c+I1), s	3.9	4.7	7.9	2.0	11.6	7.9	5.5	21.7				
Green Ext Time (p_c), s	0.0	0.1	0.0	2.2	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			18.4									
HCM 6th LOS			B									

Timings
2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	 		 			 		 
Traffic Volume (vph)	166	182	140	165	46	764	59	708
Future Volume (vph)	166	182	140	165	46	764	59	708
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	17.0	29.0	17.0	29.0	15.0	39.0	15.0	39.0
Total Split (%)	17.0%	29.0%	17.0%	29.0%	15.0%	39.0%	15.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	9.4	18.6	8.6	17.8	7.3	47.0	7.7	45.4
Actuated g/C Ratio	0.09	0.19	0.09	0.18	0.07	0.47	0.08	0.45
v/c Ratio	0.55	0.80	0.49	0.70	0.39	0.60	0.45	0.56
Control Delay	49.5	52.2	49.0	46.5	63.3	10.5	52.2	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	52.2	49.0	46.5	63.3	10.5	52.2	28.3
LOS	D	D	D	D	E	B	D	C
Approach Delay		51.2		47.4		13.0		30.0
Approach LOS		D		D		B		C

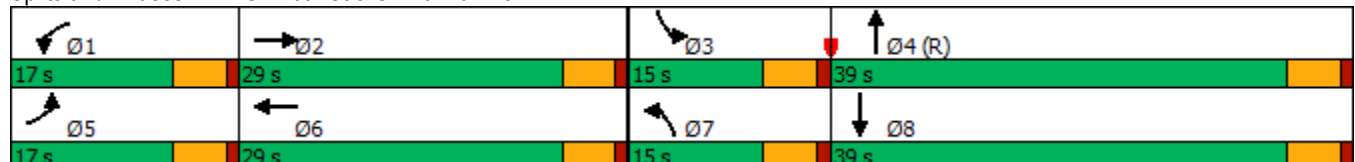
Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 29.6
 Intersection Capacity Utilization 65.8%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 2: SE 20th St & SE 192nd Ave



HCM 6th Signalized Intersection Summary

2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	182	84	140	165	57	46	764	156	59	708	103
Future Volume (veh/h)	166	182	84	140	165	57	46	764	156	59	708	103
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1841	1885	1885	1885	1811	1856	1841	1885	1811	1826
Adj Flow Rate, veh/h	175	192	70	147	174	23	48	804	147	62	745	97
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	4	1	1	1	6	3	4	1	6	5
Cap, veh/h	242	221	81	214	256	34	86	1570	287	80	1599	208
Arrive On Green	0.07	0.17	0.17	0.06	0.16	0.16	0.05	0.53	0.53	0.06	0.69	0.69
Sat Flow, veh/h	3428	1328	484	3483	1631	216	1725	2976	544	1795	3061	398
Grp Volume(v), veh/h	175	0	262	147	0	197	48	476	475	62	419	423
Grp Sat Flow(s),veh/h/ln	1714	0	1813	1742	0	1846	1725	1763	1757	1795	1721	1739
Q Serve(g_s), s	5.0	0.0	14.1	4.1	0.0	10.1	2.7	17.5	17.5	3.4	11.0	11.0
Cycle Q Clear(g_c), s	5.0	0.0	14.1	4.1	0.0	10.1	2.7	17.5	17.5	3.4	11.0	11.0
Prop In Lane	1.00		0.27	1.00		0.12	1.00		0.31	1.00		0.23
Lane Grp Cap(c), veh/h	242	0	301	214	0	290	86	930	927	80	899	908
V/C Ratio(X)	0.72	0.00	0.87	0.69	0.00	0.68	0.56	0.51	0.51	0.78	0.47	0.47
Avail Cap(c_a), veh/h	411	0	435	418	0	443	172	930	927	180	899	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79
Uniform Delay (d), s/veh	45.5	0.0	40.6	46.0	0.0	39.8	46.4	15.3	15.3	46.5	9.0	9.0
Incr Delay (d2), s/veh	1.5	0.0	9.2	1.5	0.0	1.0	2.1	2.0	2.0	4.7	1.4	1.4
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(95%),veh/ln	3.8	0.0	11.1	3.2	0.0	8.0	2.1	11.2	11.2	2.8	6.2	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	0.0	49.8	47.5	0.0	40.8	48.5	17.3	17.3	51.2	10.3	10.3
LnGrp LOS	D	A	D	D	A	D	D	B	B	D	B	B
Approach Vol, veh/h		437			344			999			904	
Approach Delay, s/veh		48.7			43.7			18.8			13.1	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	21.6	9.5	57.8	12.1	20.7	10.0	57.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	24.0	10.0	34.0	12.0	24.0	10.0	34.0				
Max Q Clear Time (g_c+I1), s	6.1	16.1	5.4	19.5	7.0	12.1	4.7	13.0				
Green Ext Time (p_c), s	0.1	0.5	0.0	3.3	0.1	0.5	0.0	3.2				
Intersection Summary												
HCM 6th Ctrl Delay			24.9									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	10	888	3	7	906
Future Vol, veh/h	7	10	888	3	7	906
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	20	4	67	0	7
Mvmt Flow	7	11	935	3	7	954
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1429	470	0	0	939	0
Stage 1	938	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Critical Hdwy	6.8	7.3	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.5	-	-	2.2	-
Pot Cap-1 Maneuver	128	494	-	-	738	-
Stage 1	346	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	127	494	-	-	737	-
Mov Cap-2 Maneuver	127	-	-	-	-	-
Stage 1	346	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	21.7	0	0.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 127 494	737	-		
HCM Lane V/C Ratio	-	- 0.058 0.021	0.01	-		
HCM Control Delay (s)	-	- 35.1 12.4	9.9	-		
HCM Lane LOS	-	- E B	A	-		
HCM 95th %tile Q(veh)	-	- 0.2 0.1	0	-		

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	199	170	207	145	67	153	704	349	108	547
Future Volume (vph)	199	170	207	145	67	153	704	349	108	547
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	15.0	36.0	15.0	36.0	36.0	15.0	34.0	15.0	15.0	34.0
Total Split (%)	15.0%	36.0%	15.0%	36.0%	36.0%	15.0%	34.0%	15.0%	15.0%	34.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	31.5	21.8	31.6	21.8	21.8	12.8	38.5	48.2	10.0	35.7
Actuated g/C Ratio	0.32	0.22	0.32	0.22	0.22	0.13	0.38	0.48	0.10	0.36
v/c Ratio	0.59	0.84	0.89	0.38	0.15	0.73	0.60	0.40	0.35	0.75
Control Delay	29.3	50.7	59.3	34.4	0.7	61.4	28.7	2.4	43.1	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	50.7	59.3	34.4	0.7	61.4	28.7	2.4	43.1	30.9
LOS	C	D	E	C	A	E	C	A	D	C
Approach Delay		42.3		41.4			25.3			32.4
Approach LOS		D		D			C			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 32.4

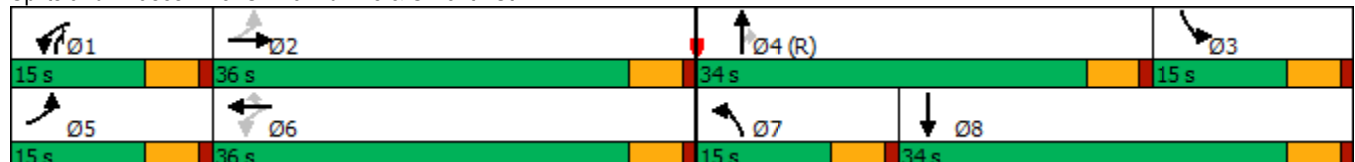
Intersection LOS: C

Intersection Capacity Utilization 77.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

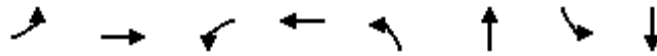
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	170	136	207	145	67	153	704	349	108	547	221
Future Volume (veh/h)	199	170	136	207	145	67	153	704	349	108	547	221
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1728	1803	1847	1943	2018	1988	2018	1883	1988	1832	1684	1684
Adj Flow Rate, veh/h	221	189	114	230	161	7	170	782	154	120	608	202
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	3	0	5	0	2	0	9	2	1	11	11
Cap, veh/h	395	221	133	298	424	347	192	1037	655	677	920	305
Arrive On Green	0.10	0.21	0.21	0.10	0.21	0.21	0.10	0.29	0.29	0.20	0.39	0.39
Sat Flow, veh/h	1646	1051	634	1850	2018	1653	1922	3578	1679	3385	2359	782
Grp Volume(v), veh/h	221	0	303	230	161	7	170	782	154	120	412	398
Grp Sat Flow(s),veh/h/ln	1646	0	1684	1850	2018	1653	1922	1789	1679	1693	1600	1542
Q Serve(g_s), s	10.0	0.0	17.3	9.8	6.8	0.2	8.7	19.9	2.6	2.9	21.2	21.2
Cycle Q Clear(g_c), s	10.0	0.0	17.3	9.8	6.8	0.2	8.7	19.9	2.6	2.9	21.2	21.2
Prop In Lane	1.00		0.38	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	395	0	354	298	424	347	192	1037	655	677	624	601
V/C Ratio(X)	0.56	0.00	0.86	0.77	0.38	0.02	0.88	0.75	0.23	0.18	0.66	0.66
Avail Cap(c_a), veh/h	395	0	522	298	626	513	192	1037	655	677	624	601
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)	0.81	0.00	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	38.1	29.1	33.9	12.1	44.4	32.3	7.2	33.2	25.1	25.1
Incr Delay (d2), s/veh	0.9	0.0	5.2	10.7	0.2	0.0	34.1	5.1	0.8	0.0	5.4	5.7
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(95%),veh/ln	7.1	0.0	11.4	8.7	5.9	0.2	9.8	13.8	2.2	2.1	13.3	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.1	0.0	43.2	39.8	34.1	12.1	78.5	37.3	8.0	33.2	30.5	30.7
LnGrp LOS	C	A	D	D	C	B	E	D	A	C	C	C
Approach Vol, veh/h		524			398			1106			930	
Approach Delay, s/veh		37.3			37.0			39.6			30.9	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	26.0	25.0	34.0	15.0	26.0	15.0	44.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	31.0	10.0	29.0	10.0	31.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	11.8	19.3	4.9	21.9	12.0	8.8	10.7	23.2				
Green Ext Time (p_c), s	0.0	0.5	0.0	1.4	0.0	0.2	0.0	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			36.1									
HCM 6th LOS			D									

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Phase 2 2038 AM Peak Hour Conditions



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	290	27	238	63	19	231	4
Future Volume (vph)	115	290	27	238	63	19	231	4
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	10.0	27.0	32.0	32.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effect Green (s)	5.2	34.2	5.2	29.1	21.7	21.7	21.7	21.7
Actuated g/C Ratio	0.07	0.48	0.07	0.41	0.30	0.30	0.30	0.30
v/c Ratio	1.08	0.45	0.25	0.83	0.20	0.14	0.70	0.11
Control Delay	144.1	16.3	42.8	28.0	22.1	10.2	34.1	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	144.1	16.3	42.8	28.0	22.1	10.2	34.1	7.8
LOS	F	B	D	C	C	B	C	A
Approach Delay		50.5		28.8		16.3		29.4
Approach LOS		D		C		B		C

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 71.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 34.7

Intersection LOS: C

Intersection Capacity Utilization 66.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

10 s	85 s	35 s	35 s
10 s	85 s	35 s	35 s

HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	290	24	27	238	249	63	19	41	231	4	45
Future Volume (veh/h)	115	290	24	27	238	249	63	19	41	231	4	45
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1841	1900	1876	1802	1876	1832	1876	1876	1900	1900	1900
Adj Flow Rate, veh/h	142	358	26	33	294	254	78	23	7	285	5	8
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	4	0	0	5	0	3	0	0	0	0	0
Cap, veh/h	172	730	53	65	332	286	469	342	104	466	163	261
Arrive On Green	0.09	0.43	0.43	0.04	0.37	0.37	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1810	1695	123	1787	891	769	1372	1381	420	1401	658	1053
Grp Volume(v), veh/h	142	0	384	33	0	548	78	0	30	285	0	13
Grp Sat Flow(s),veh/h/ln	1810	0	1818	1787	0	1660	1372	0	1801	1401	0	1711
Q Serve(g_s), s	4.1	0.0	8.0	1.0	0.0	16.3	2.4	0.0	0.7	10.3	0.0	0.3
Cycle Q Clear(g_c), s	4.1	0.0	8.0	1.0	0.0	16.3	2.7	0.0	0.7	11.0	0.0	0.3
Prop In Lane	1.00		0.07	1.00		0.46	1.00		0.23	1.00		0.62
Lane Grp Cap(c), veh/h	172	0	783	65	0	618	469	0	446	466	0	424
V/C Ratio(X)	0.83	0.00	0.49	0.51	0.00	0.89	0.17	0.00	0.07	0.61	0.00	0.03
Avail Cap(c_a), veh/h	172	0	2762	170	0	2522	911	0	1026	917	0	975
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	23.4	0.0	10.8	24.9	0.0	15.5	16.0	0.0	15.1	19.3	0.0	15.0
Incr Delay (d2), s/veh	25.6	0.0	0.2	2.3	0.0	1.8	0.1	0.0	0.0	0.5	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(95%),veh/ln	4.9	0.0	4.4	0.7	0.0	8.8	1.3	0.0	0.5	5.6	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.0	0.0	11.0	27.2	0.0	17.2	16.1	0.0	15.2	19.8	0.0	15.0
LnGrp LOS	D	A	B	C	A	B	B	A	B	B	A	B
Approach Vol, veh/h	526			581			108			298		
Approach Delay, s/veh	21.2			17.8			15.8			19.6		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	27.7		18.1	10.0	24.6		18.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	3.0	10.0		13.0	6.1	18.3		4.7				
Green Ext Time (p_c), s	0.0	0.7		0.1	0.0	1.2		0.1				
Intersection Summary												
HCM 6th Ctrl Delay	19.2											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	413	11	7	339	29	17
Future Vol, veh/h	413	11	7	339	29	17
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	0	0	5	0	0
Mvmt Flow	486	13	8	399	34	20
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	502	0	911	496
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	415	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1073	-	307	578
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	671	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1070	-	304	576
Mov Cap-2 Maneuver	-	-	-	-	304	-
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	666	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		16.5	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	368	-	-	1070	-	
HCM Lane V/C Ratio	0.147	-	-	0.008	-	
HCM Control Delay (s)	16.5	-	-	8.4	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	236	352	4	305	14	7	66	4
Future Volume (vph)	236	352	4	305	14	7	66	4
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	31.5	31.9	25.7	19.3	9.3	9.3	9.3	9.3
Actuated g/C Ratio	0.64	0.65	0.52	0.39	0.19	0.19	0.19	0.19
v/c Ratio	0.48	0.35	0.01	0.62	0.07	0.05	0.30	0.31
Control Delay	12.9	10.5	7.0	18.7	19.3	15.0	22.3	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	10.5	7.0	18.7	19.3	15.0	22.3	7.4
LOS	B	B	A	B	B	B	C	A
Approach Delay		11.5		18.6		17.2		13.2
Approach LOS		B		B		B		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 49.4

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 14.1

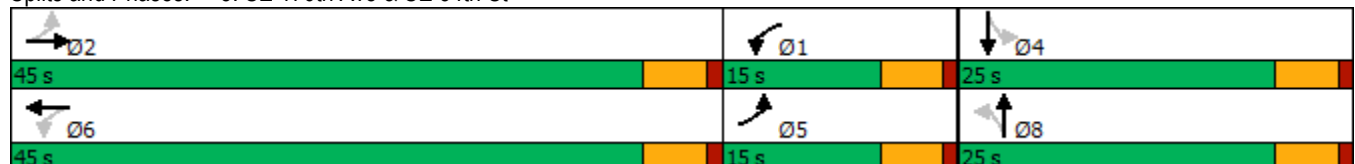
Intersection LOS: B

Intersection Capacity Utilization 55.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	352	2	4	305	59	14	7	6	66	4	100
Future Volume (veh/h)	236	352	2	4	305	59	14	7	6	66	4	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.98		1.00	0.98		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1856	1900	1900	1811	1826	1900	1900	1530	1870	1900	1885
Adj Flow Rate, veh/h	278	414	2	5	359	57	16	8	0	78	5	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	9	3	0	0	6	5	0	0	25	2	0	1
Cap, veh/h	569	711	3	613	590	94	331	202	0	326	202	0
Arrive On Green	0.12	0.39	0.39	0.12	0.39	0.39	0.11	0.11	0.00	0.11	0.11	0.00
Sat Flow, veh/h	1682	1845	9	1810	1524	242	1407	1900	0	1382	1900	0
Grp Volume(v), veh/h	278	0	416	5	0	416	16	8	0	78	5	0
Grp Sat Flow(s),veh/h/ln	1682	0	1854	1810	0	1766	1407	1900	0	1382	1900	0
Q Serve(g_s), s	0.0	0.0	6.9	0.0	0.0	7.4	0.4	0.1	0.0	2.1	0.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	6.9	0.0	0.0	7.4	0.5	0.1	0.0	2.2	0.1	0.0
Prop In Lane	1.00		0.00	1.00		0.14	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	569	0	714	613	0	684	331	202	0	326	202	0
V/C Ratio(X)	0.49	0.00	0.58	0.01	0.00	0.61	0.05	0.04	0.00	0.24	0.02	0.00
Avail Cap(c_a), veh/h	795	0	1901	852	0	1810	903	974	0	888	974	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	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.6	0.0	9.5	8.8	0.0	9.6	15.8	15.6	0.0	16.6	15.6	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.1	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(95%),veh/ln	3.0	0.0	3.3	0.0	0.0	3.3	0.2	0.1	0.0	1.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	0.0	9.8	8.8	0.0	9.9	15.9	15.7	0.0	16.8	15.6	0.0
LnGrp LOS	B	A	A	A	A	A	B	B	A	B	B	A
Approach Vol, veh/h	694			421			24			83		
Approach Delay, s/veh	11.0			9.9			15.8			16.7		
Approach LOS	B			A			B			B		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	9.8	20.0	9.1		9.8	20.1	9.1					
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0					
Max Green Setting (Gmax), s	10.0	40.0	20.0		10.0	40.0	20.0					
Max Q Clear Time (g_c+I1), s	2.0	8.9	4.2		2.0	9.4	2.5					
Green Ext Time (p_c), s	0.0	1.5	0.1		0.3	1.6	0.0					

Intersection Summary

HCM 6th Ctrl Delay 11.1

HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

MOVEMENT SUMMARY

 **Site: 101 [SE 176 Avenue/ SE 29th Street Phase 2 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Phase 2

Site Category: (None)

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Queue	Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				mph
			veh/h	%	veh/h	%	v/c	sec			ft				
South: SE 176th Avenue															
3	L2	All MCs	5	0.0	5	0.0	0.315	5.9	LOS A	1.8	44.4	0.37	0.18	0.37	32.8
8	T1	All MCs	144	2.0	144	2.0	0.315	6.0	LOS A	1.8	44.4	0.37	0.18	0.37	33.5
18	R2	All MCs	225	0.0	225	0.0	0.315	5.9	LOS A	1.8	44.4	0.37	0.18	0.37	33.2
Approach			373	0.8	373	0.8	0.315	5.9	LOS A	1.8	44.4	0.37	0.18	0.37	33.3
East: SE 29th Street															
1	L2	All MCs	74	0.0	74	0.0	0.286	5.6	LOS A	1.5	38.6	0.37	0.20	0.37	32.5
6	T1	All MCs	215	0.0	215	0.0	0.286	5.6	LOS A	1.5	38.6	0.37	0.20	0.37	33.1
16	R2	All MCs	46	0.0	46	0.0	0.286	5.6	LOS A	1.5	38.6	0.37	0.20	0.37	32.9
Approach			335	0.0	335	0.0	0.286	5.6	LOS A	1.5	38.6	0.37	0.20	0.37	33.0
North: SE 176th Avenue															
7	L2	All MCs	20	88.0	20	88.0	0.291	16.9	LOS C	1.2	35.0	0.50	0.33	0.50	29.7
4	T1	All MCs	105	1.0	105	1.0	0.291	5.9	LOS A	1.2	35.0	0.50	0.33	0.50	32.8
14	R2	All MCs	122	18.0	122	18.0	0.291	7.5	LOS A	1.2	35.0	0.50	0.33	0.50	32.2
Approach			247	16.5	247	16.5	0.291	7.4	LOS A	1.2	35.0	0.50	0.33	0.50	32.2
West: SE 29th Street															
5	L2	All MCs	6	0.0	6	0.0	0.109	4.1	LOS A	0.5	12.1	0.37	0.22	0.37	33.6
2	T1	All MCs	98	0.0	98	0.0	0.109	4.1	LOS A	0.5	12.1	0.37	0.22	0.37	34.3
12	R2	All MCs	15	10.0	15	10.0	0.109	5.0	LOS A	0.5	12.1	0.37	0.22	0.37	33.8
Approach			119	1.3	119	1.3	0.109	4.2	LOS A	0.5	12.1	0.37	0.22	0.37	34.2
All Vehicles			1074	4.2	1074	4.2	0.315	6.0	LOS A	1.8	44.4	0.40	0.23	0.40	33.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Sieglösch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27715 - VIC Implementation\005 - Master Plan Update TIA\Analysis\176th_29th With Project 2038 AM.sip9

Intersection												
Intersection Delay, s/veh	15.1											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	272	33	76	314	14	47	85	56	0	66	10
Future Vol, veh/h	12	272	33	76	314	14	47	85	56	0	66	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	4	10	4	1	9	4	3	0	0	0	0
Mvmt Flow	13	299	36	84	345	15	52	93	62	0	73	11
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	16.5	16.1	11.9	11.6
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	60%	0%	89%	0%	96%	87%
Vol Right, %	0%	40%	0%	11%	0%	4%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	47	141	12	305	76	328	76
LT Vol	47	0	12	0	76	0	0
Through Vol	0	85	0	272	0	314	66
RT Vol	0	56	0	33	0	14	10
Lane Flow Rate	52	155	13	335	84	360	84
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.107	0.286	0.024	0.57	0.152	0.599	0.165
Departure Headway (Hd)	7.446	6.637	6.633	6.117	6.573	5.984	7.119
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	479	539	538	587	544	602	500
Service Time	5.22	4.409	4.399	3.883	4.336	3.746	5.211
HCM Lane V/C Ratio	0.109	0.288	0.024	0.571	0.154	0.598	0.168
HCM Control Delay	11.1	12.1	9.6	16.8	10.5	17.4	11.6
HCM Lane LOS	B	B	A	C	B	C	B
HCM 95th-tile Q	0.4	1.2	0.1	3.6	0.5	4	0.6

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	42	14	46	202	35	140	23	1081	92	795
Future Volume (vph)	42	14	46	202	35	140	23	1081	92	795
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2		1	6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	9.5	39.0	39.0	9.5	38.0	38.0	10.0	32.0	10.0	32.0
Total Split (s)	10.0	25.0	25.0	14.0	29.0	29.0	17.0	44.0	37.0	64.0
Total Split (%)	8.3%	20.8%	20.8%	11.7%	24.2%	24.2%	14.2%	36.7%	30.8%	53.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	15.9	12.0	12.0	23.3	15.2	15.2	5.7	71.8	10.0	80.1
Actuated g/C Ratio	0.13	0.10	0.10	0.19	0.13	0.13	0.05	0.60	0.08	0.67
v/c Ratio	0.22	0.08	0.16	0.85	0.16	0.44	0.28	0.38	0.66	0.26
Control Delay	39.2	47.7	1.2	71.7	46.1	10.8	64.1	7.1	72.8	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	47.7	1.2	71.7	46.1	10.8	64.1	7.1	72.8	9.8
LOS	D	D	A	E	D	B	E	A	E	A
Approach Delay		23.3			46.8			8.3		16.2
Approach LOS		C			D			A		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 17.6

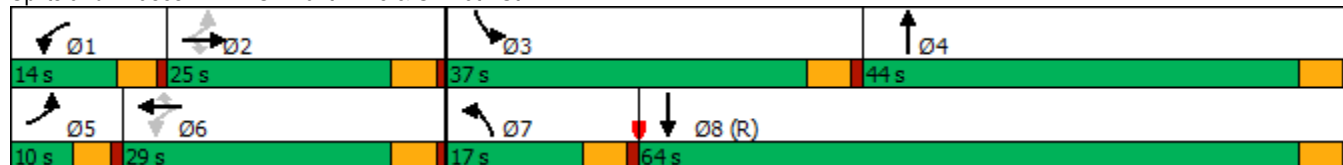
Intersection LOS: B

Intersection Capacity Utilization 58.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	14	46	202	35	140	23	1081	15	92	795	26
Future Volume (veh/h)	42	14	46	202	35	140	23	1081	15	92	795	26
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1856	1870	1870	1900	1900	1870	1796	1885	1856	1826
Adj Flow Rate, veh/h	44	15	7	213	37	22	24	1138	15	97	837	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	3	2	2	0	0	2	7	1	3	5
Cap, veh/h	226	156	129	305	242	208	42	2323	31	121	2485	74
Arrive On Green	0.03	0.08	0.08	0.08	0.13	0.13	0.02	0.45	0.45	0.07	0.49	0.49
Sat Flow, veh/h	1767	1900	1572	1781	1870	1610	1810	5194	68	1795	5055	151
Grp Volume(v), veh/h	44	15	7	213	37	22	24	746	407	97	559	303
Grp Sat Flow(s), veh/h/ln	1767	1900	1572	1781	1870	1610	1810	1702	1858	1795	1689	1828
Q Serve(g_s), s	2.7	0.9	0.5	9.5	2.1	1.4	1.6	18.6	18.6	6.4	12.1	12.1
Cycle Q Clear(g_c), s	2.7	0.9	0.5	9.5	2.1	1.4	1.6	18.6	18.6	6.4	12.1	12.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.08
Lane Grp Cap(c), veh/h	226	156	129	305	242	208	42	1522	831	121	1660	899
V/C Ratio(X)	0.19	0.10	0.05	0.70	0.15	0.11	0.58	0.49	0.49	0.80	0.34	0.34
Avail Cap(c_a), veh/h	250	317	262	305	374	322	181	1522	831	479	1660	899
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	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	51.0	50.8	47.1	46.4	46.1	58.0	23.5	23.5	55.2	18.6	18.6
Incr Delay (d2), s/veh	0.4	0.1	0.1	6.9	0.1	0.1	3.6	0.9	1.6	4.6	0.5	1.0
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(95%),veh/ln	2.2	0.8	0.3	3.8	1.8	1.0	1.4	11.3	12.4	5.4	8.2	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.7	51.1	50.8	53.9	46.5	46.2	61.7	24.4	25.1	59.7	19.1	19.6
LnGrp LOS	D	D	D	D	D	D	E	C	C	E	B	B
Approach Vol, veh/h	66				272				1177			
Approach Delay, s/veh	49.5				52.3				25.4			
Approach LOS	D				D				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	14.8	13.1	58.7	8.3	20.5	7.8	64.0				
Change Period (Y+Rc), s	4.5	5.0	5.0	5.0	4.5	5.0	5.0	5.0				
Max Green Setting (Gmax), s	9.5	20.0	32.0	39.0	5.5	24.0	12.0	59.0				
Max Q Clear Time (g_c+I1), s	11.5	2.9	8.4	20.6	4.7	4.1	3.6	14.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	4.7	0.0	0.1	0.0	3.7				

Intersection Summary

HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Timings
12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	28	60	165	302	121	109	111	931	366	158	803
Future Volume (vph)	28	60	165	302	121	109	111	931	366	158	803
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	20.0	33.0	20.0	25.0	38.0	17.0	20.0	45.0	25.0	17.0	42.0
Total Split (%)	16.7%	27.5%	16.7%	20.8%	31.7%	14.2%	16.7%	37.5%	20.8%	14.2%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	6.4	8.2	23.0	20.0	23.8	47.0	11.8	55.6	80.6	18.2	62.0
Actuated g/C Ratio	0.05	0.07	0.19	0.17	0.20	0.39	0.10	0.46	0.67	0.15	0.52
v/c Ratio	0.39	0.56	0.53	1.14	0.36	0.18	0.72	0.64	0.35	0.66	0.37
Control Delay	68.3	70.9	31.3	140.5	45.0	4.6	74.0	28.4	1.9	65.2	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	70.9	31.3	140.5	45.0	4.6	74.0	28.4	1.9	65.2	14.5
LOS	E	E	C	F	D	A	E	C	A	E	B
Approach Delay		44.8			91.0			25.1			22.6
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 36.9

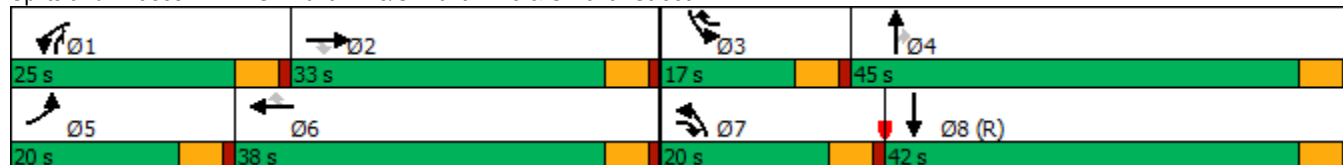
Intersection LOS: D

Intersection Capacity Utilization 70.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave/SE164th Ave & SE 34th Street



HCM 6th Signalized Intersection Summary

12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 2 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	60	165	302	121	109	111	931	366	158	803	37
Future Volume (veh/h)	28	60	165	302	121	109	111	931	366	158	803	37
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1565	1758	1803	1870	1885	1841	1791	1776	1746	1806	1761	1761
Adj Flow Rate, veh/h	31	67	124	336	134	33	123	1034	235	176	892	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	19	6	3	2	1	4	1	2	4	0	3	3
Cap, veh/h	40	159	270	297	434	515	147	1125	740	172	1641	70
Arrive On Green	0.03	0.09	0.09	0.17	0.23	0.23	0.09	0.33	0.33	0.20	0.69	0.69
Sat Flow, veh/h	1491	1758	1528	1781	1885	1560	1706	3375	1480	1720	4730	201
Grp Volume(v), veh/h	31	67	124	336	134	33	123	1034	235	176	604	326
Grp Sat Flow(s),veh/h/ln	1491	1758	1528	1781	1885	1560	1706	1687	1480	1720	1603	1725
Q Serve(g_s), s	2.5	4.3	8.7	20.0	7.1	1.7	8.5	35.3	11.3	12.0	11.1	11.2
Cycle Q Clear(g_c), s	2.5	4.3	8.7	20.0	7.1	1.7	8.5	35.3	11.3	12.0	11.1	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	40	159	270	297	434	515	147	1125	740	172	1112	599
V/C Ratio(X)	0.77	0.42	0.46	1.13	0.31	0.06	0.84	0.92	0.32	1.02	0.54	0.54
Avail Cap(c_a), veh/h	186	410	488	297	518	585	213	1125	740	172	1112	599
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	58.0	51.6	44.2	50.0	38.3	27.5	54.0	38.4	17.8	48.0	13.7	13.7
Incr Delay (d2), s/veh	11.1	0.7	0.5	92.6	0.1	0.0	11.8	13.3	1.1	72.8	1.8	3.3
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(95%),veh/ln	1.9	3.4	5.9	24.4	5.8	1.2	7.3	22.7	7.1	12.5	5.6	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	52.2	44.7	142.6	38.4	27.5	65.8	51.8	19.0	120.8	15.5	17.0
LnGrp LOS	E	D	D	F	D	C	E	D	B	F	B	B
Approach Vol, veh/h	222			503			1392			1106		
Approach Delay, s/veh	50.4			107.3			47.5			32.7		
Approach LOS	D			F			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	15.9	17.0	45.0	8.2	32.7	15.4	46.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	28.0	12.0	40.0	15.0	33.0	15.0	37.0				
Max Q Clear Time (g_c+I1), s	22.0	10.7	14.0	37.3	4.5	9.1	10.5	13.2				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.0	0.0	0.2	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay	51.9											
HCM 6th LOS	D											

Timings

Mitigation

1: SE 192nd & SE 15th St

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	116	91	40	82	242	78	1310	115	1475
Future Volume (vph)	116	91	40	82	242	78	1310	115	1475
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	15.0	29.0	15.0	29.0	16.0	14.0	40.0	16.0	42.0
Total Split (%)	15.0%	29.0%	15.0%	29.0%	16.0%	14.0%	40.0%	16.0%	42.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effect Green (s)	9.0	15.8	6.2	11.1	19.8	7.6	52.2	9.7	56.3
Actuated g/C Ratio	0.09	0.16	0.06	0.11	0.20	0.08	0.52	0.10	0.56
v/c Ratio	0.79	0.62	0.38	0.42	0.67	0.60	0.77	0.69	0.86
Control Delay	78.1	36.9	54.0	45.4	30.5	54.0	25.1	63.7	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.1	36.9	54.0	45.4	30.5	54.0	25.1	63.7	28.3
LOS	E	D	D	D	C	D	C	E	C
Approach Delay		52.7		36.4			26.7		30.6
Approach LOS		D		D			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 81.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St

			
Ø1	Ø2	Ø3	Ø4 (R)
15 s	29 s	16 s	40 s
			
Ø5	Ø6	Ø7	Ø8
15 s	29 s	14 s	42 s

HCM 6th Signalized Intersection Summary

Mitigation

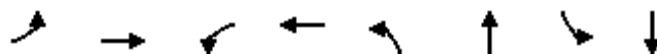
1: SE 192nd & SE 15th St

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	91	94	40	82	242	78	1310	32	115	1475	133
Future Volume (veh/h)	116	91	94	40	82	242	78	1310	32	115	1475	133
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1885	1900	1900	1856	1900	1900	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	122	96	56	42	86	192	82	1379	32	121	1553	135
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	1	0	0	3	0	0	2	0	0	2	2
Cap, veh/h	150	207	121	62	248	344	116	1768	41	149	1708	147
Arrive On Green	0.09	0.19	0.19	0.03	0.13	0.13	0.09	0.66	0.66	0.11	0.69	0.69
Sat Flow, veh/h	1739	1116	651	1810	1856	1582	1810	3550	82	1810	3309	285
Grp Volume(v), veh/h	122	0	152	42	86	192	82	690	721	121	828	860
Grp Sat Flow(s),veh/h/ln	1739	0	1767	1810	1856	1582	1810	1777	1855	1810	1777	1818
Q Serve(g_s), s	6.9	0.0	7.7	2.3	4.2	10.8	4.4	27.1	27.2	6.5	38.4	40.0
Cycle Q Clear(g_c), s	6.9	0.0	7.7	2.3	4.2	10.8	4.4	27.1	27.2	6.5	38.4	40.0
Prop In Lane	1.00		0.37	1.00		1.00	1.00		0.04	1.00		0.16
Lane Grp Cap(c), veh/h	150	0	327	62	248	344	116	885	924	149	917	938
V/C Ratio(X)	0.82	0.00	0.46	0.67	0.35	0.56	0.71	0.78	0.78	0.81	0.90	0.92
Avail Cap(c_a), veh/h	174	0	424	181	445	512	163	885	924	199	917	938
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.30	0.30	0.30	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	36.3	47.7	39.4	35.0	44.8	13.1	13.1	43.8	13.6	13.8
Incr Delay (d2), s/veh	19.5	0.0	0.4	4.6	0.3	0.5	1.0	2.1	2.0	12.5	13.8	15.0
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(95%),veh/ln	6.7	0.0	5.8	2.0	3.5	7.3	3.2	10.0	10.4	5.9	18.7	19.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	36.7	52.4	39.7	35.5	45.8	15.2	15.1	56.3	27.4	28.9
LnGrp LOS	E	A	D	D	D	D	D	B	B	E	C	C
Approach Vol, veh/h		274			320			1493			1809	
Approach Delay, s/veh		49.0			38.8			16.8			30.0	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	23.5	13.2	54.8	13.6	18.4	11.4	56.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	24.0	11.0	35.0	10.0	24.0	9.0	37.0				
Max Q Clear Time (g_c+I1), s	4.3	9.7	8.5	29.2	8.9	12.8	6.4	42.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.9	0.0	0.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			27.0									
HCM 6th LOS			C									

Timings

Mitigation

2: SE 192nd Ave & SE 20th St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↰↱	↱	↰↱	↱	↰	↱↱	↰	↱↱
Traffic Volume (vph)	233	183	266	265	144	892	151	1089
Future Volume (vph)	233	183	266	265	144	892	151	1089
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	20.0	27.0	20.0	27.0	14.0	35.0	18.0	39.0
Total Split (%)	20.0%	27.0%	20.0%	27.0%	14.0%	35.0%	18.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effect Green (s)	11.3	23.6	12.1	24.4	9.3	32.6	11.7	35.0
Actuated g/C Ratio	0.11	0.24	0.12	0.24	0.09	0.33	0.12	0.35
v/c Ratio	0.62	0.66	0.66	0.88	0.90	0.97	0.75	1.13
Control Delay	49.0	39.8	49.4	56.7	89.3	35.9	62.2	99.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	39.8	49.4	56.7	89.3	35.9	62.2	99.4
LOS	D	D	D	E	F	D	E	F
Approach Delay		44.0		53.7		42.2		95.6
Approach LOS		D		D		D		F

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 93 (93%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 64.8

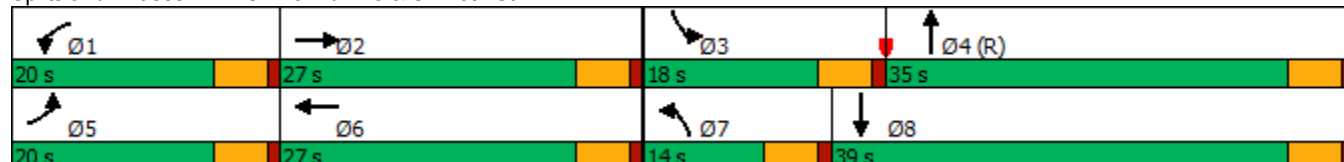
Intersection LOS: E

Intersection Capacity Utilization 90.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: SE 192nd Ave & SE 20th St



HCM 6th Signalized Intersection Summary

2: SE 192nd Ave & SE 20th St

Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	183	94	266	265	118	144	892	179	151	1089	237
Future Volume (veh/h)	233	183	94	266	265	118	144	892	179	151	1089	237
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1870	1900	1885	1900	1885	1870	1885
Adj Flow Rate, veh/h	243	191	79	277	276	106	150	929	168	157	1134	227
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	1	0	0	2	0	1	0	1	2	1
Cap, veh/h	316	268	111	350	286	110	163	1165	211	189	1181	235
Arrive On Green	0.09	0.21	0.21	0.10	0.22	0.22	0.09	0.38	0.38	0.14	0.53	0.53
Sat Flow, veh/h	3510	1276	528	3510	1301	500	1810	3029	548	1795	2953	588
Grp Volume(v), veh/h	243	0	270	277	0	382	150	549	548	157	680	681
Grp Sat Flow(s),veh/h/ln	1755	0	1803	1755	0	1801	1810	1791	1786	1795	1777	1764
Q Serve(g_s), s	6.8	0.0	13.9	7.7	0.0	21.0	8.2	27.2	27.2	8.5	36.5	37.2
Cycle Q Clear(g_c), s	6.8	0.0	13.9	7.7	0.0	21.0	8.2	27.2	27.2	8.5	36.5	37.2
Prop In Lane	1.00		0.29	1.00		0.28	1.00		0.31	1.00		0.33
Lane Grp Cap(c), veh/h	316	0	379	350	0	396	163	689	687	189	711	705
V/C Ratio(X)	0.77	0.00	0.71	0.79	0.00	0.96	0.92	0.80	0.80	0.83	0.96	0.97
Avail Cap(c_a), veh/h	527	0	397	527	0	396	163	689	687	233	711	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.42	0.42	0.42
Uniform Delay (d), s/veh	44.5	0.0	36.7	44.0	0.0	38.6	45.1	27.3	27.3	42.1	22.6	22.7
Incr Delay (d2), s/veh	1.5	0.0	4.7	2.5	0.0	35.6	47.3	9.3	9.4	7.0	13.8	15.2
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(95%),veh/ln	5.3	0.0	10.5	6.1	0.0	18.7	9.6	18.5	18.5	6.0	18.6	19.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	41.3	46.5	0.0	74.2	92.4	36.7	36.7	49.1	36.3	37.9
LnGrp LOS	D	A	D	D	A	E	F	D	D	D	D	D
Approach Vol, veh/h		513			659			1247			1518	
Approach Delay, s/veh		43.5			62.6			43.4			38.4	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	26.0	15.6	43.4	14.0	27.0	14.0	45.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	22.0	13.0	30.0	15.0	22.0	9.0	34.0				
Max Q Clear Time (g_c+I1), s	9.7	15.9	10.5	29.2	8.8	23.0	10.2	39.2				
Green Ext Time (p_c), s	0.2	0.5	0.0	0.4	0.2	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			44.7									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	1225	3	10	1316
Future Vol, veh/h	3	4	1225	3	10	1316
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	1289	3	11	1385
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2008	648	0	0	1294	0
Stage 1	1293	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	53	418	-	-	542	-
Stage 1	225	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	52	417	-	-	541	-
Mov Cap-2 Maneuver	52	-	-	-	-	-
Stage 1	225	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	41.6	0		0.1		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)	-	-	52	417	541	-
HCM Lane V/C Ratio	-	-	0.061	0.01	0.019	-
HCM Control Delay (s)	-	-	78.7	13.7	11.8	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0	0.1	-

Timings 5: SE 192nd Ave & SE 34th St

Mitigation

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	253	245	355	216	120	177	955	204	212	932
Future Volume (vph)	253	245	355	216	120	177	955	204	212	932
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	14.0	32.0	19.0	37.0	37.0	13.0	34.0	19.0	15.0	36.0
Total Split (%)	14.0%	32.0%	19.0%	37.0%	37.0%	13.0%	34.0%	19.0%	15.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	33.6	24.6	43.6	29.6	29.6	10.4	31.4	45.4	10.0	31.0
Actuated g/C Ratio	0.34	0.25	0.44	0.30	0.30	0.10	0.31	0.45	0.10	0.31
v/c Ratio	0.63	0.92	1.13	0.40	0.21	0.98	0.89	0.25	0.65	1.13
Control Delay	28.3	61.7	117.2	29.9	1.8	109.6	45.1	2.1	40.0	91.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	61.7	117.2	29.9	1.8	109.6	45.1	2.1	40.0	91.7
LOS	C	E	F	C	A	F	D	A	D	F
Approach Delay		48.7		69.9			47.0			83.6
Approach LOS		D		E			D			F

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 36 (36%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 63.5

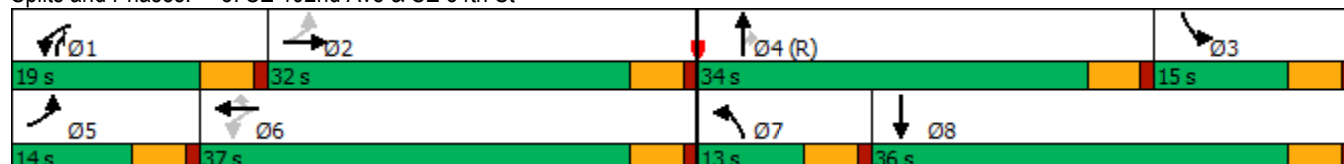
Intersection LOS: E

Intersection Capacity Utilization 101.5%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

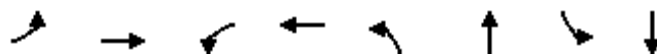
Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	253	245	152	355	216	120	177	955	204	212	932	215
Future Volume (veh/h)	253	245	152	355	216	120	177	955	204	212	932	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1773	1847	1817	2003	2003	2018	2018	1988	2003	1847	1832	1743
Adj Flow Rate, veh/h	266	258	136	374	227	30	186	1005	87	223	981	205
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	0	2	1	1	0	0	2	1	0	1	7
Cap, veh/h	444	280	147	365	595	507	154	1095	726	419	951	198
Arrive On Green	0.09	0.25	0.25	0.14	0.30	0.30	0.08	0.29	0.29	0.12	0.33	0.33
Sat Flow, veh/h	1688	1131	596	1908	2003	1705	1922	3777	1683	3413	2857	596
Grp Volume(v), veh/h	266	0	394	374	227	30	186	1005	87	223	597	589
Grp Sat Flow(s),veh/h/ln	1688	0	1728	1908	2003	1705	1922	1889	1683	1706	1741	1713
Q Serve(g_s), s	9.0	0.0	22.2	14.0	9.0	0.9	8.0	25.7	1.6	6.1	33.3	33.3
Cycle Q Clear(g_c), s	9.0	0.0	22.2	14.0	9.0	0.9	8.0	25.7	1.6	6.1	33.3	33.3
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	444	0	427	365	595	507	154	1095	726	419	579	570
V/C Ratio(X)	0.60	0.00	0.92	1.02	0.38	0.06	1.21	0.92	0.12	0.53	1.03	1.03
Avail Cap(c_a), veh/h	444	0	467	365	641	546	154	1095	726	419	579	570
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)	0.78	0.00	0.78	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	36.7	25.3	27.9	11.7	46.0	34.3	6.2	41.2	33.4	33.4
Incr Delay (d2), s/veh	1.2	0.0	18.4	53.4	0.1	0.0	139.9	13.4	0.3	0.7	45.3	46.5
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(95%),veh/ln	2.1	0.0	16.0	17.0	7.5	0.9	15.8	19.2	1.4	4.6	28.5	28.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	0.0	55.1	78.6	28.0	11.7	185.9	47.8	6.6	41.8	78.7	79.9
LnGrp LOS	C	A	E	F	C	B	F	D	A	D	F	F
Approach Vol, veh/h		660			631			1278			1409	
Approach Delay, s/veh		44.4			57.2			65.1			73.3	
Approach LOS		D			E			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	29.7	17.3	34.0	14.0	34.7	13.0	38.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.0	27.0	10.0	29.0	9.0	32.0	8.0	31.0				
Max Q Clear Time (g_c+I1), s	16.0	24.2	8.1	27.7	11.0	11.0	10.0	35.3				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.5	0.0	0.4	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			63.3									
HCM 6th LOS			E									
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings

Mitigation

6: SE Hiddenbrook Dr & SE 34th St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	→	←	→	←	→	←	→
Traffic Volume (vph)	69	308	37	366	71	15	309	27
Future Volume (vph)	69	308	37	366	71	15	309	27
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	30.0	10.0	30.0	32.0	32.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effect Green (s)	5.1	37.4	5.1	32.9	30.4	30.4	30.4	30.4
Actuated g/C Ratio	0.06	0.45	0.06	0.39	0.36	0.36	0.36	0.36
v/c Ratio	0.67	0.51	0.37	0.93	0.21	0.08	0.69	0.31
Control Delay	72.0	18.7	51.8	42.0	23.7	11.4	34.3	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.0	18.7	51.8	42.0	23.7	11.4	34.3	6.5
LOS	E	B	D	D	C	B	C	A
Approach Delay		26.7		42.6		18.8		23.0
Approach LOS		C		D		B		C

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 83.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 31.0

Intersection LOS: C

Intersection Capacity Utilization 78.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

← Ø1	→ Ø2	↓ Ø4
10 s	85 s	35 s
↑ Ø5	← Ø6	↑ Ø8
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	308	80	37	366	249	71	15	32	309	27	184
Future Volume (veh/h)	69	308	80	37	366	249	71	15	32	309	27	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1870	1841	1832	1847	1876	1817	1876	1832	1841	1900	1900
Adj Flow Rate, veh/h	73	328	73	39	389	234	76	16	11	329	29	62
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, %	0	2	4	3	2	0	4	0	3	4	0	0
Cap, veh/h	109	607	135	70	420	253	437	297	204	500	154	330
Arrive On Green	0.06	0.41	0.41	0.04	0.39	0.39	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1810	1479	329	1745	1077	648	1265	1034	711	1357	538	1150
Grp Volume(v), veh/h	73	0	401	39	0	623	76	0	27	329	0	91
Grp Sat Flow(s),veh/h/ln	1810	0	1808	1745	0	1724	1265	0	1746	1357	0	1688
Q Serve(g_s), s	2.3	0.0	9.6	1.3	0.0	19.7	2.8	0.0	0.6	13.2	0.0	2.3
Cycle Q Clear(g_c), s	2.3	0.0	9.6	1.3	0.0	19.7	5.1	0.0	0.6	13.9	0.0	2.3
Prop In Lane	1.00		0.18	1.00		0.38	1.00		0.41	1.00		0.68
Lane Grp Cap(c), veh/h	109	0	742	70	0	673	437	0	501	500	0	484
V/C Ratio(X)	0.67	0.00	0.54	0.55	0.00	0.93	0.17	0.00	0.05	0.66	0.00	0.19
Avail Cap(c_a), veh/h	158	0	2533	153	0	2415	739	0	917	824	0	887
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	26.3	0.0	12.8	26.9	0.0	16.6	17.3	0.0	14.8	19.8	0.0	15.4
Incr Delay (d2), s/veh	2.7	0.0	0.2	2.5	0.0	2.5	0.1	0.0	0.0	0.6	0.0	0.1
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(95%),veh/ln	1.7	0.0	5.6	0.9	0.0	10.9	1.4	0.0	0.4	7.0	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.0	0.0	13.0	29.4	0.0	19.1	17.3	0.0	14.8	20.3	0.0	15.4
LnGrp LOS	C	A	B	C	A	B	B	A	B	C	A	B
Approach Vol, veh/h	474			662			103			420		
Approach Delay, s/veh	15.5			19.7			16.7			19.3		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	28.4		21.4	8.4	27.3		21.4				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	3.3	11.6		15.9	4.3	21.7		7.1				
Green Ext Time (p_c), s	0.0	0.3		0.1	0.0	0.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	18.2											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	450	32	16	606	18	7
Future Vol, veh/h	450	32	16	606	18	7
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	495	35	18	666	20	8
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	530	0	1215	514
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	702	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1048	-	202	564
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1048	-	199	563
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	487	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		21.7	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	243	-	-	1048	-	
HCM Lane V/C Ratio	0.113	-	-	0.017	-	
HCM Control Delay (s)	21.7	-	-	8.5	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

Timings 8: SE 176th Ave & SE 34th St

Mitigation

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	197	383	16	488	10	9	94	19
Future Volume (vph)	197	383	16	488	10	9	94	19
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	37.2	35.8	30.0	24.9	10.5	10.5	10.5	10.5
Actuated g/C Ratio	0.62	0.60	0.50	0.42	0.18	0.18	0.18	0.18
v/c Ratio	0.53	0.39	0.03	0.86	0.05	0.05	0.41	0.41
Control Delay	20.5	10.9	8.6	28.7	23.9	19.7	29.4	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	10.9	8.6	28.7	23.9	19.7	29.4	10.0
LOS	C	B	A	C	C	B	C	B
Approach Delay		14.1		28.2		21.5		17.4
Approach LOS		B		C		C		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 59.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 20.6

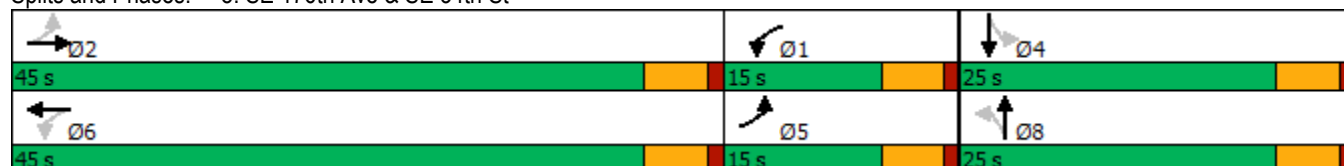
Intersection LOS: C

Intersection Capacity Utilization 68.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary 8: SE 176th Ave & SE 34th St

Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	197	383	13	16	488	120	10	9	5	94	19	135
Future Volume (veh/h)	197	383	13	16	488	120	10	9	5	94	19	135
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		0.97
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1870	1900	1900	1885	1885	1900	1900	1900	1885	1900	1900
Adj Flow Rate, veh/h	214	416	13	17	530	117	11	10	1	102	21	13
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, %	1	2	0	0	1	1	0	0	0	1	0	0
Cap, veh/h	396	639	20	652	637	141	301	189	19	320	121	75
Arrive On Green	0.11	0.35	0.35	0.18	0.43	0.43	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1795	1804	56	1810	1496	330	1391	1699	170	1409	1085	672
Grp Volume(v), veh/h	214	0	429	17	0	647	11	0	11	102	0	34
Grp Sat Flow(s),veh/h/ln	1795	0	1860	1810	0	1826	1391	0	1869	1409	0	1757
Q Serve(g_s), s	0.0	0.0	8.2	0.0	0.0	13.3	0.3	0.0	0.2	3.0	0.0	0.7
Cycle Q Clear(g_c), s	0.0	0.0	8.2	0.0	0.0	13.3	1.0	0.0	0.2	3.2	0.0	0.7
Prop In Lane	1.00		0.03	1.00		0.18	1.00		0.09	1.00		0.38
Lane Grp Cap(c), veh/h	396	0	659	652	0	777	301	0	208	320	0	196
V/C Ratio(X)	0.54	0.00	0.65	0.03	0.00	0.83	0.04	0.00	0.05	0.32	0.00	0.17
Avail Cap(c_a), veh/h	625	0	1757	753	0	1724	802	0	882	828	0	830
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	16.7	0.0	11.5	9.4	0.0	10.8	17.5	0.0	16.8	18.2	0.0	17.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	0.9	0.0	0.0	0.0	0.2	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(95%),veh/ln	2.8	0.0	4.4	0.1	0.0	6.5	0.2	0.0	0.2	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.1	0.0	11.9	9.4	0.0	11.7	17.5	0.0	16.9	18.4	0.0	17.2
LnGrp LOS	B	A	B	A	A	B	B	A	B	B	A	B
Approach Vol, veh/h	643			664			22			136		
Approach Delay, s/veh	13.6			11.7			17.2			18.1		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.6	20.0		9.7	9.6	23.0		9.7				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	10.2		5.2	2.0	15.3		3.0				
Green Ext Time (p_c), s	0.0	1.6		0.2	0.2	2.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	13.2											
HCM 6th LOS	B											

MOVEMENT SUMMARY

 Site: 101 [SE 176 Avenue/ SE 29th Street Phase 2 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Phase 2

Site Category: (None)

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
			veh/h		veh/h					ft				mph	
South: SE 176th Avenue															
3	L2	All MCs	16	15.0	16	15.0	0.314	7.4	LOS A	1.7	43.3	0.41	0.22	0.41	32.3
8	T1	All MCs	268	0.0	268	0.0	0.314	6.0	LOS A	1.7	43.3	0.41	0.22	0.41	33.4
18	R2	All MCs	74	0.0	74	0.0	0.314	6.0	LOS A	1.7	43.3	0.41	0.22	0.41	33.1
Approach			358	0.7	358	0.7	0.314	6.1	LOS A	1.7	43.3	0.41	0.22	0.41	33.3
East: SE 29th Street															
1	L2	All MCs	152	0.0	152	0.0	0.438	8.4	LOS A	2.6	64.2	0.59	0.40	0.59	31.0
6	T1	All MCs	247	0.0	247	0.0	0.438	8.4	LOS A	2.6	64.2	0.59	0.40	0.59	31.6
16	R2	All MCs	41	0.0	41	0.0	0.438	8.4	LOS A	2.6	64.2	0.59	0.40	0.59	31.3
Approach			440	0.0	440	0.0	0.438	8.4	LOS A	2.6	64.2	0.59	0.40	0.59	31.3
North: SE 176th Avenue															
7	L2	All MCs	44	0.0	44	0.0	0.249	6.5	LOS A	1.2	29.2	0.55	0.41	0.55	32.1
4	T1	All MCs	67	1.0	67	1.0	0.249	6.6	LOS A	1.2	29.2	0.55	0.41	0.55	32.7
14	R2	All MCs	113	0.0	113	0.0	0.249	6.5	LOS A	1.2	29.2	0.55	0.41	0.55	32.4
Approach			224	0.3	224	0.3	0.249	6.6	LOS A	1.2	29.2	0.55	0.41	0.55	32.4
West: SE 29th Street															
5	L2	All MCs	22	7.0	22	7.0	0.159	5.4	LOS A	0.7	18.1	0.42	0.27	0.42	32.9
2	T1	All MCs	111	0.0	111	0.0	0.159	4.8	LOS A	0.7	18.1	0.42	0.27	0.42	33.8
12	R2	All MCs	33	0.0	33	0.0	0.159	4.8	LOS A	0.7	18.1	0.42	0.27	0.42	33.5
Approach			166	0.9	166	0.9	0.159	4.9	LOS A	0.7	18.1	0.42	0.27	0.42	33.6
All Vehicles			1187	0.4	1187	0.4	0.438	6.9	LOS A	2.6	64.2	0.50	0.33	0.50	32.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Sieglösch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27715 - VIC Implementation\005 - Master Plan Update TIA\Analysis\176th_29th With Project 2038 PM.sip9

Intersection	
Intersection Delay, s/veh	90.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	466	71	93	503	18	49	132	76	27	95	28
Future Vol, veh/h	48	466	71	93	503	18	49	132	76	27	95	28
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
Heavy Vehicles, %	3	0	0	1	0	7	0	1	0	4	1	8
Mvmt Flow	52	507	77	101	547	20	53	143	83	29	103	30
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	124.1	106.1	19.5	19.6
HCM LOS	F	F	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	18%
Vol Thru, %	0%	63%	0%	87%	0%	97%	63%
Vol Right, %	0%	37%	0%	13%	0%	3%	19%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	208	48	537	93	521	150
LT Vol	49	0	48	0	93	0	27
Through Vol	0	132	0	466	0	503	95
RT Vol	0	76	0	71	0	18	28
Lane Flow Rate	53	226	52	584	101	566	163
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.133	0.517	0.117	1.199	0.223	1.167	0.409
Departure Headway (Hd)	9.705	8.932	8.467	7.801	8.438	7.877	9.937
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	372	407	426	473	429	464	365
Service Time	7.405	6.632	6.167	5.501	6.138	5.577	7.937
HCM Lane V/C Ratio	0.142	0.555	0.122	1.235	0.235	1.22	0.447
HCM Control Delay	13.9	20.8	12.3	134.1	13.5	122.6	19.6
HCM Lane LOS	B	C	B	F	B	F	C
HCM 95th-tile Q	0.5	2.9	0.4	21.2	0.8	19.7	1.9

Timings

Mitigation

11: SE 164th Ave & SE 29th St

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	89	49	51	240	36	143	42	1434	131	1306
Future Volume (vph)	89	49	51	240	36	143	42	1434	131	1306
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2		1	6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	9.5	39.0	39.0	9.5	38.0	38.0	10.0	32.0	19.5	32.0
Total Split (s)	15.0	20.0	20.0	19.0	24.0	24.0	15.0	59.0	22.0	66.0
Total Split (%)	12.5%	16.7%	16.7%	15.8%	20.0%	20.0%	12.5%	49.2%	18.3%	55.0%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	18.9	11.0	11.0	28.7	14.5	14.5	6.3	64.6	11.8	72.1
Actuated g/C Ratio	0.16	0.09	0.09	0.24	0.12	0.12	0.05	0.54	0.10	0.60
v/c Ratio	0.37	0.30	0.19	0.76	0.17	0.47	0.49	0.57	0.78	0.46
Control Delay	40.7	55.0	1.5	55.9	47.9	12.2	51.3	34.3	80.8	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	55.0	1.5	55.9	47.9	12.2	51.3	34.3	80.8	14.9
LOS	D	D	A	E	D	B	D	C	F	B
Approach Delay		33.8			40.3			34.8		20.8
Approach LOS		C			D			C		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 112 (93%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 29.6

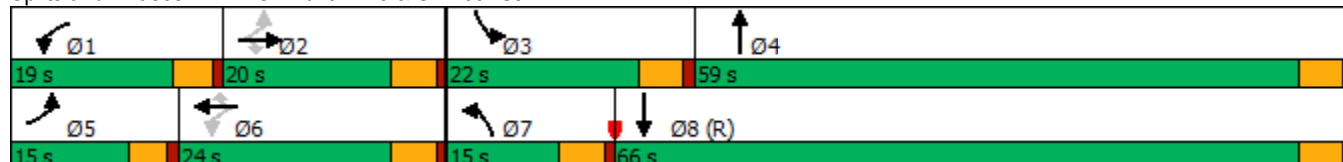
Intersection LOS: C

Intersection Capacity Utilization 68.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	49	51	240	36	143	42	1434	32	131	1306	46
Future Volume (veh/h)	89	49	51	240	36	143	42	1434	32	131	1306	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1826	1870	1752	1885	1885	1900
Adj Flow Rate, veh/h	94	52	10	253	38	26	44	1509	32	138	1375	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	2	2	2	5	2	10	1	1	0
Cap, veh/h	287	163	138	356	273	230	56	2315	49	164	2605	87
Arrive On Green	0.06	0.09	0.09	0.12	0.15	0.15	0.03	0.45	0.45	0.09	0.51	0.51
Sat Flow, veh/h	1810	1900	1599	1781	1870	1579	1739	5146	109	1795	5114	171
Grp Volume(v), veh/h	94	52	10	253	38	26	44	998	543	138	922	499
Grp Sat Flow(s), veh/h/ln	1810	1900	1599	1781	1870	1579	1739	1702	1851	1795	1716	1854
Q Serve(g_s), s	5.6	3.1	0.7	14.5	2.1	1.7	3.0	27.4	27.4	9.1	21.7	21.7
Cycle Q Clear(g_c), s	5.6	3.1	0.7	14.5	2.1	1.7	3.0	27.4	27.4	9.1	21.7	21.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.09
Lane Grp Cap(c), veh/h	287	163	138	356	273	230	56	1532	833	164	1748	944
V/C Ratio(X)	0.33	0.32	0.07	0.71	0.14	0.11	0.79	0.65	0.65	0.84	0.53	0.53
Avail Cap(c_a), veh/h	334	238	200	356	296	250	145	1532	833	254	1748	944
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	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	51.5	50.4	42.6	44.7	44.5	57.7	25.7	25.7	53.6	19.8	19.8
Incr Delay (d2), s/veh	0.7	0.4	0.1	6.5	0.1	0.1	6.3	1.5	2.8	8.2	1.1	2.1
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(95%),veh/ln	4.7	2.7	0.5	12.0	1.8	1.2	2.5	15.5	17.0	7.8	13.3	14.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.7	51.9	50.5	49.1	44.8	44.6	64.0	27.2	28.5	61.8	20.9	21.9
LnGrp LOS	D	D	D	D	D	D	E	C	C	E	C	C
Approach Vol, veh/h		156			317			1585			1559	
Approach Delay, s/veh		48.7			48.2			28.7			24.8	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	15.3	16.0	59.0	11.8	22.5	8.9	66.1				
Change Period (Y+Rc), s	4.5	5.0	5.0	5.0	4.5	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.5	15.0	17.0	54.0	10.5	19.0	10.0	61.0				
Max Q Clear Time (g_c+I1), s	16.5	5.1	11.1	29.4	7.6	4.1	5.0	23.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay				29.6								
HCM 6th LOS				C								
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings

Mitigation

12: SE 164th Ave & SE 34th St

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	49	102	194	279	136	247	192	1216	390	164	1372
Future Volume (vph)	49	102	194	279	136	247	192	1216	390	164	1372
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	15.0	33.0	20.0	17.0	35.0	20.0	20.0	50.0	17.0	20.0	50.0
Total Split (%)	12.5%	27.5%	16.7%	14.2%	29.2%	16.7%	16.7%	41.7%	14.2%	16.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	7.3	10.7	34.0	12.0	17.5	38.0	18.3	61.8	78.8	15.5	59.0
Actuated g/C Ratio	0.06	0.09	0.28	0.10	0.15	0.32	0.15	0.52	0.66	0.13	0.49
v/c Ratio	0.51	0.66	0.41	1.64	0.54	0.46	0.74	0.70	0.35	0.75	0.59
Control Delay	71.7	71.0	24.2	348.1	56.2	21.9	64.4	26.2	3.7	67.2	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	71.0	24.2	348.1	56.2	21.9	64.4	26.2	3.7	67.2	22.3
LOS	E	E	C	F	E	C	E	C	A	E	C
Approach Delay		44.8			166.5			25.4			26.9
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.64

Intersection Signal Delay: 48.8

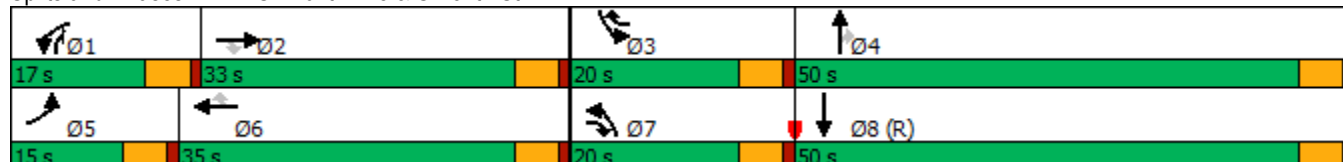
Intersection LOS: D

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave & SE 34th St



HCM 6th Signalized Intersection Summary 12: SE 164th Ave & SE 34th St

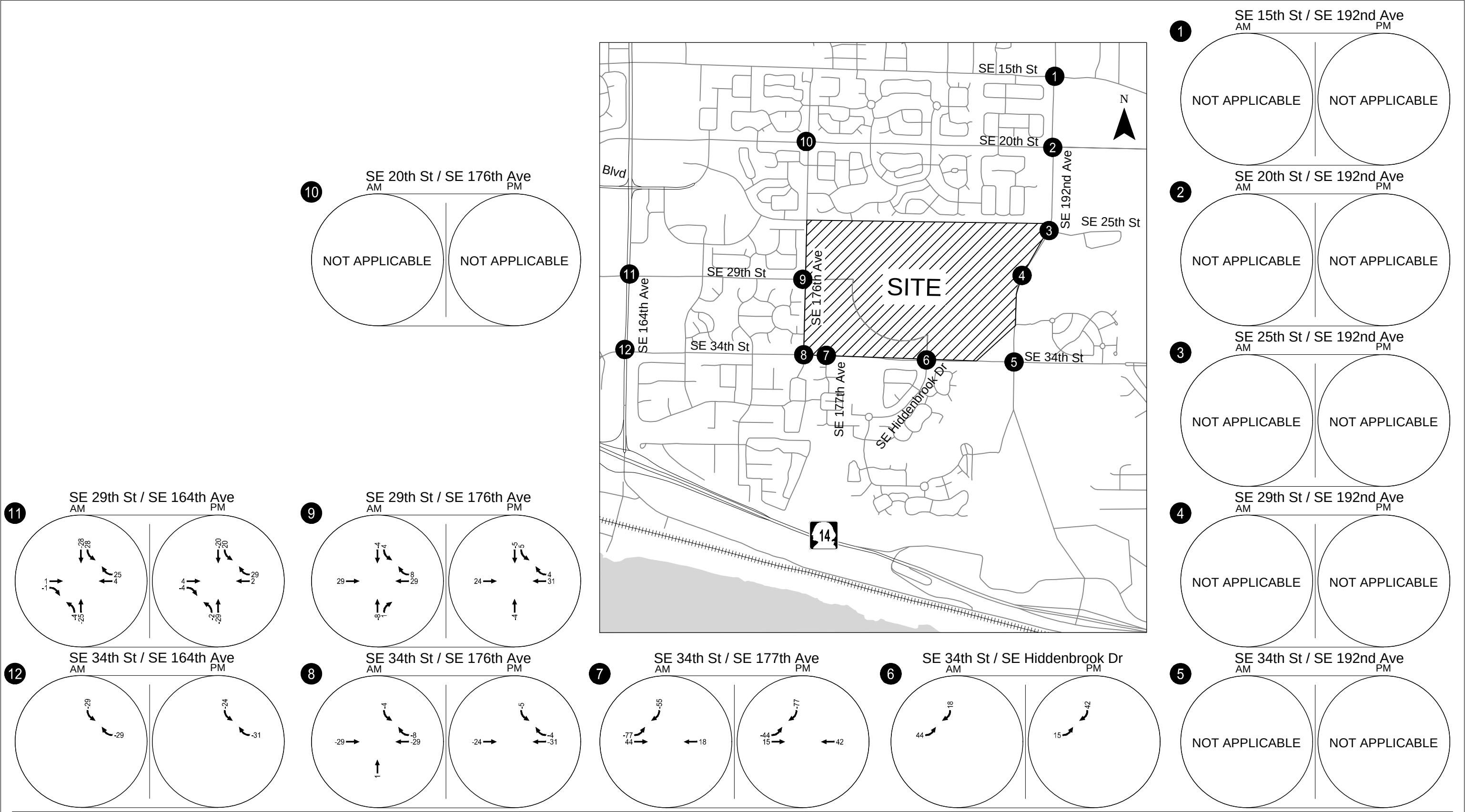
Mitigation

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	102	194	279	136	247	192	1216	390	164	1372	49
Future Volume (veh/h)	49	102	194	279	136	247	192	1216	390	164	1372	49
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1826	1885	1870	1841	1856	1885	1870	1885	1870	1870	1841
Adj Flow Rate, veh/h	51	106	152	291	142	182	200	1267	279	171	1429	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	5	1	2	4	3	1	2	1	2	2	4
Cap, veh/h	64	183	359	178	298	430	224	1379	780	199	1902	64
Arrive On Green	0.04	0.10	0.10	0.10	0.16	0.16	0.13	0.39	0.39	0.04	0.12	0.12
Sat Flow, veh/h	1682	1826	1598	1781	1841	1572	1795	3554	1598	1781	5073	170
Grp Volume(v), veh/h	51	106	152	291	142	182	200	1267	279	171	959	518
Grp Sat Flow(s),veh/h/ln	1682	1826	1598	1781	1841	1572	1795	1777	1598	1781	1702	1840
Q Serve(g_s), s	3.6	6.7	9.8	12.0	8.4	11.4	13.2	40.7	13.0	11.5	32.7	32.7
Cycle Q Clear(g_c), s	3.6	6.7	9.8	12.0	8.4	11.4	13.2	40.7	13.0	11.5	32.7	32.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	64	183	359	178	298	430	224	1379	780	199	1277	690
V/C Ratio(X)	0.79	0.58	0.42	1.63	0.48	0.42	0.89	0.92	0.36	0.86	0.75	0.75
Avail Cap(c_a), veh/h	140	426	572	178	460	569	224	1379	780	223	1277	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	57.2	51.6	39.8	54.0	45.7	35.8	51.7	34.9	19.0	56.8	47.2	47.2
Incr Delay (d2), s/veh	7.9	1.1	0.3	309.2	0.4	0.2	31.8	11.3	1.3	20.4	3.5	6.4
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(95%),veh/ln	3.0	5.5	6.9	32.7	6.9	7.7	12.4	26.1	8.5	10.5	21.4	23.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	52.7	40.1	363.2	46.1	36.0	83.5	46.2	20.3	77.2	50.7	53.6
LnGrp LOS	E	D	D	F	D	D	F	D	C	E	D	D
Approach Vol, veh/h	309			615			1746			1648		
Approach Delay, s/veh	48.6			193.2			46.3			54.4		
Approach LOS	D			F			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	17.0	18.4	51.6	9.6	24.4	20.0	50.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	28.0	15.0	45.0	10.0	30.0	15.0	45.0				
Max Q Clear Time (g_c+I1), s	14.0	11.8	13.5	42.7	5.6	13.4	15.2	34.7				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.1	0.0	0.3	0.0	2.9				
Intersection Summary												
HCM 6th Ctrl Delay	70.5											
HCM 6th LOS	E											



Figure
G-1

H:\2712715 - VIC Implementation\005 - Master Plan Update TIA\report\figs\2712715-Figures_For_TIA.dwg Apr 05, 2023 - 3:31pm - ckeyhans Layout Tab: Fig G2_Redistributed Ph1 Assignment



Redistributed Phase 1 Trips - SE 29th St Western Connection
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
G-2

Appendix H 2038 With-Project Phase 3
Buildout Operations
Worksheets & Re-routed trips

Timings

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 3 2038 AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	156	45	29	64	158	61	986	89	888
Future Volume (vph)	156	45	29	64	158	61	986	89	888
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	20.0	29.0	20.0	29.0	14.0	15.0	37.0	14.0	36.0
Total Split (%)	20.0%	29.0%	20.0%	29.0%	14.0%	15.0%	37.0%	14.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	12.4	18.7	5.9	10.2	22.0	7.4	50.6	8.8	54.0
Actuated g/C Ratio	0.12	0.19	0.06	0.10	0.22	0.07	0.51	0.09	0.54
v/c Ratio	0.80	0.30	0.32	0.38	0.43	0.53	0.64	0.69	0.61
Control Delay	67.8	19.2	53.4	45.3	17.8	58.9	23.7	69.1	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	19.2	53.4	45.3	17.8	58.9	23.7	69.1	22.2
LOS	E	B	D	D	B	E	C	E	C
Approach Delay		49.3		28.9			25.7		26.1
Approach LOS		D		C			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 9 (9%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 28.4

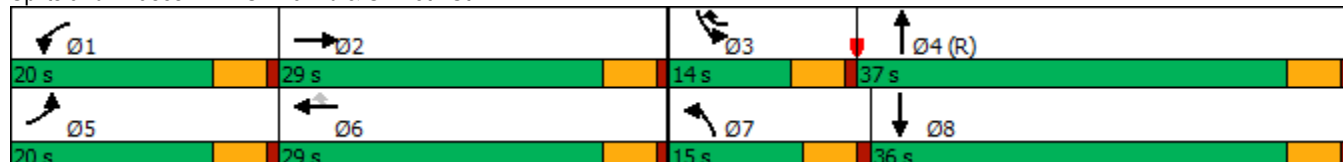
Intersection LOS: C

Intersection Capacity Utilization 60.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 3 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	45	50	29	64	158	61	986	16	89	888	87
Future Volume (veh/h)	156	45	50	29	64	158	61	986	16	89	888	87
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		0.98	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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1796	1781	1841	1870	1856	1841	1900	1737	1767	1856
Adj Flow Rate, veh/h	173	50	8	32	71	99	68	1096	17	99	987	91
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	7	8	4	2	3	4	0	11	9	3
Cap, veh/h	204	262	42	50	144	241	101	1877	29	122	1708	157
Arrive On Green	0.12	0.16	0.16	0.03	0.08	0.08	0.11	1.00	1.00	0.07	0.55	0.55
Sat Flow, veh/h	1767	1598	256	1697	1841	1585	1767	3523	55	1654	3107	286
Grp Volume(v), veh/h	173	0	58	32	71	99	68	544	569	99	533	545
Grp Sat Flow(s),veh/h/ln	1767	0	1854	1697	1841	1585	1767	1749	1829	1654	1678	1715
Q Serve(g_s), s	9.6	0.0	2.7	1.9	3.7	5.6	3.7	0.0	0.0	5.9	21.0	21.0
Cycle Q Clear(g_c), s	9.6	0.0	2.7	1.9	3.7	5.6	3.7	0.0	0.0	5.9	21.0	21.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	204	0	304	50	144	241	101	932	975	122	923	943
V/C Ratio(X)	0.85	0.00	0.19	0.64	0.49	0.41	0.68	0.58	0.58	0.81	0.58	0.58
Avail Cap(c_a), veh/h	265	0	445	254	442	498	177	932	975	149	923	943
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.76	0.76	0.76	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	0.0	36.1	48.0	44.2	38.4	43.4	0.0	0.0	45.6	14.9	14.9
Incr Delay (d2), s/veh	14.7	0.0	0.1	5.0	1.0	0.4	2.2	2.0	1.9	19.5	2.6	2.6
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(95%),veh/ln	8.5	0.0	2.2	1.5	3.1	3.9	2.8	0.9	0.9	5.4	12.4	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	0.0	36.2	53.0	45.2	38.8	45.6	2.0	1.9	65.1	17.5	17.4
LnGrp LOS	E	A	D	D	D	D	D	A	A	E	B	B
Approach Vol, veh/h	231			202			1181			1177		
Approach Delay, s/veh	52.6			43.3			4.5			21.5		
Approach LOS	D			D			A			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	21.4	12.4	58.3	16.5	12.8	10.7	60.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	24.0	9.0	32.0	15.0	24.0	10.0	31.0				
Max Q Clear Time (g_c+I1), s	3.9	4.7	7.9	2.0	11.6	7.6	5.7	23.0				
Green Ext Time (p_c), s	0.0	0.1	0.0	2.2	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay	18.4											
HCM 6th LOS	B											

Timings
2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	166	182	166	165	47	780	59	754
Future Volume (vph)	166	182	166	165	47	780	59	754
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	17.0	29.0	17.0	29.0	15.0	39.0	15.0	39.0
Total Split (%)	17.0%	29.0%	17.0%	29.0%	15.0%	39.0%	15.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	9.4	18.7	9.3	18.7	7.4	46.2	7.7	44.6
Actuated g/C Ratio	0.09	0.19	0.09	0.19	0.07	0.46	0.08	0.45
v/c Ratio	0.55	0.81	0.54	0.67	0.39	0.62	0.45	0.60
Control Delay	49.5	53.3	49.3	44.1	64.6	14.2	52.2	29.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	53.3	49.3	44.1	64.6	14.2	52.2	29.7
LOS	D	D	D	D	E	B	D	C
Approach Delay		51.9		46.3		16.6		31.2
Approach LOS		D		D		B		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 31.4

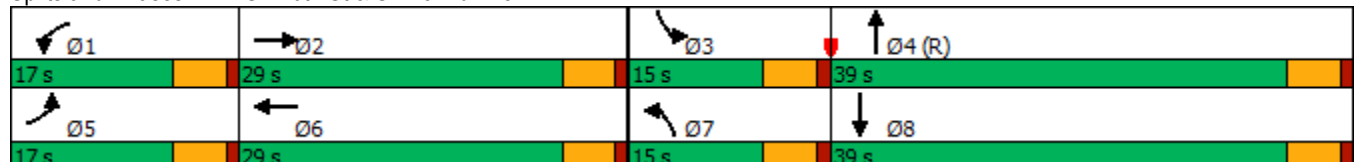
Intersection LOS: C

Intersection Capacity Utilization 67.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: SE 20th St & SE 192nd Ave



HCM 6th Signalized Intersection Summary

2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	182	89	166	165	57	47	780	161	59	754	103
Future Volume (veh/h)	166	182	89	166	165	57	47	780	161	59	754	103
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1841	1885	1885	1885	1811	1856	1841	1885	1811	1826
Adj Flow Rate, veh/h	175	192	74	175	174	46	49	821	154	62	794	99
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	4	1	1	1	6	3	4	1	6	5
Cap, veh/h	242	220	85	244	241	64	86	1531	287	80	1574	196
Arrive On Green	0.07	0.17	0.17	0.07	0.17	0.17	0.05	0.52	0.52	0.06	0.68	0.68
Sat Flow, veh/h	3428	1306	503	3483	1437	380	1725	2962	556	1795	3078	384
Grp Volume(v), veh/h	175	0	266	175	0	220	49	489	486	62	444	449
Grp Sat Flow(s),veh/h/ln	1714	0	1809	1742	0	1817	1725	1763	1755	1795	1721	1742
Q Serve(g_s), s	5.0	0.0	14.3	4.9	0.0	11.5	2.8	18.5	18.5	3.4	12.6	12.6
Cycle Q Clear(g_c), s	5.0	0.0	14.3	4.9	0.0	11.5	2.8	18.5	18.5	3.4	12.6	12.6
Prop In Lane	1.00		0.28	1.00		0.21	1.00		0.32	1.00		0.22
Lane Grp Cap(c), veh/h	242	0	305	244	0	305	86	911	907	80	880	891
V/C Ratio(X)	0.72	0.00	0.87	0.72	0.00	0.72	0.57	0.54	0.54	0.78	0.50	0.50
Avail Cap(c_a), veh/h	411	0	434	418	0	436	172	911	907	180	880	891
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.77	0.77	0.77
Uniform Delay (d), s/veh	45.5	0.0	40.5	45.5	0.0	39.4	46.4	16.2	16.2	46.5	9.8	9.8
Incr Delay (d2), s/veh	1.5	0.0	9.8	1.5	0.0	1.3	2.2	2.3	2.3	4.6	1.6	1.6
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(95%),veh/ln	3.8	0.0	11.3	3.8	0.0	8.8	2.2	11.8	11.8	2.8	6.8	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	0.0	50.3	47.0	0.0	40.7	48.6	18.4	18.4	51.1	11.4	11.4
LnGrp LOS	D	A	D	D	A	D	D	B	B	D	B	B
Approach Vol, veh/h		441			395			1024			955	
Approach Delay, s/veh		49.0			43.5			19.9			14.0	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	21.9	9.5	56.7	12.1	21.8	10.0	56.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	24.0	10.0	34.0	12.0	24.0	10.0	34.0				
Max Q Clear Time (g_c+I1), s	6.9	16.3	5.4	20.5	7.0	13.5	4.8	14.6				
Green Ext Time (p_c), s	0.1	0.5	0.0	3.3	0.1	0.5	0.0	3.3				

Intersection Summary

HCM 6th Ctrl Delay 25.8
HCM 6th LOS C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	10	910	3	7	983
Future Vol, veh/h	7	10	910	3	7	983
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	20	4	67	0	7
Mvmt Flow	7	11	958	3	7	1035
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1493	482	0	0	962	0
Stage 1	961	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Critical Hdwy	6.8	7.3	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.5	-	-	2.2	-
Pot Cap-1 Maneuver	116	485	-	-	724	-
Stage 1	337	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	485	-	-	723	-
Mov Cap-2 Maneuver	115	-	-	-	-	-
Stage 1	337	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	23.2	0	0.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 115 485	723	-		
HCM Lane V/C Ratio	-	- 0.064 0.022	0.01	-		
HCM Control Delay (s)	-	- 38.4 12.6	10	-		
HCM Lane LOS	-	- E B	B	-		
HCM 95th %tile Q(veh)	-	- 0.2 0.1	0	-		

Timings
4: SE 192nd Ave & SE 29th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

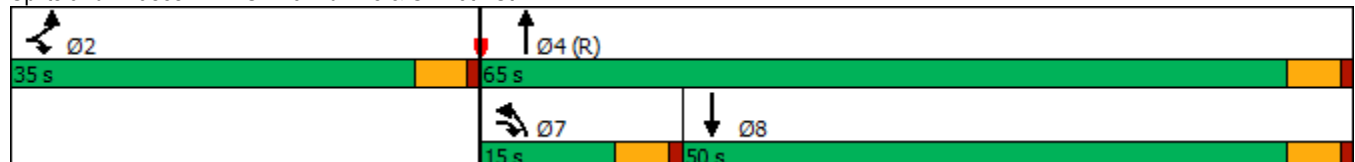
					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	147	70	91	766	781
Future Volume (vph)	147	70	91	766	781
Turn Type	Prot	pt+ov	Prot	NA	NA
Protected Phases	2	2 7	7	4	8
Permitted Phases					
Detector Phase	2	2 7	7	4	8
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	27.0		10.0	26.0	26.0
Total Split (s)	35.0		15.0	65.0	50.0
Total Split (%)	35.0%		15.0%	65.0%	50.0%
Yellow Time (s)	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0
Lead/Lag			Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		None	C-Max	Max
Act Effct Green (s)	14.8	30.7	10.8	75.2	59.3
Actuated g/C Ratio	0.15	0.31	0.11	0.75	0.59
v/c Ratio	0.62	0.14	0.52	0.31	0.53
Control Delay	49.6	5.3	28.6	11.4	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	5.3	28.6	11.4	23.0
LOS	D	A	C	B	C
Approach Delay	35.3			13.2	23.0
Approach LOS	D			B	C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 85 (85%), Referenced to phase 4:NBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 20.3
 Intersection Capacity Utilization 53.9%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 4: SE 192nd Ave & SE 29th St



HCM 6th Signalized Intersection Summary

4: SE 192nd Ave & SE 29th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (veh/h)	147	70	91	766	781	209
Future Volume (veh/h)	147	70	91	766	781	209
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1826	1826	1826	1811	1767
Adj Flow Rate, veh/h	155	20	96	806	822	201
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	5	5	5	6	9
Cap, veh/h	192	279	120	2736	1836	449
Arrive On Green	0.11	0.11	0.14	1.00	0.67	0.67
Sat Flow, veh/h	1725	1547	1739	3561	2831	670
Grp Volume(v), veh/h	155	20	96	806	516	507
Grp Sat Flow(s),veh/h/ln	1725	1547	1739	1735	1721	1690
Q Serve(g_s), s	8.8	1.1	5.4	0.0	14.1	14.1
Cycle Q Clear(g_c), s	8.8	1.1	5.4	0.0	14.1	14.1
Prop In Lane	1.00	1.00	1.00			0.40
Lane Grp Cap(c), veh/h	192	279	120	2736	1153	1132
V/C Ratio(X)	0.81	0.07	0.80	0.29	0.45	0.45
Avail Cap(c_a), veh/h	517	571	174	2736	1153	1132
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	43.4	34.0	42.5	0.0	7.8	7.8
Incr Delay (d2), s/veh	7.8	0.1	12.9	0.2	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.4	1.8	4.6	0.2	8.3	8.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.2	34.2	55.3	0.2	9.0	9.1
LnGrp LOS	D	C	E	A	A	A
Approach Vol, veh/h	175			902	1023	
Approach Delay, s/veh	49.2			6.1	9.1	
Approach LOS	D			A	A	
Timer - Assigned Phs	2		4		7	8
Phs Duration (G+Y+Rc), s	16.1		83.9		11.9	72.0
Change Period (Y+Rc), s	5.0		5.0		5.0	5.0
Max Green Setting (Gmax), s	30.0		60.0		10.0	45.0
Max Q Clear Time (g_c+I1), s	10.8		2.0		7.4	16.1
Green Ext Time (p_c), s	0.4		6.3		0.0	7.3
Intersection Summary						
HCM 6th Ctrl Delay			11.1			
HCM 6th LOS			B			

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	74	164	207	146	87	111	775	349	121	604
Future Volume (vph)	74	164	207	146	87	111	775	349	121	604
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	15.0	36.0	15.0	36.0	36.0	15.0	34.0	15.0	15.0	34.0
Total Split (%)	15.0%	36.0%	15.0%	36.0%	36.0%	15.0%	34.0%	15.0%	15.0%	34.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	26.5	19.8	32.8	24.8	24.8	9.4	40.5	50.2	10.0	41.0
Actuated g/C Ratio	0.26	0.20	0.33	0.25	0.25	0.09	0.40	0.50	0.10	0.41
v/c Ratio	0.23	0.79	0.84	0.34	0.18	0.72	0.63	0.39	0.39	0.59
Control Delay	22.1	48.8	50.4	32.4	0.7	66.6	28.3	2.3	44.6	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	48.8	50.4	32.4	0.7	66.6	28.3	2.3	44.6	25.5
LOS	C	D	D	C	A	E	C	A	D	C
Approach Delay		42.9		34.6			24.4			28.3
Approach LOS		D		C			C			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 29.3

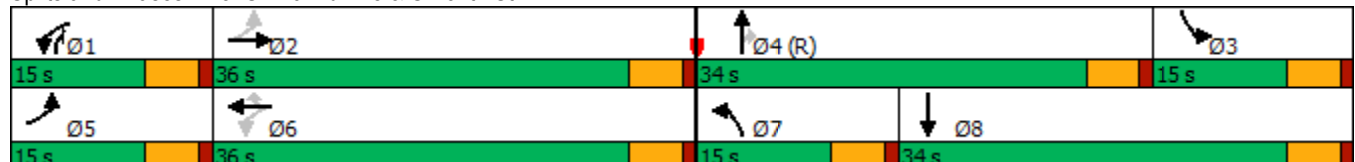
Intersection LOS: C

Intersection Capacity Utilization 70.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

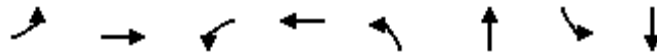
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	164	96	207	146	87	111	775	349	121	604	89
Future Volume (veh/h)	74	164	96	207	146	87	111	775	349	121	604	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1817	1803	1847	1943	2018	1988	2018	1883	1988	1832	1684	1817
Adj Flow Rate, veh/h	82	182	79	230	162	16	123	861	169	134	671	88
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	0	5	0	2	0	9	2	1	11	2
Cap, veh/h	357	221	96	302	472	387	154	1037	655	758	1233	162
Arrive On Green	0.05	0.19	0.19	0.10	0.23	0.23	0.08	0.29	0.29	0.22	0.43	0.43
Sat Flow, veh/h	1731	1189	516	1850	2018	1654	1922	3578	1679	3385	2844	373
Grp Volume(v), veh/h	82	0	261	230	162	16	123	861	169	134	377	382
Grp Sat Flow(s),veh/h/ln	1731	0	1706	1850	2018	1654	1922	1789	1679	1693	1600	1616
Q Serve(g_s), s	3.8	0.0	14.7	9.9	6.7	0.4	6.3	22.5	2.6	3.2	17.5	17.5
Cycle Q Clear(g_c), s	3.8	0.0	14.7	9.9	6.7	0.4	6.3	22.5	2.6	3.2	17.5	17.5
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	357	0	317	302	472	387	154	1037	655	758	694	701
V/C Ratio(X)	0.23	0.00	0.82	0.76	0.34	0.04	0.80	0.83	0.26	0.18	0.54	0.54
Avail Cap(c_a), veh/h	440	0	529	302	626	513	192	1037	655	758	694	701
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)	0.96	0.00	0.96	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	30.5	0.0	39.1	29.4	31.9	9.9	45.2	33.2	7.3	31.4	21.0	21.0
Incr Delay (d2), s/veh	0.1	0.0	2.0	9.7	0.2	0.0	13.5	7.7	1.0	0.0	2.6	2.6
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(95%),veh/ln	2.8	0.0	10.1	8.7	5.7	0.5	6.3	15.7	2.2	2.3	10.5	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	41.1	39.1	32.1	9.9	58.7	40.9	8.2	31.4	23.6	23.6
LnGrp LOS	C	A	D	D	C	A	E	D	A	C	C	C
Approach Vol, veh/h		343			408			1153			893	
Approach Delay, s/veh		38.6			35.2			38.0			24.7	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	23.6	27.4	34.0	10.2	28.4	13.0	48.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	31.0	10.0	29.0	10.0	31.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	11.9	16.7	5.2	24.5	5.8	8.7	8.3	19.5				
Green Ext Time (p_c), s	0.0	0.4	0.0	1.2	0.0	0.2	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			33.4									
HCM 6th LOS			C									

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Phase 3 2038 AM Peak Hour Conditions



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	153	289	27	212	63	29	61	4
Future Volume (vph)	153	289	27	212	63	29	61	4
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	10.0	27.0	32.0	32.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	5.4	28.1	5.4	17.1	8.9	8.9	8.9	8.9
Actuated g/C Ratio	0.12	0.63	0.12	0.38	0.20	0.20	0.20	0.20
v/c Ratio	0.78	0.30	0.14	0.52	0.27	0.21	0.26	0.14
Control Delay	52.7	10.2	25.1	15.6	17.6	9.3	17.4	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	10.2	25.1	15.6	17.6	9.3	17.4	6.6
LOS	D	B	C	B	B	A	B	A
Approach Delay		24.2		16.3		13.2		12.8
Approach LOS		C		B		B		B

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 44.6

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 19.1

Intersection LOS: B

Intersection Capacity Utilization 48.7%

ICU Level of Service A

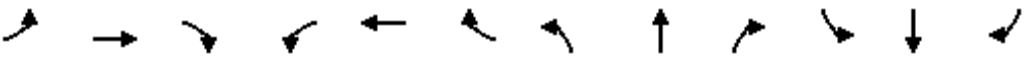
Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

10 s	85 s	35 s
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary 6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	289	24	27	212	102	63	29	41	61	4	42
Future Volume (veh/h)	153	289	24	27	212	102	63	29	41	61	4	42
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1841	1900	1876	1802	1876	1832	1876	1876	1900	1900	1900
Adj Flow Rate, veh/h	170	321	24	30	236	92	70	32	3	68	4	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	4	0	0	5	0	3	0	0	0	0	0
Cap, veh/h	217	799	60	64	479	187	330	185	17	312	110	83
Arrive On Green	0.12	0.47	0.47	0.04	0.39	0.39	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1810	1691	126	1787	1233	481	1380	1690	158	1395	1008	756
Grp Volume(v), veh/h	170	0	345	30	0	328	70	0	35	68	0	7
Grp Sat Flow(s),veh/h/ln	1810	0	1817	1787	0	1714	1380	0	1848	1395	0	1764
Q Serve(g_s), s	3.6	0.0	4.8	0.6	0.0	5.7	1.9	0.0	0.7	1.8	0.0	0.1
Cycle Q Clear(g_c), s	3.6	0.0	4.8	0.6	0.0	5.7	2.0	0.0	0.7	2.5	0.0	0.1
Prop In Lane	1.00		0.07	1.00		0.28	1.00		0.09	1.00		0.43
Lane Grp Cap(c), veh/h	217	0	859	64	0	665	330	0	202	312	0	193
V/C Ratio(X)	0.78	0.00	0.40	0.47	0.00	0.49	0.21	0.00	0.17	0.22	0.00	0.04
Avail Cap(c_a), veh/h	231	0	3706	228	0	3494	1234	0	1413	1226	0	1349
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	16.8	0.0	6.7	18.6	0.0	9.1	16.5	0.0	15.9	17.0	0.0	15.6
Incr Delay (d2), s/veh	13.6	0.0	0.1	2.0	0.0	0.2	0.1	0.0	0.1	0.1	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(95%),veh/ln	3.6	0.0	1.9	0.5	0.0	2.5	1.0	0.0	0.5	1.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	0.0	6.8	20.6	0.0	9.3	16.6	0.0	16.0	17.1	0.0	15.6
LnGrp LOS	C	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h	515			358			105			75		
Approach Delay, s/veh	14.6			10.2			16.4			17.0		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	23.5		9.3	9.7	20.2		9.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	6.8		4.5	5.6	7.7		4.0				
Green Ext Time (p_c), s	0.0	0.6		0.0	0.0	0.6		0.1				
Intersection Summary												
HCM 6th Ctrl Delay	13.5											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	450	11	7	310	29	17
Future Vol, veh/h	450	11	7	310	29	17
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	0	0	5	0	0
Mvmt Flow	529	13	8	365	34	20
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	545	0	920	539
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1034	-	303	546
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	695	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1031	-	300	544
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	689	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		16.8	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	360		-	-	1031	-
HCM Lane V/C Ratio	0.15		-	-	0.008	-
HCM Control Delay (s)	16.8		-	-	8.5	-
HCM Lane LOS	C		-	-	A	-
HCM 95th %tile Q(veh)	0.5		-	-	0	-

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	280	388	4	276	14	9	65	4
Future Volume (vph)	280	388	4	276	14	9	65	4
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	31.4	31.8	24.6	18.7	9.3	9.3	9.3	9.3
Actuated g/C Ratio	0.64	0.65	0.50	0.38	0.19	0.19	0.19	0.19
v/c Ratio	0.54	0.38	0.01	0.58	0.07	0.07	0.29	0.32
Control Delay	13.6	10.2	7.5	18.3	18.7	14.5	21.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	10.2	7.5	18.3	18.7	14.5	21.7	7.2
LOS	B	B	A	B	B	B	C	A
Approach Delay		11.7		18.2		16.4		12.4
Approach LOS		B		B		B		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 48.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 13.7

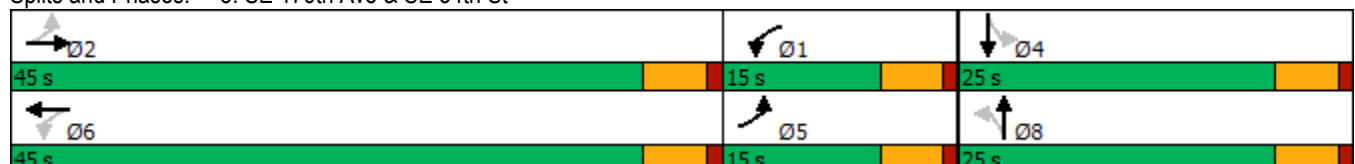
Intersection LOS: B

Intersection Capacity Utilization 56.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	388	2	4	276	59	14	9	8	65	4	109
Future Volume (veh/h)	280	388	2	4	276	59	14	9	8	65	4	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.98		1.00	0.98		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1856	1900	1900	1811	1826	1900	1900	1530	1870	1900	1885
Adj Flow Rate, veh/h	329	456	2	5	325	56	16	11	0	76	5	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	9	3	0	0	6	5	0	0	25	2	0	1
Cap, veh/h	595	709	3	584	580	100	331	203	0	324	203	0
Arrive On Green	0.12	0.38	0.38	0.13	0.39	0.39	0.11	0.11	0.00	0.11	0.11	0.00
Sat Flow, veh/h	1682	1846	8	1810	1503	259	1407	1900	0	1378	1900	0
Grp Volume(v), veh/h	329	0	458	5	0	381	16	11	0	76	5	0
Grp Sat Flow(s),veh/h/ln	1682	0	1854	1810	0	1762	1407	1900	0	1378	1900	0
Q Serve(g_s), s	0.0	0.0	7.9	0.0	0.0	6.6	0.4	0.2	0.0	2.1	0.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	7.9	0.0	0.0	6.6	0.5	0.2	0.0	2.3	0.1	0.0
Prop In Lane	1.00		0.00	1.00		0.15	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	595	0	712	584	0	680	331	203	0	324	203	0
V/C Ratio(X)	0.55	0.00	0.64	0.01	0.00	0.56	0.05	0.05	0.00	0.23	0.02	0.00
Avail Cap(c_a), veh/h	816	0	1895	818	0	1801	900	971	0	881	971	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	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.4	0.0	9.9	9.4	0.0	9.4	15.9	15.7	0.0	16.7	15.7	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.1	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(95%),veh/ln	3.6	0.0	3.8	0.0	0.0	3.0	0.2	0.1	0.0	1.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	0.0	10.2	9.4	0.0	9.7	15.9	15.8	0.0	16.9	15.7	0.0
LnGrp LOS	B	A	B	A	A	A	B	B	A	B	B	A
Approach Vol, veh/h	787		386				27				81	
Approach Delay, s/veh	11.3		9.7				15.8				16.8	
Approach LOS	B		A				B				B	
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	9.9	20.0	9.2		9.9	20.1	9.2					
Change Period (Y+Rc), s	5.0	5.0	5.0		5.0	5.0	5.0					
Max Green Setting (Gmax), s	10.0	40.0	20.0		10.0	40.0	20.0					
Max Q Clear Time (g_c+I1), s	2.0	9.9	4.3		2.0	8.6	2.5					
Green Ext Time (p_c), s	0.0	1.7	0.1		0.3	1.4	0.0					
Intersection Summary												
HCM 6th Ctrl Delay	11.2											
HCM 6th LOS	B											

MOVEMENT SUMMARY

 **Site: 101 [SE 176 Avenue/ SE 29th Street Phase 3 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Phase 3
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	ft				mph
South: SE 176th Avenue															
3	L2	All MCs	5	0.0	5	0.0	0.392	7.2	LOS A	2.3	57.6	0.49	0.29	0.49	32.2
8	T1	All MCs	144	2.0	144	2.0	0.392	7.4	LOS A	2.3	57.6	0.49	0.29	0.49	32.8
18	R2	All MCs	279	0.0	279	0.0	0.392	7.2	LOS A	2.3	57.6	0.49	0.29	0.49	32.6
Approach			427	0.7	427	0.7	0.392	7.3	LOS A	2.3	57.6	0.49	0.29	0.49	32.6
East: SE 29th Street															
1	L2	All MCs	85	0.0	85	0.0	0.338	6.2	LOS A	1.9	48.5	0.40	0.21	0.40	32.2
6	T1	All MCs	259	0.0	259	0.0	0.338	6.2	LOS A	1.9	48.5	0.40	0.21	0.40	32.9
16	R2	All MCs	53	0.0	53	0.0	0.338	6.2	LOS A	1.9	48.5	0.40	0.21	0.40	32.6
Approach			396	0.0	396	0.0	0.338	6.2	LOS A	1.9	48.5	0.40	0.21	0.40	32.7
North: SE 176th Avenue															
7	L2	All MCs	26	88.0	26	88.0	0.322	18.6	LOS C	1.3	38.3	0.55	0.39	0.55	29.3
4	T1	All MCs	104	1.0	104	1.0	0.322	6.5	LOS A	1.3	38.3	0.55	0.39	0.55	32.3
14	R2	All MCs	122	18.0	122	18.0	0.322	8.3	LOS A	1.3	38.3	0.55	0.39	0.55	31.7
Approach			252	18.2	252	18.2	0.322	8.3	LOS A	1.3	38.3	0.55	0.39	0.55	31.7
West: SE 29th Street															
5	L2	All MCs	6	0.0	6	0.0	0.176	4.9	LOS A	0.8	20.5	0.41	0.25	0.41	33.3
2	T1	All MCs	167	0.0	167	0.0	0.176	4.9	LOS A	0.8	20.5	0.41	0.25	0.41	34.0
12	R2	All MCs	15	10.0	15	10.0	0.176	5.8	LOS A	0.8	20.5	0.41	0.25	0.41	33.5
Approach			188	0.8	188	0.8	0.176	4.9	LOS A	0.8	20.5	0.41	0.25	0.41	34.0
All Vehicles			1264	4.0	1264	4.0	0.392	6.9	LOS A	2.3	57.6	0.46	0.28	0.46	32.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Sieglach M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27715 - VIC Implementation\005 - Master Plan Update TIA\Analysis\176th_29th With Project 2038 AM.sip9

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	272	34	76	314	14	50	88	56	0	69	10
Future Vol, veh/h	12	272	34	76	314	14	50	88	56	0	69	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	4	10	4	1	9	4	3	0	0	0	0
Mvmt Flow	13	299	37	84	345	15	55	97	62	0	76	11
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	16.7	16.4	11.9	11.8
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	61%	0%	89%	0%	96%	87%
Vol Right, %	0%	39%	0%	11%	0%	4%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	144	12	306	76	328	79
LT Vol	50	0	12	0	76	0	0
Through Vol	0	88	0	272	0	314	69
RT Vol	0	56	0	34	0	14	10
Lane Flow Rate	55	158	13	336	84	360	87
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.114	0.293	0.024	0.575	0.154	0.604	0.173
Departure Headway (Hd)	7.47	6.666	6.679	6.161	6.62	6.03	7.157
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	477	536	534	582	540	595	497
Service Time	5.249	4.445	4.45	3.931	4.386	3.795	5.253
HCM Lane V/C Ratio	0.115	0.295	0.024	0.577	0.156	0.605	0.175
HCM Control Delay	11.2	12.2	9.6	17	10.6	17.7	11.8
HCM Lane LOS	B	B	A	C	B	C	B
HCM 95th-tile Q	0.4	1.2	0.1	3.6	0.5	4	0.6

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	42	15	46	214	38	162	23	1081	145	792
Future Volume (vph)	42	15	46	214	38	162	23	1081	145	792
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2		1	6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	9.5	39.0	39.0	9.5	38.0	38.0	10.0	32.0	10.0	32.0
Total Split (s)	10.0	25.0	25.0	14.0	29.0	29.0	17.0	44.0	37.0	64.0
Total Split (%)	8.3%	20.8%	20.8%	11.7%	24.2%	24.2%	14.2%	36.7%	30.8%	53.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	15.9	12.0	12.0	23.3	15.2	15.2	5.7	68.0	13.8	80.1
Actuated g/C Ratio	0.13	0.10	0.10	0.19	0.13	0.13	0.05	0.57	0.12	0.67
v/c Ratio	0.22	0.08	0.16	0.90	0.17	0.48	0.28	0.40	0.75	0.26
Control Delay	39.2	47.9	1.2	79.3	46.3	11.2	64.3	7.8	72.3	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	47.9	1.2	79.3	46.3	11.2	64.3	7.8	72.3	9.8
LOS	D	D	A	E	D	B	E	A	E	A
Approach Delay		23.6			49.6			8.9		19.2
Approach LOS		C			D			A		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 19.8

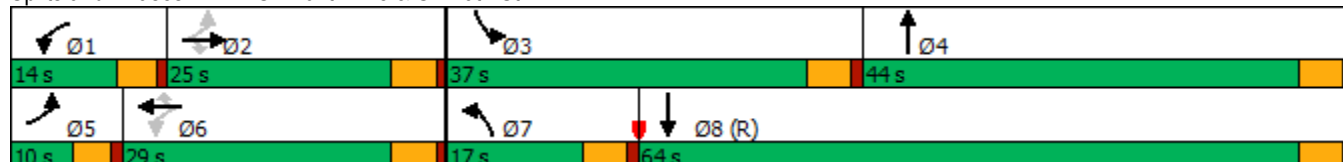
Intersection LOS: B

Intersection Capacity Utilization 61.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	15	46	214	38	162	23	1081	20	145	792	26
Future Volume (veh/h)	42	15	46	214	38	162	23	1081	20	145	792	26
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1856	1870	1870	1900	1900	1870	1796	1885	1856	1826
Adj Flow Rate, veh/h	44	16	2	225	40	14	24	1138	20	153	834	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	3	2	2	0	0	2	7	1	3	5
Cap, veh/h	226	155	128	304	241	207	42	2141	38	180	2485	74
Arrive On Green	0.03	0.08	0.08	0.08	0.13	0.13	0.02	0.41	0.41	0.10	0.49	0.49
Sat Flow, veh/h	1767	1900	1572	1781	1870	1610	1810	5167	91	1795	5054	151
Grp Volume(v), veh/h	44	16	2	225	40	14	24	750	408	153	557	302
Grp Sat Flow(s),veh/h/ln	1767	1900	1572	1781	1870	1610	1810	1702	1854	1795	1689	1828
Q Serve(g_s), s	2.7	0.9	0.1	9.5	2.3	0.9	1.6	19.8	19.9	10.1	12.0	12.1
Cycle Q Clear(g_c), s	2.7	0.9	0.1	9.5	2.3	0.9	1.6	19.8	19.9	10.1	12.0	12.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		0.08
Lane Grp Cap(c), veh/h	226	155	128	304	241	207	42	1410	768	180	1660	899
V/C Ratio(X)	0.19	0.10	0.02	0.74	0.17	0.07	0.58	0.53	0.53	0.85	0.34	0.34
Avail Cap(c_a), veh/h	250	317	262	304	374	322	181	1410	768	479	1660	899
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	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	51.0	50.7	47.7	46.5	45.9	58.0	26.4	26.4	53.1	18.6	18.6
Incr Delay (d2), s/veh	0.4	0.1	0.0	9.3	0.1	0.1	3.6	1.1	2.1	4.3	0.5	1.0
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(95%),veh/ln	2.2	0.8	0.1	4.9	2.0	0.7	1.4	12.1	13.2	8.2	8.2	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	51.1	50.7	57.0	46.7	46.0	61.7	27.5	28.5	57.3	19.1	19.6
LnGrp LOS	D	D	D	E	D	D	E	C	C	E	B	B
Approach Vol, veh/h	62				279				1182			
Approach Delay, s/veh	49.4				54.9				28.5			
Approach LOS	D				D				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	14.8	17.0	54.7	8.3	20.4	7.8	64.0				
Change Period (Y+Rc), s	4.5	5.0	5.0	5.0	4.5	5.0	5.0	5.0				
Max Green Setting (Gmax), s	9.5	20.0	32.0	39.0	5.5	24.0	12.0	59.0				
Max Q Clear Time (g_c+I1), s	11.5	2.9	12.1	21.9	4.7	4.3	3.6	14.1				
Green Ext Time (p_c), s	0.0	0.0	0.1	4.6	0.0	0.1	0.0	3.7				

Intersection Summary

HCM 6th Ctrl Delay	30.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Timings 12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	28	60	165	293	121	99	111	936	449	155	813
Future Volume (vph)	28	60	165	293	121	99	111	936	449	155	813
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	20.0	33.0	20.0	25.0	38.0	17.0	20.0	45.0	25.0	17.0	42.0
Total Split (%)	16.7%	27.5%	16.7%	20.8%	31.7%	14.2%	16.7%	37.5%	20.8%	14.2%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	6.4	8.2	23.0	20.0	23.8	46.4	11.8	56.2	81.2	17.6	62.0
Actuated g/C Ratio	0.05	0.07	0.19	0.17	0.20	0.39	0.10	0.47	0.68	0.15	0.52
v/c Ratio	0.39	0.56	0.53	1.11	0.36	0.16	0.72	0.64	0.42	0.66	0.53
Control Delay	68.3	70.9	31.3	129.9	45.0	4.8	74.0	28.0	2.1	66.0	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	70.9	31.3	129.9	45.0	4.8	74.0	28.0	2.1	66.0	16.8
LOS	E	E	C	F	D	A	E	C	A	E	B
Approach Delay		44.8			85.8			23.7			24.4
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 35.3

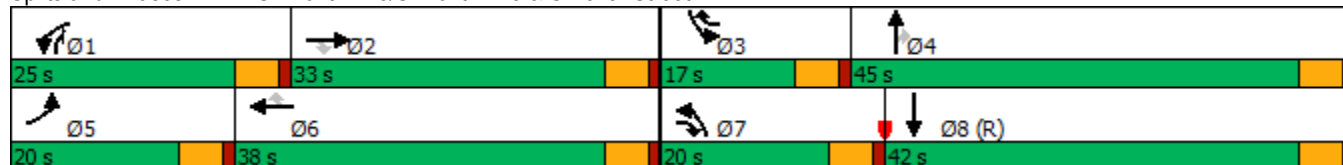
Intersection LOS: D

Intersection Capacity Utilization 70.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave/SE164th Ave & SE 34th Street



HCM 6th Signalized Intersection Summary

12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 3 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	60	165	293	121	99	111	936	449	155	813	37
Future Volume (veh/h)	28	60	165	293	121	99	111	936	449	155	813	37
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1565	1758	1803	1870	1885	1841	1791	1776	1746	1806	1761	1761
Adj Flow Rate, veh/h	31	67	124	326	134	30	123	1040	291	172	903	39
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	19	6	3	2	1	4	1	2	4	0	3	3
Cap, veh/h	40	159	270	297	434	515	147	1125	740	172	1326	57
Arrive On Green	0.03	0.09	0.09	0.17	0.23	0.23	0.09	0.33	0.33	0.10	0.35	0.35
Sat Flow, veh/h	1491	1758	1528	1781	1885	1560	1706	3375	1480	1720	3821	165
Grp Volume(v), veh/h	31	67	124	326	134	30	123	1040	291	172	532	410
Grp Sat Flow(s),veh/h/ln	1491	1758	1528	1781	1885	1560	1706	1687	1480	1720	1127	1732
Q Serve(g_s), s	2.5	4.3	8.7	20.0	7.1	1.6	8.5	35.6	14.7	12.0	24.2	24.3
Cycle Q Clear(g_c), s	2.5	4.3	8.7	20.0	7.1	1.6	8.5	35.6	14.7	12.0	24.2	24.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	40	159	270	297	434	515	147	1125	740	172	782	601
V/C Ratio(X)	0.77	0.42	0.46	1.10	0.31	0.06	0.84	0.92	0.39	1.00	0.68	0.68
Avail Cap(c_a), veh/h	186	410	488	297	518	585	213	1125	740	172	782	601
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93
Uniform Delay (d), s/veh	58.0	51.6	44.2	50.0	38.3	27.4	54.0	38.5	18.7	54.0	33.5	33.5
Incr Delay (d2), s/veh	11.1	0.7	0.5	81.1	0.1	0.0	11.8	13.9	1.6	66.2	4.4	5.7
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(95%),veh/ln	1.9	3.4	5.9	22.8	5.8	1.0	7.3	23.0	8.9	12.8	11.1	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	52.2	44.7	131.1	38.4	27.4	65.8	52.5	20.2	120.2	37.9	39.3
LnGrp LOS	E	D	D	F	D	C	E	D	C	F	D	D
Approach Vol, veh/h		222			490			1454			1114	
Approach Delay, s/veh		50.4			99.4			47.1			51.1	
Approach LOS		D			F			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	15.9	17.0	45.0	8.2	32.7	15.4	46.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	28.0	12.0	40.0	15.0	33.0	15.0	37.0				
Max Q Clear Time (g_c+I1), s	22.0	10.7	14.0	37.6	4.5	9.1	10.5	26.3				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.9	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			56.5									
HCM 6th LOS			E									

Timings

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 3 2038 PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	116	91	40	82	242	84	1345	115	1486
Future Volume (vph)	116	91	40	82	242	84	1345	115	1486
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	15.0	29.0	15.0	29.0	16.0	14.0	40.0	16.0	42.0
Total Split (%)	15.0%	29.0%	15.0%	29.0%	16.0%	14.0%	40.0%	16.0%	42.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	9.0	15.9	6.2	11.1	19.8	7.8	52.2	9.7	56.1
Actuated g/C Ratio	0.09	0.16	0.06	0.11	0.20	0.08	0.52	0.10	0.56
v/c Ratio	0.79	0.62	0.38	0.42	0.67	0.63	0.79	0.69	0.87
Control Delay	78.1	37.0	54.0	45.3	30.4	53.9	25.4	63.7	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.1	37.0	54.0	45.3	30.4	53.9	25.4	63.7	28.9
LOS	E	D	D	D	C	D	C	E	C
Approach Delay		52.7		36.4			27.0		31.2
Approach LOS		D		D			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 31.8

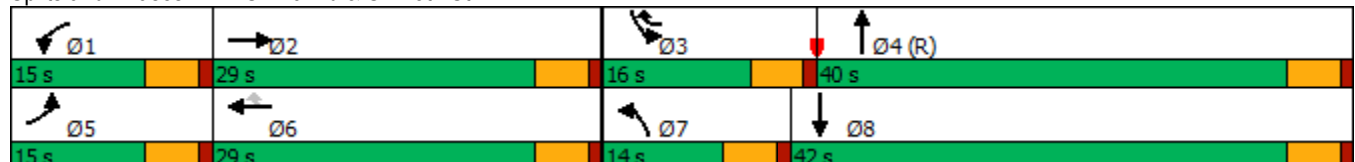
Intersection LOS: C

Intersection Capacity Utilization 81.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 3 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	91	97	40	82	242	84	1345	32	115	1486	133
Future Volume (veh/h)	116	91	97	40	82	242	84	1345	32	115	1486	133
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		0.98	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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1885	1900	1900	1856	1900	1900	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	122	96	58	42	86	192	88	1416	32	121	1564	135
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	1	0	0	3	0	0	2	0	0	2	2
Cap, veh/h	150	204	123	62	248	344	122	1769	40	149	1699	145
Arrive On Green	0.09	0.19	0.19	0.03	0.13	0.13	0.09	0.66	0.66	0.11	0.68	0.68
Sat Flow, veh/h	1739	1100	664	1810	1856	1582	1810	3552	80	1810	3311	283
Grp Volume(v), veh/h	122	0	154	42	86	192	88	708	740	121	833	866
Grp Sat Flow(s),veh/h/ln	1739	0	1764	1810	1856	1582	1810	1777	1856	1810	1777	1818
Q Serve(g_s), s	6.9	0.0	7.8	2.3	4.2	10.8	4.7	28.6	28.7	6.5	39.6	41.3
Cycle Q Clear(g_c), s	6.9	0.0	7.8	2.3	4.2	10.8	4.7	28.6	28.7	6.5	39.6	41.3
Prop In Lane	1.00		0.38	1.00		1.00	1.00		0.04	1.00		0.16
Lane Grp Cap(c), veh/h	150	0	327	62	248	344	122	885	924	149	912	933
V/C Ratio(X)	0.82	0.00	0.47	0.67	0.35	0.56	0.72	0.80	0.80	0.81	0.91	0.93
Avail Cap(c_a), veh/h	174	0	423	181	445	512	163	885	924	199	912	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.19	0.19	0.19	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	36.4	47.7	39.4	35.0	44.6	13.3	13.3	43.8	14.0	14.3
Incr Delay (d2), s/veh	19.5	0.0	0.4	4.6	0.3	0.5	1.1	1.5	1.5	12.5	15.1	16.5
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(95%),veh/ln	6.7	0.0	5.9	2.0	3.5	7.3	3.1	9.8	10.2	5.9	19.5	20.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	36.8	52.4	39.7	35.5	45.7	14.8	14.8	56.3	29.1	30.8
LnGrp LOS	E	A	D	D	D	D	D	B	B	E	C	C
Approach Vol, veh/h	276			320			1536			1820		
Approach Delay, s/veh	49.0			38.8			16.6			31.7		
Approach LOS	D			D			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	23.5	13.2	54.8	13.6	18.4	11.7	56.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	24.0	11.0	35.0	10.0	24.0	9.0	37.0				
Max Q Clear Time (g_c+I1), s	4.3	9.8	8.5	30.7	8.9	12.8	6.7	43.3				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.6	0.0	0.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	27.6											
HCM 6th LOS	C											

Timings
2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	233	183	272	265	148	933	151	1103
Future Volume (vph)	233	183	272	265	148	933	151	1103
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	20.0	27.0	20.0	27.0	14.0	35.0	18.0	39.0
Total Split (%)	20.0%	27.0%	20.0%	27.0%	14.0%	35.0%	18.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	11.3	23.5	12.2	24.4	9.5	32.6	11.7	34.8
Actuated g/C Ratio	0.11	0.24	0.12	0.24	0.10	0.33	0.12	0.35
v/c Ratio	0.62	0.66	0.66	0.88	0.91	1.03	0.75	1.15
Control Delay	49.0	40.2	49.5	56.7	105.2	54.2	61.7	106.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	40.2	49.5	56.7	105.2	54.2	61.7	106.8
LOS	D	D	D	E	F	D	E	F
Approach Delay		44.2		53.7		60.1		102.3
Approach LOS		D		D		E		F

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 93 (93%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 72.9

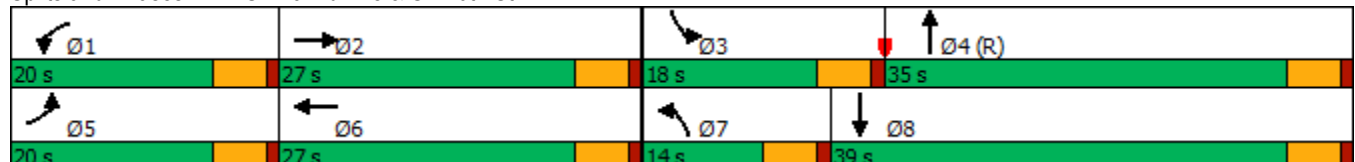
Intersection LOS: E

Intersection Capacity Utilization 90.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: SE 192nd Ave & SE 20th St



HCM 6th Signalized Intersection Summary

2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	183	95	272	265	118	148	933	203	151	1103	237
Future Volume (veh/h)	233	183	95	272	265	118	148	933	203	151	1103	237
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1870	1900	1885	1900	1885	1870	1885
Adj Flow Rate, veh/h	243	191	80	283	276	106	154	972	192	157	1149	228
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	1	0	0	2	0	1	0	1	2	1
Cap, veh/h	316	265	111	355	286	110	163	1146	226	189	1183	233
Arrive On Green	0.09	0.21	0.21	0.10	0.22	0.22	0.09	0.38	0.38	0.14	0.53	0.53
Sat Flow, veh/h	3510	1270	532	3510	1301	500	1810	2981	588	1795	2958	583
Grp Volume(v), veh/h	243	0	271	283	0	382	154	583	581	157	688	689
Grp Sat Flow(s),veh/h/ln	1755	0	1802	1755	0	1801	1810	1791	1778	1795	1777	1764
Q Serve(g_s), s	6.8	0.0	14.0	7.9	0.0	21.0	8.5	29.7	29.8	8.5	37.3	38.1
Cycle Q Clear(g_c), s	6.8	0.0	14.0	7.9	0.0	21.0	8.5	29.7	29.8	8.5	37.3	38.1
Prop In Lane	1.00		0.30	1.00		0.28	1.00		0.33	1.00		0.33
Lane Grp Cap(c), veh/h	316	0	376	355	0	396	163	689	684	189	711	706
V/C Ratio(X)	0.77	0.00	0.72	0.80	0.00	0.96	0.95	0.85	0.85	0.83	0.97	0.98
Avail Cap(c_a), veh/h	527	0	397	527	0	396	163	689	684	233	711	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.40	0.40	0.40
Uniform Delay (d), s/veh	44.5	0.0	36.8	43.9	0.0	38.6	45.3	28.1	28.1	42.1	22.8	22.9
Incr Delay (d2), s/veh	1.5	0.0	5.0	2.9	0.0	35.6	54.0	12.3	12.5	6.7	14.9	16.6
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(95%),veh/ln	5.3	0.0	10.6	6.2	0.0	18.7	10.2	20.5	20.4	5.9	19.1	19.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	41.8	46.8	0.0	74.2	99.2	40.4	40.6	48.8	37.7	39.6
LnGrp LOS	D	A	D	D	A	E	F	D	D	D	D	D
Approach Vol, veh/h		514			665			1318			1534	
Approach Delay, s/veh		43.8			62.6			47.4			39.7	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.1	25.9	15.6	43.4	14.0	27.0	14.0	45.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	22.0	13.0	30.0	15.0	22.0	9.0	34.0				
Max Q Clear Time (g_c+I1), s	9.9	16.0	10.5	31.8	8.8	23.0	10.5	40.1				
Green Ext Time (p_c), s	0.3	0.5	0.0	0.0	0.2	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			46.5									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	1294	3	10	1337
Future Vol, veh/h	3	4	1294	3	10	1337
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	1362	3	11	1407
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2092	685	0	0	1367	0
Stage 1	1366	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	46	395	-	-	509	-
Stage 1	206	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	45	394	-	-	508	-
Mov Cap-2 Maneuver	45	-	-	-	-	-
Stage 1	206	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	47.1	0		0.1		
HCM LOS	E					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)		-	-	45 394	508	-
HCM Lane V/C Ratio		-	-	0.07 0.011	0.021	-
HCM Control Delay (s)		-	-	91 14.2	12.2	-
HCM Lane LOS		-	-	F B	B	-
HCM 95th %tile Q(veh)		-	-	0.2 0	0.1	-

Timings
4: SE 192nd Ave & SE 29th St

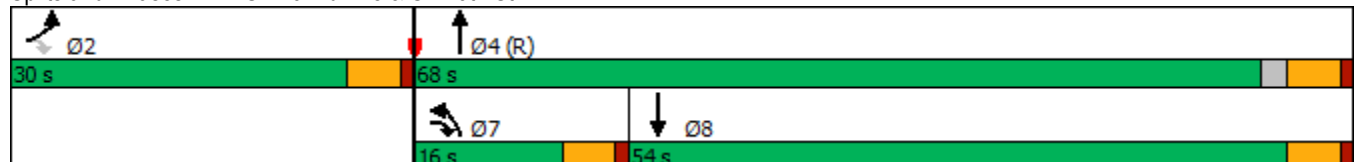
Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	131	45	55	1166	1239
Future Volume (vph)	131	45	55	1166	1239
Turn Type	Prot	pm+ov	Prot	NA	NA
Protected Phases	2	7	7	4	8
Permitted Phases		2			
Detector Phase	2	7	7	4	8
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	10.0	10.0	26.0	26.0
Total Split (s)	30.0	16.0	16.0	68.0	54.0
Total Split (%)	30.0%	16.0%	16.0%	68.0%	54.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	Max	None	None	C-Max	None
Act Effect Green (s)	25.0	38.5	8.5	65.0	53.6
Actuated g/C Ratio	0.25	0.38	0.08	0.65	0.54
v/c Ratio	0.32	0.08	0.40	0.53	0.75
Control Delay	33.0	9.9	68.8	4.6	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	9.9	68.8	4.6	23.2
LOS	C	A	E	A	C
Approach Delay	27.1			7.5	23.2
Approach LOS	C			A	C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 45 (45%), Referenced to phase 4:NBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 16.4
 Intersection LOS: B
 Intersection Capacity Utilization 61.3%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 4: SE 192nd Ave & SE 29th St



HCM 6th Signalized Intersection Summary

4: SE 192nd Ave & SE 29th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (veh/h)	131	45	55	1166	1239	101
Future Volume (veh/h)	131	45	55	1166	1239	101
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1826	1826	1885	1885	1826
Adj Flow Rate, veh/h	138	47	58	1227	1304	100
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	5	5	1	1	5
Cap, veh/h	442	453	74	2328	1880	144
Arrive On Green	0.25	0.25	0.08	1.00	0.56	0.56
Sat Flow, veh/h	1767	1547	1739	3676	3466	258
Grp Volume(v), veh/h	138	47	58	1227	691	713
Grp Sat Flow(s),veh/h/ln	1767	1547	1739	1791	1791	1839
Q Serve(g_s), s	6.4	2.2	3.3	0.0	27.8	28.0
Cycle Q Clear(g_c), s	6.4	2.2	3.3	0.0	27.8	28.0
Prop In Lane	1.00	1.00	1.00			0.14
Lane Grp Cap(c), veh/h	442	453	74	2328	998	1025
V/C Ratio(X)	0.31	0.10	0.78	0.53	0.69	0.70
Avail Cap(c_a), veh/h	442	453	191	2328	998	1025
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.49	0.49	1.00	1.00
Uniform Delay (d), s/veh	30.5	25.8	45.3	0.0	15.9	16.0
Incr Delay (d2), s/veh	1.8	0.5	8.6	0.4	2.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	4.1	2.7	0.2	16.0	16.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.3	26.3	53.9	0.4	18.0	18.1
LnGrp LOS	C	C	D	A	B	B
Approach Vol, veh/h	185			1285	1404	
Approach Delay, s/veh	30.8			2.8	18.0	
Approach LOS	C			A	B	
Timer - Assigned Phs	2		4		7	8
Phs Duration (G+Y+Rc), s	30.0		70.0		9.2	60.8
Change Period (Y+Rc), s	5.0		5.0		5.0	5.0
Max Green Setting (Gmax), s	25.0		63.0		11.0	49.0
Max Q Clear Time (g_c+I1), s	8.4		2.0		5.3	30.0
Green Ext Time (p_c), s	0.5		11.8		0.0	9.2
Intersection Summary						
HCM 6th Ctrl Delay			12.1			
HCM 6th LOS			B			

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	191	254	355	220	124	139	1006	204	221	968
Future Volume (vph)	191	254	355	220	124	139	1006	204	221	968
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	14.0	32.0	19.0	37.0	37.0	13.0	34.0	19.0	15.0	36.0
Total Split (%)	14.0%	32.0%	19.0%	37.0%	37.0%	13.0%	34.0%	19.0%	15.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	33.3	24.8	43.8	30.2	30.2	9.3	31.2	45.2	10.0	32.0
Actuated g/C Ratio	0.33	0.25	0.44	0.30	0.30	0.09	0.31	0.45	0.10	0.32
v/c Ratio	0.47	0.93	1.14	0.40	0.21	0.86	0.94	0.26	0.68	1.05
Control Delay	22.4	62.2	118.0	29.7	2.0	88.2	51.5	2.1	73.0	87.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	62.2	118.0	29.7	2.0	88.2	51.5	2.1	73.0	87.9
LOS	C	E	F	C	A	F	D	A	E	F
Approach Delay		49.4		69.6			47.8			85.4
Approach LOS		D		E			D			F

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 36 (36%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 64.4

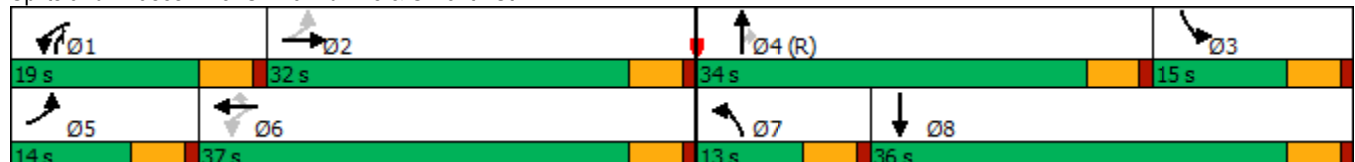
Intersection LOS: E

Intersection Capacity Utilization 97.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	254	145	355	220	124	139	1006	204	221	968	135
Future Volume (veh/h)	191	254	145	355	220	124	139	1006	204	221	968	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1847	1817	2003	2003	2018	2018	1988	2003	1847	1832	1817
Adj Flow Rate, veh/h	201	267	131	374	232	32	146	1059	90	233	1019	130
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	2	1	1	0	0	2	1	0	1	2
Cap, veh/h	451	289	142	365	598	509	154	1095	726	415	1027	131
Arrive On Green	0.09	0.25	0.25	0.14	0.30	0.30	0.08	0.29	0.29	0.12	0.33	0.33
Sat Flow, veh/h	1731	1163	570	1908	2003	1705	1922	3777	1683	3413	3099	395
Grp Volume(v), veh/h	201	0	398	374	232	32	146	1059	90	233	572	577
Grp Sat Flow(s),veh/h/ln	1731	0	1733	1908	2003	1705	1922	1889	1683	1706	1741	1753
Q Serve(g_s), s	8.7	0.0	22.4	14.0	9.2	0.9	7.6	27.7	1.7	6.4	32.7	32.8
Cycle Q Clear(g_c), s	8.7	0.0	22.4	14.0	9.2	0.9	7.6	27.7	1.7	6.4	32.7	32.8
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	451	0	431	365	598	509	154	1095	726	415	577	581
V/C Ratio(X)	0.45	0.00	0.92	1.02	0.39	0.06	0.95	0.97	0.12	0.56	0.99	0.99
Avail Cap(c_a), veh/h	451	0	468	365	641	546	154	1095	726	415	577	581
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)	0.79	0.00	0.79	1.00	1.00	1.00	1.00	1.00	1.00	0.62	0.62	0.62
Uniform Delay (d), s/veh	24.9	0.0	36.7	25.2	27.8	11.7	45.8	35.0	6.3	41.4	33.3	33.3
Incr Delay (d2), s/veh	0.2	0.0	18.8	53.7	0.2	0.0	57.0	20.3	0.4	0.7	27.5	27.7
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(95%),veh/ln	6.1	0.0	16.2	17.1	7.7	0.9	9.9	21.5	1.4	4.8	22.8	23.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	0.0	55.5	78.8	28.0	11.8	102.8	55.3	6.6	42.1	60.8	61.0
LnGrp LOS	C	A	E	F	C	B	F	E	A	D	E	E
Approach Vol, veh/h	599			638			1295			1382		
Approach Delay, s/veh	45.3			57.0			57.3			57.7		
Approach LOS	D			E			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	29.8	17.2	34.0	14.0	34.8	13.0	38.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.0	27.0	10.0	29.0	9.0	32.0	8.0	31.0				
Max Q Clear Time (g_c+I1), s	16.0	24.4	8.4	29.7	10.7	11.2	9.6	34.8				
Green Ext Time (p_c), s	0.0	0.3	0.0	0.0	0.0	0.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 55.6

HCM 6th LOS E

Notes

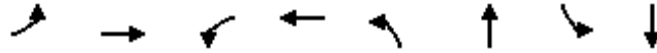
User approved pedestrian interval to be less than phase max green.

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Phase 3 2038 PM Peak Hour Conditions



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	74	307	37	334	71	17	250	37
Future Volume (vph)	74	307	37	334	71	17	250	37
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	30.0	10.0	30.0	32.0	32.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effect Green (s)	5.2	29.0	5.2	24.0	17.8	17.8	17.8	17.8
Actuated g/C Ratio	0.08	0.46	0.08	0.38	0.28	0.28	0.28	0.28
v/c Ratio	0.53	0.49	0.27	0.77	0.26	0.11	0.71	0.38
Control Delay	47.8	15.9	37.5	24.9	21.5	10.3	32.9	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	15.9	37.5	24.9	21.5	10.3	32.9	8.1
LOS	D	B	D	C	C	B	C	A
Approach Delay		21.0		25.7		16.9		21.6
Approach LOS		C		C		B		C

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 62.6

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 22.5

Intersection LOS: C

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

10 s	85 s	35 s
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	307	80	37	334	167	71	17	32	250	37	173
Future Volume (veh/h)	74	307	80	37	334	167	71	17	32	250	37	173
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1870	1841	1832	1847	1876	1817	1876	1832	1841	1900	1900
Adj Flow Rate, veh/h	79	327	74	39	355	156	76	18	7	266	39	53
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, %	0	2	4	3	2	0	4	0	3	4	0	0
Cap, veh/h	126	548	124	75	419	184	424	323	126	487	183	249
Arrive On Green	0.07	0.37	0.37	0.04	0.35	0.35	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1810	1474	333	1745	1213	533	1263	1285	500	1359	728	989
Grp Volume(v), veh/h	79	0	401	39	0	511	76	0	25	266	0	92
Grp Sat Flow(s),veh/h/ln	1810	0	1807	1745	0	1745	1263	0	1784	1359	0	1717
Q Serve(g_s), s	1.9	0.0	8.0	1.0	0.0	12.2	2.3	0.0	0.5	8.3	0.0	1.9
Cycle Q Clear(g_c), s	1.9	0.0	8.0	1.0	0.0	12.2	4.2	0.0	0.5	8.8	0.0	1.9
Prop In Lane	1.00		0.18	1.00		0.31	1.00		0.28	1.00		0.58
Lane Grp Cap(c), veh/h	126	0	672	75	0	603	424	0	448	487	0	432
V/C Ratio(X)	0.63	0.00	0.60	0.52	0.00	0.85	0.18	0.00	0.06	0.55	0.00	0.21
Avail Cap(c_a), veh/h	201	0	3217	194	0	3107	950	0	1191	1053	0	1146
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	20.3	0.0	11.4	21.1	0.0	13.6	15.0	0.0	12.8	16.1	0.0	13.3
Incr Delay (d2), s/veh	1.9	0.0	0.3	2.1	0.0	1.3	0.1	0.0	0.0	0.4	0.0	0.1
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(95%),veh/ln	1.3	0.0	4.3	0.7	0.0	6.7	1.1	0.0	0.3	4.1	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	11.7	23.1	0.0	14.9	15.0	0.0	12.8	16.5	0.0	13.4
LnGrp LOS	C	A	B	C	A	B	B	A	B	B	A	B
Approach Vol, veh/h	480			550			101			358		
Approach Delay, s/veh	13.4			15.5			14.5			15.7		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	21.7		16.3	8.1	20.5		16.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	3.0	10.0		10.8	3.9	14.2		6.2				
Green Ext Time (p_c), s	0.0	0.3		0.1	0.0	0.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	14.8											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	454	32	16	563	18	7
Future Vol, veh/h	454	32	16	563	18	7
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	499	35	18	619	20	8
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	534	0	1172	518
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	655	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1044	-	215	562
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1044	-	211	561
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	512	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.2		20.7		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	256	-	-	1044	-	
HCM Lane V/C Ratio	0.107	-	-	0.017	-	
HCM Control Delay (s)	20.7	-	-	8.5	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	207	387	18	443	10	10	93	21
Future Volume (vph)	207	387	18	443	10	10	93	21
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	35.3	34.1	29.8	23.4	10.2	10.2	10.2	10.2
Actuated g/C Ratio	0.61	0.59	0.52	0.41	0.18	0.18	0.18	0.18
v/c Ratio	0.52	0.40	0.04	0.81	0.06	0.06	0.41	0.48
Control Delay	18.1	11.0	7.5	25.4	23.4	18.4	28.2	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	11.0	7.5	25.4	23.4	18.4	28.2	9.7
LOS	B	B	A	C	C	B	C	A
Approach Delay		13.4		24.9		20.3		15.7
Approach LOS		B		C		C		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 57.6

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 18.4

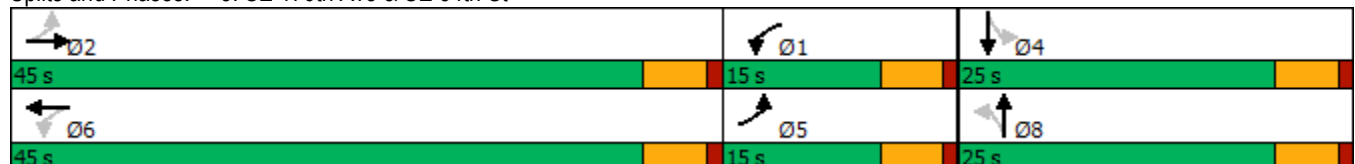
Intersection LOS: B

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	207	387	13	18	443	120	10	10	6	93	21	174
Future Volume (veh/h)	207	387	13	18	443	120	10	10	6	93	21	174
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		0.97
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1870	1900	1900	1885	1885	1900	1900	1900	1885	1900	1900
Adj Flow Rate, veh/h	225	421	13	20	482	115	11	11	0	101	23	18
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, %	1	2	0	0	1	1	0	0	0	1	0	0
Cap, veh/h	449	671	21	614	591	141	305	215	0	330	110	86
Arrive On Green	0.11	0.37	0.37	0.14	0.40	0.40	0.11	0.11	0.00	0.11	0.11	0.11
Sat Flow, veh/h	1795	1805	56	1810	1471	351	1382	1900	0	1409	975	763
Grp Volume(v), veh/h	225	0	434	20	0	597	11	11	0	101	0	41
Grp Sat Flow(s),veh/h/ln	1795	0	1860	1810	0	1822	1382	1900	0	1409	0	1738
Q Serve(g_s), s	0.0	0.0	7.7	0.0	0.0	11.8	0.3	0.2	0.0	2.8	0.0	0.9
Cycle Q Clear(g_c), s	0.0	0.0	7.7	0.0	0.0	11.8	1.2	0.2	0.0	3.0	0.0	0.9
Prop In Lane	1.00		0.03	1.00		0.19	1.00		0.00	1.00		0.44
Lane Grp Cap(c), veh/h	449	0	691	614	0	732	305	215	0	330	0	196
V/C Ratio(X)	0.50	0.00	0.63	0.03	0.00	0.82	0.04	0.05	0.00	0.31	0.00	0.21
Avail Cap(c_a), veh/h	689	0	1843	802	0	1806	834	941	0	869	0	861
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	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	10.4	9.4	0.0	10.8	16.8	16.0	0.0	17.3	0.0	16.3
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.0	0.0	0.9	0.0	0.0	0.0	0.2	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(95%),veh/ln	2.7	0.0	3.9	0.2	0.0	5.7	0.2	0.1	0.0	1.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	10.7	9.4	0.0	11.6	16.8	16.0	0.0	17.5	0.0	16.5
LnGrp LOS	B	A	B	A	A	B	B	B	A	B	A	B
Approach Vol, veh/h	659			617			22			142		
Approach Delay, s/veh	12.4			11.5			16.4			17.2		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	20.0		9.6	9.6	21.2		9.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	9.7		5.0	2.0	13.8		3.2				
Green Ext Time (p_c), s	0.0	1.6		0.2	0.2	2.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay 12.6
HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

MOVEMENT SUMMARY

 **Site: 101 [SE 176 Avenue/ SE 29th Street Phase 3 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Phase 3
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Queue	Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] ft				mph
South: SE 176th Avenue															
3	L2	All MCs	16	15.0	16	15.0	0.336	7.9	LOS A	1.9	46.6	0.45	0.27	0.45	32.1
8	T1	All MCs	267	0.0	267	0.0	0.336	6.5	LOS A	1.9	46.6	0.45	0.27	0.45	33.2
18	R2	All MCs	87	0.0	87	0.0	0.336	6.5	LOS A	1.9	46.6	0.45	0.27	0.45	32.9
Approach			370	0.7	370	0.7	0.336	6.5	LOS A	1.9	46.6	0.45	0.27	0.45	33.1
East: SE 29th Street															
1	L2	All MCs	197	0.0	197	0.0	0.594	11.4	LOS B	6.0	151.1	0.71	0.58	0.94	29.8
6	T1	All MCs	354	0.0	354	0.0	0.594	11.4	LOS B	6.0	151.1	0.71	0.58	0.94	30.3
16	R2	All MCs	47	0.0	47	0.0	0.594	11.4	LOS B	6.0	151.1	0.71	0.58	0.94	30.1
Approach			598	0.0	598	0.0	0.594	11.4	LOS B	6.0	151.1	0.71	0.58	0.94	30.1
North: SE 176th Avenue															
7	L2	All MCs	51	0.0	51	0.0	0.325	8.5	LOS A	1.5	38.0	0.65	0.54	0.65	31.2
4	T1	All MCs	86	1.0	86	1.0	0.325	8.6	LOS A	1.5	38.0	0.65	0.54	0.65	31.8
14	R2	All MCs	113	0.0	113	0.0	0.325	8.5	LOS A	1.5	38.0	0.65	0.54	0.65	31.6
Approach			249	0.3	249	0.3	0.325	8.5	LOS A	1.5	38.0	0.65	0.54	0.65	31.6
West: SE 29th Street															
5	L2	All MCs	22	7.0	22	7.0	0.199	6.3	LOS A	0.9	23.1	0.48	0.34	0.48	32.6
2	T1	All MCs	139	0.0	139	0.0	0.199	5.5	LOS A	0.9	23.1	0.48	0.34	0.48	33.5
12	R2	All MCs	33	0.0	33	0.0	0.199	5.5	LOS A	0.9	23.1	0.48	0.34	0.48	33.2
Approach			194	0.8	194	0.8	0.199	5.6	LOS A	0.9	23.1	0.48	0.34	0.48	33.3
All Vehicles			1411	0.3	1411	0.3	0.594	8.8	LOS A	6.0	151.1	0.60	0.46	0.70	31.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Sieglach M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27715 - VIC Implementation\005 - Master Plan Update TIA\Analysis\176th_29th With Project 2038 PM.sip9

Intersection	
Intersection Delay, s/veh	92.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	466	73	93	503	18	50	135	76	27	96	28
Future Vol, veh/h	48	466	73	93	503	18	50	135	76	27	96	28
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
Heavy Vehicles, %	3	0	0	1	0	7	0	1	0	4	1	8
Mvmt Flow	52	507	79	101	547	20	54	147	83	29	104	30
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	127.4	107.5	19.7	19.8
HCM LOS	F	F	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	18%
Vol Thru, %	0%	64%	0%	86%	0%	97%	64%
Vol Right, %	0%	36%	0%	14%	0%	3%	19%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	211	48	539	93	521	151
LT Vol	50	0	48	0	93	0	27
Through Vol	0	135	0	466	0	503	96
RT Vol	0	76	0	73	0	18	28
Lane Flow Rate	54	229	52	586	101	566	164
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.136	0.525	0.117	1.208	0.224	1.171	0.413
Departure Headway (Hd)	9.732	8.962	8.503	7.834	8.481	7.92	9.988
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	371	406	424	469	426	464	363
Service Time	7.432	6.662	6.203	5.534	6.181	5.62	7.988
HCM Lane V/C Ratio	0.146	0.564	0.123	1.249	0.237	1.22	0.452
HCM Control Delay	14	21.1	12.3	137.6	13.6	124.3	19.8
HCM Lane LOS	B	C	B	F	B	F	C
HCM 95th-tile Q	0.5	3	0.4	21.6	0.8	19.8	2

Timings
11: SE 164th Ave & SE 29th St

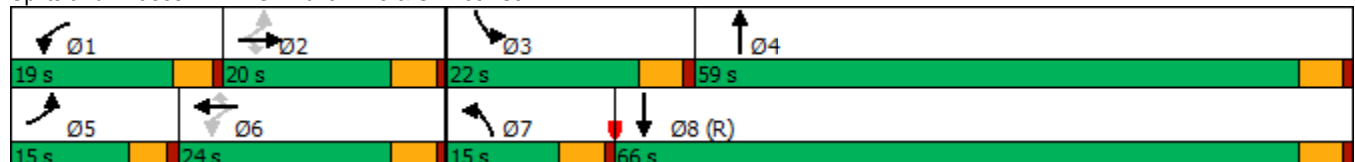
Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	89	51	51	287	38	193	42	1419	151	1304
Future Volume (vph)	89	51	51	287	38	193	42	1419	151	1304
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2		1	6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	9.5	39.0	39.0	9.5	38.0	38.0	10.0	32.0	19.5	32.0
Total Split (s)	15.0	20.0	20.0	19.0	24.0	24.0	15.0	59.0	22.0	66.0
Total Split (%)	12.5%	16.7%	16.7%	15.8%	20.0%	20.0%	12.5%	49.2%	18.3%	55.0%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	18.9	11.0	11.0	28.7	14.5	14.5	6.3	63.6	12.9	72.1
Actuated g/C Ratio	0.16	0.09	0.09	0.24	0.12	0.12	0.05	0.53	0.11	0.60
v/c Ratio	0.37	0.31	0.19	0.91	0.18	0.55	0.49	0.57	0.83	0.94
Control Delay	40.8	55.3	1.5	74.3	48.1	12.4	51.0	35.3	84.5	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	55.3	1.5	74.3	48.1	12.4	51.0	35.3	84.5	36.2
LOS	D	E	A	E	D	B	D	D	F	D
Approach Delay		34.1			49.3			35.7		41.1
Approach LOS		C			D			D		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 112 (93%), Referenced to phase 8:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 39.7
 Intersection Capacity Utilization 72.0%
 Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	51	51	287	38	193	42	1419	36	151	1304	46
Future Volume (veh/h)	89	51	51	287	38	193	42	1419	36	151	1304	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1826	1870	1752	1885	1885	1900
Adj Flow Rate, veh/h	94	54	1	302	40	17	44	1494	36	159	1373	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	2	2	2	5	2	10	1	1	0
Cap, veh/h	287	163	137	355	273	230	56	2308	56	186	1794	61
Arrive On Green	0.06	0.09	0.09	0.12	0.15	0.15	0.03	0.45	0.45	0.10	0.52	0.52
Sat Flow, veh/h	1810	1900	1599	1781	1870	1579	1739	5128	124	1795	3443	118
Grp Volume(v), veh/h	94	54	1	302	40	17	44	992	538	159	677	743
Grp Sat Flow(s), veh/h/ln	1810	1900	1599	1781	1870	1579	1739	1702	1848	1795	848	1864
Q Serve(g_s), s	5.6	3.2	0.1	14.5	2.2	1.1	3.0	27.1	27.1	10.5	38.1	38.1
Cycle Q Clear(g_c), s	5.6	3.2	0.1	14.5	2.2	1.1	3.0	27.1	27.1	10.5	38.1	38.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	287	163	137	355	273	230	56	1532	832	186	884	972
V/C Ratio(X)	0.33	0.33	0.01	0.85	0.15	0.07	0.79	0.65	0.65	0.86	0.77	0.77
Avail Cap(c_a), veh/h	335	238	200	355	296	250	145	1532	832	254	884	972
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	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	51.6	50.2	45.1	44.7	44.3	57.7	25.6	25.6	52.9	22.9	22.9
Incr Delay (d2), s/veh	0.7	0.4	0.0	17.6	0.1	0.0	6.3	1.5	2.8	14.6	6.3	5.7
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(95%),veh/ln	4.7	2.8	0.0	6.6	1.9	0.8	2.5	15.3	16.8	9.2	12.5	23.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.7	52.0	50.2	62.7	44.8	44.3	64.0	27.1	28.4	67.5	29.1	28.6
LnGrp LOS	D	D	D	E	D	D	E	C	C	E	C	C
Approach Vol, veh/h		149			359			1574			1579	
Approach Delay, s/veh		48.7			59.9			28.6			32.8	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	15.3	17.4	59.0	11.8	22.5	8.9	67.5				
Change Period (Y+Rc), s	4.5	5.0	5.0	5.0	4.5	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.5	15.0	17.0	54.0	10.5	19.0	10.0	61.0				
Max Q Clear Time (g_c+I1), s	16.5	5.2	12.5	29.1	7.6	4.2	5.0	40.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay	34.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Timings
12: SE 164th Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	49	102	194	287	136	232	192	1220	405	162	1419
Future Volume (vph)	49	102	194	287	136	232	192	1220	405	162	1419
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	15.0	33.0	20.0	17.0	35.0	20.0	20.0	50.0	17.0	20.0	50.0
Total Split (%)	12.5%	27.5%	16.7%	14.2%	29.2%	16.7%	16.7%	41.7%	14.2%	16.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	7.3	10.7	34.0	12.0	17.5	37.8	18.3	62.0	79.0	15.3	59.0
Actuated g/C Ratio	0.06	0.09	0.28	0.10	0.15	0.32	0.15	0.52	0.66	0.13	0.49
v/c Ratio	0.51	0.66	0.41	1.69	0.54	0.43	0.74	0.70	0.36	0.75	0.86
Control Delay	71.7	71.0	24.2	366.8	56.2	20.7	64.4	26.0	3.7	67.8	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	71.0	24.2	366.8	56.2	20.7	64.4	26.0	3.7	67.8	25.4
LOS	E	E	C	F	E	C	E	C	A	E	C
Approach Delay		44.8			179.6			25.1			29.6
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.69

Intersection Signal Delay: 51.1

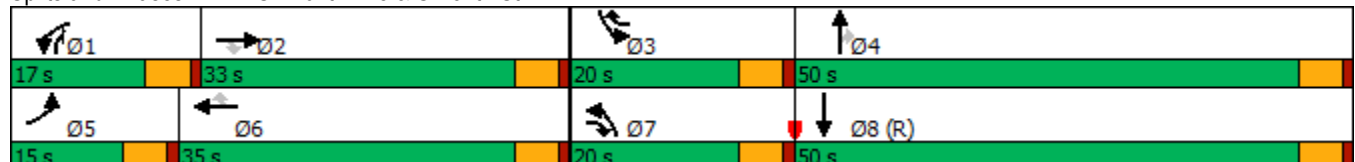
Intersection LOS: D

Intersection Capacity Utilization 80.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave & SE 34th St



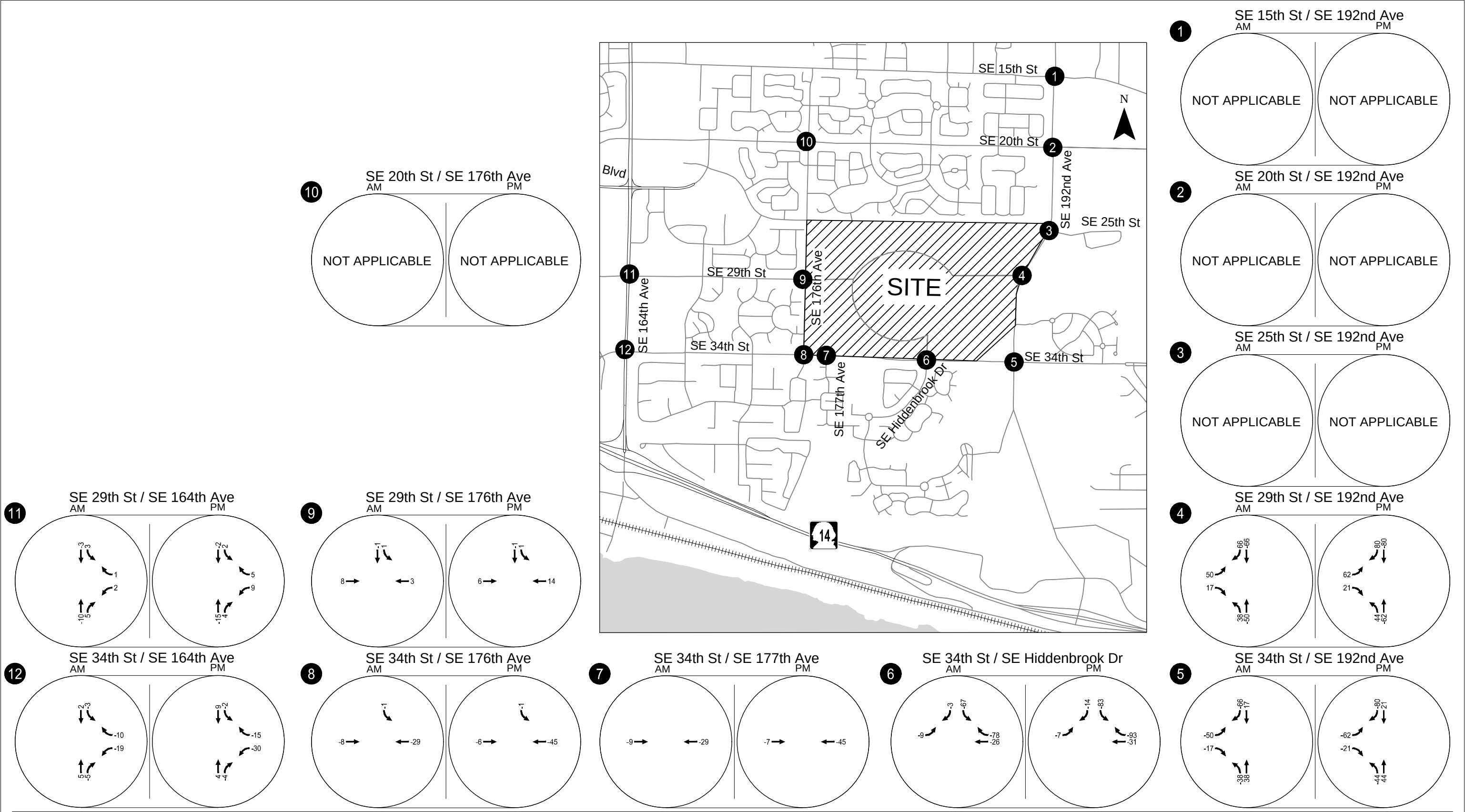
HCM 6th Signalized Intersection Summary

12: SE 164th Ave & SE 34th St

Vancouver Innovation Center
Phase 3 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	102	194	287	136	232	192	1220	405	162	1419	49
Future Volume (veh/h)	49	102	194	287	136	232	192	1220	405	162	1419	49
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1826	1885	1870	1841	1856	1885	1870	1885	1870	1870	1841
Adj Flow Rate, veh/h	51	106	152	299	142	167	200	1271	291	169	1478	49
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	5	1	2	4	3	1	2	1	2	2	4
Cap, veh/h	64	183	359	178	298	427	224	1387	783	195	1552	51
Arrive On Green	0.04	0.10	0.10	0.10	0.16	0.16	0.13	0.39	0.39	0.11	0.38	0.38
Sat Flow, veh/h	1682	1826	1598	1781	1841	1572	1795	3554	1598	1781	4140	137
Grp Volume(v), veh/h	51	106	152	299	142	167	200	1271	291	169	868	659
Grp Sat Flow(s),veh/h/ln	1682	1826	1598	1781	1841	1572	1795	1777	1598	1781	1216	1846
Q Serve(g_s), s	3.6	6.7	9.8	12.0	8.4	10.4	13.2	40.7	13.6	11.2	41.6	41.6
Cycle Q Clear(g_c), s	3.6	6.7	9.8	12.0	8.4	10.4	13.2	40.7	13.6	11.2	41.6	41.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	64	183	359	178	298	427	224	1387	783	195	912	692
V/C Ratio(X)	0.79	0.58	0.42	1.68	0.48	0.39	0.89	0.92	0.37	0.86	0.95	0.95
Avail Cap(c_a), veh/h	140	426	572	178	460	566	224	1387	783	223	912	692
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30	0.30	0.30
Uniform Delay (d), s/veh	57.2	51.6	39.8	54.0	45.7	35.6	51.7	34.7	19.1	52.5	36.5	36.5
Incr Delay (d2), s/veh	7.9	1.1	0.3	328.6	0.4	0.2	31.8	11.0	1.4	8.6	8.4	10.4
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(95%),veh/ln	3.0	5.5	6.9	34.2	6.9	7.1	12.4	26.0	8.9	7.5	16.1	23.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	52.7	40.1	382.6	46.1	35.8	83.5	45.7	20.4	61.2	44.9	46.9
LnGrp LOS	E	D	D	F	D	D	F	D	C	E	D	D
Approach Vol, veh/h	309			608			1762			1696		
Approach Delay, s/veh	48.6			208.8			45.8			47.3		
Approach LOS	D			F			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	17.0	18.2	51.8	9.6	24.4	20.0	50.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	28.0	15.0	45.0	10.0	30.0	15.0	45.0				
Max Q Clear Time (g_c+I1), s	14.0	11.8	13.2	42.7	5.6	12.4	15.2	43.6				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.1	0.0	0.3	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	69.2											
HCM 6th LOS	E											

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Redistributed Baseline Traffic Volumes - SE 29th St Eastern Connection
Weekday AM & PM Peak Hour
Vancouver, WA

Figure
H-1

Appendix I 2038 With-Project Phase 4
Buildout Operations
Worksheets

Timings

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 4 2038 AM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	156	45	29	64	158	69	1025	89	920
Future Volume (vph)	156	45	29	64	158	69	1025	89	920
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	20.0	29.0	20.0	29.0	14.0	15.0	37.0	14.0	36.0
Total Split (%)	20.0%	29.0%	20.0%	29.0%	14.0%	15.0%	37.0%	14.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	12.4	18.7	5.9	10.2	22.0	7.7	50.6	8.8	53.7
Actuated g/C Ratio	0.12	0.19	0.06	0.10	0.22	0.08	0.51	0.09	0.54
v/c Ratio	0.80	0.31	0.32	0.38	0.43	0.57	0.66	0.69	0.63
Control Delay	67.8	18.5	53.4	45.3	18.0	60.6	24.5	69.1	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	18.5	53.4	45.3	18.0	60.6	24.5	69.1	22.9
LOS	E	B	D	D	B	E	C	E	C
Approach Delay		48.3		29.0			26.8		26.7
Approach LOS		D		C			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 9 (9%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 29.0

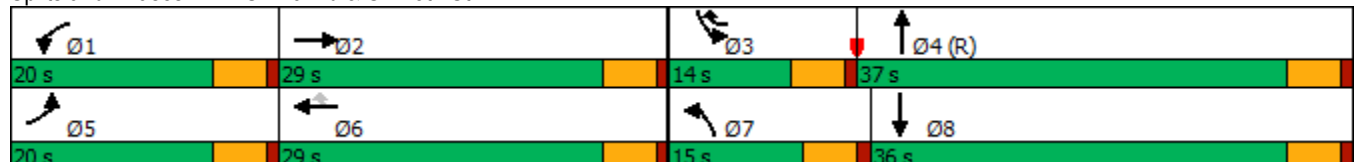
Intersection LOS: C

Intersection Capacity Utilization 61.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 4 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	45	57	29	64	158	69	1025	16	89	920	87
Future Volume (veh/h)	156	45	57	29	64	158	69	1025	16	89	920	87
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1796	1781	1841	1870	1856	1841	1900	1737	1767	1856
Adj Flow Rate, veh/h	173	50	9	32	71	100	77	1139	17	99	1022	91
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	7	8	4	2	3	4	0	11	9	3
Cap, veh/h	204	258	46	50	145	242	109	1877	28	122	1697	151
Arrive On Green	0.12	0.16	0.16	0.03	0.08	0.08	0.12	1.00	1.00	0.07	0.54	0.54
Sat Flow, veh/h	1767	1567	282	1697	1841	1585	1767	3526	53	1654	3117	277
Grp Volume(v), veh/h	173	0	59	32	71	100	77	565	591	99	550	563
Grp Sat Flow(s),veh/h/ln	1767	0	1849	1697	1841	1585	1767	1749	1830	1654	1678	1716
Q Serve(g_s), s	9.6	0.0	2.8	1.9	3.7	5.7	4.2	0.0	0.0	5.9	22.2	22.2
Cycle Q Clear(g_c), s	9.6	0.0	2.8	1.9	3.7	5.7	4.2	0.0	0.0	5.9	22.2	22.2
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.03	1.00		0.16
Lane Grp Cap(c), veh/h	204	0	304	50	145	242	109	931	974	122	913	934
V/C Ratio(X)	0.85	0.00	0.19	0.64	0.49	0.41	0.70	0.61	0.61	0.81	0.60	0.60
Avail Cap(c_a), veh/h	265	0	444	254	442	498	177	931	974	149	913	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	0.0	36.1	48.0	44.2	38.3	42.9	0.0	0.0	45.6	15.4	15.5
Incr Delay (d2), s/veh	14.7	0.0	0.1	5.0	1.0	0.4	2.2	2.1	2.0	19.5	2.9	2.9
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(95%),veh/ln	8.5	0.0	2.2	1.5	3.1	3.9	3.2	1.0	1.0	5.4	13.1	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	0.0	36.2	53.0	45.1	38.8	45.1	2.1	2.0	65.1	18.4	18.3
LnGrp LOS	E	A	D	D	D	D	D	A	A	E	B	B
Approach Vol, veh/h		232			203			1233			1212	
Approach Delay, s/veh		52.5			43.2			4.7			22.2	
Approach LOS		D			D			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	21.4	12.4	58.2	16.5	12.9	11.2	59.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	24.0	9.0	32.0	15.0	24.0	10.0	31.0				
Max Q Clear Time (g_c+I1), s	3.9	4.8	7.9	2.0	11.6	7.7	6.2	24.2				
Green Ext Time (p_c), s	0.0	0.1	0.0	2.3	0.0	0.2	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			18.6									
HCM 6th LOS			B									

Timings
2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

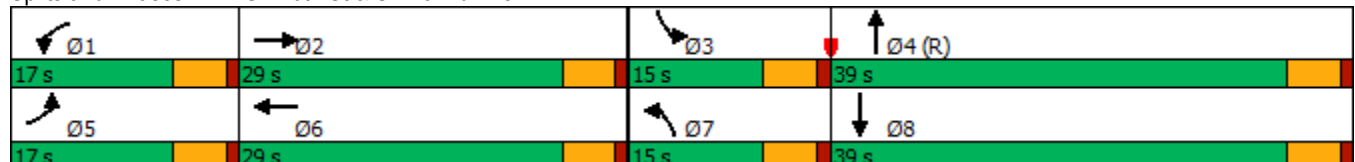
								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	 		 			 		 
Traffic Volume (vph)	166	182	182	165	50	827	59	793
Future Volume (vph)	166	182	182	165	50	827	59	793
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	17.0	29.0	17.0	29.0	15.0	39.0	15.0	39.0
Total Split (%)	17.0%	29.0%	17.0%	29.0%	15.0%	39.0%	15.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effct Green (s)	9.4	18.8	9.7	19.1	7.5	45.8	7.7	44.0
Actuated g/C Ratio	0.09	0.19	0.10	0.19	0.08	0.46	0.08	0.44
v/c Ratio	0.55	0.82	0.57	0.65	0.42	0.67	0.45	0.64
Control Delay	49.5	53.5	49.7	43.0	64.3	19.0	51.9	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	53.5	49.7	43.0	64.3	19.0	51.9	31.1
LOS	D	D	D	D	E	B	D	C
Approach Delay		52.0		46.0		21.2		32.4
Approach LOS		D		D		C		C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 33.2
 Intersection Capacity Utilization 69.8%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 2: SE 20th St & SE 192nd Ave



HCM 6th Signalized Intersection Summary

2: SE 20th St & SE 192nd Ave

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 				 			 	
Traffic Volume (veh/h)	166	182	92	182	165	57	50	827	179	59	793	103
Future Volume (veh/h)	166	182	92	182	165	57	50	827	179	59	793	103
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1900	1841	1885	1885	1885	1811	1856	1841	1885	1811	1826
Adj Flow Rate, veh/h	175	192	77	192	174	46	53	871	172	62	835	100
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	4	1	1	1	6	3	4	1	6	5
Cap, veh/h	242	220	88	261	251	66	87	1496	295	80	1560	187
Arrive On Green	0.07	0.17	0.17	0.07	0.17	0.17	0.05	0.51	0.51	0.06	0.67	0.67
Sat Flow, veh/h	3428	1290	517	3483	1437	380	1725	2934	579	1795	3094	371
Grp Volume(v), veh/h	175	0	269	192	0	220	53	523	520	62	464	471
Grp Sat Flow(s),veh/h/ln	1714	0	1807	1742	0	1817	1725	1763	1751	1795	1721	1744
Q Serve(g_s), s	5.0	0.0	14.5	5.4	0.0	11.4	3.0	20.7	20.7	3.4	13.9	13.9
Cycle Q Clear(g_c), s	5.0	0.0	14.5	5.4	0.0	11.4	3.0	20.7	20.7	3.4	13.9	13.9
Prop In Lane	1.00		0.29	1.00		0.21	1.00		0.33	1.00		0.21
Lane Grp Cap(c), veh/h	242	0	308	261	0	318	87	899	893	80	868	879
V/C Ratio(X)	0.72	0.00	0.87	0.74	0.00	0.69	0.61	0.58	0.58	0.78	0.54	0.54
Avail Cap(c_a), veh/h	411	0	434	418	0	436	172	899	893	180	868	879
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.74	0.74	0.74
Uniform Delay (d), s/veh	45.5	0.0	40.4	45.3	0.0	38.7	46.5	17.1	17.1	46.5	10.4	10.4
Incr Delay (d2), s/veh	1.5	0.0	10.3	1.5	0.0	1.1	2.6	2.7	2.8	4.4	1.8	1.7
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(95%),veh/ln	3.8	0.0	11.5	4.2	0.0	8.7	2.4	13.1	13.0	2.8	7.3	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	0.0	50.7	46.8	0.0	39.9	49.1	19.8	19.8	51.0	12.2	12.2
LnGrp LOS	D	A	D	D	A	D	D	B	B	D	B	B
Approach Vol, veh/h	444			412			1096			997		
Approach Delay, s/veh	49.2			43.1			21.3			14.6		
Approach LOS	D			D			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	22.1	9.5	56.0	12.1	22.5	10.0	55.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	24.0	10.0	34.0	12.0	24.0	10.0	34.0				
Max Q Clear Time (g_c+I1), s	7.4	16.5	5.4	22.7	7.0	13.4	5.0	15.9				
Green Ext Time (p_c), s	0.1	0.5	0.0	3.4	0.1	0.5	0.0	3.5				

Intersection Summary

HCM 6th Ctrl Delay 26.3
HCM 6th LOS C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	10	978	3	7	1041
Future Vol, veh/h	7	10	978	3	7	1041
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	20	4	67	0	7
Mvmt Flow	7	11	1029	3	7	1096
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1594	517	0	0	1033	0
Stage 1	1032	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.8	7.3	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.5	-	-	2.2	-
Pot Cap-1 Maneuver	100	459	-	-	681	-
Stage 1	309	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	459	-	-	680	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	25.9	0	0.1			
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 99 459	680	-		
HCM Lane V/C Ratio	-	- 0.074 0.023	0.011	-		
HCM Control Delay (s)	-	- 44.3 13	10.4	-		
HCM Lane LOS	-	- E B	B	-		
HCM 95th %tile Q(veh)	-	- 0.2 0.1	0	-		

Timings
4: SE 192nd Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	215	100	109	766	781
Future Volume (vph)	215	100	109	766	781
Turn Type	Prot	pt+ov	Prot	NA	NA
Protected Phases	2	2 7	7	4	8
Permitted Phases					
Detector Phase	2	2 7	7	4	8
Switch Phase					
Minimum Initial (s)	5.0		5.0	5.0	5.0
Minimum Split (s)	27.0		10.0	26.0	26.0
Total Split (s)	35.0		15.0	65.0	50.0
Total Split (%)	35.0%		15.0%	65.0%	50.0%
Yellow Time (s)	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0
Lead/Lag			Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None		None	C-Max	Max
Act Effct Green (s)	18.6	35.4	11.9	71.4	54.6
Actuated g/C Ratio	0.19	0.35	0.12	0.71	0.55
v/c Ratio	0.72	0.17	0.57	0.33	0.61
Control Delay	50.5	5.0	28.9	14.1	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	5.0	28.9	14.1	27.0
LOS	D	A	C	B	C
Approach Delay	36.1			15.9	27.0
Approach LOS	D			B	C

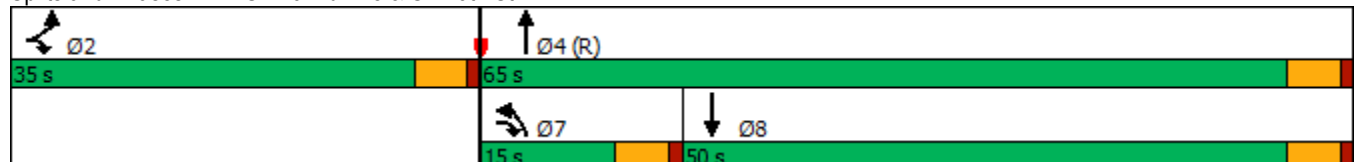
Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 85 (85%), Referenced to phase 4:NBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 23.9
 Intersection Capacity Utilization 60.6%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service B

Splits and Phases: 4: SE 192nd Ave & SE 29th St



HCM 6th Signalized Intersection Summary 4: SE 192nd Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	215	100	109	766	781	267
Future Volume (veh/h)	215	100	109	766	781	267
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1826	1826	1826	1811	1767
Adj Flow Rate, veh/h	226	39	115	806	822	252
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	5	5	5	6	9
Cap, veh/h	266	364	141	2587	1595	489
Arrive On Green	0.15	0.15	0.16	1.00	0.61	0.61
Sat Flow, veh/h	1725	1547	1739	3561	2684	795
Grp Volume(v), veh/h	226	39	115	806	545	529
Grp Sat Flow(s),veh/h/ln	1725	1547	1739	1735	1721	1668
Q Serve(g_s), s	12.8	2.0	6.4	0.0	17.9	17.9
Cycle Q Clear(g_c), s	12.8	2.0	6.4	0.0	17.9	17.9
Prop In Lane	1.00	1.00	1.00			0.48
Lane Grp Cap(c), veh/h	266	364	141	2587	1058	1026
V/C Ratio(X)	0.85	0.11	0.82	0.31	0.52	0.52
Avail Cap(c_a), veh/h	517	589	174	2587	1058	1026
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.79	0.79	1.00	1.00
Uniform Delay (d), s/veh	41.2	30.0	41.2	0.0	10.8	10.9
Incr Delay (d2), s/veh	7.4	0.1	17.6	0.2	1.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.9	3.5	5.7	0.2	10.6	10.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.6	30.1	58.8	0.2	12.6	12.7
LnGrp LOS	D	C	E	A	B	B
Approach Vol, veh/h	265			921	1074	
Approach Delay, s/veh	45.9			7.6	12.7	
Approach LOS	D			A	B	
Timer - Assigned Phs	2		4		7	8
Phs Duration (G+Y+Rc), s	20.4		79.6		13.1	66.5
Change Period (Y+Rc), s	5.0		5.0		5.0	5.0
Max Green Setting (Gmax), s	30.0		60.0		10.0	45.0
Max Q Clear Time (g_c+I1), s	14.8		2.0		8.4	19.9
Green Ext Time (p_c), s	0.7		6.3		0.0	7.5
Intersection Summary						
HCM 6th Ctrl Delay			14.5			
HCM 6th LOS			B			

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	74	173	207	154	95	121	785	349	131	624
Future Volume (vph)	74	173	207	154	95	121	785	349	131	624
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	15.0	36.0	15.0	36.0	36.0	15.0	34.0	15.0	15.0	34.0
Total Split (%)	15.0%	36.0%	15.0%	36.0%	36.0%	15.0%	34.0%	15.0%	15.0%	34.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	27.6	20.9	34.0	26.0	26.0	10.0	39.3	49.1	10.0	39.3
Actuated g/C Ratio	0.28	0.21	0.34	0.26	0.26	0.10	0.39	0.49	0.10	0.39
v/c Ratio	0.22	0.82	0.85	0.34	0.19	0.73	0.66	0.40	0.43	0.63
Control Delay	21.3	49.9	52.2	31.6	0.8	66.8	29.6	2.4	41.6	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	49.9	52.2	31.6	0.8	66.8	29.6	2.4	41.6	24.3
LOS	C	D	D	C	A	E	C	A	D	C
Approach Delay		44.0		34.5			25.6			27.0
Approach LOS		D		C			C			C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 29.7

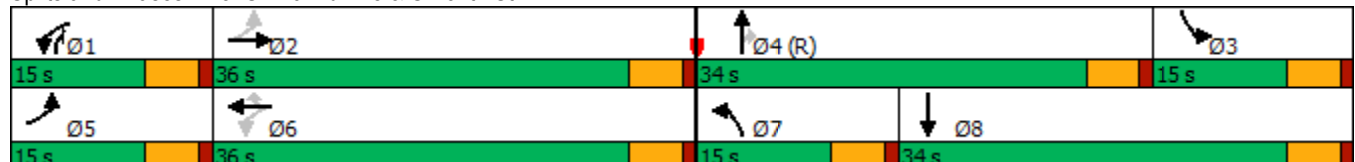
Intersection LOS: C

Intersection Capacity Utilization 72.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	173	112	207	154	95	121	785	349	131	624	89
Future Volume (veh/h)	74	173	112	207	154	95	121	785	349	131	624	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1817	1803	1847	1943	2018	1988	2018	1883	1988	1832	1684	1817
Adj Flow Rate, veh/h	82	192	94	230	171	19	134	872	165	146	693	88
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	0	5	0	2	0	9	2	1	11	2
Cap, veh/h	367	228	111	300	501	411	166	1037	655	712	1182	150
Arrive On Green	0.05	0.20	0.20	0.10	0.25	0.25	0.09	0.29	0.29	0.21	0.41	0.41
Sat Flow, veh/h	1731	1140	558	1850	2018	1655	1922	3578	1679	3385	2856	362
Grp Volume(v), veh/h	82	0	286	230	171	19	134	872	165	146	388	393
Grp Sat Flow(s),veh/h/ln	1731	0	1698	1850	2018	1655	1922	1789	1679	1693	1600	1618
Q Serve(g_s), s	3.7	0.0	16.2	9.7	7.0	0.5	6.8	22.9	2.7	3.6	18.8	18.8
Cycle Q Clear(g_c), s	3.7	0.0	16.2	9.7	7.0	0.5	6.8	22.9	2.7	3.6	18.8	18.8
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	367	0	339	300	501	411	166	1037	655	712	662	670
V/C Ratio(X)	0.22	0.00	0.84	0.77	0.34	0.05	0.81	0.84	0.25	0.21	0.59	0.59
Avail Cap(c_a), veh/h	451	0	526	300	626	513	192	1037	655	712	662	670
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)	0.96	0.00	0.96	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79
Uniform Delay (d), s/veh	29.5	0.0	38.5	28.6	30.9	9.9	44.9	33.3	7.2	32.6	22.7	22.7
Incr Delay (d2), s/veh	0.1	0.0	4.1	10.3	0.1	0.0	16.8	8.2	0.9	0.0	3.0	3.0
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(95%),veh/ln	2.7	0.0	11.1	8.6	5.9	0.6	7.1	16.0	2.3	2.6	11.1	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.6	0.0	42.6	38.9	31.0	9.9	61.7	41.5	8.1	32.6	25.7	25.7
LnGrp LOS	C	A	D	D	C	A	E	D	A	C	C	C
Approach Vol, veh/h		368			420			1171			927	
Approach Delay, s/veh		39.7			34.4			39.1			26.8	
Approach LOS		D			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	25.0	26.0	34.0	10.1	29.8	13.6	46.4				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	31.0	10.0	29.0	10.0	31.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	11.7	18.2	5.6	24.9	5.7	9.0	8.8	20.8				
Green Ext Time (p_c), s	0.0	0.4	0.0	1.1	0.0	0.3	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			34.5									
HCM 6th LOS			C									

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Phase 4 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	169	288	27	212	63	57	86	29
Future Volume (vph)	169	288	27	212	63	57	86	29
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	10.0	27.0	32.0	32.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	5.4	28.3	5.4	17.3	9.6	9.6	9.6	9.6
Actuated g/C Ratio	0.12	0.62	0.12	0.38	0.21	0.21	0.21	0.21
v/c Ratio	0.88	0.31	0.14	0.55	0.26	0.28	0.35	0.20
Control Delay	67.2	10.4	25.7	16.2	17.4	13.8	19.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.2	10.4	25.7	16.2	17.4	13.8	19.0	9.0
LOS	E	B	C	B	B	B	B	A
Approach Delay		30.4		16.9		15.2		14.5
Approach LOS		C		B		B		B

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 45.5

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 21.9

Intersection LOS: C

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

		
10 s	85 s	35 s
		
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	169	288	24	27	212	120	63	57	41	86	29	42
Future Volume (veh/h)	169	288	24	27	212	120	63	57	41	86	29	42
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1841	1900	1876	1802	1876	1832	1876	1876	1900	1900	1900
Adj Flow Rate, veh/h	188	320	24	30	236	107	70	63	22	96	32	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	4	0	0	5	0	3	0	0	0	0	0
Cap, veh/h	217	761	57	63	428	194	359	207	72	324	257	32
Arrive On Green	0.12	0.45	0.45	0.04	0.37	0.37	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1810	1691	127	1787	1172	532	1344	1329	464	1333	1656	207
Grp Volume(v), veh/h	188	0	344	30	0	343	70	0	85	96	0	36
Grp Sat Flow(s),veh/h/ln	1810	0	1817	1787	0	1704	1344	0	1793	1333	0	1863
Q Serve(g_s), s	4.3	0.0	5.4	0.7	0.0	6.7	2.0	0.0	1.8	2.9	0.0	0.7
Cycle Q Clear(g_c), s	4.3	0.0	5.4	0.7	0.0	6.7	2.7	0.0	1.8	4.6	0.0	0.7
Prop In Lane	1.00		0.07	1.00		0.31	1.00		0.26	1.00		0.11
Lane Grp Cap(c), veh/h	217	0	818	63	0	623	359	0	279	324	0	289
V/C Ratio(X)	0.87	0.00	0.42	0.48	0.00	0.55	0.19	0.00	0.31	0.30	0.00	0.12
Avail Cap(c_a), veh/h	217	0	3484	214	0	3267	1116	0	1289	1075	0	1339
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	18.0	0.0	7.8	19.8	0.0	10.5	16.3	0.0	15.6	17.7	0.0	15.2
Incr Delay (d2), s/veh	27.9	0.0	0.1	2.1	0.0	0.3	0.1	0.0	0.2	0.2	0.0	0.1
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(95%),veh/ln	5.6	0.0	2.4	0.5	0.0	3.2	1.0	0.0	1.2	1.4	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.9	0.0	7.9	21.8	0.0	10.8	16.4	0.0	15.9	17.9	0.0	15.2
LnGrp LOS	D	A	A	C	A	B	B	A	B	B	A	B
Approach Vol, veh/h	532			373			155			132		
Approach Delay, s/veh	21.4			11.7			16.1			17.1		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	23.8		11.5	10.0	20.2		11.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	2.7	7.4		6.6	6.3	8.7		4.7				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.7		0.2				
Intersection Summary												
HCM 6th Ctrl Delay	17.2											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	465	11	7	310	29	17
Future Vol, veh/h	465	11	7	310	29	17
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	0	0	5	0	0
Mvmt Flow	547	13	8	365	34	20
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	563	0	938	557
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1019	-	296	534
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	695	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1016	-	293	532
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	689	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		17.1	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	351	-	-	1016	-	
HCM Lane V/C Ratio	0.154	-	-	0.008	-	
HCM Control Delay (s)	17.1	-	-	8.6	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	295	403	4	276	14	9	65	4
Future Volume (vph)	295	403	4	276	14	9	65	4
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	31.7	32.1	24.5	18.7	9.3	9.3	9.3	9.3
Actuated g/C Ratio	0.65	0.65	0.50	0.38	0.19	0.19	0.19	0.19
v/c Ratio	0.56	0.40	0.01	0.59	0.07	0.07	0.29	0.39
Control Delay	14.5	10.2	7.5	18.4	18.9	14.5	21.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	10.2	7.5	18.4	18.9	14.5	21.7	7.1
LOS	B	B	A	B	B	B	C	A
Approach Delay		12.0		18.3		16.4		11.6
Approach LOS		B		B		B		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 49.1

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 13.7

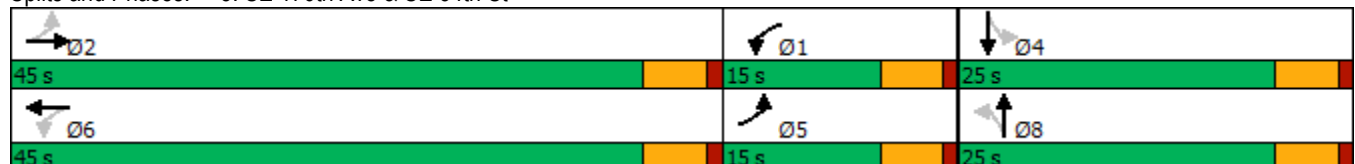
Intersection LOS: B

Intersection Capacity Utilization 59.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	403	2	4	276	59	14	9	8	65	4	141
Future Volume (veh/h)	295	403	2	4	276	59	14	9	8	65	4	141
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.98		1.00	0.98		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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1767	1856	1900	1900	1811	1826	1900	1900	1530	1870	1900	1885
Adj Flow Rate, veh/h	347	474	2	5	325	56	16	11	0	76	5	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	9	3	0	0	6	5	0	0	25	2	0	1
Cap, veh/h	596	708	3	572	580	100	330	202	0	324	202	0
Arrive On Green	0.12	0.38	0.38	0.13	0.39	0.39	0.11	0.11	0.00	0.11	0.11	0.00
Sat Flow, veh/h	1682	1846	8	1810	1503	259	1407	1900	0	1378	1900	0
Grp Volume(v), veh/h	347	0	476	5	0	381	16	11	0	76	5	0
Grp Sat Flow(s),veh/h/ln	1682	0	1854	1810	0	1762	1407	1900	0	1378	1900	0
Q Serve(g_s), s	0.0	0.0	8.3	0.0	0.0	6.6	0.4	0.2	0.0	2.1	0.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.3	0.0	0.0	6.6	0.5	0.2	0.0	2.3	0.1	0.0
Prop In Lane	1.00		0.00	1.00		0.15	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	596	0	711	572	0	680	330	202	0	324	202	0
V/C Ratio(X)	0.58	0.00	0.67	0.01	0.00	0.56	0.05	0.05	0.00	0.23	0.02	0.00
Avail Cap(c_a), veh/h	816	0	1893	805	0	1800	899	970	0	880	970	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	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.6	0.0	10.0	9.7	0.0	9.4	15.9	15.7	0.0	16.7	15.7	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.1	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(95%),veh/ln	3.9	0.0	4.0	0.0	0.0	3.0	0.2	0.1	0.0	1.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	0.0	10.4	9.7	0.0	9.7	15.9	15.8	0.0	16.9	15.7	0.0
LnGrp LOS	B	A	B	A	A	A	B	B	A	B	B	A
Approach Vol, veh/h	823				386				27			
Approach Delay, s/veh	11.5				9.7				15.9			
Approach LOS	B				A				B			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	20.0		9.2	9.9	20.1		9.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	10.3		4.3	2.0	8.6		2.5				
Green Ext Time (p_c), s	0.0	1.8		0.1	0.4	1.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

MOVEMENT SUMMARY

 **Site: 101 [SE 176 Avenue/ SE 29th Street Phase 4 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Phase 4
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Queue	Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				mph
			veh/h	%	veh/h	%	v/c	sec			ft				
South: SE 176th Avenue															
3	L2	All MCs	5	0.0	5	0.0	0.515	10.9	LOS B	3.9	97.6	0.71	0.64	0.94	30.6
8	T1	All MCs	144	2.0	144	2.0	0.515	11.2	LOS B	3.9	97.6	0.71	0.64	0.94	31.1
18	R2	All MCs	296	0.0	296	0.0	0.515	10.9	LOS B	3.9	97.6	0.71	0.64	0.94	30.9
Approach			445	0.6	445	0.6	0.515	11.0	LOS B	3.9	97.6	0.71	0.64	0.94	31.0
East: SE 29th Street															
1	L2	All MCs	122	0.0	122	0.0	0.527	8.9	LOS A	3.9	97.9	0.51	0.27	0.51	31.1
6	T1	All MCs	418	0.0	418	0.0	0.527	8.9	LOS A	3.9	97.9	0.51	0.27	0.51	31.7
16	R2	All MCs	79	0.0	79	0.0	0.527	8.9	LOS A	3.9	97.9	0.51	0.27	0.51	31.5
Approach			619	0.0	619	0.0	0.527	8.9	LOS A	3.9	97.9	0.51	0.27	0.51	31.6
North: SE 176th Avenue															
7	L2	All MCs	69	88.0	69	88.0	0.536	28.9	LOS D	2.9	90.3	0.75	0.78	1.15	26.5
4	T1	All MCs	104	1.0	104	1.0	0.536	12.3	LOS B	2.9	90.3	0.75	0.78	1.15	28.9
14	R2	All MCs	122	18.0	122	18.0	0.536	14.7	LOS B	2.9	90.3	0.75	0.78	1.15	28.4
Approach			295	28.5	295	28.5	0.536	16.4	LOS C	2.9	90.3	0.75	0.78	1.15	28.1
West: SE 29th Street															
5	L2	All MCs	6	0.0	6	0.0	0.351	7.5	LOS A	1.8	46.0	0.57	0.40	0.57	32.2
2	T1	All MCs	313	0.0	313	0.0	0.351	7.5	LOS A	1.8	46.0	0.57	0.40	0.57	32.8
12	R2	All MCs	15	10.0	15	10.0	0.351	8.7	LOS A	1.8	46.0	0.57	0.40	0.57	32.3
Approach			334	0.5	334	0.5	0.351	7.5	LOS A	1.8	46.0	0.57	0.40	0.57	32.8
All Vehicles			1693	5.2	1693	5.2	0.536	10.6	LOS B	3.9	97.9	0.62	0.48	0.75	31.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Sieglösch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27715 - VIC Implementation\005 - Master Plan Update TIA\Analysis\176th_29th With Project 2038 AM.sip9

Intersection	
Intersection Delay, s/veh	16.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	272	36	87	314	14	55	94	66	0	93	10
Future Vol, veh/h	12	272	36	87	314	14	55	94	66	0	93	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	4	10	4	1	9	4	3	0	0	0	0
Mvmt Flow	13	299	40	96	345	15	60	103	73	0	102	11
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	18.8	17.9	12.8	12.8
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	59%	0%	88%	0%	96%	90%
Vol Right, %	0%	41%	0%	12%	0%	4%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	160	12	308	87	328	103
LT Vol	55	0	12	0	87	0	0
Through Vol	0	94	0	272	0	314	93
RT Vol	0	66	0	36	0	14	10
Lane Flow Rate	60	176	13	338	96	360	113
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.13	0.338	0.026	0.614	0.185	0.638	0.235
Departure Headway (Hd)	7.746	6.923	7.051	6.526	6.969	6.377	7.466
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	463	519	510	555	517	569	481
Service Time	5.489	4.665	4.763	4.238	4.681	4.089	5.517
HCM Lane V/C Ratio	0.13	0.339	0.025	0.609	0.186	0.633	0.235
HCM Control Delay	11.6	13.2	10	19.1	11.3	19.7	12.8
HCM Lane LOS	B	B	A	C	B	C	B
HCM 95th-tile Q	0.4	1.5	0.1	4.1	0.7	4.5	0.9

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	42	30	46	234	56	259	23	1081	237	792
Future Volume (vph)	42	30	46	234	56	259	23	1081	237	792
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2		1	6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	9.5	39.0	39.0	9.5	38.0	38.0	10.0	32.0	10.0	32.0
Total Split (s)	10.0	25.0	25.0	14.0	29.0	29.0	17.0	44.0	37.0	64.0
Total Split (%)	8.3%	20.8%	20.8%	11.7%	24.2%	24.2%	14.2%	36.7%	30.8%	53.3%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	15.9	12.0	12.0	23.3	15.2	15.2	5.7	61.5	20.3	80.1
Actuated g/C Ratio	0.13	0.10	0.10	0.19	0.13	0.13	0.05	0.51	0.17	0.67
v/c Ratio	0.23	0.17	0.16	0.98	0.25	0.62	0.28	0.45	0.82	0.26
Control Delay	39.2	49.8	1.2	98.6	48.1	11.6	64.3	9.3	69.2	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	49.8	1.2	98.6	48.1	11.6	64.3	9.3	69.2	9.8
LOS	D	D	A	F	D	B	E	A	E	A
Approach Delay		27.3			52.4			10.4		23.1
Approach LOS		C			D			B		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 23.8

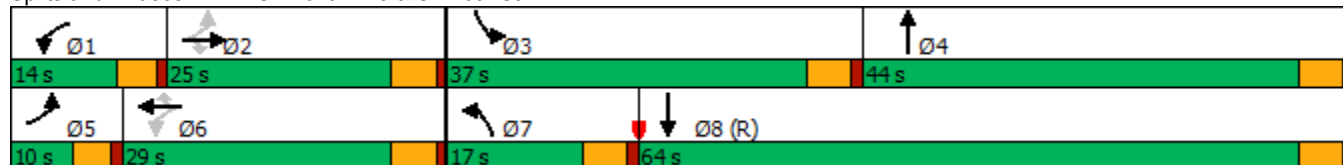
Intersection LOS: C

Intersection Capacity Utilization 67.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	30	46	234	56	259	23	1081	37	237	792	26
Future Volume (veh/h)	42	30	46	234	56	259	23	1081	37	237	792	26
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1900	1856	1870	1870	1900	1900	1870	1796	1885	1856	1826
Adj Flow Rate, veh/h	44	32	2	246	59	22	24	1138	37	249	834	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	3	2	2	0	0	2	7	1	3	5
Cap, veh/h	225	158	130	293	243	209	42	1834	60	276	2485	74
Arrive On Green	0.03	0.08	0.08	0.08	0.13	0.13	0.02	0.36	0.36	0.15	0.49	0.49
Sat Flow, veh/h	1767	1900	1572	1781	1870	1610	1810	5079	165	1795	5054	151
Grp Volume(v), veh/h	44	32	2	246	59	22	24	763	412	249	557	302
Grp Sat Flow(s),veh/h/ln	1767	1900	1572	1781	1870	1610	1810	1702	1840	1795	1689	1828
Q Serve(g_s), s	2.7	1.9	0.1	9.5	3.4	1.4	1.6	22.1	22.2	16.4	12.0	12.1
Cycle Q Clear(g_c), s	2.7	1.9	0.1	9.5	3.4	1.4	1.6	22.1	22.2	16.4	12.0	12.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.09	1.00		0.08
Lane Grp Cap(c), veh/h	225	158	130	293	243	209	42	1229	664	276	1660	899
V/C Ratio(X)	0.20	0.20	0.02	0.84	0.24	0.11	0.58	0.62	0.62	0.90	0.34	0.34
Avail Cap(c_a), veh/h	249	317	262	293	374	322	181	1229	664	479	1660	899
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	1.00	1.00	1.00	1.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	51.3	50.5	48.9	46.9	46.0	58.0	31.6	31.6	49.9	18.6	18.6
Incr Delay (d2), s/veh	0.4	0.2	0.0	18.9	0.2	0.1	3.6	1.8	3.4	6.2	0.5	1.0
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(95%),veh/ln	2.2	1.7	0.1	7.7	2.9	1.0	1.4	13.5	14.8	12.2	8.2	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	51.6	50.5	67.8	47.1	46.1	61.6	33.4	34.9	56.1	19.1	19.6
LnGrp LOS	D	D	D	E	D	D	E	C	C	E	B	B
Approach Vol, veh/h		78			327			1199			1108	
Approach Delay, s/veh		49.9			62.6			34.5			27.6	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	15.0	23.4	48.3	8.3	20.6	7.8	64.0				
Change Period (Y+Rc), s	4.5	5.0	5.0	5.0	4.5	5.0	5.0	5.0				
Max Green Setting (Gmax), s	9.5	20.0	32.0	39.0	5.5	24.0	12.0	59.0				
Max Q Clear Time (g_c+I1), s	11.5	3.9	18.4	24.2	4.7	5.4	3.6	14.1				
Green Ext Time (p_c), s	0.0	0.0	0.1	4.4	0.0	0.1	0.0	3.7				

Intersection Summary

HCM 6th Ctrl Delay	35.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Timings
12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	28	60	165	312	121	99	111	953	465	155	833
Future Volume (vph)	28	60	165	312	121	99	111	953	465	155	833
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	20.0	33.0	20.0	25.0	38.0	17.0	20.0	45.0	25.0	17.0	42.0
Total Split (%)	16.7%	27.5%	16.7%	20.8%	31.7%	14.2%	16.7%	37.5%	20.8%	14.2%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	6.4	8.2	23.0	20.0	23.8	46.4	11.8	56.2	81.2	17.6	62.0
Actuated g/C Ratio	0.05	0.07	0.19	0.17	0.20	0.39	0.10	0.47	0.68	0.15	0.52
v/c Ratio	0.39	0.56	0.53	1.18	0.36	0.16	0.72	0.65	0.43	0.66	0.54
Control Delay	68.3	70.9	31.3	152.9	45.0	4.8	74.0	28.4	2.3	65.1	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	70.9	31.3	152.9	45.0	4.8	74.0	28.4	2.3	65.1	17.1
LOS	E	E	C	F	D	A	E	C	A	E	B
Approach Delay		44.8			100.8			23.7			24.4
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 37.8

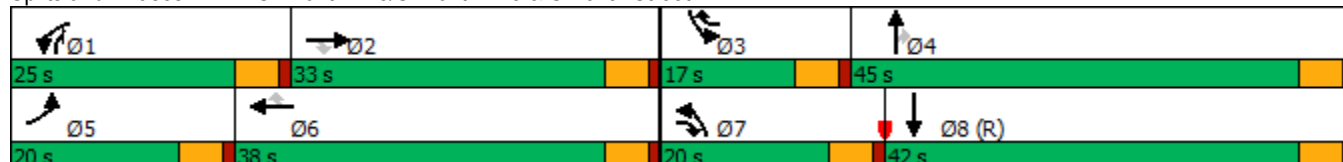
Intersection LOS: D

Intersection Capacity Utilization 71.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave/SE164th Ave & SE 34th Street



HCM 6th Signalized Intersection Summary

12: SE 164th Ave/SE164th Ave & SE 34th Street

Vancouver Innovation Center
Phase 4 2038 AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	60	165	312	121	99	111	953	465	155	833	37
Future Volume (veh/h)	28	60	165	312	121	99	111	953	465	155	833	37
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1565	1758	1803	1870	1885	1841	1791	1776	1746	1806	1761	1761
Adj Flow Rate, veh/h	31	67	124	347	134	30	123	1059	306	172	926	39
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	19	6	3	2	1	4	1	2	4	0	3	3
Cap, veh/h	40	159	270	297	434	515	147	1125	740	172	1327	56
Arrive On Green	0.03	0.09	0.09	0.17	0.23	0.23	0.09	0.33	0.33	0.10	0.35	0.35
Sat Flow, veh/h	1491	1758	1528	1781	1885	1560	1706	3375	1480	1720	3826	161
Grp Volume(v), veh/h	31	67	124	347	134	30	123	1059	306	172	545	420
Grp Sat Flow(s),veh/h/ln	1491	1758	1528	1781	1885	1560	1706	1687	1480	1720	1127	1732
Q Serve(g_s), s	2.5	4.3	8.7	20.0	7.1	1.6	8.5	36.6	15.6	12.0	25.0	25.1
Cycle Q Clear(g_c), s	2.5	4.3	8.7	20.0	7.1	1.6	8.5	36.6	15.6	12.0	25.0	25.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	40	159	270	297	434	515	147	1125	740	172	782	601
V/C Ratio(X)	0.77	0.42	0.46	1.17	0.31	0.06	0.84	0.94	0.41	1.00	0.70	0.70
Avail Cap(c_a), veh/h	186	410	488	297	518	585	213	1125	740	172	782	601
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	58.0	51.6	44.2	50.0	38.3	27.4	54.0	38.9	18.9	54.0	33.7	33.8
Incr Delay (d2), s/veh	11.1	0.7	0.5	106.0	0.1	0.0	11.8	16.0	1.7	65.9	4.7	6.1
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(95%),veh/ln	1.9	3.4	5.9	26.2	5.8	1.0	7.3	23.8	9.3	12.7	11.3	16.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	52.2	44.7	156.0	38.4	27.4	65.8	54.9	20.6	119.9	38.5	39.9
LnGrp LOS	E	D	D	F	D	C	E	D	C	F	D	D
Approach Vol, veh/h	222			511			1488			1137		
Approach Delay, s/veh	50.4			117.6			48.7			51.3		
Approach LOS	D			F			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	15.9	17.0	45.0	8.2	32.7	15.4	46.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	28.0	12.0	40.0	15.0	33.0	15.0	37.0				
Max Q Clear Time (g_c+I1), s	22.0	10.7	14.0	38.6	4.5	9.1	10.5	27.1				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.6	0.0	0.2	0.0	1.7				
Intersection Summary												
HCM 6th Ctrl Delay	60.2											
HCM 6th LOS	E											

Timings
1: SE 192nd & SE 15th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	116	91	40	82	242	87	1360	115	1505
Future Volume (vph)	116	91	40	82	242	87	1360	115	1505
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	7	4	3	8
Permitted Phases					6				
Detector Phase	5	2	1	6	3	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	15.0	5.0	15.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	10.0	20.0
Total Split (s)	15.0	29.0	15.0	29.0	16.0	14.0	40.0	16.0	42.0
Total Split (%)	15.0%	29.0%	15.0%	29.0%	16.0%	14.0%	40.0%	16.0%	42.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	Max
Act Effct Green (s)	9.0	15.9	6.2	11.1	19.9	7.9	52.1	9.7	55.9
Actuated g/C Ratio	0.09	0.16	0.06	0.11	0.20	0.08	0.52	0.10	0.56
v/c Ratio	0.79	0.63	0.38	0.42	0.67	0.64	0.80	0.69	0.88
Control Delay	78.1	37.1	54.0	45.1	30.3	53.9	25.6	63.7	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.1	37.1	54.0	45.1	30.3	53.9	25.6	63.7	30.0
LOS	E	D	D	D	C	D	C	E	C
Approach Delay		52.5		36.2			27.2		32.3
Approach LOS		D		D			C		C

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 98 (98%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 32.3

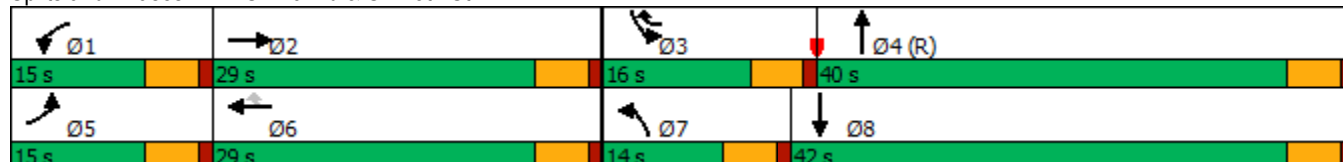
Intersection LOS: C

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: SE 192nd & SE 15th St



HCM 6th Signalized Intersection Summary

1: SE 192nd & SE 15th St

Vancouver Innovation Center

Phase 4 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	91	101	40	82	242	87	1360	32	115	1505	133
Future Volume (veh/h)	116	91	101	40	82	242	87	1360	32	115	1505	133
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1885	1900	1900	1856	1900	1900	1870	1900	1900	1870	1870
Adj Flow Rate, veh/h	122	96	60	42	86	192	92	1432	33	121	1584	135
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	1	0	0	3	0	0	2	0	0	2	2
Cap, veh/h	150	201	125	62	248	344	126	1768	41	149	1694	143
Arrive On Green	0.09	0.19	0.19	0.03	0.13	0.13	0.09	0.66	0.66	0.11	0.68	0.68
Sat Flow, veh/h	1739	1084	678	1810	1856	1582	1810	3550	82	1810	3315	280
Grp Volume(v), veh/h	122	0	156	42	86	192	92	716	749	121	842	877
Grp Sat Flow(s),veh/h/ln	1739	0	1762	1810	1856	1582	1810	1777	1855	1810	1777	1819
Q Serve(g_s), s	6.9	0.0	7.9	2.3	4.2	10.8	4.9	29.3	29.5	6.5	41.1	43.0
Cycle Q Clear(g_c), s	6.9	0.0	7.9	2.3	4.2	10.8	4.9	29.3	29.5	6.5	41.1	43.0
Prop In Lane	1.00		0.38	1.00		1.00	1.00		0.04	1.00		0.15
Lane Grp Cap(c), veh/h	150	0	326	62	248	344	126	885	924	149	908	929
V/C Ratio(X)	0.82	0.00	0.48	0.67	0.35	0.56	0.73	0.81	0.81	0.81	0.93	0.94
Avail Cap(c_a), veh/h	174	0	423	181	445	512	163	885	924	199	908	929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.14	0.14	0.14	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	36.4	47.7	39.4	35.0	44.5	13.4	13.5	43.8	14.4	14.7
Incr Delay (d2), s/veh	19.5	0.0	0.4	4.6	0.3	0.5	1.1	1.2	1.2	12.5	16.8	18.6
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(95%),veh/ln	6.7	0.0	6.0	2.0	3.5	7.3	3.1	9.7	10.1	5.9	20.7	22.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	36.8	52.4	39.7	35.5	45.5	14.6	14.6	56.3	31.3	33.4
LnGrp LOS	E	A	D	D	D	D	D	B	B	E	C	C
Approach Vol, veh/h		278			320			1557			1840	
Approach Delay, s/veh		48.9			38.8			16.4			33.9	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	23.5	13.2	54.8	13.6	18.4	12.0	56.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	24.0	11.0	35.0	10.0	24.0	9.0	37.0				
Max Q Clear Time (g_c+I1), s	4.3	9.9	8.5	31.5	8.9	12.8	6.9	45.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.5	0.0	0.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			28.5									
HCM 6th LOS			C									

Timings
2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	233	183	280	265	149	951	151	1126
Future Volume (vph)	233	183	280	265	149	951	151	1126
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	7	4	3	8
Permitted Phases								
Detector Phase	5	2	1	6	7	4	3	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	25.0	10.0	25.0
Total Split (s)	20.0	27.0	20.0	27.0	14.0	35.0	18.0	39.0
Total Split (%)	20.0%	27.0%	20.0%	27.0%	14.0%	35.0%	18.0%	39.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Min	C-Max	None	Max
Act Effect Green (s)	11.3	23.3	12.4	24.4	9.5	32.6	11.7	34.8
Actuated g/C Ratio	0.11	0.23	0.12	0.24	0.10	0.33	0.12	0.35
v/c Ratio	0.62	0.67	0.67	0.88	0.91	1.05	0.75	1.17
Control Delay	49.0	40.5	49.7	56.7	104.0	62.1	61.1	115.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	40.5	49.7	56.7	104.0	62.1	61.1	115.4
LOS	D	D	D	E	F	E	E	F
Approach Delay		44.4		53.7		66.8		110.0
Approach LOS		D		D		E		F

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 93 (93%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 78.1

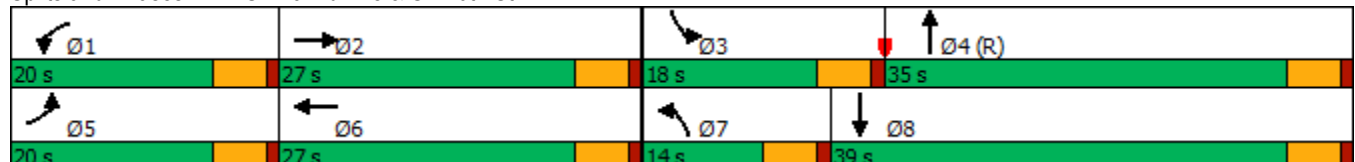
Intersection LOS: E

Intersection Capacity Utilization 91.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: SE 192nd Ave & SE 20th St



HCM 6th Signalized Intersection Summary

2: SE 192nd Ave & SE 20th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	183	95	280	265	118	149	951	210	151	1126	237
Future Volume (veh/h)	233	183	95	280	265	118	149	951	210	151	1126	237
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		0.98	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1870	1900	1885	1900	1885	1870	1885
Adj Flow Rate, veh/h	243	191	80	292	276	106	155	991	200	157	1173	228
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	1	0	0	2	0	1	0	1	2	1
Cap, veh/h	316	262	110	364	286	110	163	1142	230	189	1188	229
Arrive On Green	0.09	0.21	0.21	0.10	0.22	0.22	0.09	0.38	0.38	0.14	0.53	0.53
Sat Flow, veh/h	3510	1270	532	3510	1301	500	1810	2969	598	1795	2970	573
Grp Volume(v), veh/h	243	0	271	292	0	382	155	597	594	157	699	702
Grp Sat Flow(s),veh/h/ln	1755	0	1802	1755	0	1801	1810	1791	1777	1795	1777	1766
Q Serve(g_s), s	6.8	0.0	14.0	8.1	0.0	21.0	8.5	30.8	30.9	8.5	38.6	39.5
Cycle Q Clear(g_c), s	6.8	0.0	14.0	8.1	0.0	21.0	8.5	30.8	30.9	8.5	38.6	39.5
Prop In Lane	1.00		0.30	1.00		0.28	1.00		0.34	1.00		0.32
Lane Grp Cap(c), veh/h	316	0	372	364	0	396	163	689	683	189	711	707
V/C Ratio(X)	0.77	0.00	0.73	0.80	0.00	0.96	0.95	0.87	0.87	0.83	0.98	0.99
Avail Cap(c_a), veh/h	527	0	397	527	0	396	163	689	683	233	711	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.37	0.37	0.37
Uniform Delay (d), s/veh	44.5	0.0	37.1	43.8	0.0	38.6	45.3	28.4	28.5	42.1	23.1	23.3
Incr Delay (d2), s/veh	1.5	0.0	5.2	3.5	0.0	35.6	55.7	13.8	14.2	6.3	16.9	19.2
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(95%),veh/ln	5.3	0.0	10.7	6.5	0.0	18.7	10.3	21.3	21.3	5.8	19.8	20.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	42.3	47.3	0.0	74.2	101.0	42.3	42.6	48.4	40.0	42.5
LnGrp LOS	D	A	D	D	A	E	F	D	D	D	D	D
Approach Vol, veh/h		514			674			1346			1558	
Approach Delay, s/veh		44.0			62.6			49.2			42.0	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.4	25.6	15.6	43.4	14.0	27.0	14.0	45.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	22.0	13.0	30.0	15.0	22.0	9.0	34.0				
Max Q Clear Time (g_c+I1), s	10.1	16.0	10.5	32.9	8.8	23.0	10.5	41.5				
Green Ext Time (p_c), s	0.3	0.5	0.0	0.0	0.2	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			48.0									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	4	1320	3	10	1368
Future Vol, veh/h	3	4	1320	3	10	1368
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	125	0	-	-	230	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	4	1389	3	11	1440
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2135	698	0	0	1394	0
Stage 1	1393	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	43	388	-	-	497	-
Stage 1	199	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	42	387	-	-	496	-
Mov Cap-2 Maneuver	42	-	-	-	-	-
Stage 1	199	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	50.1	0		0.1		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)	-	-	42	387	496	-
HCM Lane V/C Ratio	-	-	0.075	0.011	0.021	-
HCM Control Delay (s)	-	-	97.6	14.4	12.4	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	0.2	0	0.1	-

Timings
4: SE 192nd Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

						
Lane Group	EBL	EBR	NBL	NBT	SBT	
Lane Configurations						
Traffic Volume (vph)	157	57	70	1166	1239	
Future Volume (vph)	157	57	70	1166	1239	
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	2	7	7	4	8	
Permitted Phases		2				
Detector Phase	2	7	7	4	8	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	27.0	10.0	10.0	26.0	26.0	
Total Split (s)	30.0	16.0	16.0	68.0	54.0	
Total Split (%)	30.0%	16.0%	16.0%	68.0%	54.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	Max	None	None	C-Max	None	
Act Effct Green (s)	25.0	34.1	9.1	65.0	53.1	
Actuated g/C Ratio	0.25	0.34	0.09	0.65	0.53	
v/c Ratio	0.38	0.11	0.47	0.53	0.77	
Control Delay	34.1	11.5	70.0	4.6	24.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	34.1	11.5	70.0	4.6	24.0	
LOS	C	B	E	A	C	
Approach Delay	28.1			8.3	24.0	
Approach LOS	C			A	C	

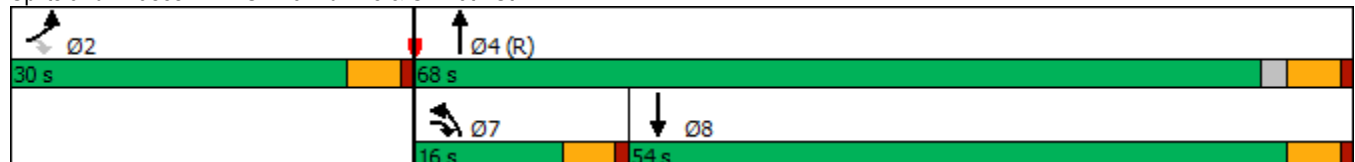
Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 45 (45%), Referenced to phase 4:NBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 17.5
 Intersection Capacity Utilization 73.5%
 Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service D

Splits and Phases: 4: SE 192nd Ave & SE 29th St



HCM 6th Signalized Intersection Summary

4: SE 192nd Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	157	57	70	1166	1239	132
Future Volume (veh/h)	157	57	70	1166	1239	132
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1826	1826	1885	1885	1826
Adj Flow Rate, veh/h	165	39	74	1227	1304	131
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	5	5	1	1	5
Cap, veh/h	442	470	94	2328	1795	180
Arrive On Green	0.25	0.25	0.11	1.00	0.55	0.55
Sat Flow, veh/h	1767	1547	1739	3676	3382	329
Grp Volume(v), veh/h	165	39	74	1227	708	727
Grp Sat Flow(s),veh/h/ln	1767	1547	1739	1791	1791	1826
Q Serve(g_s), s	7.7	1.8	4.1	0.0	29.7	30.0
Cycle Q Clear(g_c), s	7.7	1.8	4.1	0.0	29.7	30.0
Prop In Lane	1.00	1.00	1.00			0.18
Lane Grp Cap(c), veh/h	442	470	94	2328	978	997
V/C Ratio(X)	0.37	0.08	0.79	0.53	0.72	0.73
Avail Cap(c_a), veh/h	442	470	191	2328	978	997
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.46	0.46	1.00	1.00
Uniform Delay (d), s/veh	31.0	24.8	44.0	0.0	17.0	17.1
Incr Delay (d2), s/veh	2.4	0.3	6.6	0.4	2.7	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.4	3.4	3.3	0.2	17.2	17.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.4	25.2	50.6	0.4	19.7	19.9
LnGrp LOS	C	C	D	A	B	B
Approach Vol, veh/h	204			1301	1435	
Approach Delay, s/veh	31.9			3.3	19.8	
Approach LOS	C			A	B	
Timer - Assigned Phs	2		4		7	8
Phs Duration (G+Y+Rc), s	30.0		70.0		10.4	59.6
Change Period (Y+Rc), s	5.0		5.0		5.0	5.0
Max Green Setting (Gmax), s	25.0		63.0		11.0	49.0
Max Q Clear Time (g_c+I1), s	9.7		2.0		6.1	32.0
Green Ext Time (p_c), s	0.5		11.8		0.0	8.9
Intersection Summary						
HCM 6th Ctrl Delay			13.3			
HCM 6th LOS			B			

Timings
5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	191	258	355	224	129	148	1016	204	225	976
Future Volume (vph)	191	258	355	224	129	148	1016	204	225	976
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	1	6		7	4	1	3	8
Permitted Phases	2		6		6			4		
Detector Phase	5	2	1	6	6	7	4	1	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	25.0	10.0	10.0	25.0
Total Split (s)	14.0	32.0	19.0	37.0	37.0	13.0	34.0	19.0	15.0	36.0
Total Split (%)	14.0%	32.0%	19.0%	37.0%	37.0%	13.0%	34.0%	19.0%	15.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	None	Max
Act Effct Green (s)	33.8	25.2	44.2	30.7	30.7	9.6	30.8	44.8	10.0	31.2
Actuated g/C Ratio	0.34	0.25	0.44	0.31	0.31	0.10	0.31	0.45	0.10	0.31
v/c Ratio	0.47	0.94	1.13	0.40	0.22	0.89	0.97	0.26	0.69	1.08
Control Delay	22.2	64.1	117.8	29.5	2.2	92.2	55.9	2.1	72.0	97.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	64.1	117.8	29.5	2.2	92.2	55.9	2.1	72.0	97.2
LOS	C	E	F	C	A	F	E	A	E	F
Approach Delay		50.8		68.8			51.8			92.9
Approach LOS		D		E			D			F

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 36 (36%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 68.3

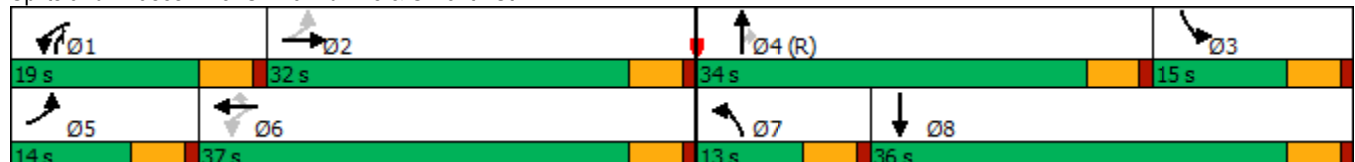
Intersection LOS: E

Intersection Capacity Utilization 99.2%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 5: SE 192nd Ave & SE 34th St



HCM 6th Signalized Intersection Summary

5: SE 192nd Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	258	153	355	224	129	148	1016	204	225	976	135
Future Volume (veh/h)	191	258	153	355	224	129	148	1016	204	225	976	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1847	1817	2003	2003	2018	2018	1988	2003	1847	1832	1817
Adj Flow Rate, veh/h	201	272	138	374	236	35	156	1069	91	237	1027	130
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	2	1	1	0	0	2	1	0	1	2
Cap, veh/h	455	292	148	363	610	520	154	1095	726	393	1009	128
Arrive On Green	0.09	0.25	0.25	0.14	0.30	0.30	0.08	0.29	0.29	0.12	0.33	0.33
Sat Flow, veh/h	1731	1148	583	1908	2003	1705	1922	3777	1683	3413	3102	392
Grp Volume(v), veh/h	201	0	410	374	236	35	156	1069	91	237	576	581
Grp Sat Flow(s),veh/h/ln	1731	0	1731	1908	2003	1705	1922	1889	1683	1706	1741	1753
Q Serve(g_s), s	8.6	0.0	23.1	14.0	9.3	1.0	8.0	28.0	1.7	6.6	32.5	32.5
Cycle Q Clear(g_c), s	8.6	0.0	23.1	14.0	9.3	1.0	8.0	28.0	1.7	6.6	32.5	32.5
Prop In Lane	1.00		0.34	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	455	0	441	363	610	520	154	1095	726	393	566	570
V/C Ratio(X)	0.44	0.00	0.93	1.03	0.39	0.07	1.01	0.98	0.13	0.60	1.02	1.02
Avail Cap(c_a), veh/h	455	0	467	363	641	546	154	1095	726	393	566	570
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)	0.79	0.00	0.79	1.00	1.00	1.00	1.00	1.00	1.00	0.59	0.59	0.59
Uniform Delay (d), s/veh	24.4	0.0	36.4	25.5	27.4	11.8	46.0	35.2	6.4	42.1	33.7	33.7
Incr Delay (d2), s/veh	0.2	0.0	20.2	54.8	0.1	0.0	76.5	22.0	0.4	1.1	33.4	33.8
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(95%),veh/ln	6.1	0.0	16.8	17.2	7.7	1.0	11.4	22.0	1.5	4.9	23.8	24.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.6	0.0	56.6	80.4	27.5	11.8	122.5	57.1	6.7	43.2	67.2	67.5
LnGrp LOS	C	A	E	F	C	B	F	E	A	D	F	F
Approach Vol, veh/h	611			645			1316			1394		
Approach Delay, s/veh	46.1			57.3			61.4			63.2		
Approach LOS	D			E			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	30.5	16.5	34.0	14.0	35.5	13.0	37.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.0	27.0	10.0	29.0	9.0	32.0	8.0	31.0				
Max Q Clear Time (g_c+I1), s	16.0	25.1	8.6	30.0	10.6	11.3	10.0	34.5				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 59.0

HCM 6th LOS E

Notes

User approved pedestrian interval to be less than phase max green.

Timings

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center

Phase 4 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	86	306	37	333	71	26	263	46
Future Volume (vph)	86	306	37	333	71	26	263	46
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	30.0	10.0	30.0	32.0	32.0	34.0	34.0
Total Split (s)	10.0	85.0	10.0	85.0	35.0	35.0	35.0	35.0
Total Split (%)	7.7%	65.4%	7.7%	65.4%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	5.2	29.9	5.2	24.9	19.0	19.0	19.0	19.0
Actuated g/C Ratio	0.08	0.46	0.08	0.38	0.29	0.29	0.29	0.29
v/c Ratio	0.63	0.49	0.28	0.79	0.26	0.12	0.71	0.40
Control Delay	55.8	16.1	38.9	26.1	21.8	11.3	32.7	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	16.1	38.9	26.1	21.8	11.3	32.7	11.1
LOS	E	B	D	C	C	B	C	B
Approach Delay		23.3		27.0		17.1		22.8
Approach LOS		C		C		B		C

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 64.7

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 23.9

Intersection LOS: C

Intersection Capacity Utilization 70.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: SE Hiddenbrook Dr & SE 34th St

		
Ø1	Ø2	Ø4
10 s	85 s	35 s
		
Ø5	Ø6	Ø8
10 s	85 s	35 s

HCM 6th Signalized Intersection Summary

6: SE Hiddenbrook Dr & SE 34th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	306	80	37	333	181	71	26	32	263	46	174
Future Volume (veh/h)	86	306	80	37	333	181	71	26	32	263	46	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1870	1841	1832	1847	1876	1817	1876	1832	1885	1900	1900
Adj Flow Rate, veh/h	91	326	74	39	354	167	76	28	8	280	49	82
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, %	0	2	4	3	2	0	4	0	3	1	0	0
Cap, veh/h	134	553	125	74	407	192	398	367	105	494	167	279
Arrive On Green	0.07	0.38	0.38	0.04	0.34	0.34	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1810	1473	334	1745	1183	558	1220	1402	401	1378	637	1066
Grp Volume(v), veh/h	91	0	400	39	0	521	76	0	36	280	0	131
Grp Sat Flow(s),veh/h/ln	1810	0	1807	1745	0	1741	1220	0	1803	1378	0	1703
Q Serve(g_s), s	2.3	0.0	8.3	1.0	0.0	13.1	2.5	0.0	0.7	9.0	0.0	2.9
Cycle Q Clear(g_c), s	2.3	0.0	8.3	1.0	0.0	13.1	5.4	0.0	0.7	9.7	0.0	2.9
Prop In Lane	1.00		0.19	1.00		0.32	1.00		0.22	1.00		0.63
Lane Grp Cap(c), veh/h	134	0	678	74	0	598	398	0	472	494	0	446
V/C Ratio(X)	0.68	0.00	0.59	0.53	0.00	0.87	0.19	0.00	0.08	0.57	0.00	0.29
Avail Cap(c_a), veh/h	193	0	3088	186	0	2975	860	0	1155	1016	0	1092
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	21.1	0.0	11.7	21.9	0.0	14.4	16.0	0.0	13.0	16.7	0.0	13.8
Incr Delay (d2), s/veh	2.2	0.0	0.3	2.1	0.0	1.6	0.1	0.0	0.0	0.4	0.0	0.1
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(95%),veh/ln	1.6	0.0	4.5	0.7	0.0	7.4	1.1	0.0	0.5	4.6	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.4	0.0	12.0	24.1	0.0	16.0	16.1	0.0	13.0	17.1	0.0	14.0
LnGrp LOS	C	A	B	C	A	B	B	A	B	B	A	B
Approach Vol, veh/h	491			560			112			411		
Approach Delay, s/veh	14.1			16.5			15.1			16.1		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	22.6		17.2	8.5	21.1		17.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	5.0	80.0		30.0	5.0	80.0		30.0				
Max Q Clear Time (g_c+I1), s	3.0	10.3		11.7	4.3	15.1		7.4				
Green Ext Time (p_c), s	0.0	0.3		0.1	0.0	0.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	15.6											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	465	32	16	563	18	7
Future Vol, veh/h	465	32	16	563	18	7
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	95	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	511	35	18	619	20	8
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	546	0	1184	530
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	655	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1033	-	211	553
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1033	-	207	552
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	512	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		21.1	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	251	-	-	1033	-	
HCM Lane V/C Ratio	0.109	-	-	0.017	-	
HCM Control Delay (s)	21.1	-	-	8.5	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

Timings 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	219	398	18	443	10	10	93	21
Future Volume (vph)	219	398	18	443	10	10	93	21
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	10.0	28.0	33.0	33.0	32.0	32.0
Total Split (s)	15.0	45.0	15.0	45.0	25.0	25.0	25.0	25.0
Total Split (%)	17.6%	52.9%	17.6%	52.9%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Min	None	Min	None	None	None	None
Act Effct Green (s)	35.9	34.6	29.8	23.5	10.3	10.3	10.3	10.3
Actuated g/C Ratio	0.62	0.60	0.51	0.40	0.18	0.18	0.18	0.18
v/c Ratio	0.55	0.40	0.04	0.82	0.07	0.06	0.41	0.50
Control Delay	19.1	10.9	7.6	25.7	23.8	18.5	28.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	10.9	7.6	25.7	23.8	18.5	28.5	9.7
LOS	B	B	A	C	C	B	C	A
Approach Delay		13.7		25.2		20.5		15.5
Approach LOS		B		C		C		B

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 58.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 18.5

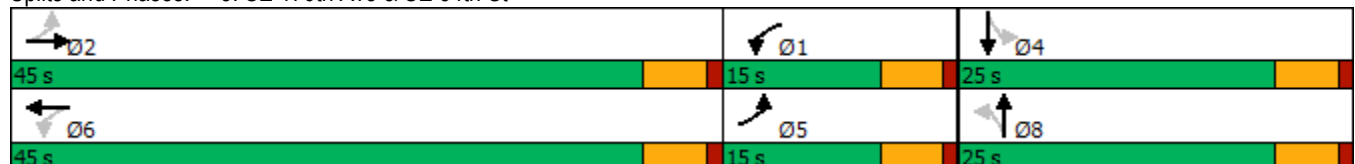
Intersection LOS: B

Intersection Capacity Utilization 68.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: SE 176th Ave & SE 34th St



HCM 6th Signalized Intersection Summary 8: SE 176th Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	398	13	18	443	120	10	10	6	93	21	186
Future Volume (veh/h)	219	398	13	18	443	120	10	10	6	93	21	186
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		0.97
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1870	1900	1900	1885	1885	1900	1900	1900	1885	1900	1900
Adj Flow Rate, veh/h	238	433	13	20	482	115	11	11	0	101	23	18
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, %	1	2	0	0	1	1	0	0	0	1	0	0
Cap, veh/h	450	670	20	607	590	141	304	215	0	330	110	86
Arrive On Green	0.12	0.37	0.37	0.15	0.40	0.40	0.11	0.11	0.00	0.11	0.11	0.11
Sat Flow, veh/h	1795	1806	54	1810	1471	351	1382	1900	0	1409	975	763
Grp Volume(v), veh/h	238	0	446	20	0	597	11	11	0	101	0	41
Grp Sat Flow(s),veh/h/ln	1795	0	1861	1810	0	1822	1382	1900	0	1409	0	1738
Q Serve(g_s), s	0.0	0.0	8.0	0.0	0.0	11.8	0.3	0.2	0.0	2.8	0.0	0.9
Cycle Q Clear(g_c), s	0.0	0.0	8.0	0.0	0.0	11.8	1.2	0.2	0.0	3.0	0.0	0.9
Prop In Lane	1.00		0.03	1.00		0.19	1.00		0.00	1.00		0.44
Lane Grp Cap(c), veh/h	450	0	690	607	0	731	304	215	0	330	0	196
V/C Ratio(X)	0.53	0.00	0.65	0.03	0.00	0.82	0.04	0.05	0.00	0.31	0.00	0.21
Avail Cap(c_a), veh/h	687	0	1839	790	0	1801	832	939	0	867	0	859
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	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	10.5	9.6	0.0	10.8	16.8	16.0	0.0	17.4	0.0	16.3
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	0.9	0.0	0.0	0.0	0.2	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(95%),veh/ln	2.9	0.0	4.1	0.2	0.0	5.7	0.2	0.1	0.0	1.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	10.9	9.6	0.0	11.7	16.9	16.1	0.0	17.5	0.0	16.5
LnGrp LOS	B	A	B	A	A	B	B	B	A	B	A	B
Approach Vol, veh/h	684			617			22			142		
Approach Delay, s/veh	12.6			11.6			16.5			17.2		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	20.0		9.6	9.7	21.2		9.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	40.0		20.0	10.0	40.0		20.0				
Max Q Clear Time (g_c+I1), s	2.0	10.0		5.0	2.0	13.8		3.2				
Green Ext Time (p_c), s	0.0	1.6		0.2	0.2	2.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay 12.7
HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

MOVEMENT SUMMARY

 **Site: 101 [SE 176 Avenue/ SE 29th Street Phase 4 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Phase 4
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Queue	Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				mph
			veh/h	%	veh/h	%	v/c	sec			ft				
South: SE 176th Avenue															
3	L2	All MCs	16	15.0	16	15.0	0.373	9.0	LOS A	2.1	51.9	0.53	0.35	0.53	31.7
8	T1	All MCs	267	0.0	267	0.0	0.373	7.3	LOS A	2.1	51.9	0.53	0.35	0.53	32.8
18	R2	All MCs	100	0.0	100	0.0	0.373	7.3	LOS A	2.1	51.9	0.53	0.35	0.53	32.5
Approach			383	0.6	383	0.6	0.373	7.4	LOS A	2.1	51.9	0.53	0.35	0.53	32.7
East: SE 29th Street															
1	L2	All MCs	210	0.0	210	0.0	0.673	13.7	LOS B	9.1	227.6	0.79	0.71	1.20	29.0
6	T1	All MCs	408	0.0	408	0.0	0.673	13.7	LOS B	9.1	227.6	0.79	0.71	1.20	29.5
16	R2	All MCs	60	0.0	60	0.0	0.673	13.7	LOS B	9.1	227.6	0.79	0.71	1.20	29.3
Approach			677	0.0	677	0.0	0.673	13.7	LOS B	9.1	227.6	0.79	0.71	1.20	29.3
North: SE 176th Avenue															
7	L2	All MCs	66	0.0	66	0.0	0.369	9.7	LOS A	1.8	46.4	0.68	0.62	0.76	30.6
4	T1	All MCs	86	1.0	86	1.0	0.369	9.9	LOS A	1.8	46.4	0.68	0.62	0.76	31.2
14	R2	All MCs	113	0.0	113	0.0	0.369	9.7	LOS A	1.8	46.4	0.68	0.62	0.76	30.9
Approach			265	0.3	265	0.3	0.369	9.7	LOS A	1.8	46.4	0.68	0.62	0.76	30.9
West: SE 29th Street															
5	L2	All MCs	22	7.0	22	7.0	0.263	7.2	LOS A	1.3	31.7	0.53	0.38	0.53	32.3
2	T1	All MCs	194	0.0	194	0.0	0.263	6.4	LOS A	1.3	31.7	0.53	0.38	0.53	33.1
12	R2	All MCs	33	0.0	33	0.0	0.263	6.4	LOS A	1.3	31.7	0.53	0.38	0.53	32.9
Approach			248	0.6	248	0.6	0.263	6.4	LOS A	1.3	31.7	0.53	0.38	0.53	33.0
All Vehicles			1573	0.3	1573	0.3	0.673	10.3	LOS B	9.1	227.6	0.67	0.56	0.86	30.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Sieglösch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27715 - VIC Implementation\005 - Master Plan Update TIA\Analysis\176th_29th With Project 2038 PM.sip9

Intersection	
Intersection Delay, s/veh	97.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	466	76	96	503	18	52	142	79	27	104	28
Future Vol, veh/h	48	466	76	96	503	18	52	142	79	27	104	28
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
Heavy Vehicles, %	3	0	0	1	0	7	0	1	0	4	1	8
Mvmt Flow	52	507	83	104	547	20	57	154	86	29	113	30
Number of Lanes	1	1	0	1	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	137.5	114	20.9	20.8
HCM LOS	F	F	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	100%	0%	100%	0%	17%
Vol Thru, %	0%	64%	0%	86%	0%	97%	65%
Vol Right, %	0%	36%	0%	14%	0%	3%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	52	221	48	542	96	521	159
LT Vol	52	0	48	0	96	0	27
Through Vol	0	142	0	466	0	503	104
RT Vol	0	79	0	76	0	18	28
Lane Flow Rate	57	240	52	589	104	566	173
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.142	0.554	0.119	1.235	0.235	1.191	0.438
Departure Headway (Hd)	9.852	9.084	8.658	7.985	8.65	8.088	10.159
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	366	399	416	460	417	453	358
Service Time	7.552	6.784	6.358	5.685	6.35	5.788	8.159
HCM Lane V/C Ratio	0.156	0.602	0.125	1.28	0.249	1.249	0.483
HCM Control Delay	14.2	22.5	12.5	148.6	14	132.4	20.8
HCM Lane LOS	B	C	B	F	B	F	C
HCM 95th-tile Q	0.5	3.2	0.4	22.5	0.9	20.4	2.2

Timings
11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	89	59	51	295	44	229	42	1419	194	1304
Future Volume (vph)	89	59	51	295	44	229	42	1419	194	1304
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2		1	6		7	4	3	8
Permitted Phases	2		2	6		6				
Detector Phase	5	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0
Minimum Split (s)	9.5	39.0	39.0	9.5	38.0	38.0	10.0	32.0	19.5	32.0
Total Split (s)	15.0	20.0	20.0	19.0	24.0	24.0	15.0	59.0	22.0	66.0
Total Split (%)	12.5%	16.7%	16.7%	15.8%	20.0%	20.0%	12.5%	49.2%	18.3%	55.0%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	5.0	5.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	C-Max
Act Effct Green (s)	18.9	11.0	11.0	28.7	14.5	14.5	6.3	60.6	15.9	72.1
Actuated g/C Ratio	0.16	0.09	0.09	0.24	0.12	0.12	0.05	0.50	0.13	0.60
v/c Ratio	0.38	0.36	0.19	0.94	0.20	0.60	0.49	0.60	0.86	0.94
Control Delay	40.8	56.6	1.5	79.8	48.6	12.5	51.0	37.6	82.8	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	56.6	1.5	79.8	48.6	12.5	51.0	37.6	82.8	36.2
LOS	D	E	A	E	D	B	D	D	F	D
Approach Delay		35.3			50.3			38.0		42.1
Approach LOS		D			D			D		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 112 (93%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 41.3

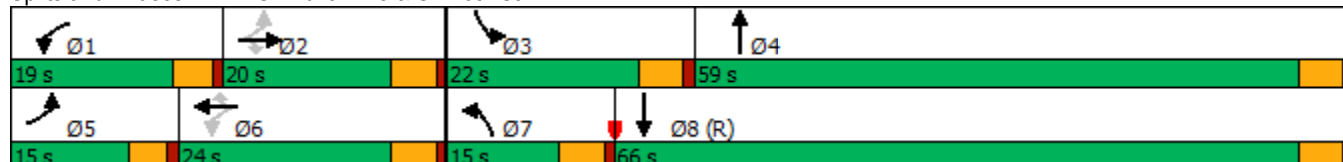
Intersection LOS: D

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: SE 164th Ave & SE 29th St



HCM 6th Signalized Intersection Summary

11: SE 164th Ave & SE 29th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	59	51	295	44	229	42	1419	36	194	1304	46
Future Volume (veh/h)	89	59	51	295	44	229	42	1419	36	194	1304	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1826	1870	1752	1885	1885	1900
Adj Flow Rate, veh/h	94	62	12	311	46	107	44	1494	36	204	1373	45
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	2	2	2	5	2	10	1	1	0
Cap, veh/h	278	164	138	348	273	230	56	2308	56	230	1883	62
Arrive On Green	0.06	0.09	0.09	0.12	0.15	0.15	0.03	0.45	0.45	0.13	0.55	0.55
Sat Flow, veh/h	1810	1900	1599	1781	1870	1579	1739	5128	124	1795	3448	113
Grp Volume(v), veh/h	94	62	12	311	46	107	44	992	538	204	676	742
Grp Sat Flow(s),veh/h/ln	1810	1900	1599	1781	1870	1579	1739	1702	1848	1795	848	1865
Q Serve(g_s), s	5.6	3.7	0.8	14.5	2.6	7.5	3.0	27.1	27.1	13.4	36.0	36.0
Cycle Q Clear(g_c), s	5.6	3.7	0.8	14.5	2.6	7.5	3.0	27.1	27.1	13.4	36.0	36.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	278	164	138	348	273	230	56	1532	832	230	927	1018
V/C Ratio(X)	0.34	0.38	0.09	0.89	0.17	0.46	0.79	0.65	0.65	0.89	0.73	0.73
Avail Cap(c_a), veh/h	326	238	200	348	296	250	145	1532	832	254	927	1018
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	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	51.8	50.5	45.7	44.9	47.0	57.7	25.6	25.6	51.4	20.5	20.5
Incr Delay (d2), s/veh	0.7	0.5	0.1	24.0	0.1	0.5	6.3	1.5	2.8	25.6	5.0	4.6
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(95%),veh/ln	4.7	3.2	0.6	8.2	2.2	5.3	2.5	15.3	16.8	12.1	11.7	22.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	52.3	50.6	69.7	45.0	47.5	64.0	27.1	28.4	77.0	25.6	25.1
LnGrp LOS	D	D	D	E	D	D	E	C	C	E	C	C
Approach Vol, veh/h		168			464			1574			1622	
Approach Delay, s/veh		49.1			62.1			28.6			31.8	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	15.3	20.4	59.0	11.8	22.5	8.9	70.5				
Change Period (Y+Rc), s	4.5	5.0	5.0	5.0	4.5	5.0	5.0	5.0				
Max Green Setting (Gmax), s	14.5	15.0	17.0	54.0	10.5	19.0	10.0	61.0				
Max Q Clear Time (g_c+I1), s	16.5	5.7	15.4	29.1	7.6	9.5	5.0	38.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay	34.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Timings
12: SE 164th Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	49	102	194	295	136	232	192	1220	426	162	1427
Future Volume (vph)	49	102	194	295	136	232	192	1220	426	162	1427
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA
Protected Phases	5	2	7	1	6	3	7	4	1	3	8
Permitted Phases			2			6			4		
Detector Phase	5	2	7	1	6	3	7	4	1	3	8
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0	5.0	5.0	20.0
Minimum Split (s)	10.0	33.0	10.0	10.0	32.0	10.0	10.0	31.0	10.0	10.0	28.0
Total Split (s)	15.0	33.0	20.0	17.0	35.0	20.0	20.0	50.0	17.0	20.0	50.0
Total Split (%)	12.5%	27.5%	16.7%	14.2%	29.2%	16.7%	16.7%	41.7%	14.2%	16.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	C-Max
Act Effct Green (s)	7.3	10.7	34.0	12.0	17.5	37.8	18.3	62.0	79.0	15.3	59.0
Actuated g/C Ratio	0.06	0.09	0.28	0.10	0.15	0.32	0.15	0.52	0.66	0.13	0.49
v/c Ratio	0.51	0.66	0.41	1.73	0.54	0.43	0.74	0.70	0.38	0.75	0.86
Control Delay	71.7	71.0	24.2	385.6	56.2	20.7	64.4	26.0	3.8	67.6	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	71.0	24.2	385.6	56.2	20.7	64.4	26.0	3.8	67.6	25.7
LOS	E	E	C	F	E	C	E	C	A	E	C
Approach Delay		44.8			190.1			24.9			29.9
Approach LOS		D			F			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.73

Intersection Signal Delay: 52.7

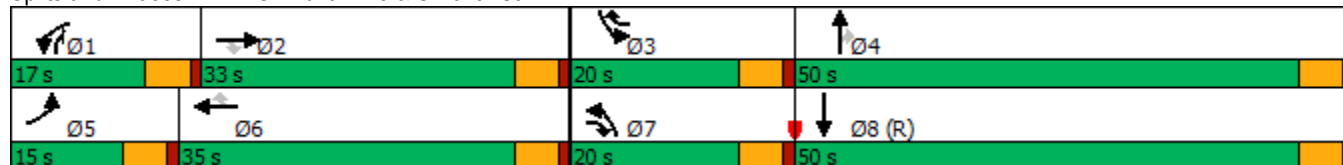
Intersection LOS: D

Intersection Capacity Utilization 81.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: SE 164th Ave & SE 34th St



HCM 6th Signalized Intersection Summary

12: SE 164th Ave & SE 34th St

Vancouver Innovation Center
Phase 4 2038 PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	102	194	295	136	232	192	1220	426	162	1427	49
Future Volume (veh/h)	49	102	194	295	136	232	192	1220	426	162	1427	49
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1826	1885	1870	1841	1856	1885	1870	1885	1870	1870	1841
Adj Flow Rate, veh/h	51	106	152	307	142	167	200	1271	305	169	1486	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	5	1	2	4	3	1	2	1	2	2	4
Cap, veh/h	64	183	359	178	298	427	224	1387	783	195	1554	50
Arrive On Green	0.04	0.10	0.10	0.10	0.16	0.16	0.13	0.39	0.39	0.11	0.38	0.38
Sat Flow, veh/h	1682	1826	1598	1781	1841	1572	1795	3554	1598	1781	4144	134
Grp Volume(v), veh/h	51	106	152	307	142	167	200	1271	305	169	872	662
Grp Sat Flow(s), veh/h/ln	1682	1826	1598	1781	1841	1572	1795	1777	1598	1781	1216	1846
Q Serve(g_s), s	3.6	6.7	9.8	12.0	8.4	10.4	13.2	40.7	14.4	11.2	41.9	41.9
Cycle Q Clear(g_c), s	3.6	6.7	9.8	12.0	8.4	10.4	13.2	40.7	14.4	11.2	41.9	41.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	64	183	359	178	298	427	224	1387	783	195	912	692
V/C Ratio(X)	0.79	0.58	0.42	1.72	0.48	0.39	0.89	0.92	0.39	0.86	0.96	0.96
Avail Cap(c_a), veh/h	140	426	572	178	460	566	224	1387	783	223	912	692
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.28	0.28	0.28
Uniform Delay (d), s/veh	57.2	51.6	39.8	54.0	45.7	35.6	51.7	34.7	19.3	52.5	36.5	36.5
Incr Delay (d2), s/veh	7.9	1.1	0.3	348.1	0.4	0.2	31.8	11.0	1.5	8.1	8.5	10.4
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(95%),veh/ln	3.0	5.5	6.9	35.7	6.9	7.1	12.4	26.0	9.3	7.4	16.1	23.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	52.7	40.1	402.1	46.1	35.8	83.5	45.7	20.7	60.6	45.0	47.0
LnGrp LOS	E	D	D	F	D	D	F	D	C	E	D	D
Approach Vol, veh/h		309			616			1776			1703	
Approach Delay, s/veh		48.6			220.7			45.7			47.3	
Approach LOS		D			F			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	17.0	18.2	51.8	9.6	24.4	20.0	50.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	28.0	15.0	45.0	10.0	30.0	15.0	45.0				
Max Q Clear Time (g_c+I1), s	14.0	11.8	13.2	42.7	5.6	12.4	15.2	43.9				
Green Ext Time (p_c), s	0.0	0.2	0.0	1.1	0.0	0.3	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay				71.0								
HCM 6th LOS				E								

APPENDIX F

REVISED DESIGN GUIDELINES



EXHIBIT E DESIGN GUIDELINES

Vancouver Innovation Center Master Plan

Updated April 2023

CONTENTS

Purpose	01
Applicability.....	02
Design Guidelines.....	03
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Water	04
Building Design.....	05
Exterior Building Finishes.....	06
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Tree Canopy	07
Open Space	07

Appendix A

Single Family Residential Design Reference Guide

Appendix B

Placemaking Goals

PURPOSE

These design guidelines are intended to ensure that development within the Vancouver Innovation Center is cohesive in both form and function and is consistent with the brand pillars of the VIC. These brand pillars form the foundation of the design principles that will guide project implementation. These brand pillars and the associated VIC design principles are described further below:



Natural

Connected to nature in all that we do

Design Principle

Provide a network of both passive and active open space areas that utilize existing trees and natural resources for recreation and relaxation.



Balanced

physical, mental, and spiritual

Design Principle

Provide a balance of community gathering spaces and areas for personal escape.



Authentic

Urban style and refinement, built with taste, personalization and ease in mind

Design Principle

Create a compact urban form composed of well-articulated buildings and ample pedestrian areas to encourage multi-modal travel throughout the site between the various on-site uses and open space areas.



Blended

Contemporary convenience, modern collaboration

Design Principle

Design buildings to encourage pedestrian access, ground floor visibility and community spaces for socialization and collaboration.



Community

Inclusivity and shared knowledge, energy and passion

Design Principle

Design with an eye towards the future. Incorporate sustainability and energy efficiency measures including things such as vehicle charging stations, solar panels, and low impact development (LID) stormwater management approaches. Continuously evaluate project performance related to parking and space efficiency, vehicular trips and sustainability with the goal of design refinements and improvements throughout project buildout, with the goal of the project becoming a “living laboratory.” Provide a network of well defined and accessible pedestrian corridors to encourage access through the site for all individuals.

APPLICABILITY

These guidelines will apply to new development and remodels of existing development within the Residential, Light Industrial, Mixed-Use, and Open Space LUAs within the VIC masterplan. Demonstration of project adherence to these guidelines will be required with land use permit submittals for new development on the site.



DESIGN GUIDELINES



Mobility

All new developments will demonstrate:

- a. Support for a 20-Minute Neighborhood by providing means to reduce need for vehicle trips;
- b. Functional connections to the site-wide bicycle and walking path network outlined in the Masterplan;
- c. Compliance with Washington State electric vehicle charging standards in effect at the time of land use application;
- d. Curbside ride share drop off or pull-out areas shall be incorporated at major entry points to all new buildings in the IL LUA; and
- e. Shared parking strategies.
- f. Compliance with the City of Vancouver Complete Street Policy, including infrastructure designed to be safe for all users, ages and abilities regardless of their mode of travel.



Energy

Developer is installing HVAC and lighting upgrades for the Existing Building. All new developments will demonstrate:

- a. Compliance with the 2018 Washington State Energy Code, at a minimum;
- b. Compliance with environmental standards in effect at the time of building permit application (i.e. environmental development standards do not vest on the Restated DA Effective Date;
- c. That every new building is designed to accommodate ready access for installation of solar panels that would occupy at least 10% of the building footprint. This includes the necessary structural and electrical infrastructure to accommodate the solar panels; and
- d. Infrastructure for electric vehicle charging stations.
- e. Advancement of "District Energy Conditions" as identified in Appendix A – Vancouver Innovation Center Master Plan Sustainability Framework.

Water

The VIC will prioritize use reductions, efficiency strategies, and surface water quality in its design. All new development applications will include:

- a. Water-saving plumbing fixtures in all new buildings;
- b. Native and adaptive plant selections that do not require excessive irrigation; and
- c. A surface stormwater strategy synopsis describing anticipated collection, treatment, and discharge strategies including any Low Impact Development (LID) BMPs planned for the project.
- d. An evaluation of means to reduce potable water use consistent with Appendix A – Vancouver Innovation Center Master Plan Sustainability Framework.





Building Design

a. Blank Walls

- i. At least 75% of the width of any new first-story building wall facing a street shall be devoted to interest-creating features, pedestrian entrances, transparent show or display windows, or windows affording views into retail, office or lobby space.
- ii. In all areas other than the IL LUA, building surfaces over 2,000 sf shall be broken up with window openings and/or changes in material.
- iii. Blank walls longer than 20 feet without windows or an unbroken series of garage doors are not permitted on any street frontage.
- iv. Any face of a building that is over 50' wide shall have varied horizontal plane and/or vertical façade shifts to break up the building's mass.

b. Corner Buildings

- i. New IL LUA buildings on a corner will have an entrance within 75 feet of the corner.

c. Ground Floor

- i. Buildings should engage with the “sidewalk zone” to bring visual interest, variation, and intimacy to the streetscape, while maintaining the pedestrian through-routes that link the land use areas on the site.
- ii. Pedestrian access to primary building entrances should be close to and visible from circulation facilities that include a pedestrian component such as a sidewalk, trail, or pedestrian plaza. Primary building entrances may not be from non-pedestrian oriented areas. Each primary building entrance should be attractive and have weather protection and highlight the presence of the entrance to pedestrians through the use of architectural treatments such as changes in the street-facing wall and lighting. Entrances from primary pedestrian corridors should be visually more prominent than
- iii. The design of buildings, above and below should be pedestrian scaled, intimate, and inviting.

d. Roofs

- i. Roof materials shall screen roof top mechanical equipment from ground-level views
- ii. Buildings shall have primarily flat roofs - architectural detailing and rooftop decks shall be allowed.



Exterior Building Finishes

To create a unique identity for the VIC, material selection and application is required to adhere to exterior finish standards.

- a. Major color themes are to predominantly be earth tones of grey, brown, and tan.
- b. Materials exhibiting patina are encouraged – including weathered wood, rusted steel, singed wood.
- c. Material changes shall be offset by a minimum 3 ½" horizontal or vertical relief.
- d. Materials that expose their natural state are encouraged such as exposed wood and concrete.
- e. First floor window framing shall be either wood or aluminum (does not apply to Residential LUAs)
- f. Opportunity for more industrial and technological materials, such as steel, aluminum, and heavy timber.

Maximum Building Heights

See Development Standards applicable to each LUA under Exhibit D of the Restated DA.

Single Family Residential

Single family residential attached designs should incorporate the material and pedestrian orientation provisions of these guidelines. See Appendix B – Single Family Residential Design Reference Guide.

Signage

- a. Monument signs will have a uniform color and typeface throughout the property.





Tree canopy

Every development application must demonstrate how it complies with the Tree Canopy Plan (Section 6.10 of the Restated DA) and provide an tree canopy assessment for its site and a 5-, 10-, 15-, and 20-year forecast for the tree canopy on the entire Property.

Open Space

All site plans will demonstrate adherence to the Masterplan and Appendix C - Placemaking Goals.

- a. Open spaces shall be directly accessible from all buildings in the development (building occupants should not have to walk around the building to get outside)
- b. Avoid inconvenient or circuitous ped access to amenities.
- c. Both greenscaping and useable accessible hardscaping elements shall count as open space
- d. Hardscape open spaces shall be designed for four season use and durable for urban intensity.
- e. Neighborhood open spaces
 - i. Refer to Circulation and Open Public Space Plan for targeted locations.
 - ii. Neighborhood open spaces shall be a minimum of 2,000 sf.
 - iii. Neighborhood open spaces shall incorporate interactive amenities such as pavilions, picnic facilities, and play structures.

Street Cross Sections

See DA for street section implementation options for the Vancouver Innovation Center.

APPENDIX A

Single Family Residential Design Reference Guide

Vancouver Innovation Center Master Plan

Updated April 2023



SINGLE FAMILY ATTACHED

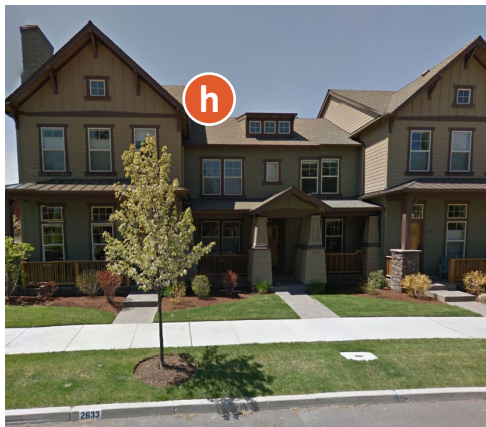


- a. Find opportunities to alley-load attached single family residential units to minimize driveway and garage exposure.
- b. Orient residential buildings to the “sidewalk zone” through the use of front porch features.
- c. Incorporate a range of natural color tones, architectural styles and horizontal and vertical relief.
- d. Seek opportunities to orient units to courtyards and open spaces.
- e. Create visual interest through horizontal and vertical relief and variation of architectural styles of adjoining attached units.
- f. Encourage reduced setbacks for residential units to engage entrances with the sidewalk.



SINGLE FAMILY ATTACHED – CONTINUED

- g.** Allow front-loaded attached units when accessed from a local street and when the garage exposure is minimized by site and building design features.
- h.** Allow for a mix of scale and size of attached product including larger duplexes.
- i.** Natural material elements including wood and stone should be prioritized for use.
- j.** Provide substantial window and trim relief on units to break up the potential for monolithic appearances on taller units.
- k.** For continuous banks of attached units, provide vertical, horizontal and roof relief variation to minimize the scale of the structures.



APPENDIX B

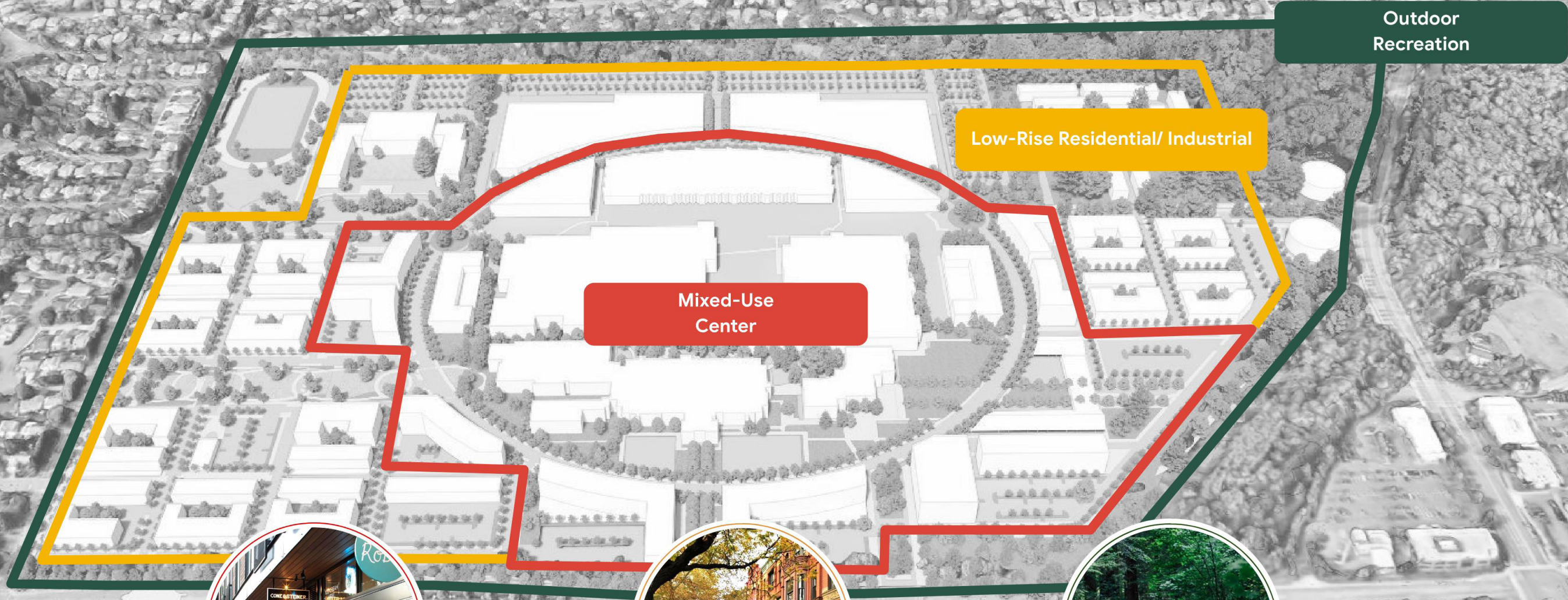
Placemaking Goals

Vancouver Innovation Center Master Plan

Updated April 2023



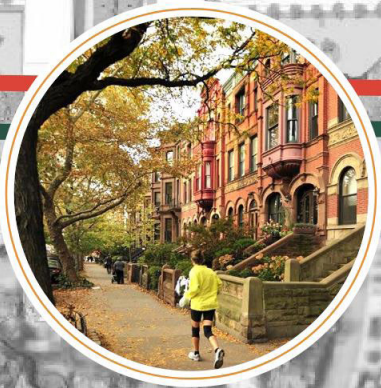


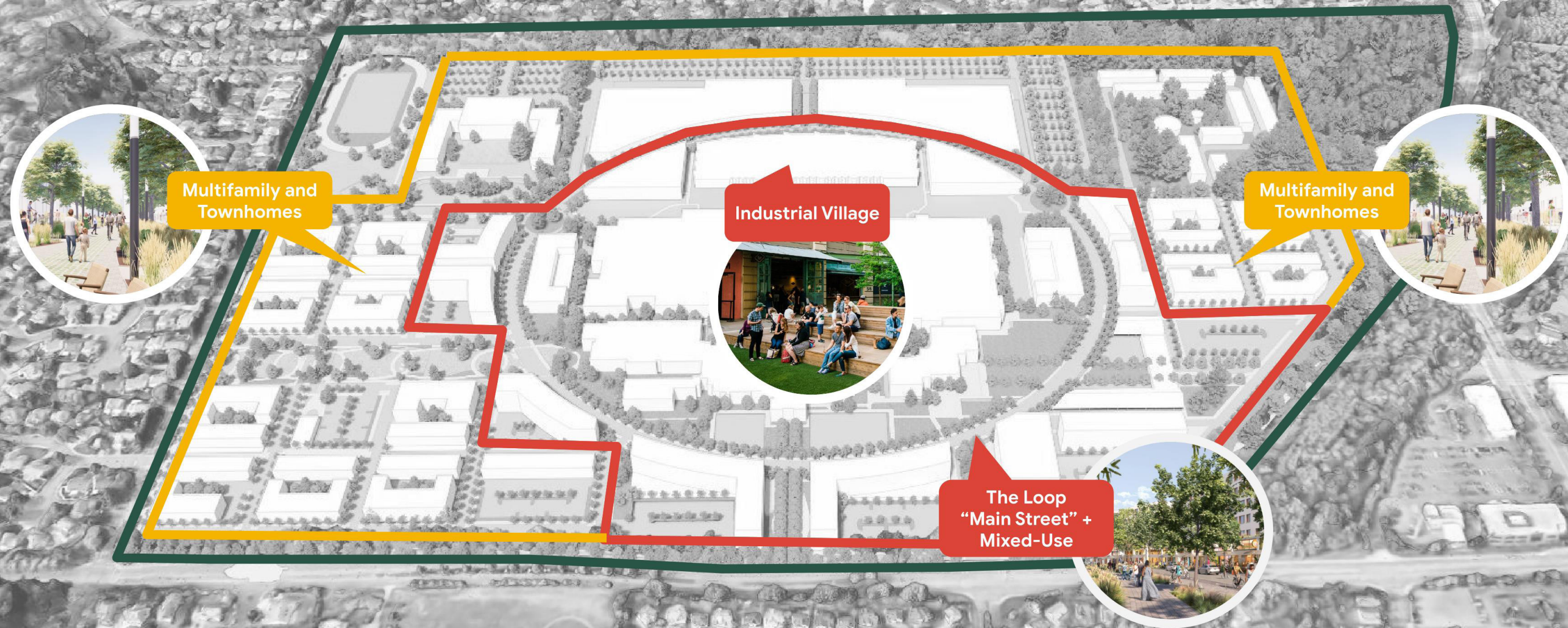


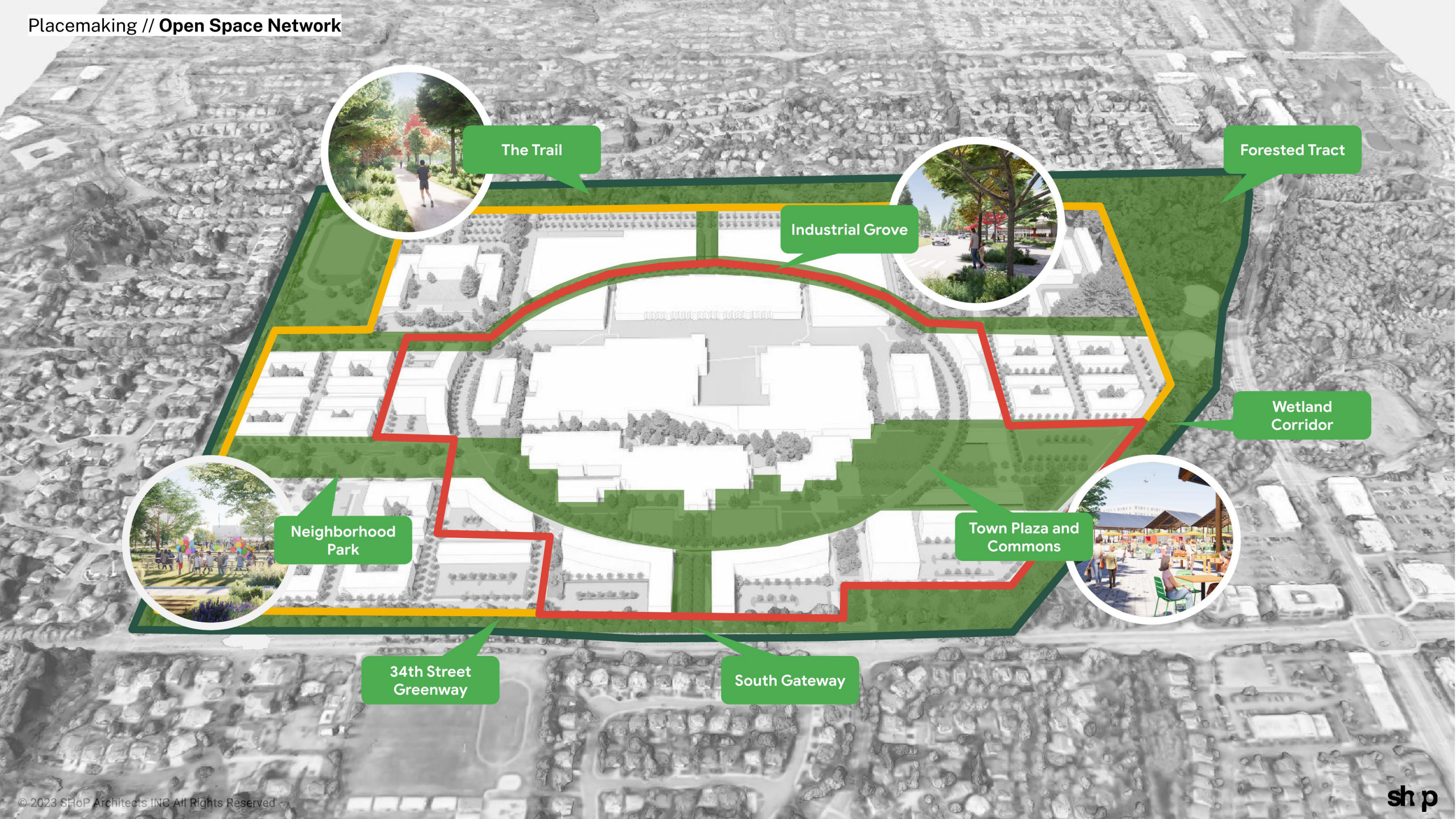
Outdoor
Recreation

Low-Rise Residential/
Industrial

Mixed-Use
Center







The Trail

Forested Tract

Industrial Grove

Wetland
Corridor

Neighborhood
Park

Town Plaza and
Commons

34th Street
Greenway

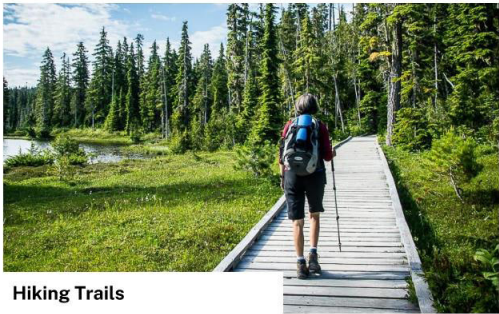
South Gateway



Multi-Use Public Trail



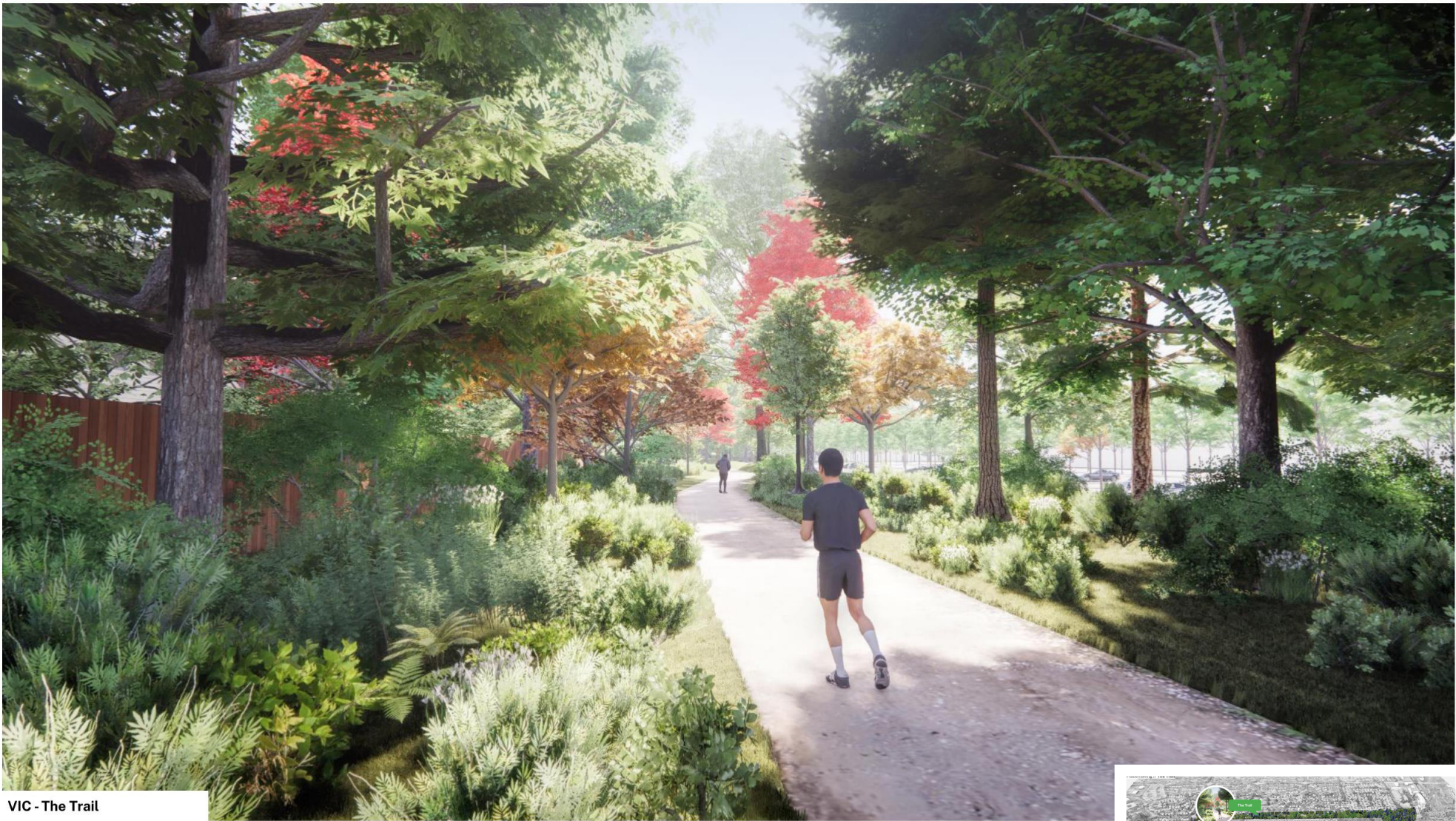
Existing Landscape



Hiking Trails

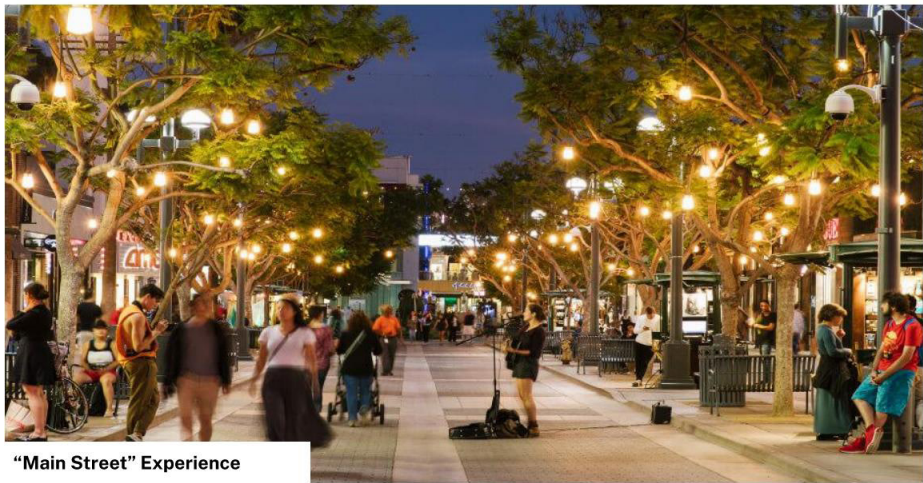


Connection to Forest Park



VIC - The Trail

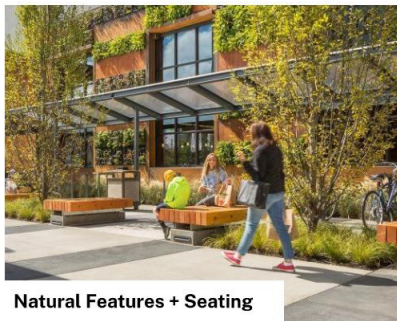




“Main Street” Experience



Destination Retail and F&B



Natural Features + Seating



Community Amenities



VIC - The Loop



Placemaking // Town Plaza and VIC Commons



Community Events



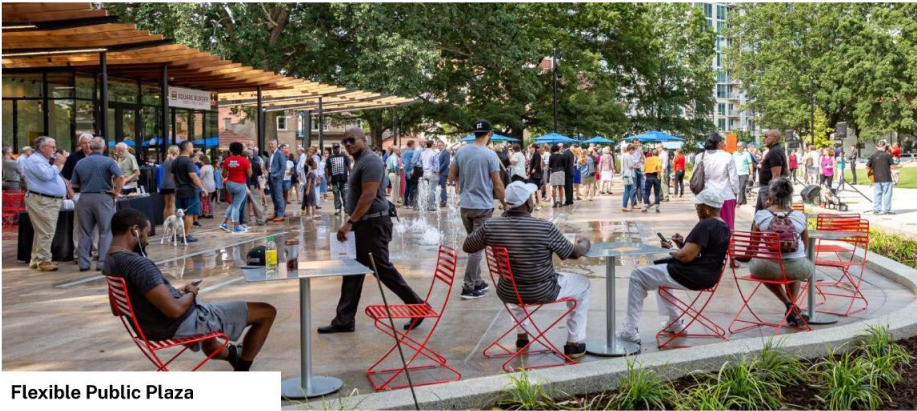
Outdoor Fitness



Water Play Features



Indoor-Outdoor Dining



Flexible Public Plaza



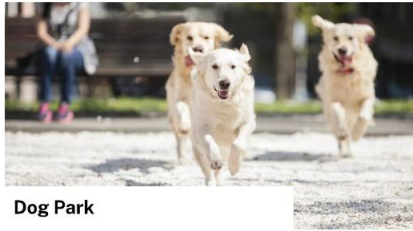
VIC - Town Plaza



Placemaking // Multi-family and Townhomes - Neighborhood Park



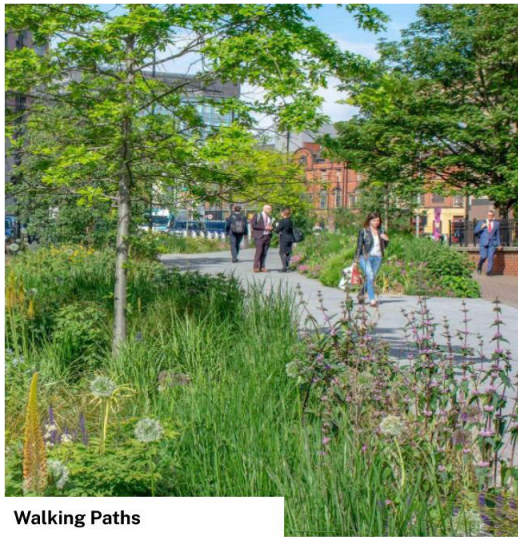
Seating + Picnic Areas



Dog Park



Playscapes



Walking Paths



Community Garden



VIC - Neighborhood Park



Placemaking // Multi-family and Townhomes - Pedestrian Laneways



Variety of Residential Types



Bioretention Landscape



Porches + Stoops



Pedestrian + Bike Laneway



VIC - Pedestrian Laneway



Placemaking // Industrial Grove



Light Industrial + Manufacturing



Pedestrian Pathways



Parking Area



29th St. Parkway



Innovation + Makerspace



VIC - Industrial Grove



APPENDIX G

PARKING STRATEGY

SEE PROJECT NARRATIVE, APPENDIX B

APPENDIX H

PHASING STRATEGY

SEE PROJECT NARRATIVE, APPENDIX B

APPENDIX I

SUSTAINABILITY GOALS FOR CITY OF VANCOUVER CAF ALIGNMENT

Memo

Date: March 27, 2023
Project: VIC Sustainability Master Planning
Project Number: 22-1362
To: Pedro Polanco, Jennifer Rabina, Marc Esrig
From: Forest Tanier-Gesner, Ned Greene
Subject: Sustainability Goals for City of Vancouver CAF Alignment

The Vancouver Innovation Center (VIC) development is determining sustainability goals for site infrastructure and future phase developments and is working to align to the Vancouver Climate Action Framework (CAF) that has recently been released by the City of Vancouver.

GOALS OF THE CLIMATE ACTION FRAMEWORK

One of the primary goals of the City of Vancouver's Climate Action Framework is aggressive reductions in the Greenhouse Gas (GHG) emissions associated with the City and Community operations:

- By 2025 – Achieve 80% Reduction in GHG emissions associated with municipal operations.
- By 2030 – Achieve 80% Reduction in GHG emissions associated with community operations.
- By 2040 – Achieve 100% Reduction in GHG emissions (Carbon Neutrality) associated with municipal and community operations.

PAE understands that the VIC development team is in favor of these performance-based standards over arbitrary certification programs that do not guarantee the City's desired outcome for emission reduction as set forth in the CAF.

To that end, PAE has developed life-cycle emissions and life-cycle cost assessments of several heating, cooling, and domestic hot water (DHW) system options and cooking appliance options for the VIC campus. PAE's recommended baseline design option was then benchmarked against the City of Vancouver's CAF. Based on this analysis it is estimated that the non-industrial process loads¹ on the VIC campus could be within 2% of the CAF reduction targets by 2030 and within 1% of the total CAF target by 2040.

PAE identified additional potential measures to address the minor gap in the emissions reductions estimates versus the CAF targets. These measures serve as a menu of options and can be implemented incrementally and discretely during the course of the VIC development. The quantifiable impacts of these options are also summarized in the following table.

¹ It is understood that the campus currently houses industrial processes that rely on natural gas fuel. These operations are currently outside of the scope of the systems options analysis and emissions reduction estimates. Alternate fuel sources should be considered by the Development Team as these become more readily available for the types of industrial processes.



	Reference Year	2024	2030	2040
BENCHMARK:				
Existing Building Stock and Forecasting Future buildings per today's Standards				
	MT CO2e/year	20,743	20,743	20,743
BASELINE DESIGN for new buildings:				
All Electric heating, cooling, and domestic hot water for all asset types.				
All Electric appliance requirements for all residential buildings (all-electric cooking and laundry)				
Efficient heat pump selections for space heating and domestic hot water (DHW) in all new buildings				
	MT CO2e/year	7,075	4,530	289
	(% reduction from benchmark)	66%	78%	99%
UPGRADES BY 2030 - OPTIONS TO CONSIDER				
Increase campus Photovoltaic (Solar) installations as needed to reach emission reduction goal. Consider exceeding code minimum if needed.			A	
Material selections and construction practices could further reduce the emissions associated with the campus development, through reductions in the embodied emissions for the buildings and site infrastructure. Design teams could help address marginal reductions needed to achieve goal by 2030			B	
Consider committing to provide more EV charging for residential parking and/or more residential spaces provisioned as EV ready if market demand supports that investment			C	
A+B+C = 390 MT CO2e/year	MT CO2e/year	7,075	4,140	289
	(% reduction from benchmark)	66%	80.0%	99%
UPGRADES BY 2040				
Phase out use of non-industrial gas use from the VIC Campus - enforce all electric cooking in commercial buildings, upgrade existing buildings, phase out other gas uses by 2040 if required by code.				-289
	MT CO2e/year	7,075	4,140	0
	(% reduction from benchmark)	66%	80%	100%

Table 1: Emissions Reduction Estimates for VIC Campus



VIC SUSTAINABILITY GOALS

As shown in Table 1, site emissions estimates for the recommended baseline design approach closely aligns with the City's CAF emissions reductions targets. Below is a summary of PAE's recommended baseline design for the campus:

- BOD - "Building by Building Heating and Cooling – All Electric" systems approach for all new construction.
 - Efficient heat pump selections for space heating and domestic hot water (DHW) in all new buildings
 - Electrification phase in plan for all existing buildings heating and DHW heating systems by 2040, if required under City CAF.
 - Central heating update requires consideration of low temp heating coils for end-of-life upgrades with current heat pump technology.
 - All Electric appliance requirements for all residential buildings (all-electric cooking and laundry)

To close the minor gap between the baseline design approach and the CAF targets, PAE recommends the following possible options to be evaluated at the time of each new development project:

- Recommend to future commercial tenants to strive for All Electric appliance requirements for all commercial buildings (i.e. all-electric commercial cooking by 2040 if required by code). It is understood that restaurants and some industrial tenants who have commercial grade kitchens within their premises, may not be willing to comply with this requirement today given current industry standards.
- Increase onsite Photovoltaic (solar) installations as needed to reach emission reduction goal. This may require exceeding code minimum to achieve the desired target.
- Material selections and construction practices could further reduce the emissions associated with the campus development, through reductions in the embodied emissions for the buildings and site infrastructure. Design teams could help address marginal reductions needed to achieve goal by 2030.
- Evaluate demand for Increasing percentage of Electrical Vehicle charging stations for residential neighborhoods. Exceeding existing code if demand warranted that could help meet the CAF targets.

VIC Sustainability Plan

The following outlines the Sustainability Plan for VIC Masterplan 2.0 and the various commitments the Developer has submitted to date.

Sustainability Improvements done to date at the existing 715,000 SF industrial buildings:

- **Energy Efficiency Improvements:** Developer has worked with Clark PUD and Energy Trust of Oregon to improve energy efficiency at the existing industrial buildings as follows:
 - Installed new, more efficient chillers.
 - Replaced pumps and installed new VFDs in central plant.
 - Installed new building HVAC control systems.
 - Converting point controls from pneumatic to digital.
 - Installed exterior LED lighting.
 - Replacing all common area and house lighting with state-of-the-art LED and lighting control system.

The total estimated annual savings from the above installed improvements is estimated to be 6,300,000 KWh and 345,000 Therms.

- Additional energy efficiency upgrades and sustainability initiatives to date include:
 - Upgraded bathrooms with waterless and reduced flow systems to achieve **indoor water use reduction**.
 - Replaced water fountains with bottle filling stations.
 - Installed new electrical sub-metering system for better monitoring of electrical and water usage.
 - Participant in Clark PUD's Community Solar Program.
- All new tenants are required to install LED lighting and controls within their space.
- Installed showers and bicycle storage space to promote biking to work.
 - Creating long term program to replace a portion of current landscaping with native plants species.
- **Adaptive Reuse, Access to Recreation Facilities:**
 - The existing 715,000 SF of buildings is at the heart of this campus and substantial sustainability investments have been made as noted above. The Developer also renovated underutilized former corporate cafeteria into an activated community space with an upscale café and coffee bar, living room/lounge space, conference rooms, expanded fitness center with fully renovated locker rooms, a yoga and meditation studio, etc.

Sustainability Plan for the New Development under Masterplan 2.0

Overall Campus & Vision:

- **Walkable Streets, Compact Development, Mixed-Use Neighborhoods, Smart Location, Access to Recreation Facilities:** The campus is designed as a 20-minute, walkable, mixed-use

neighborhood providing convenient, safe pedestrian-oriented access to places and services that residents, employees, and neighbors need every day – including work, transit, shopping, quality food, school, parks, open space, and social activities.

- **Neighborhood Schools:** The campus includes a 20-acre parcel that is owned by the Evergreen School District and will be home to a future middle school.
- **Site Design for Habitat Conservation:** A 13.7-acre Forested Tract that has a restrictive covenant to remain as open space. The Developer intends to sell this Forested Tract to the City of Vancouver.
- **Housing Types and Affordability, Housing and Jobs Proximity:** Developer commits to participating in the MFTE program whereby 20% of the 1,800 units (i.e. 360 units) will be available at 80% AMI. All residential units are within walking distance of all employment opportunities on campus.
- **Connected and Open Community, Access to Civic and Public Space, Access to Recreation Facilities, Local Food Production:** Developer will provide a perimeter trail and neighborhood park open to the general public. The trail will be connected to the Forested Tract. The trail will also link together all of the developments within the campus. Community gardens will be available to residents and tenants. The Town Plaza is an optimal location for a local farmers market to operate on the campus.
- **Community Outreach and Involvement:** Masterplan 2.0 was developed in concert with community and municipal input through feedback from the Masterplan 1.0 approval process, community engagement sessions on the proposed Masterplan 2.0, and ongoing conversations with City staff.

Building Design:

- **Optimize Building Energy Performance:** Developer will achieve GHG emissions reduction targets stated in the City's Climate Action Framework as outlined in Appendix I of the application (Appendix I is part of Developer's Sustainability Plan).
- **Optimize Building Energy Performance:** All new buildings will include the following:
 - All electric heating, cooling and domestic hot water.
 - Efficient heat pump selections for space heating and domestic hot water
 - for all new residential buildings, all electric appliances
- **Solar Orientation:** All new buildings will be solar ready per code.
- **Rainwater Management:** For new buildings, Developer will be infiltrating all runoff on site.
- **Electric Vehicles:** Developer will comply with City code for EV infrastructure requirements with each project's site plan approval.

Transportation and Mobility:

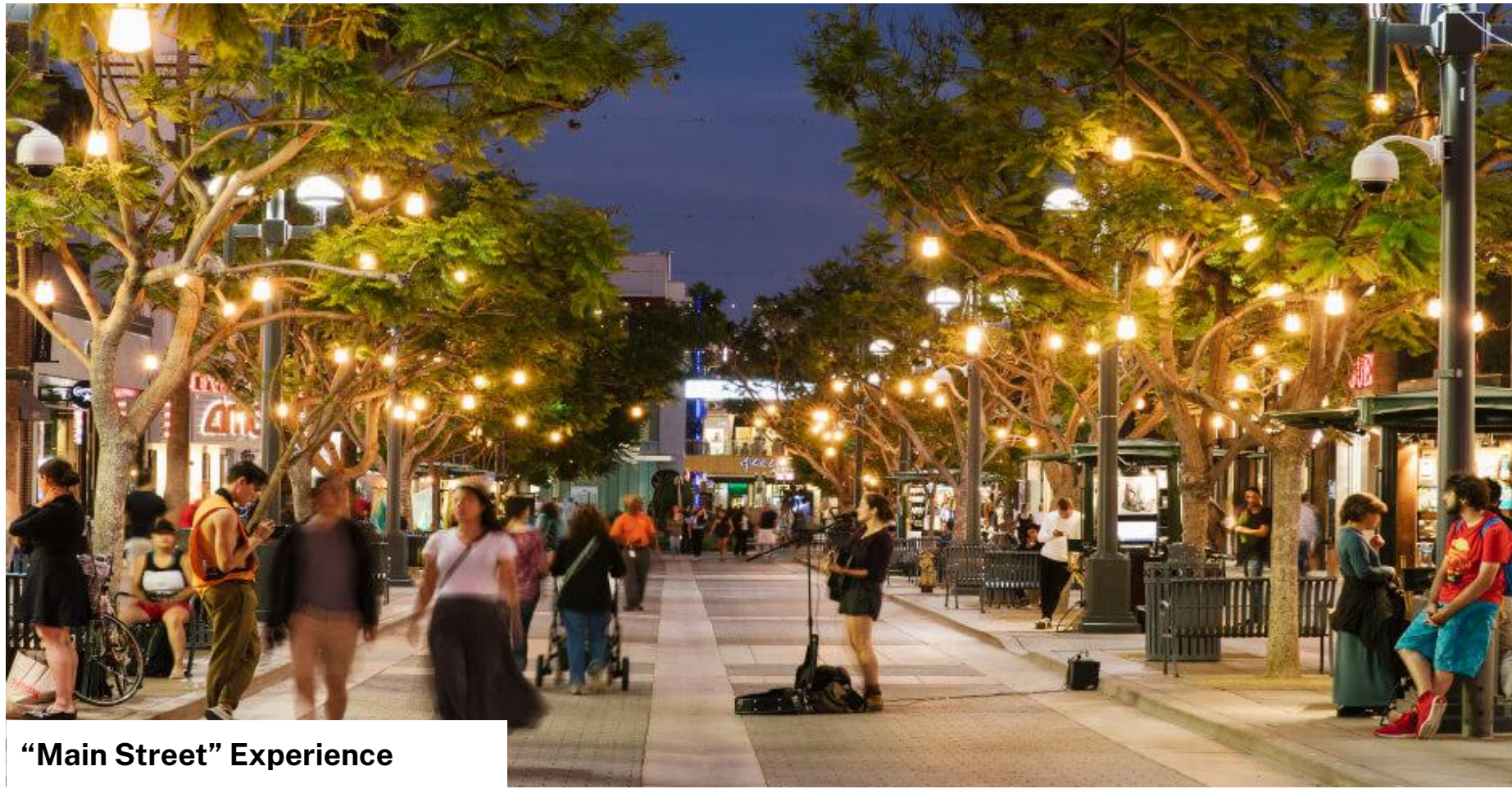
- **Compact Development, Walkable Streets, Mixed-Use Neighborhoods, Connected and Open Community, Transportation Demand Management, Housing and Jobs Proximity, Smart Location:** Masterplan 2.0 allows for greater integration of uses than Masterplan 1.0. The entire campus will be walkable/bikeable with ample opportunities to live and work on campus. Small retail and commercial services will be within a 5-minute walk of any residential neighborhood or

commercial/industrial tenant. The reconfiguration of Masterplan 2.0 also achieves added density with the same amount of vested trips in Masterplan 1.0. Masterplan 2.0 also creates a more efficient street network that allows for separation of industrial related truck traffic from residential and mixed-use traffic.

- **Walkable Streets, Transit Facilities, Bike Facilities, Smart Location:** Road networks will be designed and coordinated with City transportation staff to ensure safe, comfortable and complete connections for various modes of transportation (vehicular, pedestrian, bicycles, etc.)
 - Once ESD develops the school, Developer will have bikeable/walkable laneways for students to be able to walk or bike to school safely.
- **Bicycle Facilities, Smart Location:** Developer will include infrastructure to support bike parking and will have bike sharing programs. Developer renovated locker rooms, showers and changing facilities at the existing buildings to help encourage habitual biking for its tenants. The perimeter trail and bike paths throughout the campus will encourage recreational physical activity.
- **Transportation Demand Management, Smart Location:** Developer will deploy shared parking strategies where applicable. The campus design encourages multimodal travel. Developer is eliminating an entrance on 34th Street to reduce traffic congestion at 176th Avenue and 34th Street. Campus entrances/exits at 34th Street are being coordinated with the City's efforts along that corridor to ensure offsite improvements result in a smooth and safe pedestrian experience.
- **Access to Quality Transit and Transit Facilities, Smart Location:** Developer will work with CTran, ESD and City staff to coordinate safe and efficient placement of bus stops within the campus. The VIC campus already has a bus stop along 34th Street and the campus will have pedestrian laneways to provide safe access to the existing bus stop.

Open Space, Natural Systems & Water Resources:

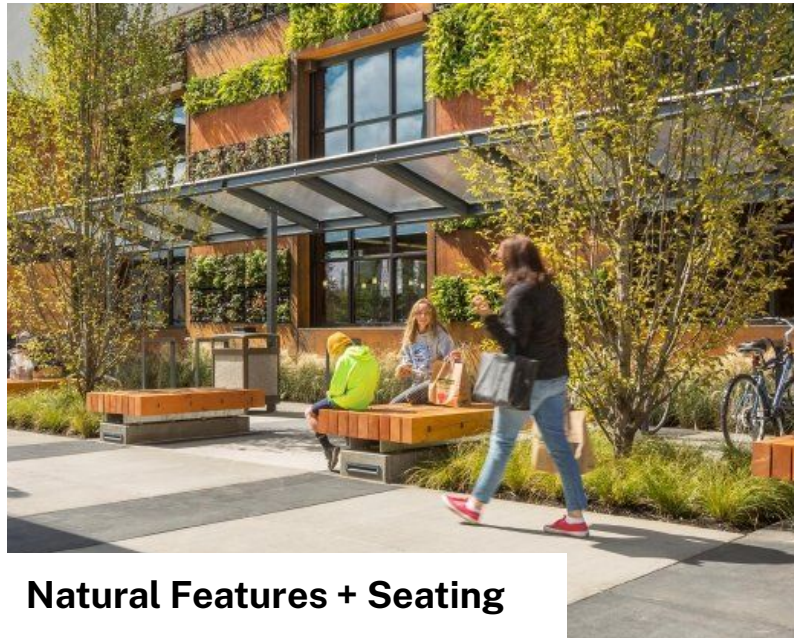
- **Site Design for Habitat Conservation and Long-Term Conservation Management of Habitat, Connected and Open Community, Access to Recreation Facilities:** Preservation of 13.7 acre Forested Tract
 - Developer worked with a local arborist to adjust the boundary line of the Forested Tract to create a better edge condition for the trees allowing for a more resilient tree canopy and preservation of native and climate resilient species.
- **Connected and Open Community, Access to Civic and Public Space, Access to Recreation Facilities, Connected and Open Community, Access to Recreation Facilities:** Masterplan 2.0 increases the amount of open space/parks/trails by 26% from 19 acres of open space to 24 acres.
- **Tree Lined and Shaded Streetscapes and Heat Island Reduction:** Canopy coverage per Restated DA which is above and beyond the code minimum for all use types. Developer also commits to achieving Tree CAP certification for all projects (minimum Silver Leaf Achievement). Both canopy coverage & Tree Cap Silver will reduce the heat island effects within the campus.
- **Outdoor Water Use Reduction:** Developer will favor nature scaping in lieu of high maintenance turf for streetscapes.
- **Rainwater Management:** For new buildings, Developer will be infiltrating all runoff on site.



“Main Street” Experience



Destination Retail and F&B



Natural Features + Seating



Community Amenities



VIC - The Loop



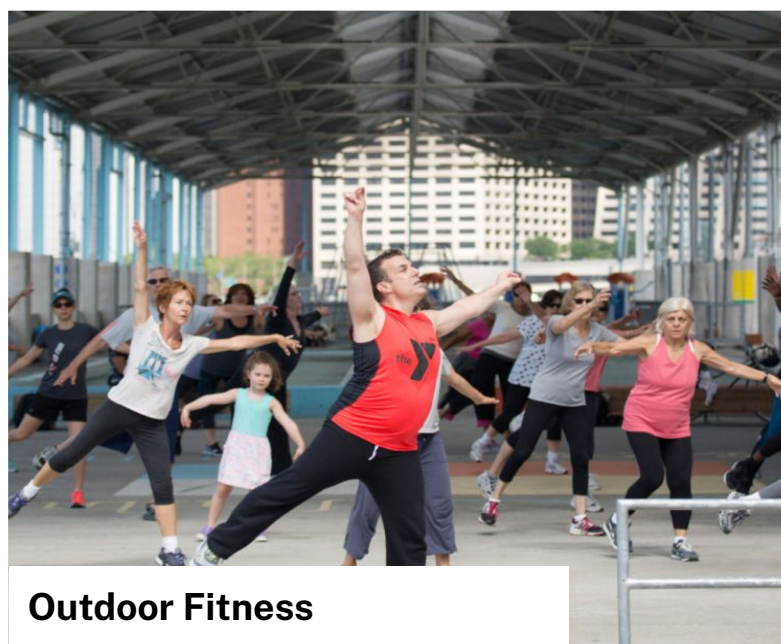
Town Plaza and
VIC Commons



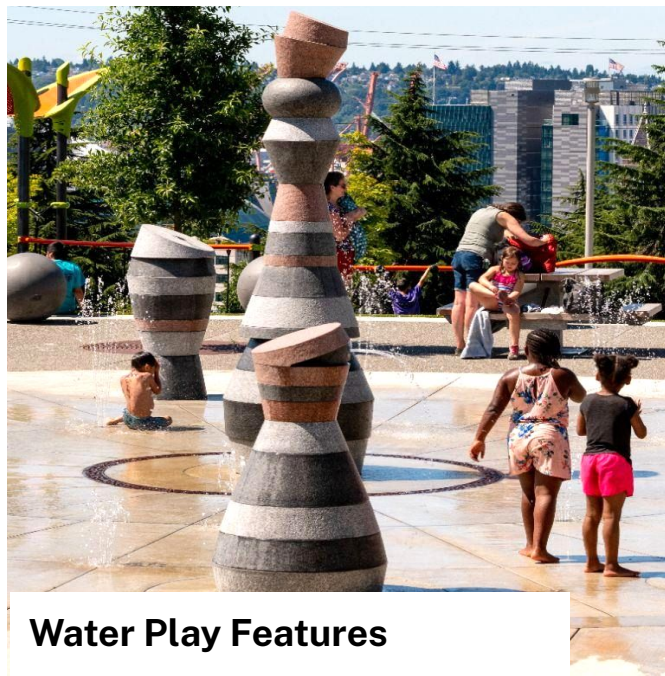
Placemaking // Town Plaza and VIC Commons



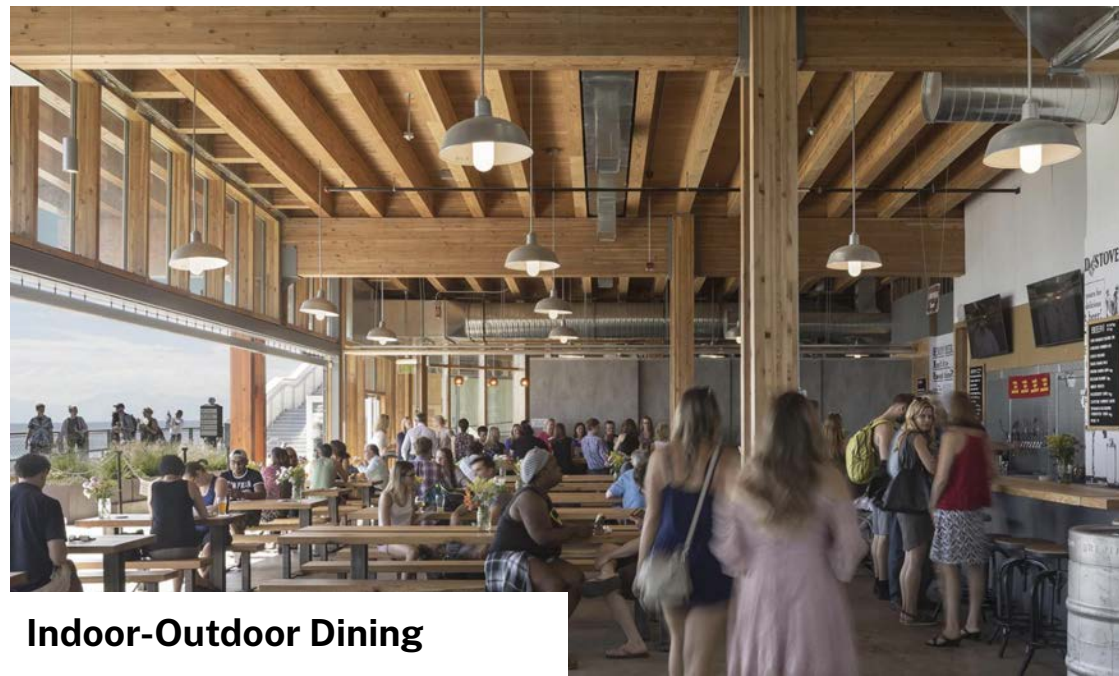
Community Events



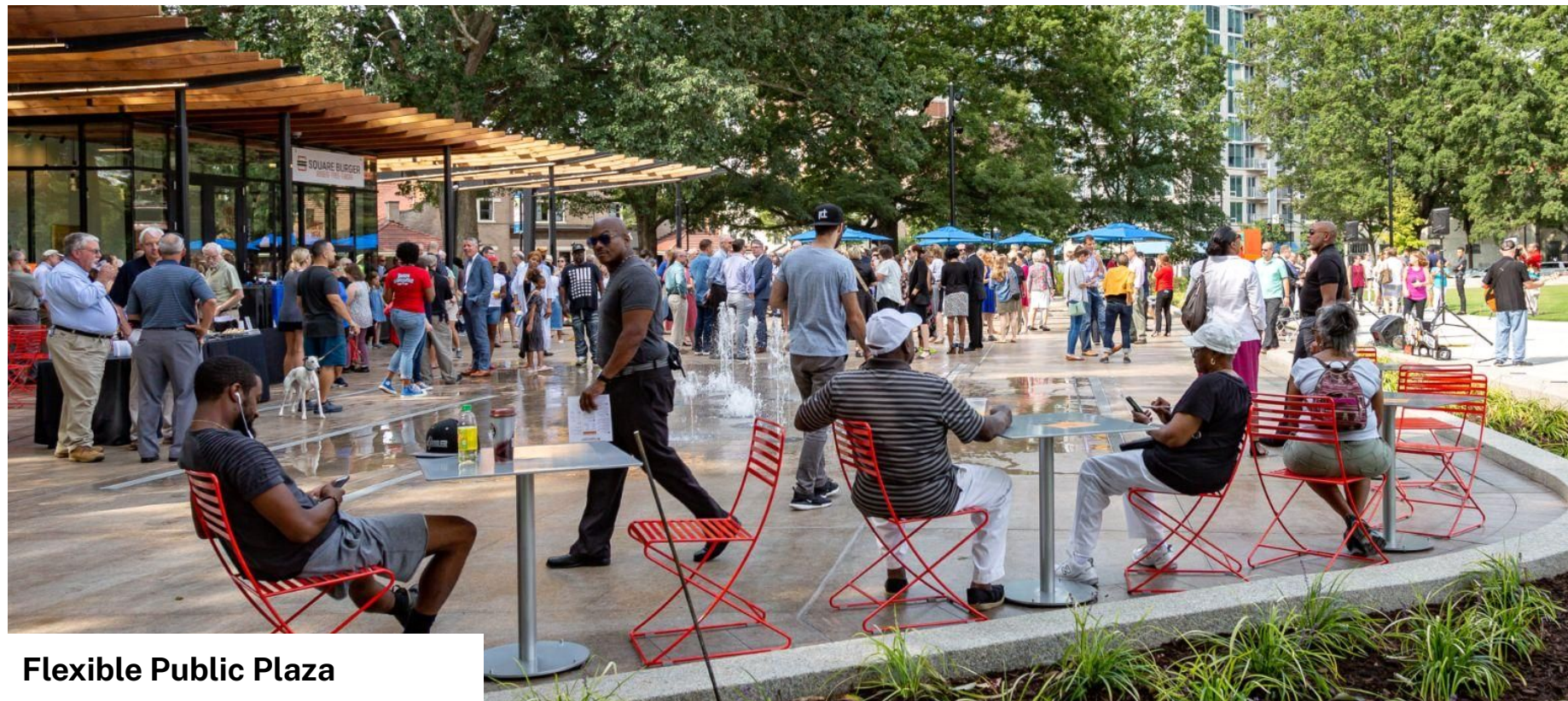
Outdoor Fitness



Water Play Features



Indoor-Outdoor Dining



Flexible Public Plaza



VIC - Town Plaza

Vancouver Innovation Center
Master Plan and Development Agreement (DA) Revisions
Summary of Changes
Original vs. Revised Master Plan/DA

Original Master Plan/ DA	Proposed Master Plan/ DA	Notes on Revised Plan
Main East-West Road – 29th Street	Central Loop/ Ring Road	Provides better connectivity, traffic flow, and multi-modal accessibility
Defined Open Space	Open Space as overlay throughout the campus	Provides an additional 5 acres of open space, compared to the approved plan – from 19 to 24 acres, not including the school space; also spreads open space throughout the campus.
Detached Single-Family Residential (SFR) LUA	Removal of Single-Family Detached uses	Single- family attached (townhouses) are still permitted. That helps increase the campus density while maintaining open space area.
Maximum residential density 1,200 units	Increase maximum residential units to 1,800 units	Additional 600 residential units on campus, a 50% increase.
No affordable housing commitment	Commitment to Affordable housing through MFTE	Commitment to apply for MFTE and designate 20% of units across all residential buildings to be affordable for households at 80% AMI.
Commercial node located by the Town Center	Commercial expands throughout the Central Loop/ Ring Road	A focal point Town Center remains but the Central Loop/ Ring Road provides a commercial corridor that connects the different areas within the campus.

Specifically defined Residential LUAs – MFR and SFR	Consolidated Residential LUAs into R-LUA	Single-family attached and multi-family can be developed within the same LUA
Forested Area Access acquisition – no clarity on ownership, development and management.	Negotiated terms on Forested Area acquisition, development timeline and management.	Clarifies that City will acquire the Forested Area along with additional acreage for parking; establishes the development timeline for the first phase of a community park within 3 years and that the City will manage the park and forested area to its standards.
Hotel and community center allowed as a Type III application	Hotel and community center allowed as a Type II application	Provides an easier path for the development of a hotel and/or community space, by performing a Traffic Impact Analysis.
School as part of the Master Plan and DA	School removed from DA	The school area has been sold to the Evergreen School District and it is still designated to be a school.
Specifically defined phasing of development	Phasing to follow infrastructure and market needs	Revised DA allows development to follow infrastructure development as well as market needs while still complying with the walkable neighborhood concept. Applicant will develop office space once market demand returns.

**RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:**

Stephen W. Horenstein, Attorney
Schwabe, Williamson & Wyatt P.C.
700 Washington Street, Suite 701
Vancouver, WA 98660

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**VANCOUVER INNOVATION CENTER (VIC)
FOURTH AMENDED AND RESTATED DEVELOPMENT AGREEMENT**

City (Grantor):	City of Vancouver, a Washington municipal corporation
Developer (Grantee):	The VIC Building Owner LLC, a Delaware limited liability company
Property Abbreviated Legal:	#5&7 6-1-3E #10 MARTIN DLC,#22N,41,36,13 SIMMONS DLC 52.65A; #5&7 6-1-3E #10 MARTIN DLC,#22N,41,36,13 SIMMONS DLC 104.52A; #172 WM SIMMONS DLC 1.24A
Property Assessor's Tax Parcel Nos.:	126455000; 126816000; 986056494
Property Full Legal Description:	See Exhibit A
Reference Numbers of Related Documents:	3343884, 5809816, 5979934 AMD, 6017326 COV

**VANCOUVER INNOVATION CENTER (VIC)
FOURTH AMENDED AND RESTATED DEVELOPMENT AGREEMENT**

This Vancouver Innovation Center (VIC) Fourth Amended and Restated Development Agreement (this "VIC DA") is entered into on this ____ day of _____, 2024, by and among the City of Vancouver, a Washington municipal corporation (the "City" or "Grantor"). The VIC Building Owner LLC, a Delaware limited liability company (the "VIC") and "Developer" or "Grantee." City and Developer are referred to as the "Parties."

RECITALS

A. WHEREAS, in the 1970's, Hewlett-Packard ("HP") acquired approximately 179 acres of real property, located at 18110 SE 34th Street, Vancouver, Washington, formerly known as the HP Campus and now commonly known as the Vancouver Innovation Center (VIC), for the purpose of developing a large manufacturing campus for its own purposes pursuant to an HP South Campus Master Plan and, after building 715,000 square feet of office space, HP sold the VIC in 2009 to S-E, Inc., a Delaware corporation ("SE"), and SE sold to Developer in 2020, subject to the a development agreement; and

B. WHEREAS, the "Property" as legally described on Exhibit A attached hereto is currently encumbered by that certain Third Amended and Restated Development Agreement by and among SE, the Developer, and the City, dated September 15, 2021 (the "Restated DA") and the Developer is the successor in interest to SE on the Property and the Restated DA, except for any portion designated as the School Property (Clark County Tax Parcel 986060362; abbreviated legal description #17 SEC 6 T1N R3EWM 20.00A), as currently configured and legally described on Exhibit A-3 attached hereto, which SE sold to the Evergreen School District, a Washington municipal corporation ("ESD"), on November 30, 2021 and which is subject to an Agreement Related to Development Infrastructure by and between ESD and the Developer dated November 18, 2021 and recorded under Clark County Auditor's File No. 5994962, as amended by that First Amendment dated _____, 2024 and recorded under Clark County Auditor's File No. _____ (the "ESD Infrastructure Agreement") which, in addition to any required City land use approvals, sets forth those obligations required of ESD in to the development of the School Property; and

C. WHEREAS, on August 16, 2021, the City adopted Ordinance No. M-4346 amending the Property's Vancouver Comprehensive Plan and zoning map designation from Light Industrial (IL) to Mixed Use (MX) (the "Zoning Change"), adopting the Developer's Mixed Use Master Plan (the "VIC Master Plan") and approving the Restated DA; and

D. WHEREAS, as required by the Restated DA, that certain Restrictive Covenant, as corrected and re-recorded February 8, 2022 (6017326 COV) (the "Forested Tract Covenant") was recorded on the real property defined therein as the "Forested Tract" prohibiting development of the Forested Tract for any purpose other than park or open space uses; and

E. WHEREAS, the Property includes six existing connected buildings encompassing approximately 700,000 square feet that were constructed by HP (the "Existing Building") and, subsequent to the Parties entering into the Restated DA, the Developer obtained City approval to construct a 200,981 square foot industrial building pursuant to Type II Site Plan Review; and

F. WHEREAS, on May 5, 2023, Developer submitted a land use application for Major revisions, including but not limited to, the VIC Master Plan (the VIC Master Plan 2.0, as later defined herein) pursuant to Section 7 of the Restated DA requesting to amend certain master plan elements for the purposes of: consolidating industrial areas to optimize opportunities for employment-generating development, increasing residential density and affordable housing; integrating more open space; refining the transportation network to include a central ring road for primary site circulation; better integrating mixed-use elements across the campus by changing from a Town Center District to a mixed-use slow street corridor along the proposed ring road; replacing the Town Center Master Plan Amendment required by the Restated DA with this proposed VIC Masterplan 2.0; allowing for hotel and community center development as a Type II conditional use permit; and updating the land use areas, phasing, and design standards;

G. WHEREAS, while retaining the Property's MX zoning designation and the Forested Tract Covenant development restrictions, modifications to the Restated DA and the VIC Master Plan currently encumbering the Property are necessary to facilitate development of the Property as proposed, and the Parties desire to facilitate development of the Property under the terms and conditions described below;

NOW, THEREFORE, for good and valuable consideration, the sufficiency of which is acknowledged, the Parties agree set forth in this VIC DA.

AGREEMENT

Section 1. Recitals. The above recitals are incorporated in this VIC DA.

Section 2. History of Development Agreements.

2.1 On June 4, 2001, HP and the City of Vancouver entered into a Development Agreement ("Original DA") for the Property with an initial term of 15 years. This Original DA provided HP with reserved traffic capacity, master plan approval, vesting to existing land use codes, and required dedication of right-of-way on SE 192nd Ave.

2.2 On November 16, 2009, the City approved the First Amendment to the Original DA extending its term to June 4, 2020 ("First Amendment") and a Second Amendment, approved on June 1, 2020, further extended the term another two years ("Second Amendment").

2.3 On May 21, 2020, a pre-application conference was held between City staff, applicant representatives and a local neighborhood representative for consideration of the proposed Zoning Change, Restated DA, and VIC Master Plan. Application materials were submitted beginning on June 15, 2020.

2.4 Duly advertised Planning Commission workshops on the proposed Zoning Change, Restated DA, and VIC Master Plan were held on August 11, 2020, September 8, 2020, November 10, 2020, December 8, 2020, January 26, 2021, and May 11, 2021, and a Planning Commission public hearing was held on July 6, 2021. Duly advertised City Council workshops on the proposed Zoning Change, Restated DA, and VIC Master Plan were held on November 23, 2020, December 21, 2020, and July 12, 2021, followed by a City Council First Reading on August 9, 2021 and public hearing on August 16, 2021.

2.5 Pursuant to the public hearing, on August 16, 2021, the City Council adopted Ordinance M-4346 implementing the Zoning Change by amending the Vancouver Comprehensive Plan and Zoning map designation for parcels adjacent tax lots 126455000 and 126816000, located at 18110 SE 34th Street, adopting the VIC Master Plan, and authorizing the Restated DA, which was originally recorded on October 25, 2021 and re-recorded on February 8, 2022 to correct the cover page to include reference to Parcel 986056494 as it existed on October 25, 2021.

2.6 On October 25, 2021 the Forested Tract Covenant was recorded, and then re-recorded on February 8, 2022 to correct the Assessor's Parcel Number referenced on the first page.

2.7 Duly advertised Planning Commission workshops on this VIC DA and the VIC Master Plan 2.0 were held on September 12, 2023, December 12, 2023, and [TBD], and a Planning Commission hearing was on [DATE]. Duly advertised City Council workshops were held on [DATES], followed by a City Council First Reading on [DATE] and public hearing on [DATE].

Section 3. Effective Date and Purpose. The "Effective Date" of this VIC DA is the date upon which the Vancouver City Council adopts an ordinance approving this VIC DA. That date will be written on the first page of this VIC DA, regardless of the date upon which the Parties' signatures are affixed below. The purpose of this VIC DA is to:

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3.1 Provides an integral and required component of a revised employment centered mixed-use master plan for the Property (“VIC Master Plan 2.0” defined below);

3.2 Continue to reserve a certain amount of traffic capacity set forth in the Original DA for the term of this VIC DA;

3.3 Vest the Property and VIC Master Plan 2.0 approved under those land use regulations as provided herein;

3.4 Identify desired land uses that are approved and outright allowed under the VIC Master Plan 2.0;

3.5 Identify transportation improvements Developer agrees to construct to benefit the community and the Property, pursuant to the implementation of the VIC Master Plan 2.0; and

3.6 Identify the Park Parcel (as defined herein) that City has requested Developer sell to City, contingent upon execution of a mutually satisfactory purchase and sale agreement, and community park improvements the City will develop and operate.

Section 4. Description of the Proposed Development of the Property. The development of the Property will be a mixed use, 20-minute community where business, industry, residences, and the outdoors intersect. The Property will be developed consistent with the terms and provisions of this VIC DA and the VIC Master Plan 2.0, approved pursuant to Section 6 below.

Section 5. Approval and Vesting. The VIC Master Plan 2.0 will be fully and finally approved by the Vancouver City Council simultaneously with the approval of this VIC DA, in accordance with VMC 20.430.060(C)(3), after review and recommendation to the Vancouver City Council by the Vancouver Planning Commission. The Property shall be developed in accordance with the Vancouver Municipal Code (VMC) in effect as of the date the application for the VIC Master Plan 2.0 was received, which was December 1, 2022 (the “VIC 2.0 Application Date”), as modified by this VIC DA (including the VIC Master Plan 2.0), and (b) subject to the exception provided in Section 15, the VIC Master Plan 2.0 shall be vested to existing land use regulations and standards as of the VIC 2.0 Application Date.

5.1 Any permit or approval issued by the City for the Property after the Effective Date and before the termination of this VIC DA must be consistent with this VIC DA.

5.2 Through a Type I land use application process, as defined in the VMC, Developer may request that the Property be subject to later-enacted laws, regulations, and ordinances initiated and adopted by the City. Developer must demonstrate how the later-enacted ordinance(s) will benefit both the project and the City while maintaining consistency with the City’s Comprehensive Plan. Developer must also demonstrate that use of later-enacted ordinances will not conflict with other ordinances to which the development is subject and will not be significantly detrimental to the health, safety, or general welfare of the City. An application to subject a development project to a subsequently enacted development regulation will cause the entire development project to be subject to all subsequently enacted development regulations in effect for the date of that application rather than the Effective Date, unless the City and Developer agree otherwise by amending this VIC DA. The Planning Director shall review and either approve the request, or determine that a new application must be submitted without reference to the later-enacted ordinance(s).

5.3 The amount and type of any impact fees associated with a proposed development will not vest, but rather, will be determined for each project specific development application in accordance with then applicable law. Environmental laws or development requirements, including standards related to sustainability and climate action, also will not vest.

5.4 The Property is located within the City's Multifamily Housing Tax Exemption (MFTE) East Vancouver Residential Target Area defined in VMC Section 3.22.030(C)(4) and Developer must apply for the MFTE tax exemption program for any residential development of the Property, in accordance with the eligibility and application criteria of VMC Chapter 3.22 and will diligently initiate and pursue MFTE applications for all residential units developed on the Property in accordance with the application procedures set forth in VMC 3.22.040(E), issuance of a conditional MFTE certificate in accordance with VMC 3.22.040(G), and application and issuance of a final MFTE certificate in accordance with VMC 3.22.040(J) and VMC 3.22.040(K). For any MFTE application approved by the City on the Property, Developer shall, as an independent obligation of this VIC DA comport with all MFTE program requirements, provided that such program requirements are not more restrictive than those established by the City as of this VIC DA Effective Date.

Section 6. VIC Master Plan 2.0. The VIC Master Plan approved in conjunction with an application for a modified master plan (VIC Master Plan 2.0) includes the information provided in this Section 6 and Exhibits B, C, D, E, F, G, & H (including sub-exhibits) of this VIC DA. Exhibit B-1 provides a Master Plan Proposed Land Use Plan; and Exhibit E-1 (Design Guidelines) provides VIC Master Plan 2.0 renderings, depicting the intended look and feel of the fully developed Property. Any inconsistencies between Exhibit B-1 and its sub-exhibits B-2 through B-5 will be resolved in favor of Exhibit B-1. The VIC Master Plan 2.0, attached hereto as Exhibit B-2, is hereby approved and incorporated fully by reference into this VIC DA.

6.1 Land Use Areas. The VIC Master Plan 2.0 contains three Land Use Areas ("LUAs") as well as the Forested Tract and references the approximately 20-acre School Property now owned by ESD. The three LUAs for the Property are identified as Light Industrial (IL), Mixed Use (MX), and Residential (R). Exhibit B-1 provides a Full Site Utilization Plan for the Property, identifying the location and intended use for each LUA and depicting an open space overlay. With the exception of the MX LUA, Developer shall submit site plans or subdivision applications, as appropriate for development of the LUAs, or portions thereof, in accordance with Title 20 VMC and the synchronicity and phasing provisions outlined in Sections 6.4 and 6.5, below.

6.2 Allowed Uses. Notwithstanding any limitations contained within the mixed-use provisions of VMC Title 20 to the contrary, the permitted uses for each LUA will be those uses that are permitted for each type of LUA specified in section 6.1, as of the VIC 2.0 Application Date, as modified by this VIC DA and Exhibit C.

6.3 Development Standards. Although the entire Property is zoned Mixed Use, each LUA will utilize development standards that more closely match its LUA designation, as modified by this VIC DA. For example, parking and lot size standards for the Light Industrial (IL) LUA will be held to the parking and lot size standards within the IL zoning code, unless otherwise modified by this VIC DA. Parking standards and set back requirements for the Mixed Use (MX) LUA will be subject to the MX zone parking standards, as modified by this VIC DA and the VIC Master Plan 2.0. Attached hereto as Exhibit D is a list of approved development standards for the indicated LUAs that deviate from current VMC and including those that are deemed modified by this DA. Any variations from the applicable VMC development standards (as modified by this VIC DA) will be approved in accordance with VMC Title 20 as of the VIC 2.0 Application Date. Approval of such variations will be granted in accordance with applicable law and sections 7.2e and 7.3 below.

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a. Vesting. The Property will vest to the development standards provided in VMC Title 20, applicable to each type of LUA specified in section 6.1, as of the VIC 2.0 Application Date, as modified by this VIC DA and Exhibit D.

b. New Buildings. Developer shall build 600,000 to 860,000 square feet of new employment square footage (new non-residential, non-parking gross square footage, with approximately 216,000 square feet of that employment square footage to be built in the IL LUA. Developer may build up to 1,800 residential units throughout the Property. Developer may build more than 860,000 square feet of new employment square footage or more than 1,800 residential units only if Developer obtains a new traffic impact analysis, updating the April 28, 2023 *Kittelson & Associates Traffic Impact Analysis for the Revised Vancouver Innovation Center (The VIC) Mixed Use Master Plan* on file with the City.

c. Building Height. Notwithstanding anything contained within VMC Title 20 to the contrary, MX height standards apply to all LUAs throughout the Property (up to 75 feet).

6.4 Synchronicity. The sequencing of development of the various LUAs within the VIC Master Plan 2.0 is critical to achieving a successful mixed-use development and 20-minute community. The VIC Master Plan 2.0 is, at its core, an employment based mixed use development. However, to obtain the on-site traffic recapture and to comply with VMC 20.430.060 (which requires at least 20% of the combined gross floor area of the buildings to be devoted to residential uses), residential development must be properly synchronized with employment land development. Notwithstanding anything to the contrary in VMC chapter 20.430, the following synchronicity rules apply to the timing of development of the LUAs.

a. There is no limit on the timing or pace of development of the **light industrial (IL) LUA** depicted on the Master Plan. Developer has already begun and intends to complete renovations and capital improvements in the Existing Building in the IL LUA by December 31, 2023. Residential units in the IL LUA, if any, shall be on the second floor, or above.

b. In the **mixed-use (MX) LUA** depicted in the VIC Master Plan 2.0 the timing and pace of development needs to include a mix of residential and commercial to support development of 20-minute communities.

c. There is no limit on Developer's ability to submit, entitle, and obtain land use approval for developing residential units in the **residential (R) LUA**.

6.5 Phasing. Developer is focusing current development efforts on the interior of the Existing Building. Subsequent development is expected to occur in phases. Each phase of development may overlap with the other and will follow the infrastructure phasing as described in Figure 2 of the April 28, 2023 *Kittelson & Associates Traffic Impact Analysis for the Revised Vancouver Innovation Center (The VIC) Mixed Use Master Plan* on file with the City (the "2023 VIC TIA"), which provides for development in four phases.

6.6 Design Standards. All new building development must comply with this VIC Master Plan 2.0 and the Design Guidelines provided in Exhibit E to this VIC DA. In addition, all new building development must be consistent with the November 2023 Comprehensive Sustainability Plan outlined in Exhibit E-2.

6.7 Parking Plan. Parking will be provided in accordance with the requirements of each LUA, as may be modified by this VIC DA and the VIC Master Plan 2.0, as set forth in Table 1.0 below. Developer and City may coordinate a residential parking permit program within the R-LUA that limits on-street public parking to permitted residents only during certain hours. Not less than 60 days prior to City's completion of park improvements in the Forested Tract *and* opening that area for public use, Developer will work with each tenant in its commercial and industrial buildings adjacent to the Forested Tract to determine if it is feasible to allow public use of portions of privately constructed parking lots for those buildings during those periods of time employees of tenants are not using such parking lots. If Developer determines in its sole discretion that such parking will not interfere with tenant parking or confidentiality concerns of tenants requiring parking to be limited to employees of tenants only, public use will be allowed in those areas and during hours designated by Developer. As tenants change, lease up of tenant spaces occurs, and the needs of existing tenants change, Developer will reevaluate the availability of parking for public use as provided for herein and notify the City prior to limiting such parking, if any. The City will direct the public to first use the public parking the City provides on land it acquires from Developer adjacent to the Forested Tract that it will make available to the public for parking purposes while accessing the park.

Table 1.0. Revised VIC Master Plan Parking Ratios

Program	VIC Masterplan 2.0
Single Family Attached (TH) within R LUA and MX LUA	1 stall/DU min.
Multifamily within R LUA and MX LUA except for Studios	1.5 stall/DU min.
Senior Housing in all LUAS	0.3 stall/DU min.
Studio units in all LUAs(MP2.0)	1 stall/DU min.
MX LUA (Non-Residential)	2 – 2.5 stalls/ 1,000 SF
IL LUA	Minimum per VMC 20.945.070; no maximum

Developer will be allowed to count on-street public parking immediately adjacent to the respective building for which Developer is seeking to satisfy the LUA parking requirements. Each site plan or subdivision application must demonstrate how it contributes toward compliance of the entire Property with the parking requirements of VMC 20.430.060(C)(2)(h) (including the 25% variance, if necessary) at full Property build out.

6.8 Open Space. Developer shall create various open spaces comprising at least 24 acres throughout the Property. The Developer has proposed open space as an overlay across the Property to provide flexibility in the location of open space. The open space shall be developed in accordance with the VIC Master Plan 2.0 and in compliance with the MX LUA. Such open space does include the Forested Tract for these purposes. Exhibit B-2 to this VIC DA is reflective of how open space may be configured. The Developer may change the depicted locations of such open space without formal approval by the City so long as Developer does not diminish the amount of open space provided on the Property to less than 24 acres.

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a. In addition to the Forested Tract and any private residential parks, the open space must include one or more outdoor publicly accessible features to encourage interaction and gathering, centrally located on the Property. Publicly accessible open spaces must equal at least five percent (5%) of the total Property in accordance with VMC 20.430.060(C)(2)(d)(4).

b. Each site plan, subdivision application, or building permit application must demonstrate compliance with requirements as set forth in VMC 20.430.040(B) for the particular LUA in which it is located with the proviso that no less than 15% of the cumulative area of all approved and pending site plan applications within the Property shall be landscaped. Developer shall provide the City a chart demonstrating compliance with this requirement in conjunction with all such applications.

6.9 Community Park. Developer has set aside the approximately 13.70-acre Forested Tract in the northeast corner of the Property as open space for purposes of forest preservation, open space, public recreation, and natural habitat and Developer has reserved the Park Access Area for a future parking and public entryway to the Forested Tract, with both the Forested Tract and the Park Access Area. Although Developer is willing to retain ownership of the Forested Tract for the uses set forth in this section, the City has expressed a desire to acquire the Forested Tract for development by the City as a public community park. The Forested Tract is part of the open space identified in the VIC Master Plan 2.0. The Forested Tract is more specifically depicted on Exhibit A-1. The Park Access Area is generally depicted on Exhibit A-2.

a. Restrictive Covenant. Developer and City have recorded the Forested Tract Covenant, prohibiting development of the Forested Tract for any purpose other than open space. Such covenant does not prohibit installation of community park amenities. For the purpose of more effective tree canopy preservation, Developer and City shall modify the Forested Tract Covenant within thirty (30) business days of the Effective Date to update the Forested Tract legal description to that attached hereto on Exhibit A-1. The Forested Tract Covenant cannot be otherwise modified or removed without Vancouver City Council approval.

b. Creditable. Whether or not the City acquires the Forested Tract, it will count toward the open space requirements under applicable chapters of the VMC for a mixed-use master plan. The trees existing within the Forested Tract will be evaluated for any requirement of the VMC and the VIC Master Plan 2.0 applicable to tree preservation, tree unit calculation, tree canopy calculations. Tree density calculations will be based upon a Tree Plan developed by the Developer's project arborist in conjunction with the City of Vancouver Urban Forester and submitted by Developer to the City for review designating trees in the Forested Tract and on the Property either for retention or removal (the "Tree Plan"). Based upon the Tree Plan, tree density calculations for the Property will be established in accordance with VMC Section 20.770.080(B).

c. Creation of Park Parcel. If Developer and the City reach agreement as to the Sale of the Forested Tract, Developer shall cause the creation of separate legal lot from the existing Property, which separate lot will consist of the combined Forested Tract and Park Access Area (the "Park Parcel").

d. Public Acquisition. Provided that the City determines to provide improvements for public use and enjoyment consistent with the community park designated in the City's Capital Facility Plan and consistent with the VIC Master Plan 2.0, the City may seek to acquire the Park Parcel utilizing budgeted and reserved Park Impact

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Fee funds from the park service area in which the Park Parcel is located (formerly District 4, now designated as District C) in accordance with RCW 82.02.070 for this purpose. Developer and City will negotiate in good faith to enter into a purchase and sale agreement for the Park Parcel pursuant to this VIC DA (“Park PSA”). However, if the Developer and the City cannot reasonably enter into a Park PSA, then the exercise of City’s power of eminent domain in order to fulfill a fundamental public purpose by causing the Park Parcel to become a community park will be imminent. Notwithstanding the foregoing, the City must comply with Chapter 8.12 RCW and all applicable laws and procedures for any condemnation action. If Developer and City negotiate and enter into the Park PSA, Developer and City agree as follows:

(i) Fair Market Value. The purchase price to be paid by the City for the Park Parcel shall be determined by the fair market value of the real property as determined by an appraisal dated within 24 months of the effective date of the purchase and sale agreement, using the Uniform Standards of Professional Appraisal Practice (“USPAP”) methodologies based on the Park Parcel’s best and highest use as a mixed-use zoned property (the “Appraisal Value”). The purchase price to be paid by the City for the Park Access Area portion of the Park Parcel shall be the Appraisal Value and the purchase price to be paid by the City for the Forested Tract portion of the Park Parcel shall be fifty percent (50%) of the Appraisal Value, calculated on the basis of the per square footage valuation.

(ii) Qualified Appraiser. The parties shall attempt to agree on a single MAI real estate appraiser to conduct the USPAP appraisal and share that cost equally. If the parties are unable to agree upon a single appraiser, then the City shall choose an appraiser who shall be a certified general real estate appraiser licensed by the State of Washington who is a member of the Appraisal Institute of America (MAI) and who has at least five (5) years’ commercial appraisal experience in Clark County and who has not been regularly employed or retained as a consultant, appraiser or agent of either party during the prior twelve (12) months (herein “Qualified Appraiser”) and Developer shall choose an appraiser who shall also be a Qualified Appraiser. Each Party will pay for the cost of their Qualified Appraiser. If the appraisers are unable to agree upon the Appraisal Value within fifteen (15) days, the two Qualified Appraisers so appointed shall select a third Qualified Appraiser within five (5) days (whose cost will be shared equally between the Developer and the City). Within fifteen (15) days following the selection of a third Qualified Appraiser, a majority of the Qualified Appraisers shall attempt to reach agreement on the Appraisal Value of the Park Parcel. If a majority of the Qualified Appraisers are unable to agree on the Appraisal Value, the three appraisals shall be added together, and their total divided by three; the resulting quotient shall be the Appraisal Value. If, however, the low appraisal and/or high appraisal is more than ten percent (10%) lower and/or higher than the middle appraisal, the lower appraisal and/or the higher appraisal shall be disregarded. If only one appraisal is discarded, the remaining two appraisals shall be added together, and their total divided by two and the resulting quotient shall be the Appraisal Value. If both the low appraisal and the high appraisal are disregarded, the middle appraisal shall be the Appraisal Value.

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(iii) Park Rules. Upon acquisition by the City, the Park Parcel will be subject to the versions of VMC Chapter 15.04 ("Park Rules") and VMC Chapter 15.08 that are in effect as of the VIC 2.0 Application Date.

(iv) Community Park Design. The Park Parcel will be planned to meet the City's current community park standard, as of the Effective Date. The community park master planning and design process for the Park Parcel will consider the Revised Design Standards of this VIC DA, be congruent with the VIC Master Plan 2.0, integrate passive recreation space and natural resource areas, provide public restrooms, accommodate public parking in the Park Access Area, and engage the surrounding community. The Developer shall have input during the Park Parcel planning and design process, which will include a detailed needs and community park site assessment to determine size, scale, and final selection of specific amenities. The Park Parcel design will include a wide variety of amenities that seek to serve all segments of the surrounding community and may include a selection of recreation improvements for organized activities such as sports fields, skate parks, picnic shelters, community gardens, trails, event spaces, and public art and cultural features within the Forested Tract.

(v) Community Park Development. Based on the City's recent community park design efforts, the City anticipates that the following Initial Improvements to the Park Parcel would be constructed within three (3) years of the City's acquisition:

- (1) Preservation of tree canopy and tree density preservation as a design priority;
- (2) Dedicated public parking, including ADA accessible parking, constructed in the Park Access Area;
- (3) Provision for replacement by the City in accordance with VMC 20.770.080 of any tree density removal from the Park Access Area that is necessitated by parking development with trees planted on-site (within the Property) and restricted from future removal;
- (4) Siting and construction of public restrooms;
- (5) Playground installation;
- (6) Hard surface paths making all major amenities pedestrian accessible; and
- (7) Nature trails, which may be soft surface.

The City will issue a Request for Qualification (RFQ) within sixty (60) days following execution of the Park PSA for a qualified landscape architect to create and implement the Park Parcel design. The Developer shall have input on the RFQ specifications and standards for approval in the City's selection of a qualified landscape architect. The RFQ will allow a thirty (30) day response period, and, assuming a qualified response is received, the City will award the contract within sixty (60) days of the RFQ closing. The City will allow eight (8) months from the award of contract for a community park design draft and an additional two (2) months for issuance of Initial Improvements plans and specifications.

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The City will report annually to the VIC on progress made to complete the Initial Improvements design, planning, and construction. The City must demonstrate commercially reasonable efforts to meet major milestones and to budget adequate funds to timely complete the Initial Improvements. The VIC will notify the City of any perceived deficiencies in performance within thirty (30) days of receipt of such progress report.

Should Developer and the City fail for any reason to enter into the Park PSA for the Forested Tract, and further, should the City institute a condemnation proceeding to acquire the Forested Tract, nothing included in this VIC DA may be used by the City as evidence in such proceeding as to the Developer's willingness to sell the Forested Tract to the City or for purposes of demonstrating public use and necessity.

6.10 Landscape Plan. Once developed in accordance with the VIC Master Plan 2.0, the Property will have more tree canopy coverage than the Property currently enjoys, with a target of 47.7 acres of tree canopy, equal to more than the City's aspirational target of 30%. Developer shall submit more detailed landscape plans with each site plan/subdivision application, detailing the drought-resistant, native plants that will be used in each LUA, demonstrating compliance with tree density requirements in VMC 20.770.080, and demonstrating progress toward the 5-, 10-, 15-, and 20-year tree canopy targets. Landscaping throughout the Property will be consistent with and complimentary to the native plants in the Forested Tract.

6.11 Mixed-Use Slow Street Corridor. Within the IL LUA and MX LUA, there is an identified mixed-use corridor created by a loop road that rings the Existing Building and plaza. Improvements adjacent to the ring road within the MX LUA must have predominantly active commercial uses on first floor of frontages facing the ring road. Development of all improvements adjacent to the ring road in the MX LUA must be at least three-stories high and have a setback from the ring road of no more than 20 feet, unless there is a public plaza, market, or pavilion in the setback. Parking for buildings on the ring road must be located behind buildings and/or effectively buffered from the ring road. Notwithstanding the above, the planning official shall have the ability to deviate from specific aspects of these Mixed-Use Slow Street Corridor requirements (including but not limited to building height, number of floors and setback requirements) to the extent that the plan proposed is in keeping with the overall vision of an activated commercial street and otherwise compliant with building code. The mixed-use corridor must be attractive, active and accessible and the Developer must coordinate wayfinding for the ring road with the City.

6.12 Compliance. Developer shall comply with this VIC DA and the VIC Master Plan 2.0 – including but not limited to all associated exhibits. All development proposed by an entity other than Developer will be reviewed by a design review committee, chaired by Developer, to ensure compliance with the VIC Master Plan 2.0, the VIC DA.

Section 7. Master Plan Revisions. There are three categories of VIC Master Plan 2.0 revisions: Major, Minor, and De Minimis revision requests. Developer may request Major revisions to the VIC Master Plan 2.0 no more than once in any calendar year, unless mutually agreed to by the City. All proposed revisions shall be considered under the approval criteria identified below.

7.1 Major Revisions. Requests to modify or revise the VIC Master Plan 2.0 as follows are deemed Major and subject to a Type IV review process, requiring concurrent amendment of this VIC DA.

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- a. Greater than 10% increase in total residential units on the Property, except as provided in Section 6.3;
 - b. A reduction of non-residential square footage on the Property by more than 10%;
 - c. Increase of parking by more than 10%;
 - d. Greater than 10% decrease in the amount of open space approved in the VIC Master Plan 2.0;
 - e. New uses not included in the VIC Master Plan 2.0 and this VIC DA;
 - f. Changes in the boundaries between LUAs that alter the total acreage of any LUA by more than 10%;
- and
- g. A change from a residential use to any other use for structures along the Forested Tract.

7.2 Minor Revisions: The following will be considered Minor Revisions to the VIC Master Plan 2.0, subject to Type II Review:

- a. Access points of any LUA provided the resulting site plan or subdivision proposal is consistent with the Full Site Utilization Plan;
- b. New buildings, so long as the additional development can be accommodated with only minor changes to the transportation, water, sewer, storm drainage systems, or the Full Site Utilization Plan, in the approved Master Plan;
- c. Significant changes to street locations or capacity, as determined by the Planning Director;
- d. Reduction of parking by more than 10%;
- e. Approval of development and design standard variations in excess of the variations allowed by applicable VMC; and
- f. Any other changes that are not Major Revisions, that the Planning Director or Parks and Recreation Director, regarding changes to the Forested Tract, determines are not de minimis.

7.3 De Minimis Revisions: The Planning Director may review and approve any change to the VIC Master Plan 2.0 that are not specifically addressed above, if the Planning Director determines such change to be de minimis.

7.4 Approval Criteria. All Major, Minor, and De Minimis changes to the VIC Master Plan 2.0 will be reviewed according to the following approval criteria:

- a. The proposed change meets the intent of the adopted VIC Master Plan 2.0;
- b. The proposed change will not result in a substantial impact to transportation, water, sewer or storm water management systems, after considering all mitigation plans;
- c. The proposed change will not result in adverse impacts to adjacent properties or uses, after considering all mitigation plans; and

- d.** The proposed change is consistent with the then current Vancouver Municipal Code and Vancouver Comprehensive Plan.

Section 8. Parcelization. Developer may divide the Property into separate legal lots so long as those lots are created utilizing the land division processes or exemptions thereto contained in applicable law and are not inconsistent with the VIC Master Plan 2.0 and this VIC DA. Any new parcel or lot thereby created will be bound by the terms and conditions of the VIC Master Plan 2.0 and this VIC DA.

Section 9. Park Impact Fee Credits and Reductions. Developer shall be entitled to Park Impact Fee exemptions and reductions available by law, including but not limited to VMC 20.915.080 and .090.

Section 10. Traffic and Trips.

10.1 Retained Traffic Capacity. Exhibit F to this VIC DA sets forth the AM peak hour trips, PM peak trips and total vehicle trips per day that were reserved under the Restated DA and remain reserved through this VIC DA, hereunder. Also attached as part of Exhibit F is the VIC Site Trip Generation Estimate provided in Table 4 of the 2023 VIC TIA.

10.2 Surrendered Traffic Capacity. Exhibit G to this VIC DA sets forth the AM peak hour trips, PM peak hour trips and total vehicle trips per day that were vested and reserved under the Restated DA, and trips surrendered to the City through the Original Development Agreement.

10.3 Trip Utilization Accounting. Developer shall prepare a Transportation Compliance Letter for each proposed new development site, in conjunction with site plan application to document the utilization of vested, retained traffic capacity. Trips generated by the Forested Tract will not be charged against the Retained Traffic Capacity. The Transportation Compliance Letter for each proposed new development must provide:

- a.** The number of net new weekday daily, weekday AM peak hour and weekday PM peak hour trips estimated to be generated by the proposed use based on trip rates in the *Trip Generation Manual, 11th Edition* as published by the Institute of Transportation Engineers, or the then-current version as agreed between the parties, for the site. Internal trip allocations will be documented following the assumptions made in the 2023 VIC TIA.
- b.** A debiting summary comparing the total net new weekday AM peak hour and weekday PM peak hour trips vested to the Property (as set forth in Exhibit F attached hereto), net new weekday AM and PM peak hour trips consumed to date, and net new weekday AM and PM peak hour trips remaining for future development after accounting for approved and proposed site development(s).
- c.** The net new Weekday PM peak hour site-generated trips associated with the proposed development, projected to travel through the SR-14/SE 192nd Avenue westbound terminal will be developed using the trip distribution pattern identified in Figure 5 of the 2023 VIC TIA, as set forth on Exhibit F attached hereto as most applicable to the proposed use.
- d.** The net new Weekday PM peak hour site-generated trips associated with the proposed development projected to travel through the SE 20th Street/SE 176th Avenue intersection will be developed using the trip distribution pattern identified in Figure 5 of the 2023 VIC TIA, as set forth on Exhibit F attached hereto as most applicable to the proposed use.

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e. The net new Weekday PM peak hour site-generated trips associated with the proposed development projected to travel through the SE 34th Street/SE 192nd Avenue will be developed using the trip distribution pattern identified in Figure 5 of the 2023 VIC TIA, as set forth on Exhibit F attached hereto as most applicable to the proposed use.

f. In the event the sum of the total net new trips generated by a development within the Property plus the sum of total net new trips previously allocated to development within the Property exceed the total net new weekday AM and PM peak hour trips vested to the property in Exhibit F, Developer shall prepare a new traffic impact analysis to assess the impact of the excess trips.

Section 11. Transportation Improvements. Developer agrees to construct those transportation improvements and dedicate necessary right of away identified in Exhibit H to this VIC DA. Timelines will be established by the individual project phases identified in Table 1 of the 2023 VIC TIA. Notwithstanding anything to the contrary in this VIC DA, the City Transportation Manager may approve changes to the individual project phases in Table 1; such changes will not be considered revisions to this VIC DA. Developer's efforts to improve the Existing Building will not be contingent upon or require the development of any Transportation Improvements as a condition of approval. Developer may pay to have the City, or a third party, construct the transportation improvements in whole, or in part. If the total number of trips allocated to the Property remain below the vested, Retained Traffic Capacity provided in Exhibit F, Developer shall not be obligated to accomplish any other transportation improvements or other transportation mitigation as a condition of approval for any development on the Property. In the event the total net new trips generated by a proposed development on the Property triggers the requirements of Section 10.3f above, Developer may be required to accomplish transportation improvements or mitigation measures related solely to the impact of those excess trips.

Section 12. "Proportionate Share" Payments. Although the estimated trips for the Property are already vested, and thus future development of the Property pursuant to this VIC DA will not increase the presently calculated burden on the City's transportation system, Developer voluntarily agrees to pay fees as outlined in this section, as if it were participating in a "proportional share" transportation impact overlay area. Notwithstanding anything to the contrary herein, Developer's efforts to improve the Existing Building will not be contingent upon or require the development of any "Proportionate Share" payments. Prior to building occupancy permit issuance for any new building to be built on the Property, Developer shall pay:

12.1 A \$2,000 "proportionate share" fee for each weekday PM peak hour site-generated trip projected to travel through the **SR-14/SE 192nd Avenue** westbound terminal intersection, as documented in the Trip Compliance Letter;

12.2 A \$400 "proportionate share" fee for each weekday PM peak hour site-generated trip projected to travel through the **SE 176th Avenue/SE 20th Street** intersection, as documented in the Trip Compliance Letter.; and

12.3 A \$150 "proportionate share" fee for each weekday PM peak hour site-generated trip projected to travel through the **SE 34th Street/SE 192nd Avenue** intersection, to reconstruct that intersection to a concrete surface, as documented in the Trip Compliance Letter. The precise amount of this fee will be calculated and mutually agreed upon between the City of Vancouver Streets/Transportation Manager and Developer. Such an agreement will not require a revision of this VIC DA.

12.4 Any other proportionate share projects that have been developed by the City as of the Effective Date of this VIC DA to which development of the Property will distribute new peak hour trips and as set forth on Exhibit ____ to this VIC DA.

Section 13. SE 29th Street. The City shall add SE 29th Street between SE 176th Avenue and SE 192nd Avenue, including all roadways, sidewalks, lighting, landscaping roundabout on 176th to access 29th Street and signalized intersection at 192nd to its Capital Facilities Plan by way of the Spring 2024 Supplemental Budget process and its Transportation Impact Fee (TIF) Program project list, in accordance with VMC 20.915.090(A)(1) and pursuant to Developer timely providing the City with an engineered cost estimate that reflects the value of the public works prevailing wage construction cost unit price. Additionally, although not required for these improvements to qualify for TIF credits, the City will consider adding SE 29th Street (between 176th Avenue and 192nd Avenue) to its 2025-2030 Six-Year Transportation Improvement Program, which will be finalized and approved by City Council on or before June 30, 2024. The Property requires access onto both SE 176th Avenue and SE 192nd Avenue from SE 29th Street and Developer is obligated to design and construct SE 29th Street between SE 176th Avenue and SE 192nd Avenue, including a single lane roundabout at SE 176th Avenue and a traffic signal at SE 192nd Avenue.

Section 14. Traffic Impact Fee Credits and Reductions.

14.1 As provided herein, Developer shall construct SE 29th Street from 176th Avenue through the Property to 192nd Avenue as conceptually shown on the VIC Master Plan 2.0, based on the project phases in the 2023 VIC TIA. Notwithstanding VMC 20.915.090(A)(3), Developer shall be entitled to traffic impact fee credits, for the full value of the impact fee calculated for the SE 29th Street improvements.

14.2 Developer shall be entitled to Traffic Impact Fee credits for any and all other transportation improvements provided by Developer so long as such improvements are located on the Traffic Impact Fee Program's list of projects at the time such improvements are made.

14.3 Developer shall be entitled to Traffic Impact Fee reductions in accordance with VMC 20.915.090(D).

Section 15. Sustainability and Environment. Environmental laws or development requirements shall not vest. Developer shall comply with all current environmental law requirements including standards related to sustainability and climate action such as the City's Interim Green Building Policy as set forth in the Developer's Sustainability Plan (Exhibit E-2), which are in effect and applicable at the time of development approval for any project within the Property.

Section 16. Reserved Authority of City. Anything in this VIC DA to the contrary notwithstanding, the City shall have the authority to impose new or different regulations to the extent required by a serious threat to public health and safety as required by RCW 36.70B.170 to the extent that such threat is proximate cause, or is proximately aggravated by the impacts of the proposed development of the Property, or any portion thereof; provided, however that such action will only be taken by legislative act of the Vancouver City Council after appropriate public process, Developer reserves all rights to contest and/or appeal the implementation of such new or different regulation(s) and further reserves the right to seek any damages they may be lawfully entitled to, to the extent such new or different regulation(s) impact(s) property rights conveyed under this VIC DA.

Section 17. Miscellaneous Provisions

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17.1 Counterparts. This VIC DA may be executed in counterparts; however, all signature pages will be recorded together, and the complete recorded VIC DA constitutes the final instrument.

17.2 Termination. This VIC DA will terminate upon the mutual agreement of the Parties in writing, which will be recorded, or upon expiration of the Term, whichever first occurs.

17.3 Authorization. The persons executing this VIC DA on behalf of City and Developer are authorized to do so and, upon execution by such parties, this VIC DA will be a valid and binding obligation of such parties in accordance with its terms. The Parties have each obtained any and all consents required to enter into this VIC DA and to consummate or cause to be consummated the transactions contemplated hereby.

17.4 Run with the Land. This VIC DA will run with the land and inure to the benefit of and be binding on the Parties' successors and assigns and will be recorded with the County Auditor.

17.5 Public Hearing. The City's authority to execute this VIC DA is granted by the Vancouver City Council in accordance with the requirements of VMC Chapter 20.250.

17.6 Dispute Resolution. Should a disagreement arise between the Parties, the Parties agree to attempt to resolve the disagreement by first meeting and conferring. If such meeting proves unsuccessful to resolve the dispute, the disagreement may be resolved by a civil action.

17.7 Venue. This VIC DA will be construed in accordance with the laws of the State of Washington, and venue is in the Clark County Superior Court.

17.8 Attorneys' Fees. If a suit, action, or other proceeding of any nature whatsoever (including any proceeding under the U. S. Bankruptcy Code) is instituted in connection with any controversy arising out of this VIC DA or to interpret or enforce any rights or obligations hereunder, the prevailing party will be entitled to recover its attorney, paralegal, accountant, and other expert fees and all other fees, costs, and expenses actually incurred and reasonably necessary, as determined by the court at trial or on any appeal, or by any mediator, arbitrator, hearing examiner, or other dispute review, in addition to all other amounts provided by law.

17.9 Performance. In the event either Party fails to perform the terms and provisions of this VIC DA, which failure continues uncured for a period of sixty (60) days following written notice from the other Party (unless the Parties have mutually agreed in writing to extend this period) will constitute a default under this VIC DA. Any notice of default must specify the nature of the alleged default and, where appropriate, the way the alleged default may be satisfactorily cured. If the nature of the alleged default is such that it cannot be reasonably cured within the sixty (60) day period, then the commencement of actions to cure the alleged default within the sixty (60) day period and diligent prosecution of such actions necessary to complete the cure of the alleged default, will be deemed to be a cure within the sixty (60) day period. Upon a default that is not cured as provided above, the non-defaulting Party may institute legal proceedings to enforce the terms of this VIC DA. If the default is cured, then no default exists, and the noticing Party shall take no further action.

17.10 Severability. If any portion of this VIC DA will be invalid or unenforceable to any extent, the validity of the remaining provisions will not be affected thereby. If a material provision of this VIC DA is held invalid or unenforceable such that a Party does not receive the benefit of its bargain, then the other Parties will renegotiate in good faith terms and provisions that will effectuate the spirit and intent of the Parties' agreement herein.

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17.11 Inconsistencies. If any provisions of the VMC and land use regulations are deemed inconsistent with this VIC DA, the provisions of this VIC DA will prevail, excepting the City's reserved authority described above and in accordance with VMC 20.250.020(A).

17.12 Amendments. This VIC DA and its Exhibits may only be amended as provided herein. Where specific amendment or revision clauses are not provided in this VIC DA, then all other amendments or revisions to this VIC DA will be made only by mutual written agreement of the Parties, and all amendments will be recorded in the Clark County deed records. Agreement by the City may only be obtained through a Type IV legislative proceeding.

17.13 Survival. Any covenant or condition set forth in this VIC DA, the full performance of which is not specifically required prior to the expiration or earlier termination but which by its terms is to survive the termination of this VIC DA, will survive the expiration or earlier termination of this VIC DA and will remain fully enforceable thereafter.

17.14 No Benefit to Third Parties. The Parties are the only parties to this VIC DA and are the only parties entitled to enforce its terms, except as otherwise specifically provided in this VIC DA. There are no third-party beneficiaries.

17.15 Entire Agreement. This VIC DA supersedes the Original DA, the First Amendment to DA, the Second Amendment to DA, and the Restated DA in their entirety. This VIC DA, as amended from time to time, constitutes the entire agreement between the Parties as to the subject matter.

17.16 Non-Waiver. Waiver by any Party of strict performance of any provision of this VIC DA will not be deemed a waiver of or prejudice a Party's right to require strict performance of the same or any other provision in the future. A claimed waiver must be in writing and signed by the Party granting a waiver. A waiver of one provision of this VIC DA will be a waiver of only that provision. A waiver of a provision in one instance will be a waiver only for that instance, unless the waiver explicitly waives that provision for all instances.

17.17 Interpretation of VIC DA; Status of Parties. This VIC DA is the result of arm's-length negotiations between the Parties and will not be construed against any Party by reason of its preparation of this VIC DA. Nothing contained in this VIC DA will be construed as creating the relationship of principal and agent, partners, joint ventures, or any other similar relationship between the Parties.

17.18 Future Assurances. Each of the Parties will promptly execute and deliver such additional documents and will do such acts that are reasonably necessary, in connection with the performance of their respective obligations under this VIC DA to carry out the intent of this VIC DA.

17.19 Term. The Term of this VIC DA continues the Term of the Restated DA and therefore is 15 years from the effective date of the Restated DA, commencing on September 15, 2021 and expiring on September 14, 2036. The Term of this VIC DA may be extended after public hearing by the Vancouver City Council.

17.20 List of Exhibits

- A Property Legal Descriptions
 - A-1 Legal Description of Forested Tract
 - A-2 Diagram of the Proposed Park Access Area
 - A-3 Legal description of the School Property
- B VIC Master Plan 2.0
 - B-1 VIC Master Plan 2.0
 - B-2 Site Open Space Plan

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B-3	Site Plan Mobility
B-4	Site Streetscape Plan
B-5	Site Trail Sections Plan
C	Allowed Uses
D	Approved Development Standards
E	Design Standards
E-1	Revised Design Guidelines (Appendix F)
E-2	November 2023 Comprehensive Sustainability Plan
F	Retained Traffic Capacity
G	Restated DA Surrendered Traffic Capacity
H	Transportation Improvements

[SIGNATURE PAGES FOLLOW]

DRAFT 02/02/2024

CITY OF VANCOUVER, a Washington municipal corporation

By: _____

Date: _____

By: Eric Holmes, City Manager

PO Box 1995

Vancouver, WA 98668-1995

Attest:

By: _____

By: Natasha Ramras, City Clerk (or designee)

Approved as to form only:

By: _____

By: Jonathan Young, City Attorney (or designee)

STATE OF WASHINGTON }
 }
 } SS
COUNTY OF CLARK }

I certify that I know or have satisfactory evidence that Eric Holmes is the person who appeared before me, acknowledged that they signed this instrument, and on oath stated that they were authorized to execute the instrument and acknowledged it as the City Manager of the City of Vancouver, a Washington municipal corporation, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated this ____ day of _____, 20 ____.

By: _____

Notary Public in and for the State of Washington

My appointment expires: _____

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THE VIC BUILDING OWNER, LLC, a Delaware limited liability company

By: _____

Date: _____

By: Joshua Rabina, Manager

505 5th Avenue, FL 27

New York, NY 10017-4907

STATE OF _____ }
 } SS
COUNTY OF _____ }

I certify that I know or have satisfactory evidence that Joshua Rabina is the person who appeared before me, acknowledged that they signed this instrument, and on oath stated that they were authorized to execute the instrument and acknowledged it as the Manager of The VIC Building Owner LLC, a Delaware limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated this ____ day of _____, 20 ____.

By: _____

Notary Public in and for the State of _____

My appointment expires: _____

DRAFT 02/02/2024

EXHIBIT A – Property Legal Descriptions

**[FULL LEGAL DESCRIPTION OF THE “PROPERTY” FOR ALL VIC PARCELS COVERED
BY DA TO BE INSERTED]**

DRAFT 02/02/2024

EXHIBIT A-1 – Forested Tract Legal Description



17356LD_FOREST PARCEL
1/23/2023
GAH

VANCOUVER OFFICE

18405 SE Mill Plain Blvd #100 • Vancouver, WA 98683
360.695.3411 • info@mackaysposito.com

EXHIBIT A
VANCOUVER INNOVATION CENTER
FOREST PARCEL DESCRIPTION

A TRACT OF LAND SITUATED IN THE NORTHEAST QUARTER OF SECTION 6, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, IN CLARK COUNTY, WASHINGTON, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 6; THENCE SOUTH 01°12'07" WEST ALONG THE EAST LINE OF SAID SECTION 6, A DISTANCE OF 1,298.25 FEET TO A POINT ON THE NORTH LINE OF THAT TRACT OF LAND AS SURVEYED BY MACKAY AND SPOSITO JANUARY 9, 1979 AND RECORDED IN BOOK 9 OF SURVEYS, PAGE 116 OF CLARK COUNTY RECORDS; THENCE NORTH 89°09'22" WEST ALONG SAID NORTH LINE, A DISTANCE OF 146.43 FEET TO THE WESTERLY RIGHT-OF-WAY LINE OF SE 192ND AVENUE, AS DEDICATED TO THE CITY OF VANCOUVER BY STATUTORY WARRANTY DEED RECORDED JULY 2, 2001 AS AUDITOR'S FILE NO. 3340502, CLARK COUNTY DEED RECORDS AND THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG THE NORTH LINE OF SAID TRACT NORTH 89°09'22" WEST 1,309.26 FEET; THENCE LEAVING SAID NORTH LINE SOUTH 28°27'56" EAST 116.02 FEET; THENCE SOUTH 08°31'19" EAST 130.88 FEET; THENCE SOUTH 54°26'09" EAST 32.52 FEET; THENCE SOUTH 81°09'42" EAST 34.55 FEET;

THENCE SOUTH 86°53'01" EAST 38.46 FEET; THENCE NORTH 88°58'07" EAST 63.55 FEET; THENCE NORTH 44°50'55" EAST 54.57 FEET; THENCE NORTH 70°20'16" EAST 19.00 FEET;

THENCE NORTH 88°58'30" EAST 45.84 FEET; THENCE SOUTH 68°10'17" EAST 47.96 FEET; THENCE SOUTH 86°13'08" EAST 59.13 FEET; THENCE SOUTH 42°13'51" EAST 42.32 FEET; THENCE SOUTH 47°27'34" EAST 46.27 FEET;

THENCE SOUTH 10°03'09" WEST 86.58 FEET; THENCE SOUTH 30°16'57" EAST 65.57 FEET; THENCE SOUTH 03°45'52" WEST 141.65 FEET; THENCE SOUTH 22°10'44" EAST 93.49 FEET; THENCE SOUTH 64°39'09" EAST 66.26 FEET;

DRAFT 02/02/2024

THENCE SOUTH 52°42'23" EAST 55.11 FEET; THENCE SOUTH 19°16'23" EAST 29.23 FEET; THENCE SOUTH 04°58'07" EAST 26.82 FEET; THENCE SOUTH 59°04'57" EAST 53.41 FEET; THENCE SOUTH 48°14'21" EAST 31.31 FEET;

THENCE SOUTH 59°35'41" EAST 57.85 FEET; THENCE SOUTH 55°08'35" EAST 28.97 FEET; THENCE SOUTH 65°30'39" EAST 61.99 FEET TO A POINT ON A NON-TANGENT CURVE WITH A 1,235.00 FOOT RADIUS AND A TANGENT BEARING OF NORTH 25°20'21" EAST INTO SAID CURVE; SAID POINT BEING ON THE WESTERLY RIGHT-OF-WAY LINE OF SE 192ND AVENUE, AS DEDICATED TO THE CITY OF VANCOUVER BY STATUTORY WARRANTY DEED RECORDED JULY 2, 2001 AS AUDITOR'S FILE NO. 3340502, CLARK COUNTY DEED RECORDS;

THENCE ALONG SAID WESTERLY RIGHT-OF-WAY LINE OF SE 192ND AVENUE THE FOLLOWING 7 COURSES:

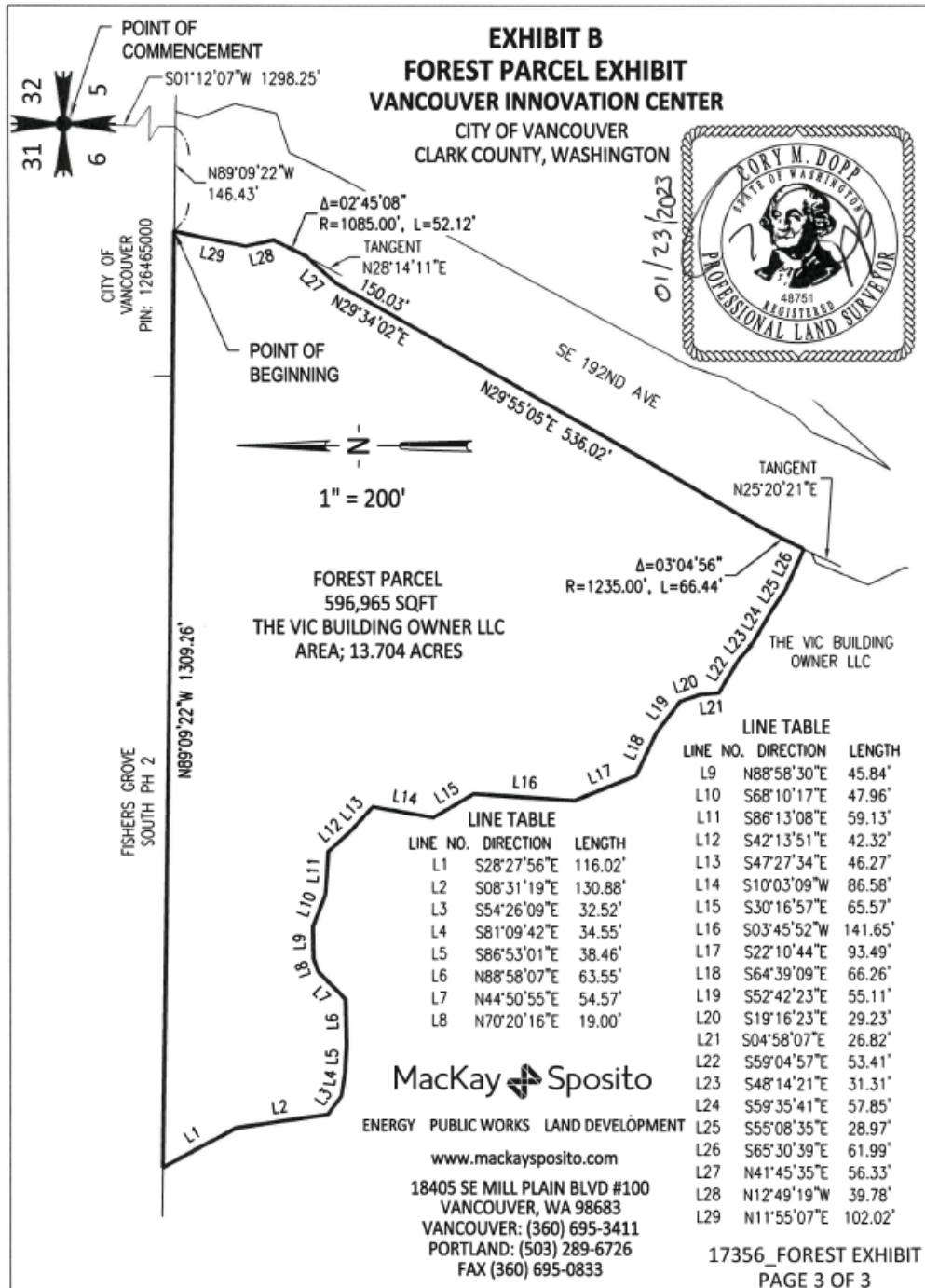
THENCE ALONG SAID CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 03°04'56", AN ARC DISTANCE OF 66.44 FEET; THENCE NORTH 29°55'05" EAST 536.02 FEET; THENCE NORTH 29°34'02" EAST 150.03 FEET; THENCE NORTH 41°45'35" EAST 56.33 FEET TO A POINT ON A NON-TANGENT CURVE WITH A 1,085.00 RADIUS AND A TANGENT BEARING OF NORTH 28°14'11" EAST INTO SAID CURVE; THENCE ALONG SAID CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 02°45'08" AN ARC DISTANCE OF 52.12 FEET; THENCE NORTH 12°49'19" WEST 39.78 FEET; THENCE NORTH 11°55'07" EAST 102.02 FEET TO THE **POINT OF BEGINNING**.

EXCEPTING THERE FROM ANY PORTION LYING WITHIN SE 192ND AVENUE.

CONTAINING 13.704 ACRES, MORE OR LESS.



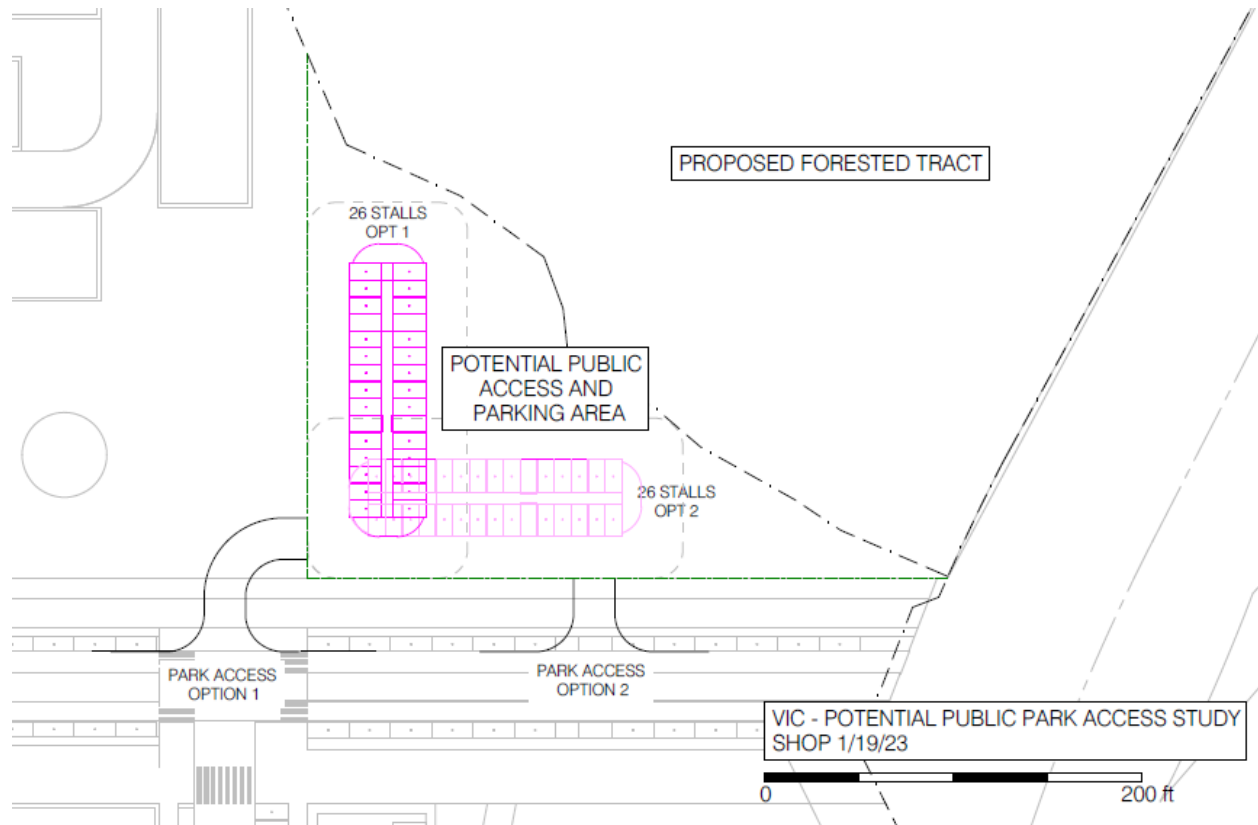
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EXHIBIT A-2 – Park Access Area Legal Description

[Insert legal description of the property adjacent to the Forested Tract but exempt from the covenant, intended for use as park parking to be acquired at Fair Market Value (MX) and improved by the City.]



DRAFT 02/02/2024

EXHIBIT A-3 – School Property Legal Description (Parcel 986060362)



17356LD1
10/29/2020
GAH

VANCOUVER OFFICE

1325 SE Tech Center Drive, Suite 140 • Vancouver, WA 98683
360.695.3411 • info@mackaysposito.com

EXHIBIT A
VANCOUVER INNOVATION CENTER
PROPOSED EVERGREEN PARCEL DESCRIPTION

REAL PROPERTY SITUATED WITHIN THAT TRACT OF LAND CONVEYED TO S-E INC., UNDER AUDITOR'S FILE NO. 4577169, CLARK COUNTY DEED RECORDS, LOCATED IN SECTION 6, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, IN THE CITY OF VANCOUVER, CLARK COUNTY, WASHINGTON, BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID S-E INC. PARCEL AS SHOWN ON A MACKAY AND SPOSITO RECORD-OF-SURVEY, DATED JANUARY 9, 1979 AND RECORDED IN BOOK 9 OF SURVEYS, PAGE 116 OF CLARK COUNTY RECORDS; THENCE SOUTH 89°09'22" EAST ALONG THE NORTH LINE OF SAID S-E INC. PARCEL 30.00 FEET TO THE EAST RIGHT-OF-WAY LINE OF SE 176TH AVENUE AND THE **POINT OF BEGINNING**; THENCE CONTINUING ALONG SAID NORTH LINE, SOUTH 89°09'22" EAST 1048.46 FEET; THENCE LEAVING SAID NORTH LINE SOUTH 00°00'00" EAST 500.54 FEET TO A POINT ON A NON-TANGENT CURVE WITH A 384.00 FOOT RADIUS AND A TANGENT BEARING OF SOUTH 62°34'05" WEST INTO SAID CURVE; THENCE ALONG SAID CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 10°21'40" AN ARC DISTANCE OF 69.44 FEET TO A POINT OF TANGENCY; THENCE SOUTH 52°12'25" WEST 178.45 FEET; THENCE NORTH 82°47'35" WEST 70.71 FEET; THENCE SOUTH 52°12'25" WEST 94.58 FEET; THENCE SOUTH 07°12'25" WEST 70.71 FEET; THENCE SOUTH 52°12'25" WEST 146.08 FEET TO A POINT ON A 459.00 FOOT RADIUS CURVE TO THE RIGHT; THENCE ALONG SAID CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 38°39'23" AN ARC DISTANCE OF 309.68 FEET TO A POINT OF TANGENCY; THENCE NORTH 89°08'12" WEST 315.12 FEET TO SAID EAST RIGHT-OF-WAY LINE; THENCE NORTH 01°24'06" EAST ALONG SAID EAST LINE 963.24 FEET TO THE **POINT OF BEGINNING**.

EXCEPTING THEREFROM ANY PORTION LYING WITHIN SE 176TH AVENUE.

CONTAINING 20.00 ACRES



**SKETCH TO ACCOMPANY LEGAL DESCRIPTION FOR
VANCOUVER INNOVATION CENTER
PROPOSED EVERGREEN SCHOOL DISTRICT 114 PARCEL
CITY OF VANCOUVER, CLARK COUNTY, WASHINGTON**



EXHIBIT B-2 – SITE PLAN OPEN SPACE

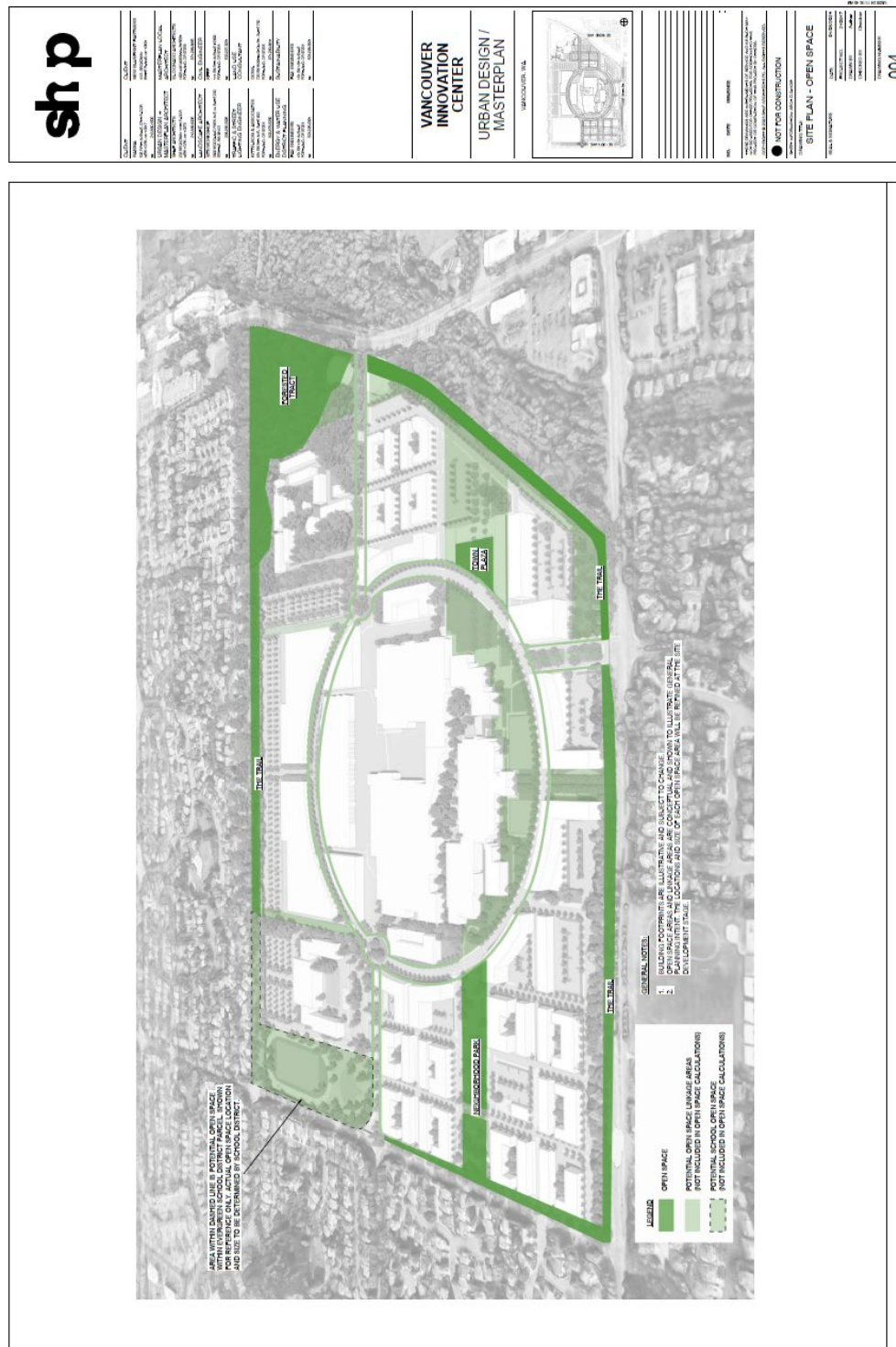


EXHIBIT B-3 – SITE PLAN MOBILITY

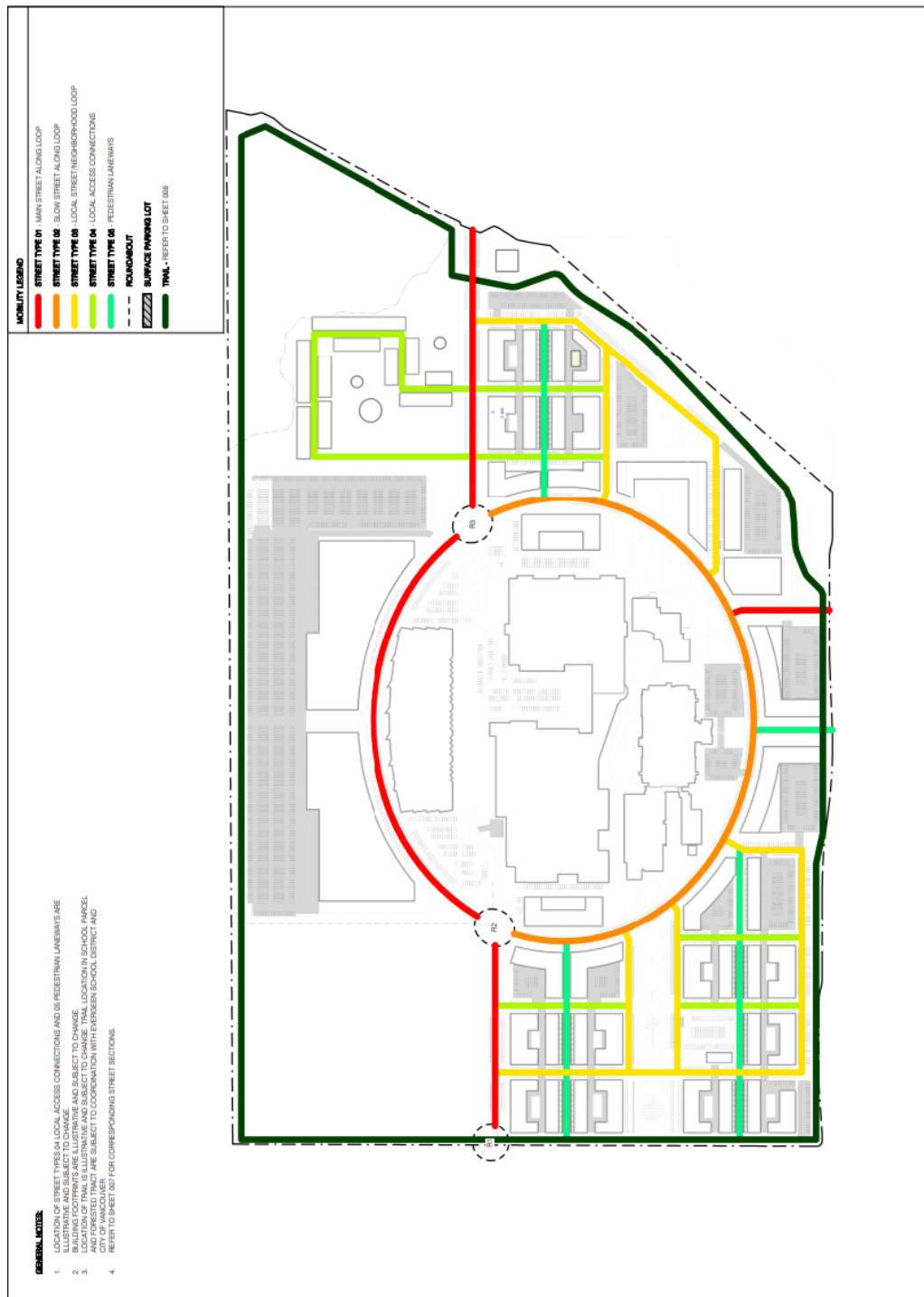
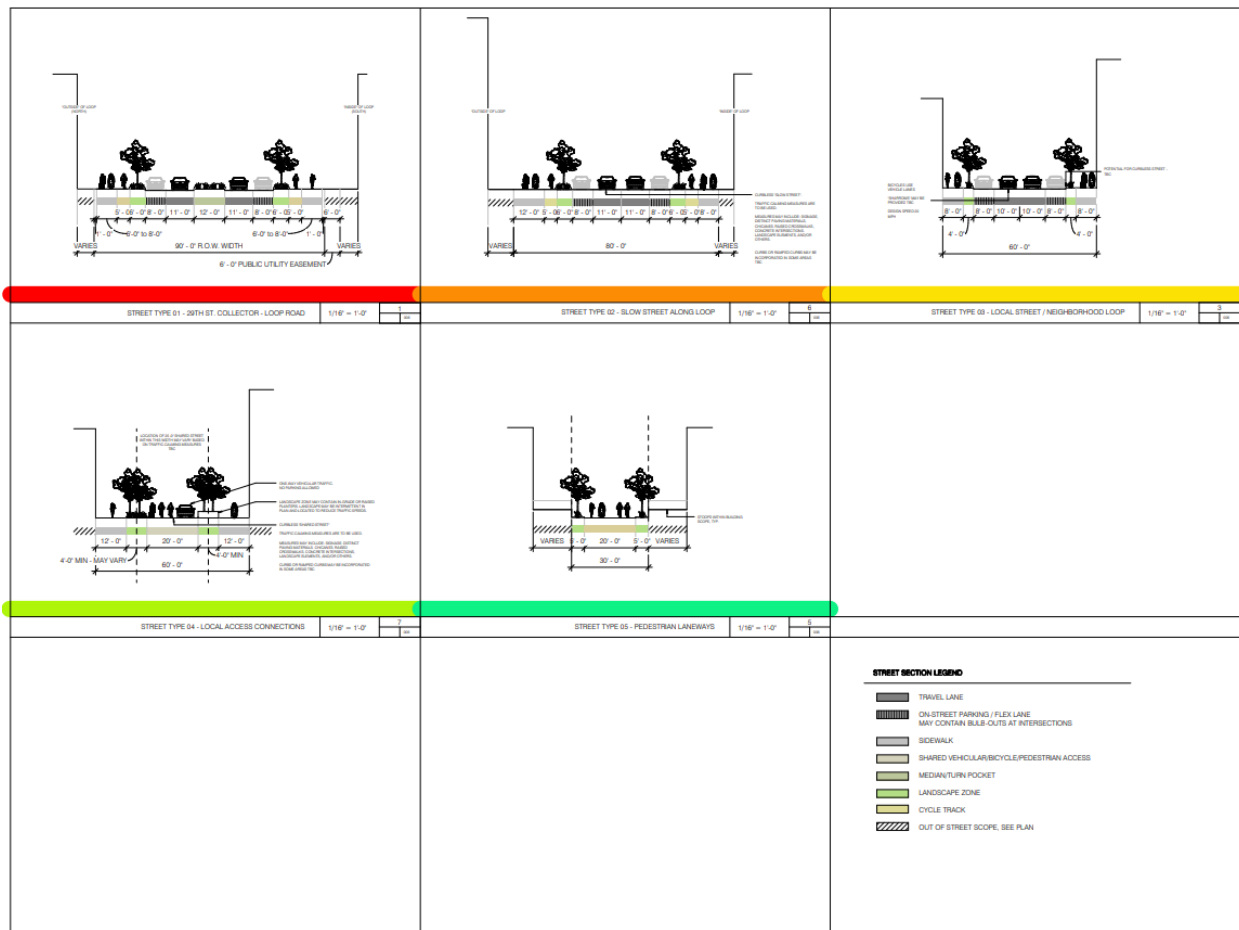


EXHIBIT B-4 – STREETSCAPE



EXHBIT B-5 – TRAIL SECTIONS

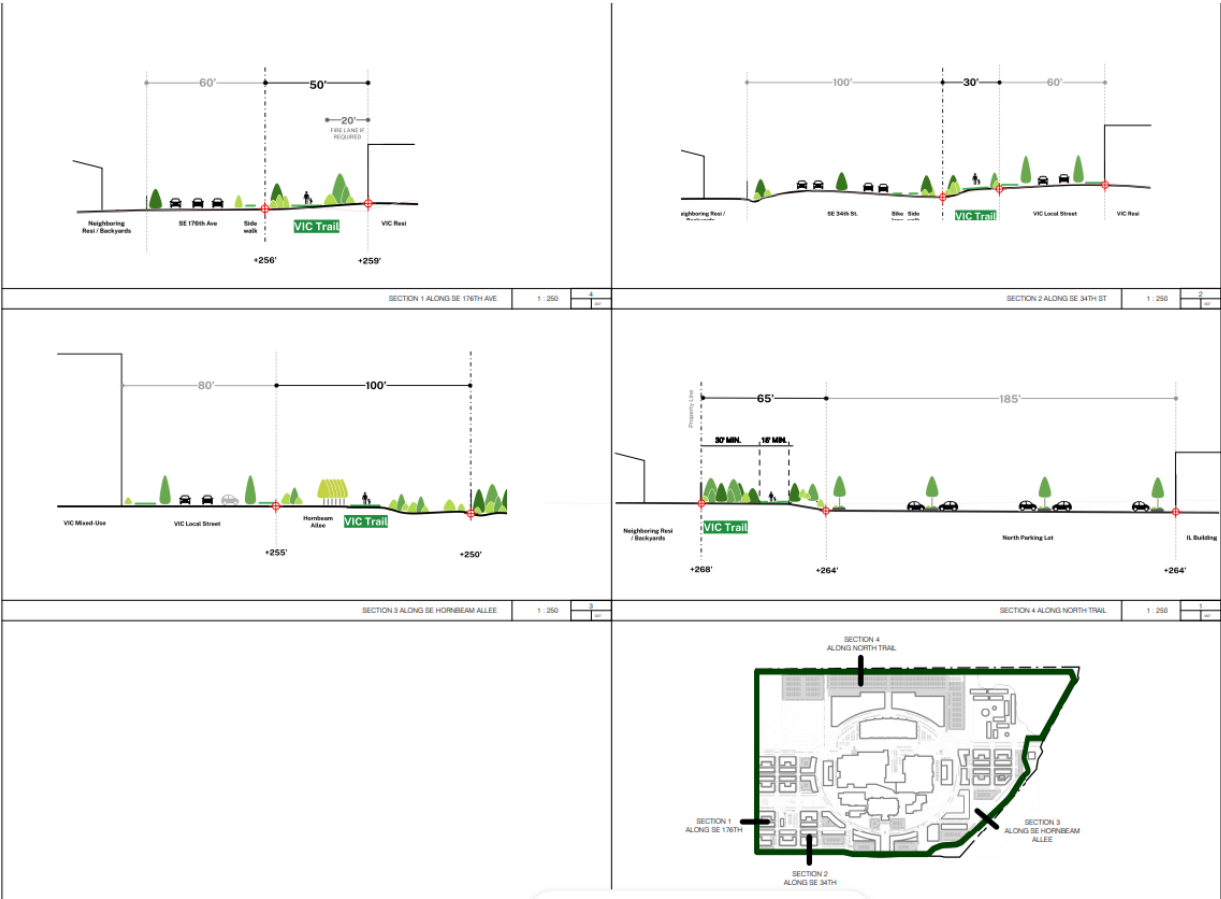


EXHIBIT C - Allowed Uses

R LUA – Uses are those identified in VMC Table 20.420.030-1 for R-30 zoned properties, as of the VIC 2.0 Application Date. Family Child Day Care Homes and Child Care Centers are permitted uses, subject to the provisions of VMC chapter 20.840.

MX LUA – Uses are those identified in VMC Table 20.430.030-1, as of the VIC 2.0 Application Date, as modified here. Family Child Day Care Homes and Child Care Centers are permitted uses, subject to the provisions of VMC chapter 20.840. In addition to those uses allowed by VMC Table 20.430.030-1, the following uses are also allowed:

Use	MX LUA
Commercial	
Artisan and Specialty Goods Production	P
Office	
• Extended	P
-Community Center	P
-Hotel	P
Industrial	
Industrial Services	P
Manufacturing and Production	P
Research and Development	P
Warehouse/Freight Movement (as ancillary use)	P
Other	
Wireless Communication Facilities	
• Subject to the limitations on this use provided in VMC Table 20.430.030-1;	P

[see next page for IL LUA]

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IL LUA – Uses are those identified in VMC Table 20.440.030-1 as of the VIC 2.0 Application Date, as modified here. Family Child Day Care Homes and Child Care Centers are permitted uses, subject to the provisions of VMC chapter 20.840. In addition to the uses allowed by VMC Table 20.440.030-1, the following uses are also allowed, as a permitted or limited use, as indicated below:

Use	IL LUA
Residential	
Multi-Dwelling Units - Allowed above ground floor only as specified by VMC 20.430.060(B)(2). - One caretaker residence permitted per use. - May be permitted only after 125,000 square feet of new construction in the LI LUA has been built and if Developer demonstrates residential units will not limit or interfere with Developer's ability to construct the light industrial square footage identified in the VIC Master Plan 2.0	L
Civic	
Colleges - Provided they have a functional relationship with existing industrial uses, and do not exceed 25,000 square feet in aggregate	L
Child Care Center - Child care centers allowed, subject to a Type II procedure. - Child care centers are permitted in order to provide service for those employees working or residents living anywhere on the Property, subject to provisions in Chapter 20.840 VMC, Child Care Centers.	L
Commercial	
Eating/Drinking Establishments - Provided they are located within an industrial building and consume no more than [15] percent of the building's total gross square footage.	L
Artisan Small Scale Manufacturing	P
Industrial	
Warehouse/Freight Movement (as ancillary use) - Permitted as limited use provided all activities, except outdoor storage of materials, are wholly contained within building(s).	L
Warehouse/Freight Movement (as primary use): • Permitted as limited use provided all activities, except outdoor storage of materials, are wholly contained within building(s). • Limited to 50,000 sf aggregate cap for any new construction after January 1, 2021. • Building 4 in the northeast portion of the Existing Building, has 24 to 35 foot ceilings and is designed as a large bay warehouse. This 130,000 sf area shall be allowed to continue as a preexisting nonconforming use for warehouse/freight movement.	L
Wireless Communication Facilities - Subject to requirements in Chapter 20.890 VMC, Wireless Telecommunications Facilities.	L

DRAFT 02/02/2024

Conditional Use	
Warehouse/Freight Movement (as ancillary use) - Permitted as limited use provided all activities, except outdoor storage of materials, are wholly contained within building(s).	L

EXHIBIT D – Approved Development Standards

The following standards supplement the requirements of the City of Vancouver, Title 20, Land Use and Development Code. To the extent there is a conflict between the Development Standards outlined in the VIC DA and this Exhibit D, and VMC Title 20, the provisions of this VIC DA and Exhibit D control.

1. Mixed Use (MX) LUA. The standards outlined in VMC 20.430.060.C.2 apply to the Property, except as outlined below:
 - a. Subsection 2.a. does not apply;
 - b. The last sentence of Subsection 2.d.1 (“Complete segregation of use types, such as placement of multiple commercial structures all on one side of a mixed-use site and multiple residential structures all on the other shall be prohibited”) does not apply; Subsection 2.e.3 applies only in the MX LUA; and
 - c. Subsection 2.f. does not apply to the R LUA
2. Buffer Standards. The buffer requirements outlined in VMC 20.925.030 and subsequent buffer setbacks in table 20.925.030-1 do not apply to adjacent land use areas within the VIC Masterplan 2.0. Along the perimeter of the masterplan site, these buffer requirements will still apply.
3. Residential (R) LUA - Development standards of the R LUA are those of the R-30 zoning district pursuant to VMC chapter 20.420 unless stated otherwise herein.
 - a. Building Design
 - i. 30-foot setback for the primary structure from the western Park Parcel boundary for the adjacent building perimeter to create a residential unit buffer
 - ii. 50% of street frontage occupied space
 - iii. No minimum lot size required
 - iv. Maximum lot coverage is 90%
 - b. Residential Unit Density
 - i. Minimum residential unit density shall be R-30 (22.1 units per net acre as measured by the total number of residential units divided by the portion of the site devoted to residential use, not including public or private streets, or critical areas and associated buffers on that portion) and maximum residential unit density is R-35 (35 units per net acre as measured by the total number of residential units divided by the portion of the site devoted to residential use, not including public or private streets, or critical areas and associated buffers on that portion).
 - ii. Density calculations are based the overall R-LUA acreage
 - c. c. Bicycle Parking
 - i. One covered, long term bicycle parking space is required per two dwelling units.
 - ii. Balcony or patio bicycle storage is discouraged and if proposed must be screened from street review.
 - d. Building Height – per VIC DA Section 6.3(c)
 - e. Frontage Standards - The R LUA shall not be required to comply with frontage standards requirements in VMC 20.430.060(C)(2)(f)(1).
4. Light Industrial (IL) LUA - Development standards of the IL LUA are those of the IL zoning district pursuant to VMC Chapter 20.440 unless stated otherwise herein. The following supplemental development standards apply to buildings and sites developed in the IL LUA after 2020:

DRAFT 02/02/2024

- a. Exterior building design.
 - i. Publicly identifiable entry/office on street wall required on ground floor on streets and Outdoor Public Spaces.
 - ii. Exteriors should be no more than 4 stories in height to be on scale with adjacent uses.
 - b. Fences - Maximum 10% of property may be fenced or walled for concealment of trash/recycling and storage.
 - c. Building Height – per VIC DA Section 6.3(c)
5. Mixed Use (MX) LUA - Development standards are those of the MX zoning district pursuant to VMC Chapter 20.430 unless stated otherwise herein. The standards outlined in VMC 20.430.060(C)(2) apply to the MX LUA, except as outlined below:
- a. VMC 20.430.060(C)(2)(a) does not apply;
 - b. The last sentence of VMC 20.430.060(C)(2)(d)(1) (“Complete segregation of use types, such as placement of multiple commercial structures all on one side of a mixed use site and multiple residential structures all on the other shall be prohibited”) does not apply;
 - c. VMC 20.430.060(C)(2)(e)(1) does not apply; required minimum residential density is 22.1 units per net acre, as measured by the total number of residential units divided by the portion of the site devoted to residential use, not including public or private streets, or critical areas and associated buffers on that portion

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EXHIBIT E-1 – DESIGN Guidelines



EXHIBIT E DESIGN GUIDELINES

Vancouver Innovation Center Master Plan

Updated April 2023

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 Water 04

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Appendix A

 Single Family Residential Design Reference Guide

Appendix B

 Placemaking Goals

PURPOSE

These design guidelines are intended to ensure that development within the Vancouver Innovation Center is cohesive in both form and function and is consistent with the brand pillars of the VIC. These brand pillars form the foundation of the design principles that will guide project implementation. These brand pillars and the associated VIC design principles are described further below:



Natural

Connected to nature in all that we do

Design Principle

Provide a network of both passive and active open space areas that utilize existing trees and natural resources for recreation and relaxation.



Balanced

physical, mental, and spiritual

Design Principle

Provide a balance of community gathering spaces and areas for personal escape.



Authentic

Urban style and refinement, built with taste, personalization and ease in mind

Design Principle

Create a compact urban form composed of well-articulated buildings and ample pedestrian areas to encourage multi-modal travel throughout the site between the various on-site uses and open space areas.



Blended

Contemporary convenience, modern collaboration

Design Principle

Design buildings to encourage pedestrian access, ground floor visibility and community spaces for socialization and collaboration.



Community

Inclusivity and shared knowledge, energy and passion

Design Principle

Design with an eye towards the future. Incorporate sustainability and energy efficiency measures including things such as vehicle charging stations, solar panels, and low impact development (LID) stormwater management approaches. Continuously evaluate project performance related to parking and space efficiency, vehicular trips and sustainability with the goal of design refinements and improvements throughout project buildout, with the goal of the project becoming a "living laboratory." Provide a network of well defined and accessible pedestrian corridors to encourage access through the site for all individuals.

APPLICABILITY

These guidelines will apply to new development and remodels of existing development within the Residential, Light Industrial, Mixed-Use, and Open Space LUAs within the VIC masterplan. Demonstration of project adherence to these guidelines will be required with land use permit submittals for new development on the site.



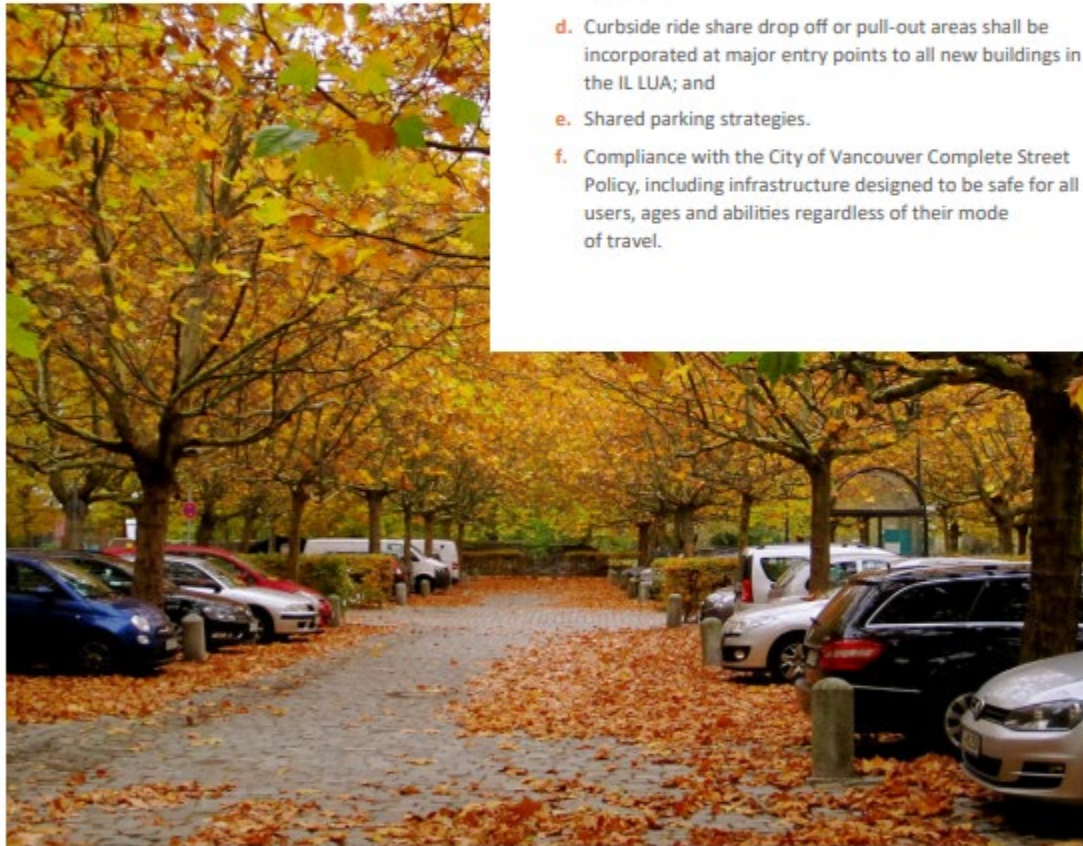
DESIGN GUIDELINES



Mobility

All new developments will demonstrate:

- a. Support for a 20-Minute Neighborhood by providing means to reduce need for vehicle trips;
- b. Functional connections to the site-wide bicycle and walking path network outlined in the Masterplan;
- c. Compliance with Washington State electric vehicle charging standards in effect at the time of land use application;
- d. Curbside ride share drop off or pull-out areas shall be incorporated at major entry points to all new buildings in the IL LUA; and
- e. Shared parking strategies.
- f. Compliance with the City of Vancouver Complete Street Policy, including infrastructure designed to be safe for all users, ages and abilities regardless of their mode of travel.



Energy

Developer is installing HVAC and lighting upgrades for the Existing Building. All new developments will demonstrate:

- a. Compliance with the 2018 Washington State Energy Code, at a minimum;
- b. Compliance with environmental standards in effect at the time of building permit application (i.e. environmental development standards do not vest on the Restated DA Effective Date;
- c. That every new building is designed to accommodate ready access for installation of solar panels that would occupy at least 10% of the building footprint. This includes the necessary structural and electrical infrastructure to accommodate the solar panels; and
- d. Infrastructure for electric vehicle charging stations.
- e. Advancement of "District Energy Conditions" as identified in Appendix A – Vancouver Innovation Center Master Plan Sustainability Framework.

Water

The VIC will prioritize use reductions, efficiency strategies, and surface water quality in its design. All new development applications will include:

- a. Water-saving plumbing fixtures in all new buildings;
- b. Native and adaptive plant selections that do not require excessive irrigation; and
- c. A surface stormwater strategy synopsis describing anticipated collection, treatment, and discharge strategies including any Low Impact Development (LID) BMPs planned for the project.
- d. An evaluation of means to reduce potable water use consistent with Appendix A – Vancouver Innovation Center Master Plan Sustainability Framework.





Building Design

a. Blank Walls

- i. At least 75% of the width of any new first-story building wall facing a street shall be devoted to interest-creating features, pedestrian entrances, transparent show or display windows, or windows affording views into retail, office or lobby space.
- ii. In all areas other than the IL LUA, building surfaces over 2,000 sf shall be broken up with window openings and/or changes in material.
- iii. Blank walls longer than 20 feet without windows or an unbroken series of garage doors are not permitted on any street frontage.
- iv. Any face of a building that is over 50' wide shall have varied horizontal plane and/or vertical façade shifts to break up the building's mass.

b. Corner Buildings

- i. New IL LUA buildings on a corner will have an entrance within 75 feet of the corner.

c. Ground Floor

- i. Buildings should engage with the "sidewalk zone" to bring visual interest, variation, and intimacy to the streetscape, while maintaining the pedestrian through-routes that link the land use areas on the site.
- ii. Pedestrian access to primary building entrances should be close to and visible from circulation facilities that include a pedestrian component such as a sidewalk, trail, or pedestrian plaza. Primary building entrances may not be from non-pedestrian oriented areas. Each primary building entrance should be attractive and have weather protection and highlight the presence of the entrance to pedestrians through the use of architectural treatments such as changes in the street-facing wall and lighting. Entrances from primary pedestrian corridors should be visually more prominent than
- iii. The design of buildings, above and below should be pedestrian scaled, intimate, and inviting.

d. Roofs

- i. Roof materials shall screen roof top mechanical equipment from ground-level views
- ii. Buildings shall have primarily flat roofs - architectural detailing and rooftop decks shall be allowed.



Exterior Building Finishes

To create a unique identity for the VIC, material selection and application is required to adhere to exterior finish standards.

- a. Major color themes are to predominantly be earth tones of grey, brown, and tan.
- b. Materials exhibiting patina are encouraged – including weathered wood, rusted steel, singed wood.
- c. Material changes shall be offset by a minimum 3 ½" horizontal or vertical relief.
- d. Materials that expose their natural state are encouraged such as exposed wood and concrete.
- e. First floor window framing shall be either wood or aluminum (does not apply to Residential LUAs)
- f. Opportunity for more industrial and technological materials, such as steel, aluminum, and heavy timber.

Maximum Building Heights

See Development Standards applicable to each LUA under Exhibit D of the Restated DA.

Single Family Residential

Single family residential attached designs should incorporate the material and pedestrian orientation provisions of these guidelines. See Appendix B – Single Family Residential Design Reference Guide.

Signage

- a. Monument signs will have a uniform color and typeface throughout the property.





Tree canopy

Every development application must demonstrate how it complies with the Tree Canopy Plan (Section 6.10 of the Restated DA) and provide an tree canopy assessment for its site and a 5-, 10-, 15-, and 20-year forecast for the tree canopy on the entire Property.

Open Space

All site plans will demonstrate adherence to the Masterplan and Appendix C - Placemaking Goals.

- a. Open spaces shall be directly accessible from all buildings in the development (building occupants should not have to walk around the building to get outside)
- b. Avoid inconvenient or circuitous ped access to amenities.
- c. Both greenscaping and useable accessible hardscaping elements shall count as open space
- d. Hardscape open spaces shall be designed for four season use and durable for urban intensity.
- e. Neighborhood open spaces
 - i. Refer to Circulation and Open Public Space Plan for targeted locations.
 - ii. Neighborhood open spaces shall be a minimum of 2,000 sf.
 - iii. Neighborhood open spaces shall incorporate interactive amenities such as pavilions, picnic facilities, and play structures.

Street Cross Sections

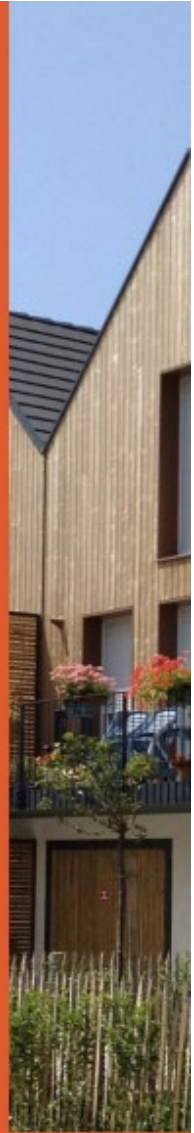
See DA for street section implementation options for the Vancouver Innovation Center.

APPENDIX A

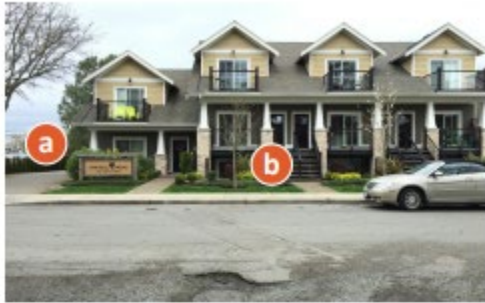
Single Family Residential Design Reference Guide

Vancouver Innovation Center Master Plan

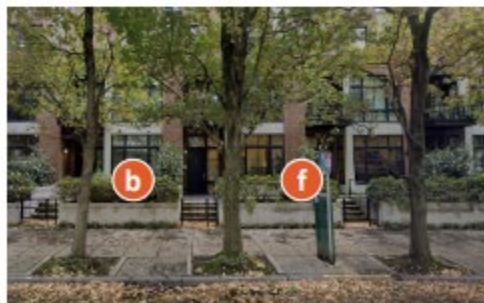
Updated April 2023



SINGLE FAMILY ATTACHED

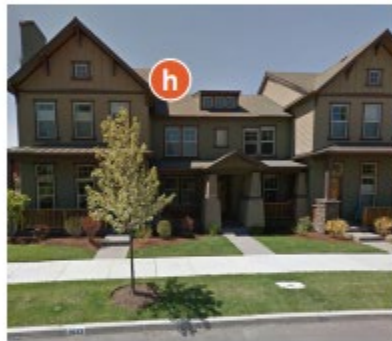


- a. Find opportunities to alley-load attached single family residential units to minimize driveway and garage exposure.
- b. Orient residential buildings to the "sidewalk zone" through the use of front porch features.
- c. Incorporate a range of natural color tones, architectural styles and horizontal and vertical relief.
- d. Seek opportunities to orient units to courtyards and open spaces.
- e. Create visual interest through horizontal and vertical relief and variation of architectural styles of adjoining attached units.
- f. Encourage reduced setbacks for residential units to engage entrances with the sidewalk.



SINGLE FAMILY ATTACHED – CONTINUED

- g.** Allow front-loaded attached units when accessed from a local street and when the garage exposure is minimized by site and building design features.
- h.** Allow for a mix of scale and size of attached product including larger duplexes.
- i.** Natural material elements including wood and stone should be prioritized for use.
- j.** Provide substantial window and trim relief on units to break up the potential for monolithic appearances on taller units.
- k.** For continuous banks of attached units, provide vertical, horizontal and roof relief variation to minimize the scale of the structures.



APPENDIX B

Placemaking Goals

Vancouver Innovation Center Master Plan

Updated April 2023



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Placemaking // Overview



Placemaking // District "Layers"

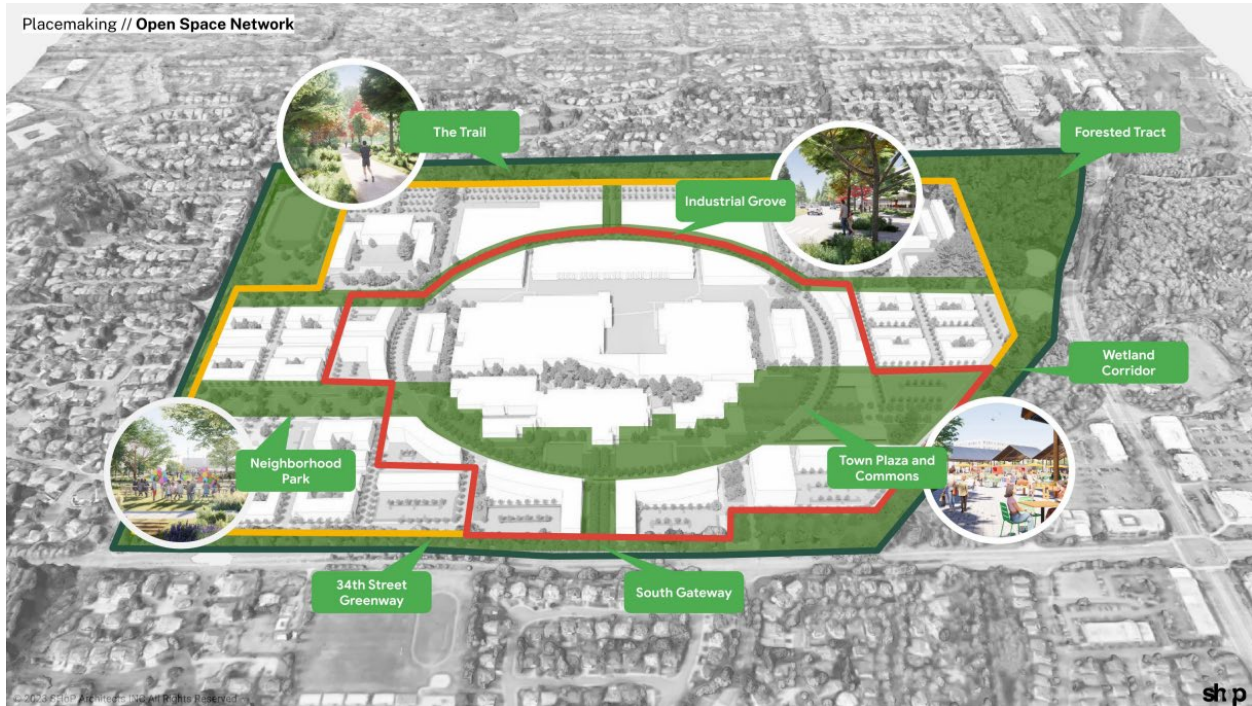


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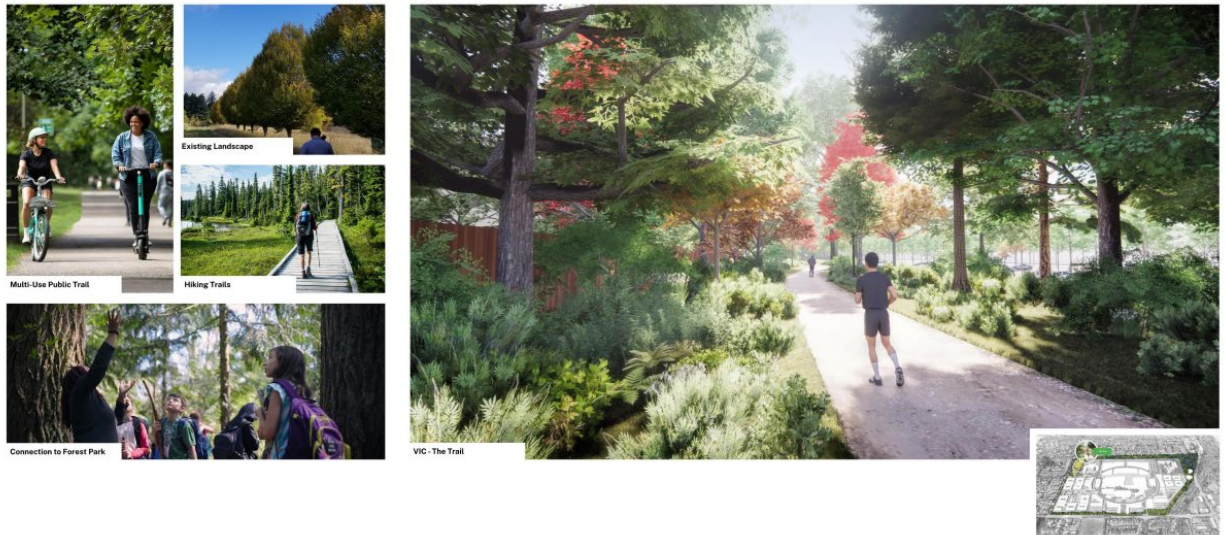
Placemaking // Program + Use



Placemaking // Open Space Network



Placemaking // **The Trail**



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sh p

Placemaking // **The Loop**



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DRAFT 02/02/2024

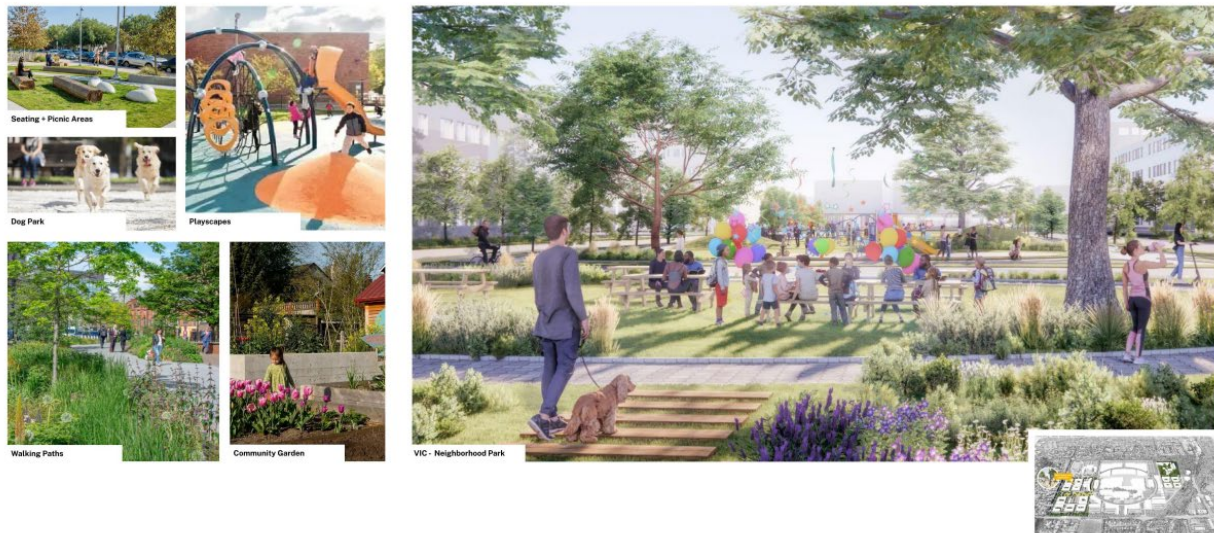
Placemaking // Town Plaza and VIC Commons



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sh p

Placemaking // Multi-family and Townhomes - Neighborhood Park



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DRAFT 02/02/2024

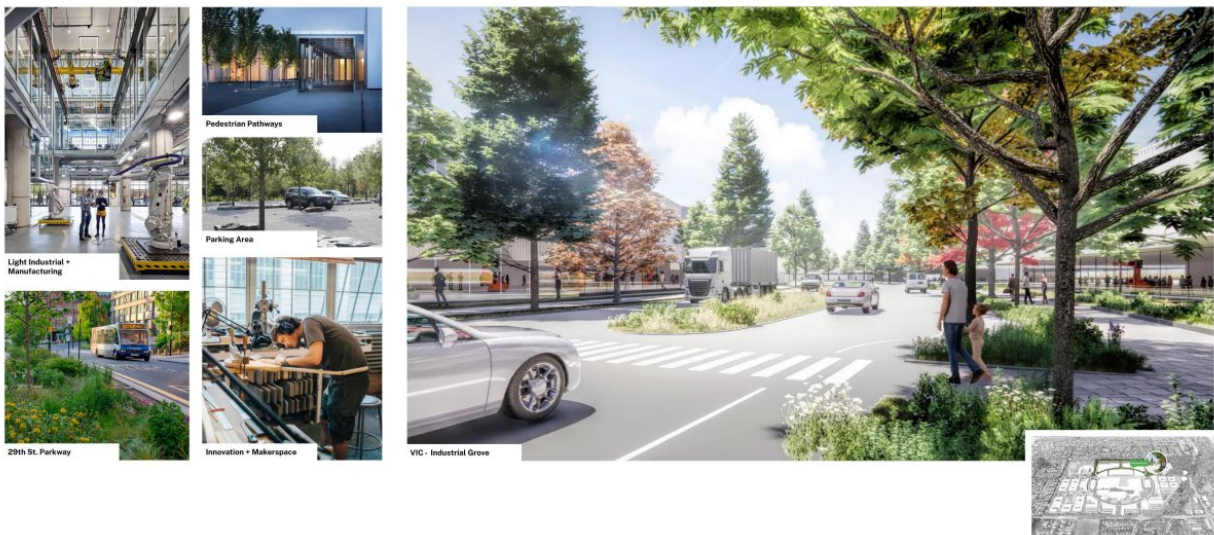
Placemaking // Multi-family and Townhomes - Pedestrian Laneways



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Placemaking // Industrial Grove



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EXHIBIT E-2 – November 2023 Comprehensive Sustainability Plan

Sustainability Improvements Implemented for Existing 715,000 SF Industrial Buildings:

- **Energy Efficiency Improvements:** Developer has worked with Clark PUD and Energy Trust of Oregon to improve energy efficiency at the existing industrial buildings as follows:
 - Installed new, more efficient chillers.
 - Replaced pumps and installed new VFDs in central plant.
 - Installed new building HVAC control systems.
 - Converting point controls from pneumatic to digital.
 - Installed exterior LED lighting.
 - Replacing all common area and house lighting with state-of-the-art LED and lighting control system.

The total estimated annual savings from the above installed improvements is estimated to be 6,300,000 KWh and 345,000 Therms.

- Additional energy efficiency upgrades and sustainability initiatives to date include:
 - Upgraded bathrooms with waterless and reduced flow systems to achieve **indoor water use reduction**.
 - Replaced water fountains with bottle filling stations.
 - Installed new electrical sub-metering system for better monitoring of electrical and water usage.
 - Participant in Clark PUD's Community Solar Program.
- All new tenants are required to install LED lighting and controls within their space.
- Installed showers and bicycle storage space to promote biking to work.
 - Creating long term program to replace a portion of current landscaping with native plants species.
- **Adaptive Reuse, Access to Recreation Facilities:**
 - The existing 715,000 SF of buildings is at the heart of this campus and substantial sustainability investments have been made as noted above. The Developer also renovated underutilized former corporate cafeteria into an activated community space with an upscale café and coffee bar, living room/lounge space, conference rooms, expanded fitness center with fully renovated locker rooms, a yoga and meditation studio, etc.

Sustainability Plan for New Development (VIC Masterplan 2.0)

Overall Campus & Vision:

- **Walkable Streets, Compact Development, Mixed-Use Neighborhoods, Smart Location, Access to Recreation Facilities:** The campus is designed as a 20-minute, walkable, mixed-use neighborhood providing convenient, safe pedestrian-oriented access to places and services that residents, employees, and neighbors need every day – including work, transit, shopping, quality food, school, parks, open space, and social activities.

DRAFT 02/02/2024

- **Neighborhood Schools:** The campus includes a 20-acre parcel that is owned by the Evergreen School District and will be home to a future middle school.
- **Site Design for Habitat Conservation:** A 13.7-acre Forested Tract that has a restrictive covenant to remain as open space. The Developer intends to sell this Forested Tract to the City of Vancouver.
- **Housing Types and Affordability, Housing and Jobs Proximity:** Developer commits to participating in the MFTE program whereby 20% of the 1,800 units (i.e. 360 units) will be available at 80% AMI. All residential units are within walking distance of all employment opportunities on campus.
- **Connected and Open Community, Access to Civic and Public Space, Access to Recreation Facilities, Local Food Production:** Developer will provide a perimeter trail and neighborhood park open to the general public. The trail will be connected to the Forested Tract. The trail will also link together all of the developments within the campus. Community gardens will be available to residents and tenants. The Town Plaza is an optimal location for a local farmers market to operate on the campus.
- **Community Outreach and Involvement:** _Masterplan 2.0 was developed in concert with community and municipal input through feedback from the Masterplan 1.0 approval process, community engagement sessions on the proposed Masterplan 2.0, and ongoing conversations with City staff.

Building Design:

- **Optimize Building Energy Performance:** Developer will achieve GHG emissions reduction targets stated in the City's Climate Action Framework as outlined in the March 27, 2023 Sustainability Goals for City of Vancouver CAF Alignment Memorandum included below.
- **Optimize Building Energy Performance:** All new buildings will include the following:
 - All electric heating, cooling and domestic hot water.
 - Efficient heat pump selections for space heating and domestic hot water
 - o for all new residential buildings, all electric appliances
- **Solar Orientation:** All new buildings will be solar ready per code.
- **Rainwater Management:** For new buildings, Developer will be infiltrating all runoff on site.
- **Electric Vehicles:** Developer will comply with City code for EV infrastructure requirements with each project's site plan approval.

Transportation and Mobility:

- **Compact Development, Walkable Streets, Mixed-Use Neighborhoods, Connected and Open Community, Transportation Demand Management, Housing and Jobs Proximity, Smart Location:** Masterplan 2.0 allows for greater integration of uses than Masterplan 1.0. The entire campus will be walkable/bikeable with ample opportunities to live and work on campus. Small retail and commercial services will be within a 5-minute walk of any residential neighborhood or commercial/industrial tenant. The reconfiguration of Masterplan 2.0 also achieves added density with the same amount of vested trips in Masterplan 1.0. Masterplan 2.0 also creates a more efficient street network that allows for separation of industrial related truck traffic from residential and mixed-use traffic.

DRAFT 02/02/2024

- **Walkable Streets, Transit Facilities, Bike Facilities, Smart Location:** Road networks will be designed and coordinated with City transportation staff to ensure safe, comfortable and complete connections for various modes of transportation (vehicular, pedestrian, bicycles, etc.) o Once ESD develops the school, Developer will have bikeable/walkable laneways for students to be able to walk or bike to school safely.
- **Bicycle Facilities, Smart Location:** Developer will include infrastructure to support bike parking and will have bike sharing programs. Developer renovated locker rooms, showers and changing facilities at the existing buildings to help encourage habitual biking for its tenants. The perimeter trail and bike paths throughout the campus will encourage recreational physical activity.
- **Transportation Demand Management, Smart Location:** Developer will deploy shared parking strategies where applicable. The campus design encourages multimodal travel. Developer is eliminating an entrance on 34th Street to reduce traffic congestion at 176th Avenue and 34th Street. Campus entrances/exits at 34th Street are being coordinated with the City's efforts along that corridor to ensure offsite improvements result in a smooth and safe pedestrian experience.
- **Access to Quality Transit and Transit Facilities, Smart Location:** Developer will work with CTran, ESD and City staff to coordinate safe and efficient placement of bus stops within the campus. The VIC campus already has a bus stop along 34th Street and the campus will have pedestrian laneways to provide safe access to the existing bus stop.

Open Space, Natural Systems, and Water Resources:

- **Site Design for Habitat Conservation and Long-Term Conservation Management of Habitat, Connected and Open Community, Access to Recreation Facilities:** Preservation of 13.7 acre Forested Tract o Developer worked with a local arborist to adjust the boundary line of the Forested Tract to create a better edge condition for the trees allowing for a more resilient tree canopy and preservation of native and climate resilient species.
- **Connected and Open Community, Access to Civic and Public Space, Access to Recreation Facilities, Connected and Open Community, Access to Recreation Facilities:** Masterplan 2.0 increases the amount of open space/parks/trails by 26% from 19 acres of open space to 24 acres.
- **Tree Lined and Shaded Streetscapes and Heat Island Reduction:** Canopy coverage per Restated DA which is above and beyond the code minimum for all use types. Developer also commits to achieving Tree CAP certification for all projects (minimum Silver Leaf Achievement). Both canopy coverage & Tree Cap Silver will reduce the heat island effects within the campus.
- **Outdoor Water Use Reduction:** Developer will favor nature scaping in lieu of high maintenance turf for streetscapes.
- **Rainwater Management:** For new buildings, Developer will be infiltrating all runoff on site.

Memo

Date: March 27, 2023
Project: VIC Sustainability Master Planning
Project Number: 22-1362
To: Pedro Polanco, Jennifer Rabina, Marc Esrig
From: Forest Tanier-Gesner, Ned Greene
Subject: Sustainability Goals for City of Vancouver CAF Alignment

The Vancouver Innovation Center (VIC) development is determining sustainability goals for site infrastructure and future phase developments and is working to align to the Vancouver Climate Action Framework (CAF) that has recently been released by the City of Vancouver.

GOALS OF THE CLIMATE ACTION FRAMEWORK

One of the primary goals of the City of Vancouver's Climate Action Framework is aggressive reductions in the Greenhouse Gas (GHG) emissions associated with the City and Community operations:

- By 2025 – Achieve 80% Reduction in GHG emissions associated with municipal operations.
- By 2030 – Achieve 80% Reduction in GHG emissions associated with community operations.
- By 2040 – Achieve 100% Reduction in GHG emissions (Carbon Neutrality) associated with municipal and community operations.

PAE understands that the VIC development team is in favor of these performance-based standards over arbitrary certification programs that do not guarantee the City's desired outcome for emission reduction as set forth in the CAF.

To that end, PAE has developed life-cycle emissions and life-cycle cost assessments of several heating, cooling, and domestic hot water (DHW) system options and cooking appliance options for the VIC campus. PAE's recommended baseline design option was then benchmarked against the City of Vancouver's CAF. Based on this analysis it is estimated that the non-industrial process loads¹ on the VIC campus could be within 2% of the CAF reduction targets by 2030 and within 1% of the total CAF target by 2040.

PAE identified additional potential measures to address the minor gap in the emissions reductions estimates versus the CAF targets. These measures serve as a menu of options and can be implemented incrementally and discretely during the course of the VIC development. The quantifiable impacts of these options are also summarized in the following table.

¹ It is understood that the campus currently houses industrial processes that rely on natural gas fuel. These operations are currently outside of the scope of the systems options analysis and emissions reduction estimates. Alternate fuel sources should be considered by the Development Team as these become more readily available for the types of industrial processes.

March 27, 2023



	Reference Year	2024	2030	2040
BENCHMARK:				
Existing Building Stock and Forecasting Future buildings per today's Standards				
	MT CO2e/year	20,743	20,743	20,743
BASELINE DESIGN for new buildings:				
All Electric heating, cooling, and domestic hot water for all asset types.				
All Electric appliance requirements for all residential buildings (all-electric cooking and laundry)				
Efficient heat pump selections for space heating and domestic hot water (DHW) in all new buildings				
	MT CO2e/year	7,075	4,530	289
	(% reduction from benchmark)	66%	78%	99%
UPGRADES BY 2030 - OPTIONS TO CONSIDER				
Increase campus Photovoltaic (Solar) installations as needed to reach emission reduction goal. Consider exceeding code minimum if needed.			A	
Material selections and construction practices could further reduce the emissions associated with the campus development, through reductions in the embodied emissions for the buildings and site infrastructure. Design teams could help address marginal reductions needed to achieve goal by 2030			B	
Consider committing to provide more EV charging for residential parking and/or more residential spaces provisioned as EV ready if market demand supports that investment			C	
A+B+C = 390 MT CO2e/year	MT CO2e/year	7,075	4,140	289
	(% reduction from benchmark)	66%	80.0%	99%
UPGRADES BY 2040				
Phase out use of non-industrial gas use from the VIC Campus - enforce all electric cooking in commercial buildings, upgrade existing buildings, phase out other gas uses by 2040 if required by code.				-289
	MT CO2e/year	7,075	4,140	0
	(% reduction from benchmark)	66%	80%	100%

Table 1: Emissions Reduction Estimates for VIC Campus

March 27, 2023



VIC SUSTAINABILITY GOALS

As shown in Table 1, site emissions estimates for the recommended baseline design approach closely aligns with the City's CAF emissions reductions targets. Below is a summary of PAE's recommended baseline design for the campus:

- BOD - "Building by Building Heating and Cooling – All Electric" systems approach for all new construction.
- Efficient heat pump selections for space heating and domestic hot water (DHW) in all new buildings
- Electrification phase in plan for all existing buildings heating and DHW heating systems by 2040, if required under City CAF.
 - Central heating update requires consideration of low temp heating coils for end-of-life upgrades with current heat pump technology.
- All Electric appliance requirements for all residential buildings (all-electric cooking and laundry)

To close the minor gap between the baseline design approach and the CAF targets, PAE recommends the following possible options to be evaluated at the time of each new development project:

- Recommend to future commercial tenants to strive for All Electric appliance requirements for all commercial buildings (i.e. all-electric commercial cooking by 2040 if required by code). It is understood that restaurants and some industrial tenants who have commercial grade kitchens within their premises, may not be willing to comply with this requirement today given current industry standards.
- Increase onsite Photovoltaic (solar) installations as needed to reach emission reduction goal. This may require exceeding code minimum to achieve the desired target.
- Material selections and construction practices could further reduce the emissions associated with the campus development, through reductions in the embodied emissions for the buildings and site infrastructure. Design teams could help address marginal reductions needed to achieve goal by 2030.
- Evaluate demand for Increasing percentage of Electrical Vehicle charging stations for residential neighborhoods. Exceeding existing code if demand warranted that could help meet the CAF targets.

EXHIBIT F – Retained Traffic Capacity

Total Vested Average Daily Trips: 26,982

- Total vested trips reflect those trips expected to be utilized by and reserved for the VIC Master Plan 2.0 after reductions for internal trips within the VIC Master Plan 2.0 and pass by trips for the VIC Master Plan 2.0 retail uses.
- Total vested trips include trips utilized by existing onsite buildings.

Total Vested AM Peak Hour Trips: 2,229

Total Vested PM Peak Hour Trips: 1,991

VIC Site Trip Generation Estimate

(From Table 4 of the 2023 VIC TIA):

Table 4: Site Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Existing The VIC Buildings ¹	1996 Traffic Counts	715,000 Square Feet	10,200 ²	382	262	120	444	76	368
Less Trips Internal to the Campus Area			(236)	(24)	(12)	(12)	(26)	(8)	(18)
Net New			9,964	358	250	108	418	68	350
General Light Industrial	110	600,565 Square Feet	2,925	444	391	53	390	55	335
Less Trips Internal to the Campus Area			(198)	(20)	(10)	(10)	(22)	(7)	(15)
Net New			2,727	424	381	43	368	48	320
General Office Building	710	87,500 Square Feet	949	133	117	16	126	21	105
Less Trips Internal to the Campus Area			(29)	(2)	(1)	(1)	(3)	(1)	(2)
Net New			920	131	116	15	123	20	103
Medical Office Building	720	10,000 square feet	360	31	24	7	39	12	27
Less Trips Internal to the Campus Area			(4)	(1)	(1)	(0)	(0)	(0)	(0)
Net New			356	30	23	7	39	12	27
Shopping Center	820	140,000 square feet	5,181	118	73	45	476	228	248
Less Trips Internal to the Campus Area			(1,607)	(45)	(29)	(16)	(110)	(41)	(69)
Less Pass-by Reduction			(1,036)	(21)	(13)	(8)	(106)	(54)	(52)
Net New			2,538	52	31	21	260	133	127
Multifamily Housing (Mid-Rise)	221	1,248 Units	5,666	538	124	414	487	297	190
Less Trips Internal to the Campus Area			(790)	(14)	(2)	(12)	(80)	(56)	(24)
Net New			4,876	524	122	402	407	241	166
Multifamily Housing (Low-Rise)	220	552 Units	3,720	194	47	147	258	163	98
Less Trips Internal to the Campus Area			(350)	(6)	(1)	(5)	(35)	(25)	(10)
Net New			3,370	188	46	142	223	138	85
Middle School ²	522	900 Students	1,917	522	282	240	153	75	78
Total Trips			30,918	2,362	1,320	1,042	2,373	927	1,446
Less Total Trips Internal to the Campus Area			(3,214)	(112)	(56)	(56)	(276)	(138)	(138)
Less Total Pass-by Reduction			(1,036)	(21)	(13)	(8)	(106)	(54)	(52)
Total Net New Trips			26,668	2,229	1,251	978	1,991	735	1,256
The VIC Development Agreement Vested Net New Trips			26,982	2,088	1,343	745	1,991	627	1,364
Proposed Total Net New – The VIC DA Vested Net New			-314	141	-92	233	0	108	-108
Total Net New Trips – Existing The VIC Building Net New Trips			16,704	1,871	1,001	870	1,573	667	906

¹ Source: Traffic Impact Analysis for The VIC Master Plan dated November 20, 2020.

² Trip estimates from approved 2020 The VIC Traffic Impact Analysis. The potential for internal trips associated with a school could be revisited in conjunction with a more specific school development proposal.

2023 VIC TIA – Figure 5



EXHIBIT G – Surrendered Traffic Capacity

Land Use	Average Daily Trips	Weekday AM Peak Hour Trips	Weekday PM Peak Hour Trips
RETAINED RESTATED DA AND VIC MASTER PLAN TRIPS	26,982	2,229	1,991

Land Use	Average Daily Trips	Weekday AM Peak Hour Trips	Weekday PM Peak Hour Trips
Master Plan Trips from Original HP Development Agreement	30,000	4,200	3,950
Retained VIC Master Plan Trips <i>(Exhibit F net new after reducing for internal and pass-by trips)</i>	26,982	2,088	1,991
Vested Trips Surrendered to City in Restated DA <i>(Original Development Agreement-VIC Master Plan Trips)</i>	3,018	2,112	1,959
Change in Vested Trips with Retained Restated DA and VIC Master Plan 2.0	0	+141	0
Retained Restated DA and VIC Master Plan Trips	26,982	2,229	1,991

Land Use	Average Daily Trips	Weekday AM Peak Hour Trips	Weekday PM Peak Hour Trips
Master Plan Trips from Original HP Development Agreement	30,000	4,200	3,950
Vested Trips Surrendered to City in Restated DA <i>(Original Development Agreement-VIC Master Plan Trips)</i>	-3,018	-2,112	-1,959
Retained VIC Master Plan Trips <i>(Exhibit F net new after reducing for internal and pass-by trips)</i>	26,982	2,088	1,991
Change in Vested Trips with Retained Restated DA and VIC Master Plan 2.0	0	+141	0
RETAINED RESTATED DA AND VIC MASTER PLAN 2.0 TRIPS	26,982	2,229	1,991

EXHIBIT H – Transportation Improvements

Table 1. Summary of Mitigation Recommendations

Facility	Segment/ Study Intersection ID	Mitigation Recommendation	Needed Pre- VIC Master Plan?	Triggered by VIC Master Plan Trips?	VIC Master Plan Trigger Phase?
On-Site Roadways & Intersections					
SE 29 th Street	<i>Extend collector arterial roadway across the VIC Master Plan site in three segments</i>				
	West Segment	From SE 176 th Avenue to West Loop Road	N/A	Yes	2
	North Segment	From West Loop Road to East Loop Road	N/A	Yes	3
	East Segment	From East Loop Road to SE 192 nd Avenue	N/A	Yes	3
SE 184 th Avenue	N/A	Renovate collector arterial roadway within The VIC Master Plan site from SE 34 th Street to Loop Road	N/A	Yes	2
West Loop Road	N/A	From SE 184 th Avenue to SE 29 th Street	N/A	Yes	2
East Loop Road	N/A	From SE 184 th Avenue to SE 29 th Street	N/A	Yes	4
West Loop Road/ SE 29 th Street	N/A	Construct single lane roundabout	N/A	Yes	2
East Loop Road/ SE 29 th Street	N/A	Construct single lane roundabout	N/A	Yes	3
Site-Access Changes					
West Site Access/ SE 34 th Street	7	Close and vacate motor vehicle site-access (intersection north approach)	No	No	2
SE 29 th Street/ SE 176 th Avenue	9	Reconstruct as a single lane roundabout	No	Yes	2
SE 29 th Street/ SE 192 nd Avenue	4	Install traffic signal with interconnect Construct and stripe separate eastbound left and right turn lanes with 250 feet of storage each Stripe northbound left-turn lane with 200 feet of storage	No	Yes	3
Off-site Intersection Mitigations with Master Plan Development					
SE 29 th Street/ SE 164 th Avenue	11	Modify traffic signal to provide east-west protected/permissive left-turn phasing	No	Yes	2
		Extend westbound left-turn lane striping to provide 225 feet of storage (striping only)	No	Yes	2
		Extend southbound left-turn storage to provide 300 feet of storage (reconstruct center median area)	No	Yes	2
SE 192 nd Avenue/ SR-14 Westbound Ramp Terminal	N/A	Pay proportionate share contribution toward future capacity improvements with each site development application. Estimated total fee of \$430,000 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added
SE 20 th Street/ SE 176 th Avenue	10	Pay proportionate share contribution toward future capacity improvements with each site development application. Estimated total fee of \$33,600 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added
SE 34 th Street/ SE 192 nd Avenue	5	Pay proportional share contribution towards re-constructing streets with a more durable pavement treatment to reduce maintenance needs. Estimated total fee of \$83,400 based on assumed Master Plan land use plan.	Yes	No	Each phase based on trips added

N/A = Not applicable

From: ssilvey643@aol.com
To: [Planning Commission](#)
Subject: comments and notes for 13 Feb Meet
Date: Tuesday, February 13, 2024 7:46:47 AM

You don't often get email from ssilvey643@aol.com. [Learn why this is important](#)

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Sirs,

In looking over all this data for the workshop and meeting, one seems to need a 30,000 foot view.

There are all the buzz words of the day, which basically seem to segregate and divide the community and the interesting note that future workers shall be of high tech, which means making a bit of monies. Yet the push is in the direction of those not educated, or segmented into various groups.

Nothing creates a center of work, and it seems the folks pushing all this have not investigated prior areas and what has failed. If in fact one is to look at these groups, than where are the manufacturing centers, the industrial dirty jobs that really create things within your plans.

On a further note, the city has failed, no communication to property owners when information and replies are requested, phone calls that avoid documentation with answers when check upon that are false. Further building permits issued, and paid for but inspection by the inspector incomplete, not up to code and passed by said inspector. Further other permits issue which are bogus if not just plain false in factual data, leaving the homeowner with his own problems as the city washes their hands...

Maybe the city while pushing ahead spend some time taking care of things and correcting internal systems that appear to be rigged, possibly employ non competent people, or are employed to meet some buzz work of the month.

I well state that the workers, those whom man the phones and interact on worker level do a good job but seem to be hamstrung by the powers to be who are making policy and directing folks.

TA

S Silvey

Vancouver, WA

From: [Annette Griffy](#)
To: [Planning Commission](#)
Subject: The VIC - Traffic Mitigation
Date: Tuesday, February 13, 2024 11:19:06 AM

You don't often get email from amgriffy@msn.com. [Learn why this is important](#)

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City Planning Commission,

As a homeowner in Fisher's Landing East neighborhood, we share concerns of many residents on the traffic impacts to the existing neighborhood. The Transportation Impact Analysis (TIA) has NO offsite impacts or required mitigation.

At the first developer outreach meeting on January 29th, 2024, it was stated that the traffic study analysis report would be available for review. I haven't found the report or study on the city or developer websites. The neighborhood concern over the lack of impact improvements or mitigation stems from the TIA assumptions. Specially, the traffic study was conducted during the pandemic. Also, the analysis for accident data and warrants was over the last 5 years (as stated in the January 31st meeting), this was mostly work from home pandemic traffic. A posting of the traffic study as promised is needed for the residents to review!

The collector roads through the neighborhood were constructed to a County standard from the late 80's and 90's. Specifically, SE 29th Street from 164th to 176th, SE 25th west of 176th, and SE 176th Avenue.

There is no lighting, there are missing speed signs, and the overwide cross sections promotes speeding. Driving the speed limit on 176th I have frequently experienced being passed by speeding cars in the median. The traffic circle in 176th will be an improvement to help mitigate this behavior.

Thank you! However, crossing these streets as a pedestrian is often met with long waits at the corners or park trail intersections with the roads, due to speeding traffic. With a volume increase this will become more difficult and dangerous. Are there any plans for future improvements to these specific neighborhood streets, given the sub-standard construction, higher speeds and increase in the volume of traffic?

In addition, we have concern over the height of the low rise multi-family buildings along 176th. The low rise design is appreciated, but the grading and building elevation has not been provided. Even a low rise design could be impactful to the neighborhood to the east if the grading is modified.

Proposed building elevation data or preliminary grading would be appreciated, especially to the existing neighbors along 176th.

Thank you to the Planning Commission and City Staff for review of this major development in Fisher's Landing East.

Respectfully,

Annette Griffy and Carl Amell

17400 SE 30th Street
Vancouver, WA 98683
amgriffy@msn.com

Sent from [Mail](#) for Windows

From: [Ron](#)
To: [Planning Commission](#)
Subject: Public Hearing 6:30 pm, 2/13/24 -
Date: Tuesday, February 13, 2024 11:52:56 AM

You don't often get email from r_rushford@comcast.net. [Learn why this is important](#)

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Planning Commission, City Council and all it may concern,

Revision to the VIC MASTER PLAN...approved in 2021, should be suspended subject to "required SEPA environmental impact" The zone change and sale of this "179 acre site", should not have been completed without the "required environmental impact. The Purchaser, H.I.G Partners through New Blueprint Partners and now RABINA, have "over 60 Billion of Real estate under management"

The City is not acting in the best interests of the citizens, the environment or future generations if it proceeds without following required guidelines.

"Deferring the environmental impact requirement " is a syndical way of subverting the interests of the citizens for power and profit.

Mark Person, Senior Planner, City of Vancouver, Please respond.

Thank You

Ron Rushford

Sent from [Mail](#) for Windows

From: [Connor Riggs](#)
To: [Planning Commission](#)
Subject: VIC
Date: Tuesday, February 13, 2024 12:49:13 PM

You don't often get email from riggscpr@gmail.com. [Learn why this is important](#)

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello, I have the following notes/questions for the community forum:

Permit Conditions to Seek from City

- **Construction hours:** Aim for later start times on weekends.
- **Pile driving:** No impact pile driving after XX PM. Maybe 5 PM??
- **Construction worker parking:** Require all construction worker parking to be on the property and not in neighborhoods
- **Noise permit:** Construction shall not go above XX dBA.
- **Noise mitigation:** What noise mitigation will the city require?
- **Construction hotline:** Require 24-hour hotline answered by a live person for duration of construction. Hotline person must be able to reach contractor management to address noise issues outside of allowable construction hours.

Questions/Requests to VIC Developer

- **Open space:** Aim to maximize public open space
- **Pile driving:**
 - How many piles will be installed?
 - What is the planned duration for pile driving?
 - Will they be using impact or vibration installation? Can the city require vibing them in??

Mitigation Requests to VIC and/or as Permit Conditions

- **Neighborhood improvements?** Are there neighborhood amenities that can be tied to the permits? Examples:
 - Street/sidewalk improvements
 - Additional safety, lighting, or signage improvements

Looking forward to it. Thank you!