

# 9

# Appendices

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# 9.1 Concomitant Agreements

# 9.1.1 Concomitant Agreement May 30, 1986

OCT 06 1986

CONCOMITANT AGREEMENT

CITY OF PUYALLUP

#13

THIS AGREEMENT, entered into this 30<sup>TH</sup> day of MAY, 1986, by and between BEIM & JAMES PROPERTIES II, hereinafter referred to as the "Applicant", and the CITY OF Puyallup, Washington, a municipal corporation, hereinafter referred to as the "City".

W I T N E S S E T H :

WHEREAS the City has authority to enact laws and to enter into agreements to promote the health, safety and welfare of its citizens and thereby control the use and development of property within its jurisdiction, and

WHEREAS the Applicant has applied for a rezone (Case #2-4-84) of a certain property described in attached Exhibit "A" Case No. Z-4-84 and located within the City's jurisdiction from an "RS" Residential Single-Family District to an "I" Industrial District, and

WHEREAS the City, pursuant to RCW 43.21C, the State Environmental Policy Act, should mitigate any adverse effects which might result because of the proposed rezone, and

WHEREAS the Applicant has indicated willingness to cooperate with the City, its Departments and officials, to ensure compliance with all City ordinances and all other local, state, and federal laws relating to the use and development of the Site, and

WHEREAS, said rezone has been found to comply with the Puyallup Comprehensive Plan and City of Puyallup Municipal Code, and

WHEREAS the City, in addition to civil and criminal sanctions available by law, desires to enforce the rights and interests of the public by this Concomitant Agreement;

NOW, THEREFORE, in the event the Site is rezoned from "RS" Residential Single-Family District to an "I" Industrial District, and subject to the terms and conditions hereinafter stated, the Applicant does hereby covenant and agree as follows:

1. SPECIFIC CONDITIONS OF APPROVAL:

a. That only the following uses as defined by Condition No. (g), be permitted on the subject property: Professional Offices and Services, Public Service Uses, and Business Park Uses. General Commercial Uses are permitted only as incidental and/or accessory uses to business or office park developments.

EXCISE TAX EXEMPT. DATE 9-29-86  
Pierce County.

By Beverly Lamb Auth. Sig

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b. That the following use as defined by Condition No. (g), be permitted south of 104th Street East as proposed on Site Plan 3 on page 18 of the Draft EIS subject to approval of a Conditional Use Permit for such use: Light Manufacturing Uses.

c. That the following development standards be applied to all site development within the project area (all setbacks are measured from interior limit of one hundred foot buffer required by Condition No. (a). Front and street side yards are required to be fully landscaped except for walks and access drives):

1. Minimum Lot Area/Building Site: 20,000 square feet.
2. Minimum Lot Width: 100 feet.
3. Minimum Lot Depth: 150 feet.
4. Minimum Front Yard Setback: 30 feet.
5. Minimum Rear Yard Setback: 25 feet.
6. Minimum Side Yard Setback: 15 feet.
7. Minimum Street Side Yard Setback: 20 feet.
8. Maximum Lot Coverage: 50%.
9. Maximum Building Height: 50 feet.
10. Maximum Floor Area Ratio: 3.0.

d. That a one hundred foot (100') minimum setback and native vegetation buffer be established along the easterly property line (abutting Wildwood Park Drive) and the north property line (abutting Parkwood subdivision). No construction of improvements other than public streets and utilities shall be permitted in such buffer. Where existing vegetation in such buffer is insufficient to prevent views of interior site development, additional native-type landscaping materials will be installed.

e. That the property owner dedicate and improve public streets, utilities and storm drainage areas proposed by Site Plan 3 on page 18 of the Draft EIS in accordance with the city Design Standards. Said streets, utilities and storm drainage areas shall be completely installed prior to issuance of any building permit in reliance upon this rezoning, unless a Binding Site Plan, approved pursuant to Title 19 of the Puyallup Municipal Code is in full force and effect.

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f. Developments for which permits are issued, in reliance upon this rezone action, prior to establishment of municipal water, sewer and/or storm drainage utility system development charges shall be required to pay such charges upon their enactment by ordinance of the City Council, provided that such charges are established within two years of the effective date of this rezone action.

g. That the following definitions for permitted and conditionally permitted uses apply:

1. Business Park Use: A use that involves the manufacturing, compounding or assembly of consumer, business, scientific and medical merchandise, such as electronic equipment, precision instruments, glassware, china, household appliance, cabinets, furniture, or jewelry, from the following previously-prepared typical materials: Clay, cloth or fiber, cork, fur, glass, leather, paper (no milling), precious or semi-precious stones or metals, non ferrous metals, plaster, plastics, shells, textiles, tile and wood. Also includes scientific and research labs. Such uses typically do not employ the use of hazardous materials or volatile chemicals, except as a minor or incidental part of the production process.

2. Commercial Use, General: A use that involves the purchase, sale, lease, rental, repair or other transaction involving the handling of any article, service, substance or commodity commonly used for consumer or household use. Typical uses include arcades, art specialty and retail shops, consumer services enterprises (laundries, dry cleaners, shoe repair, appliance and electronic repair, tailoring, printing shops and photo finishing, etc.), shopping centers or malls, food stores and super markets, health spas and studios; indoor theaters, and restaurants (including sale of alcoholic beverages). General Commercial Uses may be profit or non-profit and are typically conducted entirely within an enclosed building and do not involve outdoor storage of materials. Does not include Road Service Uses.

3. Light Manufacturing Use: A use involving the manufacturing, assembly, processing or treatment of parts, materials, goods, foodstuffs and products intended for general distribution. Production processes may employ the use of hazardous or volatile materials or chemicals, or continuous high levels of noise. Typical uses include blacksmith shops,

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custom boat building, indoor storage of bulk materials and machinery, non-flammable gas production, warehousing, publishing plants, pharmaceutical and cosmetics manufacture, veterinary hospitals or kennels. No single such use shall exceed six hundred thousand (600,000) square feet or three thousand (3,000) employees.

4. Professional Offices & Services: A use that provides service for individual, in contrast to sales or services of objects, or an office for business, professional, educational or government use. The service or office may be public or private, profit or non-profit. Typical uses include: barber and beauty shops, insurance stockbrokers, clinics, governmental, business or medical offices, including architects, lawyers, realtors or travel agents.

5. Public Service Use: A use involving government of community function or public service or utility. Typical uses include emergency service (ambulance or rescue), public parking lots (but not garages), broadcasting stations, towers or facilities, government buildings and facilities, and public parks and open space.

## 2. MITIGATING MEASURES:

### EARTH

a. In as much as the intent of the project is to provide a campus environment in a natural "northwest" setting, earthwork will be restricted as much as possible. Buildings, parking areas and access roads will be situated so as to minimize impacts on the natural topography.

b. No building will occur on the steep slopes (30%+) above the swale in the southeast corner of the site.

c. To avert the beginning of active erosion, earthwork in areas of potential erosion will occur during the dry season and care will be taken to prevent disturbing the vegetative cover on steep slopes. Any exposed soil on steep slopes will be quickly revegetated and replanted.

d. Temporary erosion control and sedimentation plans will also be developed. Temporary siltation basins, siltation fences and hay bales will be used as required.

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## AIR

e. During the temporary clearing and construction phases, the continuing application of effective maintenances, and operating procedures, the correct use of properly maintained equipment and vehicles, and appropriate treatment of disturbed areas will keep the generation of dust within acceptable limits. Any exposed soil will be covered with building, paved areas, formal landscaping or natural vegetation.

f. No trades, services or activities shall be conducted nor shall anything else be done which may be or become an annoyance or nuisance to the owners or occupants by reason of unsightliness or excessive emission of fumes, odors, glare, vibration, gases, radiation, dust, liquid wastes, smoke, debris or noise.

g. No significant industrial sources of suspended particulates will be allowed to locate within the site.

## NOISE

h. There will be no significant perception of noise beyond the project boundaries.

i. Construction noise can be mitigated by proper operation and maintenance of construction equipment, keeping construction equipment as far away as possible from noise sensitive areas, and limiting hours of construction to the normal work day (i.e., 7:00 a.m. - 6:00 p.m.).

j. Noise levels of actual development shall not exceed the maximum allowed by applicable law.

k. All street and parking lot lighting will be located as close as possible to the ground and directed away from residential properties.

## LAND USE

l. Parking, loading and unloading area - All parking areas shall be buffered as well as practicable by the use of landscaping materials, all driveways and areas for parking, maneuvering, loading and unloading shall be paved with asphalt, concrete or similar materials. Off-street loading spaces shall be designated to include an additional area or means of ingress and egress, which shall be adequate for maneuvering.

m. Garbage and refuse containers shall be contained within buildings, or shall be concealed by means of shrubbery or screening walls of materials similar to and compatible with that of the building. Fuel and other storage tanks and coal bins shall be installed

underground whenever practicable or screened from public view. Such improvements shall be integrated with the concept of the building plan, be designed so as not to attract attention and shall be inconspicuously located. Unless specifically approved in writing for display and similar purposes, no materials, supplies or equipment shall be stored in any area on a building site except inside a closed building, or behind a visual barrier which screens such areas, so they are not visible from neighboring building sites or streets; the materials used for said screening barriers shall be wood or masonry in type and must be similar to and compatible with those materials used on the buildings.

n. Exterior materials, color - architecturally and aesthetically suitable building materials shall be applied to, or used on all sides of buildings which are visible to the general public and shall be harmonious and compatible with colors of the natural surroundings and other adjacent buildings.

o. All utility lines, including electrical, shall be underground. Pad-mounted transformers, switch gear and similar equipment which must be installed above ground line, shall be screened with suitable landscaping. Equipment shall be located or screened so as not to be visible from the street view of the general public, or from the front view of other building sites. Penthouses and mechanical equipment screening walls shall be of design and materials compatible with those of the building. Antennae shall be visually masked to the extent practicable and consistent with electromagnetic considerations. All mechanical devices shall be operated so as not to disturb the peace, quiet and comfort of neighboring residents.

p. Exterior lighting - All exterior and security lighting shall have underground service and shall be designed, erected, altered and maintained to the end that lighting shall be compatible and harmonious throughout the park. Outdoor lighting and aerial mounted flood lights shall be shielded from above, in such a manner that the bottom edge of the shield shall be shielded so that the direct illumination shall be confined to the property boundaries of the light source. Ground mounted flood lighting or light projection above the horizontal plane is prohibited between midnight and sunrise.

q. Pollutants - No trades, services or activities shall be conducted nor shall anything else be done which may be or become an annoyance or nuisance to the owners or occupants by reason of unsightliness or

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excessive emission or fumes, odors, glare, vibration, gases, radiation, dust, liquid wastes, smoke, debris or noise.

#### TRANSPORTATION

r. In the event that the 104th Street extension is not constructed to Meridian, traffic volumes at the intersection of 39th Avenue with the proposed project access road shall be monitored and this intersection signalized when traffic volumes warrant.

s. Concurrent with development of adjoining properties, construct the proposed project access road from 39th northward to 104th as a 40-foot industrial collector cross-section (consisting of one lane in each direction with paved shoulders and left-turn pockets at intersections), appropriate drainage treatment consisting of either open ditches or curb and gutter, and pedestrian pathways or sidewalks, parallel to, but separated from, the roadway.

t. Prohibit direct access to Wildwood Park Drive except at the proposed Wildwood and 104th Extension.

u. Construct the 104th Avenue Extension in the northwest portion of the site to a 40-foot industrial collector standard similar to that proposed for the north-south access road previously discussed. This access road should be constructed as adjacent properties are developed.

v. Individual development projects including applicant's may be required to participate in their proportional share of measures designed to mitigate impacts to transportation facilities in the vicinity of the proposal, including that included in paragraph "r" above.

#### FIRE PROTECTION

w. Any uses requiring hazardous or flammable materials will be reviewed on a case-by-case basis. The delivery, handling, storage and disposal of any such materials will be approved by the City.

x. The proposed street layout will be designed to permit easy access to all building and other land uses within the project site. Sufficient street widths and turning radii will be provided to facilitate the movement of emergency vehicles.

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## UTILITIES

y. All potential users with significant quantities of process water or process waste water will be reviewed on a case-by-case basis.

z. All industrial effluent will be treated per City standards prior to entering the City's sewer or surface water drainage system.

aa. A detailed analysis will be conducted prior to developing the detention facility in the existing swale along Wildwood Park Drive. The City has preliminary sized this facility at 80,000 square feet. After determining the elevation of the existing high ground water table, storage for the 100 year and 25 year storm will be provided above that elevation.

bb. Oil pollution control will separate oil pollutants and silt from the run-off prior to its release. Upon completion of the project, the quantity and rate of run-off leaving the site will not be significantly different from that generating by the property in its present state.

## AESTHETICS

cc. Temporary erosion and sediment control will be provided as necessary during each construction phase. Disturbed areas will be re-seeded or surfaced soon after construction.

dd. As streets and buildings are constructed, vegetation will be re-established in cleared areas. All areas not initially improved with buildings, parking, or formal landscaping, must be landscaped in either a natural or formal manner.

ee. Landscaping would consist of lawns with a mixture of street trees and other plantings. If appropriate, the setback area would be bermed in an undulating fashion. Flower beds or other landscape features may be incorporated around signs, entry drives, etc. All landscaping will be required to be regularly serviced and maintained.

3. No modifications of this agreement shall be made unless mutually agreed upon by the parties in writing.
4. The City may, at its discretion, bring a lawsuit to compel specific performance of the terms of this agreement.

5. If any condition or covenant herein contained is not performed by the applicant, the Applicant hereby consents to entry upon the Site by the City of Puyallup or any entity, individual, person, or corporation acting on behalf of the City of Puyallup for purposes of curing said defect and performing said condition or covenant. Should the City in its discretion exercise the rights granted herein to cure said defect, the Applicant, his successors and assigns, consent to the entry of the City on the above described property and waive all claims for damages of any kind whatsoever arising from such activity, and the applicant further agrees to pay the City all costs incurred by the City in remedying said defects or conditions. The obligations contained in this section are covenants running with the land, and burden the successors and assigns of the respective parties.
6. In the event that any term or clause of this agreement conflicts with applicable law, such conflict shall not affect other terms of this agreement which can be given effect without the conflicting term or clause, and to this end, the terms of this agreement are declared to be severable.

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IN WITNESS WHEREOF the parties hereto executed this agreement as of the day and year first above written.

ATTEST:  
Robin Wahlkuter  
City Clerk

CITY OF Puyallup  
by R. S. [Signature]  
Mayor

Approved as to Form:  
[Signature]

BEIM & JAMES PROPERTIES II  
By: Waterbear Partners  
by [Signature]  
Its GENERAL PARTNER

STATE OF Washington  
COUNTY OF Pierce ; SS.

I, THE UNDERSIGNED, a Notary Public in and for the State of Washington, do hereby certify that on this 15th day of September, 1986, personally appeared before me [Signature] of said corporation which executed the above instrument, and acknowledge said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes above mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporate seal of said corporation.

GIVEN under my hand and official seal the day and year last above written.

[Signature]  
NOTARY PUBLIC in and for the State of Washington, residing at Puyallup

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PARTNERSHIP ACKNOWLEDGMENT

NO. 2

State of CALIFORNIA  
County of SAN MATEO } SS.

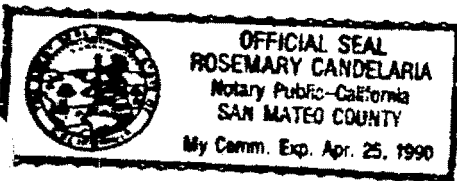
On this the 4th day of JUNE 1986, before me,

Rosemary Candalaria  
the undersigned Notary Public, personally appeared

John K. James

- personally known to me
  - proved to me on the basis of satisfactory evidence to be the person(s) who executed the within instrument on behalf of the partnership, and acknowledged to me that the partnership executed it.
- WITNESS my hand and official seal.

Rosemary Candalaria  
Notary's Signature



## EXHIBIT "A"

CASE NO. Z-4-84

That portion of the Southwest quarter of Section 2 and of the East half of Section 3, Township 19 North, Range 4 East of the Willamette Meridian, described as follows:

Beginning at a point on the East line of the East half of said Section 3, said point bears North 0 degrees 55'34" West 60.10 feet from the Southeast corner of said Section 3 and is also the North margin of 112th Street East (39th Avenue SE) thence along said North margin North 87 degrees 41'32" West 1015.15 feet to the east line of the parcel of land described in Pierce County Auditor's number 2362554; thence leaving said North margin North 1 degree 02'14" West 275.47 feet along said Parcel to the Northeast corner thereof; thence North 0 degrees 56'15" West 2327.24 feet; thence North 88 degrees 53'29" West 1613.90 feet to a point on the North-South centerline of said Section 3, said point bears North 1 degree 12'53" West 12.65 feet from the center of section of said Section 3, said point being a fence post as shown on the Plat of "PARKWOOD DIVISION NO. 3" recorded in volume 61 of Plats, at pages 50 and 51, records of Pierce County, Washington; thence along said North-South centerline North 1 degree 12'53" West 590.27 feet to the Southwest corner of the said Plat of "PARKWOOD DIVISION NO. 3"; thence Easterly along the South line thereof North 88 degrees 46'50" East 167.70 feet to a concrete monument; thence North 77 degrees 54'21" East 588.30 feet to a concrete monument; thence North 88 degrees 10'28" East 165.41 feet; thence North 82 degrees 32'53" East 197.89 feet to a concrete monument; thence North 76 degrees 30'04" East 137.96 feet; thence North 73 degrees 02'16" East 260.92 feet to a concrete monument; thence North 88 degrees 32'11" East 108.02 feet to the Westerly margin of Wildwood Park Drive (School Road East), as conveyed to Pierce county by instrument recorded under Auditor's No. 3125764, 2135764, and the Southeast corner of the said Plat of "PARKWOOD DIVISION NO. 3"; said point also being on a 633.11 foot radius curve to the left (radius point bears North 88 degrees 07'39"); thence Southerly and Easterly along said West margin and said curve 417.45 feet through a central angle of 37 degrees 46'42"; thence South 39 degrees 39'03" East 384.34 feet to the beginning of a 468.22 foot radius curve to the right; thence along said curve 245.16 feet through a central angle of 30 degrees 0'00"; thence South 9 degrees 39'03" East 513.83 feet to the beginning of a 331.56 foot radius curve to the left; thence along said curve 460.40 feet through a central angle of 79 degrees 33'34"; thence South 89 degrees 12'37" East 289.96 feet to the beginning of a 760.23 foot radius curve to the right; thence along said curve 1097.41 feet through a central angle of 82 degrees 42'29"; thence South 6 degrees 30'08" East 19.70 feet to the beginning of a 848.57 foot radius curve to the left; thence along said curve 330.27 feet through a central angle of 22 degrees 18'00"; thence South 28 degrees 48'08" East 158.73 feet

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to the beginning of a 920.34 foot radius curve to the right; thence along said curve 467.30 feet through a central angle 29 degrees 05'30"; thence South 0 degrees 17'22" West 259.81 feet to the North margin of the said 112th Street East (39th Avenue Southeast); thence along said North margin North 89 degrees 42'26" West 470.95 feet; thence South 9 degrees 31'15" West 5.07 feet; thence North 89 degrees 42'26" West 666.44 feet to a point on said North margin and the East line of said Section 3; thence along said East line North 0 degrees 55'34" West 5.08 feet to the Point of Beginning.

Subject to easements, restrictions, and reservations of record.

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RECORDED

86 SEP 29 P 2: 52

PIERCE COUNTY WASH  
AUDITOR  
DEPUTY

Unrecorded Document

## 9.1.2 Concomitant Agreement August 5, 1987

CLARIFICATION OF CONCOMITANT AGREEMENT  
BETWEEN CITY OF PUYALLUP and BEIM & JAMES PROPERTIES II  
AND ITS SUCCESSORS IN INTEREST

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This letter serves to clarify the Concomitant Agreement entered into between the City of Puyallup and Beim & James Properties II and its successors in interest relating to certain aspects of the storm drainage requirements of the development of Puyallup Science Park Division II.

There is a regional drainage basin comprising approximately 304 acres situated within Pierce County and the City of Puyallup. Storm drainage problems have arisen in a part of this regional drainage basin commonly referred to as the Candlewood Manorwood section.

Beim & James Properties II or any successors in interest are the owners (referred to herein as "Owners") of certain real property (referred to herein as "the Property") located within the City of Puyallup and the regional drainage basin. The Property, commonly referred to as Puyallup Science Park Division 2, has been classified as Industrial through a Concomitant Zoning Agreement with the City of Puyallup (herein referred to as "City") dated May 30, 1986.

The Property is comprised of 122.54 acres, 40 acres of which drain to the southeast section of the site to a retention pond and then through a previously existing culvert under 39th Avenue to the Candlewood Glen portion of the drainage basin. Prior to the zoning reclassification of May 30, 1986, unbeknownst to the City and to the Owners, Pierce County (referred to herein as "County") blocked the culvert under 39th Avenue. Subsequent to the zoning reclassification of May 30, 1986 storm drainage problems have occurred.

After discussions between the County, City and Property Owners the parties agree as follows:

1. The County and the City agree to cooperate in resolving the storm drainage problems which have occurred within the regional drainage basin and more specifically in the area of 39th Avenue.
2. During those discussions it was found that the most favorable solution to the storm drainage problem was the construction of a third detention pond to be located on the property in private ownership but subject to an easement by Bonneville Power Administration. With regard to this alternative

solution, it is agreed that the County will take lead responsibility in implementing this alternative solution including the acquisition of all necessary easements, the design and construction of the third detention pond and the design and construction of appurtenant facilities. As part of the implementation process the County agrees to unblock the culvert under 39th Avenue.

3. In the event that the alternate solution described above is determined to be infeasible, the City and County agree to use their best efforts in determining another solution to the regional drainage problem.
4. The City and the County agree to assume their respective share of the cost of implementing the improvements described in Paragraph 2 or 3 according to a separate agreement between them. Based on the information available at the time of this letter, the area of the Property that drains into this basin comprises approximately 25% of the area of the drainage basin that is presently within the City. With respect to the City's share of the cost of implementing the improvements described in Paragraph 2 or 3 above the City will pay \$10,000 and the Owners of the Property (as a portion of the City area) agree to pay the amount of the City's share of this cost that is in excess of \$10,000.
5. Upon implementation of the solution described in Paragraph 2 or 3 herein, the City agrees that the Owners have met the requirements contained in the Concomitant Zoning Agreement relating to off-site storm drainage control specifically:

1. Subsection A, Page 8, Section aa.

"A detailed analysis will be conducted prior to developing the detention facility in the existing swale along Wildwood Park Drive. The City has preliminary sized this facility at 80,000 square feet. After determining the elevation of the existing high ground water table, storage for the 100 year and 25 year storm will be provided above that elevation."

The City will not require any improvements to the retention pond in the Southeast corner of the Property as set forth in subsection 1e. on page 2 of the Concomitant Agreement or that off-site storm drainage facilities as proposed in Paragraph 2 or 3 herein be implemented prior to the issuance of any building

permits for the subject property. It is hereby expressly understood that this Paragraph 5 does not pertain to "on-site" storm drainage requirements of the City.

6. The City further agrees that it will impose no further requirements relating to off-site storm drainage than those already stated in the Concomitant Zoning Agreement as amended herein.

CITY OF PUYALLUP

By: [Signature]  
Its: City Manager

Approved as to From:

[Signature]  
MARTIN MEUNCH  
Attorney for the City of Puyallup

BEIM & JAMES PROPERTIES II  
a California limited partnership

By: Waterbear Partners, a  
California limited partnership,  
Its general partner

By: [Signature]  
John K. James  
Its: General Partner

STATE OF CALIFORNIA )  
County of San Mateo ) ss.

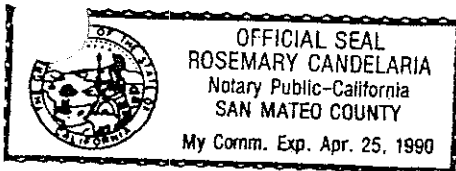
On this 9th day of July, 1987, before me, the undersigned, a Notary Public in and for the State of California, duly commissioned and sworn, personally appeared John K. James, personally known to me to be the person who executed the within instrument on behalf of the partnership, and acknowledged to me that the partnership executed it.

Witness my hand and official seal hereto affixed the day and year first above written.

[Signature]  
NOTARY PUBLIC in and for the State of California,  
residing at Mountain View, Calif.  
My commission expires: 7-25-90

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## 9.1.3 Concomitant Agreement June 5, 2003





200306050075 19 PGS  
 06-05-2003 09:29am \$37.00  
 PIERCE COUNTY, WASHINGTON

**Name & Return Address:**

**CITY OF PUYALLUP – CITY CLERK  
 218 WEST PIONEER  
 PUYALLUP, WA 98371**

**Please print legibly or type information.**

**Document Title (Or transaction contained therein)**

Amendment to Concomitant Agreement dated May 30, 1986 between the City of Puyallup and Beim & James Properties II (property later purchased by Pierce College)

**Grantor(s) (Last name first, then first name, middle name)**

Puyallup, city of

**Grantee(s) (Last name first, then first name, middle name)**

Pierce College

**Legal Description (Abbreviated: i.e., lot, block & subdivision name or number OR Section/township/range and quarter/quarter section)**

84.33 acre site located in the southern half of the NE and NW sections of Section 3, and the SE and SW quarter sections of Section 3, Township 19, Range 4

**Complete Legal Description on Page \_\_\_\_ of Document**

**Auditor's Reference Number(s)**

8609290435 (Pierce County Recording number)

**Assessor's Property Tax Parcel/Account Number(s)**

**The Auditor/Recorder will rely on the information provided on this cover sheet. The staff will not read the document to verify the accuracy or completeness of the indexing information provided herein. IF YOU REPRODUCE THIS FORM, BE SURE MARGINS REMAIN 3 INCHES AT THE TOP AND 1 INCH ON SIDES AND BOTTOM.**

Gpcovst.1<sup>st</sup> 2/98

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**Amendment to Concomitant Agreement Dated May 30, 1986**  
**Between the City of Puyallup and Beim & James Properties II**

The City of Puyallup and property owner Beim & James Properties II entered into a Concomitant Agreement on May 30, 1986 ("Agreement") describing the use and development of a 84.33 acre site, which property is legally described in the original Agreement and is generally located at the northwest corner of 39<sup>th</sup> Avenue SE and Wildwood Park Drive (1601 39<sup>th</sup> Avenue SE). Since executing the agreement, properties to the north of 39<sup>th</sup> Avenue SE have been sold for the construction and operation of a state funded community college; Pierce College. In recognition of this sole use by Pierce College, the original Concomitant Agreement is in need of amendment to better serve the City and College.

WHEREAS, the community college use is consistent with the original Concomitant Agreement's specific conditions of approval for land use as a "Professional Offices & Services", and

WHEREAS, the City, pursuant to RCW 43.21C, the State Environmental Policy Act, should mitigate any adverse effects which might result in the development of the College's Master Plan, and

WHEREAS, some of the conditions of approval outlined in the Concomitant Agreement may now be in conflict with the mitigation needed to support the College's Master Plan, and

WHEREAS, new mitigation measures may be necessary to properly mitigate impacts presented by the development of the college to satisfy the State Environmental Policy Act;

NOW, THEREFORE, the original Concomitant Agreement entered into on May 30, 1986 shall be amended as follows:

I. Section 1 entitled "SPECIFIC CONDITIONS OF APPROVAL" of the attached Agreement, is amended to read as follows:

1. Paragraph "b." of Section 1 of the Agreement is hereby repealed in its entirety.
2. Paragraph "d." of Section 1 of the Agreement is hereby amended as follows:

That a one hundred foot (100') minimum setback and native vegetation buffer be established along the easterly property line (abutting Wildwood Park Drive) and the north property line (abutting Parkwood subdivision). No construction of improvements other than public streets, ~~public or private bicycle and walkways, private drives and utilities~~ shall be permitted in such buffer. Where existing vegetation in such buffer is insufficient to prevent views of interior site development, additional native-type landscaping materials will be installed.

3. Paragraph "e." of Section 1 of the Agreement is hereby amended as follows:

That the property owner ~~dedicate and improve public streets, utilities and storm drainage areas proposed by Site Plan 3 on page 18 of the Draft EIS in accordance with~~

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03-0505

~~the city Design Standards. Said streets, utilities and storm drainage areas shall be completely installed prior to issuance of any building permit in reliance upon this rezoning, unless a Binding Site Plan, approved pursuant to Title 19 of the Puyallup Municipal Code is in full force and effect.~~ process a Binding Site Plan that will be subject to approval pursuant to Title 19 of the Puyallup Municipal Code. The Binding Site Plan will identify the project's necessary access locations, utilities and storm drainage facilities.

II. Section 2 entitled "MITIGATING MEASURES – TRANSPORTATION" of the attached Agreement, is amended to read as follows:

4. Paragraph "r." of Section 2 of the Agreement is hereby amended as follows:

~~In the event that the 104<sup>th</sup> Street extension is not constructed to Meridian, traffic volumes at the intersection of 39<sup>th</sup> Avenue with the proposed project access road shall be monitored and this intersection signalized when traffic volumes warrant.~~ The College will assess the need for additional access to the campus during the development of each major addition in accordance with the College Master Plan. This assessment shall be by a Traffic Access Study meeting the current City requirements at the time of application.

5. Paragraph "s." of Section 2 of the Agreement is hereby amended as follows:

~~Concurrent with development of adjoining properties, construct the proposed project access road from 39<sup>th</sup> northward to 104<sup>th</sup> as a 40-foot industrial collector cross-section (consisting of one lane in each direction with paved shoulders and left turn pockets at intersections), appropriate drainage treatment consisting of either open ditches or curb and gutter, and pedestrian pathways or sidewalks, parallel to, but separated from, the roadway.~~ Several options for access have been determined through previous work that would benefit the College and the City. These access locations have been identified as their current access location off 39<sup>th</sup> Avenue, but with possible improvements such as a signal, if warranted per the MUTCD, access westerly through the campus to a public street such as 5<sup>th</sup> / 7<sup>th</sup> connection, and access to Wildwood Park Drive. Access to Wildwood Park Drive to the east of the campus will be evaluated during the development of any major campus addition and only be required when level of service operation would justify additional access and such access is approved by the City Council. Access to Wildwood Park Drive should be selected so it does not align with any existing neighborhood streets that would then promote cut-through traffic, but at such a location that entering sight distance meets current City design standards.

6. Paragraph "t." of Section 2 of the Agreement is hereby amended as follows:

~~Prohibit direct access to Wildwood Park Drive except at the proposed Wildwood and 104<sup>th</sup> Extension.~~ In addition to performing a site access study for each phase of the Master Plan, the college will be required to assess their new trips that may impact the City's

street system based on current City requirements for Traffic Impact Studies at the time of application.

7. Paragraph "u." of Section 2 of the Agreement is hereby amended as follows:

Construct the 104<sup>th</sup> Avenue Extension in the northwest portion of the site to a 40-foot industrial collector standard similar to that proposed for the north-south access road previously discussed. This access road should be constructed as adjacent properties are developed. The City supports and encourages the construction of a non-motorized public connection through the campus to connect the neighborhoods to the east side of the campus to Bradley Lake Park. The cost of these improvements will be considered allowable costs to offset transportation proportionate share fees since the improvements will be providing the public an optional means of transportation by connecting a college campus, neighborhoods, public parks and a large commercial core area.

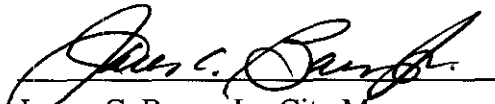
8. Paragraph "v." of Section 2 of the Agreement is hereby repealed in its entirety.


All other provisions of the Concomitant Agreement entered into on May 30, 1986 shall remain in full force and effect as though fully set forth in its entirety.

IN WITNESS WHEREOF the parties hereto have executed this Amendment the date and year indicated.

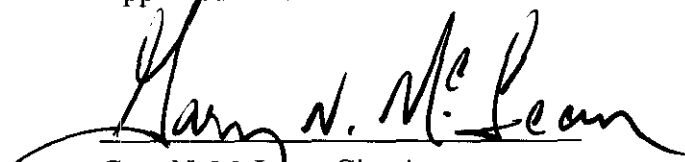
CITY OF PUYALLUP  
APPROVED BY CITY COUNCIL 05/05/2003

PIERCE COLLEGE

  
James C. Bacon Jr., City Manager  
Date: 5-6-3

  
By: Steven R. Wall  
Its: District President  
Date: 5-16-03

Approved as to Form:

  
Gary N. McLean, City Attorney

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OCT 06 1986

CONCOMITANT AGREEMENT

CITY OF PUYALLUP

#13

THIS AGREEMENT, entered into this 30<sup>TH</sup> day of MAY, 1986, by and between BEIM & JAMES PROPERTIES II, hereinafter referred to as the "Applicant", and the CITY OF Puyallup, Washington, a municipal corporation, hereinafter referred to as the "City".

W I T N E S S E T H :

WHEREAS the City has authority to enact laws and to enter into agreements to promote the health, safety and welfare of its citizens and thereby control the use and development of property within its jurisdiction, and

WHEREAS the Applicant has applied for a rezone (Case #2-4-84) of a certain property described in attached Exhibit "A" Case No. Z-4-84 and located within the City's jurisdiction from an "RS" Residential Single-Family District to an "I" Industrial District, and

WHEREAS the City, pursuant to RCW 43.21C, the State Environmental Policy Act, should mitigate any adverse effects which might result because of the proposed rezone, and

WHEREAS the Applicant has indicated willingness to cooperate with the City, its Departments and officials, to ensure compliance with all City ordinances and all other local, state, and federal laws relating to the use and development of the Site, and

WHEREAS, said rezone has been found to comply with the Puyallup Comprehensive Plan and City of Puyallup Municipal Code, and

WHEREAS the City, in addition to civil and criminal sanctions available by law, desires to enforce the rights and interests of the public by this Concomitant Agreement;

NOW, THEREFORE, in the event the Site is rezoned from "RS" Residential Single-Family District to an "I" Industrial District, and subject to the terms and conditions hereinafter stated, the Applicant does hereby covenant and agree as follows:

1. SPECIFIC CONDITIONS OF APPROVAL:

a. That only the following uses as defined by Condition No. (g), be permitted on the subject property: Professional Offices and Services, Public Service Uses, and Business Park Uses. General Commercial Uses are permitted only as incidental and/or accessory uses to business or office park developments.

EXCISE TAX EXEMPT. DATE 9-29-86  
Pierce County.

By Beverly Land Auth. Sig

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16-

b. That the following use as defined by Condition No. (g), be permitted south of 104th Street East as proposed on Site Plan 3 on page 18 of the Draft EIS subject to approval of a Conditional Use Permit for such use: Light Manufacturing Uses.

c. That the following development standards be applied to all site development within the project area (all setbacks are measured from interior limit of one hundred foot buffer required by Condition No. (a). Front and street side yards are required to be fully landscaped except for walks and access drives):

1. Minimum Lot Area/Building Site: 20,000 square feet.
2. Minimum Lot Width: 100 feet.
3. Minimum Lot Depth: 150 feet.
4. Minimum Front Yard Setback: 30 feet.
5. Minimum Rear Yard Setback: 25 feet.
6. Minimum Side Yard Setback: 15 feet.
7. Minimum Street Side Yard Setback: 20 feet.
8. Maximum Lot Coverage: 50%.
9. Maximum Building Height: 50 feet.
10. Maximum Floor Area Ratio: 3.0.

d. That a one hundred foot (100') minimum setback and native vegetation buffer be established along the easterly property line (abutting Wildwood Park Drive) and the north property line (abutting Parkwood subdivision). No construction of improvements other than public streets and utilities shall be permitted in such buffer. Where existing vegetation in such buffer is insufficient to prevent views of interior site development, additional native-type landscaping materials will be installed.

e. That the property owner dedicate and improve public streets, utilities and storm drainage areas proposed by Site Plan 3 on page 18 of the Draft EIS in accordance with the city Design Standards. Said streets, utilities and storm drainage areas shall be completely installed prior to issuance of any building permit in reliance upon this rezoning, unless a Binding Site Plan, approved pursuant to Title 19 of the Puyallup Municipal Code is in full force and effect.

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f. Developments for which permits are issued, in reliance upon this rezone action, prior to establishment of municipal water, sewer and/or storm drainage utility system development charges shall be required to pay such charges upon their enactment by ordinance of the City Council, provided that such charges are established within two years of the effective date of this rezone action.

g. That the following definitions for permitted and conditionally permitted uses apply:

1. Business Park Use: A use that involves the manufacturing, compounding or assembly of consumer, business, scientific and medical merchandise, such as electronic equipment, precision instruments, glassware, china, household appliance, cabinets, furniture, or jewelry, from the following previously-prepared typical materials: Clay, cloth or fiber, cork, fur, glass, leather, paper (no milling), precious or semi-precious stones or metals, non ferrous metals, plaster, plastics, shells, textiles, tile and wood. Also includes scientific and research labs. Such uses typically do not employ the use of hazardous materials or volatile chemicals, except as a minor or incidental part of the production process.

2. Commercial Use, General: A use that involves the purchase, sale, lease, rental, repair or other transaction involving the handling of any article, service, substance or commodity commonly used for consumer or household use. Typical uses include arcades, art specialty and retail shops, consumer services enterprises (laundries, dry cleaners, shoe repair, appliance and electronic repair, tailoring, printing shops and photo finishing, etc.), shopping centers or malls, food stores and super markets, health spas and studios; indoor theaters, and restaurants (including sale of alcoholic beverages). General Commercial Uses may be profit or non-profit and are typically conducted entirely within an enclosed building and do not involve outdoor storage of materials. Does not include Road Service Uses.

3. Light Manufacturing Use: A use involving the manufacturing, assembly, processing or treatment of parts, materials, goods, foodstuffs and products intended for general distribution. Production processes may employ the use of hazardous or volatile materials or chemicals, or continuous high levels of noise. Typical uses include blacksmith shops,

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custom boat building, indoor storage of bulk materials and machinery, non-flammable gas production, warehousing, publishing plants, pharmaceutical and cosmetics manufacture, veterinary hospitals or kennels. No single such use shall exceed six hundred thousand (600,000) square feet or three thousand (3,000) employees.

4. Professional Offices & Services: A use that provides service for individual, in contrast to sales or services of objects, or an office for business, professional, educational or government use. The service or office may be public or private, profit or non-profit. Typical uses include: barber and beauty shops, insurance stockbrokers, clinics, governmental, business or medical offices, including architects, lawyers, realtors or travel agents.

5. Public Service Use: A use involving government of community function or public service or utility. Typical uses include emergency service (ambulance or rescue), public parking lots (but not garages), broadcasting stations, towers or facilities, government buildings and facilities, and public parks and open space.

## 2. MITIGATING MEASURES:

### EARTH

a. In as much as the intent of the project is to provide a campus environment in a natural "northwest" setting, earthwork will be restricted as much as possible. Buildings, parking areas and access roads will be situated so as to minimize impacts on the natural topography.

b. No building will occur on the steep slopes (30%+) above the swale in the southeast corner of the site.

c. To avert the beginning of active erosion, earthwork in areas of potential erosion will occur during the dry season and care will be taken to prevent disturbing the vegetative cover on steep slopes. Any exposed soil on steep slopes will be quickly revegetated and replanted.

d. Temporary erosion control and sedimentation plans will also be developed. Temporary siltation basins, siltation fences and hay bales will be used as required.



## AIR

e. During the temporary clearing and construction phases, the continuing application of effective maintenances, and operating procedures, the correct use of properly maintained equipment and vehicles, and appropriate treatment of disturbed areas will keep the generation of dust within acceptable limits. Any exposed soil will be covered with building, paved areas, formal landscaping or natural vegetation.

f. No trades, services or activities shall be conducted nor shall anything else be done which may be or become an annoyance or nuisance to the owners or occupants by reason of unsightliness or excessive emission of fumes, odors, glare, vibration, gases, radiation, dust, liquid wastes, smoke, debris or noise.

g. No significant industrial sources of suspended particulates will be allowed to locate within the site.

## NOISE

h. There will be no significant perception of noise beyond the project boundaries.

i. Construction noise can be mitigated by proper operation and maintenance of construction equipment, keeping construction equipment as far away as possible from noise sensitive areas, and limiting hours of construction to the normal work day (i.e., 7:00 a.m. - 6:00 p.m.).

j. Noise levels of actual development shall not exceed the maximum allowed by applicable law.

k. All street and parking lot lighting will be located as close as possible to the ground and directed away from residential properties.

## LAND USE

l. Parking, loading and unloading area - All parking areas shall be buffered as well as practicable by the use of landscaping materials, all driveways and areas for parking, maneuvering, loading and unloading shall be paved with asphalt, concrete or similar materials. Off-street loading spaces shall be designated to include an additional area or means of ingress and egress, which shall be adequate for maneuvering.

m. Garbage and refuse containers shall be contained within buildings, or shall be concealed by means of shrubbery or screening walls of materials similar to and compatible with that of the building. Fuel and other storage tanks and coal bins shall be installed

underground whenever practicable or screened from public view. Such improvements shall be integrated with the concept of the building plan, be designed so as not to attract attention and shall be inconspicuously located. Unless specifically approved in writing for display and similar purposes, no materials, supplies or equipment shall be stored in any area on a building site except inside a closed building, or behind a visual barrier which screens such areas, so they are not visible from neighboring building sites or streets; the materials used for said screening barriers shall be wood or masonry in type and must be similar to and compatible with those materials used on the buildings.

n. Exterior materials, color - architecturally and aesthetically suitable building materials shall be applied to, or used on all sides of buildings which are visible to the general public and shall be harmonious and compatible with colors of the natural surroundings and other adjacent buildings.

o. All utility lines, including electrical, shall be underground. Pad-mounted transformers, switch gear and similar equipment which must be installed above ground line, shall be screened with suitable landscaping. Equipment shall be located or screened so as not to be visible from the street view of the general public, or from the front view of other building sites. Penthouses and mechanical equipment screening walls shall be of design and materials compatible with those of the building. Antennae shall be visually masked to the extent practicable and consistent with electromagnetic considerations. All mechanical devices shall be operated so as not to disturb the peace, quiet and comfort of neighboring residents.

p. Exterior lighting - All exterior and security lighting shall have underground service and shall be designed, erected, altered and maintained to the end that lighting shall be compatible and harmonious throughout the park. Outdoor lighting and aerial mounted flood lights shall be shielded from above, in such a manner that the bottom edge of the shield shall be shielded so that the direct illumination shall be confined to the property boundaries of the light source. Ground mounted flood lighting or light projection above the horizontal plane is prohibited between midnight and sunrise.

q. Pollutants - No trades, services or activities shall be conducted nor shall anything else be done which may be or become an annoyance or nuisance to the owners or occupants by reason of unsightliness or

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excessive emission or fumes, odors, glare, vibration, gases, radiation, dust, liquid wastes, smoke, debris or noise.

#### TRANSPORTATION

r. In the event that the 104th Street extension is not constructed to Meridian, traffic volumes at the intersection of 39th Avenue with the proposed project access road shall be monitored and this intersection signalized when traffic volumes warrant.

s. Concurrent with development of adjoining properties, construct the proposed project access road from 39th northward to 104th as a 40-foot industrial collector cross-section (consisting of one lane in each direction with paved shoulders and left-turn pockets at intersections), appropriate drainage treatment consisting of either open ditches or curb and gutter, and pedestrian pathways or sidewalks, parallel to, but separated from, the roadway.

t. Prohibit direct access to Wildwood Park Drive except at the proposed Wildwood and 104th Extension.

u. Construct the 104th Avenue Extension in the northwest portion of the site to a 40-foot industrial collector standard similar to that proposed for the north-south access road previously discussed. This access road should be constructed as adjacent properties are developed.

v. Individual development projects including applicant's may be required to participate in their proportional share of measures designed to mitigate impacts to transportation facilities in the vicinity of the proposal, including that included in paragraph "r" above.

#### FIRE PROTECTION

w. Any uses requiring hazardous or flammable materials will be reviewed on a case-by-case basis. The delivery, handling, storage and disposal of any such materials will be approved by the City.

x. The proposed street layout will be designed to permit easy access to all building and other land uses within the project site. Sufficient street widths and turning radii will be provided to facilitate the movement of emergency vehicles.

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## UTILITIES

y. All potential users with significant quantities of process water or process waste water will be reviewed on a case-by-case basis.

z. All industrial effluent will be treated per City standards prior to entering the City's sewer or surface water drainage system.

aa. A detailed analysis will be conducted prior to developing the detention facility in the existing swale along Wildwood Park Drive. The City has preliminary sized this facility at 80,000 square feet. After determining the elevation of the existing high ground water table, storage for the 100 year and 25 year storm will be provided above that elevation.

bb. Oil pollution control will separate oil pollutants and silt from the run-off prior to its release. Upon completion of the project, the quantity and rate of run-off leaving the site will not be significantly different from that generating by the property in its present state.

## AESTHETICS

cc. Temporary erosion and sediment control will be provided as necessary during each construction phase. Disturbed areas will be re-seeded or surfaced soon after construction.

dd. As streets and buildings are constructed, vegetation will be re-established in cleared areas. All areas not initially improved with buildings, parking, or formal landscaping, must be landscaped in either a natural or formal manner.

ee. Landscaping would consist of lawns with a mixture of street trees and other plantings. If appropriate, the setback area would be bermed in an undulating fashion. Flower beds or other landscape features may be incorporated around signs, entry drives, etc. All landscaping will be required to be regularly serviced and maintained.

3. No modifications of this agreement shall be made unless mutually agreed upon by the parties in writing.
4. The City may, at its discretion, bring a lawsuit to compel specific performance of the terms of this agreement.

5. If any condition or covenant herein contained is not performed by the applicant, the Applicant hereby consents to entry upon the Site by the City of Puyallup or any entity, individual, person, or corporation acting on behalf of the City of Puyallup for purposes of curing said defect and performing said condition or covenant. Should the City in its discretion exercise the rights granted herein to cure said defect, the Applicant, his successors and assigns, consent to the entry of the City on the above described property and waive all claims for damages of any kind whatsoever arising from such activity, and the applicant further agrees to pay the City all costs incurred by the City in remedying said defects or conditions. The obligations contained in this section are covenants running with the land, and burden the successors and assigns of the respective parties.
6. In the event that any term or clause of this agreement conflicts with applicable law, such conflict shall not affect other terms of this agreement which can be given effect without the conflicting term or clause, and to this end, the terms of this agreement are declared to be severable.

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IN WITNESS WHEREOF the parties hereto executed this agreement as of the day and year first above written.

ATTEST:

CITY OF Puyallup

Robin Wohlkutter  
City Clerk

by R. S. [Signature]  
Mayor

Approved as to Form:

[Signature]

BEIM & JAMES PROPERTIES II

By: Waterbear Partners  
by [Signature]  
Its GENERAL PARTNER

STATE OF Washington  
COUNTY OF Pierce

SS.

I, THE UNDERSIGNED, a Notary Public in and for the State of Washington, do hereby certify that on this 15th day of September, 1986, personally appeared before me [Signature] of said corporation which executed the above instrument, and acknowledge said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes above mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

GIVEN under my hand and official seal the day and year last above written.

[Signature]  
NOTARY PUBLIC in and for the State of Washington, residing at Puyallup

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PARTNERSHIP ACKNOWLEDGMENT

NO. 2

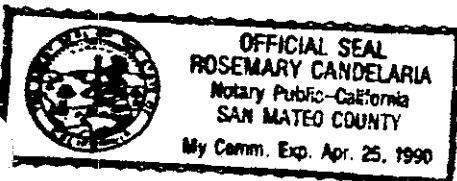
State of CALIFORNIA  
County of SAN MATEO

SS.

On this the 4th day of JUNE, 1986, before me,

Rosemary Candalaria  
the undersigned Notary Public, personally appeared

John K. James



- personally known to me
  - proved to me on the basis of satisfactory evidence to be the person(s) who executed the within instrument on behalf of the partnership, and acknowledged to me that the partnership executed it.
- WITNESS my hand and official seal.

Rosemary Candalaria  
Notary's Signature

## EXHIBIT "A"

CASE NO. Z-4-84

That portion of the Southwest quarter of Section 2 and of the East half of Section 3, Township 19 North, Range 4 East of the Willamette Meridian, described as follows:

Beginning at a point on the East line of the East half of said Section 3, said point bears North 0 degrees 55'34" West 60.10 feet from the Southeast corner of said Section 3 and is also the North margin of 112th Street East (39th Avenue SE) thence along said North margin North 87 degrees 41'32" west 1015.15 feet to the east line of the parcel of land described in Pierce County Auditor's number 2362554; thence leaving said North margin North 1 degree 02'14" West 275.47 feet along said Parcel to the Northeast corner thereof; thence North 0 degrees 56'15" West 2327.24 feet; thence North 88 degrees 53'29" West 1613.90 feet to a point on the North-South centerline of said Section 3, said point bears North 1 degree 12'53" West 12.65 feet from the center of section of said Section 3, said point being a fence post as shown on the Plat of "PARKWOOD DIVISION NO. 3" recorded in volume 61 of Plats, at pages 50 and 51, records of Pierce County, Washington; thence along said North-South centerline North 1 degree 12'53" West 590.27 feet to the Southwest corner of the said Plat of "PARKWOOD DIVISION NO. 3"; thence Easterly along the South line thereof North 88 degrees 46'50" East 167.70 feet to a concrete monument; thence North 77 degrees 54'21" East 588.30 feet to a concrete monument; thence North 88 degrees 10'28" East 165.41 feet; thence North 82 degrees 32'53" East 197.89 feet to a concrete monument; thence North 76 degrees 30'04" East 137.96 feet; thence North 73 degrees 02'16" East 260.92 feet to a concrete monument; thence North 88 degrees 32'11" East 108.02 feet to the Westerly margin of Wildwood Park Drive (School Road East), as conveyed to Pierce county by instrument recorded under Auditor's No. 3125764, 2135764, and the Southeast corner of the said Plat of "PARKWOOD DIVISION NO. 3"; said point also being on a 633.11 foot radius curve to the left (radius point bears North 88 degrees 07'39"); thence Southerly and Easterly along said West margin and said curve 417.45 feet through a central angle of 37 degrees 46'42"; thence South 39 degrees 39'03" East 384.34 feet to the beginning of a 468.22 foot radius curve to the right; thence along said curve 245.16 feet through a central angle of 30 degrees 0'00"; thence South 9 degrees 39'03" East 513.83 feet to the beginning of a 331.56 foot radius curve to the left; thence along said curve 460.40 feet through a central angle of 79 degrees 33'34"; thence South 89 degrees 12'37" East 289.96 feet to the beginning of a 760.23 foot radius curve to the right; thence along said curve 1097.41 feet through a central angle of 82 degrees 42'29"; thence South 6 degrees 30'08" East 19.70 feet to the beginning of a 848.57 foot radius curve to the left; thence along said curve 330.27 feet through a central angle of 22 degrees 18'00"; thence South 28 degrees 48'08" East 158.73 feet

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to the beginning of a 920.34 foot radius curve to the right; thence along said curve 467.30 feet through a central angle 29 degrees 05'30"; thence South 0 degrees 17'22" West 259.81 feet to the North margin of the said 112th Street East (39th Avenue Southeast); thence along said North margin North 89 degrees 42'26" West 470.95 feet; thence South 9 degrees 31'15" West 5.07 feet; thence North 89 degrees 42'26" West 666.44 feet to a point on said North margin and the East line of said Section 3; thence along said East line North 0 degrees 55'34" West 5.08 feet to the Point of Beginning.

Subject to easements, restrictions, and reservations of record.

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RECORDED

86 SEP 29 P 2: 52

PIERCE COUNTY WASH  
AUDITOR  
DEPUTY

Unrecorded Document



CLARIFICATION OF CONCOMITANT AGREEMENT  
 BETWEEN CITY OF PUYALLUP and BEIM & JAMES PROPERTIES II  
 AND ITS SUCCESSORS IN INTEREST

This letter serves to clarify the Concomitant Agreement entered into between the City of Puyallup and Beim & James Properties II and its successors in interest relating to certain aspects of the storm drainage requirements of the development of Puyallup Science Park Division II.

There is a regional drainage basin comprising approximately 304 acres situated within Pierce County and the City of Puyallup. Storm drainage problems have arisen in a part of this regional drainage basin commonly referred to as the Candlewood Manorwood section.

Beim & James Properties II or any successors in interest are the owners (referred to herein as "Owners") of certain real property (referred to herein as "the Property") located within the City of Puyallup and the regional drainage basin. The Property, commonly referred to as Puyallup Science Park Division 2, has been classified as Industrial through a Concomitant Zoning Agreement with the City of Puyallup (herein referred to as "City") dated May 30, 1986.

The Property is comprised of 122.54 acres, 40 acres of which drain to the southeast section of the site to a retention pond and then through a previously existing culvert under 39th Avenue to the Candlewood Glen portion of the drainage basin. Prior to the zoning reclassification of May 30, 1986, unbeknownst to the City and to the Owners, Pierce County (referred to herein as "County") blocked the culvert under 39th Avenue. Subsequent to the zoning reclassification of May 30, 1986 storm drainage problems have occurred.

After discussions between the County, City and Property Owners the parties agree as follows:

1. The County and the City agree to cooperate in resolving the storm drainage problems which have occurred within the regional drainage basin and more specifically in the area of 39th Avenue.
2. During those discussions it was found that the most favorable solution to the storm drainage problem was the construction of a third detention pond to be located on the property in private ownership but subject to an easement by Bonneville Power Administration. With regard to this alternative

solution, it is agreed that the County will take lead responsibility in implementing this alternative solution including the acquisition of all necessary easements, the design and construction of the third detention pond and the design and construction of appurtenant facilities. As part of the implementation process the County agrees to unblock the culvert under 39th Avenue.

3. In the event that the alternate solution described above is determined to be infeasible, the City and County agree to use their best efforts in determining another solution to the regional drainage problem.
4. The City and the County agree to assume their respective share of the cost of implementing the improvements described in Paragraph 2 or 3 according to a separate agreement between them. Based on the information available at the time of this letter, the area of the Property that drains into this basin comprises approximately 25% of the area of the drainage basin that is presently within the City. With respect to the City's share of the cost of implementing the improvements described in Paragraph 2 or 3 above the City will pay \$10,000 and the Owners of the Property (as a portion of the City area) agree to pay the amount of the City's share of this cost that is in excess of \$10,000.
5. Upon implementation of the solution described in Paragraph 2 or 3 herein, the City agrees that the Owners have met the requirements contained in the Concomitant Zoning Agreement relating to off-site storm drainage control specifically:

1. Subsection A, Page 8, Section aa.

"A detailed analysis will be conducted prior to developing the detention facility in the existing swale along Wildwood Park Drive. The City has preliminary sized this facility at 80,000 square feet. After determining the elevation of the existing high ground water table, storage for the 100 year and 25 year storm will be provided above that elevation."

The City will not require any improvements to the retention pond in the Southeast corner of the Property as set forth in subsection 1e. on page 2 of the Concomitant Agreement or that off-site storm drainage facilities as proposed in Paragraph 2 or 3 herein be implemented prior to the issuance of any building

permits for the subject property. It is hereby expressly understood that this Paragraph 5 does not pertain to "on-site" storm drainage requirements of the City.

6. The City further agrees that it will impose no further requirements relating to off-site storm drainage than those already stated in the Concomitant Zoning Agreement as amended herein.

CITY OF PUYALLUP

By: [Signature]  
Its: City Manager

Approved as to From:

[Signature]  
MARTIN MEUNCH  
Attorney for the City of Puyallup

BEIM & JAMES PROPERTIES II  
a California limited partnership

By: Waterbear Partners, a  
California limited partnership,  
Its general partner

By: [Signature]  
John K. James  
Its: General Partner

STATE OF CALIFORNIA )  
County of San Mateo ) ss.

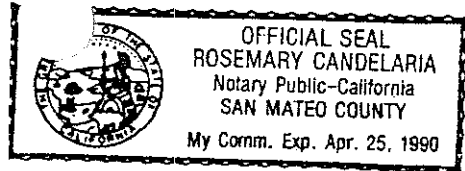
On this 9th day of July, 1987, before me, the undersigned, a Notary Public in and for the State of California, duly commissioned and sworn, personally appeared John K. James, personally known to me to be the person who executed the within instrument on behalf of the partnership, and acknowledged to me that the partnership executed it.

Witness my hand and official seal hereto affixed the day and year first above written.

[Signature]  
NOTARY PUBLIC in and for the State of California,  
residing at Mountain View, Calif.  
My commission expires: 7-25-90

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87 AUG 5 P 1: 09



# 9.2 Landscape Master Plan

**Pierce College**

Puyallup

**LANDSCAPE MASTER PLAN**

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6.1 Core Campus Plant Palette | 6.2 Perimeter and Forest Plant Palette

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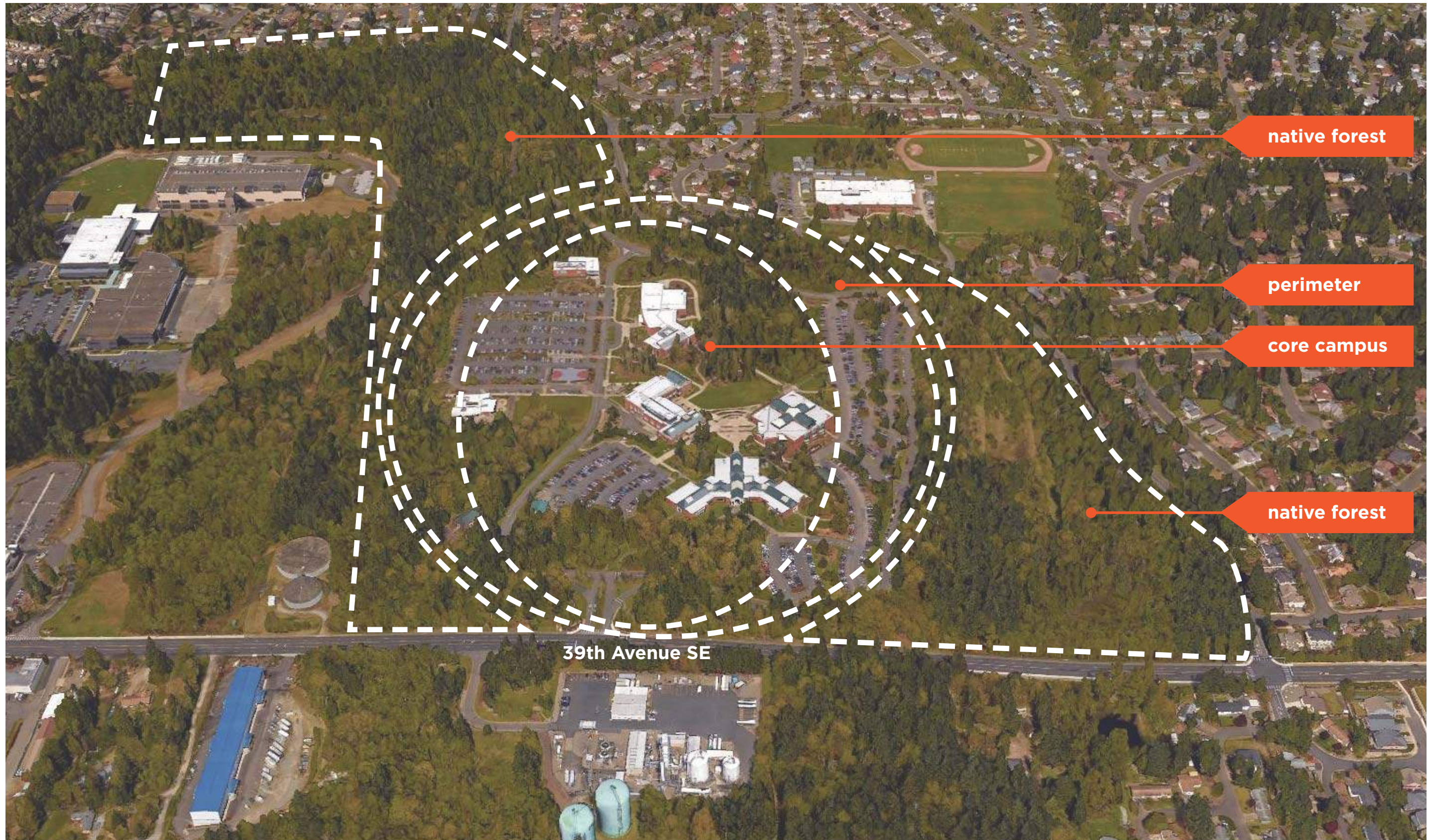


## 1.0 SUMMARY OBSERVATIONS AND RECOMMENDATIONS ○

- 1.1 CAMPUS DIAGRAM
- 1.2 CIRCULATION AND PARKING
- 1.3 ECOLOGY
- 1.4 STORMWATER MANAGEMENT
- 1.5 LANDSCAPE EXPERIENCE



# 1.1 Puyallup Campus





# 85 acres, 82 acres studied

## Coverage of studied site

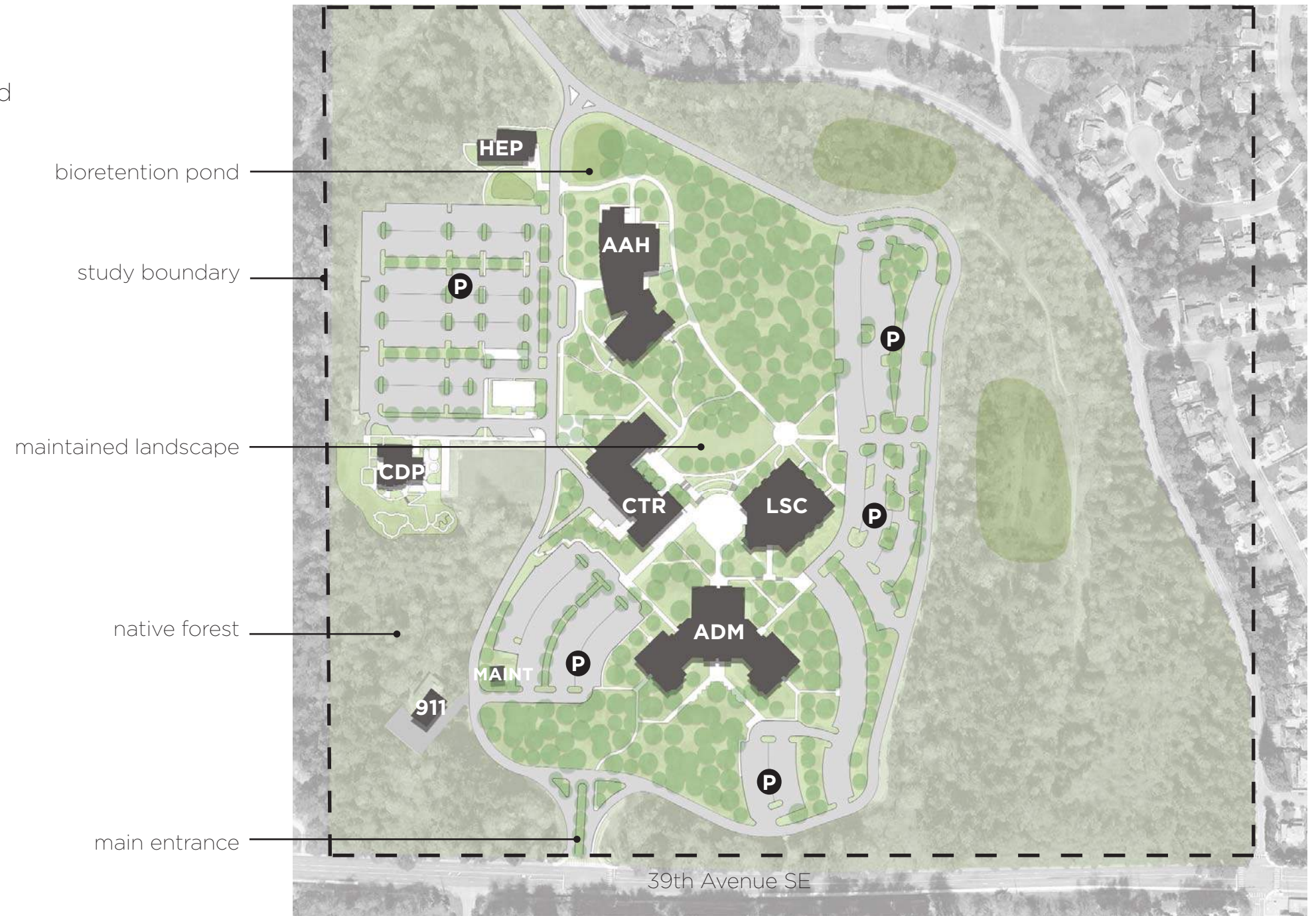
Maintained landscape = ~19 acres, 23% of site studied

Native forest = ~40 acres, 49% of site studied

Hardscape = ~19 acres, 23% of site studied

Buildings = ~4 acres, 5% of site studied

Tree Canopy = ~50 acres, 61% of site studied



Existing Campus

1" = 300' ⓘ



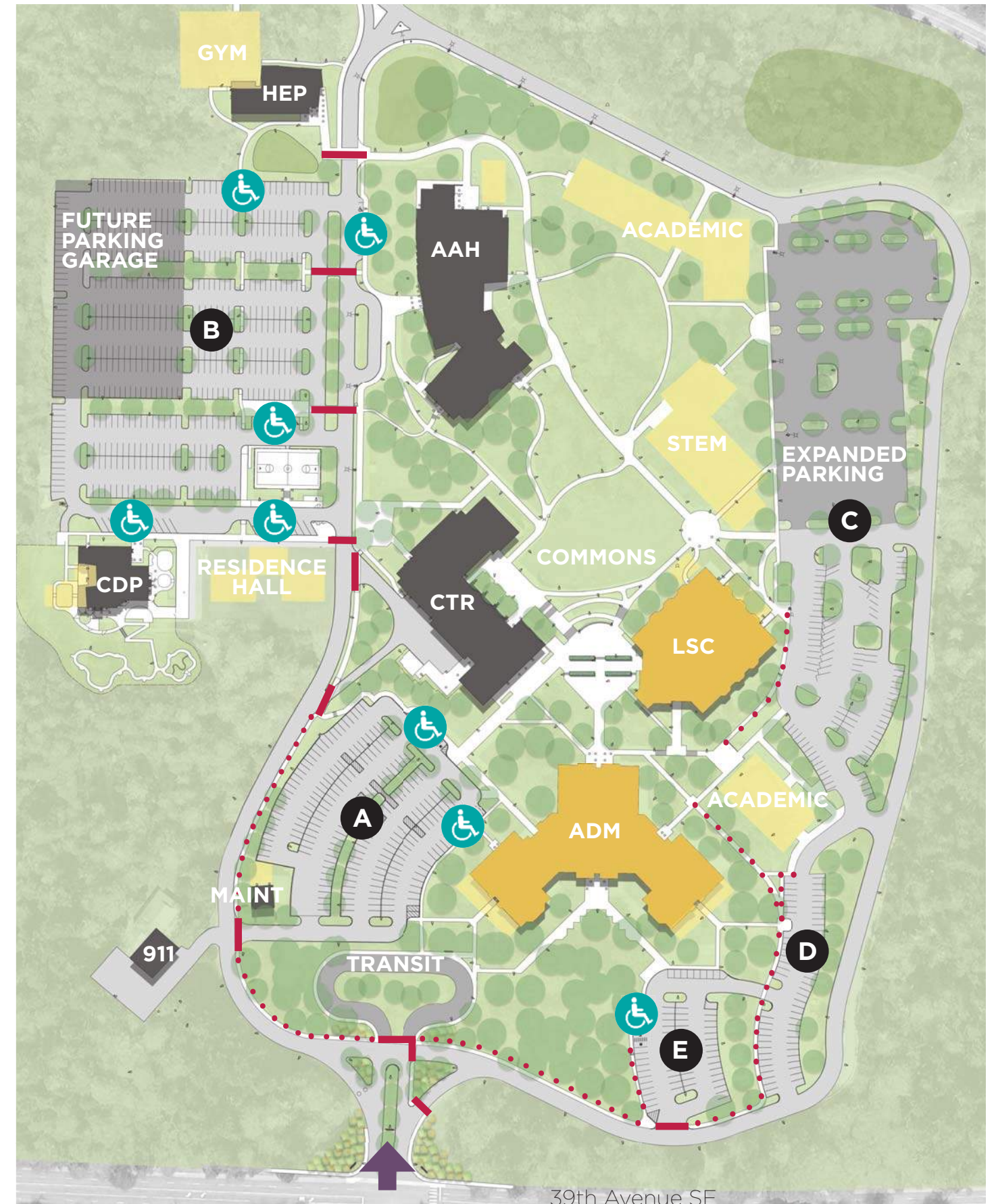
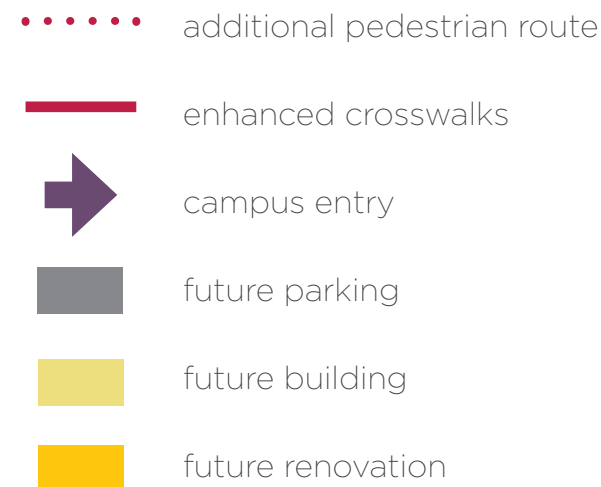
# 1.2 Circulation and Parking

## Observations

1. Missing any sense of ceremonial arrival from the street.
2. ADA routes are not marked. Some of this might be addressed through better initial directional signage.
3. The perimeter of the campus is primarily for vehicles while the core campus is primarily for pedestrians.
4. Future expansion of parking is likely if and when the campus expands.

## Recommendations

1. Start the arrival sequence sooner. Improve identity and wayfinding signage.
2. Mark ADA routes.
3. Connect pedestrian routes within the core campus. Improve ADA and pedestrian access to parking lots.
4. Enhance pedestrian crosswalks.
5. Reinforce pedestrian hierarchy using different paving types for pedestrians and vehicles, including crosswalks.
6. Retain parking outside the core campus.
7. Replant parking lot B with a mixture of rain gardens and low plants 3' in height or less. The plant palette should be composed of grasses, sub-shrubs, and perennials. Avoid large woody shrubs.



Circulation and Parking

39th Avenue SE

1" = 200'



## 1.3 Ecology

### Observations

1. The surrounding native forest and core campus urban forest provide great overall ecological value to the campus.
2. Manage core campus as an urban forest in addition to individual trees.

### Recommendations

1. Establish ecological goals for the campus.
2. Set tree canopy coverage goals. Suggest maintaining a 60% canopy coverage.
3. Implement an Integrated Pest Management (IPM) program.
4. Maintain perimeter for habitat and wildlife viewing.
5. Develop a tree management plan to outline management steps to identify potential trees for removal, maintain a certain percentage of canopy, and develop a tree diversity planting plan.
6. Reduce the number of current problem areas on campus.
7. Focus maintenance resources on the core campus.



Forest perimeter and native forest beyond



# 1.4 Stormwater Management

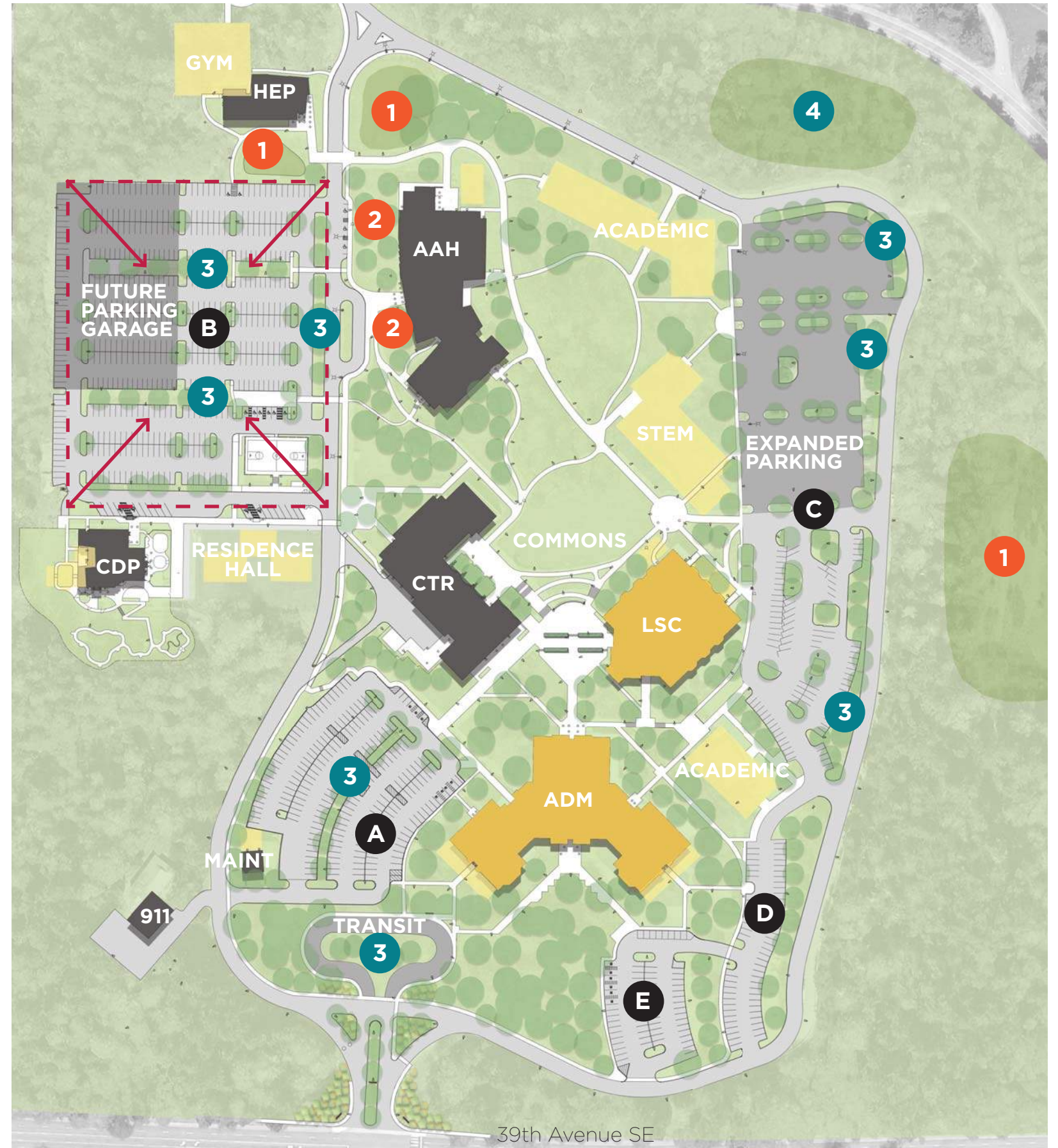
## Observations

1. The campus has begun a stormwater management program with the rain gardens adjacent to the Arts and Allied Health Building.
2. There are numerous small and difficult areas to mow that can be converted into rain gardens.

## Recommendations

1. Try to manage stormwater on site and reduce grey infrastructure as much as possible. Largest opportunity for reducing pollution would be to address stormwater at the parking areas.
2. Focus on having more smaller stormwater cells rather than fewer larger cells.
3. For parking lot B, concentrate stormwater treatment within the lot rather than discharging it to ponds outside the lot.

- 1 existing bioretention
- 2 existing rain garden
- 3 site of future rain garden
- 4 future bioretention pond



Stormwater Management

1" = 200'



# 1.5 Landscape Experience

## Observations

1. Landscape experience is generally very good.
2. The open space within the campus core provides a feeling of expansiveness.
3. The campus setting and acreage is a great asset for the college providing a uniquely Pacific Northwest identity.
4. The native forest perimeter nicely defines the campus boundary.

## Recommendations

1. Preserve and expand core campus open space by removing select areas of native forest in the campus core.
2. Preserve native forest along the perimeter of campus.
3. Manage the layers of the forest within the core campus to maintain sight lines.



Core campus open space



Forest perimeter





possibilities realized.



A photograph of a campus area. In the foreground, there is a paved plaza with a black metal bike rack. Behind it is a concrete wall with several small white rectangular openings. In the background, there is a large red brick building with green awnings over the windows. Tall evergreen trees are on the left, and bare deciduous trees are on the right. A white arrow-shaped banner is overlaid on the right side of the image, containing text.

## 2.0 CIRCULATION SYSTEMS

2.1 WAYFINDING

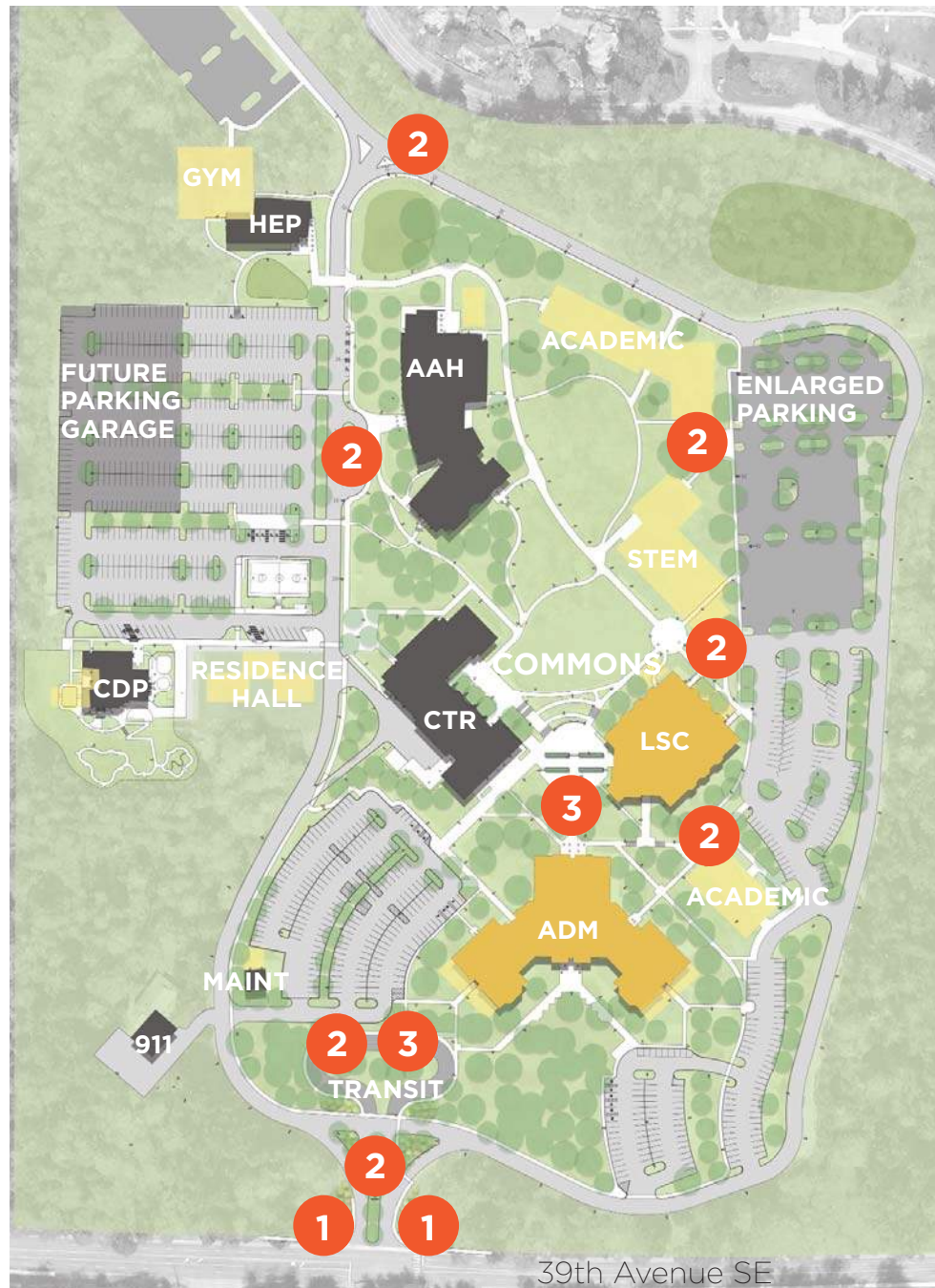
2.2 CAMPUS GATEWAY





# 2.1 Wayfinding

- 1. Wayfinding
  - a. New sign locations
  - b. ADA markings
  - c. Create a hierarchy of signage: identity, directional, informational



### Proposed Signage

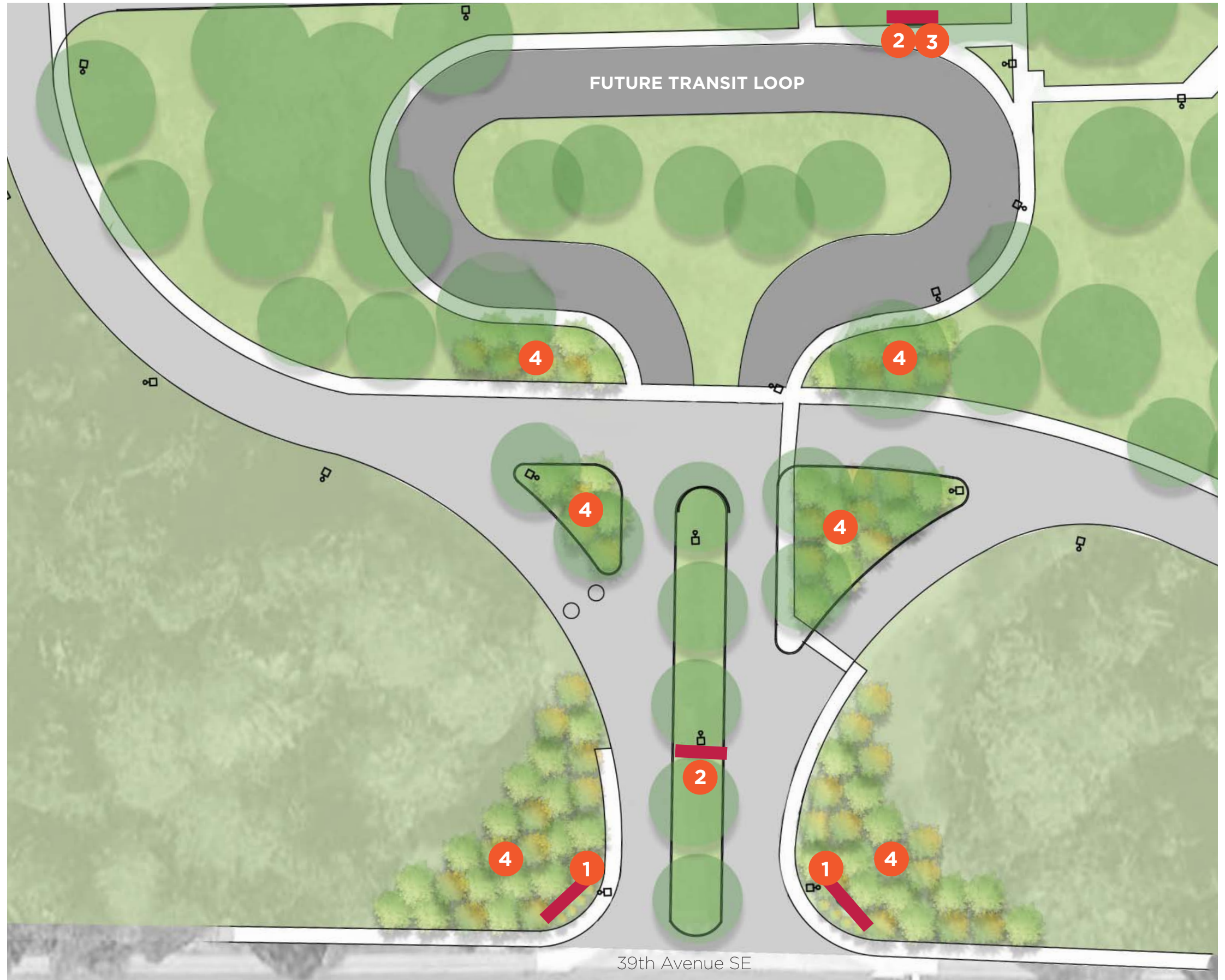
- 1** identity signage
- 2** directional signage
- 3** informational signage

Campus Wayfinding

1" = 300'

## 2.2 Gateway

- 1 identity signage
- 2 directional signage
- 3 informational signage
- 4 entry planting



Campus Entry and Wayfinding







A high-angle photograph of a lush field of purple lupines and yellow wildflowers. The flowers are densely packed and create a vibrant, textured pattern of purple and yellow against a backdrop of green foliage. The lighting is bright, highlighting the individual petals and the overall density of the plants.

## 3.0 PLANTING SYSTEMS



- 3.1 PLANTING CONCEPTS
- 3.2 VEGETATION AND URBAN FOREST MANAGEMENT
- 3.3 MAINTENANCE



# 3.1 Planting Concepts

## Forest

Native forest as inspiration: the planting on campus serves as the backdrop for learning and helps define the campus experience. One of the greatest assets to the campus is the native forest that surrounds it. This landscape serves as an amenity to the campus and to the community at large. The surrounding native forest should serve as inspiration for planting palettes for the campus and any planting should carefully consider a varied selection of native species. Well adapted non-native species should be used sparingly with a specific purpose or selected for a particular characteristic that makes them especially well suited to the application. Native species often reduce the maintenance burden and provide the greatest ecological benefit.



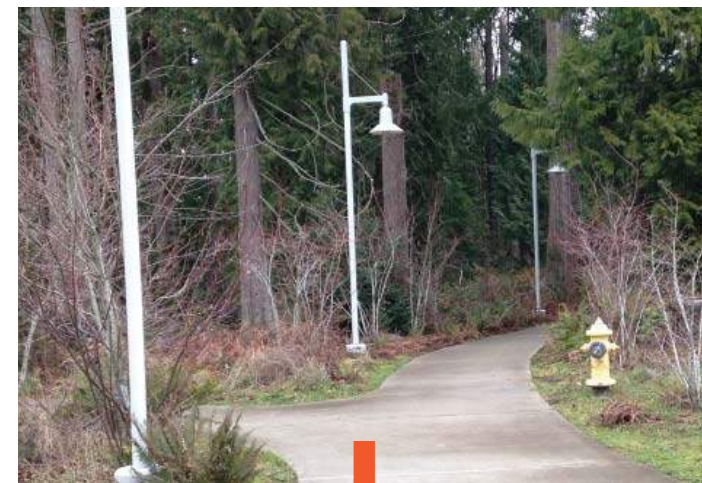
## Diversity

Avoid planting monocultures: all plantings should be varied in type. Monocultures are far more labor intensive to maintain, show weeds more readily, are less resilient to disease, and provide lower ecological value.



## Understory

Understory: encourage development of the understory as a mix of herbaceous grasses, perennials, woody sub-shrubs and groundcovers. Choose low growing species to prevent the obstruction of sight lines and increased maintenance to maintain those sight lines.



## Eco-Lawns

Plant and manage eco-lawns: turf management is consuming a large portion of the maintenance resources. Reduce the need to irrigate, mow, and fertilize.

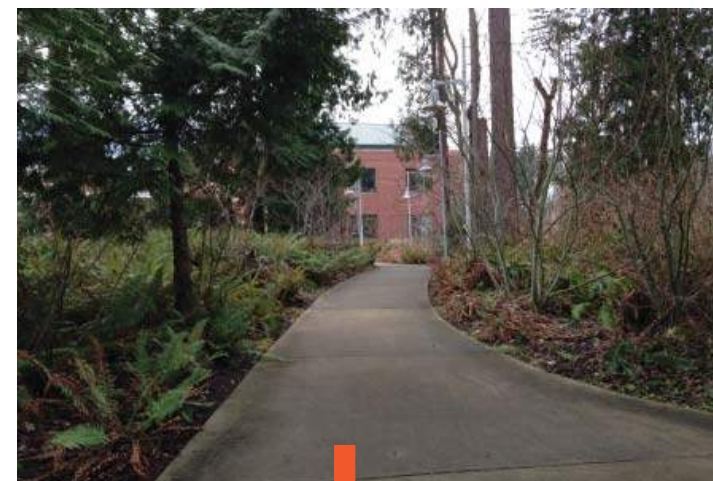




# 3.2 Vegetation and Urban Forest Management

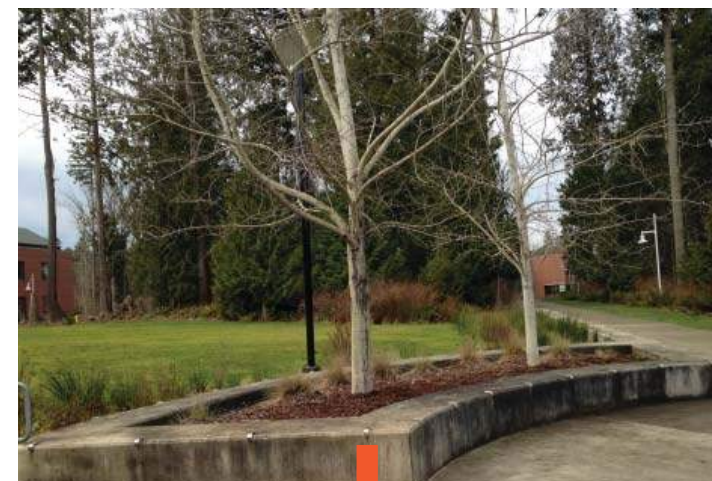
## Sight Lines

Plant to maintain sight lines and eliminate hiding places: ensure planting palettes and tree locations are considered carefully to avoid obscuring sight lines particularly around the core campus. There are a few instances on campus with a particularly full understory that offer ideal hiding spots and are well obscured from lines of sight. This is mostly attributed to large masses of woody shrubs and trees that are taller than 6' and close to walkways. Generally we would like to keep the zone between 3-8' clear of vegetation. In parking lots planting should be depressed rather than mounded to avoid additional height.



## Lighting

Reduce lighting conflicts: prune and/or remove trees blocking pole mounted light fixtures particularly in the parking areas.



## Irrigation

Irrigate less: we do not have a good understanding of exactly how much water is currently being used on campus, but we should try to find out. It's uncertain whether the current systems are sound or not and whether we are losing water to leakage. Assuming irrigation systems are sound, would recommend installing rain sensors and or solar syncs to make the systems climate responsive. Adjust irrigation settings seasonally and taper to no irrigation on plantings where feasible.



## Trees

Remove volunteer Western Red Cedar from the core campus because of its density and propensity to block views. Existing trees should be limbed up and the middle part of the understory cleaned out to maintain sight lines. Standing dead trees should be addressed for hazard potential. Recommend standing dead native trees be reduced to snags for habitat where viable.





# 3.3 Maintenance

1. Overall the landscape wants to be extremely simple, easy to maintain, and take advantage of the native backdrop.
2. Strive to reduce the amount of mowing and edging. A high percentage of resources are dedicated to these tasks.
3. Suggest that no lawn area be smaller than 8' to reduce the amount of time spent using a small mower.
4. Think of the campus as zones: core campus, perimeter, and native forest. Most maintenance should occur in the core campus area followed by the perimeter.
5. Choose plants carefully for their location. Avoid plants that are too tall, large, or require a lot of time to maintain them for their location.
6. Trees planted to close to walkways can cause pavement damage. Root barrier or rigid foam under paving can be used in the future to avoid uplift. For existing uplift, paving can be removed and an air spade used to excavate around tree roots. Some roots can be cut and the area around the roots can be backfilled with graded base and the paving replaced with concrete.



Reduce small areas of lawn such as those in parking lot islands. Replace with drought tolerant groundcover, low growing shrubs, and small trees to reduce the need for irrigation and mowing.



Mowing and edging should only occur in the core campus area.

core campus  perimeter  native forest



Campus Zones

1" = 300'











## 4.0 WATER MANAGEMENT

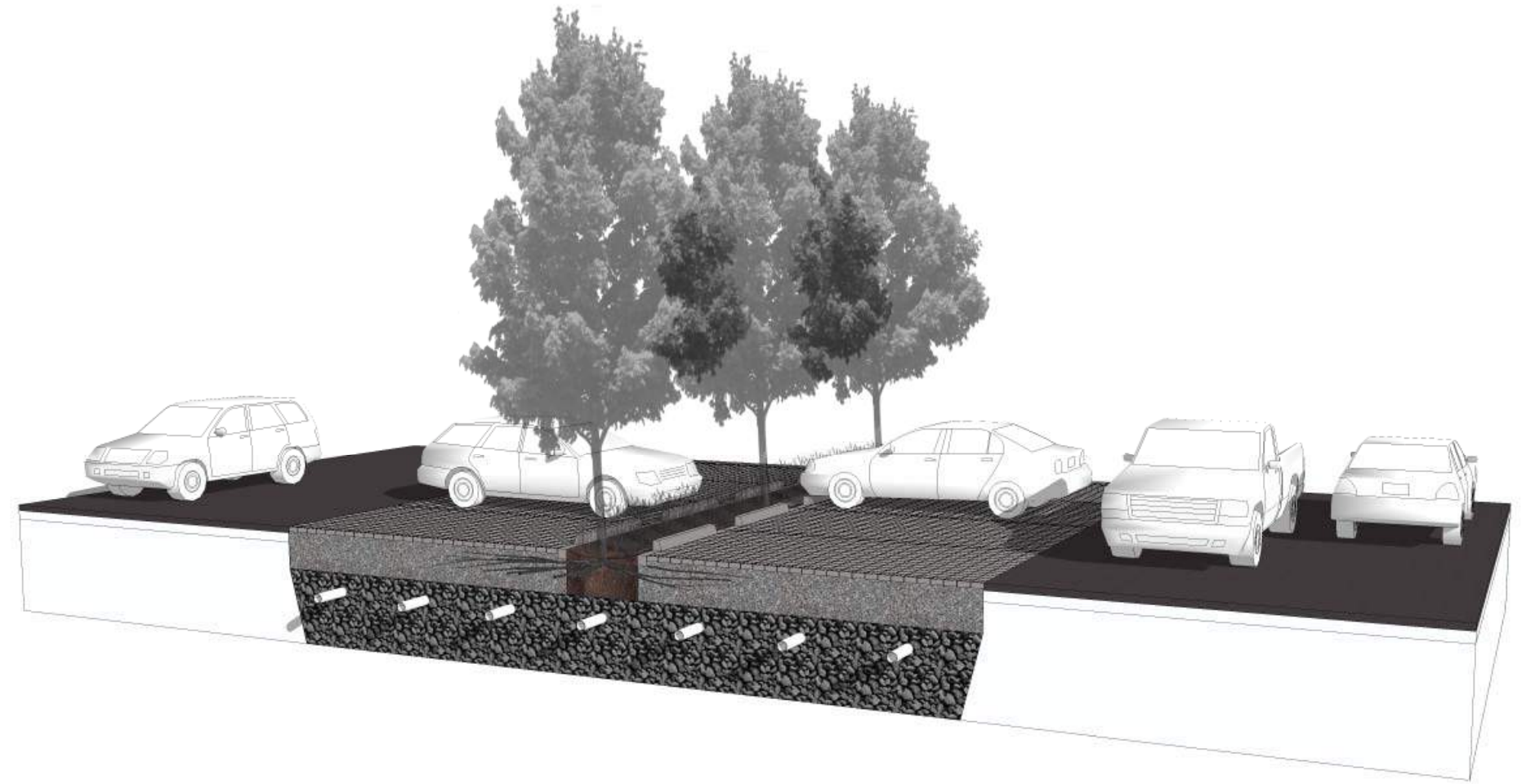


### 4.1 STORMWATER MANAGEMENT



# 4.1 Stormwater Management

- 1. Parking islands provide a good location for stormwater management in the form of rain gardens.













**5.0 PLAN AND ENLARGEMENTS**



**5.1 CAMPUS PLAN - FUTURE CONDITIONS**

**5.2 COMMONS PLAZA AND PERIMETER PLANTING**



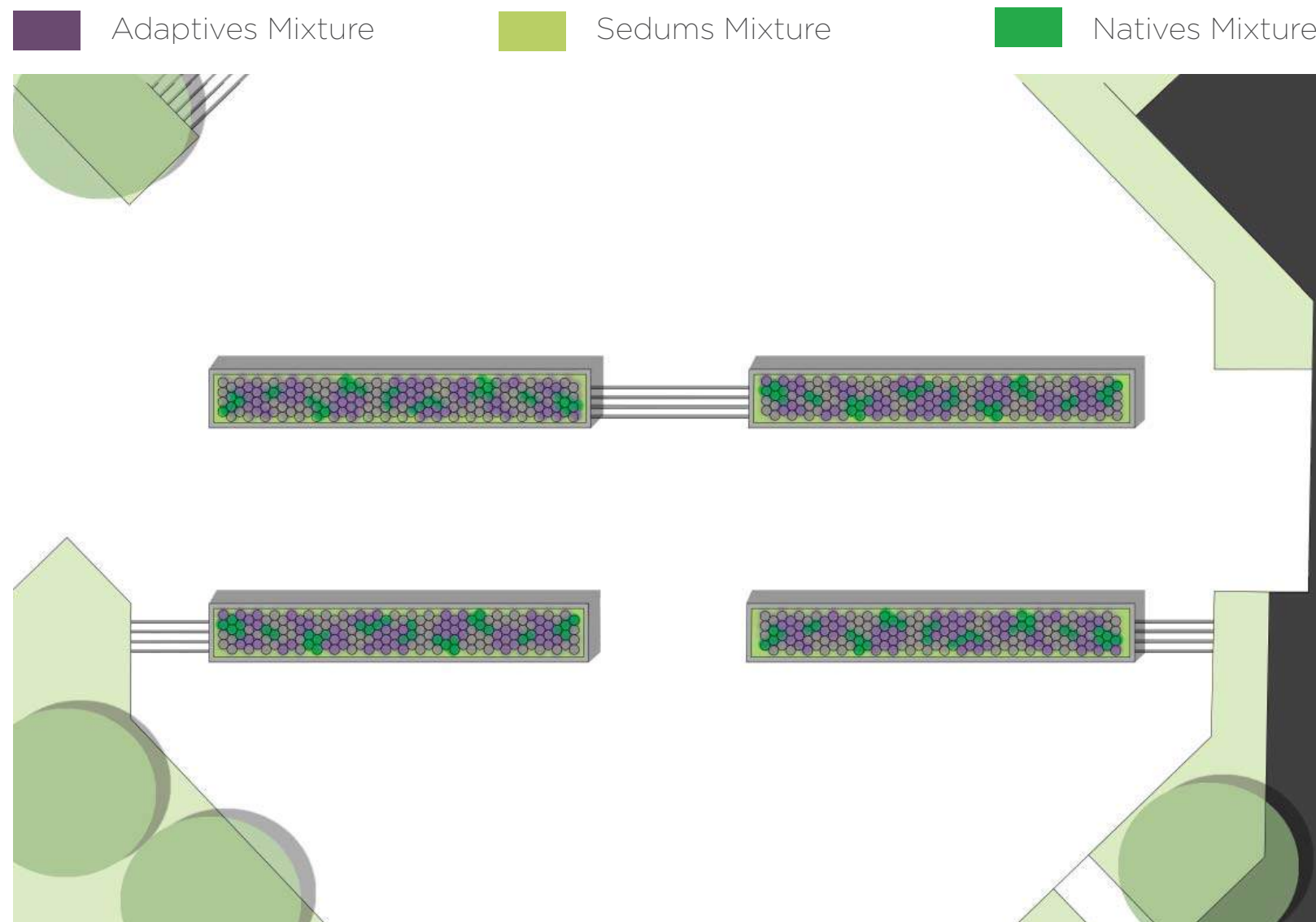
# 5.1 Campus Plan - Future Conditions





## 5.2 Commons Plaza Planting

Replant the raised beds in the Commons Plaza with a fall meadow mixture. Planting should be composed of native and adaptive plants and edged by sedums.



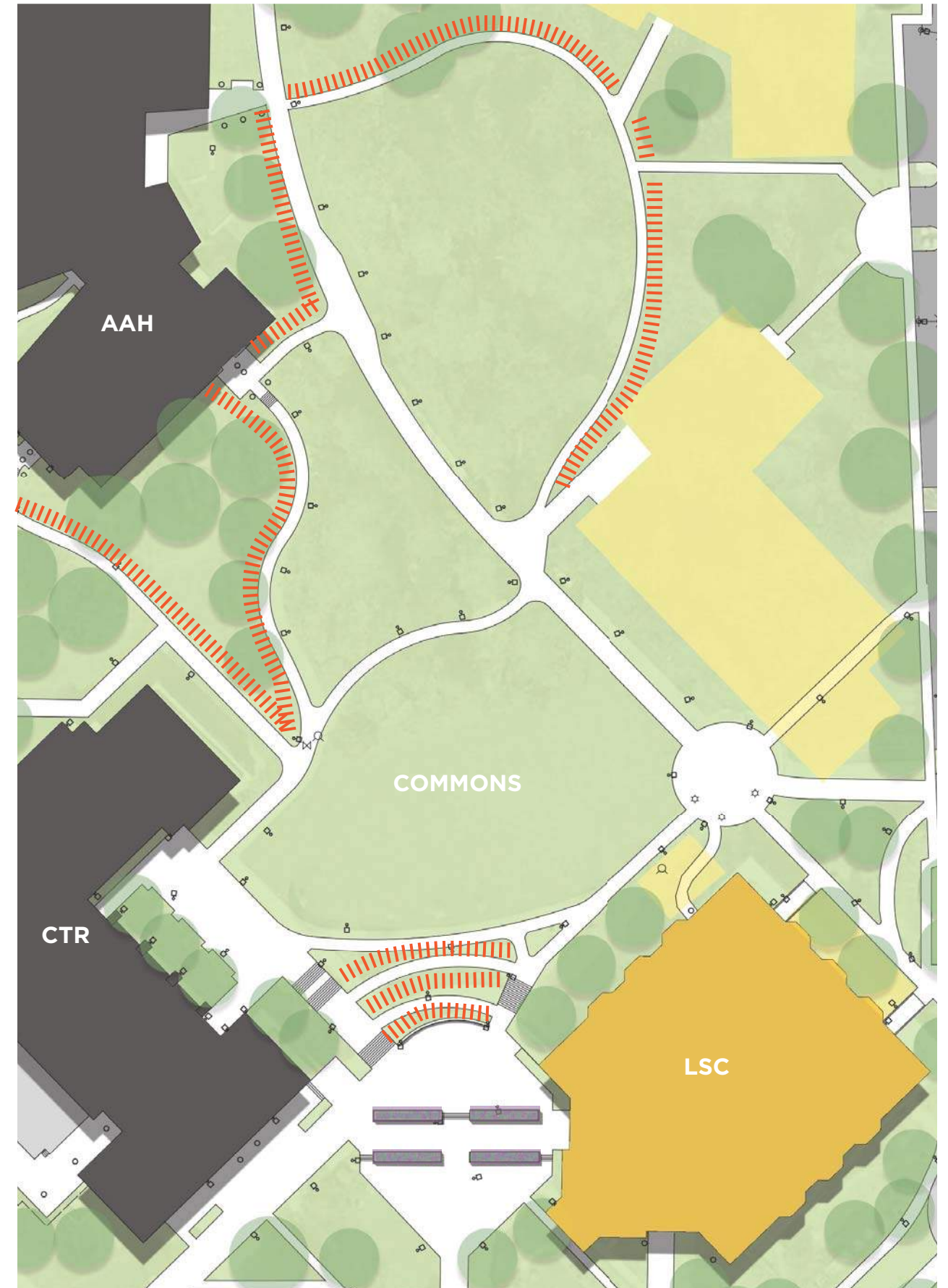
Plaza Planting - Fall Meadow

1/16" = 1'



## 5.2 Commons Perimeter Planting

Repeat the fall meadow mixture (found in the Commons Plaza planters) throughout the beds surrounding the plaza and along the perimeter of the commons green.



Commons Perimeter Planting

1" = 80'



FALL MEADOW PALETTE

ADAPTIVES - 1 gal. pots at 12" O.C.



Aster lateriflorus 'Prince'  
**Calico Aster**



Agastache 'Black Adder'  
**Giant Hyssop**



Thalictrum 'Elin'  
**Elin Meadow Rue**



Sesleria autumnalis  
**Autumn Moor Grass**



Salvia sylvestris  
**Little Night Sage**



Eryngium amethystinum  
**Blue Sea Holly**

SEDUMS - 4" pots at 8" O.C.



Sedum rupestre  
'Angelina'  
**Stonecrop**



Sedum oreganum  
**Oregon Stonecrop**



Sedum hakonense  
'Chocolate Ball'  
**Stonecrop**

NATIVES - 1 gal. pots at 12" O.C.



Rudbeckia occidentalis  
**Western Coneflower**



Penstemon fruticosus  
**Shrubby Penstemon**



Festuca occidentalis  
**Western Fescue**



Thalictrum occidentale  
**Western Meadow Rue**







## 6.0 PLANT LISTS

- 6.1 CORE CAMPUS PLANT PALETTE
- 6.2 PERIMETER AND FOREST PLANT PALETTE





# 6.1 Planting - Core Campus Plant Palette

PERENNIALS



Achillea millefolium  
**Yarrow**



Helleborus 'Grape Galaxy'  
**Grape Galaxy Lenten Rose**



Helleborus 'Ivory Prince'  
**Ivory Prince Lenten Rose**



Phlomis fruticosa  
**Jerusalem Sage**



Baptisia alba  
**Wild Indigo**



Baptisia australis  
**Wild Indigo**



Sedum rupestre 'Angelina'  
**Stonecrop**



Aster lateriflorus 'Prince'  
**Calico Aster**



Salvia sylvestris  
**Little Night Sage**



Echinacea purpurea 'Vintage Wine'  
**Cone Flower**



Penstemon digitalis 'Husker Red'  
**Husker Red Penstemon**



Salvia 'May Night'  
**May Night Sage**



Anemone 'Wild Swan'  
**Wild Swan Windflower**



Mondarda 'Petite Delight'  
**Dwarf Bee Balm**



Heuchera 'Coco'  
**Coral Bells**



Agastache 'Black Adder'  
**Giant Hyssop**



Thalictrum 'Elin'  
**Elin Meadow Rue**



Liriope muscari  
**Lily Turf**



Liriope spicata  
**Spike Lily Turf**



Veronica spicata  
**Spike Speedwell**



Asclepias tuberosa  
**Butterfly Weed**



Nepeta x 'Walker's Low'  
**Walker's Low Catnip**



Sedum rupestre  
**Stonecrop**



Sedum x 'Purple Emperor'  
**Purple Emperor Stonecrop**



Achillea x 'Moonshine'  
**Moonshine Yarrow**



Sedum spurium 'Dragon's Blood'  
**Dragon's Blood Stonecrop**



Sedum acre  
**Goldmoss Stonecrop**



# 6.1 Planting - Core Campus Plant Palette

GRASSES



*Deschampsia cespitosa*  
**Tufted Hair Grass**



*Festuca glauca* 'Elijah Blue'  
**Blue Fescue**



*Pennisetum alopecuroides* 'Hameln'  
**Dwarf Fountain Grass**



*Pennisetum alopecuroides* 'Karley Rose'  
**Fountain Grass**



*Pennisetum alopecuroides* 'Little Bunny'  
**Dwarf Fountain Grass**



*Sesleria autumnalis*  
**Autumn Moor Grass**



*Carex testacea*  
**New Zealand Orange Sedge**



*Carex morrowii* 'Ice Dance'  
**Ice Dance Japanese Sedge**



*Carex elata* 'Bowles Golden'  
**Bowles Golden Sedge**



*Imperata cylindrica*  
**Blood Grass**



*Miscanthus sinensis* 'Adagio'  
**Dwarf Maiden Grass**



*Helictotrichon sempervirens*  
**Blue Oat Grass**



*Stipa tenuissima*  
**Mexican Feather Grass**

SHRUBS



*Erica*  
**Heather**



*Cornus sericea* 'Kelsey'  
**Kelsey Dwarf Red Twig Dogwood**



*Viburnum davidii*  
**David Viburnum**



*Caryopteris incana*  
**Common Bluebeard**



*Daphne x* 'Summer Ice'  
**Summer Ice Daphne**



*Cornus sanguinea* 'Cato'  
**Arctic Sun Red Twig Dogwood**



*Rhododendron*  
**Rhododendron**



*Cornus sanguinea* 'Farrow'  
**Artic Fire Red Twig Dogwood**



*Garrya elliptica*  
**Silk Tassel**



*Arctostaphylos columbiana*  
**Hairy Manzanita**



# 6.1 Planting - Core Campus Plant Palette

SMALL TREES



*Chionanthus retusus*  
**Chinese Fringe Tree**



*Cornus mas*  
**Cornelian Cherry**



*Enkianthus*  
**Enkianthus**



*Acer palmatum*  
**Japanese Maple**



*Cornus x 'Venus'*  
**Venus Dogwood**



*Parrotia persica*  
**Persian Ironwood**



*Prunus serrulata 'Shirotae'*  
**Shirotae Cherry**



*Prunus serrulata 'Kwanzan'*  
**Kwanzan Cherry**

MEDIUM & LARGE TREES



*Nyssa sylvatica*  
**Black tupelo**



*Ginkgo biloba*  
**Ginkgo**



*Ulmus x parvifolia 'Emer II'*  
**Chinese Elm**



*Ulmus americana 'Jefferson'*  
**American Elm**



*Liquidamber styraciflua*  
**Sweet Gum**



*Cercidiphyllum japonica 'Heronswood Globe'*  
**Katsura**



*Cercidiphyllum japonica 'Red Fox'*  
**Red Fox Katsura**



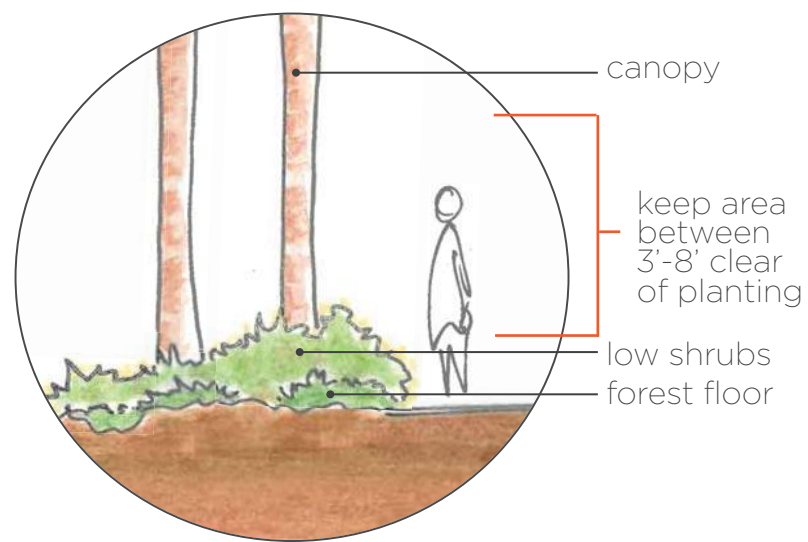
*Fraxus americana*  
**White Ash**



*Fraxus pennsylvania*  
**Green Ash**



# 6.2 Planting - Perimeter and Forest Plant Palette



LOW SHRUBS



*Gaultheria shallon*  
**Salal**



*Vaccinium ovatum*  
**Evergreen Huckleberry**



*Menziesia ferruginea*  
**Fool's Huckleberry**



*Symphoricarpos albus*  
**Snowberry**



*Rubus parviflorus*  
**Thimbleberry**



*Ribes sanguineum*  
**Red Flowering Currant**



*Rosa nutkana*  
**Nootka Rose**

FOREST FLOOR



*Arctostaphylos uva-ursi*  
**Kinnikinnick**



*Oxalis oregana*  
**Redwood Sorrel**



*Polystichum munitum*  
**Western Sword Fern**



*Asarum caudatum*  
**Wild Ginger**



*Achlys triphylla*  
**Vanilla Leaf**



*Cornus canadensis*  
**Bunchberry**



*Tiarella trifoliata*  
**Foamflower**





# 9.3 Site Lighting Master Plan



# Site Lighting Master Plan

State of Washington

Pierce College

Fort Steilacoom and  
Puyallup Campuses

Lakewood and Puyallup,  
Washington



**FINAL REPORT**

**JUNE 24, 2016**

**H A R G I S**

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## 1. EXECUTIVE SUMMARY

### 1.1 INTRODUCTION

Hargis Engineers, Inc. (Hargis) was contracted to evaluate the complete existing campus site lighting at the Pierce College Fort Steilacoom and Puyallup campuses, and to develop design criteria for future landscaping and site lighting improvements.

It was conveyed that areas of both campuses may not have existing adequate site lighting, and that there have not been any standards for design of site lighting to date. Within the scope of this study and report, we reviewed the existing conditions and defined criteria and layout for future improvements to site lighting to meet those design criteria. The goals of the study are to provide uniform and consistent lighting across both campuses, with security, energy efficiency, dark sky/light pollution, and maintenance being key considerations in development of design criteria and standards.

### 1.2 REFERENCES

The following are referenced in design criteria and product literature associated with the findings of this study and report:

1. Illuminating Engineering Society, RP-20: Lighting for Parking Facilities
2. Illuminating Engineering Society, RP-33: Lighting for Exterior Environments
3. AGI – Lighting Modeling Software – AGI32 Lighting Software version 2.36

### 1.3 OBJECTIVES

Within the scope of this report, the following are our objectives:

1. Existing Conditions: Review and document existing site lighting conditions at both campuses
2. Design Criteria: Develop criteria for site parking, site pedestrian circulation, and building entry zones.
3. Master Plan for Future Improvements: Develop a specific plan, considering existing infrastructure, to meet design criteria established in report

## 2. EXISTING CONDITIONS ASSESSMENT

### 2.1 INTRODUCTION AND OVERVIEW

The existing conditions assessment and review were conducted during the evening hours on four evenings over the course of January and February of 2016. The goals of the site assessment and survey were to document all existing site lighting fixtures and associated photometric performance on both campuses, both building-mounted and mounted independently to structures on the site. Limited documentation for existing site lighting was available for both campuses, observations regarding existing lighting fixtures were

based on visual observation only – additional information would require detailed electrical survey and access to each fixture to assess condition and lamp source type/wattage.

## **2.2 METHODOLOGY AND INSTRUMENTATION USED**

To observe existing illuminance levels, a Minolta T-1 illuminance meter was utilized. In reviewing existing site conditions, areas with similar photometric performance were grouped by zone. A general understanding of the average illuminance was developed by a rolling average of the illuminance levels throughout areas of each zone of the site, discrete measurements on specific intervals were not provided based on the extents of area included in the study. Minimum and maximum levels were observed in each area and documented by zone. Where areas of each zone contained non-operable fixtures, these areas were generally excluded from the analysis to provide a baseline equivalent to when all fixtures within the zone are operational.

## **2.3 GENERAL OBSERVATIONS**

On both campuses, a variety of design approaches and existing illuminance levels were observed. Both campuses include a combination of fluorescent, metal halide, high pressure sodium, and LED sources. Illumination levels vary significantly across the campuses. At both campuses, it was observed there are a number of fixtures in need of repair or maintenance, with some functioning at less than optimal levels based on damage to fixture or failing lamps, and others completely non-operational based on factors beyond the scope of this study. Many of the pedestrian circulation areas are illuminated from lighted bollards. No motion or occupancy based controls were observed on either campus. In general, most building entry areas included adequate lighting relative to proposed design criteria and do not require significant improvement to meet design criteria, though replacement with fixtures consistent with master planning design criteria may be considered for energy efficiency and maintenance benefits.

### **2.3.1 FORT STEILACOOM CAMPUS**

The primary pedestrian circulation courtyard area is northeast of the Cascade Building, between the Olympic, Sunrise, Rainier and Cascade buildings. This area is predominantly lighted by bollard-scale fixtures, and while it provides a level of pathway illumination, does not meet IES design criteria for pedestrian circulation areas. The parking areas west and south of the Cascade Building have been retrofitted with LED-type parking fixtures, and those areas appear to generally be well illuminated. The parking areas of the north of campus primarily include canopy-style fixtures mounted vertically on poles, and are a negative source of light trespass. The parking areas to the east of the Cascade Building are significantly below illuminance design criteria, and the service drive which runs through the Cascade Building is also significantly under illuminated for the type of use and potential security issues within this area. The main entry drive off Farwest Drive Southwest, and the areas west of



the Olympic Building (between main entry drive and building) were also not illuminated to design criteria. The pedestrian areas adjacent to the Health Education Center and Cascade Building have newer pedestrian scale lighting that may have an aesthetic significance, similar fixtures were utilized at both buildings which appear to be of different specific vintages.

### **2.3.2 PUYALLUP CAMPUS**

The primary pedestrian circulation areas on campus include the courtyard area between the Gaspard Administration Building, College Center, and Brouillet Library Buildings, at these areas, there is a mix of building, planter-mounted, pole, and bollard mounted lighting of varying lamp sources and illuminance levels. At the pedestrian walkway areas north of the Brouillet Library and east/north of the Arts and Allied Health Building, these areas primarily include pole-mounted lighting with metal halide lamping, and generally appear to be well illuminated in comparison to other similar areas of campus. The parking areas on the east side of the campus include mounded landscape features high pressure sodium pole-mounted fixtures and inadequate illumination throughout most of these areas, influenced also by fixture spacing and wattage/type. The west parking areas are lit by metal halide pole-mounted fixtures, and was particularly subject to multiple lamps being out, assumed that maintenance is needed to restore operation. Drive areas on the perimeter of campus generally include high pressure sodium pole-mounted fixtures, with illumination below design criteria.

## **3. SITE LIGHTING MASTER PLAN**

### **3.1 INTRODUCTION AND OVERVIEW**

At all pedestrian circulation and parking areas throughout both campuses, the primary goal of the master plan is to identify a design approach to modify the existing site lighting systems to meet the selected design criteria. Consideration was given to the existing infrastructure in place, including electrical rough-in (conduit and wiring to location of fixture), and existing poles and site lighting bases to help identify an approach that would be the most cost-effective way to promote the goals of the master planning study.

### **3.2 METHODOLOGY**

To maximize effectiveness and cost, existing poles were considered for re-use in master plan layouts, especially at parking areas, where existing poles are of sufficient height to promote effective area lighting. Within pedestrian areas, pole-mounted fixtures were utilized at a mounting height of 15' above grade. Within parking areas, where new pole-mounted fixture were required, the mounting height was selected to match existing adjacent fixtures in same area. Fixture-mounted occupancy controls at pole-mounted fixtures could be utilized to reduce light levels to 50% (or as desired by college) during

periods when the area is unoccupied, while still providing a level of lighting to facilitate campus security operations.

For purposes of site modeling in the AGI lighting calculation platform, the following fixtures were utilized, which meet the design criteria established by the study:

1. Pole Mounted Parking Areas: Philips Gardco Ecoform, 15,000 Lumens
2. Pedestrian Circulation Areas, Pole Mounted: Philips Gardco Slenderform, 5,500 or 10,000 Lumens
3. Pedestrian Circulation Areas, Bollard Mounted: Philips Gardco School Bollard
4. Surface Mounted Canopy: Philips Gardco G3 Series, 12,000 Lumens

To simplify the modeling process, the site was modeled as flat. Project-specific enhancements to site lighting should consider changes in elevation and provide additional modeling and adjust placement of fixtures as appropriate.

### 3.3 DESIGN CRITERIA – LIGHTING LEVELS AND UNIFORMITY, LIGHT TRESPASS

The proposed lighting design criteria for the master plan is based on the Illumination Engineering Society (IES), Recommended Practice (RP) publications for parking and exterior lighting, and are influenced by the level of activity, type of area, and surface being illuminated. All fixtures included in analysis are based on meeting IES “full cutoff” requirements, which requires that no light is transmitted above the height of the fixture to the environment above (and limits pollution to adjacent areas).

Proposed Lighting Design Criteria*			
Area	Minimum Horizontal Illumination (Lux)**	Uniformity Ratio (Avg: Min)	Reference
Parking Lot - Asphalt***	5	4:1	IES RP-20, Table 2
Parking Lot - Concrete***	10	4:1	IES RP-20, Table 2
Building Entries - Primary	20	2:1	IES RP-33, Table 2
Building Entries - Other	10	2:1	IES RP-33, Table 2
Pedestrian Plaza/Walkway	15-30****	4:1	IEP RP-33, Table 1

\* Considering site as type L22, default zone for light commercial business districts

\*\* 10.8 Lux = 1 Footcandle, Observer Age 25-65, assume light loss factor of 0.7

\*\*\* Includes associated drive aisles

\*\*\*\*Represents target (average) illumination level, Category G-I Activity Level

### 3.4 DESIGN CRITERIA – LIGHTING FIXTURES AND ASSOCIATED CONTROLS

It is not the intent or goal of this study to create a specific product to be utilized in design of site lighting systems at the campuses, but rather, define a specific set of criteria which can then be applied to multiple fixture types and manufacturers, to allow flexibility for



selection and integration with design goals in specific areas of the campus. The determining criteria and impact to fixture selection criteria is noted below:

First Cost: Overall sum of construction cost associated with the described option, including contractor's material and labor costs, overhead, profit and contingency

Visual/Aesthetics: The look and appearance of the light fixtures in relationship to the existing campus

Security: Due to the nature of this facility and the increased nighttime activity it is important that the lighting systems maintain a high degree of visibility. This criterion evaluates the option compared to IES standards for illuminance levels. Pole-mounted fixtures provide an enhanced level of visibility in comparison to bollard or ground-mounted lighting, based on the transmission of light more uniformly across the vertical component of the lighting subject.

Maintenance & Operations: Energy savings and activities required to maintain the lighting system. These activities would include lamp replacement, component replacement and servicing in the event of a unit failure.

Uniformity: Evaluates the option based on the uniformity of the light and a person's ability to perceive the appearance of higher light levels.

Efficacy and Energy Efficiency: Evaluates the efficiency of the fixture and light source to efficiently convert electrical energy into light, measured by lumens per watt. Fixture mounted controls with the potential to reduce usage during unoccupied hours.

Light Pollution/Dark Sky: Evaluates the ability of a fixture to effectively communicate the light to the desired area, while minimizing the impact on the surrounding environment.

### 3.4.1 BASIS OF STUDY

For the purposes of photometric modeling, a sample set of light fixtures were included, to help quantify the potential improvements to the existing site lighting to bring into conformance with master planning design criteria. Those fixtures, as noted in the drawings associated with this report, are intended to be representative of potential types used, but are not intended to be used as a sole-source fixture for a campus standard. The intent is to include a flexible set of design criteria to allow for competitive bidding/quoting for future site lighting improvement projects.

### 3.4.2 POLE MOUNTED

Pole heights in parking areas to be 25-40' depending on existing and adjacent pole heights. Pole heights in pedestrian areas to be 10-15'. All lamp sources shall be LED, at neutral white color temperature (4500K nominal). Efficacy of all pole mounted fixtures to meet minimum 100 lumens/watt. Distribution type shall be selected based on maximizing layout towards design criteria. Fixture or pole-mounted occupancy sensors utilized to reduce light to 50% during unoccupied periods. Fixture to meet IES full cutoff criteria, and be mounted with illuminated face of fixture

parallel to grade below (oriented downwards). Fixtures to include minimum 5 year warranty for all LED array and driver components.

### **3.4.3 BUILDING MOUNTED**

Fixtures utilized for building mounted lighting shall be selected to primarily provide lighting at building entries and at areas of the perimeter as needed to enhance site lighting levels. All lamp sources shall be LED, at neutral white color temperature (4500K nominal). Efficacy of all building mounted fixtures to meet minimum 70 lumens/watt. Fixture to meet IES full cutoff criteria, and be mounted with illuminated face of fixture parallel to grade below (oriented downwards). Fixtures to include minimum 5 year warranty for all LED array and driver components.

### **3.4.4 BOLLARD OR GROUND MOUNTED**

Bollard mounted fixtures may be utilized to enhance the desired aesthetic within a specific area of campus, subject to review and approval of college. All lamp sources shall be LED, at neutral white color temperature (4500K nominal). Efficacy of all building mounted fixtures to meet minimum 70 lumens/watt. Design considerations shall include light trespass, as this type of fixture is less likely to be available as meeting the IES cutoff criteria. Façade lighting at buildings is discouraged, and subject to approval of the college on a project-specific basis. Fixtures to include minimum 5 year warranty for all LED array and driver components.

## **3.5 DESIGN CONCEPT FOR INCORPORATING BOLLARD OR OTHER SMALLER-SCALE PEDESTRIAN LIGHTING CONCEPTS**

Subject to review and approval by the college, there may be areas on campus where bollard lighting and pedestrian-scale lighting concepts may be appropriate for the desired aesthetic within an area of campus. Where these design concepts are utilized, the design criteria for lighting levels and uniformity should be maintained the extent possible and practical. It is recommended that the use of pedestrian-scale pole lighting be included within the overall scheme to help maintain the desired uniformity.

# **1. APPENDICES/DRAWING ATTACHMENTS**

APPENDIX 1: Fort Steilacoom, Visual Renderings of Photometric Modeling

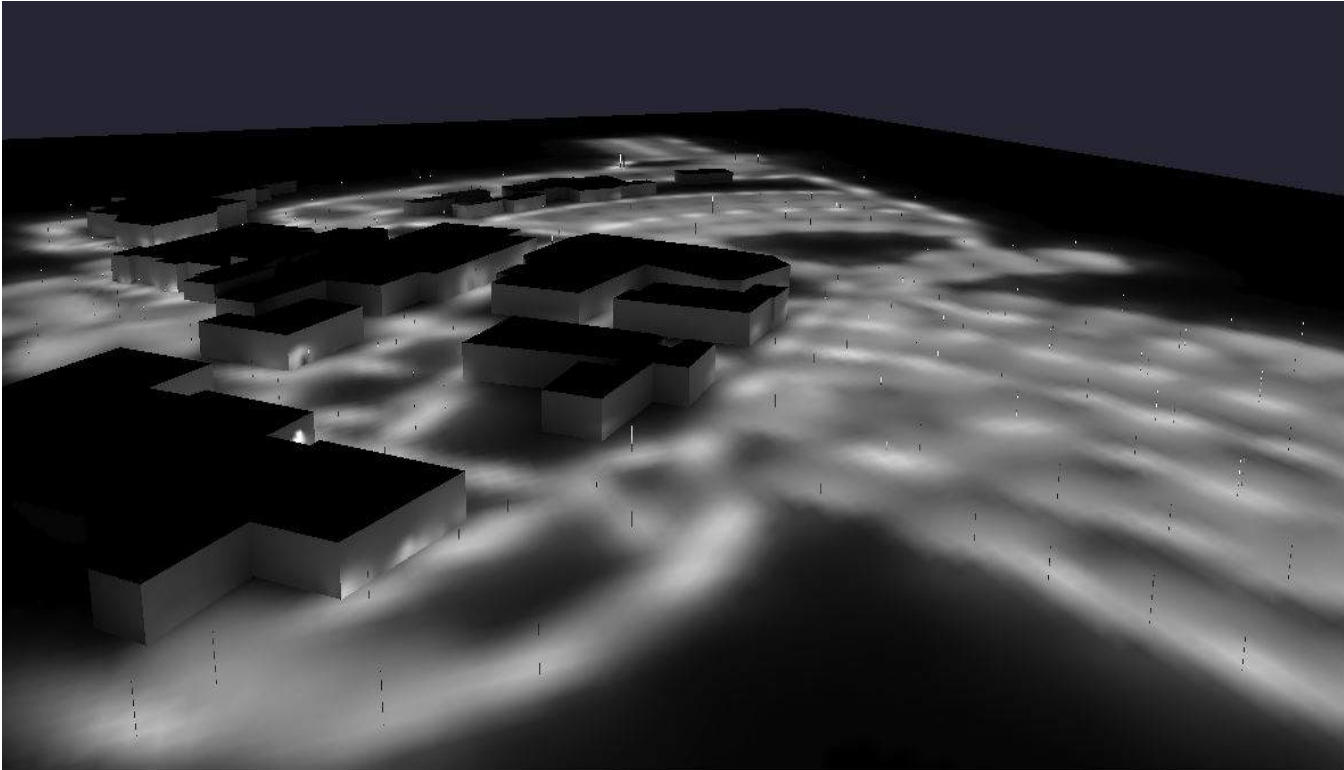
APPENDIX 2: Fort Steilacoom, Visual Renderings of Photometric Modeling

APPENDIX 3: Master Planning Drawings, Fort Steilacoom and Puyallup Campuses

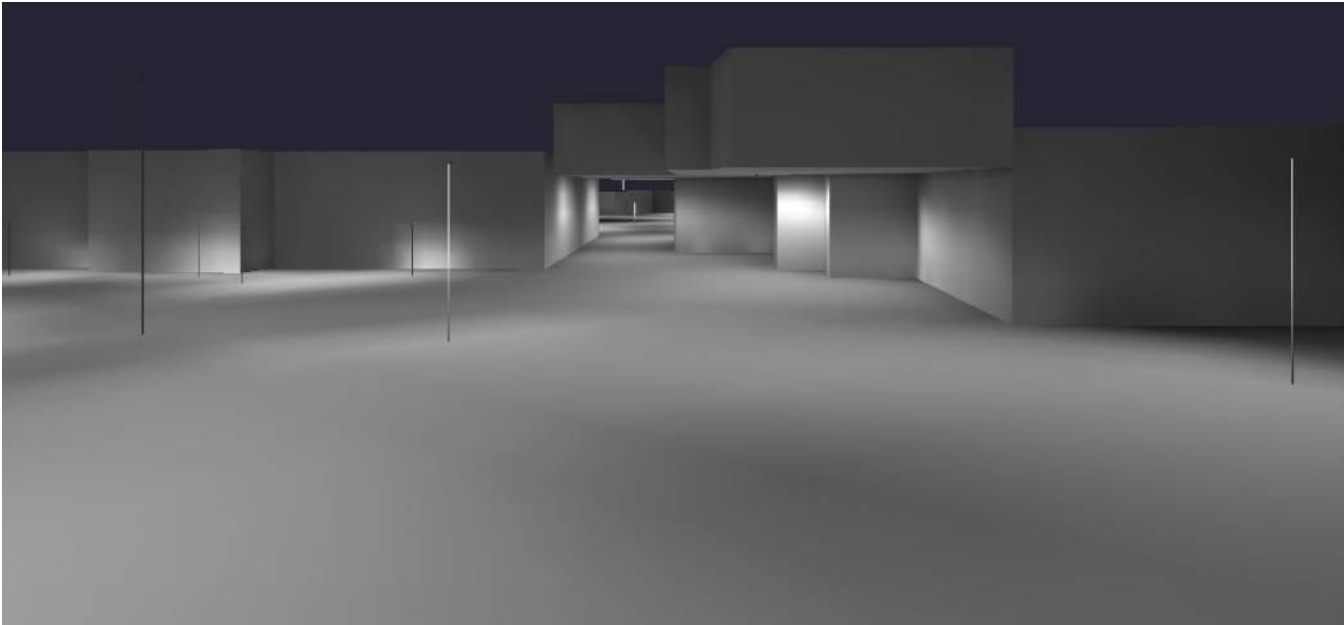
APPENDIX 4: Conceptual Plans and Renderings for Bollard or Small-Scale Pedestrian Lighting



# APPENDIX 1 – FORT STEILACOOM RENDERINGS



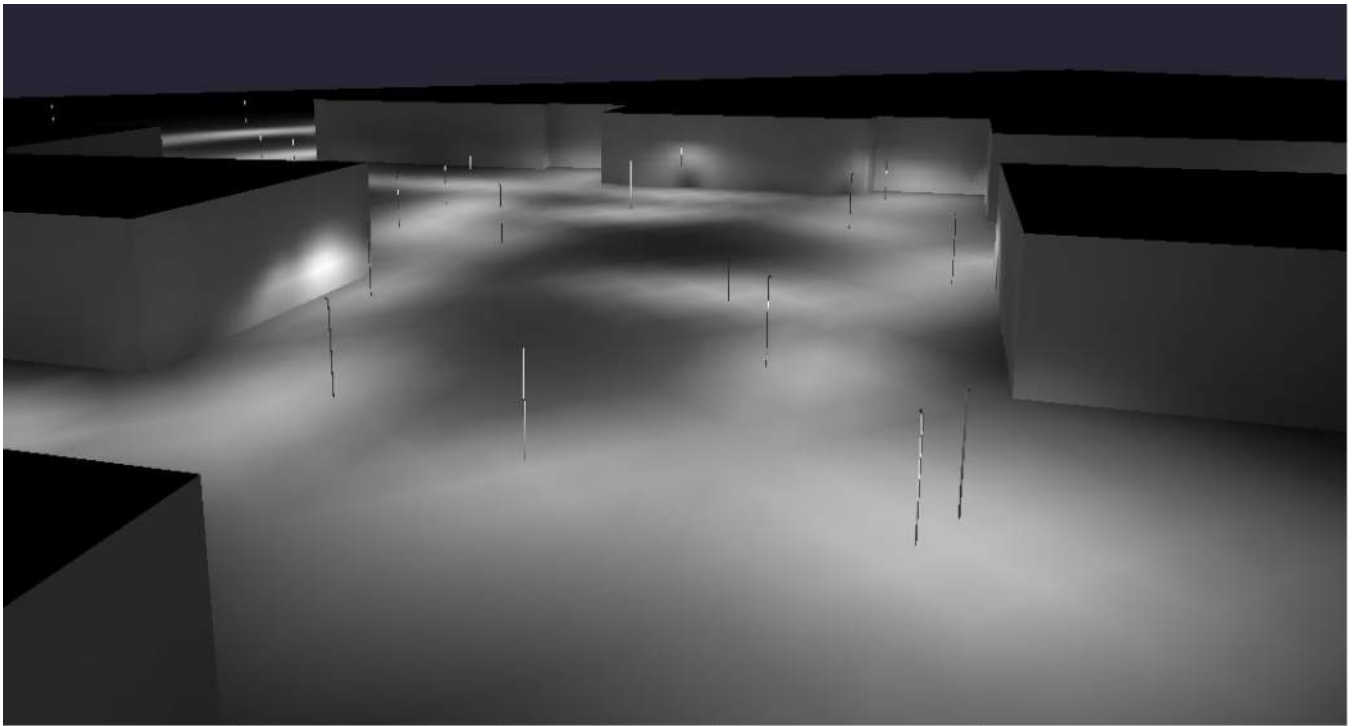
View from north of Rainier Building looking south



View from east of Cascade Building, looking west towards service drive (thru building)



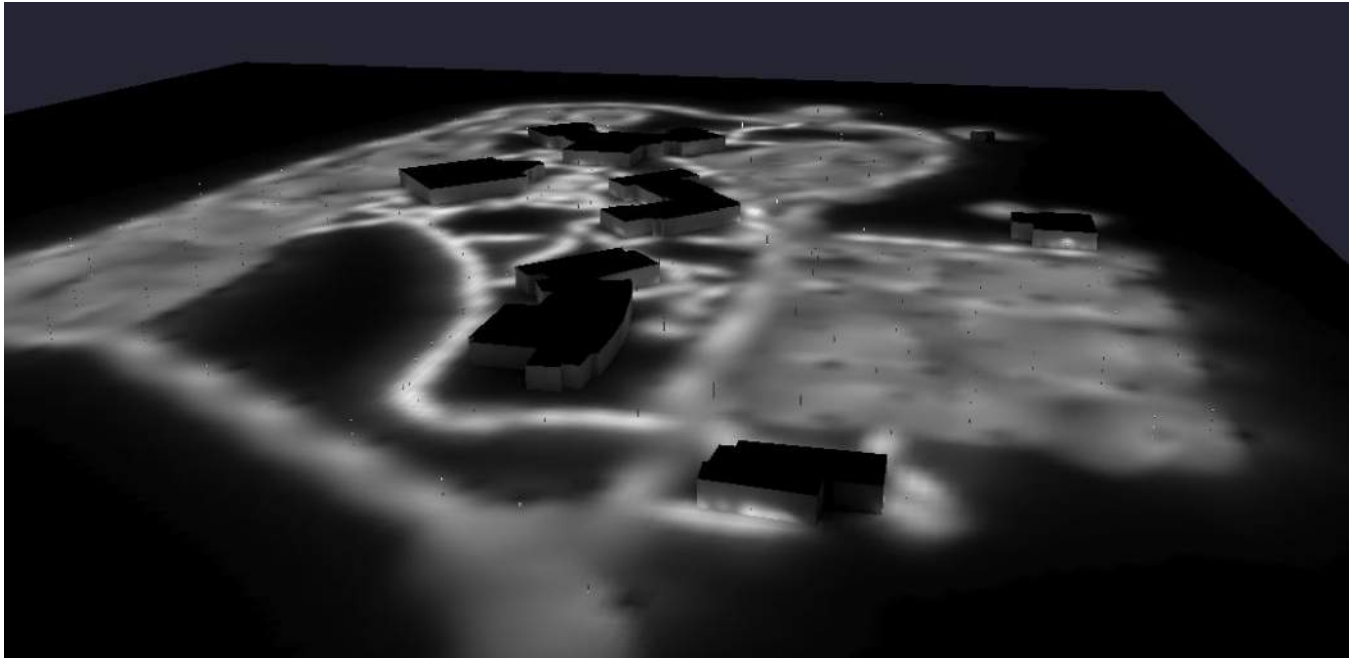
View looking east on main entry drive towards Olympic building



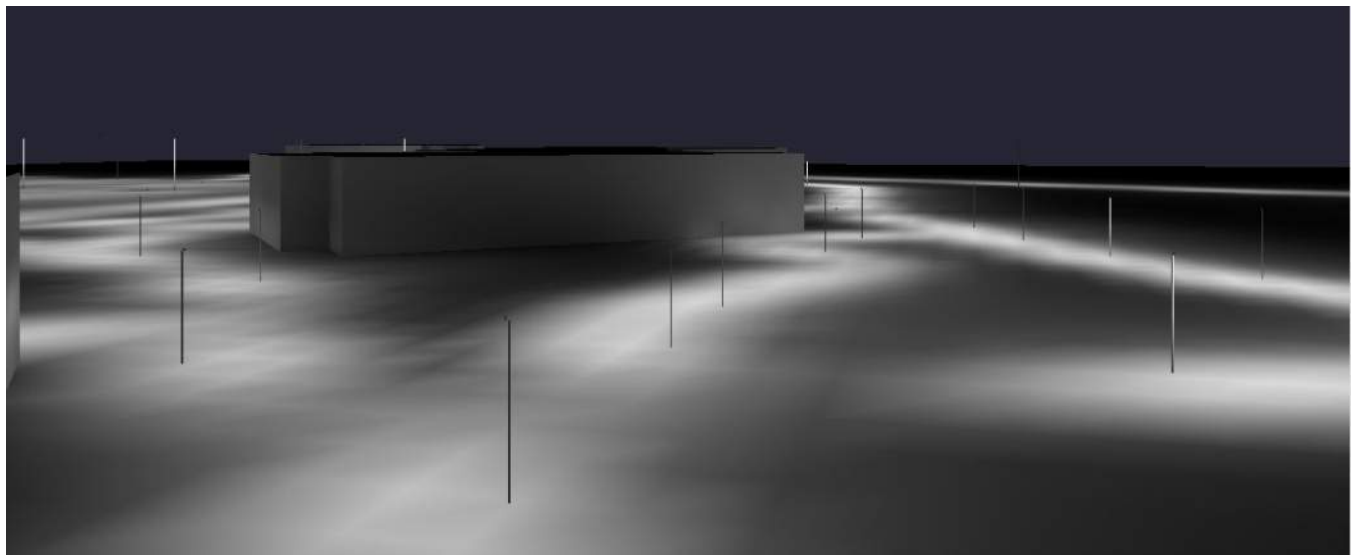
View looking east across pedestrian plaza between Cascade, Rainier, Olympic, Sunrise buildings



## APPENDIX 2 – PUYALLUP RENDERINGS



View from north end of campus looking south

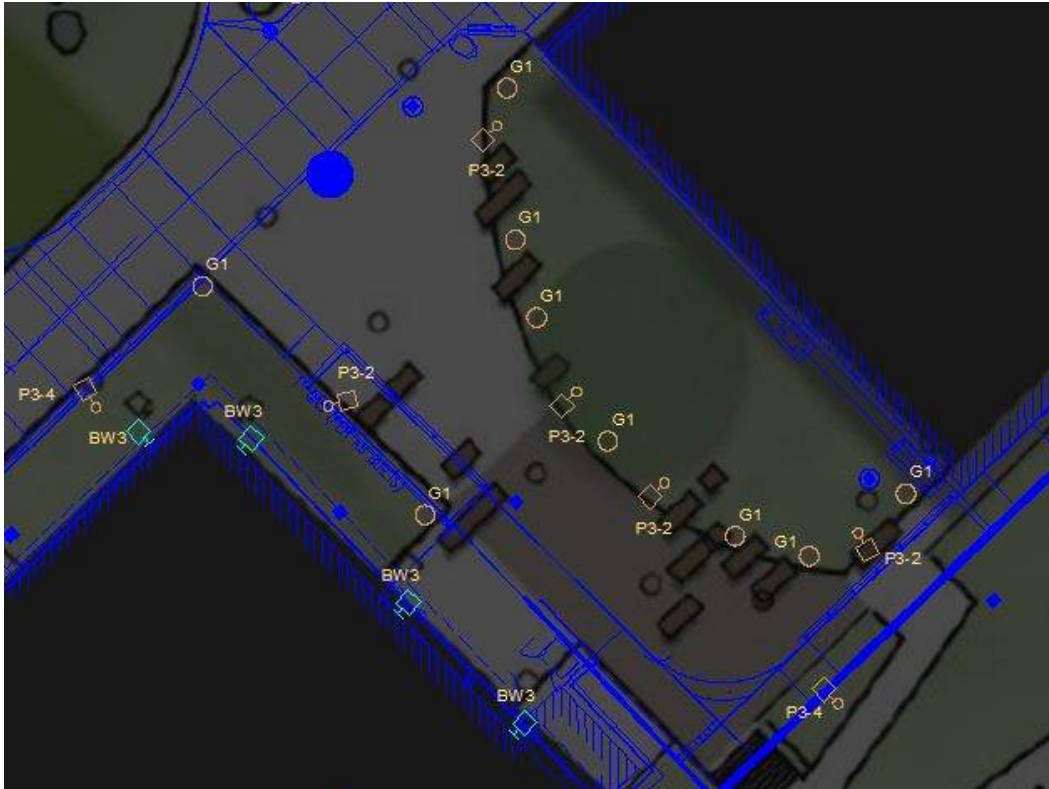


View from east of College Center building, looking north towards Arts and Allied Health building

## **APPENDIX 3 – SEE DRAWINGS**



# APPENDIX 4 – CONCEPTUAL PLANS AND RENDERINGS FOR BOLLARD OR SMALL-SCALE PEDESTRIAN LIGHTING



Walkway Plaza  
Illuminance (Fc)  
Average=4.31 Maximum=10.81 Minimum=1.23 Avg/Min=3.50  
Max/Min=8.79



# 9.4 Sign Programming Guide





# > Sign Programming Guide

# Volume **A**

EXTERIOR SIGN STANDARDS

**Section 1 > Introduction**

- > Overview ..... 5
- > How to use this book ..... 5
- > Scope ..... 7

**Section 2 > General Information**

- > Typograpy ..... 8
- > Content ..... 11
- > Color Palette ..... 12
- > Logos & Arrows ..... 14

**Section 3 > Sign Overview**

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- > Campus ID ..... 18
- > Vehicular Directionals ..... 22
- > Parking ID ..... 24
- > Pedestrian Directional ..... 26
- > Building ID ..... 28



### **Overview**

This volume of the Exterior Sign System provides an overview of the Pierce College exterior sign system for administrators, staff and consultants who require a broad understanding of the sign program without the details related to ordering or fabricating the signs.

Designed to assist Pierce College as the campuses grow and change and new signs or updates to existing signs are needed, this Programming Guide has been created to ensure:

1. Consistent and appropriate programming of sign locations.
2. Consistency with overall Pierce design guidelines.
3. Consistent use of high-quality signage materials in all sign applications.

### **How to use this book**

This book (volume A) will assist Pierce College staff in programming new signage for either campus, as well as updating existing signage. The programming notes identify which signs and messages are needed for each location, and how the signs should be used.

Once programmed, use the accompanying Ordering Workbook (volume B) to communicate with sign fabricators for procurement.

**Scope**

Information outlined in this Guide pertains to both Pierce College campuses. Pierce College is charged with maintaining the Sign Programming Guide and the Ordering Workbook. If you have questions about either of these documents or need assistance with a project, please contact:

Jim Taylor  
Director of Facilities  
Pierce College District  
9401 Farwest Drive  
Lakewood, WA 98498  
(253) 964-6589

Any unique requests that are not covered within this Guide should be presented to the above contact for case-by-case review and approval.



---

Delta Jaeger Light

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890

Frutiger Bold Condensed

**ABCDEFGHIJKLMNOPQRSTUVWXYZ**

**abcdefghijklmnopqrstuvwxyz**

**1234567890**

Frutiger Black

**ABCDEFGHIJKLMNOPQRSTUVWXYZ**

**abcdefghijklmnopqrstuvwxyz**

**1234567890**

### **Typography**

The Delta Jaeger family and the Frutiger family of fonts is used for all sign types in the Pierce College exterior sign program.

Delta Jaeger Light is used for displaying the College and Campus names, as well the building name in dimensional letters.

Frutiger Bold Condensed is used on all free-standing signs. Due to it's condensed nature, a greater number of characters can fit on the sign panels.

Frutiger Black is used for the building name acronyms on free-standing signs only. It's extra bold nature helps the acronym stand out from the rest of the message.

The typefaces are illustrated on sample layouts throughout this booklet and detailed specifications are provided in the Ordering Workbook.



### **Content**

Sign content and wording are designed into the Sign Standards. Examples of sign wording and maximum character count are provided on typical layouts.

General conventions such as avoiding the use of words like 'the' in naming buildings, programs and facilities will be applied whenever possible.

Additional message conventions include the following:

#### ***Use of "Building"***

In general, avoid the word "Building" on any signage. For example, signing "Arts & Allied Health" as opposed to "Arts & Allied Health Building". The use of the word "Building" is redundant in this case, and the name of the building is sufficient.

#### ***Use of the Ampersand***

An ampersand will be used instead of the word 'and' in most conditions. This approach conserves valuable sign space and is sufficient in conveying the same message.

#### ***Abbreviations:***

Abbreviations shall be used only when generally understood by the viewing population. This includes the use of building name abbreviations. Ensure that the accurate abbreviation is used in all cases.



"Black"



"White"



"Silver"



"Charcoal"



"Red"



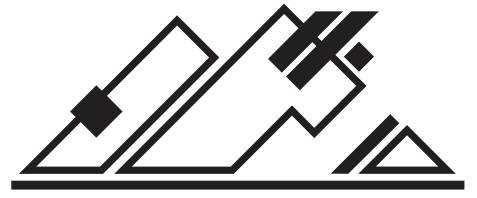
### **Color Palette**

This color palette is used for all exterior signs. “Red” matches the approved school color, while the “Charcoal” and “Silver” act as neutral foils. “White” and “Black” are used for text to achieve maximum contrast with the background color.

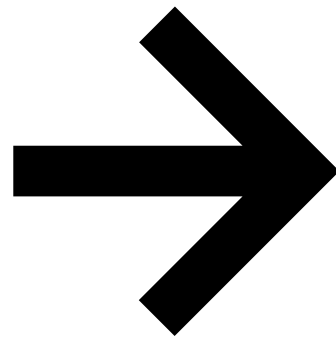
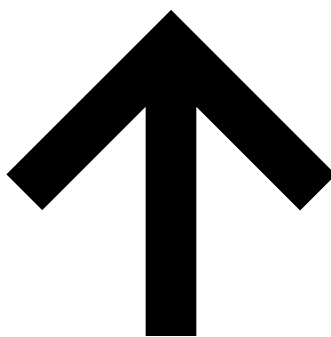
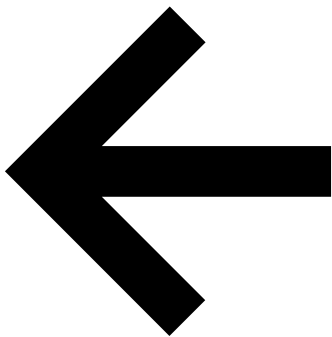
Color specifications are provided in Volume B, Ordering Workbook.



Solid Logo



Outline Logo





### **Logos**

While the design of the Pierce College logo is dictated by Pierce College, adapted versions of the logo have been developed for use in the exterior sign system.

There are two adapted logos used in this sign system: Solid Logo and Outline Logo. The logos shall be used as dictated in the sign specifications (see Volume B); they are not interchangeable. One version of the logo shall not be substituted for another version.

### **Arrows**

Arrows point left, up or right, indicating the direction of travel. An arrow pointing up indicates a forward path of travel. Arrow sizes will change throughout the sign program to fit each sign type, however the proportions of the arrow must always remain the same.

### **Sign Overview**

Signs in this section include all signs in the current program. If specialized or unique sign applications require deviation from these standards, contact the Director of Facilities.

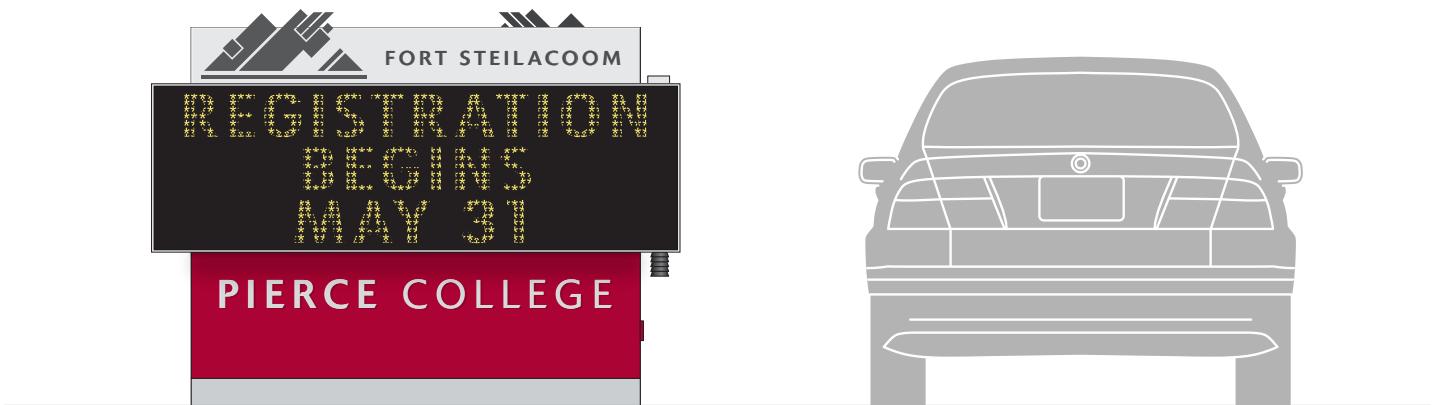
The messages shown are typical examples and do not represent all message types required.

The following pages will help in identifying which signs and messages are needed, and how the signs should be used.





Sign Type E/A



Sign Type E/B

### Site ID

E/A

A site ID marks the threshold through which one passes to enter campus. It creates the first impression for the campus and enhances campus identity.

At each campus entry a site ID shall be programmed to welcome visitors and identify the campus. The sign includes the college name and logo, the individual campus name and the campus address.

#### **Placement Criteria**

*Signs shall be located on Pierce College property, perpendicular to the roadway, with both sides of the sign visible to oncoming traffic. If conditions do not allow for this sign placement, determine the primary visitor approach and situate sign to be visible in that line of sight. If needed, program Perimeter Markers to aid visitors approaching from the secondary approach. This sign requires a permit. Contact local jurisdictions to determine compliance.*

### Electronic Message Center (EMC)

E/B

In addition to a Site ID, an exterior electronic message center is designed to display the college and campus names, as well as temporary digital messages to passing vehicles. Messages shall be kept short and concise; duration time for each message is dictated by the City.

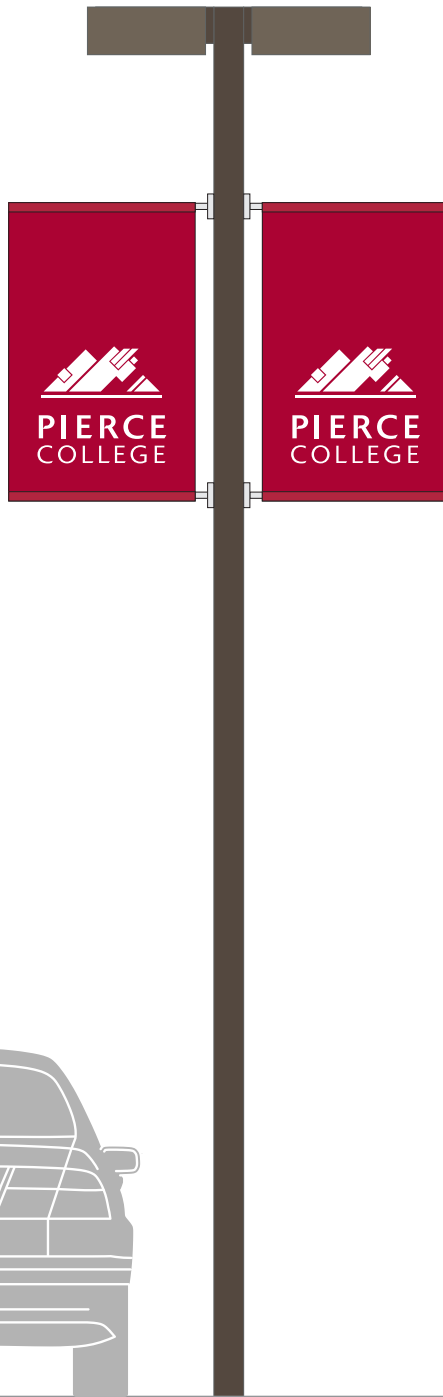
#### **Placement Criteria**

*Signs shall be located on Pierce College property. If adding a new EMC to campus, first determine the audience. If the content is to be directed toward the public, including potential students, locate the EMC on a highly frequented vehicular path of travel. Ensure that the sign is visible to traffic approaching from both directions and that the speed of travel will not deter visitors from being able to read the sign. Avoid locating the sign in areas where it would serve as a dangerous distraction (busy intersections, pedestrian crossings). EMCs can be highly regulated by City and County jurisdictions, and do require a permit. Contact local jurisdictions to determine compliance.*





Sign Type E/C-1






Sign Type E/C-2



Sign Type E/C-3

### Perimeter Markers

Three perimeter marker designs are provided to serve separate purposes. Perimeter markers may be located at secondary campus entries or along the campus perimeter in key locations. They serve to reinforce the image and identity of the college.

-  To identify campus boundaries, an overhead sign panel displays the college logo and name, and alerts visitors to the approaching campus. In addition, there is space to display a directional arrow pointing toward the campus entry, if needed. These signs include a mounting pole.
-  For temporary or changeable messages, and where existing poles are available, banner signs display the Pierce College logo and name or current marketing graphics. These signs mount to existing lightpoles.
-  To draw attention to a campus entry, colorful metal banners mounted to new poles can be located behind a site ID.

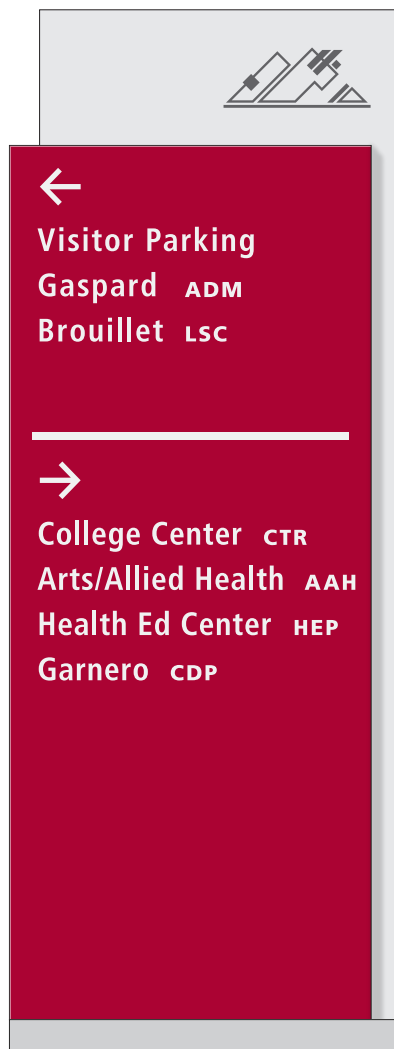
### Placement Criteria

*Signs shall be located on Pierce College property, within sightlines visible to vehicles in motion. Exact locations to be site-verified. Signs may require permits, and quantities may be restricted by the City or County. Contact local jurisdictions to determine compliance.*

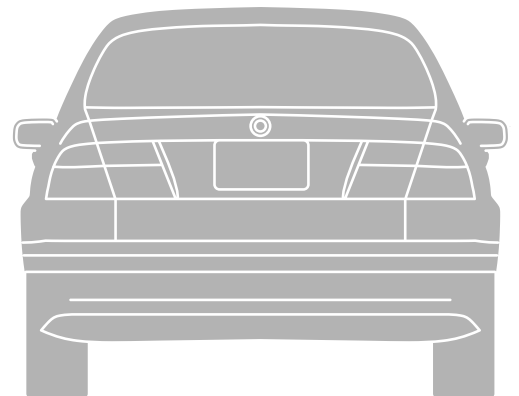




Sign Type E/D-1



Sign Type E/D-2



### Vehicular Directionals

E/D

Wayfinding signs on vehicular thoroughfares guide auto traffic. Because they are viewed hastily by moving vehicles, messages shall be simple, clear and legible.

In most cases, messages are limited to building names. Campus departments or programs are not listed on vehicular directional signs, with the exception of specific destinations frequented by visitors (not students) such as Receiving, Veterinary Technology or the Dental Clinic. These simple messages assume that visitors have seen maps or received verbal instructions for where secondary destinations (such as rooms, departments, or a public function) are located within a larger building or open space.

One directional arrow is used for each direction (right, up, left) and all destinations accessible in that direction are listed below the arrow.

There are two sizes of signs included in this program. Choose the sign size that best suits the message needs.

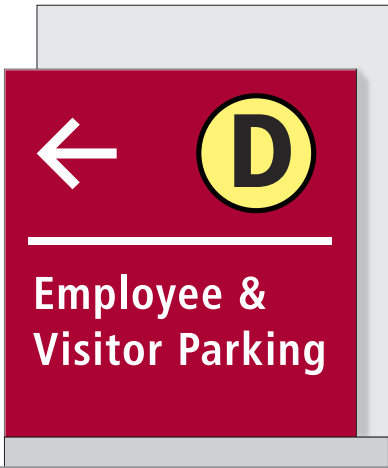
#### **Placement Criteria**

*Signs are located perpendicular to roads that traverse Pierce College property, on the side of the road that provides the best visibility to the greatest amount of traffic. The Primary frame (silver portion) shall always be closest to the road. Locate signs at primary decision points, or where reinforcement of a direction is needed.*

*Specific messages shall be programmed for each side of the sign (Side A, Side B). Indicate the direction of the arrow needed for each message (left, up, right).*

*If a sign is located on a City or County-owned road, ensure that signs are not located in the vision triangle; signs may require a permit. Contact local jurisdictions to determine compliance.*

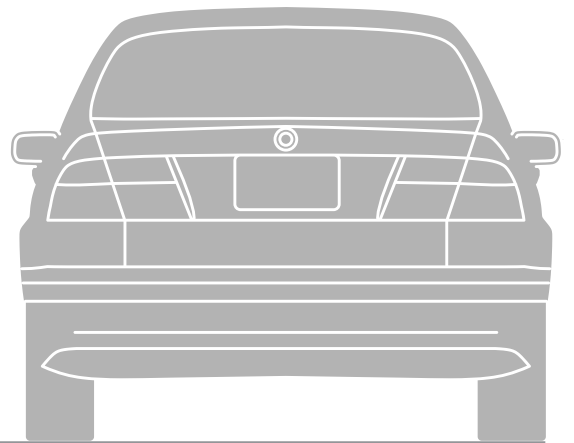




Sign Type E/P



Sign Type E/R



### **Parking Lot ID: Free-standing**

E/P

Once on campus, a visitor's first challenge is to find parking. Clearly identified lots, whether for visitors, employees or others, help drivers move through campus efficiently. Parking ID signs reassure drivers that they are in the right place and have found a parking area intended for their use.

Each parking lot is identified at its entry with a letter designation, a message regarding whether the lot is for employees, visitors or students, and an arrow pointing in the direction of the lot entry.

Parking lot identification should be referred to consistently in all campus communications - including website driving instructions, admissions catalogs, campus maps, announcements of college events and telephone directions by all campus departments and services. If any changes occur to parking lot identification, changes shall be cross-referenced in all campus communications.

#### ***Placement Criteria***

*Signs are located perpendicular to roads that traverse Pierce College property, and parallel with the entry drive. Locate signs on the side of the entry drive that provides the best visibility to the greatest amount of traffic. The Primary frame (silver portion) shall always be closest to the road. Specific messages shall be programmed for each side of the sign (Side A, Side B).*

*If a sign is located on a City or County-owned road, ensure that signs are not located in the vision triangle; signs may require a permit. Contact local jurisdictions to determine compliance.*

### **Parking Lot ID: Pole-mounted**

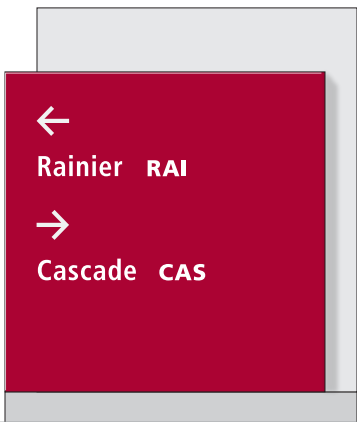
E/R

Parking lot identification is reinforced throughout the lot with pole-mounted signs displaying the appropriate letter designation.

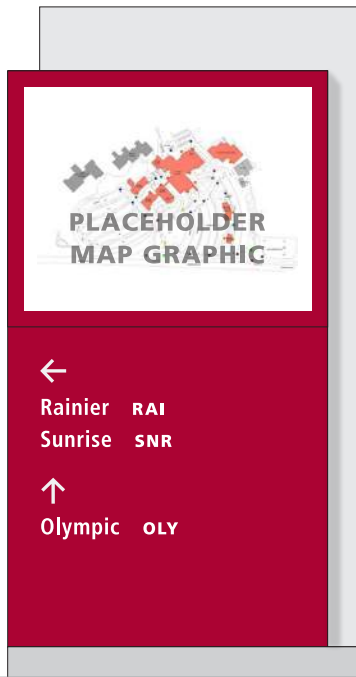
#### ***Placement Criteria***

*Signs can be mounted back-to-back on an existing lightpole, or as a single sign facing in along the perimeter of a parking lot.*

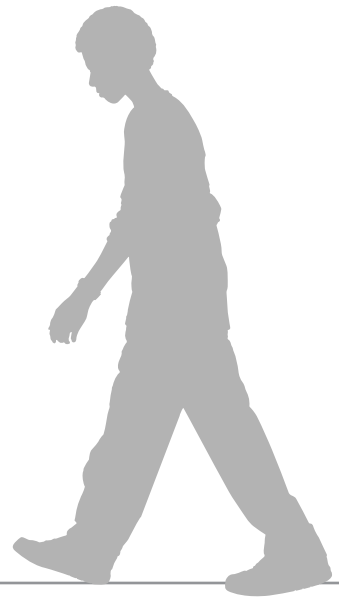




Sign Type E/K-1



Sign Type E/K-2



E/K-1

### **Pedestrian Directional**

Moving through campus after parking or upon leaving a building, the visitor experience and sense of safety are enhanced by directional information.

Directional signs feature messages that are simple and clear. In most cases, messages are limited to building names, however specific destinations frequented by visitors, such as Veterinary Technology or the Dental Clinic, may be included. These simple messages assume that visitors have seen maps or received verbal instructions for where secondary destinations (such as rooms, departments, or a public function) are located within a larger building or open space. One directional arrow is used for each direction (right, up, left) and all destinations accessible in that direction are listed below the arrow.

#### ***Placement Criteria***

*Directional information signs are strategically placed throughout campus at primary decision points along pedestrian pathways and sidewalks. Orient signs such that they are not blocked by plantings, benches or trashcans. The Primary frame (silver portion) shall always be closest to the pathway.*

E/K-2

### **Pedestrian Wayfinding Map**

Wayfinding signs feature a map of the campus with a “you are here” indicator and additional directional information, as needed. Each map indicates where the viewer is standing and shall be in a “heads up” orientation so that the direction a viewer is facing is at the top of the map. Any changes to the campus, whether in signage or architecture, should also appear on the campus wayfinding map. Directional messages shall be simple and clear and limited to building names. One directional arrow is used for each direction (left, up, right) and all destinations accessible in that direction are listed below the arrow.

#### ***Placement Criteria***

*Wayfinding maps are strategically placed along the perimeter of campus such that visitors approaching from parking lots encounter the maps before continuing into the campus. Additional maps can be located throughout campus along pedestrian pathways and sidewalks as needed. Locate maps to allow the viewer to face the bulk of the campus. When possible, locate signs with the map close to paved areas so that it is accessible to wheelchairs. The Primary frame (silver portion) shall always be closest to the pathway.*





**Sign Type E/G-Logo12**



**Sign Type E/G-Logo24**

SUNRISE  
SNR

**Sign Type E/G-9**

RAINIER  
RAI

**Sign Type E/G-12**

### Building-mounted Building ID

E/G

Because the buildings on each campus are visible from the periphery of the campus, building-mounted ID can be helpful for wayfinding from a distance.

Each building is identified with dimensional letters that are legible, visible from various points across campus, and contrast with their background color. In many cases, each building will have a set of dimensional letters on difference facades to serve a variety of sightlines. Larger letters shall be located high on the building, while smaller letters are located lower on the building. The message is limited to the building name and building acronym.

E/G-  
Logo

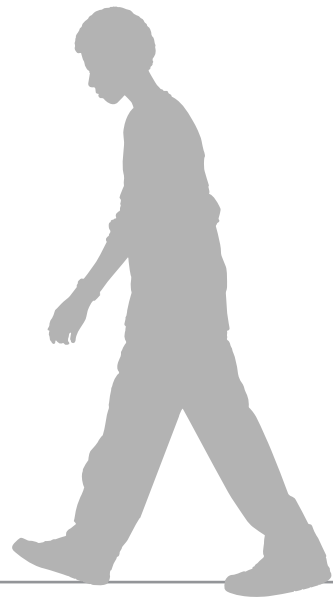
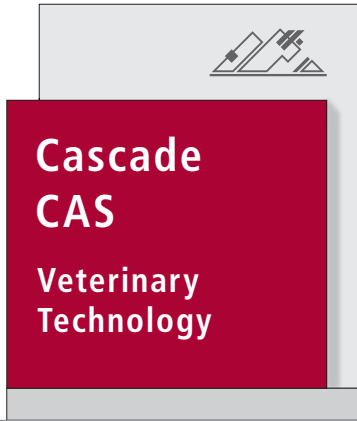
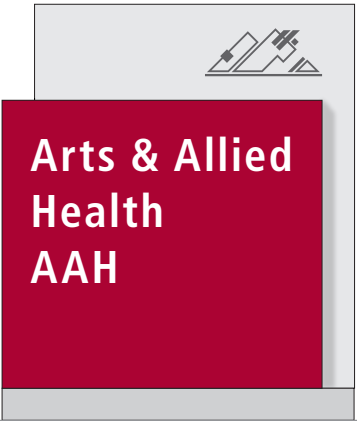
The addition of a dimensional “Solid Logo” located above the dimensional letters is useful to enhance the college identity.

The size of the letters and logo are dictated by the size size of the building, the available space, and the sightlines. Consult the building architect, Facilities or review existing locations to determine the appropriate size.

#### **Placement Criteria**

*Dimensional graphics shall be located close to building entries and in locations that will not be obscured by shrubbery or architectural features (such as columns or canopies). When programmed, the dimensional logo is always located above the dimensional letters.*





**Sign Type E/F**



**Sign Type E/E**

### Free-standing Building ID

Each primary building entry may also be identified with a free-standing sign displaying the building name and building acronym. Campus departments or programs are not listed on Building ID signs, with the exception of specific destinations frequented by visitors (not students) such as Veterinary Technology or the Dental Clinic. In some cases there may be one or two free-standing signs per building, but not all buildings require a free-standing ID.

There are two designs for free-standing signs in this sign program:

E/F

1) A free-standing sign serves pedestrians and vehicles as they approach a building. This sign is best for existing buildings where the landscape has already been completed.

E/E

2) A building ID panel may be integrated into a site-specific concrete landscape bench designed as part of the architectural or landscape package. This sign also serves the pedestrian and vehicular approach, but is larger and requires coordination with the Architect. This sign is best for new buildings where the sign can be incorporated into the landscape design.

### **Placement Criteria**

*Signs are oriented so they are visible to the majority of pedestrian traffic approaching the building and when possible, located near the building entries.*



# 9.5 Traffic Impact Analysis

# Pierce College Puyallup Campus Master Plan

Puyallup, WA

Updated Traffic Impact Analysis  
January 27, 2022

Prepared for:

*McGranahan Architects  
2111 Pacific Avenue #100  
Tacoma, WA 98402*

Prepared by:



Transportation Engineering NorthWest

11400 SE 8<sup>th</sup> Street, Suite 200  
Bellevue, WA 98004  
Office: (425) 889-6747  
Fax: (425) 889-8369



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## FINDINGS/ CONCLUSIONS

This traffic impact analysis (TIA) has been prepared for the proposed expansion of the *Pierce College Puyallup Campus*. The traffic analysis was completed based on comments received from the submitted traffic scoping worksheet as well as scoping discussions with City of Puyallup and WSDOT staff. This is an update to the previous Traffic Impact Analysis dated January 6, 2021, and addresses comments received by City of Puyallup dated October 15, 2021.

**Project Proposal.** The project proposal includes the addition of up to 72,000 square foot (SF) of building area to the Pierce College Puyallup Campus (currently, the Master Plan identifies 71,688 square-foot in gross new floor area). The existing campus currently has approximately 243,440 SF of building area. Cumulatively, this expansion would result in a total of approximately 315,440 SF of building area as assumed in this study (*it should be noted that the 2,688 SF City of Puyallup Communications Center leased to the City is not included in this total*). For this analysis, a future horizon buildout year of 2032 was used.

**Trip Generation.** The proposed *Pierce College Puyallup Campus* expansion project is anticipated to generate 1,458 new weekday daily trips, with 149.0 new trips during the weekday AM peak hour (114.7 entering, 34.3 exiting), and 133.9 net new trips during the weekday PM peak hour (66.9 entering, 67.0 exiting).

**Intersection Level of Service.** Weekday AM and PM peak hour LOS analyses were conducted at 14 study intersections. The results of the LOS analyses indicated that all turn movements at the stop-controlled study intersection as well as all of the signalized study intersections are expected to operate at LOS D or better during the weekday AM and PM peak hour in 2032, without or with the proposed *Pierce College Puyallup Campus* expansion project. Per the City's *2015 Comprehensive Plan*, while the City has a minimum LOS D for all intersections in the City, LOS E operations along the Meridian and Shaw Road corridors are considered acceptable during the PM peak period. As such, all study intersections are anticipated to operate at an acceptable LOS in 2032.

**Site Access.** Vehicular access to/from the site would continue to be provided at the two existing access points: College Way/39<sup>th</sup> Ave SE and 7<sup>th</sup> St SE/College Way. Weekday AM and PM peak hour LOS analysis at the two site access locations indicated that all turn movements at 7<sup>th</sup> Street SE/College Way as well as the signalized intersection of College Way/39<sup>th</sup> Ave SE are anticipated to operate at LOS B or better during the weekday AM and PM peak hour in 2032 without or with the proposed expansion. Per the *Amendment to Concomitant Agreement dated May 30, 1986 Between the City of Puyallup and Beim & James Properties II*, there is a requirement to "assess the need for additional access to the campus during the development of each major addition..." Since both access locations are anticipated to operate at LOS B or better with the proposed expansion, the need for an additional access to the campus would not be justified.

**Project Mitigation.** The following summarizes the measures proposed to mitigate the transportation impacts of the proposed *Pierce College Puyallup Campus* expansion project:

- **Traffic Impact Fees.** To mitigate long-term transportation impacts, the City administers a Transportation Impact Fee (TIF) to new developments to improve the transportation system to accommodate the higher travel demand added by new developments. The City of Puyallup's currently adopted transportation impact fee is \$4,500 per PM peak hour trip. The preliminary estimated transportation impact fee for the proposed project totals **\$602,550** ( $\$4,500 \times 133.9$  net new PM peak hour trips). The actual impact fees will be calculated and assessed at the time of building permit issuance.



## INTRODUCTION

This traffic impact analysis (TIA) documents the traffic impacts associated with the proposed expansion of the *Pierce College Puyallup Campus* as part of its Master Plan. *The Pierce College Puyallup Campus* is located at 1601 39<sup>th</sup> Avenue SE in Puyallup, WA as shown in **Figure 1**. This is an update to the previous Traffic Impact Analysis dated January 6, 2021, and addresses comments received by City of Puyallup dated October 15, 2021.

## Project Description

The *Pierce College Puyallup Campus* currently has approximately 243,440 square feet (SF) of building area and the proposed project would expand the college campus by an additional 72,000 SF in the context of evaluating traffic impacts. Cumulatively, this expansion would result in a total of approximately 315,440 SF of building area. For this analysis, a buildout horizon year of 2032 was used.

Vehicular access to/from the site would continue to be provided at the two existing access points off of 39<sup>th</sup> Avenue SE and 7<sup>th</sup> Street SE. The Campus will continue to have primary access via the signalized intersection of College Way/39<sup>th</sup> Avenue SE. On the west side of the Campus, a secondary, full access driveway will also continue to provide access at the intersection of 7<sup>th</sup> Street SE/College Way. A preliminary site plan is included in

**Figure 2.**

## Project Approach

Based on traffic scoping discussions with City of Puyallup staff, the following tasks were undertaken to evaluate and disclose the traffic impacts associated with the Pierce College Puyallup Campus Master Plan project:

- Assessed existing conditions through field reconnaissance and reviewed existing planning documents;
- Assessed and described existing road conditions, pedestrian facilities, and transit facilities in the project vicinity;
- Documented existing traffic volumes and intersection LOS at fourteen (14) study intersections during the weekday AM and PM peak hours;
- Documented future planned roadway improvements in the project vicinity;
- Developed trip generation estimates for weekday daily, AM, and PM peak hour conditions;
- Documented trip distribution and assignment of project-generated traffic;
- Documented traffic forecasts and assumptions for year 2032 AM and PM peak hour conditions without and with the proposed project;
- Analyzed weekday AM and PM peak hour LOS for future conditions without and with the project at fourteen (14) study intersections;
- Evaluated whether additional site access locations would be necessary; and
- Documented proposed traffic mitigation.

## Primary Data and Information Sources

- 2021 AM and PM peak hour traffic counts by All Traffic Data.
- City of Puyallup's *2015 Comprehensive Plan*.
- Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10<sup>th</sup> Edition, 2017.
- Pierce Transit Website, January 2022.
- Transportation Research Board (TRB), *Highway Capacity Manual (HCM)*, 6<sup>th</sup> Edition, 2016.



Figure 1: Project Site Vicinity







Figure 2: Preliminary Site Plan



## EXISTING CONDITIONS

This section includes a description of the existing site, an inventory of existing roadway conditions, key intersections in the site vicinity, existing daily and peak hour traffic volumes, intersection levels of service, non-motorized facilities, and planned roadway improvements.

### Existing Project Site

The existing *Pierce College Puyallup Campus* site is located at 1601 39<sup>th</sup> Avenue SE in Puyallup, WA. It sits on a total of eight (8) parcels and is currently made up of about 243,350 SF of building space. The two existing access points off of 39<sup>th</sup> Avenue SE to the south and 7<sup>th</sup> Street SE to the west will also provide access to the proposed building area of up to 72,000 SF.

### Existing Roadway Conditions

The primary vehicle travel routes to and from the site include 39<sup>th</sup> Avenue SE, S Meridian (SR 161), Shaw Road E, and 7<sup>th</sup> Street SE. These roadways serving the project site are described below in terms of the number of lanes, posted speed limits, pedestrian facilities, and shoulder conditions. Their relationships to one another can be seen in **Figure 1**.

**S Meridian (SR 161)** is a two-way north-southbound street in the project vicinity. It has five to eight lanes (2 to 3 lanes in each direction) with auxiliary turn lanes provided at most intersections in the project vicinity. It has curb, gutter and sidewalks on both sides and a posted speed limit of 35 mph. Per City of Puyallup's *Comprehensive Plan*, S Meridian is classified as a Major Arterial in the project vicinity.

**39<sup>th</sup> Avenue SE** is a two-way east-westbound street along the project's southern frontage. It is a four-to-five lane roadway (2 lanes in each direction) with curb, gutter and sidewalks on both sides and a posted speed limit of 35 mph. Auxiliary turn lanes are provided at most intersections in the project vicinity and a two-way left-turn lane is provided along 39<sup>th</sup> Ave SE west of College Way. Per City of Puyallup's *Comprehensive Plan*, 39<sup>th</sup> Avenue SE is classified as a Major Arterial in the project vicinity.

**Shaw Road E** is generally a two-way north-southbound street with a posted speed limit of 35 mph. North of 39<sup>th</sup> Ave SE, Shaw Rd E widens for a short distance to a 4-lane roadway with curb, gutter, and sidewalks on both sides of the street. After approximately 0.10 miles to the north of 39<sup>th</sup> Ave SE, the road transitions into a 2-lane roadway with curb, gutter, and sidewalk on the east side of the street and unpaved shoulder on the west side of the street. North of Manorwood Dr, Shaw road widens to a 3-lane roadway with curb, gutter, and sidewalks on both sides of the street. South of 39<sup>th</sup> Ave SE, paved shoulders are present on both sides of the street, but no sidewalks are provided. Per City of Puyallup's *Comprehensive Plan*, Shaw Road is classified as a Major Arterial in the project vicinity.

**7<sup>th</sup> Street SE** is a 3-lane two-way north-southbound street with a two-way left turn lane along the project's western frontage. Curb, gutter, and sidewalks are present on both sides of the street and the posted speed limit is 25 mph. Per City of Puyallup's

*Comprehensive Plan*, 7<sup>th</sup> Avenue SE is classified as a Major Collector in the project vicinity.

## Transit Service

Transit service to and from the project vicinity is provided by Pierce Transit. Pierce Transit Route #4 which provides weekday and weekend bus service between Lakewood Transit Center, South Hill Mall Transit Center and Pierce College Puyallup Campus has a stop located at the southeastern employee parking lot inside the campus area. Route #4 runs approximately between 5:45 AM and 8:30 PM with 30-minute headways. Outside the campus area, the nearest transit stops can be found within one mile of the campus at the intersection of 10<sup>th</sup> Street SE and 39<sup>th</sup> Avenue SE. These bus stops also serve Pierce Transit Route #4 as well as Pierce Transit Route #425 (between Puyallup and South Hill). Additional transit stops that serve Pierce Transit Route #425 are also provided at the campus' West Entrance at the intersection of 7<sup>th</sup> Street SE and College Way. Route #425 provides weekday and Saturday bus service between approximately 11:30 AM and 5:20 PM with 1-hour headways.

## Non-Motorized Transportation Facilities

Non-motorized transportation facilities in the project vicinity include sidewalks on both sides of 39<sup>th</sup> Avenue SE and 7<sup>th</sup> Street SE. Crosswalks with pedestrian push buttons are provided at most signalized study intersections along Shaw Rd, 39<sup>th</sup> Avenue SE, 37<sup>th</sup> Avenue SE and S Meridian (SR 161). Shaw Road between 23<sup>rd</sup> Ave SE and Manorwood Dr includes a shared-use path for biking and walking on the east side of the street.

## Traffic Study Intersections

To assess the traffic impact of the proposed *Pierce College Puyallup Campus* expansion project, the following off-site study intersections were analyzed during the weekday AM and PM peak hours:

1. 7<sup>th</sup> Street SE / College Way
2. S Meridian / 31<sup>st</sup> Ave SW (SR 161)
3. S Meridian (SR 161) / 37<sup>th</sup> Avenue SE
4. 5<sup>th</sup> Avenue SE / 37<sup>th</sup> Avenue SE
5. 39<sup>th</sup> Avenue SE / 37<sup>th</sup> Avenue SE
6. 10<sup>th</sup> Street SE / 39<sup>th</sup> Avenue SE
7. College Way / 39<sup>th</sup> Avenue SE
8. Wildwood Park Dr / 39<sup>th</sup> Avenue SE
9. 25<sup>th</sup> Street SE / 39<sup>th</sup> Avenue SE
10. Shaw Road E / 39<sup>th</sup> Avenue SE
11. Shaw Road E / 23<sup>rd</sup> Avenue SE (Crystal Ridge Dr SE)
12. S Meridian (SR 161) / 39<sup>th</sup> Avenue SE
13. 5<sup>th</sup> Avenue SE / 39<sup>th</sup> Avenue SE
14. S Meridian (SR 161) / 43<sup>rd</sup> Avenue SE



## Existing Peak Hour Traffic Volumes

Year 2021 existing AM and PM peak hour traffic volumes at the study intersections were estimated based on recent December 2021 turning movement counts collected by All Traffic Data. Based on comments provided by the City of Puyallup, traffic volumes in the study area have largely returned to normal with exception to the current reduced capacity of the Pierce College campus. To account for the currently reduced capacity of the Pierce College campus due to the COVID-19 pandemic, the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10<sup>th</sup> Edition, was used to estimate the trips generated by full capacity of the existing campus. The additional trips associated with full capacity of the campus were assigned through the study intersections and added to the 2021 traffic counts.

The AM peak hour traffic volumes represent the highest hourly volume of vehicles passing through an intersection between 7:00 and 9:00 AM. The PM peak hour traffic volumes represent the highest hourly volume of vehicles passing through an intersection between 4:00 and 6:00 PM.

**Figure 3** and **Figure 4** illustrate the resulting 2021 AM and PM peak hour traffic volumes at the study intersections. The existing traffic count datasheets are included in **Appendix A**.

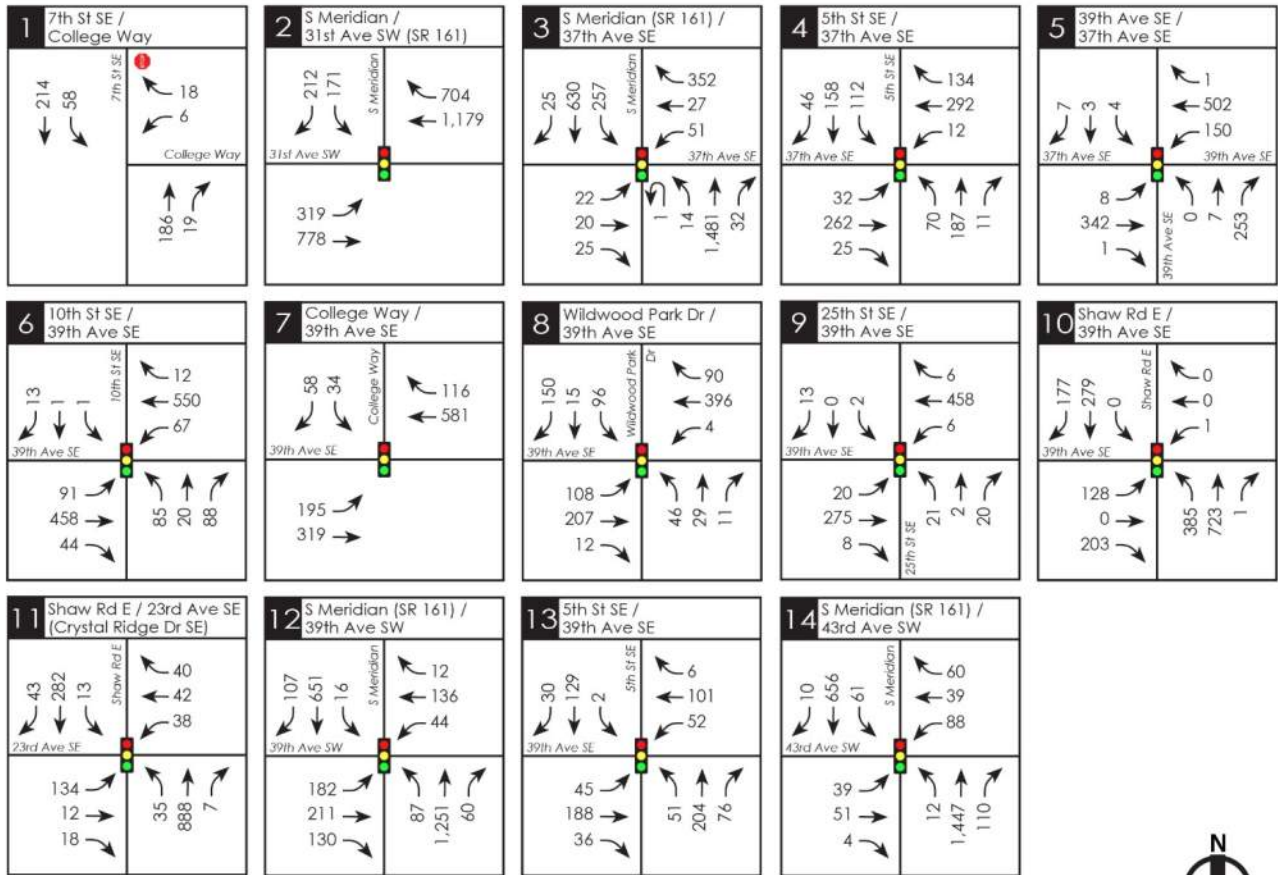


Figure 3: 2021 Existing Weekday AM Peak Hour Traffic Volumes



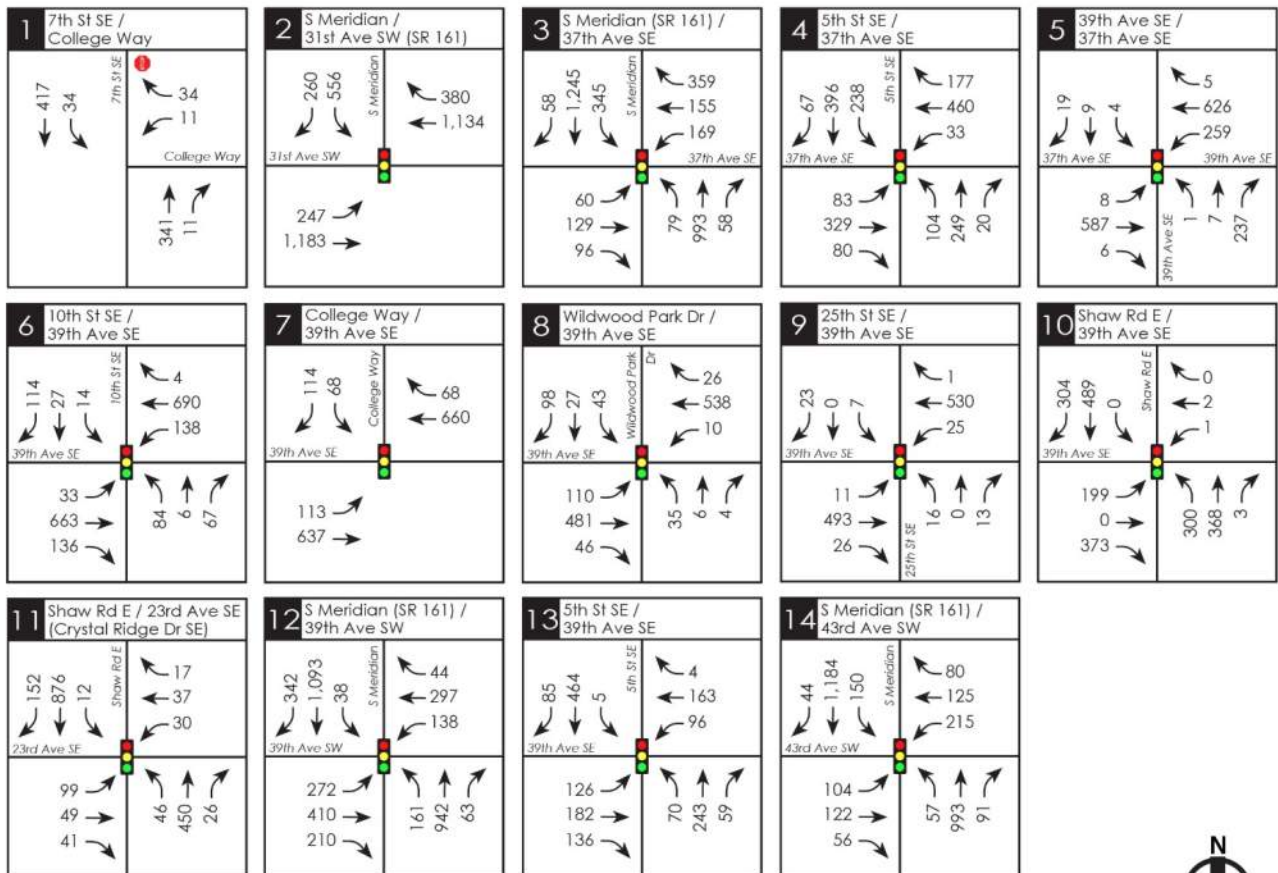


Figure 4: 2021 Existing Weekday PM Peak Hour Traffic Volumes



## Existing Intersection Level of Service

An existing AM and PM peak hour level of service (LOS) analysis was conducted at the study intersections. LOS generally refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes intersection LOS. At signalized intersections, LOS A represents free-flow conditions (motorists experience little or no delays), and LOS F represents forced-flow conditions where motorists experience an average delay in excess of 80 seconds per vehicle.

The LOS reported for signalized intersections and stop controlled intersections represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group or movement (additional v/c ratio criteria apply to lane group or movement LOS only). The LOS reported at two-way stop-controlled intersections is based on the average control delay and can be reported for each controlled minor approach, controlled minor lane group, and controlled major-street movement (additional v/c ratio criteria apply to lane group or movement LOS only). **Table 1** outlines the current HCM 6<sup>th</sup> Edition LOS criteria for signalized and unsignalized intersections based on these methodologies.

**Table 1**  
**LOS Criteria for Signalized and Stop-Controlled Intersections<sup>1</sup>**

SIGNALIZED INTERSECTIONS			STOP-CONTROLLED INTERSECTIONS		
Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio <sup>2</sup>		Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio <sup>3</sup>	
	≤ 1.0	> 1.0		≤ 1.0	> 1.0
≤ 10	A	F	≤ 10	A	F
> 10 to ≤ 20	B	F	> 10 to ≤ 15	B	F
> 20 to ≤ 35	C	F	> 15 to ≤ 25	C	F
> 35 to ≤ 55	D	F	> 25 to ≤ 35	D	F
> 55 to ≤ 80	E	F	> 35 to ≤ 50	E	F
> 80	F	F	> 50	F	F

1) Source: Highway Capacity Manual, Transportation Research Board, 6<sup>th</sup> Edition, 2016.

2) For approach-based and intersection-wide assessments at signals, LOS is defined solely by control delay.

3) For two-way stop-controlled intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole at two-way stop controlled intersections. For approach-based and intersection-wide assessments at all-way stop controlled intersections, LOS is solely defined by control delay.

The analysis was conducted using the methodology and procedures outlined in the 6<sup>th</sup> Edition of the *Highway Capacity Manual* and *Synchro 10.3* methodology/ traffic analysis software. Existing signal timing information at the signalized study intersections was provided by WSDOT and the City of Puyallup. Phasing patterns were confirmed in the field. The 2021 AM and PM LOS analysis results for the study intersections are summarized in **Table 2**. The detailed LOS worksheets are included in **Appendix B**.

**Table 2**  
**Existing AM & PM Peak Hour LOS Summary**

Study Intersections	Peak Hour LOS	
	LOS <sup>1</sup>	Delay (sec/veh)
<b>AM Peak Hour</b>		
<i>Stop-Controlled Intersection:</i>		
1. 7 <sup>th</sup> St SE / College Way		
Westbound Shared Left-Right	B	10.1
Southbound Left Turn	A	7.8
<i>Signalized Intersections:</i>		
2. S Meridian / 31 <sup>st</sup> Ave SW (SR 161) <sup>2</sup>	C	22.5
3. S Meridian (SR 161) / 37 <sup>th</sup> Ave SE	B	15.3
4. 5 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	B	17.6
5. 39 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	B	17.8
6. 10 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	15.7
7. College Way / 39 <sup>th</sup> Ave SE	A	9.7
8. Wildwood Park Dr / 39 <sup>th</sup> Ave SE	B	18.8
9. 25 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	13.4
10. Shaw Rd E / 39 <sup>th</sup> Ave SE	B	15.0
11. Shaw Rd E / 23 <sup>rd</sup> Ave SE (Crystal Ridge Dr SE)	C	20.0
12. S Meridian (SR 161) / 39 <sup>th</sup> Ave SE	B	18.5
13. 5 <sup>th</sup> Ave SE / 39 <sup>th</sup> Ave SE	B	17.0
14. S Meridian (SR 161) / 43 <sup>rd</sup> Ave SE	C	22.3
<b>PM Peak Hour</b>		
<i>Stop-Controlled Intersection:</i>		
1. 7 <sup>th</sup> St SE / College Way		
Westbound Shared Left-Right	B	11.9
Southbound Left Turn	A	8.2
<i>Signalized Intersections:</i>		
2. S Meridian / 31 <sup>st</sup> Ave SW (SR 161) <sup>2</sup>	C	25.5
3. S Meridian (SR 161) / 37 <sup>th</sup> Ave SE	C	30.2
4. 5 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	C	22.4
5. 39 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	B	18.1
6. 10 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	17.9
7. College Way / 39 <sup>th</sup> Ave SE	A	9.7
8. Wildwood Park Dr / 39 <sup>th</sup> Ave SE	B	17.9
9. 25 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	14.4
10. Shaw Rd E / 39 <sup>th</sup> Ave SE	C	28.2
11. Shaw Rd E / 23 <sup>rd</sup> Ave SE (Crystal Ridge Dr SE)	C	26.0
12. S Meridian (SR 161) / 39 <sup>th</sup> Ave SE	D	38.8
13. 5 <sup>th</sup> Ave SE / 39 <sup>th</sup> Ave SE	C	23.9
14. S Meridian (SR 161) / 43 <sup>rd</sup> Ave SE	C	34.9

<sup>1</sup> Based on HCM 6<sup>th</sup> Edition methodologies, unless otherwise noted.

<sup>2</sup> HCM 2000 LOS results due to non-NEMA phasing.

As shown in **Table 2**, all signalized study intersections and turn movements at the stop-controlled study intersection operate at LOS D or better during the weekday AM and PM peak hours. The City of Puyallup has adopted a minimum LOS D for all intersections in the City.

## TRAFFIC IMPACT ANALYSIS

The following section describes projected future baseline traffic growth, new trips generated by the proposed development, distribution and assignment of new project trips, intersection level of service, and identification of transportation mitigation to offset impacts.

### Project Trip Generation

Full buildout of the proposed project would include the addition of up to 72,000 square feet building area to the *Pierce College Puyallup Campus*. The trip generation estimates for the proposed expansion were determined based on methodology and procedures documented in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10<sup>th</sup> Edition for Land Use Codes (LUC) 540 (Junior/ Community College).

**Table 3** summarizes the new weekday trips the proposed Pierce College Puyallup Campus expansion would generate during a typical weekday and during the weekday AM and PM peak hours. The detailed trip generation calculations are provided in **Appendix C**.

**Table 3**  
**Trip Generation Summary**

Time Period	New Trips Generated		
	In	Out	Total
Weekday Daily	729	729	1,458
Weekday AM Peak Hour	114.7	34.3	149.0
Weekday PM Peak Hour	66.9	67.0	133.9

As shown in **Table 3**, full buildout of the proposed *Pierce College Puyallup Campus* expansion is anticipated to generate 1,458 new weekday daily trips, with 149.0 new trips during the weekday AM peak hour (114.7 entering, 34.3 exiting), and 133.9 net new trips during the weekday PM peak hour (66.9 entering, 67.0 exiting).

### Project Trip Distribution and Assignment

The estimated distribution of the project-generated vehicle trips to/from the site was estimated based on anticipated traffic patterns in the vicinity of the site; the distribution patterns were confirmed by the City through the traffic scoping process. **Table 4** summarizes the resulting general trip distribution patterns.



**Table 4**  
**Peak Hour Project Trip Distribution**

Route (Direction)	Trip Distribution
Shaw Rd E (north)	15%
Shaw Rd E (south)	15%
7 <sup>th</sup> Street SE (north)	15%
31 <sup>st</sup> Avenue SW (SR 161) (west)	25%
39 <sup>th</sup> Avenue SW (west)	10%
S Meridian (SR 161) (south)	20%
<b>TOTAL</b>	<b>100%</b>

Based on the trip distribution percentages shown in **Table 4**, the weekday AM and PM peak hour project trips were assigned through the study intersections. **Figure 5** and **Figure 6** illustrate the resulting distribution and assignment of weekday AM and PM peak hour project trips through the study intersections and site access locations impacted by 25 or more project trips.

## Planned Transportation Improvements

A review of the City of Puyallup’s 2020-2026 Transportation Improvement Plan showed the following planned transportation improvement projects in the immediate study area. A review of the WSDOT 2022-2025 STIP did not include any planned improvements in the project vicinity.

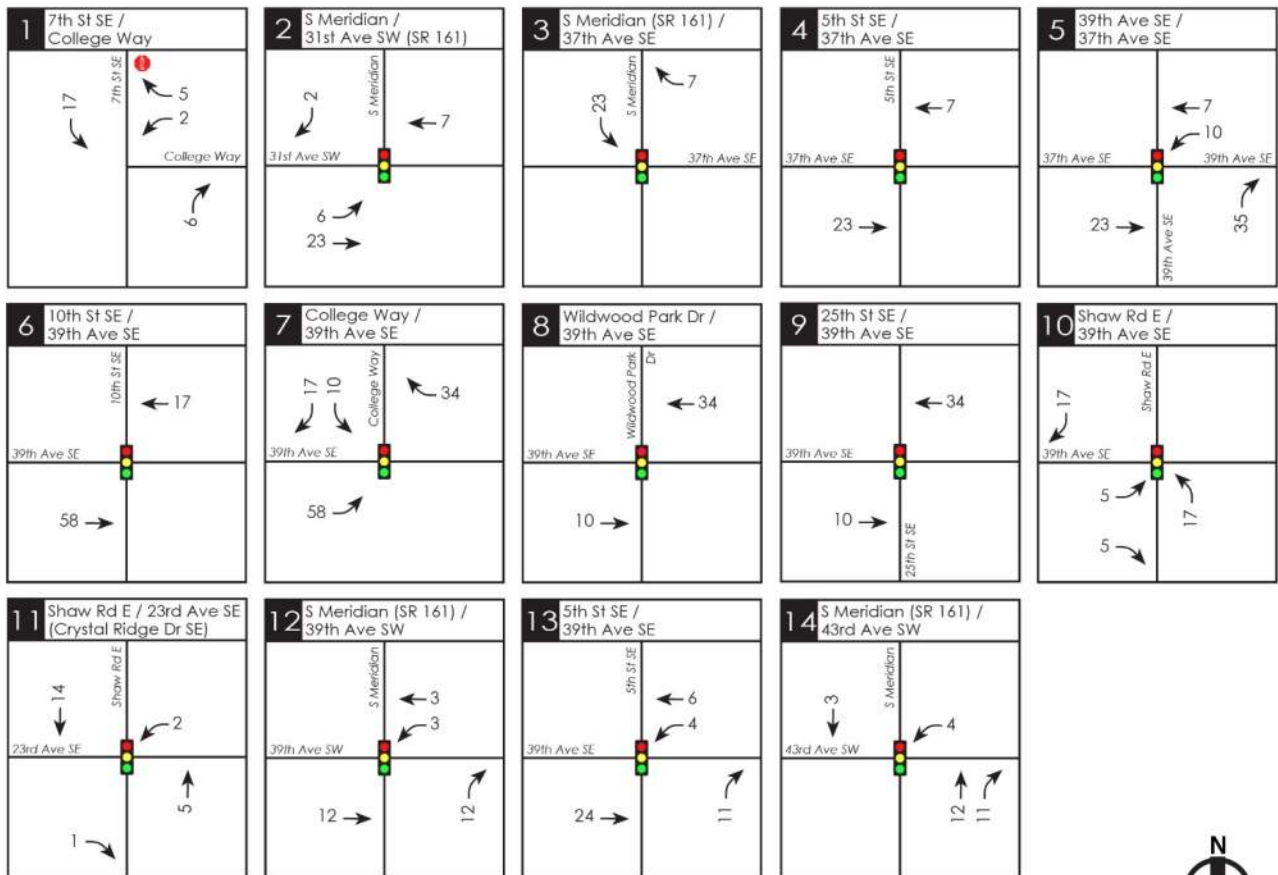
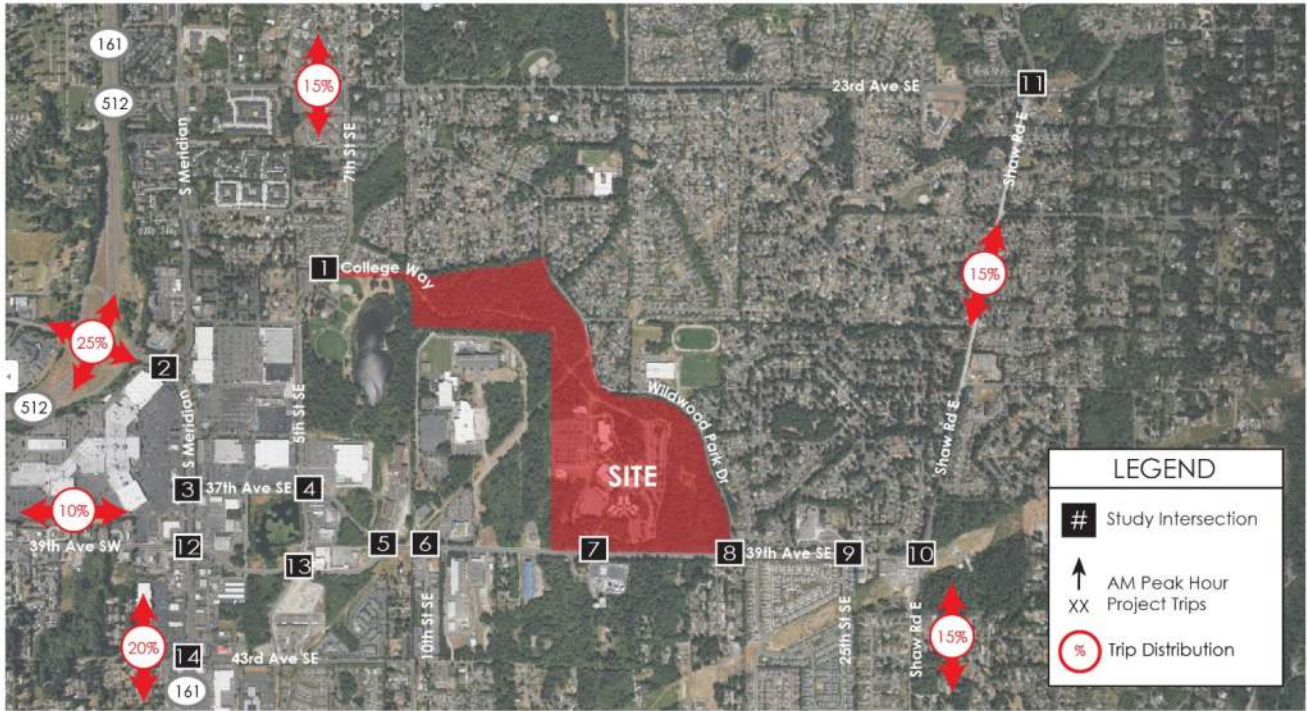
- **Project #6 - 2016-066 Bike Lanes – Wildwood Park Drive; 23<sup>rd</sup> Ave SE to 39<sup>th</sup> Ave SE.** This project would include a shared use path on the west side of Wildwood Park Drive. The possible construction year for this City project is 2023.
- **Project #13 - 2014-070 Corridor Improvements – Shaw Road Widening – Phase 4 (12<sup>th</sup> to 23<sup>rd</sup>).** This project would widen Shaw Road between 12<sup>th</sup> Ave SE and 23<sup>rd</sup> Ave SE to include 4 lanes with curb, gutter, sidewalk, bike lane, and street lighting on both sides. The possible construction year for this City project is 2026.
- **Project #15 - 2016-061 Improvements to 43<sup>rd</sup> Ave SE (between 10<sup>th</sup> St SE and S Meridian).** This project would include a roundabout or signal at 10<sup>th</sup> St SE and curb, gutter, sidewalk, and street lighting on the north half of 43<sup>rd</sup> Ave SE. It would also improve roadway standard to City standard from S Meridian to 5<sup>th</sup> St with improvements to the 43<sup>rd</sup> Ave SE/S Meridian intersection that would include adding a right turn lane. This City project was planned for 2021.
- **Project #23 - Intersection Improvements – Adaptive on 5<sup>th</sup> Street SE.** This project would install adaptive signals along the 5<sup>th</sup> Street SE corridor, including the intersections of 5<sup>th</sup> St SE with 23<sup>rd</sup> Ave, 31<sup>st</sup> Ave, 35<sup>th</sup> Ave, 37<sup>th</sup> Ave, 39<sup>th</sup> Ave and 43<sup>rd</sup> Ave (6 signals). The possible construction year for this City project is 2023.

- **Project #31 - 2016-034 Shaw Road Widening – Phase 2 (Manorwood Dr to 39<sup>th</sup> Ave SE).** This project would widen Shaw Road between Manorwood Dr and 39<sup>th</sup> Ave SE to have 3 lanes with curb, gutter, sidewalk, bike lane, and street lighting on both sides of the street. This would also include signal upgrades and improvements to the intersection of Shaw Rd E/ 39<sup>th</sup> Ave SE.

## Future Traffic Volumes

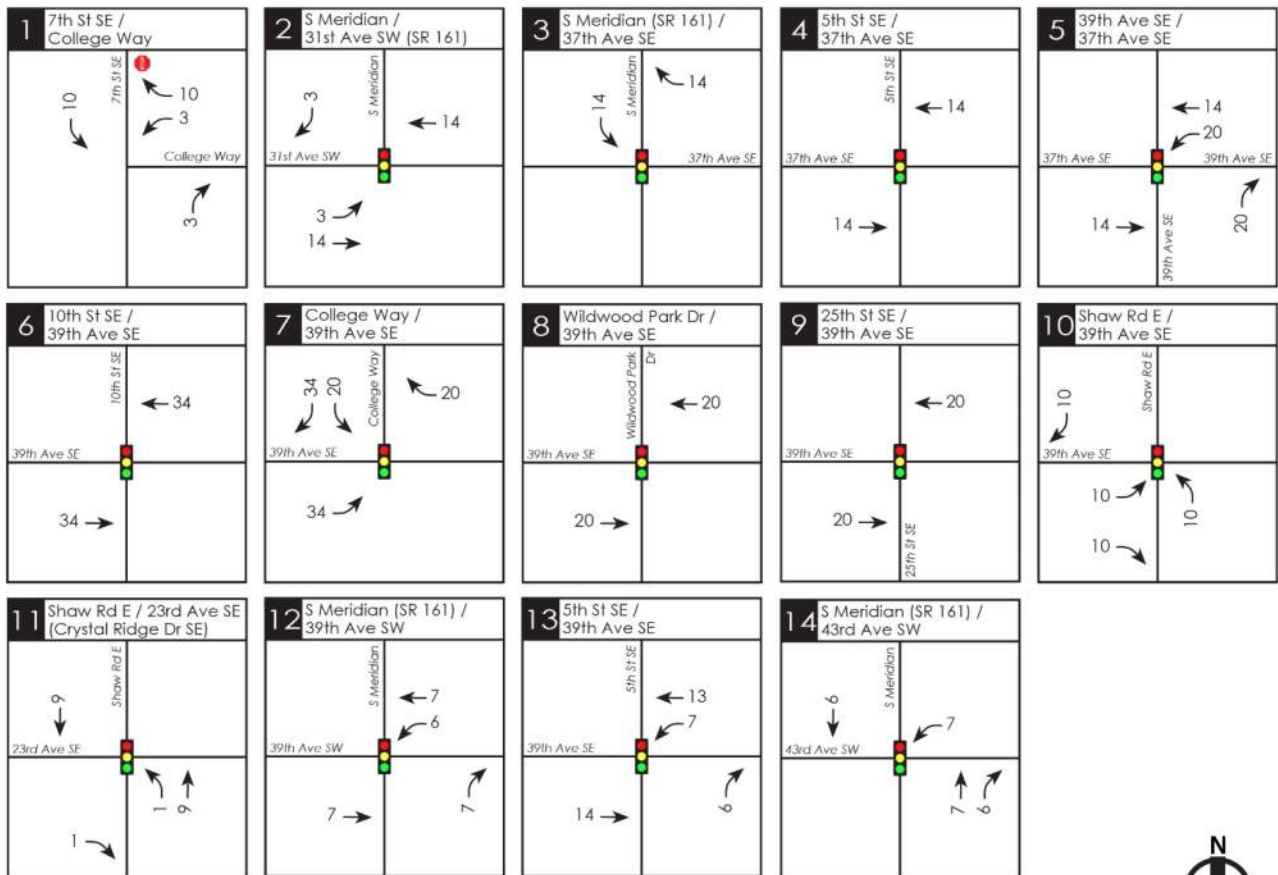
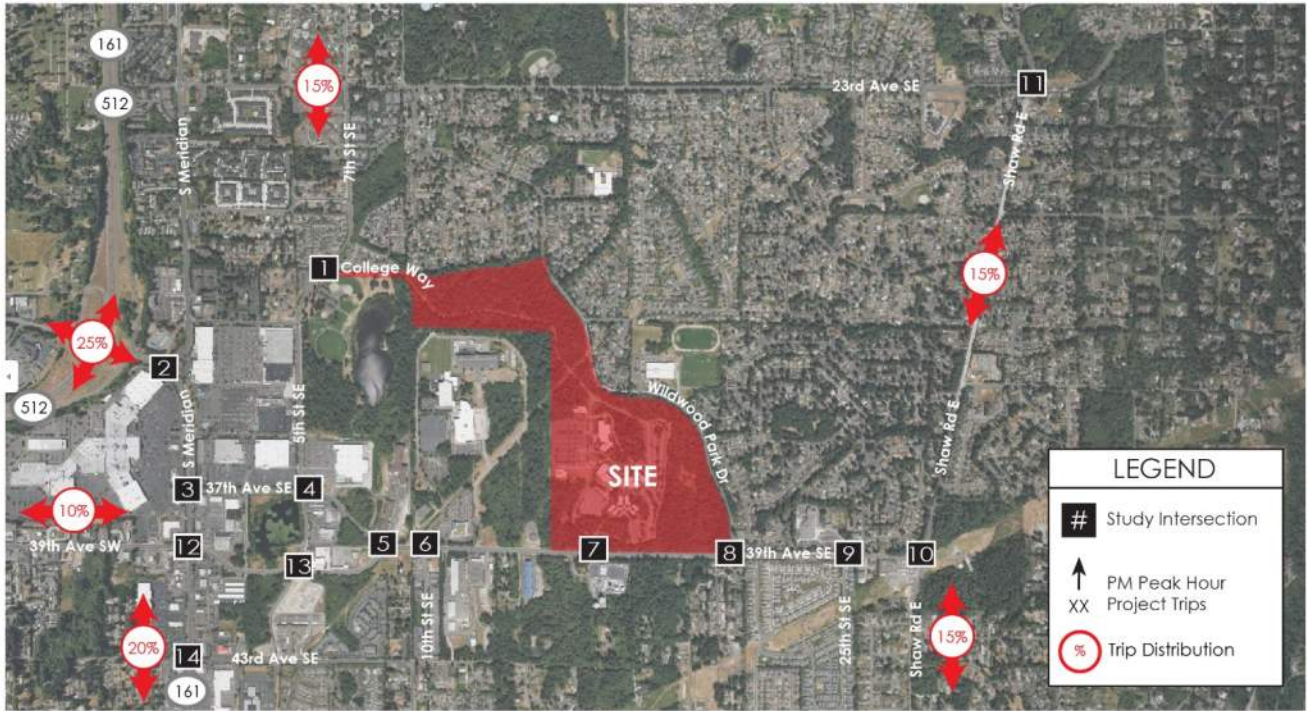
To estimate future year 2032 without-project traffic volumes at the study intersections, a 1.5 percent annual growth rate was applied to existing (2021) peak hour volumes to account for new development in the study area and growth in existing traffic. The use of the 1.5 percent growth rate for forecasting future baseline traffic volumes was confirmed through meetings with WSDOT (Development Services Department and the Regional Traffic Engineer). It should be noted that the 2021 baseline traffic volumes used in the future volume forecast were adjusted to account for full capacity of the existing campus. The future 2032 without-project AM and PM peak hour traffic volumes at the study intersections are shown in **Figure 7** and **Figure 8**.

Adding the trip assignment from the proposed project to the future 2032 without-project traffic volumes results in the 2032 with-project traffic volumes at the study intersections. The future 2032 with-project AM and PM peak hour traffic volumes at the study intersections are shown in **Figure 9** and **Figure 10**.



**Figure 5:** Weekday AM Peak Hour Project Trip Distribution & Assignment





**Figure 6:** Weekday PM Peak Hour Project Trip Distribution & Assignment

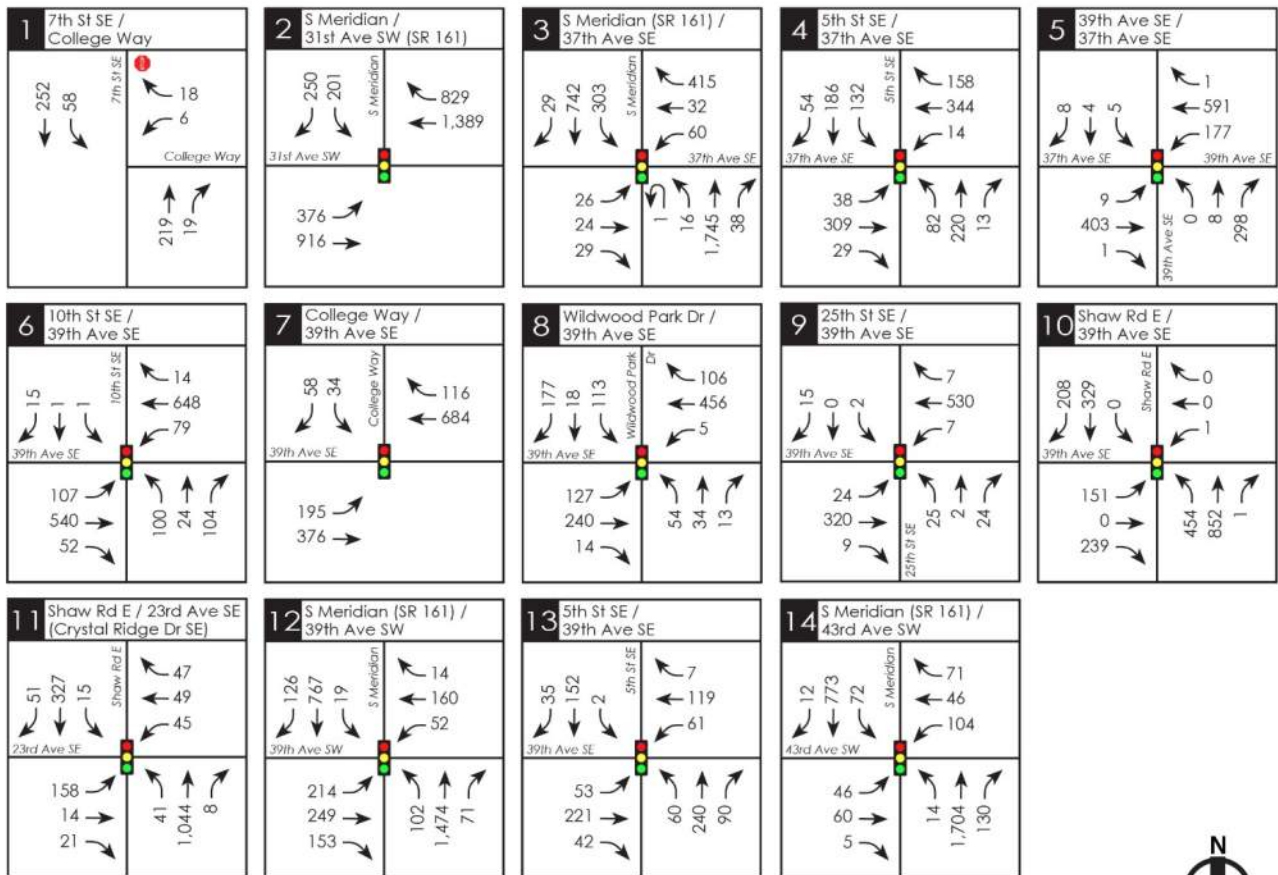


Figure 7: 2032 Without Project Weekday AM Peak Hour Traffic Volumes



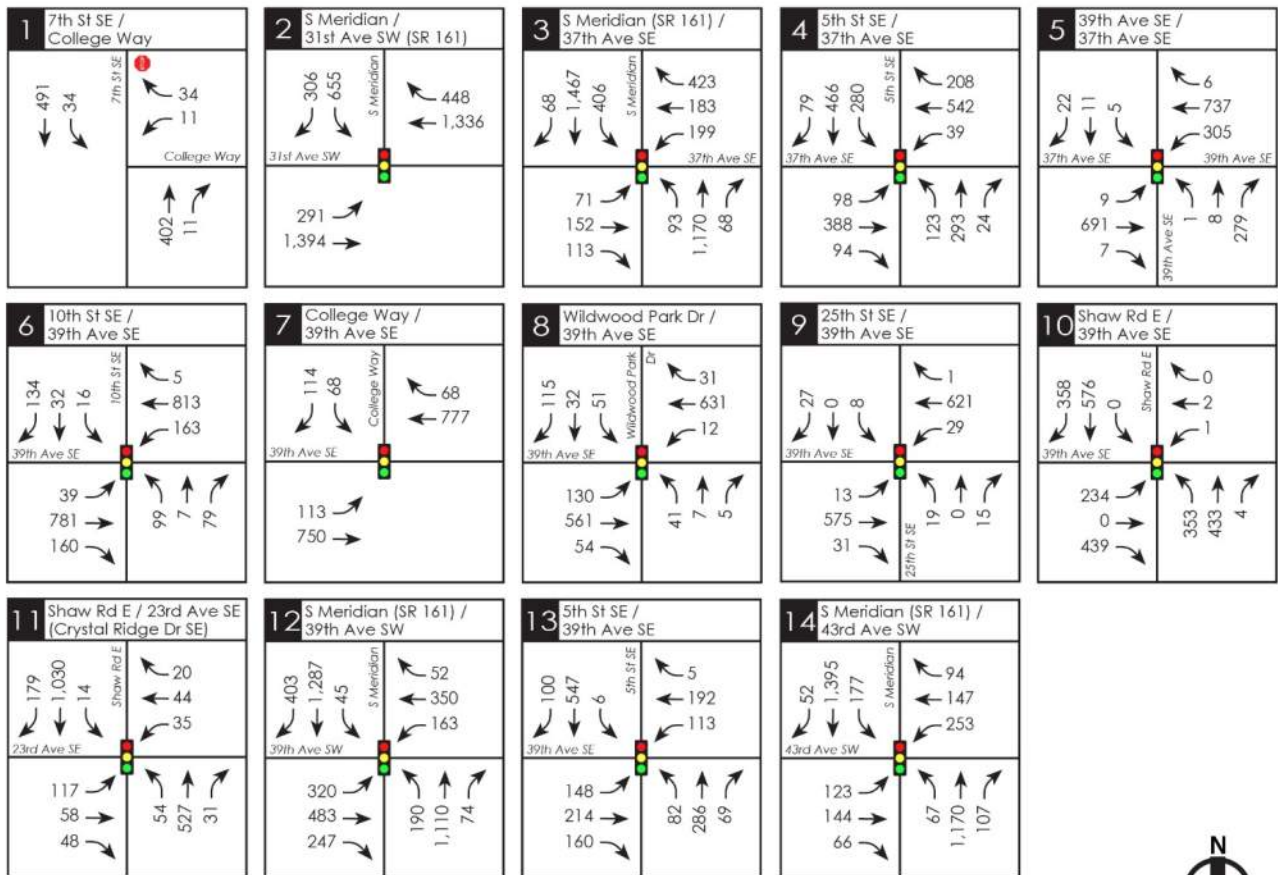


Figure 8: 2032 Without Project Weekday PM Peak Hour Traffic Volumes



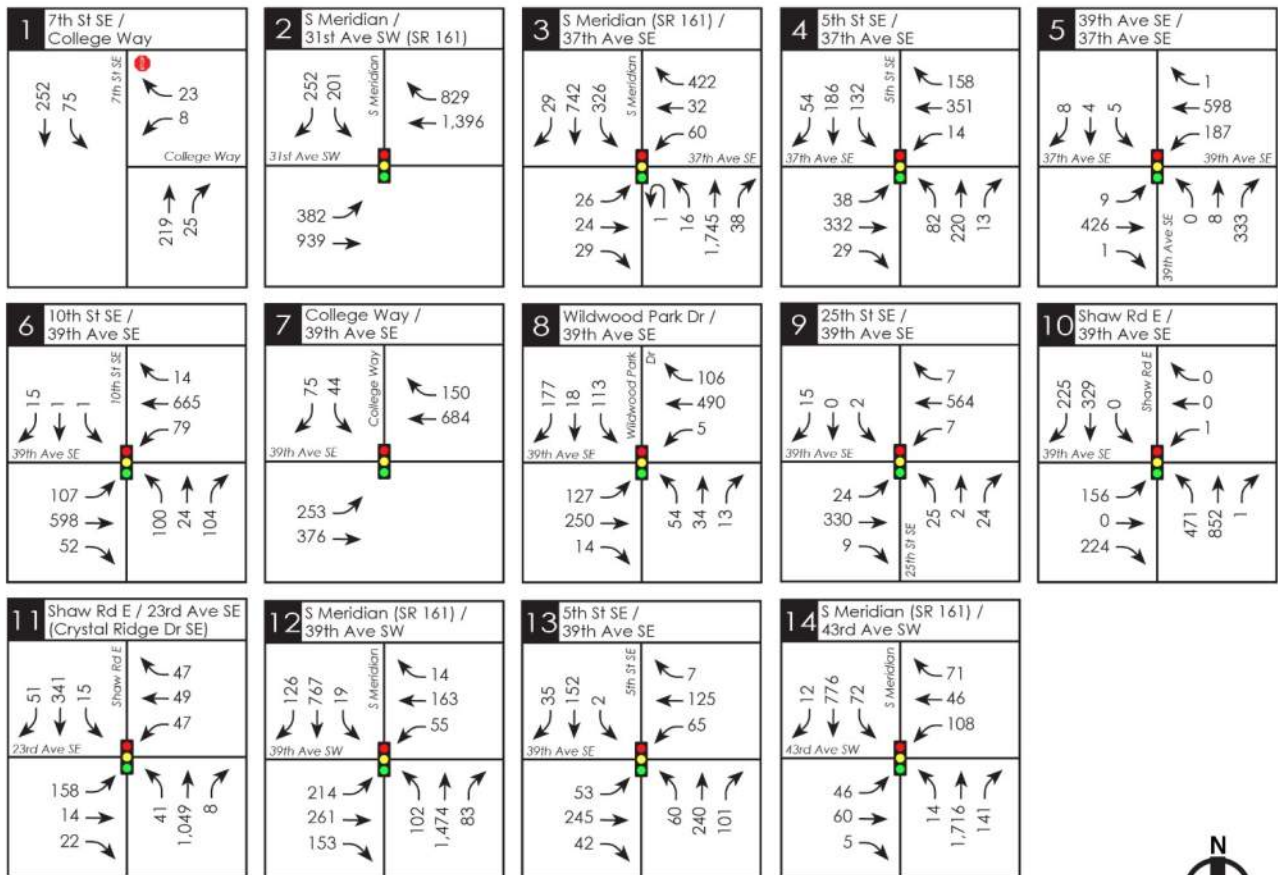


Figure 9: 2032 With Project Weekday AM Peak Hour Traffic Volumes



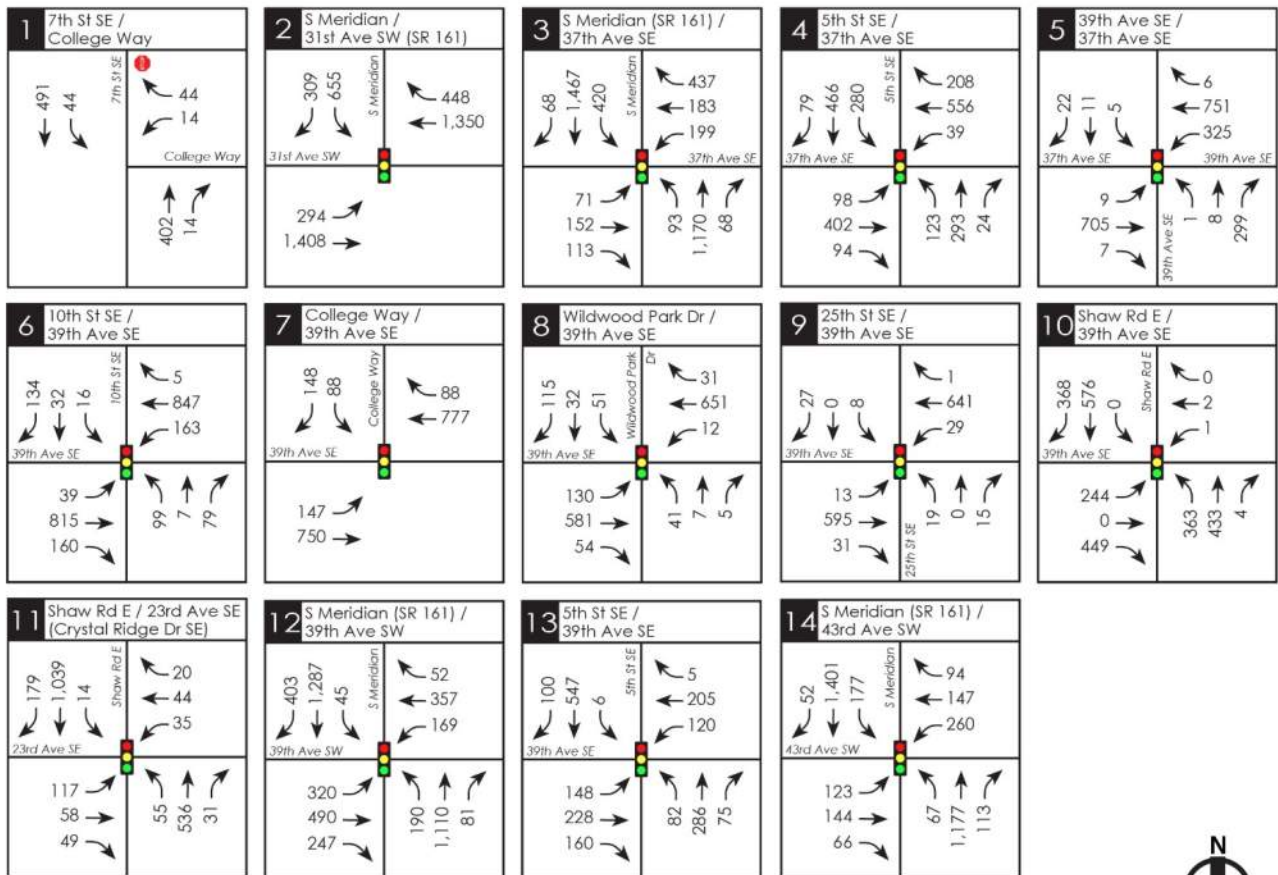


Figure 10: 2032 With Project Weekday PM Peak Hour Traffic Volumes

## Future Intersection Level of Service

A future year weekday AM and PM peak hour LOS analysis was conducted at the study intersections without and with the proposed project. The anticipated buildout year for the project is 2032. The roadway network assumed in the year 2032 LOS analysis was based on existing intersection geometry. Existing signal timing was used in the future 2032 LOS analysis. The 2021 existing, 2032 weekday AM and PM peak hour LOS results at the study intersections without and with the proposed *Pierce College Puyallup Campus* expansion are summarized in **Table 5**.

**Table 5**  
**Year 2032 AM & PM Peak Hour LOS Summary**

Study Intersection	2021 Existing		2032 Without Project		2032 With Project	
	LOS <sup>1</sup>	Delay (sec/veh)	LOS <sup>1</sup>	Delay (sec/veh)	LOS <sup>1</sup>	Delay (sec/veh)
<b>AM Peak Hour</b>						
<u>Stop-Controlled Intersection:</u>						
1. 7 <sup>th</sup> St SE / College Way						
Westbound Shared Left-Right	B	10.1	B	10.4	B	10.6
Southbound Left Turn	A	7.8	A	7.9	A	8.0
<u>Signalized Intersections:</u>						
2. S Meridian / 31 <sup>st</sup> Ave SW (SR 161) <sup>2</sup>	C	22.5	C	25.9	C	26.0
3. S Meridian (SR 161) / 37 <sup>th</sup> Ave SE	B	15.3	B	16.0	B	17.9
4. 5 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	B	17.6	B	18.5	B	18.6
5. 39 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	B	17.8	B	19.3	C	20.4
6. 10 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	15.7	B	16.2	B	16.4
7. College Way / 39 <sup>th</sup> Ave SE	A	9.7	A	9.6	B	10.9
8. Wildwood Park Dr / 39 <sup>th</sup> Ave SE	B	18.8	C	20.1	C	20.5
9. 25 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	13.4	B	14.4	B	14.4
10. Shaw Rd E / 39 <sup>th</sup> Ave SE	B	15.0	C	20.0	C	21.0
11. Shaw Rd E / 23 <sup>rd</sup> Ave SE (Crystal Ridge Dr SE)	C	20.0	C	23.6	C	23.7
12. S Meridian (SR 161) / 39 <sup>th</sup> Ave SE	B	18.5	B	18.7	B	18.9
13. 5 <sup>th</sup> Ave SE / 39 <sup>th</sup> Ave SE	B	17.0	B	17.8	B	18.0
14. S Meridian (SR 161) / 43 <sup>rd</sup> Ave SE	C	22.3	C	26.1	C	26.7

<sup>1</sup>. Based on HCM 6<sup>th</sup> Edition methodologies, unless otherwise noted.

<sup>2</sup>. HCM 2000 LOS results due to non-NEMA phasing.



**Table 5 (continued)**  
**Year 2032 AM & PM Peak Hour LOS Summary**

Study Intersection	2021 Existing		2032 Without Project		2032 With Project	
	LOS <sup>1</sup>	Delay (sec/veh)	LOS <sup>1</sup>	Delay (sec/veh)	LOS <sup>1</sup>	Delay (sec/veh)
<b>PM Peak Hour</b>						
<u>Stop-Controlled Intersection:</u>						
1. 7 <sup>th</sup> St SE / College Way						
Westbound Shared Left-Right	B	11.9	B	12.7	B	13.1
Southbound Left Turn	A	8.2	A	8.4	A	8.5
<u>Signalized Intersections:</u>						
2. S Meridian / 31 <sup>st</sup> Ave SW (SR 161) <sup>2</sup>	C	25.5	C	27.9	C	28.0
3. S Meridian (SR 161) / 37 <sup>th</sup> Ave SE	C	30.2	C	32.2	C	32.5
4. 5 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	C	22.4	C	26.6	C	26.9
5. 39 <sup>th</sup> Ave SE / 37 <sup>th</sup> Ave SE	B	18.1	C	20.4	C	21.5
6. 10 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	17.9	C	20.1	C	20.4
7. College Way / 39 <sup>th</sup> Ave SE	A	9.7	A	9.7	B	10.9
8. Wildwood Park Dr / 39 <sup>th</sup> Ave SE	B	17.9	B	19.2	B	19.5
9. 25 <sup>th</sup> Street SE / 39 <sup>th</sup> Ave SE	B	14.4	B	15.1	B	15.1
10. Shaw Rd E / 39 <sup>th</sup> Ave SE	C	28.2	D	49.2	D	53.4
11. Shaw Rd E / 23 <sup>rd</sup> Ave SE (Crystal Ridge Dr SE)	C	26.0	D	41.1	D	42.3
12. S Meridian (SR 161) / 39 <sup>th</sup> Ave SE	D	38.8	D	48.8	D	49.1
13. 5 <sup>th</sup> Ave SE / 39 <sup>th</sup> Ave SE	C	23.9	C	30.3	C	31.0
14. S Meridian (SR 161) / 43 <sup>rd</sup> Ave SE	C	34.9	D	41.5	D	42.3

1. Based on HCM 6<sup>th</sup> Edition methodologies, unless otherwise noted.  
2. HCM 2000 LOS results due to non-NEMA phasing.

As shown in **Table 5**, all turn movements at the stop-controlled study intersection as well as all of the signalized study intersections are expected to operate at LOS D or better during the weekday AM and PM peak hour in 2032, without or with the proposed *Pierce College Puyallup Campus* expansion project.

Per the City's *2015 Comprehensive Plan*, the vehicular LOS goal is to "Maintain standards that promote growth where appropriate while preserving and maintaining the existing transportation system. Set LOS D as the standard for PM peak hour intersection performance, with the exception of the Meridian, Shaw Road, and 9<sup>th</sup> Street SW corridors, where LOS E operations will be considered acceptable during PM period in recognition of the need to balance driver experience with other considerations, such as cost, right of way, and other modes". As such, all study intersections are anticipated to operate at an acceptable LOS in 2032. The detailed LOS worksheets are included in **Appendix C**.

## Site Access

Vehicular access to/from the site would continue to be provided at the two existing access points: College Way/ 39<sup>th</sup> Ave SE and 7<sup>th</sup> St SE/ College Way. As shown in **Table 5**, weekday AM and PM peak hour LOS analysis at the two site access locations indicated that all turn movements at 7<sup>th</sup> Street SE/College Way as well as the signalized intersection of College Way/39<sup>th</sup> Ave SE are anticipated to operate at LOS B or better during the weekday AM and PM peak hour in 2032 without or with the proposed project.

Per the *Amendment to Concomitant Agreement dated May 30, 1986 Between the City of Puyallup and Beim & James Properties II*, there is a requirement to "assess the need for additional access to the campus during the development of each major addition..." Since both access locations are anticipated to operate at LOS B or better with the proposed expansion, the need for an additional access to the campus would not be justified.

## PROJECT MITIGATION

The following summarizes the measures proposed to mitigate the transportation impacts of the proposed Pierce College Puyallup Campus expansion project:

- **Traffic Impact Fees.** To mitigate long-term transportation impacts, the City administers a Transportation Impact Fee (TIF) to new developments to improve the transportation system to accommodate the higher travel demand added by new developments. The City of Puyallup's currently adopted transportation impact fee is \$4,500 per PM peak hour trip. The preliminary estimated transportation impact fee for the proposed project totals **\$602,550** ( $\$4,500 \times 133.9$  net new PM peak hour trips). The actual impact fees will be calculated and assessed at the time of building permit issuance.



# Appendix A

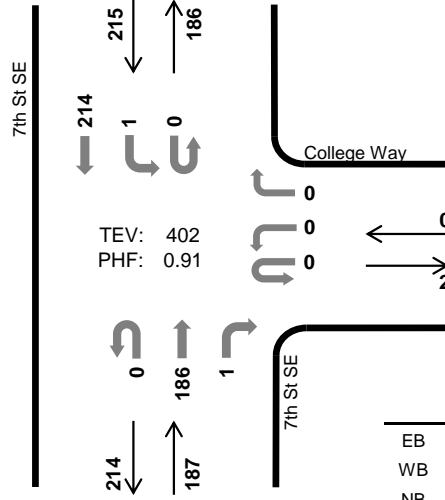
## Traffic Count Data

### 7th St SE College Way

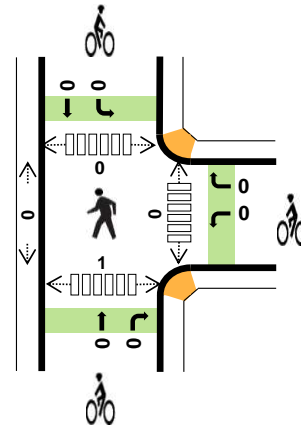


Peak Hour

Date: 12/15/2021  
Count Period: 7:00 AM to 9:00 AM  
Peak Hour: 7:15 AM to 8:15 AM



TEV: 402  
PHF: 0.91



	HV %:	PHF
EB	-	-
WB	-	-
NB	1.6%	0.94
SB	3.3%	0.90
TOTAL	2.5%	0.91

#### Two-Hour Count Summaries

Interval Start	0				College Way				7th St SE				7th St SE				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	43	0	0	0	43	0	86	0	
<b>7:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>0</b>	<b>110</b>	<b>0</b>	
7:30 AM	0	0	0	0	0	0	0	0	0	0	49	0	0	0	50	0	99	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	45	0	0	0	53	0	98	393	
8:00 AM	0	0	0	0	0	0	0	0	0	0	42	1	0	1	51	0	95	402	
8:15 AM	0	0	0	0	0	0	0	2	0	0	53	0	0	0	45	0	100	392	
8:30 AM	0	0	0	0	0	1	0	1	0	0	43	0	0	1	46	0	92	385	
8:45 AM	0	0	0	0	0	1	0	1	0	0	45	0	0	0	64	0	111	398	
Count Total	0	0	0	0	0	2	0	4	0	0	370	1	0	2	412	0	791	0	
Peak Hour	All	0	0	0	0	0	0	0	0	0	0	186	1	0	1	214	0	402	0
	HV	0	0	0	0	0	0	0	0	0	0	3	0	0	0	7	0	10	0
	HV%	-	-	-	-	-	-	-	-	-	-	2%	0%	-	0%	3%	-	2%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0
<b>7:15 AM</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
7:30 AM	0	0	1	5	6	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	1	2	3	0	0	0	0	0	0	0	0	1	1
8:15 AM	0	0	2	0	2	0	0	0	0	0	3	1	0	0	4
8:30 AM	0	0	2	2	4	0	0	0	0	0	2	1	0	0	3
8:45 AM	0	0	2	3	5	0	0	0	0	0	0	1	0	0	1
Count Total	0	0	11	13	24	0	0	0	0	0	5	3	0	1	9
Peak Hr	0	0	3	7	10	0	0	0	0	0	0	0	0	1	1

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	0				College Way				7th St SE				7th St SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
<b>7:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	6	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	10
8:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	11
8:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	9
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5	14
Count Total	0	0	0	0	0	0	0	0	0	0	11	0	0	0	13	0	24	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	3	0	0	0	7	0	10	0

Two-Hour Count Summaries - Bikes														
Interval Start	0			College Way			7th St SE			7th St SE			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>7:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

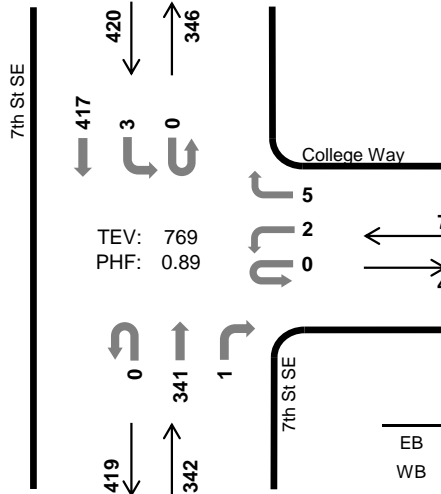


### 7th St SE College Way

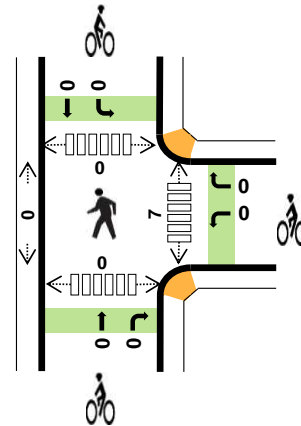


Peak Hour

Date: 12/15/2021  
 Count Period: 4:00 PM to 6:00 PM  
 Peak Hour: 4:00 PM to 5:00 PM



TEV: 769  
 PHF: 0.89



	HV %:	PHF
EB	-	-
WB	0.0%	0.58
NB	1.5%	0.93
SB	1.7%	0.85
TOTAL	1.6%	0.89

#### Two-Hour Count Summaries

Interval Start	0			College Way			7th St SE			7th St SE			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT					
4:00 PM	0	0	0	0	0	1	0	1	0	0	82	1	0	0	123	0	
4:15 PM	0	0	0	0	0	0	0	1	0	0	84	0	0	1	83	0	
4:30 PM	0	0	0	0	0	1	0	2	0	0	92	0	0	1	121	0	
4:45 PM	0	0	0	0	0	0	0	1	0	0	83	0	0	1	90	0	
5:00 PM	0	0	0	0	0	0	0	0	0	0	85	0	0	1	87	0	
5:15 PM	0	0	0	0	0	1	0	0	0	0	82	0	0	2	80	0	
5:30 PM	0	0	0	0	0	1	0	0	0	0	84	1	0	1	74	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	68	0	0	0	98	0	
Count Total	0	0	0	0	0	4	0	5	0	0	660	2	0	7	756	0	
Peak Hour	All	0	0	0	0	0	2	0	5	0	0	341	1	0	3	417	0
	HV	0	0	0	0	0	0	0	0	0	0	4	1	0	0	7	0
	HV%	-	-	-	-	-	0%	-	0%	-	-	1%	100%	-	0%	2%	-

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

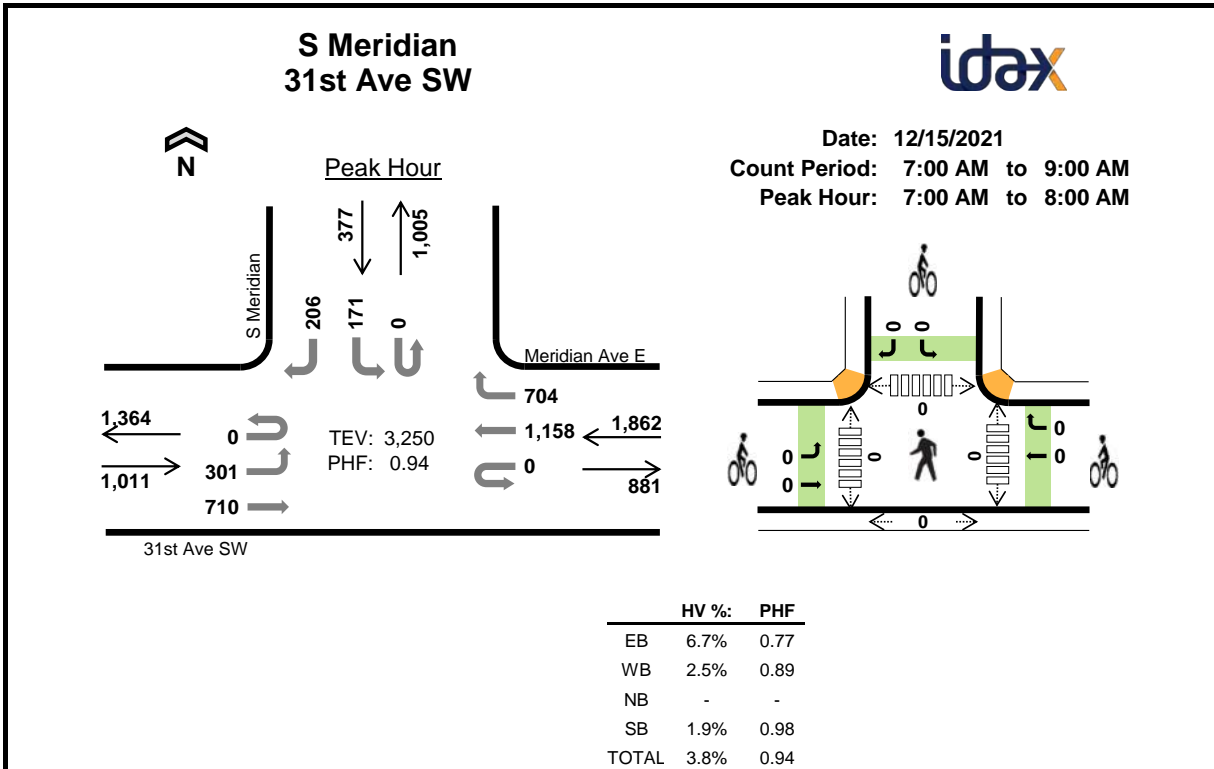
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	1	4	5	0	0	0	0	0	1	0	0	0	1
4:15 PM	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	3	3	0	0	0	0	0	5	0	0	0	5
4:45 PM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
5:00 PM	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	6	9	15	0	0	0	0	0	7	0	0	0	7
Peak Hr	0	0	5	7	12	0	0	0	0	0	7	0	0	0	7

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	0				College Way				7th St SE				7th St SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	5	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	12
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	9
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Count Total	0	0	0	0	0	0	0	0	0	0	5	1	0	0	9	0	15	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	4	1	0	0	7	0	12	0

Two-Hour Count Summaries - Bikes																		
Interval Start	0			College Way			7th St SE			7th St SE			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	31st Ave SW				Meridian Ave E				0				S Meridian				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Westbound		Eastbound		Northbound		Southbound		Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	75	151	0	0	0	271	145	0	0	0	0	0	33	0	60	735	0	
7:15 AM	0	75	164	0	0	0	315	210	0	0	0	0	0	40	0	56	860	0	
7:30 AM	0	70	148	0	0	0	311	205	0	0	0	0	0	49	0	43	826	0	
7:45 AM	0	81	247	0	0	0	261	144	0	0	0	0	0	49	0	47	829	3,250	
8:00 AM	0	54	159	0	0	0	287	136	0	0	0	0	0	49	0	45	730	3,245	
8:15 AM	0	37	231	0	0	0	318	85	0	0	0	0	0	62	0	34	767	3,152	
8:30 AM	0	47	207	0	0	0	295	102	0	0	0	0	0	82	0	40	773	3,099	
8:45 AM	0	38	224	0	0	0	283	96	0	0	0	0	0	52	0	36	729	2,999	
Count Total	0	477	1,531	0	0	0	2,341	1,123	0	0	0	0	0	416	0	361	6,249	0	
Peak Hour	All	0	301	710	0	0	0	1,158	704	0	0	0	0	0	171	0	206	3,250	0
	HV	0	6	62	0	0	0	35	12	0	0	0	0	0	3	0	4	122	0
	HV%	-	2%	9%	-	-	-	3%	2%	-	-	-	-	-	2%	-	2%	4%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	14	9	0	0	23	0	0	0	0	0	0	0	0	0	0
7:15 AM	16	16	0	4	36	0	0	0	0	0	0	0	0	0	0
7:30 AM	19	11	0	2	32	0	0	0	0	0	0	0	0	0	0
7:45 AM	19	11	0	1	31	0	0	0	0	0	0	0	0	0	0
8:00 AM	16	18	0	1	35	0	0	0	0	0	0	0	0	0	0
8:15 AM	13	15	0	5	33	0	0	0	0	0	0	0	0	0	0
8:30 AM	14	26	0	4	44	0	0	0	0	0	0	0	0	0	0
8:45 AM	15	21	0	2	38	0	0	0	0	0	0	0	0	0	0
Count Total	126	127	0	19	272	0	0	0	0	0	0	0	0	0	0
Peak Hr	68	47	0	7	122	0	0	0	0	0	0	0	0	0	0

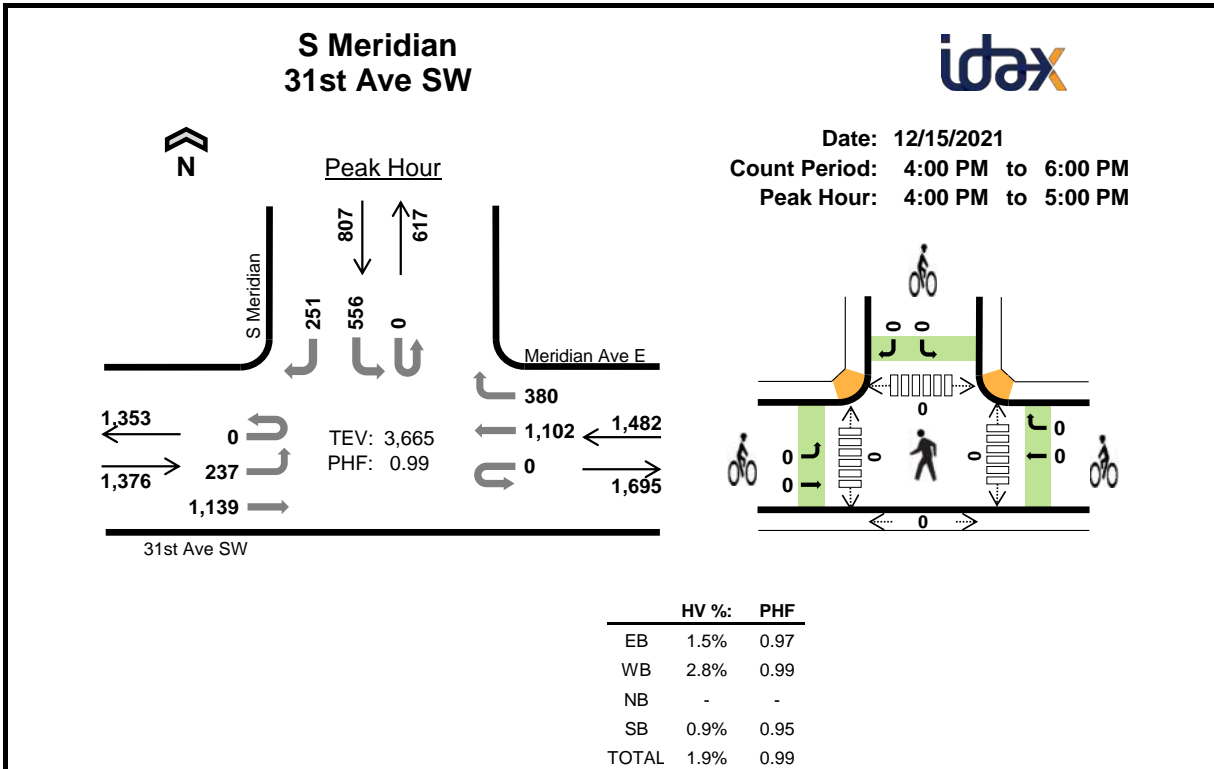


Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	31st Ave SW				Meridian Ave E				0				S Meridian					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	14	0	0	0	7	2	0	0	0	0	0	0	0	0	23	0
7:15 AM	0	3	13	0	0	0	11	5	0	0	0	0	0	2	0	2	36	0
7:30 AM	0	2	17	0	0	0	9	2	0	0	0	0	0	1	0	1	32	0
7:45 AM	0	1	18	0	0	0	8	3	0	0	0	0	0	0	0	1	31	122
8:00 AM	0	1	15	0	0	0	15	3	0	0	0	0	0	1	0	0	35	134
8:15 AM	0	0	13	0	0	0	14	1	0	0	0	0	0	3	0	2	33	131
8:30 AM	0	3	11	0	0	0	24	2	0	0	0	0	0	1	0	3	44	143
8:45 AM	0	0	15	0	0	0	20	1	0	0	0	0	0	2	0	0	38	150
Count Total	0	10	116	0	0	0	108	19	0	0	0	0	0	10	0	9	272	0
Peak Hour	0	6	62	0	0	0	35	12	0	0	0	0	0	3	0	4	122	0

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour			
Interval Start	31st Ave SW			Meridian Ave E			0			S Meridian								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	31st Ave SW				Meridian Ave E				0				S Meridian				15-min Total	Rolling One Hour
	Eastbound		Westbound		Westbound		Eastbound		Northbound		Southbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	64	270	0	0	0	280	95	0	0	0	0	0	134	0	78	921	0
4:15 PM	0	67	286	0	0	0	281	93	0	0	0	0	0	132	0	53	912	0
4:30 PM	0	61	288	0	0	0	268	104	0	0	0	0	0	140	0	63	924	0
4:45 PM	0	45	295	0	0	0	273	88	0	0	0	0	0	150	0	57	908	3,665
5:00 PM	0	53	272	0	0	0	284	73	0	0	0	0	0	112	0	56	850	3,594
5:15 PM	0	58	285	0	0	0	285	85	0	0	0	0	0	119	0	47	879	3,561
5:30 PM	0	50	246	0	0	0	258	93	0	0	0	0	0	115	0	54	816	3,453
5:45 PM	0	63	273	0	0	0	247	76	0	0	0	0	0	110	0	50	819	3,364
Count Total	0	461	2,215	0	0	0	2,176	707	0	0	0	0	0	1,012	0	458	7,029	0
Peak Hour	All	0	237	1,139	0	0	1,102	380	0	0	0	0	0	556	0	251	3,665	0
	HV	0	4	17	0	0	0	30	11	0	0	0	0	3	0	4	69	0
	HV%	-	2%	1%	-	-	-	3%	3%	-	-	-	-	-	1%	-	2%	2%

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	9	0	1	15	0	0	0	0	0	0	0	0	0	0
4:15 PM	5	9	0	2	16	0	0	0	0	0	0	0	0	0	0
4:30 PM	9	11	0	1	21	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	12	0	3	17	0	0	0	0	0	0	0	0	0	0
5:00 PM	5	12	0	0	17	0	0	0	0	0	0	0	0	0	0
5:15 PM	6	12	0	1	19	0	0	0	0	0	0	0	0	0	0
5:30 PM	6	12	0	1	19	0	0	0	0	0	0	0	0	0	0
5:45 PM	4	4	0	1	9	0	0	0	0	0	0	0	0	0	0
Count Total	42	81	0	10	133	0	0	0	0	0	0	0	0	0	0
Peak Hr	21	41	0	7	69	0	0	0	0	0	0	0	0	0	0

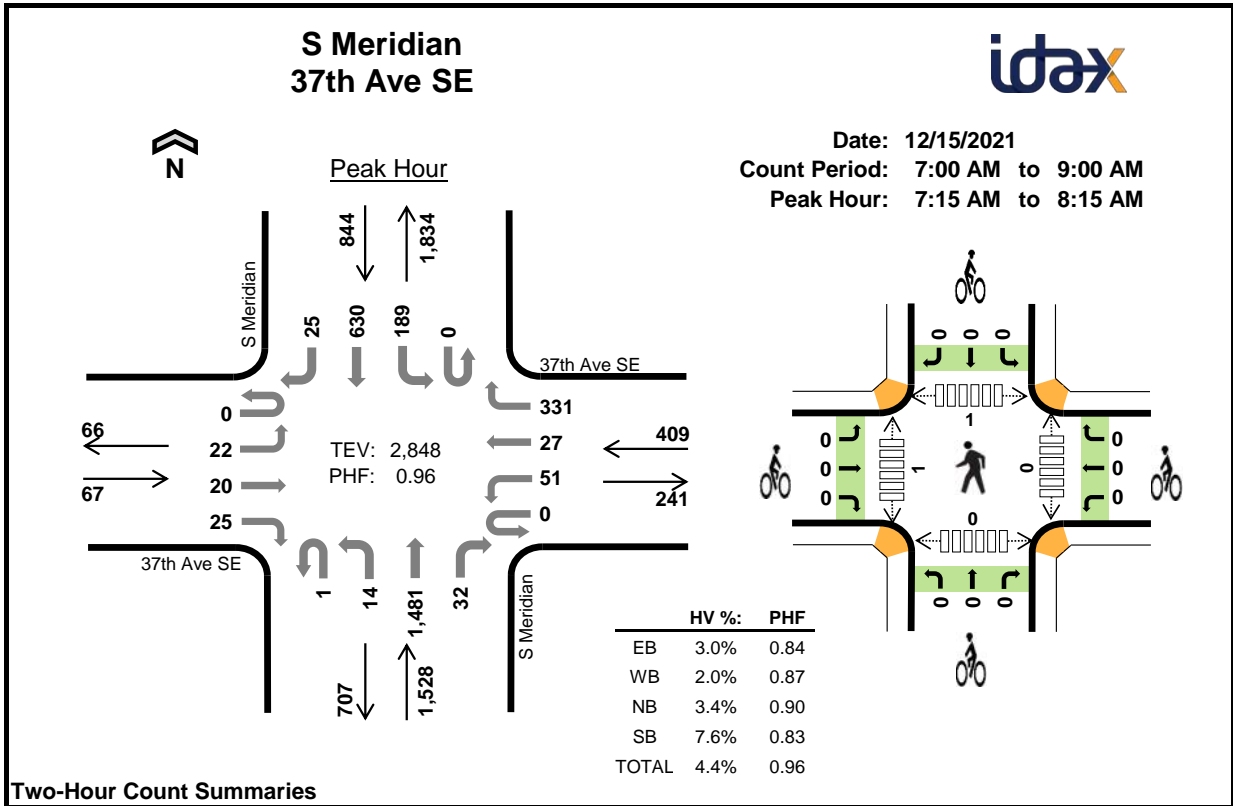
Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	31st Ave SW				Meridian Ave E				0				S Meridian					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	4	0	0	0	7	2	0	0	0	0	0	0	0	1	15	0
4:15 PM	0	2	3	0	0	0	9	0	0	0	0	0	0	0	0	2	16	0
4:30 PM	0	1	8	0	0	0	5	6	0	0	0	0	0	1	0	0	21	0
4:45 PM	0	0	2	0	0	0	9	3	0	0	0	0	0	2	0	1	17	69
5:00 PM	0	0	5	0	0	0	10	2	0	0	0	0	0	0	0	0	17	71
5:15 PM	0	0	6	0	0	0	12	0	0	0	0	0	0	0	0	1	19	74
5:30 PM	0	1	5	0	0	0	11	1	0	0	0	0	0	1	0	0	19	72
5:45 PM	0	0	4	0	0	0	3	1	0	0	0	0	0	0	0	1	9	64
Count Total	0	5	37	0	0	0	66	15	0	0	0	0	0	4	0	6	133	0
Peak Hour	0	4	17	0	0	0	30	11	0	0	0	0	0	3	0	4	69	0

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour			
Interval Start	31st Ave SW			Meridian Ave E			0			S Meridian								
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.





**Two-Hour Count Summaries**

Interval Start	37th Ave SE Eastbound				37th Ave SE Westbound				S Meridian Northbound				S Meridian Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	2	4	1	0	6	3	78	0	3	376	9	0	57	126	4	669	0	
7:15 AM	0	9	2	9	0	11	5	92	0	2	413	8	0	42	146	2	741	0	
7:30 AM	0	6	8	3	0	11	9	97	0	4	400	9	0	32	158	6	743	0	
7:45 AM	0	6	4	3	0	18	11	74	0	1	306	8	0	72	176	7	686	2,839	
8:00 AM	0	1	6	10	0	11	2	68	1	7	362	7	0	43	150	10	678	2,848	
8:15 AM	0	10	14	8	0	15	15	79	1	6	301	9	0	65	186	6	715	2,822	
8:30 AM	0	5	9	5	0	9	10	74	0	11	339	10	0	54	187	11	724	2,803	
8:45 AM	0	7	8	7	0	20	17	59	0	2	311	19	0	51	171	14	686	2,803	
Count Total	0	46	55	46	0	101	72	621	2	36	2,808	79	0	416	1,300	60	5,642	0	
Peak Hour	All	0	22	20	25	0	51	27	331	1	14	1,481	32	0	189	630	25	2,848	0
	HV	0	1	0	1	0	3	0	5	0	0	51	1	0	7	55	2	126	0
	HV%	-	5%	0%	4%	-	6%	0%	2%	0%	0%	3%	3%	-	4%	9%	8%	4%	0

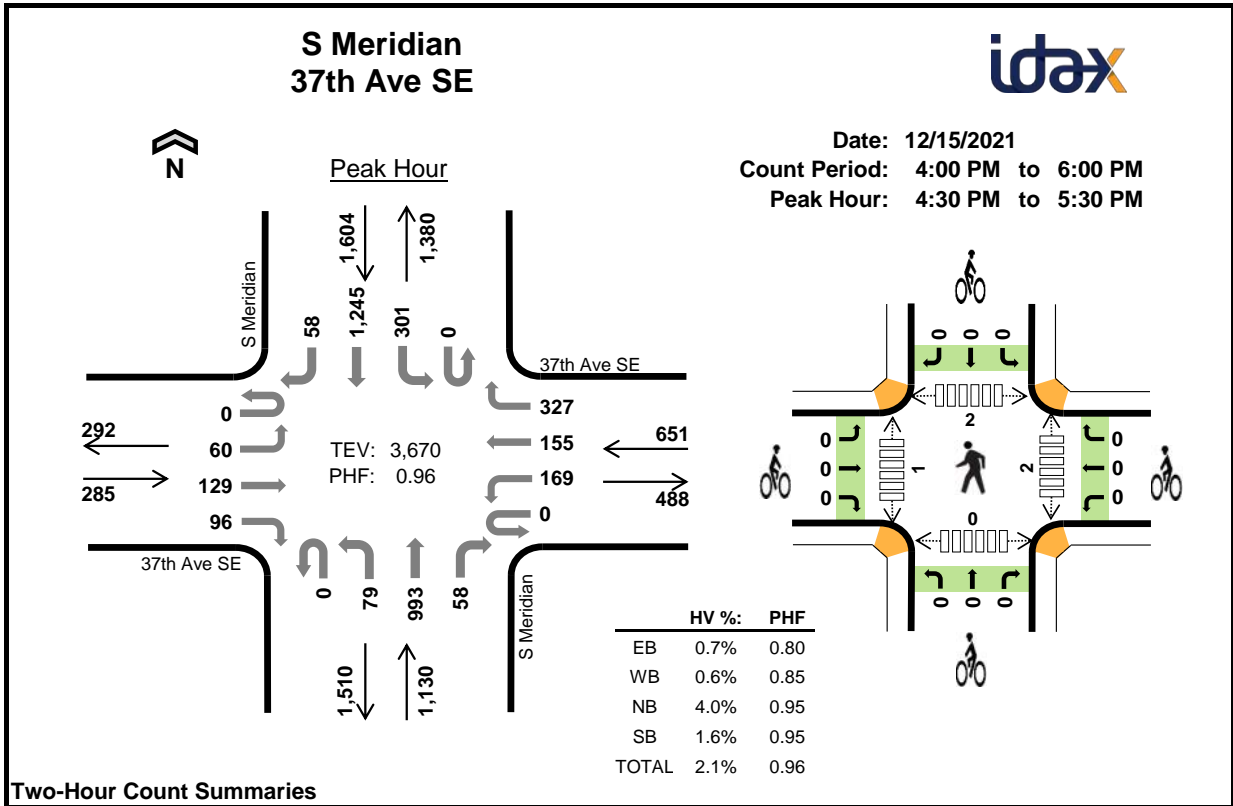
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	2	8	9	19	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	3	14	11	28	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	2	10	18	30	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	2	8	20	31	0	0	0	0	0	0	1	1	0	2
8:00 AM	1	1	20	15	37	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	4	14	15	33	0	0	0	0	0	0	1	1	0	2
8:30 AM	0	3	22	10	35	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	2	20	16	39	0	0	0	0	0	1	0	0	0	1
Count Total	3	19	116	114	252	0	0	0	0	0	1	2	2	0	5
Peak Hour	2	8	52	64	126	0	0	0	0	0	0	1	1	0	2

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	37th Ave SE				37th Ave SE				S Meridian				S Meridian				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	2	0	0	7	1	0	3	5	1	19	0
7:15 AM	0	0	0	0	0	0	0	3	0	0	14	0	0	0	11	0	28	0
7:30 AM	0	0	0	0	0	0	0	2	0	0	10	0	0	3	14	1	30	0
7:45 AM	0	1	0	0	0	2	0	0	0	0	8	0	0	2	17	1	31	108
8:00 AM	0	0	0	1	0	1	0	0	0	0	19	1	0	2	13	0	37	126
8:15 AM	0	0	0	0	0	1	0	3	0	0	14	0	0	3	12	0	33	131
8:30 AM	0	0	0	0	0	0	1	2	0	0	22	0	0	2	8	0	35	136
8:45 AM	0	1	0	0	0	0	1	1	0	0	20	0	0	5	10	1	39	144
Count Total	0	2	0	1	0	4	2	13	0	0	114	2	0	20	90	4	252	0
Peak Hour	0	1	0	1	0	3	0	5	0	0	51	1	0	7	55	2	126	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	37th Ave SE			37th Ave SE			S Meridian			S Meridian			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	37th Ave SE				37th Ave SE				S Meridian				S Meridian				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	13	17	19	0	43	34	69	0	23	259	16	0	72	297	17	879	0	
4:15 PM	0	19	36	23	0	46	32	73	0	24	241	22	0	48	283	15	862	0	
<b>4:30 PM</b>	<b>0</b>	<b>25</b>	<b>42</b>	<b>22</b>	<b>0</b>	<b>42</b>	<b>45</b>	<b>104</b>	<b>0</b>	<b>20</b>	<b>229</b>	<b>17</b>	<b>0</b>	<b>87</b>	<b>304</b>	<b>14</b>	<b>951</b>	<b>0</b>	
4:45 PM	0	13	29	31	0	40	37	75	0	18	250	18	0	76	329	18	934	3,626	
5:00 PM	0	11	36	18	0	49	38	76	0	24	266	6	0	63	309	12	908	3,655	
5:15 PM	0	11	22	25	0	38	35	72	0	17	248	17	0	75	303	14	877	3,670	
5:30 PM	0	11	30	28	0	37	27	58	0	19	249	14	0	62	275	14	824	3,543	
5:45 PM	0	9	38	23	0	34	33	59	0	11	215	21	0	61	308	15	827	3,436	
Count Total	0	112	250	189	0	329	281	586	0	156	1,957	131	0	544	2,408	119	7,062	0	
Peak Hour	All	0	60	129	96	0	169	155	327	0	79	993	58	0	301	1,245	58	3,670	0
	HV	0	2	0	0	0	1	0	3	0	0	43	2	0	2	23	0	76	0
	HV%	-	3%	0%	0%	-	1%	0%	1%	-	0%	4%	3%	-	1%	2%	0%	2%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	2	7	6	16	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	11	3	14	0	0	0	0	0	0	0	0	0	0
<b>4:30 PM</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>7</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
4:45 PM	1	0	15	5	21	0	0	0	0	0	0	1	1	0	2
5:00 PM	0	1	11	8	20	0	0	0	0	0	2	0	1	0	3
5:15 PM	1	1	12	5	19	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	10	5	15	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	1	2	4	8	0	0	0	0	0	0	0	0	0	0
Count Total	4	7	75	43	129	0	0	0	0	0	2	1	2	0	5
Peak Hour	2	4	45	25	76	0	0	0	0	0	2	1	2	0	5



<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	37th Ave SE				37th Ave SE				S Meridian				S Meridian				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	1	1	0	0	7	0	0	1	5	0	16	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	11	0	0	0	3	0	14	0
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>16</b>	<b>0</b>
4:45 PM	0	1	0	0	0	0	0	0	0	0	14	1	0	0	5	0	21	67
5:00 PM	0	0	0	0	0	1	0	0	0	0	11	0	0	0	8	0	20	71
5:15 PM	0	1	0	0	0	0	0	1	0	0	12	0	0	0	5	0	19	76
5:30 PM	0	0	0	0	0	0	0	0	0	0	10	0	0	2	3	0	15	75
5:45 PM	0	1	0	0	0	1	0	0	0	0	2	0	0	0	4	0	8	62
Count Total	0	3	1	0	0	2	1	4	0	0	73	2	0	5	38	0	129	0
Peak Hour	0	2	0	0	0	1	0	3	0	0	43	2	0	2	23	0	76	0

<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	37th Ave SE			37th Ave SE			S Meridian			S Meridian			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

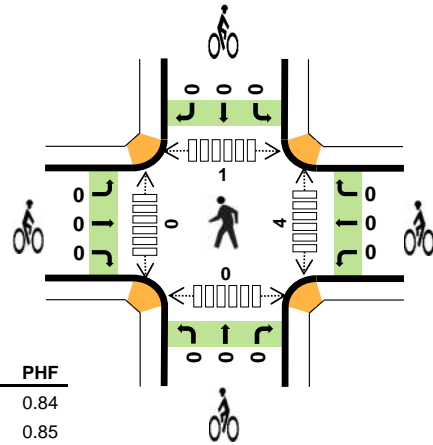
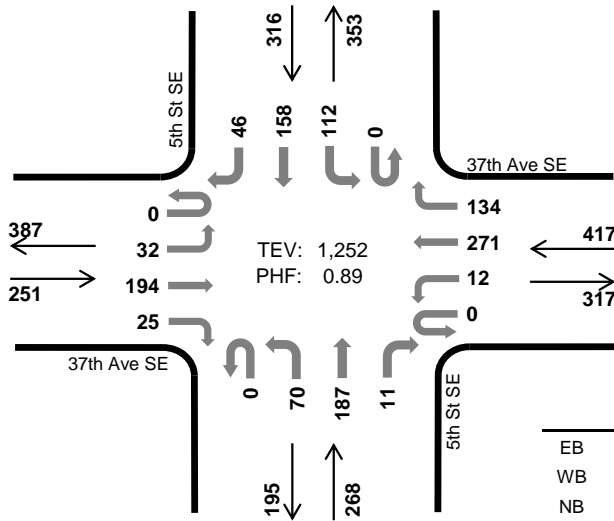


### 5th St SE 37th Ave SE



Peak Hour

Date: 12/15/2021  
Count Period: 7:00 AM to 9:00 AM  
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	4.4%	0.84
WB	3.1%	0.85
NB	2.2%	0.84
SB	3.8%	0.75
TOTAL	3.4%	0.89

#### Two-Hour Count Summaries

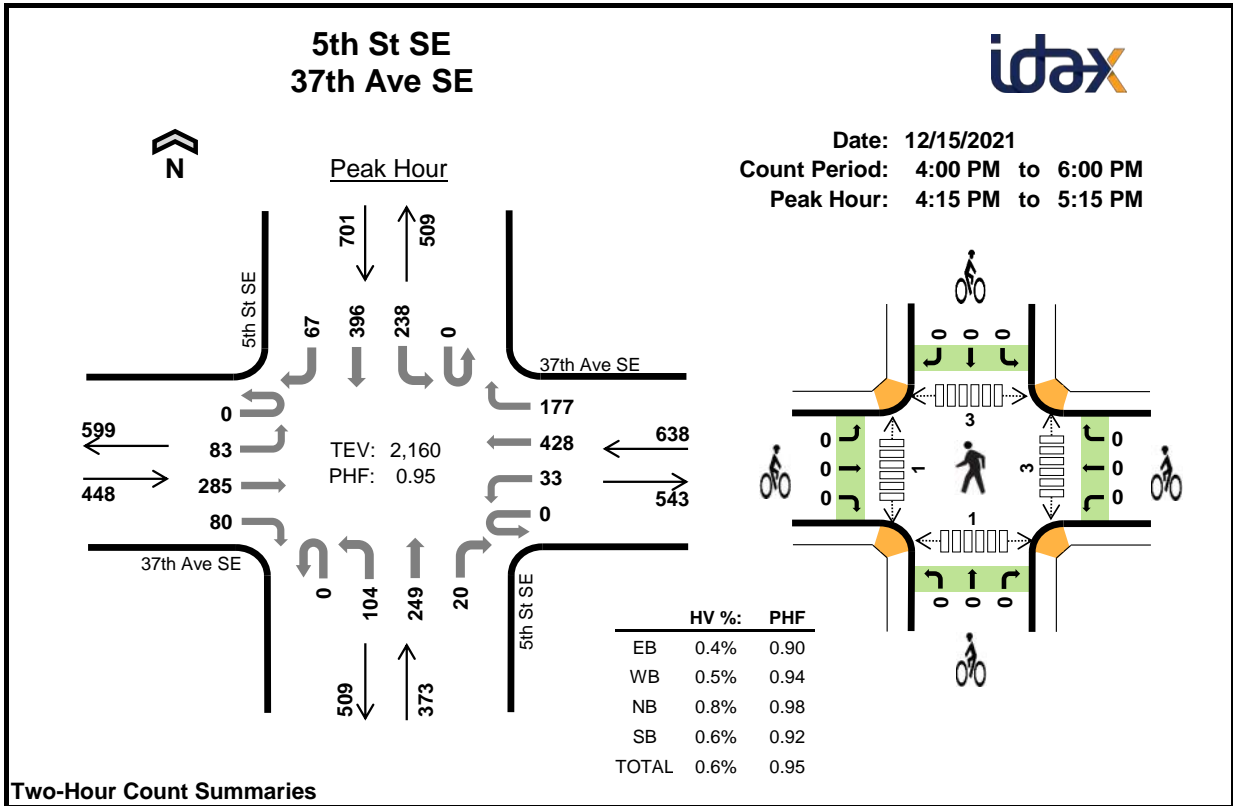
Interval Start	37th Ave SE Eastbound				37th Ave SE Westbound				5th St SE Northbound				5th St SE Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	5	64	3	0	0	73	27	0	18	42	5	0	21	13	5	276	0	
7:15 AM	0	9	41	9	0	1	85	34	0	20	49	1	0	22	20	13	304	0	
7:30 AM	0	10	41	3	0	3	106	27	0	23	53	1	0	19	33	13	332	0	
7:45 AM	0	9	63	6	0	3	69	41	0	20	38	0	0	23	37	11	320	1,232	
8:00 AM	0	6	43	4	0	5	58	30	0	11	39	2	0	29	38	10	275	1,231	
8:15 AM	0	9	58	8	0	3	85	35	0	18	41	2	0	17	30	8	314	1,241	
8:30 AM	0	11	43	7	0	1	66	28	0	20	52	3	0	29	41	9	310	1,219	
8:45 AM	0	6	50	6	0	3	62	41	0	21	55	4	0	37	49	19	353	1,252	
Count Total	0	65	403	46	0	19	604	263	0	151	369	18	0	197	261	88	2,484	0	
Peak Hour	All	0	32	194	25	0	12	271	134	0	70	187	11	0	112	158	46	1,252	0
	HV	0	2	7	2	0	2	6	5	0	0	5	1	0	8	2	2	42	0
	HV%	-	6%	4%	8%	-	17%	2%	4%	-	0%	3%	9%	-	7%	1%	4%	3%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	2	0	1	6	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	4	2	3	10	0	0	0	0	0	0	0	0	0	0
7:30 AM	3	2	0	1	6	0	0	0	0	0	1	0	0	0	1
7:45 AM	1	5	0	1	7	0	0	0	0	0	0	0	0	0	0
8:00 AM	3	1	2	3	9	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	9	1	2	14	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	1	1	2	5	0	0	0	0	0	3	0	1	0	4
8:45 AM	5	2	2	5	14	0	0	0	0	0	1	0	0	0	1
Count Total	19	26	8	18	71	0	0	0	0	0	5	0	1	0	6
Peak Hour	11	13	6	12	42	0	0	0	0	0	4	0	1	0	5

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	37th Ave SE				37th Ave SE				5th St SE				5th St SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	2	0	0	0	2	0	0	0	0	0	0	1	0	0	6	0
7:15 AM	0	0	1	0	0	0	2	2	0	1	1	0	0	2	1	0	10	0
7:30 AM	0	0	3	0	0	0	2	0	0	0	0	0	0	1	0	0	6	0
7:45 AM	0	1	0	0	0	0	1	4	0	0	0	0	0	0	0	1	7	29
8:00 AM	0	1	1	1	0	0	0	1	0	0	1	1	0	2	0	1	9	32
8:15 AM	0	1	1	0	0	2	4	3	0	0	1	0	0	2	0	0	14	36
8:30 AM	0	0	1	0	0	0	0	1	0	0	1	0	0	2	0	0	5	35
8:45 AM	0	0	4	1	0	0	2	0	0	0	2	0	0	2	2	1	14	42
Count Total	0	4	13	2	0	2	13	11	0	1	6	1	0	12	3	3	71	0
Peak Hour	0	2	7	2	0	2	6	5	0	0	5	1	0	8	2	2	42	0
<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	37th Ave SE			37th Ave SE			5th St SE			5th St SE			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		





**Two-Hour Count Summaries**

Interval Start	37th Ave SE Eastbound				37th Ave SE Westbound				5th St SE Northbound				5th St SE Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	20	77	19	0	7	103	50	0	18	55	3	0	54	98	20	524	0	
4:15 PM	0	17	54	23	0	4	111	40	0	27	60	7	0	55	111	12	521	0	
4:30 PM	0	25	83	16	0	7	114	48	0	22	67	6	0	60	102	17	567	0	
4:45 PM	0	19	75	21	0	10	86	50	0	30	59	2	0	78	90	22	542	2,154	
5:00 PM	0	22	73	20	0	12	117	39	0	25	63	5	0	45	93	16	530	2,160	
5:15 PM	0	11	66	20	0	13	70	32	0	24	64	10	0	54	100	13	477	2,116	
5:30 PM	0	14	58	21	0	15	80	25	0	18	51	3	0	47	86	16	434	1,983	
5:45 PM	0	21	67	14	0	8	86	30	0	16	43	1	0	45	84	15	430	1,871	
Count Total	0	149	553	154	0	76	767	314	0	180	462	37	0	438	764	131	4,025	0	
Peak Hour	All	0	83	285	80	0	33	428	177	0	104	249	20	0	238	396	67	2,160	0
	HV	0	2	0	0	0	0	1	2	0	0	3	0	0	1	2	1	12	0
	HV%	-	2%	0%	0%	-	0%	0%	1%	-	0%	1%	0%	-	0%	1%	1%	1%	0

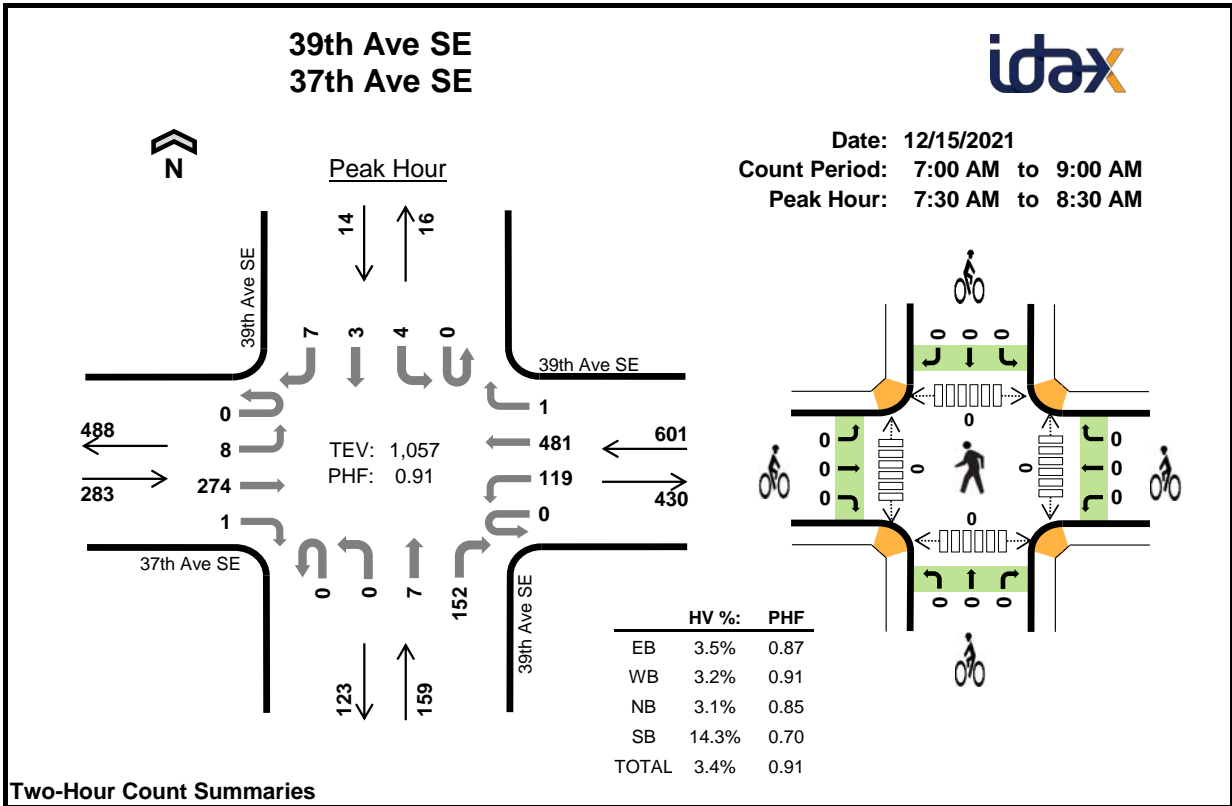
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	37th Ave SE				37th Ave SE				5th St SE				5th St SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	2	2	0	0	3	0	0	1	3	0	11	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0
4:30 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	4	0
4:45 PM	0	1	0	0	0	0	0	2	0	0	1	0	0	0	0	1	5	22
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	12
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	11
5:30 PM	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	3	10
5:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	3	8
Count Total	0	2	2	0	0	1	4	5	0	0	6	0	0	2	6	2	30	0
Peak Hour	0	2	0	0	0	0	1	2	0	0	3	0	0	1	2	1	12	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	37th Ave SE			37th Ave SE			5th St SE			5th St SE			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	37th Ave SE				39th Ave SE				39th Ave SE				39th Ave SE				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	2	84	0	0	21	89	1	0	0	0	42	0	0	1	0	240	0	
7:15 AM	0	2	61	0	0	28	124	1	0	0	2	33	0	1	0	0	252	0	
7:30 AM	0	1	56	0	0	27	137	1	0	0	1	33	0	0	0	1	257	0	
7:45 AM	0	4	77	0	0	43	122	0	0	0	3	37	0	1	2	1	290	1,039	
8:00 AM	0	0	75	0	0	22	98	0	0	0	1	46	0	1	1	2	246	1,045	
8:15 AM	0	3	66	1	0	27	124	0	0	0	2	36	0	2	0	3	264	1,057	
8:30 AM	0	3	77	0	0	23	98	0	0	0	1	31	0	1	0	1	235	1,035	
8:45 AM	0	7	85	1	0	23	109	2	0	0	0	31	0	2	0	2	262	1,007	
Count Total	0	22	581	2	0	214	901	5	0	0	10	289	0	8	4	10	2,046	0	
Peak Hour	All	0	8	274	1	0	119	481	1	0	0	7	152	0	4	3	7	1,057	0
	HV	0	0	10	0	0	3	16	0	0	0	0	5	0	1	0	1	36	0
	HV%	-	0%	4%	0%	-	3%	3%	0%	-	-	0%	3%	-	25%	0%	14%	3%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	4	6	0	14	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	9	0	0	11	0	0	0	0	0	0	0	0	0	0
7:30 AM	3	1	2	1	7	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	8	1	0	9	0	0	0	0	0	0	0	0	0	0
8:00 AM	4	3	2	1	10	0	0	0	0	0	0	0	0	0	0
8:15 AM	3	7	0	0	10	0	0	0	0	0	0	0	0	0	0
8:30 AM	3	2	1	0	6	0	0	0	0	0	0	0	0	0	0
8:45 AM	7	2	3	0	12	0	0	0	0	0	0	0	0	0	0
Count Total	26	36	15	2	79	0	0	0	0	0	0	0	0	0	0
Peak Hour	10	19	5	2	36	0	0	0	0	0	0	0	0	0	0

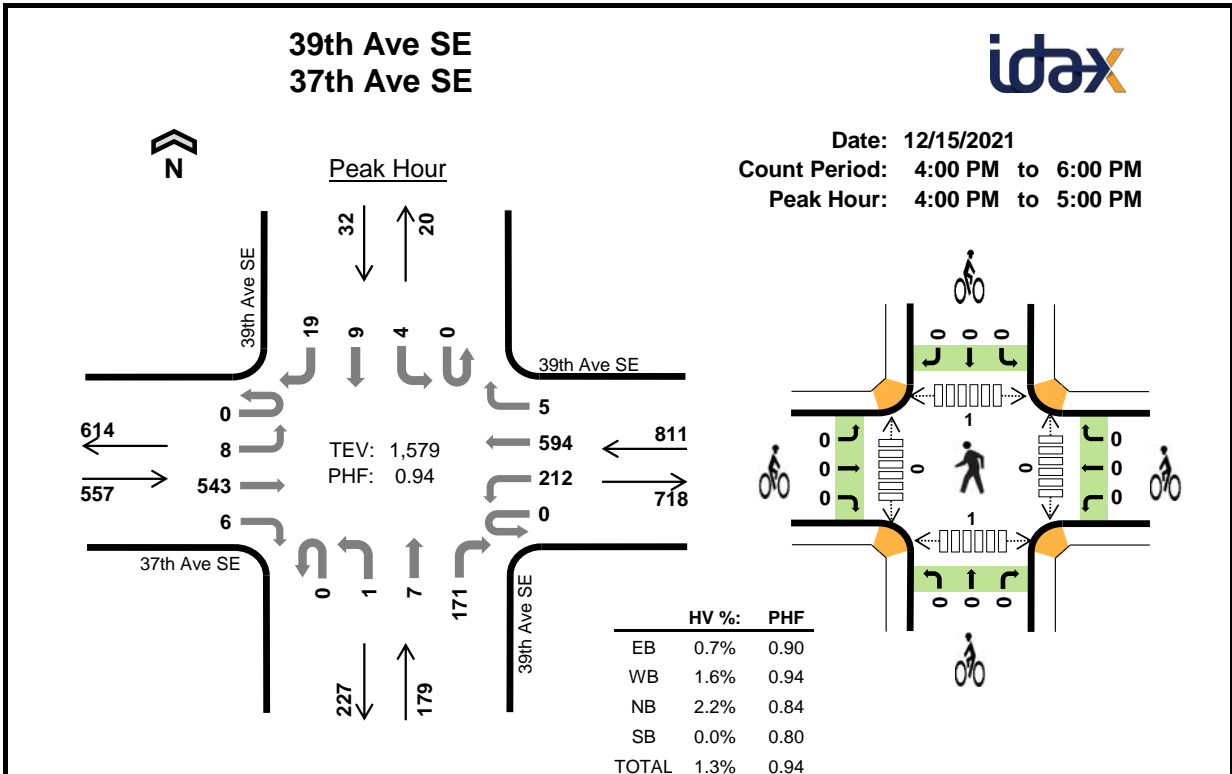


<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	37th Ave SE				39th Ave SE				39th Ave SE				39th Ave SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	3	0	0	1	3	0	0	0	0	6	0	0	0	0	14	0
7:15 AM	0	0	2	0	0	7	2	0	0	0	0	0	0	0	0	0	11	0
7:30 AM	0	0	3	0	0	0	1	0	0	0	0	2	0	0	0	1	7	0
7:45 AM	0	0	0	0	0	2	6	0	0	0	0	1	0	0	0	0	9	41
8:00 AM	0	0	4	0	0	1	2	0	0	0	0	2	0	1	0	0	10	37
8:15 AM	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	10	36
8:30 AM	0	0	3	0	0	0	2	0	0	0	0	1	0	0	0	0	6	35
8:45 AM	0	1	6	0	0	0	2	0	0	0	0	3	0	0	0	0	12	38
Count Total	0	2	24	0	0	11	25	0	0	0	0	15	0	1	0	1	79	0
Peak Hour	0	0	10	0	0	3	16	0	0	0	0	5	0	1	0	1	36	0

<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	37th Ave SE			39th Ave SE			39th Ave SE			39th Ave SE			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	37th Ave SE				39th Ave SE				39th Ave SE				39th Ave SE				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	3	126	2	0	53	156	2	0	0	0	53	0	0	2	8	405	0	
4:15 PM	0	1	117	4	0	47	147	1	0	1	0	35	0	2	3	4	362	0	
4:30 PM	0	1	149	0	0	59	156	1	0	0	6	38	0	1	2	6	419	0	
4:45 PM	0	3	151	0	0	53	135	1	0	0	1	45	0	1	2	1	393	1,579	
5:00 PM	0	1	123	0	0	45	156	0	0	1	2	53	0	1	1	1	384	1,558	
5:15 PM	0	2	122	0	0	42	112	2	0	0	2	48	0	0	1	0	331	1,527	
5:30 PM	0	1	110	1	0	35	117	0	0	0	2	42	0	1	4	1	314	1,422	
5:45 PM	0	2	116	2	0	34	121	1	0	1	2	29	0	1	1	3	313	1,342	
Count Total	0	14	1,014	9	0	368	1,100	8	0	3	15	343	0	7	16	24	2,921	0	
Peak Hour	All	0	8	543	6	0	212	594	5	0	1	7	171	0	4	9	19	1,579	0
	HV	0	0	4	0	0	6	7	0	0	0	0	4	0	0	0	0	21	0
	HV%	-	0%	1%	0%	-	3%	1%	0%	-	0%	0%	2%	-	0%	0%	0%	1%	0

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

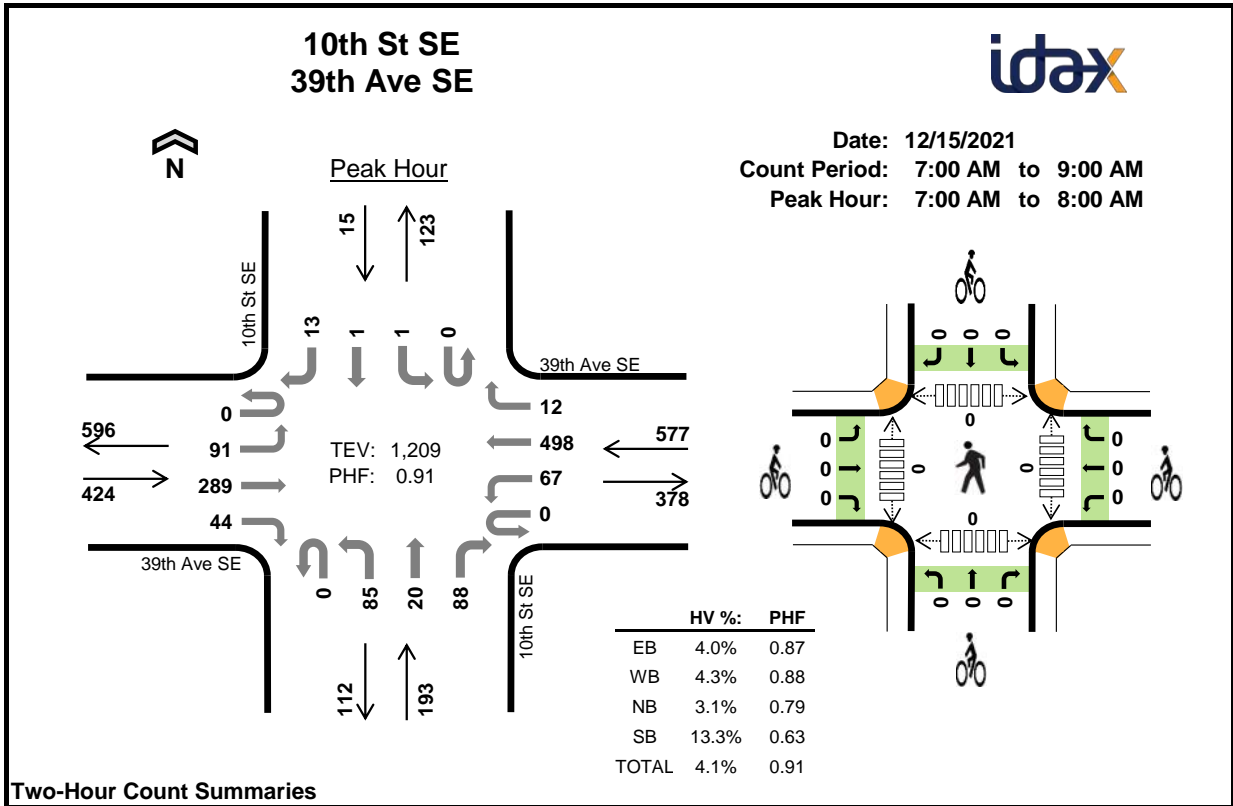
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	5	1	0	7	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	2	1	0	4	0	0	0	0	0	0	0	0	1	1
4:30 PM	2	2	1	0	5	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	8	15	4	0	27	0	0	0	0	0	0	0	1	2	3
Peak Hour	4	13	4	0	21	0	0	0	0	0	0	0	1	1	2

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	37th Ave SE				39th Ave SE				39th Ave SE				39th Ave SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	1	4	0	0	0	0	1	0	0	0	0	7	0
4:15 PM	0	0	1	0	0	2	0	0	0	0	0	1	0	0	0	0	4	0
4:30 PM	0	0	2	0	0	1	1	0	0	0	0	1	0	0	0	0	5	0
4:45 PM	0	0	0	0	0	2	2	0	0	0	0	1	0	0	0	0	5	21
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
5:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	12
5:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9
5:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	6
Count Total	0	0	8	0	0	7	8	0	0	0	0	4	0	0	0	0	27	0
Peak Hour	0	0	4	0	0	6	7	0	0	0	0	4	0	0	0	0	21	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	37th Ave SE			39th Ave SE			39th Ave SE			39th Ave SE			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.





**Two-Hour Count Summaries**

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				10th St SE Northbound				10th St SE Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	22	86	14	0	9	89	2	0	23	5	33	0	0	0	1	284	0	
7:15 AM	0	22	67	9	0	17	139	2	0	17	3	19	0	0	0	3	298	0	
7:30 AM	0	15	64	6	0	20	132	4	0	23	5	22	0	1	1	3	296	0	
7:45 AM	0	32	72	15	0	21	138	4	0	22	7	14	0	0	0	6	331	1,209	
8:00 AM	0	36	59	19	0	15	98	2	0	17	3	9	0	2	0	5	265	1,190	
8:15 AM	0	26	77	11	0	7	133	4	0	13	4	7	0	1	0	3	286	1,178	
8:30 AM	0	23	74	16	0	9	101	6	0	9	7	16	0	3	1	8	273	1,155	
8:45 AM	0	19	79	19	0	10	108	4	0	18	6	34	0	1	1	9	308	1,132	
Count Total	0	195	578	109	0	108	938	28	0	142	40	154	0	8	3	38	2,341	0	
Peak Hour	All	0	91	289	44	0	67	498	12	0	85	20	88	0	1	1	13	1,209	0
	HV	0	0	15	2	0	5	19	1	0	1	0	5	0	0	0	2	50	0
	HV%	-	0%	5%	5%	-	7%	4%	8%	-	1%	0%	6%	-	0%	0%	15%	4%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	7	5	2	0	14	0	0	0	0	0	0	0	0	0	0
7:15 AM	3	9	2	0	14	0	0	0	0	0	0	0	0	0	0
7:30 AM	6	4	0	0	10	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	7	2	2	12	0	0	0	0	0	0	0	0	0	0
8:00 AM	6	3	1	0	10	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	6	2	0	10	0	0	0	0	0	0	0	0	0	0
8:30 AM	5	4	1	0	10	0	0	0	0	0	0	0	0	1	1
8:45 AM	9	2	6	1	18	0	0	0	0	0	0	0	0	0	0
Count Total	39	40	16	3	98	0	0	0	0	0	0	0	0	1	1
Peak Hour	17	25	6	2	50	0	0	0	0	0	0	0	0	0	0

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				10th St SE				10th St SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	6	1	0	1	4	0	0	0	0	2	0	0	0	0	14	0
7:15 AM	0	0	3	0	0	0	9	0	0	0	0	2	0	0	0	0	14	0
7:30 AM	0	0	5	1	0	2	1	1	0	0	0	0	0	0	0	0	10	0
7:45 AM	0	0	1	0	0	2	5	0	0	1	0	1	0	0	0	2	12	50
8:00 AM	0	0	5	1	0	1	2	0	0	0	0	1	0	0	0	0	10	46
8:15 AM	0	0	2	0	0	0	6	0	0	1	0	1	0	0	0	0	10	42
8:30 AM	0	1	3	1	0	2	2	0	0	0	0	1	0	0	0	0	10	42
8:45 AM	0	0	9	0	0	1	1	0	0	0	1	5	0	0	0	1	18	48
Count Total	0	1	34	4	0	9	30	1	0	2	1	13	0	0	0	3	98	0
Peak Hour	0	0	15	2	0	5	19	1	0	1	0	5	0	0	0	2	50	0
<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	39th Ave SE			39th Ave SE			10th St SE			10th St SE			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		

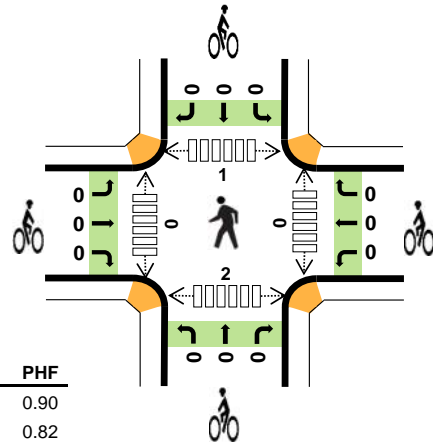
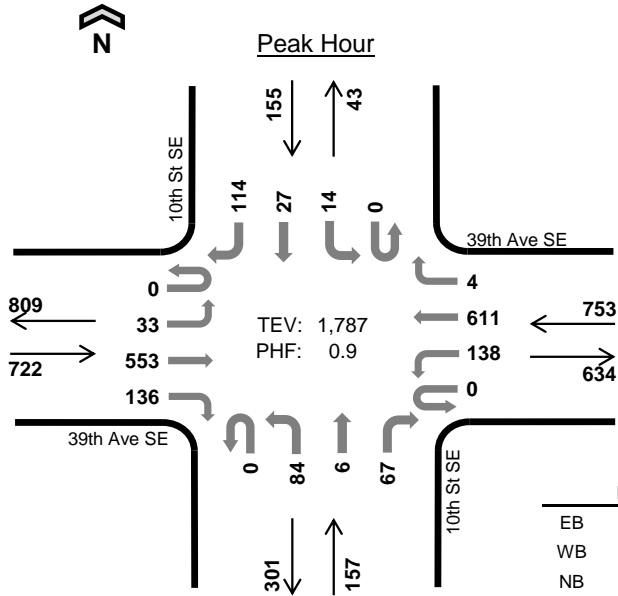


### 10th St SE 39th Ave SE

Date: 12/15/2021

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

Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	1.2%	0.90
WB	2.3%	0.82
NB	4.5%	0.65
SB	0.0%	0.84
TOTAL	1.8%	0.90

#### Two-Hour Count Summaries

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				10th St SE Northbound				10th St SE Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	12	134	34	0	28	156	1	0	20	2	10	0	3	8	32	440	0	
4:15 PM	0	10	113	30	0	20	133	0	0	31	1	28	0	5	5	30	406	0	
4:30 PM	0	7	152	30	0	53	176	1	0	16	1	14	0	4	8	34	496	0	
4:45 PM	0	4	154	42	0	37	146	2	0	17	2	15	0	2	6	18	445	1,787	
5:00 PM	0	2	148	26	0	32	147	2	0	17	0	15	0	4	4	35	432	1,779	
5:15 PM	0	1	132	37	0	35	128	0	0	13	0	9	0	3	2	18	378	1,751	
5:30 PM	0	0	118	39	0	31	116	0	0	20	0	14	0	3	5	13	359	1,614	
5:45 PM	0	0	125	19	0	21	130	0	0	14	0	14	0	1	4	9	337	1,506	
Count Total	0	36	1,076	257	0	257	1,132	6	0	148	6	119	0	25	42	189	3,293	0	
Peak Hour	All	0	33	553	136	0	138	611	4	0	84	6	67	0	14	27	114	1,787	0
	HV	0	0	8	1	0	5	12	0	0	1	0	6	0	0	0	0	33	0
	HV%	-	0%	1%	1%	-	4%	2%	0%	-	1%	0%	9%	-	0%	0%	0%	2%	0

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

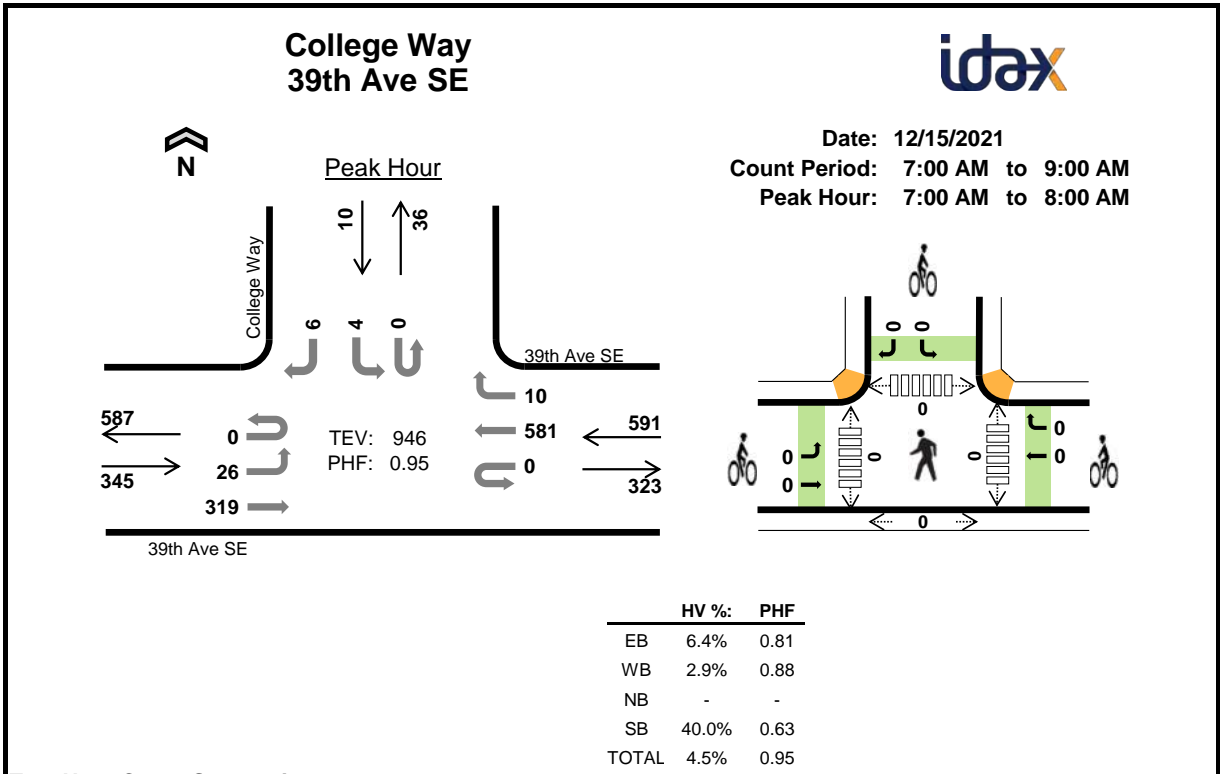
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total	
4:00 PM	2	7	3	0	12	0	0	0	0	0	0	0	0	0	1	1
4:15 PM	3	2	2	0	7	0	0	0	0	0	0	0	0	0	1	1
4:30 PM	3	4	0	0	7	0	0	0	0	0	0	0	1	0	1	
4:45 PM	1	4	2	0	7	0	0	0	0	0	0	0	0	0	0	
5:00 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	
5:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	1	1	
5:30 PM	3	1	1	0	5	0	0	0	0	0	0	0	0	0	0	
5:45 PM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	
Count Total	14	23	9	0	46	0	0	0	0	0	0	0	1	3	4	
Peak Hour	9	17	7	0	33	0	0	0	0	0	0	0	1	2	3	



<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				10th St SE				10th St SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	2	5	0	0	0	0	3	0	0	0	0	12	0
4:15 PM	0	0	3	0	0	0	2	0	0	0	0	2	0	0	0	0	7	0
4:30 PM	0	0	2	1	0	2	2	0	0	0	0	0	0	0	0	0	7	0
4:45 PM	0	0	1	0	0	1	3	0	0	1	0	1	0	0	0	0	7	33
5:00 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3	24
5:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	19
5:30 PM	0	0	3	0	0	1	0	0	0	0	0	1	0	0	0	0	5	17
5:45 PM	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3	13
Count Total	0	0	13	1	0	8	15	0	0	1	0	8	0	0	0	0	46	0
Peak Hour	0	0	8	1	0	5	12	0	0	1	0	6	0	0	0	0	33	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	39th Ave SE			39th Ave SE			10th St SE			10th St SE			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				0 Northbound				College Way Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	2	105	0	0	0	105	1	0	0	0	0	0	1	0	1	215	0	
7:15 AM	0	6	74	0	0	0	163	0	0	0	0	0	0	1	0	1	245	0	
7:30 AM	0	7	71	0	0	0	164	4	0	0	0	0	0	2	0	2	250	0	
7:45 AM	0	11	69	0	0	0	149	5	0	0	0	0	0	0	0	2	236	946	
8:00 AM	0	6	61	0	0	0	118	1	0	0	0	0	0	0	0	3	189	920	
8:15 AM	0	10	66	0	0	0	139	3	0	0	0	0	0	0	0	4	222	897	
8:30 AM	0	7	86	0	0	0	111	1	0	0	0	0	0	2	0	2	209	856	
8:45 AM	0	8	102	0	0	0	119	1	0	0	0	0	0	0	0	6	236	856	
Count Total	0	57	634	0	0	0	1,068	16	0	0	0	0	0	6	0	21	1,802	0	
Peak Hour	All	0	26	319	0	0	0	581	10	0	0	0	0	0	4	0	6	946	0
	HV	0	3	19	0	0	0	17	0	0	0	0	0	0	1	0	3	43	0
	HV%	-	12%	6%	-	-	-	3%	0%	-	-	-	-	-	25%	-	50%	5%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	8	4	0	2	14	0	0	0	0	0	0	0	0	0	0
7:15 AM	6	8	0	0	14	0	0	0	0	0	0	0	0	0	0
7:30 AM	4	4	0	2	10	0	0	0	0	0	0	0	0	0	0
7:45 AM	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0
8:00 AM	3	2	0	1	6	0	0	0	0	0	0	0	0	0	0
8:15 AM	3	4	0	1	8	0	0	0	0	0	0	0	0	0	0
8:30 AM	4	2	0	1	7	0	0	0	0	0	0	0	0	0	0
8:45 AM	12	1	0	0	13	0	0	0	0	0	0	0	0	1	1
Count Total	44	26	0	7	77	0	0	0	0	0	0	0	0	1	1
Peak Hr	22	17	0	4	43	0	0	0	0	0	0	0	0	0	0

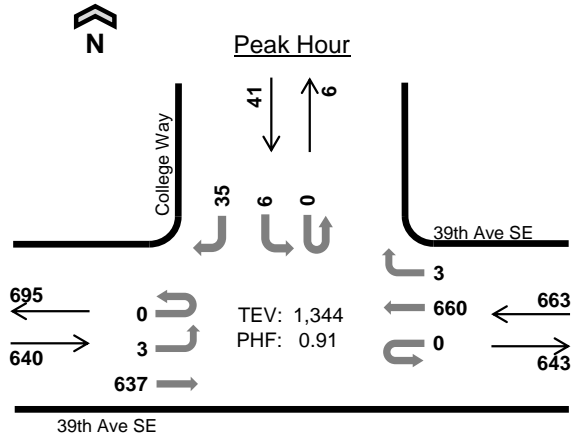
Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	39th Ave SE				39th Ave SE				0				College Way					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	8	0	0	0	4	0	0	0	0	0	0	1	0	1	14	0
7:15 AM	0	2	4	0	0	0	8	0	0	0	0	0	0	0	0	0	14	0
7:30 AM	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	2	10	0
7:45 AM	0	1	3	0	0	0	1	0	0	0	0	0	0	0	0	0	5	43
8:00 AM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	1	6	35
8:15 AM	0	2	1	0	0	0	4	0	0	0	0	0	0	0	0	1	8	29
8:30 AM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	1	7	26
8:45 AM	0	1	11	0	0	0	1	0	0	0	0	0	0	0	0	0	13	34
Count Total	0	6	38	0	0	0	26	0	0	0	0	0	0	1	0	6	77	0
Peak Hour	0	3	19	0	0	0	17	0	0	0	0	0	0	1	0	3	43	0

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour		
Interval Start	39th Ave SE			39th Ave SE			0			College Way							
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

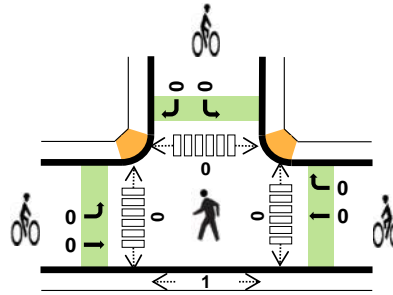
Note: U-Turn volumes for bikes are included in Left-Turn, if any.



### College Way 39th Ave SE



Date: 12/15/2021  
Count Period: 4:00 PM to 6:00 PM  
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.9%	0.95
WB	1.1%	0.88
NB	-	-
SB	4.9%	0.51
TOTAL	1.1%	0.91

#### Two-Hour Count Summaries

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				0 Northbound				College Way Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	3	131	0	0	0	176	1	0	0	0	0	0	1	0	7	319	0	
4:15 PM	0	4	144	0	0	0	145	2	0	0	0	0	0	3	0	6	304	0	
<b>4:30 PM</b>	<b>0</b>	<b>1</b>	<b>167</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>188</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>368</b>	<b>0</b>	
4:45 PM	0	1	151	0	0	0	172	2	0	0	0	0	0	1	0	4	331	1,322	
5:00 PM	0	1	162	0	0	0	148	0	0	0	0	0	0	3	0	17	331	1,334	
5:15 PM	0	0	157	0	0	0	152	0	0	0	0	0	0	0	0	5	314	1,344	
5:30 PM	0	1	136	0	0	0	149	0	0	0	0	0	0	2	0	4	292	1,268	
5:45 PM	0	3	135	0	0	0	137	0	0	0	0	0	0	0	0	3	278	1,215	
Count Total	0	14	1,183	0	0	0	1,267	6	0	0	0	0	0	12	0	55	2,537	0	
Peak Hour	All	0	3	637	0	0	0	660	3	0	0	0	0	0	6	0	35	1,344	0
	HV	0	1	5	0	0	0	7	0	0	0	0	0	0	0	0	2	15	0
	HV%	-	33%	1%	-	-	-	1%	0%	-	-	-	-	-	0%	-	6%	1%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	7	0	1	13	0	0	0	0	0	0	0	0	1	1
4:15 PM	3	1	0	0	4	0	0	0	0	0	0	0	1	0	1
<b>4:30 PM</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
4:45 PM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
5:00 PM	2	0	0	1	3	0	0	0	0	0	0	0	0	0	0
5:15 PM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
5:30 PM	4	0	0	1	5	0	0	0	0	0	0	0	0	0	0
5:45 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
Count Total	20	17	0	4	41	0	0	0	0	0	0	0	1	2	3
Peak Hr	6	7	0	2	15	0	0	0	0	0	0	0	0	1	1

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				0				College Way				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	1	13	0
4:15 PM	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>
4:45 PM	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4	26
5:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	3	16
5:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	15
5:30 PM	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	1	5	15
5:45 PM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4	15
Count Total	0	5	15	0	0	0	17	0	0	0	0	0	0	0	0	4	41	0
Peak Hour	0	1	5	0	0	0	7	0	0	0	0	0	0	0	0	2	15	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	39th Ave SE			39th Ave SE			0			College Way			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

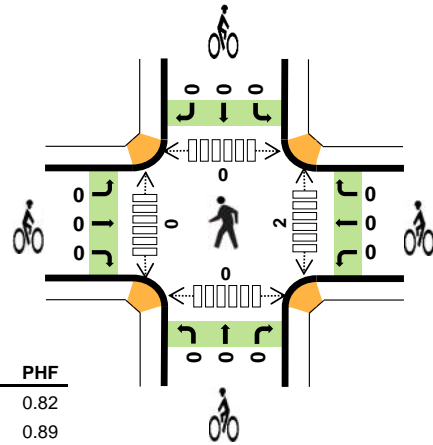
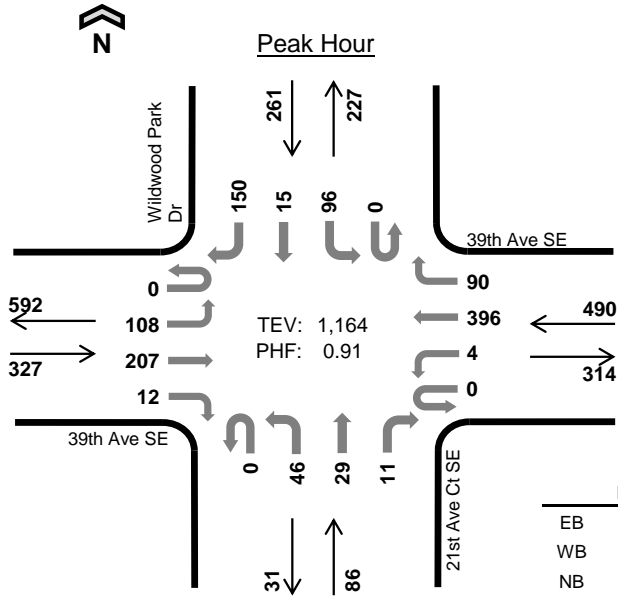


### 21st Ave Ct SE 39th Ave SE

Date: 12/15/2021

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	5.8%	0.82
WB	2.2%	0.89
NB	2.3%	0.93
SB	5.4%	0.67
TOTAL	4.0%	0.91

#### Two-Hour Count Summaries

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				21st Ave Ct SE Northbound				21st Ave Ct SE Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	50	50	0	0	1	77	59	0	7	13	2	0	26	6	29	320	0	
7:15 AM	0	30	52	2	0	2	93	17	0	10	7	4	0	36	2	60	315	0	
7:30 AM	0	19	49	5	0	0	117	8	0	14	5	4	0	18	5	37	281	0	
7:45 AM	0	9	56	5	0	1	109	6	0	15	4	1	0	16	2	24	248	1,164	
8:00 AM	0	12	46	3	0	1	94	8	0	4	4	2	0	7	1	17	199	1,043	
8:15 AM	0	12	48	7	0	1	120	2	0	8	1	2	0	4	3	16	224	952	
8:30 AM	0	13	69	2	0	1	90	7	0	9	0	3	0	5	2	12	213	884	
8:45 AM	0	20	71	4	0	0	97	11	0	6	3	3	0	10	0	24	249	885	
Count Total	0	165	441	28	0	7	797	118	0	73	37	21	0	122	21	219	2,049	0	
Peak Hour	All	0	108	207	12	0	4	396	90	0	46	29	11	0	96	15	150	1,164	0
	HV	0	9	8	2	0	0	6	5	0	0	0	2	0	4	0	10	46	0
	HV%	-	8%	4%	17%	-	0%	2%	6%	-	0%	0%	18%	-	4%	0%	7%	4%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	10	7	0	6	23	0	0	0	0	0	1	0	0	0	1
7:15 AM	3	2	0	6	11	0	0	0	0	0	0	0	0	0	0
7:30 AM	3	2	2	1	8	0	0	0	0	0	1	0	0	0	1
7:45 AM	3	0	0	1	4	0	0	0	0	0	0	0	0	0	0
8:00 AM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0
8:30 AM	4	2	0	2	8	0	0	0	0	0	0	0	0	0	0
8:45 AM	11	4	0	1	16	0	0	0	0	0	0	0	0	0	0
Count Total	39	20	2	17	78	0	0	0	0	0	2	0	0	0	2
Peak Hour	19	11	2	14	46	0	0	0	0	0	2	0	0	0	2



<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				21st Ave Ct SE				Wildwood Park Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	9	1	0	0	0	3	4	0	0	0	0	0	3	0	3	23	0
7:15 AM	0	0	2	1	0	0	1	1	0	0	0	0	0	1	0	5	11	0
7:30 AM	0	0	2	1	0	0	2	0	0	0	0	2	0	0	0	1	8	0
7:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	4	46
8:00 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4	27
8:15 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	20
8:30 AM	0	0	3	1	0	0	1	1	0	0	0	0	0	1	1	0	8	20
8:45 AM	0	4	7	0	0	0	3	1	0	0	0	0	0	0	0	1	16	32
Count Total	0	15	19	5	0	0	13	7	0	0	0	2	0	5	1	11	78	0
Peak Hour	0	9	8	2	0	0	6	5	0	0	0	2	0	4	0	10	46	0

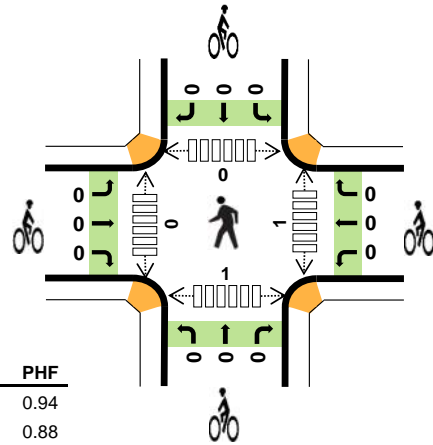
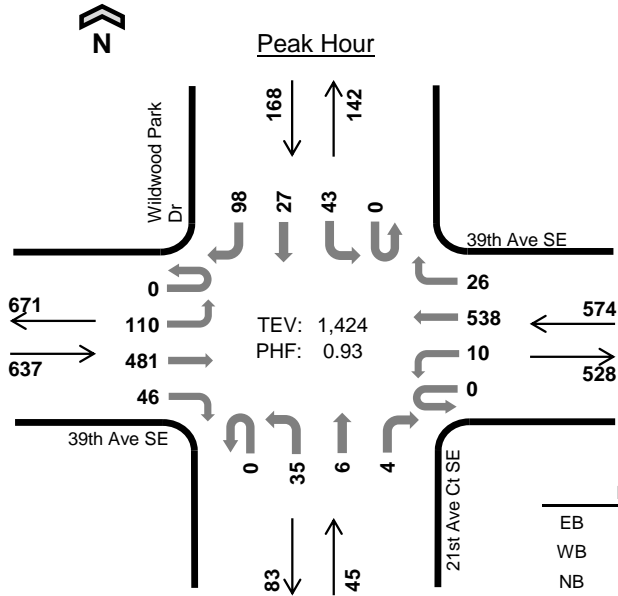
<b>Two-Hour Count Summaries - Bikes</b>														
Interval Start	39th Ave SE			39th Ave SE			21st Ave Ct SE			Wildwood Park Dr			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

## 21st Ave Ct SE 39th Ave SE



Date: 12/15/2021  
Count Period: 4:00 PM to 6:00 PM  
Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	0.8%	0.94
WB	0.7%	0.88
NB	0.0%	0.75
SB	1.8%	0.76
TOTAL	0.8%	0.93

### Two-Hour Count Summaries

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				21st Ave Ct SE Northbound				Wildwood Park Dr Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	21	100	9	0	1	136	10	0	6	2	0	0	5	8	29	327	0	
4:15 PM	0	29	110	11	0	4	127	8	0	8	2	1	0	6	8	18	332	0	
4:30 PM	0	27	133	10	0	1	155	7	0	8	0	0	0	15	4	22	382	0	
4:45 PM	0	25	119	12	0	1	130	8	0	11	2	2	0	10	8	37	365	1,406	
5:00 PM	0	29	119	13	0	4	126	3	0	8	2	1	0	12	7	21	345	1,424	
5:15 PM	0	22	122	12	0	3	119	4	0	8	1	2	0	3	7	20	323	1,415	
5:30 PM	0	21	104	10	0	3	115	3	0	5	0	3	0	10	4	29	307	1,340	
5:45 PM	0	32	94	8	0	2	100	7	0	7	1	3	0	15	6	24	299	1,274	
Count Total	0	206	901	85	0	19	1,008	50	0	61	10	12	0	76	52	200	2,680	0	
Peak Hour	All	0	110	481	46	0	10	538	26	0	35	6	4	0	43	27	98	1,424	0
	HV	0	0	4	1	0	0	4	0	0	0	0	0	0	0	1	2	12	0
	HV%	-	0%	1%	2%	-	0%	1%	0%	-	0%	0%	0%	-	0%	4%	2%	1%	0

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

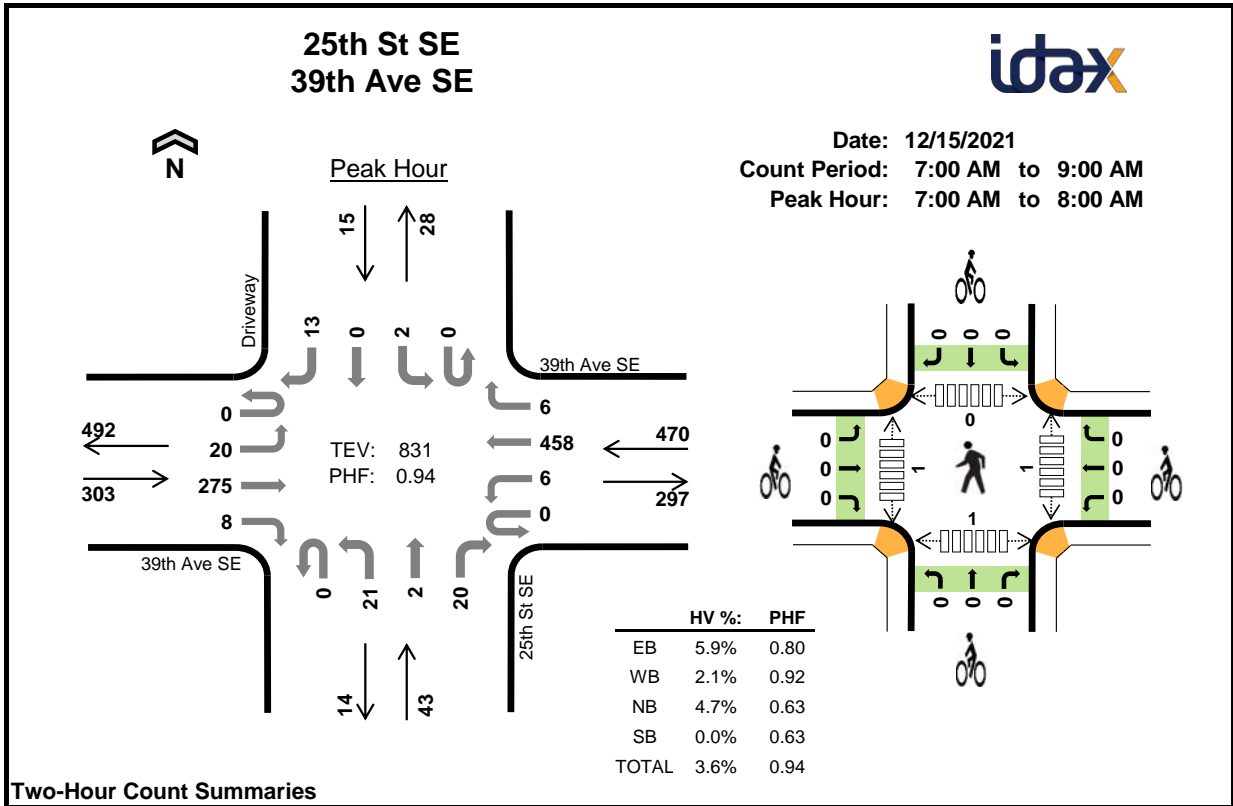
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total	
4:00 PM	4	6	0	0	10	0	0	0	0	0	0	0	0	0	1	1
4:15 PM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	2	2	0	2	6	0	0	0	0	0	1	0	0	0	1	1
4:45 PM	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1
5:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1
5:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0
Count Total	12	11	0	5	28	0	0	0	0	0	1	0	0	3	4	4
Peak Hour	5	4	0	3	12	0	0	0	0	0	1	0	0	1	2	2

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				21st Ave Ct SE				Wildwood Park Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	6	0	0	0	0	0	0	0	0	10	0	
4:15 PM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	3	0	
4:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	1	1	6	0	
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	21	
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	12	
5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	10	
5:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	6	
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	3	7	
Count Total	0	1	9	2	0	0	11	0	0	0	0	0	0	2	3	28	0	
Peak Hour	0	0	4	1	0	0	4	0	0	0	0	0	0	1	2	12	0	

<b>Two-Hour Count Summaries - Bikes</b>																
Interval Start	39th Ave SE			39th Ave SE			21st Ave Ct SE			Wildwood Park Dr			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.





**Two-Hour Count Summaries**

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				25th St SE Northbound				Driveway Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	4	66	1	0	0	125	3	0	8	1	8	0	1	0	5	222	0	
7:15 AM	0	5	86	4	0	2	108	0	0	2	1	7	0	0	0	4	219	0	
7:30 AM	0	5	59	1	0	2	115	0	0	5	0	5	0	1	0	1	194	0	
7:45 AM	0	6	64	2	0	2	110	3	0	6	0	0	0	0	0	3	196	831	
8:00 AM	0	4	49	1	0	2	104	5	0	4	1	7	0	1	0	1	179	788	
8:15 AM	0	4	45	1	0	2	117	7	0	2	0	6	0	1	0	0	185	754	
8:30 AM	0	8	59	2	0	2	93	11	0	6	2	4	0	3	0	1	191	751	
8:45 AM	0	22	56	2	0	3	95	22	0	5	6	9	0	2	0	6	228	783	
Count Total	0	58	484	14	0	15	867	51	0	38	11	46	0	9	0	21	1,614	0	
Peak Hour	All	0	20	275	8	0	6	458	6	0	21	2	20	0	2	0	13	831	0
	HV	0	0	18	0	0	0	10	0	0	1	0	1	0	0	0	0	30	0
	HV%	-	0%	7%	0%	-	0%	2%	0%	-	5%	0%	5%	-	0%	-	0%	4%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	6	2	0	11	0	0	0	0	0	0	1	0	0	1
7:15 AM	5	3	0	0	8	0	0	0	0	0	0	0	0	0	1
7:30 AM	5	1	0	0	6	0	0	0	0	0	1	0	0	0	1
7:45 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	4	0	0	5	0	0	0	0	0	0	0	1	0	1
8:30 AM	4	3	0	1	8	0	0	0	0	0	2	0	0	0	2
8:45 AM	2	3	2	0	7	0	0	0	0	0	9	0	0	0	9
Count Total	25	22	5	1	53	0	0	0	0	0	12	1	1	1	15
Peak Hour	18	10	2	0	30	0	0	0	0	0	1	1	0	1	3

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				25th St SE				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	6	0	0	1	0	1	0	0	0	0	11	0
7:15 AM	0	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0	8	0
7:30 AM	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	6	0
7:45 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	30
8:00 AM	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3	22
8:15 AM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	5	19
8:30 AM	0	1	2	1	0	0	3	0	0	0	0	0	0	1	0	0	8	21
8:45 AM	0	0	2	0	0	1	2	0	0	1	0	1	0	0	0	0	7	23
Count Total	0	1	23	1	0	1	21	0	0	2	0	3	0	1	0	0	53	0
Peak Hour	0	0	18	0	0	0	10	0	0	1	0	1	0	0	0	0	30	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	39th Ave SE			39th Ave SE			25th St SE			Driveway			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

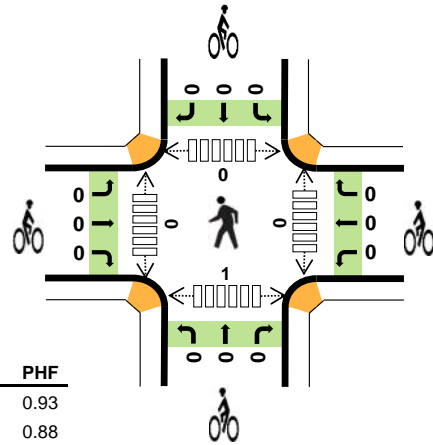
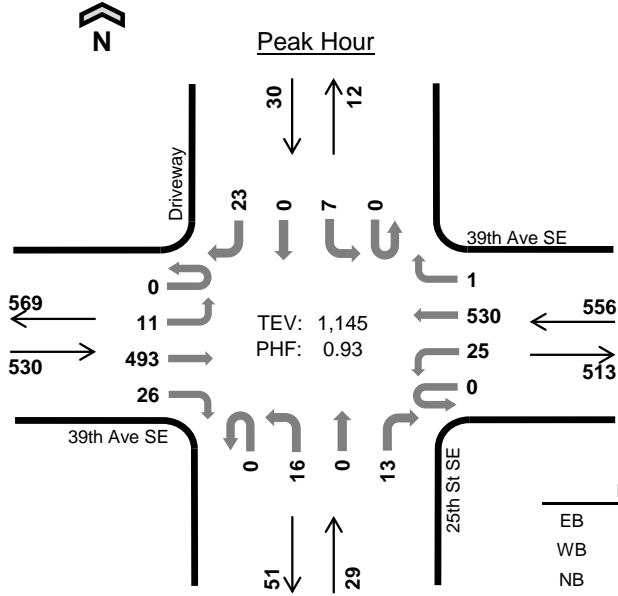


### 25th St SE 39th Ave SE

Date: 12/15/2021

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

Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	0.6%	0.93
WB	0.7%	0.88
NB	0.0%	0.73
SB	0.0%	0.58
TOTAL	0.6%	0.93

#### Two-Hour Count Summaries

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				25th St SE Northbound				Driveway Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	3	104	6	0	11	121	1	0	5	1	6	0	4	2	13	277	0	
4:15 PM	0	2	111	5	0	6	122	0	0	6	0	4	0	4	0	9	269	0	
4:30 PM	0	1	126	8	0	4	154	0	0	5	0	2	0	2	0	6	308	0	
4:45 PM	0	1	134	7	0	6	131	1	0	3	0	0	0	0	0	4	287	1,141	
5:00 PM	0	7	122	6	0	9	123	0	0	2	0	7	0	1	0	4	281	1,145	
5:15 PM	0	1	119	6	0	6	108	2	0	3	0	5	0	0	2	6	258	1,134	
5:30 PM	0	1	115	5	0	7	117	0	0	3	0	1	0	2	0	1	252	1,078	
5:45 PM	0	4	108	2	0	12	106	1	0	3	0	2	0	0	1	1	240	1,031	
Count Total	0	20	939	45	0	61	982	5	0	30	1	27	0	13	5	44	2,172	0	
Peak Hour	All	0	11	493	26	0	25	530	1	0	16	0	13	0	7	0	23	1,145	0
	HV	0	0	3	0	0	1	3	0	0	0	0	0	0	0	0	0	7	0
	HV%	-	0%	1%	0%	-	4%	1%	0%	-	0%	-	0%	-	0%	-	0%	1%	0

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

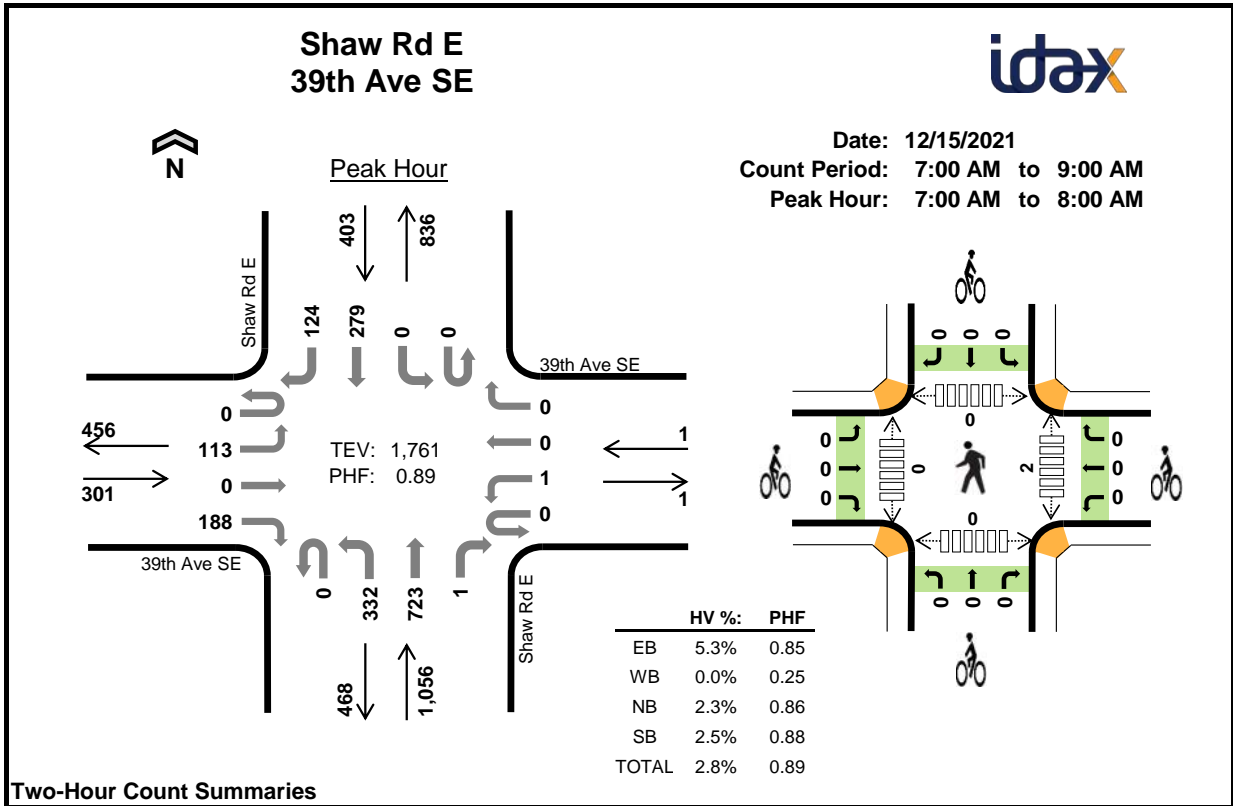
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	5	2	1	11	0	0	0	0	0	0	0	0	0	1
4:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	1	1
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	8	10	3	1	22	0	0	0	0	0	0	0	0	2	2
Peak Hour	3	4	0	0	7	0	0	0	0	0	0	0	0	1	1



<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				25th St SE				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	1	0	1	4	0	0	1	0	1	0	1	0	0	11	0
4:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0
4:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	17
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	6
5:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
Count Total	0	0	7	1	0	2	8	0	0	2	0	1	0	1	0	0	22	0
Peak Hour	0	0	3	0	0	1	3	0	0	0	0	0	0	0	0	0	7	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	39th Ave SE			39th Ave SE			25th St SE			Driveway			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				Shaw Rd E Northbound				Shaw Rd E Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	34	0	43	0	0	0	0	0	105	168	0	0	0	54	24	428	0	
7:15 AM	0	35	0	54	0	0	0	0	0	80	225	1	0	0	74	27	496	0	
7:30 AM	0	21	0	47	0	1	0	0	0	79	164	0	0	0	74	36	422	0	
7:45 AM	0	23	0	44	0	0	0	0	0	68	166	0	0	0	77	37	415	1,761	
8:00 AM	0	32	0	20	0	0	0	0	0	79	137	0	0	0	57	43	368	1,701	
8:15 AM	0	23	0	30	0	0	0	0	0	83	151	0	0	0	69	34	390	1,595	
8:30 AM	0	32	0	35	0	0	0	0	0	67	143	0	0	0	81	43	401	1,574	
8:45 AM	0	31	0	30	0	0	0	1	0	69	115	1	0	0	57	40	344	1,503	
Count Total	0	231	0	303	0	1	0	1	0	630	1,269	2	0	0	543	284	3,264	0	
Peak Hour	All	0	113	0	188	0	1	0	0	0	332	723	1	0	0	279	124	1,761	0
	HV	0	4	0	12	0	0	0	0	0	8	16	0	0	0	9	1	50	0
	HV%	-	4%	-	6%	-	0%	-	-	-	2%	2%	0%	-	-	3%	1%	3%	0

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

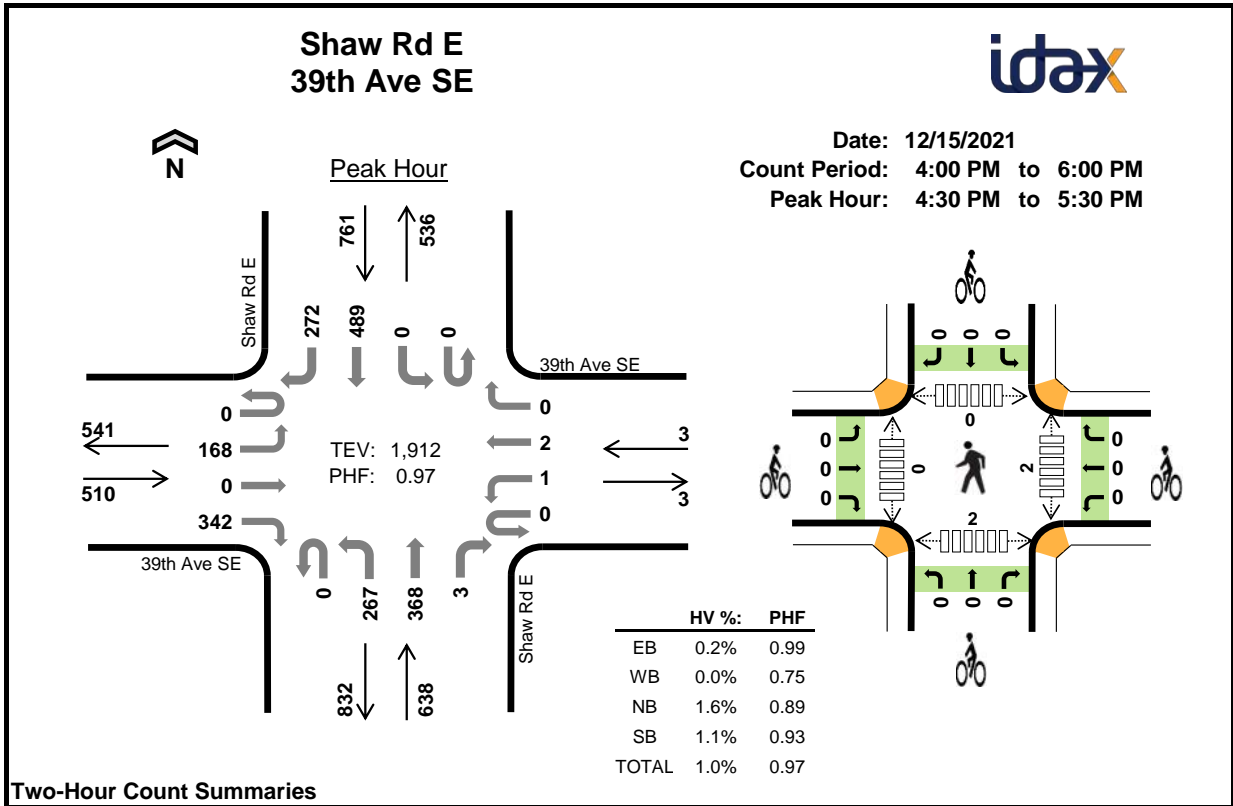
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	0	10	1	15	0	0	0	0	0	0	0	0	0	0
7:15 AM	4	0	5	3	12	0	0	0	0	0	0	0	0	0	0
7:30 AM	5	0	5	5	15	0	0	0	0	0	0	0	0	0	0
7:45 AM	3	0	4	1	8	0	0	0	0	0	2	0	0	0	2
8:00 AM	2	0	7	4	13	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	0	12	3	16	0	0	0	0	0	0	0	0	0	0
8:30 AM	2	0	8	3	13	0	0	0	0	0	0	0	0	0	0
8:45 AM	2	0	6	7	15	0	0	0	0	0	2	0	0	0	2
Count Total	23	0	57	27	107	0	0	0	0	0	4	0	0	0	4
Peak Hour	16	0	24	10	50	0	0	0	0	0	2	0	0	0	2

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				Shaw Rd E				Shaw Rd E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	3	0	0	0	0	0	6	4	0	0	0	0	1	15	0
7:15 AM	0	1	0	3	0	0	0	0	0	2	3	0	0	0	3	0	12	0
7:30 AM	0	1	0	4	0	0	0	0	0	0	5	0	0	0	5	0	15	0
7:45 AM	0	1	0	2	0	0	0	0	0	0	4	0	0	0	1	0	8	50
8:00 AM	0	1	0	1	0	0	0	0	0	0	7	0	0	0	2	2	13	48
8:15 AM	0	0	0	1	0	0	0	0	0	6	6	0	0	0	2	1	16	52
8:30 AM	0	0	0	2	0	0	0	0	0	2	6	0	0	0	3	0	13	50
8:45 AM	0	0	0	2	0	0	0	0	0	1	5	0	0	0	7	0	15	57
Count Total	0	5	0	18	0	0	0	0	0	17	40	0	0	0	23	4	107	0
Peak Hour	0	4	0	12	0	0	0	0	0	8	16	0	0	0	9	1	50	0

<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	39th Ave SE			39th Ave SE			Shaw Rd E			Shaw Rd E			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.





**Two-Hour Count Summaries**

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				Shaw Rd E Northbound				Shaw Rd E Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	47	1	64	0	0	0	0	0	70	94	0	0	0	144	51	471	0	
4:15 PM	0	51	0	66	0	0	0	0	0	63	110	0	0	1	110	65	466	0	
4:30 PM	0	42	0	86	0	1	0	0	0	92	86	1	0	0	112	73	493	0	
4:45 PM	0	34	0	90	0	0	1	0	0	63	108	0	0	0	106	72	474	1,904	
5:00 PM	0	41	0	88	0	0	0	0	0	66	71	1	0	0	137	67	471	1,904	
5:15 PM	0	51	0	78	0	0	1	0	0	46	103	1	0	0	134	60	474	1,912	
5:30 PM	0	42	1	68	0	0	0	0	0	53	99	1	0	0	124	77	465	1,884	
5:45 PM	0	38	1	76	0	0	0	0	0	56	82	0	0	0	130	61	444	1,854	
Count Total	0	346	3	616	0	1	2	0	0	509	753	4	0	1	997	526	3,758	0	
Peak Hour	All	0	168	0	342	0	1	2	0	0	267	368	3	0	0	489	272	1,912	0
	HV	0	0	0	1	0	0	0	0	0	1	9	0	0	0	7	1	19	0
	HV%	-	0%	-	0%	-	0%	0%	-	-	0%	2%	0%	-	-	1%	0%	1%	0

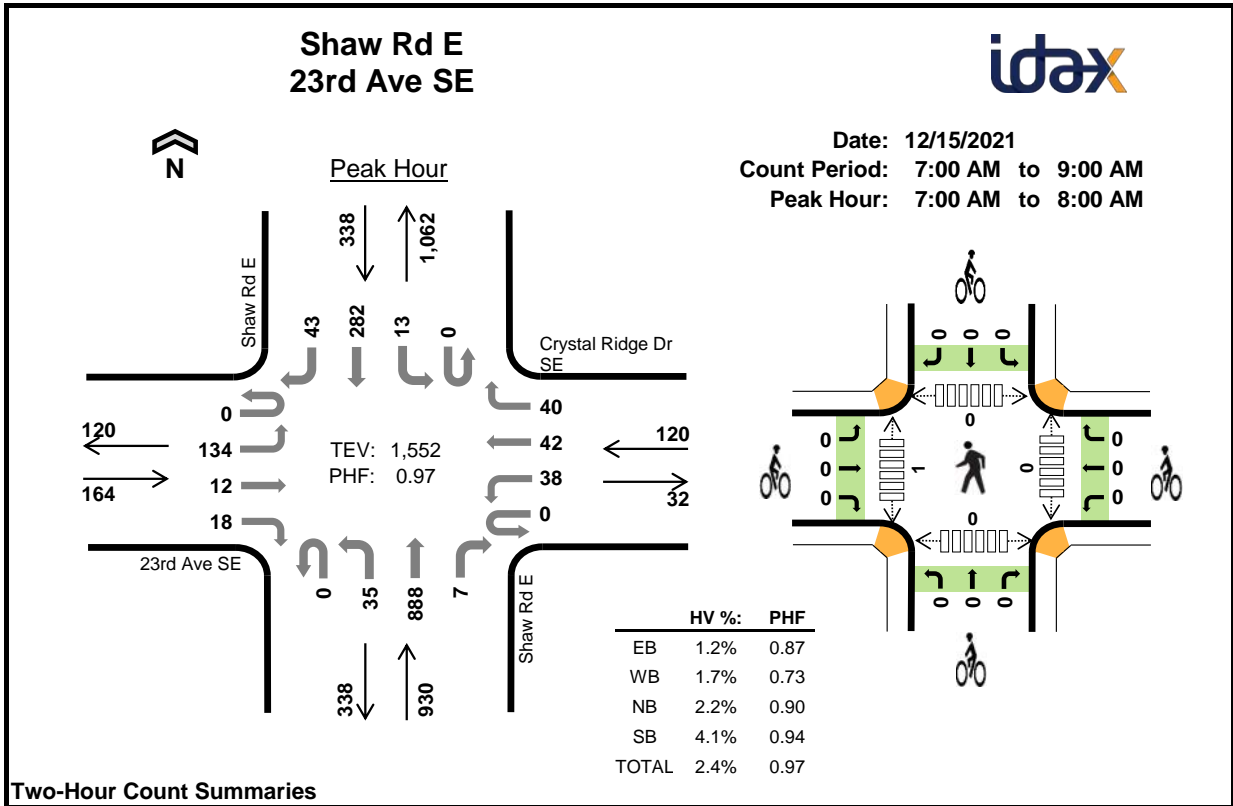
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	0	3	3	10	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	3	1	5	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	2	3	5	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	2	2	5	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	4	1	5	0	0	0	0	0	2	0	0	2	4
5:30 PM	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	2	2	5	0	0	0	0	0	0	0	0	0	0
Count Total	9	0	20	14	43	0	0	0	0	0	2	0	0	2	4
Peak Hour	1	0	10	8	19	0	0	0	0	0	2	0	0	2	4

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																			
Interval Start	39th Ave SE				39th Ave SE				Shaw Rd E				Shaw Rd E				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	2	0	2	0	0	0	0	0	3	0	0	0	0	0	1	2	10	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	5	0
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>0</b>
4:45 PM	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	5	25
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	19
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	5	19
5:30 PM	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	4	18
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	1	1	5	18
Count Total	0	3	0	6	0	0	0	0	0	0	4	16	0	0	0	10	4	43	0
Peak Hour	0	0	0	1	0	0	0	0	0	0	1	9	0	0	0	7	1	19	0

<b>Two-Hour Count Summaries - Bikes</b>																			
Interval Start	39th Ave SE			39th Ave SE			Shaw Rd E			Shaw Rd E			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	23rd Ave SE				Crystal Ridge Dr SE				Shaw Rd E				Shaw Rd E				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Westbound		Northbound		Northbound		Southbound		Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	21	2	3	0	4	7	11	0	5	253	0	0	2	64	9	381	0	
7:15 AM	0	43	1	2	0	8	7	14	0	8	194	2	0	6	75	9	369	0	
7:30 AM	0	39	5	3	0	11	8	9	0	9	234	1	0	2	70	11	402	0	
7:45 AM	0	31	4	10	0	15	20	6	0	13	207	4	0	3	73	14	400	1,552	
8:00 AM	0	20	5	11	0	2	10	9	0	7	171	2	0	1	73	9	320	1,491	
8:15 AM	0	29	7	4	0	5	9	3	0	8	193	3	0	2	81	22	366	1,488	
8:30 AM	0	25	5	6	0	5	3	4	0	10	161	1	0	4	105	12	341	1,427	
8:45 AM	0	19	2	2	0	10	5	12	0	12	143	6	0	1	70	11	293	1,320	
Count Total	0	227	31	41	0	60	69	68	0	72	1,556	19	0	21	611	97	2,872	0	
Peak Hour	All	0	134	12	18	0	38	42	40	0	35	888	7	0	13	282	43	1,552	0
	HV	0	0	0	2	0	1	1	0	0	1	19	0	0	1	8	5	38	0
	HV%	-	0%	0%	11%	-	3%	2%	0%	-	3%	2%	0%	-	8%	3%	12%	2%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	6	2	8	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	1	2	5	9	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	0	6	5	12	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	6	2	9	0	0	0	0	0	0	1	0	0	1
8:00 AM	0	0	6	4	10	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	6	7	13	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	0	3	6	10	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	0	5	6	12	0	0	0	0	0	0	0	0	0	0
Count Total	4	2	40	37	83	0	0	0	0	0	0	1	0	0	1
Peak Hour	2	2	20	14	38	0	0	0	0	0	0	1	0	0	1

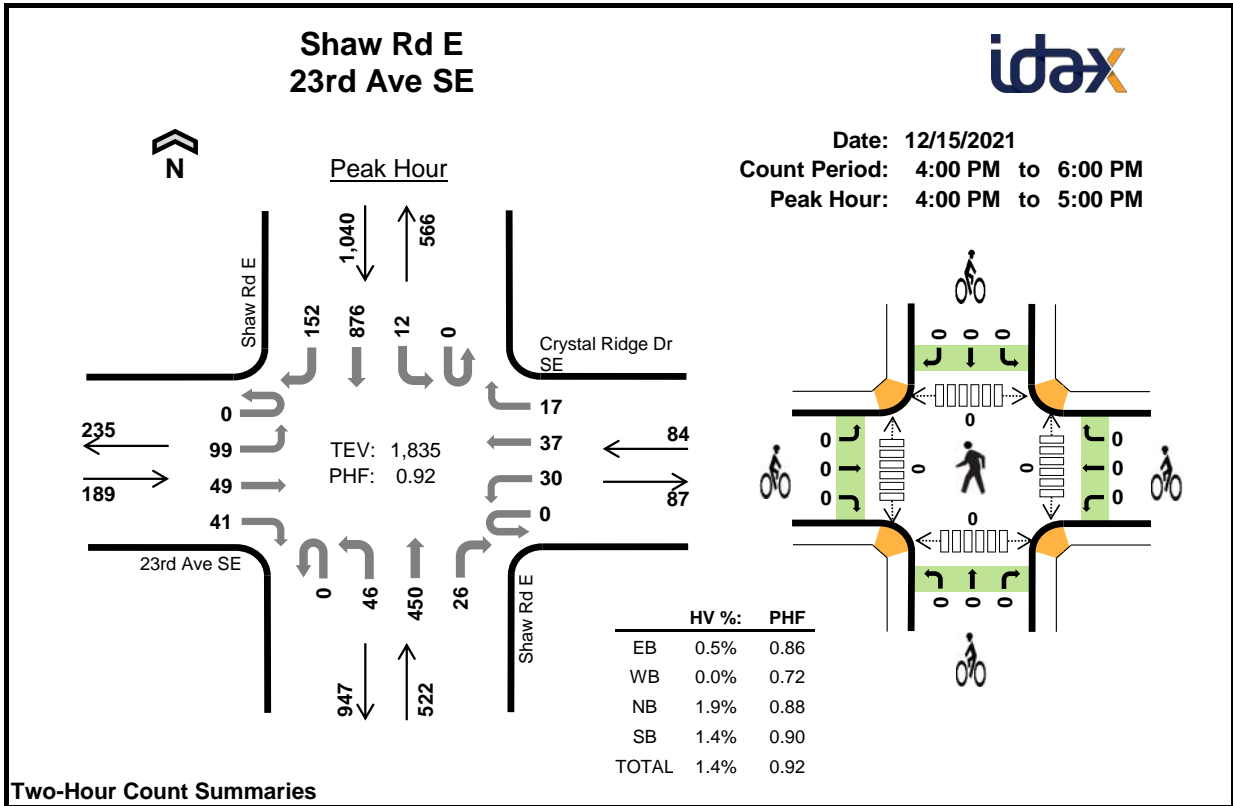


<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	23rd Ave SE				Crystal Ridge Dr SE				Shaw Rd E				Shaw Rd E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	1	8	0
7:15 AM	0	0	0	1	0	0	1	0	0	0	2	0	0	0	3	2	9	0
7:30 AM	0	0	0	1	0	0	0	0	0	1	5	0	0	1	2	2	12	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	6	0	0	0	2	0	9	38
8:00 AM	0	0	0	0	0	0	0	0	0	1	5	0	0	0	4	0	10	40
8:15 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	5	2	13	44
8:30 AM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	6	0	10	42
8:45 AM	0	1	0	0	0	0	0	0	0	0	4	1	0	1	5	0	12	45
Count Total	0	2	0	2	0	1	1	0	0	2	37	1	0	2	28	7	83	0
Peak Hour	0	0	0	2	0	1	1	0	0	1	19	0	0	1	8	5	38	0

<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	23rd Ave SE			Crystal Ridge Dr SE			Shaw Rd E			Shaw Rd E			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	23rd Ave SE				Crystal Ridge Dr SE				Shaw Rd E				Shaw Rd E				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	20	19	16	0	16	9	4	0	15	108	4	0	4	251	34	500	0	
4:15 PM	0	29	14	9	0	2	7	4	0	14	125	9	0	3	200	43	459	0	
4:30 PM	0	19	7	4	0	6	10	6	0	10	120	7	0	2	220	36	447	0	
4:45 PM	0	31	9	12	0	6	11	3	0	7	97	6	0	3	205	39	429	1,835	
5:00 PM	0	21	12	11	0	4	9	1	0	4	84	8	0	2	181	42	379	1,714	
5:15 PM	0	30	12	7	0	4	4	1	0	5	126	14	0	2	220	29	454	1,709	
5:30 PM	0	20	20	5	0	6	6	6	0	6	111	8	0	5	200	41	434	1,696	
5:45 PM	0	17	7	4	0	7	7	14	0	7	111	6	0	5	214	28	427	1,694	
Count Total	0	187	100	68	0	51	63	39	0	68	882	62	0	26	1,691	292	3,529	0	
Peak Hour	All	0	99	49	41	0	30	37	17	0	46	450	26	0	12	876	152	1,835	0
	HV	0	1	0	0	0	0	0	0	0	0	10	0	0	0	13	2	26	0
	HV%	-	1%	0%	0%	-	0%	0%	0%	-	0%	2%	0%	-	0%	1%	1%	1%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	3	7	10	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	3	2	6	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	2	3	5	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	2	3	5	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	2	1	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	1	1	3	6	0	0	0	0	0	0	0	0	0	0
Count Total	2	2	15	21	40	0	0	0	0	0	0	0	0	0	0
Peak Hour	1	0	10	15	26	0	0	0	0	0	0	0	0	0	0

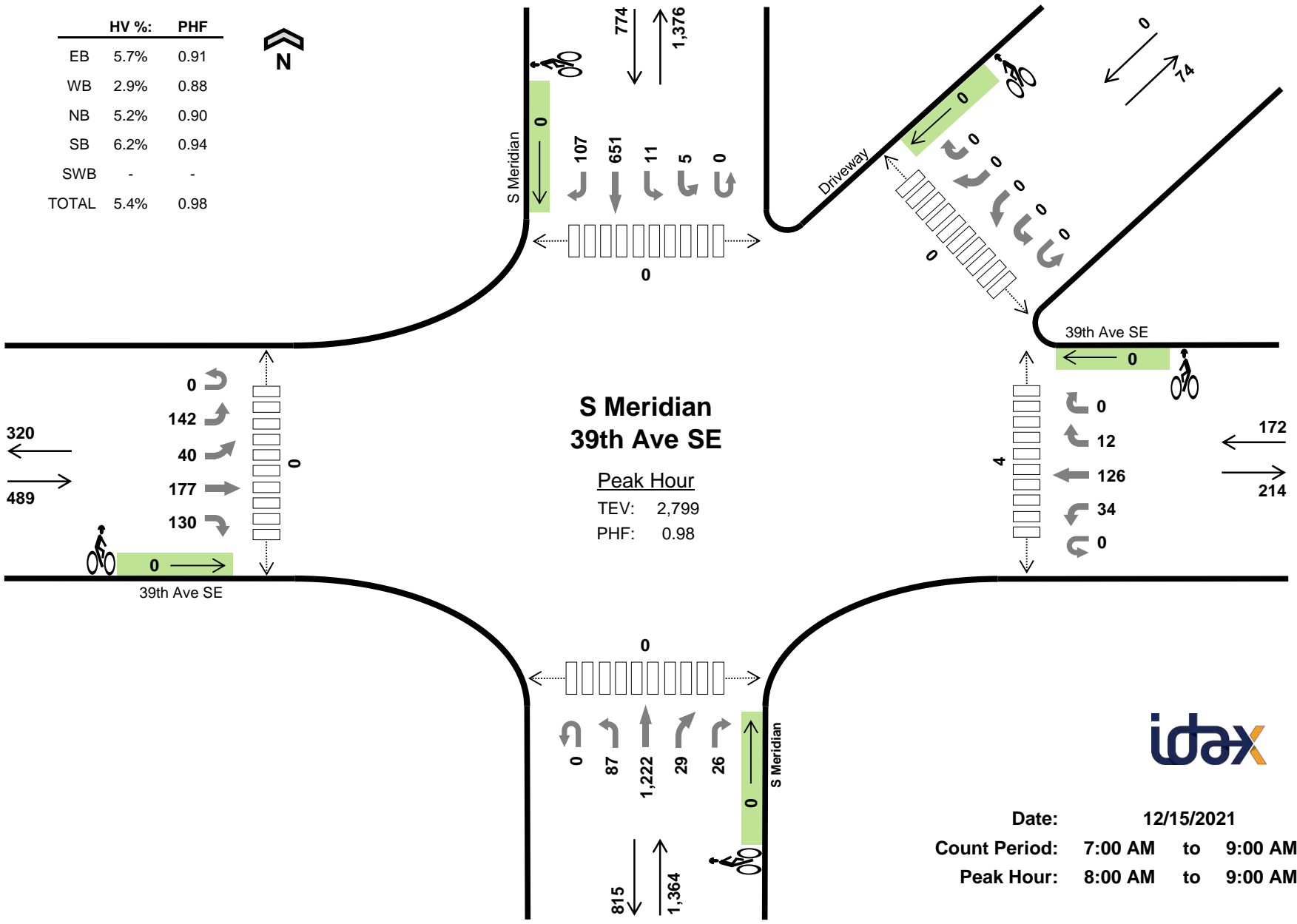
<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	23rd Ave SE				Crystal Ridge Dr SE				Shaw Rd E				Shaw Rd E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	6	1	10	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	2	0	6	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	5	26
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	18
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	14
5:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	1	4	13
5:45 PM	0	1	0	0	0	0	0	1	0	0	1	0	0	1	2	0	6	14
Count Total	0	2	0	0	0	0	0	2	0	0	15	0	0	1	17	3	40	0
Peak Hour	0	1	0	0	0	0	0	0	0	0	10	0	0	0	13	2	26	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	23rd Ave SE			Crystal Ridge Dr SE			Shaw Rd E			Shaw Rd E			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



	HV %:	PHF
EB	5.7%	0.91
WB	2.9%	0.88
NB	5.2%	0.90
SB	6.2%	0.94
SWB	-	-
TOTAL	5.4%	0.98



Date: 12/15/2021  
 Count Period: 7:00 AM to 9:00 AM  
 Peak Hour: 8:00 AM to 9:00 AM

Two-Hour Count Summaries

Interval Start	39th Ave SE					39th Ave SE					S Meridian					S Meridian					Driveway					15-min Total	Rolling One Hour	
	Eastbound					Westbound					Northbound					Southbound					Southwestbound							
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR			
7:00 AM	0	26	6	35	18	0	3	22	2	0	0	22	363	3	8	0	1	0	127	17	0	0	0	0	0	653	0	
7:15 AM	0	31	8	37	17	0	12	34	1	0	0	21	379	4	10	0	0	2	148	15	0	0	0	0	0	719	0	
7:30 AM	0	31	5	37	19	0	4	28	2	0	0	16	365	3	7	0	0	0	145	23	0	0	0	0	0	685	0	
7:45 AM	0	41	11	48	37	0	12	51	1	0	0	21	264	6	5	0	2	3	153	27	0	0	0	0	0	682	2,739	
8:00 AM	0	31	6	42	32	0	4	37	2	0	0	17	346	12	5	0	0	5	153	20	0	0	0	0	0	712	2,798	
8:15 AM	0	36	11	51	33	0	9	23	1	0	0	18	275	5	8	0	1	1	177	22	0	0	0	0	0	671	2,750	
8:30 AM	0	41	7	34	31	0	10	32	7	0	0	24	312	5	6	0	1	2	161	26	0	0	0	0	0	699	2,764	
8:45 AM	0	34	16	50	34	0	11	34	2	0	0	28	289	7	7	0	3	3	160	39	0	0	0	0	0	717	2,799	
Count Total	0	271	70	334	221	0	65	261	18	0	0	167	2,593	45	56	0	8	16	1,224	189	0	0	0	0	0	5,538	0	
Peak Hour	All	0	142	40	177	130	0	34	126	12	0	0	87	1,222	29	26	0	5	11	651	107	0	0	0	0	0	2,799	0
	HV	0	12	0	5	11	0	1	4	0	0	0	5	64	0	2	0	0	1	41	6	0	0	0	0	0	152	0
	HV%	-	8%	0%	3%	8%	-	3%	3%	0%	-	-	6%	5%	0%	8%	-	0%	9%	6%	6%	-	-	-	-	-	5%	0

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

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)														
	EB	WB	NB	SB	SWB	Total	EB	WB	NB	SB	SWB	Total	East	West	North	South	Northeast	Total									
7:00 AM	6	1	9	10	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	7	9	13	11	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	7	0	8	16	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	6	2	9	17	0	34	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	3
8:00 AM	11	1	16	16	0	44	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
8:15 AM	4	2	14	14	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	6	1	24	8	0	39	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
8:45 AM	7	1	17	10	0	35	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
Count Total	54	17	110	102	0	283	0	0	0	0	0	0	0	0	0	0	0	4	1	0	2	0	0	0	0	0	7
Peak Hr	28	5	71	48	0	152	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4

**Two-Hour Count Summaries - Heavy Vehicles**

Interval Start	39th Ave SE Eastbound					39th Ave SE Westbound					S Meridian Northbound					S Meridian Southbound					Driveway Southwestbound					15-min Total	Rolling One Hour
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	2	0	2	2	0	0	1	0	0	0	1	5	0	3	0	0	0	9	1	0	0	0	0	26	0	
7:15 AM	0	0	0	3	4	0	2	7	0	0	0	1	12	0	0	0	0	0	10	1	0	0	0	0	40	0	
7:30 AM	0	3	0	3	1	0	0	0	0	0	0	1	6	0	1	0	0	0	16	0	0	0	0	0	31	0	
7:45 AM	0	0	0	1	5	0	0	2	0	0	0	1	8	0	0	0	0	0	16	1	0	0	0	0	34	131	
8:00 AM	0	5	0	1	5	0	0	1	0	0	0	1	15	0	0	0	0	1	14	1	0	0	0	0	44	149	
8:15 AM	0	2	0	0	2	0	0	2	0	0	0	1	13	0	0	0	0	0	14	0	0	0	0	0	34	143	
8:30 AM	0	3	0	2	1	0	0	1	0	0	0	3	20	0	1	0	0	0	6	2	0	0	0	0	39	151	
8:45 AM	0	2	0	2	3	0	1	0	0	0	0	0	16	0	1	0	0	0	7	3	0	0	0	0	35	152	
Count Total	0	17	0	14	23	0	3	14	0	0	0	9	95	0	6	0	0	1	92	9	0	0	0	0	283	0	
Peak Hour	0	12	0	5	11	0	1	4	0	0	0	5	64	0	2	0	0	1	41	6	0	0	0	0	152	0	

**Two-Hour Count Summaries - Bikes**

Interval Start	39th Ave SE Eastbound					39th Ave SE Westbound					S Meridian Northbound					S Meridian Southbound					Driveway Southwestbound					15-min Total	Rolling One Hour
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





Two-Hour Count Summaries

Interval Start	39th Ave SE					39th Ave SE					S Meridian					S Meridian					Driveway					15-min Total	Rolling One Hour	
	Eastbound					Westbound					Northbound					Southbound					Southwestbound							
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR			
4:00 PM	0	60	14	93	52	0	28	84	5	1	0	42	215	29	6	0	4	5	274	66	0	0	0	0	0	978	0	
4:15 PM	0	37	8	46	44	0	18	48	6	1	0	54	232	21	7	0	2	6	273	90	0	0	0	0	0	893	0	
4:30 PM	0	56	7	123	47	0	32	100	13	3	0	40	194	13	11	0	1	7	248	85	0	0	0	0	0	980	0	
4:45 PM	0	58	11	92	57	0	35	65	10	0	0	42	231	13	9	0	3	6	299	82	0	0	0	0	0	1,013	3,864	
5:00 PM	0	52	20	78	51	0	29	56	4	1	0	40	234	19	10	0	6	9	271	73	0	0	0	0	0	953	3,839	
5:15 PM	0	57	11	95	55	0	27	60	10	3	0	39	222	16	11	0	1	5	275	102	0	0	0	0	0	989	3,935	
5:30 PM	0	47	5	58	49	0	30	53	8	1	0	38	221	13	5	0	1	4	265	67	0	0	0	0	0	865	3,820	
5:45 PM	0	45	11	67	57	0	26	50	7	0	0	42	201	12	6	0	2	7	285	62	0	0	0	0	0	880	3,687	
Count Total	0	412	87	652	412	0	225	516	63	10	0	337	1,750	136	65	0	20	49	2,190	627	0	0	0	0	0	7,551	0	
Peak Hour	All	0	223	49	388	210	0	123	281	37	7	0	161	881	61	41	0	11	27	1,093	342	0	0	0	0	0	3,935	0
	HV	0	5	0	4	6	0	2	2	2	0	0	6	42	0	0	0	2	1	17	4	0	0	0	0	0	93	0
	HV%	-	2%	0%	1%	3%	-	2%	1%	5%	0%	-	4%	5%	0%	0%	-	18%	4%	2%	1%	-	-	-	-	-	2%	0

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

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	SWB	Total	EB	WB	NB	SB	SWB	Total	East	West	North	South	Northeast	Total
4:00 PM	3	6	7	5	0	21	0	0	0	0	0	0	1	0	0	0	1	2
4:15 PM	3	3	7	3	0	16	0	0	0	0	0	0	1	1	0	0	0	2
4:30 PM	5	3	8	6	0	22	0	0	0	0	0	0	2	3	0	0	1	6
4:45 PM	5	1	16	2	0	24	0	0	0	0	0	0	0	2	0	1	0	3
5:00 PM	1	1	11	11	0	24	0	0	0	0	0	0	0	0	0	0	1	1
5:15 PM	4	1	13	5	0	23	0	0	0	0	0	0	0	1	0	1	2	4
5:30 PM	1	0	10	2	0	13	0	0	0	0	0	0	0	1	0	0	0	1
5:45 PM	1	1	3	3	0	8	0	0	0	0	0	0	0	1	0	1	0	2
Count Total	23	16	75	37	0	151	0	0	0	0	0	0	4	9	0	3	5	21
Peak Hr	15	6	48	24	0	93	0	0	0	0	0	0	2	6	0	2	4	14

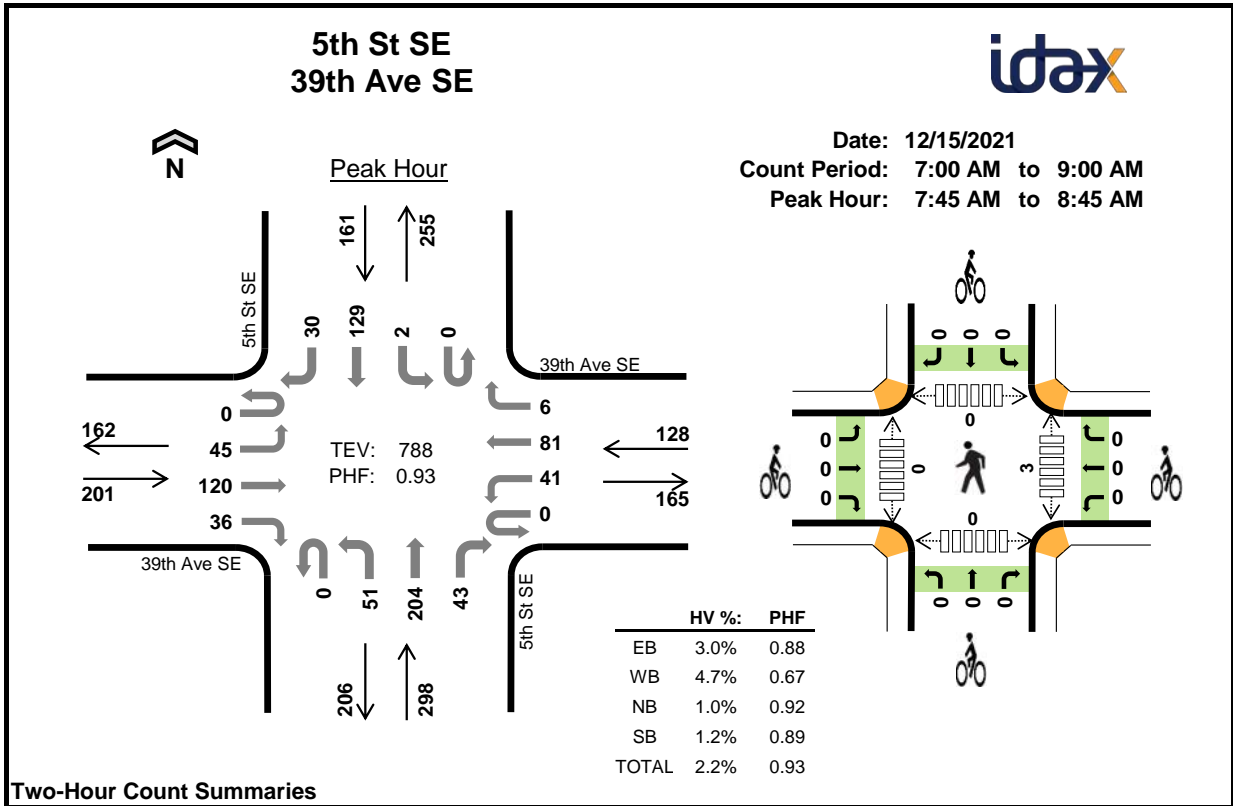
**Two-Hour Count Summaries - Heavy Vehicles**

Interval Start	39th Ave SE Eastbound					39th Ave SE Westbound					S Meridian Northbound					S Meridian Southbound					Driveway Southwestbound					15-min Total	Rolling One Hour
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	1	0	2	0	0	0	6	0	0	0	2	5	0	0	0	0	0	5	0	0	0	0	0	21	0	
4:15 PM	0	1	0	1	1	0	0	3	0	0	0	1	5	0	1	0	0	0	3	0	0	0	0	0	16	0	
4:30 PM	0	2	0	2	1	0	2	1	0	0	0	2	6	0	0	0	0	0	6	0	0	0	0	0	22	0	
4:45 PM	0	2	0	2	1	0	0	0	1	0	0	3	13	0	0	0	0	1	1	0	0	0	0	0	24	83	
5:00 PM	0	0	0	0	1	0	0	1	0	0	0	1	10	0	0	0	1	0	6	4	0	0	0	0	24	86	
5:15 PM	0	1	0	0	3	0	0	0	1	0	0	0	13	0	0	0	1	0	4	0	0	0	0	0	23	93	
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	1	9	0	0	0	0	0	2	0	0	0	0	0	13	84	
5:45 PM	0	0	0	0	1	0	0	1	0	0	0	1	2	0	0	0	0	0	3	0	0	0	0	0	8	68	
Count Total	0	8	0	7	8	0	2	12	2	0	0	11	63	0	1	0	2	1	30	4	0	0	0	0	151	0	
Peak Hour	0	5	0	4	6	0	2	2	2	0	0	6	42	0	0	0	2	1	17	4	0	0	0	0	93	0	

**Two-Hour Count Summaries - Bikes**

Interval Start	39th Ave SE Eastbound					39th Ave SE Westbound					S Meridian Northbound					S Meridian Southbound					Driveway Southwestbound					15-min Total	Rolling One Hour
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





**Two-Hour Count Summaries**

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				5th St SE Northbound				5th St SE Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	6	32	4	0	9	15	3	0	9	63	12	0	0	12	3	168	0	
7:15 AM	0	15	27	6	0	4	22	2	0	15	62	9	0	0	15	5	182	0	
7:30 AM	0	16	20	5	0	6	17	3	0	14	62	7	0	0	32	0	182	0	
7:45 AM	0	8	37	7	0	19	29	0	0	11	51	9	0	0	29	11	211	743	
8:00 AM	0	6	34	10	0	8	15	1	0	16	45	10	0	0	32	5	182	757	
8:15 AM	0	16	30	11	0	7	18	2	0	13	53	9	0	2	31	6	198	773	
8:30 AM	0	15	19	8	0	7	19	3	0	11	55	15	0	0	37	8	197	788	
8:45 AM	0	18	23	12	0	8	15	0	0	12	57	5	0	0	43	9	202	779	
Count Total	0	100	222	63	0	68	150	14	0	101	448	76	0	2	231	47	1,522	0	
Peak Hour	All	0	45	120	36	0	41	81	6	0	51	204	43	0	2	129	30	788	0
	HV	0	2	4	0	0	1	5	0	0	0	1	2	0	0	1	1	17	0
	HV%	-	4%	3%	0%	-	2%	6%	0%	-	0%	0%	5%	-	0%	1%	3%	2%	0

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

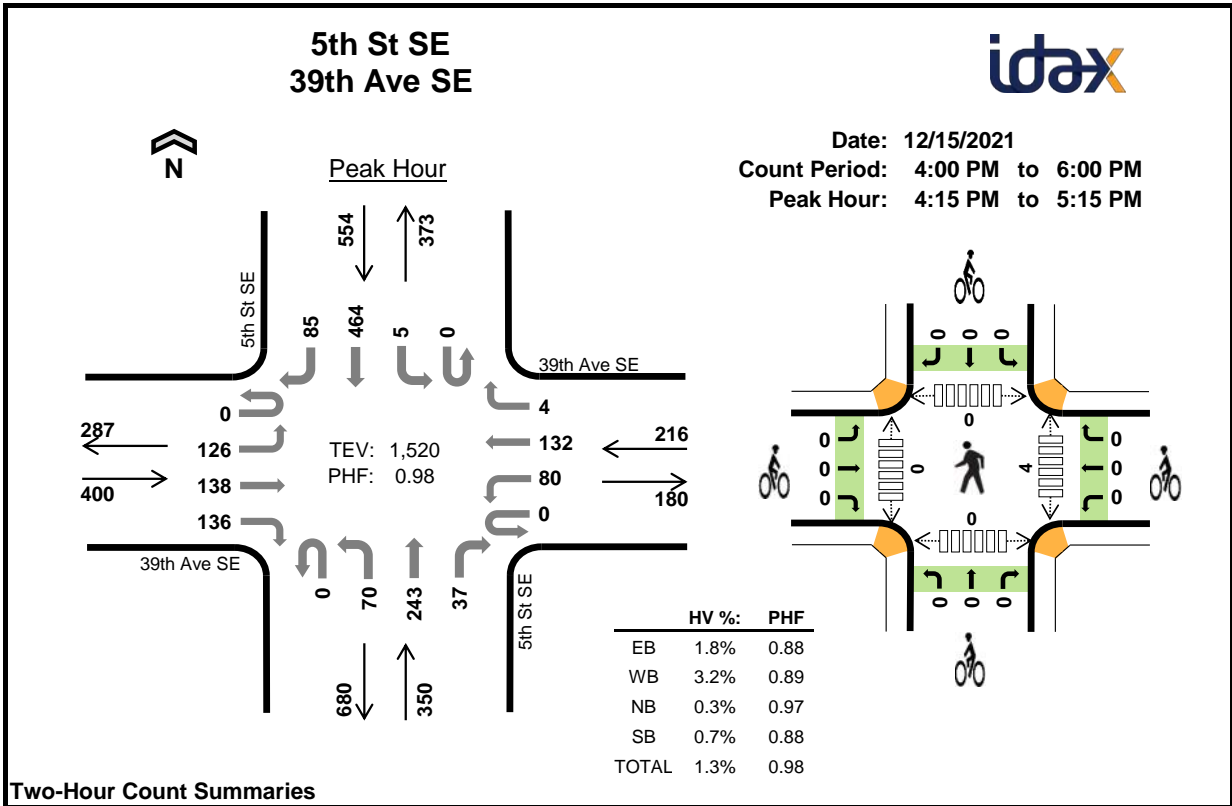
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	5	2	1	0	8	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	6	0	1	8	0	0	0	0	0	0	0	0	0	0
7:30 AM	2	0	0	0	2	0	0	0	0	0	1	0	0	0	1
7:45 AM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0
8:00 AM	2	1	1	0	4	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	2	0	2	5	0	0	0	0	0	3	0	0	0	3
8:30 AM	2	1	2	0	5	0	0	0	0	0	0	0	0	0	0
8:45 AM	3	0	1	0	4	0	0	0	0	0	1	0	0	0	1
Count Total	17	14	5	3	39	0	0	0	0	0	5	0	0	0	5
Peak Hour	6	6	3	2	17	0	0	0	0	0	3	0	0	0	3

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	39th Ave SE				39th Ave SE				5th St SE				5th St SE				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	5	0	0	0	2	0	0	0	0	1	0	0	0	0	8	0
7:15 AM	0	0	1	0	0	0	6	0	0	0	0	0	0	0	1	0	8	0
7:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
<b>7:45 AM</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>21</b>
8:00 AM	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	4	17
8:15 AM	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	1	5	14
8:30 AM	0	1	1	0	0	0	1	0	0	0	0	2	0	0	0	0	5	17
8:45 AM	0	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	4	18
Count Total	0	3	13	1	0	1	13	0	0	0	2	3	0	0	2	1	39	0
Peak Hour	0	2	4	0	0	1	5	0	0	0	1	2	0	0	1	1	17	0

<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	39th Ave SE			39th Ave SE			5th St SE			5th St SE			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>7:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



**Two-Hour Count Summaries**

Interval Start	39th Ave SE Eastbound				39th Ave SE Westbound				5th St SE Northbound				5th St SE Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	16	41	30	0	17	40	0	0	16	55	7	0	0	114	17	353	0	
4:15 PM	0	32	24	25	0	19	32	2	0	15	61	14	0	0	136	21	381	0	
4:30 PM	0	35	34	41	0	26	35	0	0	18	58	9	0	0	104	28	388	0	
4:45 PM	0	32	34	29	0	17	30	2	0	20	64	6	0	1	107	20	362	1,484	
5:00 PM	0	27	46	41	0	18	35	0	0	17	60	8	0	4	117	16	389	1,520	
5:15 PM	0	27	38	45	0	17	27	0	0	12	57	8	0	1	104	17	353	1,492	
5:30 PM	0	27	34	26	0	16	20	0	0	16	43	11	0	1	110	20	324	1,428	
5:45 PM	0	17	31	27	0	11	24	0	0	12	42	7	0	0	94	16	281	1,347	
Count Total	0	213	282	264	0	141	243	4	0	126	440	70	0	7	886	155	2,831	0	
Peak Hour	All	0	126	138	136	0	80	132	4	0	70	243	37	0	5	464	85	1,520	0
	HV	0	0	4	3	0	1	4	2	0	0	1	0	0	1	1	2	19	0
	HV%	-	0%	3%	2%	-	1%	3%	50%	-	0%	0%	0%	-	20%	0%	2%	1%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	2	1	3	8	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	4	0	0	6	0	0	0	0	0	2	0	0	0	2
4:30 PM	2	1	0	2	5	0	0	0	0	0	2	0	0	0	2
4:45 PM	2	1	1	1	5	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	1	0	1	3	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	0	1	1	3	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0
Count Total	10	10	3	10	33	0	0	0	0	0	4	0	0	0	4
Peak Hour	7	7	1	4	19	0	0	0	0	0	4	0	0	0	4



<b>Two-Hour Count Summaries - Heavy Vehicles</b>																			
Interval Start	39th Ave SE				39th Ave SE				5th St SE				5th St SE				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	1	1	0	0	0	2	0	0	1	0	0	0	0	0	0	3	8	0
4:15 PM	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	6	0
4:30 PM	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	2	5	0
4:45 PM	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	1	0	5	24
5:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	3	19
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	14
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	12
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	9
Count Total	0	1	6	3	0	1	7	2	0	1	1	1	0	2	3	5	0	33	0
Peak Hour	0	0	4	3	0	1	4	2	0	0	1	0	0	1	1	2	0	19	0

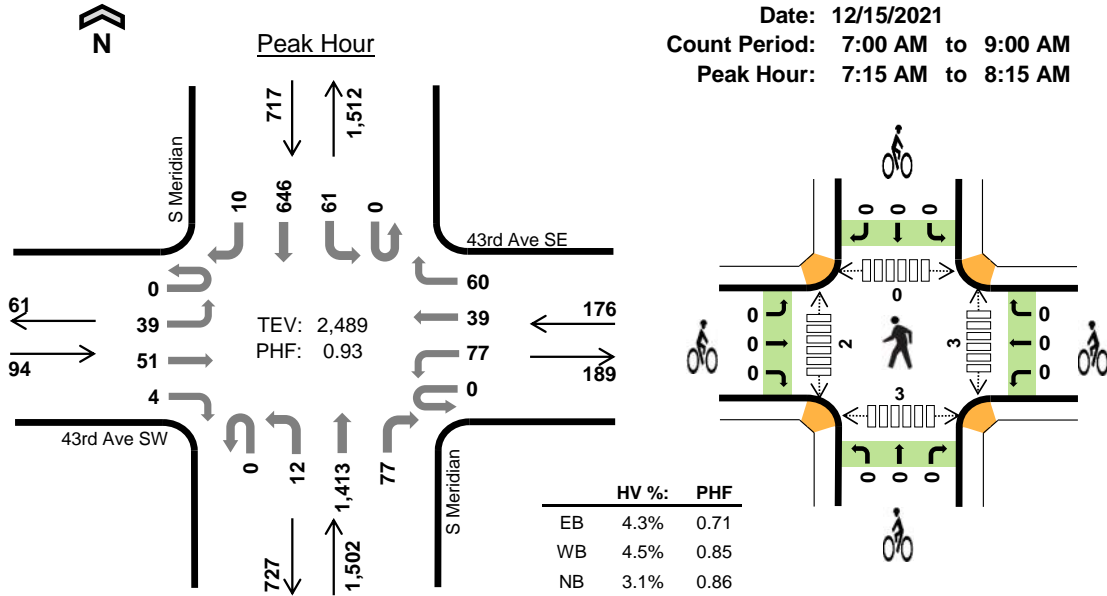
<b>Two-Hour Count Summaries - Bikes</b>																			
Interval Start	39th Ave SE			39th Ave SE			5th St SE			5th St SE			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### S Meridian 43rd Ave SW



Date: 12/15/2021  
 Count Period: 7:00 AM to 9:00 AM  
 Peak Hour: 7:15 AM to 8:15 AM



#### Two-Hour Count Summaries

Interval Start	43rd Ave SW				43rd Ave SE				S Meridian				S Meridian				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	5	8	1	0	19	5	10	0	1	365	26	0	14	108	2	564	0	
<b>7:15 AM</b>	<b>0</b>	<b>6</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>5</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>418</b>	<b>19</b>	<b>0</b>	<b>10</b>	<b>175</b>	<b>2</b>	<b>667</b>	<b>0</b>	
7:30 AM	0	8	12	1	0	16	12	19	0	5	346	20	0	19	137	1	596	0	
7:45 AM	0	9	19	0	0	28	13	11	0	3	292	24	0	17	179	4	599	2,426	
8:00 AM	0	16	14	3	0	20	9	18	0	3	357	14	0	15	155	3	627	2,489	
8:15 AM	0	13	17	4	0	20	10	17	0	3	294	19	0	24	199	2	622	2,444	
8:30 AM	0	9	15	2	0	24	13	22	0	2	327	18	0	16	161	4	613	2,461	
8:45 AM	0	10	21	2	0	32	19	17	0	7	280	22	0	24	165	4	603	2,465	
Count Total	0	76	112	13	0	172	86	126	0	25	2,679	162	0	139	1,279	22	4,891	0	
Peak Hour	All	0	39	51	4	0	77	39	60	0	12	1,413	77	0	61	646	10	2,489	0
	HV	0	3	1	0	0	2	1	5	0	0	43	3	0	11	62	2	133	0
	HV%	-	8%	2%	0%	-	3%	3%	8%	-	0%	3%	4%	-	18%	10%	20%	5%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	11	12	24	0	0	0	0	0	0	0	0	0	0
<b>7:15 AM</b>	<b>1</b>	<b>3</b>	<b>11</b>	<b>16</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
7:30 AM	1	2	9	18	30	0	0	0	0	0	1	0	0	0	1
7:45 AM	1	2	9	20	32	0	0	0	0	0	1	2	0	3	6
8:00 AM	1	1	17	21	40	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	2	18	18	38	0	0	0	0	0	0	1	0	1	2
8:30 AM	3	1	25	7	36	0	0	0	0	0	1	0	0	1	2
8:45 AM	0	0	18	13	31	0	0	0	0	0	0	1	1	0	2
Count Total	7	12	118	125	262	0	0	0	0	0	4	4	1	5	14
Peak Hour	4	8	46	75	133	0	0	0	0	0	3	2	0	3	8

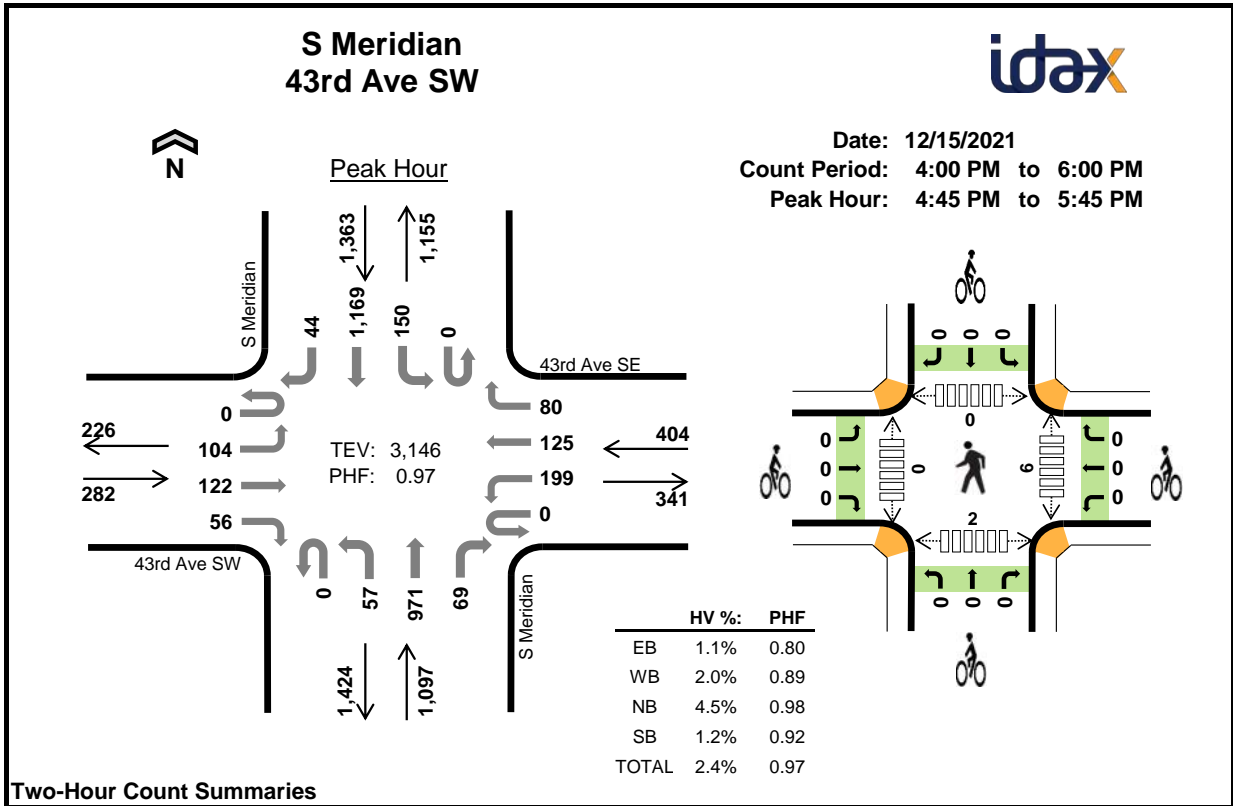
<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	43rd Ave SW				43rd Ave SE				S Meridian				S Meridian				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	10	1	0	1	10	1	24	0
<b>7:15 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>0</b>	<b>31</b>	0
7:30 AM	0	1	0	0	0	0	0	2	0	0	9	0	0	2	16	0	30	0
7:45 AM	0	1	0	0	0	1	1	0	0	0	9	0	0	3	17	0	32	117
8:00 AM	0	0	1	0	0	0	0	1	0	0	16	1	0	4	15	2	40	133
8:15 AM	0	0	0	0	0	1	1	0	0	0	17	1	0	1	17	0	38	140
8:30 AM	0	1	2	0	0	0	0	1	0	0	23	2	0	0	7	0	36	146
8:45 AM	0	0	0	0	0	0	0	0	0	0	17	1	0	2	11	0	31	145
Count Total	0	4	3	0	0	3	2	7	0	0	110	8	0	15	107	3	262	0
Peak Hour	0	3	1	0	0	2	1	5	0	0	43	3	0	11	62	2	133	0

<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	43rd Ave SW			43rd Ave SE			S Meridian			S Meridian			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>7:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.





**Two-Hour Count Summaries**

Interval Start	43rd Ave SW				43rd Ave SE				S Meridian				S Meridian				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	17	40	15	0	57	41	24	0	14	238	24	0	43	277	12	802	0	
4:15 PM	0	24	25	6	0	52	31	26	0	12	244	17	0	46	264	13	760	0	
4:30 PM	0	23	19	14	0	65	40	23	0	12	223	20	0	37	257	11	744	0	
<b>4:45 PM</b>	<b>0</b>	<b>27</b>	<b>26</b>	<b>14</b>	<b>0</b>	<b>54</b>	<b>32</b>	<b>26</b>	<b>0</b>	<b>10</b>	<b>236</b>	<b>17</b>	<b>0</b>	<b>37</b>	<b>325</b>	<b>10</b>	<b>814</b>	3,120	
5:00 PM	0	33	36	19	0	53	39	22	0	14	244	20	0	36	263	12	791	3,109	
5:15 PM	0	25	33	12	0	45	29	14	0	13	256	8	0	40	306	11	792	3,141	
5:30 PM	0	19	27	11	0	47	25	18	0	20	235	24	0	37	275	11	749	3,146	
5:45 PM	0	18	24	12	0	47	32	26	0	16	219	15	0	42	300	8	759	3,091	
Count Total	0	186	230	103	0	420	269	179	0	111	1,895	145	0	318	2,267	88	6,211	0	
Peak Hour	All	0	104	122	56	0	199	125	80	0	57	971	69	0	150	1,169	44	3,146	0
	HV	0	1	2	0	0	2	1	5	0	0	49	0	0	3	14	0	77	0
	HV%	-	1%	2%	0%	-	1%	1%	6%	-	0%	5%	0%	-	2%	1%	0%	2%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	8	6	16	0	0	0	0	0	2	0	0	2	4
4:15 PM	0	1	14	6	21	0	0	0	0	0	0	0	0	4	4
4:30 PM	0	2	5	10	17	0	0	0	0	0	1	0	0	1	2
<b>4:45 PM</b>	<b>0</b>	<b>3</b>	<b>17</b>	<b>2</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
5:00 PM	2	1	8	7	18	0	0	0	0	0	1	0	0	1	2
5:15 PM	1	3	14	8	26	0	0	0	0	0	2	0	0	0	2
5:30 PM	0	1	10	0	11	0	0	0	0	0	2	0	0	0	2
5:45 PM	0	1	4	6	11	0	0	0	0	0	0	0	0	2	2
Count Total	4	13	80	45	142	0	0	0	0	0	9	0	0	11	20
Peak Hour	3	8	49	17	77	0	0	0	0	0	6	0	0	2	8

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	43rd Ave SW				43rd Ave SE				S Meridian				S Meridian				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	1	0	0	8	0	0	0	6	0	16	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	13	1	0	1	5	0	21	0
4:30 PM	0	0	0	0	0	1	0	1	0	0	5	0	0	1	9	0	17	0
4:45 PM	0	0	0	0	0	1	1	1	0	0	17	0	0	1	1	0	22	76
5:00 PM	0	0	2	0	0	0	0	1	0	0	8	0	0	1	6	0	18	78
5:15 PM	0	1	0	0	0	1	0	2	0	0	14	0	0	1	7	0	26	83
5:30 PM	0	0	0	0	0	0	0	1	0	0	10	0	0	0	0	0	11	77
5:45 PM	0	0	0	0	0	1	0	0	0	0	4	0	0	2	4	0	11	66
Count Total	0	1	3	0	0	4	1	8	0	0	79	1	0	7	38	0	142	0
Peak Hour	0	1	2	0	0	2	1	5	0	0	49	0	0	3	14	0	77	0

<b>Two-Hour Count Summaries - Bikes</b>																	
Interval Start	43rd Ave SW			43rd Ave SE			S Meridian			S Meridian			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# Appendix B

LOS Result Worksheets

Existing 2021 AM Peak Hour



Lanes, Volumes, Timings  
1: 7th St SE & College Way

01/23/2022



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	18	186	19	58	214
Future Volume (vph)	6	18	186	19	58	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-4%			0%
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	25		25			25
Link Distance (ft)	771		286			501
Travel Time (s)	21.0		7.8			13.7
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	6	18	186	19	58	214
Future Vol, veh/h	6	18	186	19	58	214
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-4	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	2	3	3
Mvmt Flow	7	20	204	21	64	235

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	579	215	0	0	225
Stage 1	215	-	-	-	-
Stage 2	364	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227
Pot Cap-1 Maneuver	481	830	-	-	1338
Stage 1	826	-	-	-	-
Stage 2	707	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	457	830	-	-	1338
Mov Cap-2 Maneuver	541	-	-	-	-
Stage 1	826	-	-	-	-
Stage 2	672	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	732	1338	-
HCM Lane V/C Ratio	-	-	0.036	0.048	-
HCM Control Delay (s)	-	-	10.1	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Lanes, Volumes, Timings  
 2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	319	778	1179	704	171	212
Future Volume (vph)	319	778	1179	704	171	212
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Storage Length (ft)	250			0	0	175
Storage Lanes	2			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		35	
Link Distance (ft)		370	339		787	
Travel Time (s)		7.2	6.6		15.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	7%	3%	3%	2%	2%
Shared Lane Traffic (%)						
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Detector Phase	5		6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	8.0	8.0
Minimum Split (s)	12.6		20.6	20.6	12.6	12.6
Total Split (s)	15.0		99.0	99.0	26.0	26.0
Total Split (%)	10.7%		70.7%	70.7%	18.6%	18.6%
Yellow Time (s)	3.6		3.6	3.6	3.6	3.6
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)	4.6		4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	Min		C-Min	C-Min	None	None

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 41 (29%), Referenced to phase 6:WBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 ! Phase conflict between lane groups.

Splits and Phases: 2: 31st Ave SW/S Meridian (SR161)



# HCM Signalized Intersection Capacity Analysis

## 2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↕	↖↗	↕	↖↗	↖↗
Traffic Volume (vph)	319	778	1179	704	171	212
Future Volume (vph)	319	778	1179	704	171	212
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Total Lost time (s)	4.6	4.0	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Flt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3038	3132	3387	1515	3252	1500
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3038	3132	3387	1515	3252	1500
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	339	828	1254	749	182	226
RTOR Reduction (vph)	0	0	0	296	0	173
Lane Group Flow (vph)	339	828	1254	453	182	53
Heavy Vehicles (%)	7%	7%	3%	3%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Actuated Green, G (s)	29.4	140.0	83.6	83.6	13.2	13.2
Effective Green, g (s)	29.4	140.0	83.6	83.6	13.2	13.2
Actuated g/C Ratio	0.21	1.00	0.60	0.60	0.09	0.09
Clearance Time (s)	4.6		4.6	4.6	4.6	4.6
Vehicle Extension (s)	2.5		2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	637	3132	2022	904	306	141
v/s Ratio Prot	c0.11	0.26	c0.37		c0.06	
v/s Ratio Perm				0.30		0.04
v/c Ratio	0.53	0.26	0.62	0.50	0.59	0.38
Uniform Delay, d1	49.2	0.0	18.0	16.2	60.8	59.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	1.4	2.0	2.6	1.2
Delay (s)	49.9	0.2	19.5	18.2	63.4	60.8
Level of Service	D	A	B	B	E	E
Approach Delay (s)		14.6	19.0		61.9	
Approach LOS		B	B		E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			22.5		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.60			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	13.8
Intersection Capacity Utilization			63.3%		ICU Level of Service	B
Analysis Period (min)			15			
! Phase conflict between lane groups.						
c Critical Lane Group						



Lanes, Volumes, Timings  
 3: S Meridian (SR161) & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	20	25	51	27	352	15	1481	32	257	630	25
Future Volume (vph)	22	20	25	51	27	352	15	1481	32	257	630	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	250		0	225		0	350		0
Storage Lanes	1		1	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		242			1349			645			449	
Travel Time (s)		6.6			26.3			12.6			8.7	
Confl. Peds. (#/hr)						1						1
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
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	8%	8%	8%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			Free						
Detector Phase	3	8	8	7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	8.6	10.6	10.6	10.6	35.6		10.6	28.6		10.6	31.6	
Total Split (s)	15.0	25.0	25.0	27.0	37.0		15.0	68.0		20.0	73.0	
Total Split (%)	10.7%	17.9%	17.9%	19.3%	26.4%		10.7%	48.6%		14.3%	52.1%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		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-Min		None	C-Min	

Intersection Summary

Area Type: Other

Cycle Length: 140

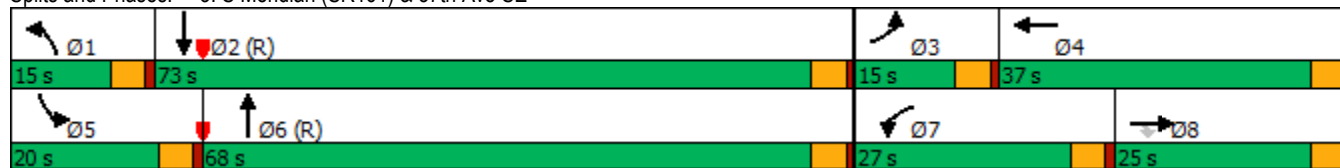
Actuated Cycle Length: 140

Offset: 44 (31%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 3: S Meridian (SR161) & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 3: S Meridian (SR161) & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	20	25	51	27	352	15	1481	32	257	630	25
Future Volume (veh/h)	22	20	25	51	27	352	15	1481	32	257	630	25
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1772	1772	1772	1758	1758	1758	1688	1688	1688
Adj Flow Rate, veh/h	23	21	26	53	28	0	16	1543	33	268	656	0
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, %	3	3	3	2	2	2	3	3	3	8	8	8
Cap, veh/h	28	120	54	68	105		33	2315	49	312	3560	
Arrive On Green	0.02	0.04	0.04	0.04	0.06	0.00	0.04	1.00	1.00	0.10	0.77	0.00
Sat Flow, veh/h	1674	3340	1490	1688	1772	1502	1674	3344	71	3118	4759	0
Grp Volume(v), veh/h	23	21	26	53	28	0	16	770	806	268	656	0
Grp Sat Flow(s),veh/h/ln	1674	1670	1490	1688	1772	1502	1674	1670	1745	1559	1536	0
Q Serve(g_s), s	1.9	0.9	2.4	4.4	2.1	0.0	1.3	0.0	0.0	11.8	5.3	0.0
Cycle Q Clear(g_c), s	1.9	0.9	2.4	4.4	2.1	0.0	1.3	0.0	0.0	11.8	5.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.00
Lane Grp Cap(c), veh/h	28	120	54	68	105		33	1156	1208	312	3560	
V/C Ratio(X)	0.81	0.17	0.49	0.78	0.27		0.48	0.67	0.67	0.86	0.18	
Avail Cap(c_a), veh/h	124	487	217	270	410		124	1156	1208	343	3560	
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(l)	1.00	1.00	1.00	0.95	0.95	0.00	0.69	0.69	0.69	1.00	1.00	0.00
Uniform Delay (d), s/veh	68.6	65.5	66.2	66.6	63.0	0.0	66.5	0.0	0.0	62.0	4.2	0.0
Incr Delay (d2), s/veh	46.6	0.7	6.7	16.8	1.4	0.0	7.3	2.1	2.0	18.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.4	1.0	2.2	1.0	0.0	0.6	0.7	0.7	5.5	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	115.1	66.2	72.9	83.4	64.3	0.0	73.8	2.1	2.0	80.1	4.3	0.0
LnGrp LOS	F	E	E	F	E		E	A	A	F	A	
Approach Vol, veh/h		70			81	A		1592			924	A
Approach Delay, s/veh		84.7			76.8			2.8			26.3	
Approach LOS		F			E			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	112.8	7.0	12.9	18.6	101.6	10.2	9.6				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	10.4	68.4	10.4	32.4	15.4	63.4	22.4	20.4				
Max Q Clear Time (g_c+I1), s	3.3	7.3	3.9	4.1	13.8	2.0	6.4	4.4				
Green Ext Time (p_c), s	0.0	6.3	0.0	0.1	0.1	23.1	0.1	0.1				

Intersection Summary												
HCM 6th Ctrl Delay	15.3											
HCM 6th LOS	B											

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
4: 5th St SE & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	262	25	12	292	134	70	187	11	112	158	46
Future Volume (vph)	32	262	25	12	292	134	70	187	11	112	158	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-3%			0%			-5%	
Storage Length (ft)	200		0	225		150	200		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		1349			1181			965				418
Travel Time (s)		26.3			23.0			21.9				11.4
Confl. Peds. (#/hr)	1					1			4			4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Detector Phase	1	6		5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0	26.0	11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0	46.0	21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%	37.1%	16.9%	29.0%		16.9%	29.0%	
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)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other

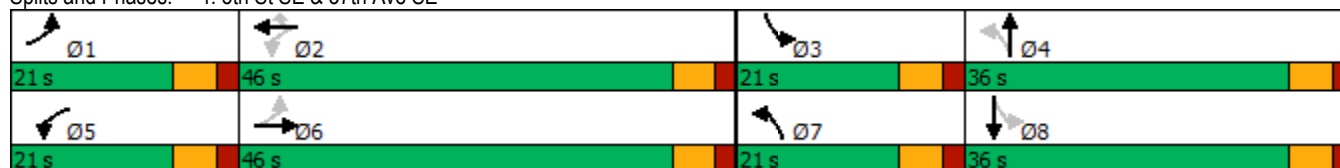
Cycle Length: 124

Actuated Cycle Length: 56

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: 5th St SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
4: 5th St SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	262	25	12	292	134	70	187	11	112	158	46
Future Volume (veh/h)	32	262	25	12	292	134	70	187	11	112	158	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		0.99
Parking Bus, Adj	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	1841	1841	1841	1973	1973	1973	1870	1870	1870	2037	2037	2037
Adj Flow Rate, veh/h	36	294	28	13	328	0	79	210	0	126	178	52
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	4	4	4
Cap, veh/h	338	718	68	333	749		396	387		436	336	98
Arrive On Green	0.04	0.22	0.22	0.02	0.20	0.00	0.07	0.21	0.00	0.08	0.22	0.22
Sat Flow, veh/h	1753	3228	305	1879	3749	1672	1781	1870	0	1940	1512	442
Grp Volume(v), veh/h	36	158	164	13	328	0	79	210	0	126	0	230
Grp Sat Flow(s),veh/h/ln	1753	1749	1785	1879	1874	1672	1781	1870	0	1940	0	1954
Q Serve(g_s), s	0.8	3.9	4.0	0.3	3.9	0.0	1.7	5.1	0.0	2.5	0.0	5.3
Cycle Q Clear(g_c), s	0.8	3.9	4.0	0.3	3.9	0.0	1.7	5.1	0.0	2.5	0.0	5.3
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	338	389	397	333	749		396	387		436	0	435
V/C Ratio(X)	0.11	0.41	0.41	0.04	0.44		0.20	0.54		0.29	0.00	0.53
Avail Cap(c_a), veh/h	787	1377	1406	857	2952		804	1105		850	0	1154
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(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	16.9	16.9	15.8	17.8	0.0	14.3	18.0	0.0	14.0	0.0	17.4
Incr Delay (d2), s/veh	0.1	0.7	0.7	0.0	0.4	0.0	0.2	1.2	0.0	0.4	0.0	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(50%),veh/ln	0.3	1.4	1.5	0.1	1.5	0.0	0.6	2.1	0.0	1.0	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	17.6	17.6	15.8	18.2	0.0	14.5	19.2	0.0	14.4	0.0	18.4
LnGrp LOS	B	B	B	B	B		B	B		B	A	B
Approach Vol, veh/h		358			341	A		289	A		356	
Approach Delay, s/veh		17.3			18.1			17.9			17.0	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	16.1	10.2	16.5	6.8	17.3	9.4	17.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	2.8	5.9	4.5	7.1	2.3	6.0	3.7	7.3				
Green Ext Time (p_c), s	0.0	2.2	0.2	1.1	0.0	1.9	0.1	1.4				

Intersection Summary

HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Lanes, Volumes, Timings  
5: 39th Ave SE & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	342	1	150	502	1	0	7	253	4	3	7
Future Volume (vph)	8	342	1	150	502	1	0	7	253	4	3	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		6%			-5%			3%			0%	
Storage Length (ft)	225		0	200		0	200		0	0		150
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35				25
Link Distance (ft)		1181			510			1162				264
Travel Time (s)		23.0			9.9			22.6				7.2
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 (%)	4%	4%	4%	3%	3%	3%	3%	3%	3%	14%	14%	14%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt		NA
Protected Phases	7	4		3	8		5	2	3	1		6
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	3	1		6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	5.0	5.0		10.0
Minimum Split (s)	12.0	30.0		12.0	30.0		11.0	16.0	12.0	11.0		34.0
Total Split (s)	23.0	42.0		23.0	42.0		22.0	22.0	23.0	22.0		22.0
Total Split (%)	21.1%	38.5%		21.1%	38.5%		20.2%	20.2%	21.1%	20.2%		20.2%
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)	3.0	3.0		3.0	3.0		2.0	2.0	3.0	2.0		2.0
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)	7.0	7.0		7.0	7.0		6.0	6.0	7.0	6.0		6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Min		None	Min		None	None	None	None		None

Intersection Summary

Area Type: Other

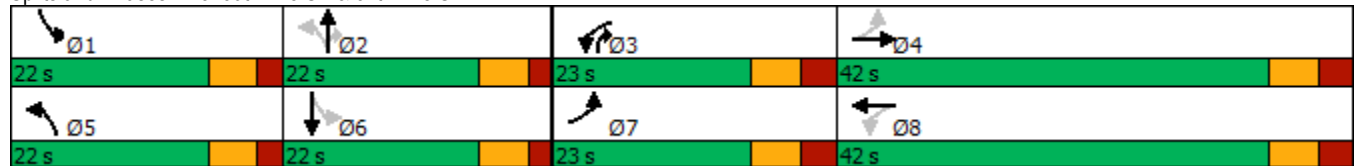
Cycle Length: 109

Actuated Cycle Length: 39.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: 39th Ave SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 5: 39th Ave SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	342	1	150	502	1	0	7	253	4	3	7
Future Volume (veh/h)	8	342	1	150	502	1	0	7	253	4	3	7
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1629	1629	1629	2052	2052	2052	1803	1803	1803	1693	1693	1693
Adj Flow Rate, veh/h	9	376	1	165	552	1	0	8	278	4	3	8
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
Percent Heavy Veh, %	4	4	4	3	3	3	3	3	3	14	14	14
Cap, veh/h	294	696	2	448	1216	2	406	360	453	335	129	343
Arrive On Green	0.01	0.22	0.22	0.10	0.30	0.30	0.00	0.20	0.20	0.01	0.32	0.32
Sat Flow, veh/h	1551	3166	8	1954	3992	7	1717	1803	1528	1612	408	1088
Grp Volume(v), veh/h	9	184	193	165	269	284	0	8	278	4	0	11
Grp Sat Flow(s),veh/h/ln	1551	1547	1627	1954	1949	2050	1717	1803	1528	1612	0	1497
Q Serve(g_s), s	0.2	5.7	5.7	3.4	6.1	6.1	0.0	0.2	8.5	0.1	0.0	0.3
Cycle Q Clear(g_c), s	0.2	5.7	5.7	3.4	6.1	6.1	0.0	0.2	8.5	0.1	0.0	0.3
Prop In Lane	1.00		0.01	1.00		0.00	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	294	340	358	448	594	625	406	360	453	335	0	472
V/C Ratio(X)	0.03	0.54	0.54	0.37	0.45	0.45	0.00	0.02	0.61	0.01	0.00	0.02
Avail Cap(c_a), veh/h	733	997	1048	834	1255	1321	908	531	597	801	0	472
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	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	18.8	18.8	14.2	15.2	15.2	0.0	17.5	16.4	15.7	0.0	12.8
Incr Delay (d2), s/veh	0.0	2.8	2.7	0.5	1.2	1.1	0.0	0.0	1.4	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(50%),veh/ln	0.1	2.1	2.2	1.4	2.5	2.6	0.0	0.1	2.7	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	21.6	21.5	14.7	16.4	16.3	0.0	17.5	17.8	15.7	0.0	12.8
LnGrp LOS	B	C	C	B	B	B	A	B	B	B	A	B
Approach Vol, veh/h		386			718			286				15
Approach Delay, s/veh		21.4			16.0			17.8				13.6
Approach LOS		C			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	16.9	12.2	18.9	0.0	23.1	7.6	23.6				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	16.0	16.0	16.0	35.0	16.0	16.0	16.0	35.0				
Max Q Clear Time (g_c+I1), s	2.1	10.5	5.4	7.7	0.0	2.3	2.2	8.1				
Green Ext Time (p_c), s	0.0	0.5	0.3	4.2	0.0	0.0	0.0	6.5				

Intersection Summary

HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
6: 10th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	458	44	67	550	12	85	20	88	1	1	13
Future Volume (vph)	91	458	44	67	550	12	85	20	88	1	1	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-5%			-6%			-4%	
Storage Length (ft)	150		0	200		0	100		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		510			1994			256				231
Travel Time (s)		9.9			38.8			5.8				6.3
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 (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	13%	13%	13%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.3	30.3		11.3	30.3		10.5	25.5		10.5	25.5	
Total Split (s)	21.3	51.3		21.3	51.3		21.3	21.3		21.3	21.3	
Total Split (%)	18.5%	44.5%		18.5%	44.5%		18.5%	18.5%		18.5%	18.5%	
Yellow Time (s)	4.3	4.3		4.3	4.3		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 115.2

Actuated Cycle Length: 52.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: 10th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
6: 10th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	458	44	67	550	12	85	20	88	1	1	13
Future Volume (veh/h)	91	458	44	67	550	12	85	20	88	1	1	13
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	2037	2037	2037	2091	2091	2091	1862	1862	1862
Adj Flow Rate, veh/h	100	503	48	74	604	13	93	22	97	1	1	14
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
Percent Heavy Veh, %	4	4	4	4	4	4	3	3	3	13	13	13
Cap, veh/h	404	975	93	431	1128	24	410	53	233	256	9	127
Arrive On Green	0.08	0.30	0.30	0.06	0.29	0.29	0.07	0.16	0.16	0.00	0.09	0.09
Sat Flow, veh/h	1753	3227	307	1940	3873	83	1991	337	1486	1774	106	1488
Grp Volume(v), veh/h	100	272	279	74	302	315	93	0	119	1	0	15
Grp Sat Flow(s),veh/h/ln	1753	1749	1785	1940	1935	2022	1991	0	1823	1774	0	1594
Q Serve(g_s), s	1.9	6.4	6.4	1.3	6.5	6.5	2.0	0.0	2.9	0.0	0.0	0.4
Cycle Q Clear(g_c), s	1.9	6.4	6.4	1.3	6.5	6.5	2.0	0.0	2.9	0.0	0.0	0.4
Prop In Lane	1.00		0.17	1.00		0.04	1.00		0.82	1.00		0.93
Lane Grp Cap(c), veh/h	404	528	539	431	563	589	410	0	285	256	0	136
V/C Ratio(X)	0.25	0.51	0.52	0.17	0.54	0.54	0.23	0.00	0.42	0.00	0.00	0.11
Avail Cap(c_a), veh/h	802	1586	1619	893	1755	1833	899	0	581	818	0	508
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(l)	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	11.0	14.3	14.3	11.1	14.8	14.8	18.4	0.0	18.9	20.7	0.0	21.0
Incr Delay (d2), s/veh	0.3	1.1	1.1	0.2	1.1	1.1	0.3	0.0	1.0	0.0	0.0	0.4
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(50%),veh/ln	0.6	2.3	2.3	0.5	2.6	2.7	0.9	0.0	1.2	0.0	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	15.4	15.4	11.3	15.9	15.9	18.7	0.0	19.9	20.7	0.0	21.3
LnGrp LOS	B	B	B	B	B	B	B	A	B	C	A	C
Approach Vol, veh/h		651			691			212				16
Approach Delay, s/veh		14.8			15.4			19.3				21.3
Approach LOS		B			B			B				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	20.7	5.6	13.3	9.5	21.3	9.1	9.7				
Change Period (Y+Rc), s	6.3	6.3	5.5	5.5	6.3	6.3	5.5	5.5				
Max Green Setting (Gmax), s	15.0	45.0	15.8	15.8	15.0	45.0	15.8	15.8				
Max Q Clear Time (g_c+I1), s	3.9	8.5	2.0	4.9	3.3	8.4	4.0	2.4				
Green Ext Time (p_c), s	0.2	5.9	0.0	0.4	0.1	5.2	0.1	0.0				

Intersection Summary

HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Lanes, Volumes, Timings  
7: 39th Ave SE & College Way

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	195	319	581	116	34	58
Future Volume (vph)	195	319	581	116	34	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	-5%		0%	
Storage Length (ft)	175			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		25	
Link Distance (ft)		1994	773		209	
Travel Time (s)		38.8	15.1		5.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	6%	3%	3%	40%	40%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	11.3	16.3	35.3		34.5	34.5
Total Split (s)	31.3	46.3	46.3		50.5	50.5
Total Split (%)	24.4%	36.1%	36.1%		39.4%	39.4%
Yellow Time (s)	4.0	4.0	4.0		3.5	3.5
All-Red Time (s)	2.3	2.3	2.3		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3		5.5	5.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	None

Intersection Summary

Area Type: Other

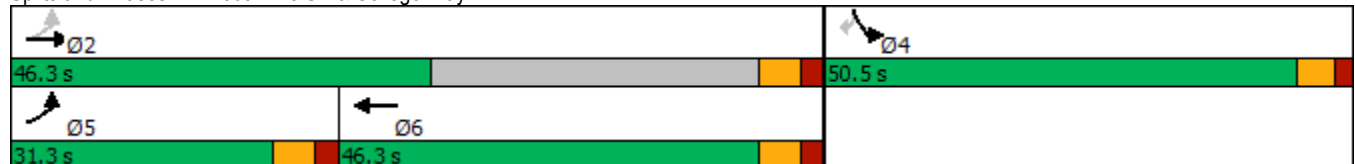
Cycle Length: 128.1

Actuated Cycle Length: 56.9

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 39th Ave SE & College Way



HCM 6th Signalized Intersection Summary  
7: 39th Ave SE & College Way

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	195	319	581	116	34	58
Future Volume (veh/h)	195	319	581	116	34	58
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
Work Zone On Approach		No	No			
Adj Sat Flow, veh/h/ln	1811	1811	2052	2052	1307	1307
Adj Flow Rate, veh/h	205	336	612	122	36	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	3	3	40	40
Cap, veh/h	513	2112	1083	215	104	92
Arrive On Green	0.12	0.61	0.33	0.33	0.08	0.08
Sat Flow, veh/h	1725	3532	3343	645	1245	1108
Grp Volume(v), veh/h	205	336	368	366	36	61
Grp Sat Flow(s),veh/h/ln	1725	1721	1949	1936	1245	1108
Q Serve(g_s), s	2.6	1.6	6.0	6.1	1.1	2.1
Cycle Q Clear(g_c), s	2.6	1.6	6.0	6.1	1.1	2.1
Prop In Lane	1.00			0.33	1.00	1.00
Lane Grp Cap(c), veh/h	513	2112	651	647	104	92
V/C Ratio(X)	0.40	0.16	0.56	0.57	0.35	0.66
Avail Cap(c_a), veh/h	1417	3534	2001	1988	1438	1280
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.6	3.2	10.6	10.6	16.8	17.3
Incr Delay (d2), s/veh	0.5	0.0	0.8	0.8	2.4	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.2	2.0	2.0	0.3	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	3.3	11.4	11.4	19.2	26.6
LnGrp LOS	A	A	B	B	B	C
Approach Vol, veh/h		541	734		97	
Approach Delay, s/veh		4.7	11.4		23.9	
Approach LOS		A	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.2		8.7	10.9	19.3
Change Period (Y+Rc), s		* 6.3		5.5	* 6.3	* 6.3
Max Green Setting (Gmax), s		* 40		45.0	* 25	* 40
Max Q Clear Time (g_c+I1), s		3.6		4.1	4.6	8.1
Green Ext Time (p_c), s		2.3		0.4	0.5	5.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.7			
HCM 6th LOS			A			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Lanes, Volumes, Timings  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	207	12	4	396	90	46	29	11	96	15	150
Future Volume (vph)	108	207	12	4	396	90	46	29	11	96	15	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-4%			0%			6%	
Storage Length (ft)	125		0	125		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25				25
Link Distance (ft)		384			416			287				528
Travel Time (s)		7.5			8.1			7.8				14.4
Confl. Peds. (#/hr)									2	2		
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 (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 52.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

Ø1 11 s	Ø2 24 s	Ø3 11 s	Ø4 24 s
Ø5 11 s	Ø6 24 s	Ø7 11 s	Ø8 24 s

HCM 6th Signalized Intersection Summary  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	207	12	4	396	90	46	29	11	96	15	150
Future Volume (veh/h)	108	207	12	4	396	90	46	29	11	96	15	150
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	1811	1811	1811	2027	2027	2027	1870	1870	1870	1614	1614	1614
Adj Flow Rate, veh/h	119	227	13	4	435	99	51	32	12	105	16	165
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
Percent Heavy Veh, %	6	6	6	2	2	2	2	2	2	5	5	5
Cap, veh/h	335	925	53	402	646	146	339	245	92	447	26	270
Arrive On Green	0.08	0.28	0.28	0.01	0.21	0.21	0.05	0.19	0.19	0.07	0.21	0.21
Sat Flow, veh/h	1725	3309	188	1931	3122	705	1781	1295	486	1537	122	1261
Grp Volume(v), veh/h	119	117	123	4	267	267	51	0	44	105	0	181
Grp Sat Flow(s),veh/h/ln	1725	1721	1777	1931	1926	1900	1781	0	1781	1537	0	1383
Q Serve(g_s), s	2.8	2.8	2.8	0.1	6.8	6.9	1.2	0.0	1.1	2.9	0.0	6.3
Cycle Q Clear(g_c), s	2.8	2.8	2.8	0.1	6.8	6.9	1.2	0.0	1.1	2.9	0.0	6.3
Prop In Lane	1.00		0.11	1.00		0.37	1.00		0.27	1.00		0.91
Lane Grp Cap(c), veh/h	335	481	497	402	399	393	339	0	338	447	0	296
V/C Ratio(X)	0.36	0.24	0.25	0.01	0.67	0.68	0.15	0.00	0.13	0.23	0.00	0.61
Avail Cap(c_a), veh/h	363	583	602	573	652	644	418	0	603	478	0	468
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(l)	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	15.1	14.8	14.8	16.5	19.4	19.4	16.1	0.0	17.9	15.5	0.0	18.9
Incr Delay (d2), s/veh	0.6	0.3	0.3	0.0	2.0	2.1	0.2	0.0	0.2	0.3	0.0	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(50%),veh/ln	1.0	1.0	1.0	0.0	2.9	2.9	0.5	0.0	0.4	1.0	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	15.1	15.1	16.5	21.4	21.5	16.3	0.0	18.1	15.7	0.0	20.9
LnGrp LOS	B	B	B	B	C	C	B	A	B	B	A	C
Approach Vol, veh/h		359			538			95				286
Approach Delay, s/veh		15.3			21.4			17.1				19.0
Approach LOS		B			C			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	16.1	6.3	20.9	8.6	17.4	10.1	17.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	4.9	3.1	2.1	4.8	3.2	8.3	4.8	8.9				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.0	0.0	0.7	0.0	2.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			18.8									
HCM 6th LOS			B									



Lanes, Volumes, Timings  
9: 25th St SE & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	275	8	6	458	6	21	2	20	2	0	13
Future Volume (vph)	20	275	8	6	458	6	21	2	20	2	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	75		0	100		0	25		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		365			225			248			136	
Travel Time (s)		7.1			4.4			6.8			3.7	
Confl. Peds. (#/hr)			1	1			1		1	1		1
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
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

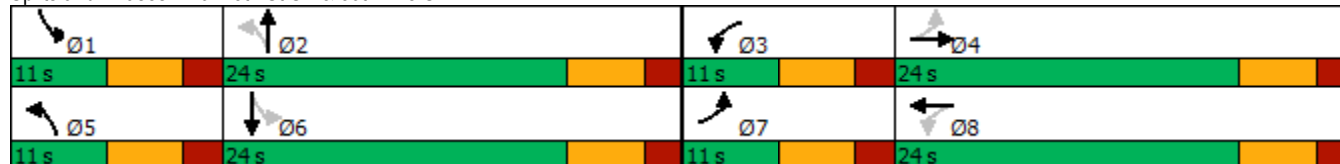
Cycle Length: 70

Actuated Cycle Length: 37.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 25th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 9: 25th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	275	8	6	458	6	21	2	20	2	0	13
Future Volume (veh/h)	20	275	8	6	458	6	21	2	20	2	0	13
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	1811	1811	1811	1870	1870	1870	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	21	293	9	6	487	6	22	2	21	2	0	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, %	6	6	6	2	2	2	5	5	5	0	0	0
Cap, veh/h	341	916	28	408	902	11	351	17	177	324	0	160
Arrive On Green	0.03	0.27	0.27	0.01	0.25	0.25	0.03	0.12	0.12	0.00	0.00	0.10
Sat Flow, veh/h	1725	3408	104	1781	3595	44	1739	136	1430	1810	0	1608
Grp Volume(v), veh/h	21	148	154	6	241	252	22	0	23	2	0	14
Grp Sat Flow(s),veh/h/ln	1725	1721	1792	1781	1777	1862	1739	0	1566	1810	0	1608
Q Serve(g_s), s	0.4	2.8	2.8	0.1	4.7	4.7	0.5	0.0	0.5	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.4	2.8	2.8	0.1	4.7	4.7	0.5	0.0	0.5	0.0	0.0	0.3
Prop In Lane	1.00		0.06	1.00		0.02	1.00		0.91	1.00		1.00
Lane Grp Cap(c), veh/h	341	462	482	408	446	467	351	0	194	324	0	160
V/C Ratio(X)	0.06	0.32	0.32	0.01	0.54	0.54	0.06	0.00	0.12	0.01	0.00	0.09
Avail Cap(c_a), veh/h	510	770	802	615	795	833	520	0	701	544	0	720
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(l)	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	10.9	11.8	11.8	11.1	13.1	13.1	15.5	0.0	15.7	16.2	0.0	16.5
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.0	1.0	1.0	0.1	0.0	0.3	0.0	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(50%),veh/ln	0.1	0.9	0.9	0.0	1.6	1.7	0.2	0.0	0.2	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	12.2	12.1	11.1	14.1	14.0	15.6	0.0	15.9	16.2	0.0	16.7
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		323			499			45				16
Approach Delay, s/veh		12.1			14.0			15.8				16.6
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	11.0	6.3	16.8	7.1	10.0	7.0	16.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.0	2.5	2.1	4.8	2.5	2.3	2.4	6.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.3	0.0	0.0	0.0	2.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			13.4									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Volume (vph)	128	0	203	1	0	0	385	723	1	0	279	177
Future Volume (vph)	128	0	203	1	0	0	385	723	1	0	279	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			8%			-4%			6%	
Storage Length (ft)	0		0	0		0	300		0	200		0
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		322			305			698			574	
Travel Time (s)		6.3			5.9			13.6			11.2	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	5%	5%	5%	0%	0%	0%	2%	2%	2%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	24.0	24.0		16.3	28.3		11.3	28.3	28.3
Total Split (s)	36.0	36.0	36.0	36.0	36.0		26.3	46.3		21.3	46.3	46.3
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%		24.2%	42.6%		19.6%	42.6%	42.6%
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)	2.0	2.0	2.0	2.0	2.0		2.3	2.3		2.3	2.3	2.3
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)		6.0	6.0		6.0		6.3	6.3		6.3	6.3	6.3
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

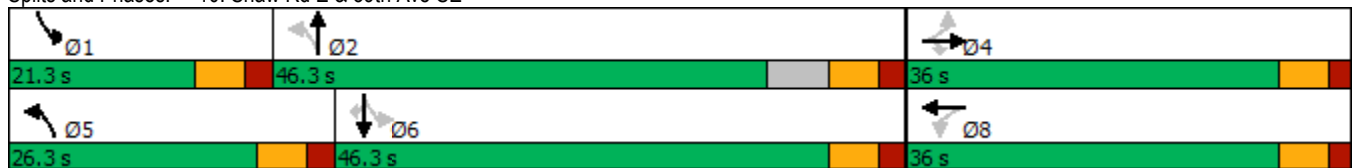
Cycle Length: 108.6

Actuated Cycle Length: 71.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Shaw Rd E & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖		↖	↕	↗
Traffic Volume (veh/h)	128	0	203	1	0	0	385	723	1	0	279	177
Future Volume (veh/h)	128	0	203	1	0	0	385	723	1	0	279	177
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	1826	1826	1826	1523	1523	1523	2027	2027	2027	1644	1644	1644
Adj Flow Rate, veh/h	144	0	228	1	0	0	433	812	1	0	313	199
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	5	5	5	0	0	0	2	2	2	3	3	3
Cap, veh/h	428	0	308	246	0	0	608	1182	1	294	456	386
Arrive On Green	0.20	0.00	0.20	0.20	0.00	0.00	0.20	0.58	0.58	0.00	0.28	0.28
Sat Flow, veh/h	1514	0	1547	598	0	0	1931	2024	2	1565	1644	1390
Grp Volume(v), veh/h	144	0	228	1	0	0	433	0	813	0	313	199
Grp Sat Flow(s),veh/h/ln	1514	0	1547	598	0	0	1931	0	2027	1565	1644	1390
Q Serve(g_s), s	0.0	0.0	7.8	0.1	0.0	0.0	8.1	0.0	15.8	0.0	9.6	6.8
Cycle Q Clear(g_c), s	4.1	0.0	7.8	4.2	0.0	0.0	8.1	0.0	15.8	0.0	9.6	6.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	428	0	308	246	0	0	608	0	1184	294	456	386
V/C Ratio(X)	0.34	0.00	0.74	0.00	0.00	0.00	0.71	0.00	0.69	0.00	0.69	0.52
Avail Cap(c_a), veh/h	885	0	819	556	0	0	912	0	1430	705	1160	981
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	0.0	21.3	21.6	0.0	0.0	10.9	0.0	8.2	0.0	18.3	17.3
Incr Delay (d2), s/veh	0.5	0.0	3.5	0.0	0.0	0.0	1.6	0.0	1.3	0.0	2.6	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(50%),veh/ln	1.5	0.0	2.8	0.0	0.0	0.0	2.8	0.0	5.1	0.0	3.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	24.8	21.6	0.0	0.0	12.5	0.0	9.5	0.0	20.9	18.8
LnGrp LOS	C	A	C	C	A	A	B	A	A	A	C	B
Approach Vol, veh/h		372			1			1246			512	
Approach Delay, s/veh		23.1			21.6			10.5			20.1	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	39.4		17.3	17.4	22.0		17.3				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 15	* 40		30.0	* 20	* 40		30.0				
Max Q Clear Time (g_c+I1), s	0.0	17.8		9.8	10.1	11.6		6.2				
Green Ext Time (p_c), s	0.0	8.5		1.5	1.0	3.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	15.0
HCM 6th LOS	B

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lanes, Volumes, Timings

11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	12	18	38	42	40	35	888	7	13	282	43
Future Volume (vph)	134	12	18	38	42	40	35	888	7	13	282	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-9%			3%			-9%			6%	
Storage Length (ft)	50		0	50		0	100		175	75		100
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			Yes			Yes
Link Speed (mph)		25			25			35				35
Link Distance (ft)		481			429			444				403
Travel Time (s)		13.1			11.7			8.6				7.9
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	64.0	64.0	11.0	64.0	64.0
Total Split (%)	10.0%	21.8%		10.0%	21.8%		10.0%	58.2%	58.2%	10.0%	58.2%	58.2%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 81.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

11 s	64 s	11 s	24 s
11 s	64 s	11 s	24 s

HCM 6th Signalized Intersection Summary  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	12	18	38	42	40	35	888	7	13	282	43
Future Volume (veh/h)	134	12	18	38	42	40	35	888	7	13	282	43
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2239	2239	2239	1817	1817	1817	2224	2224	2224	1629	1629	1629
Adj Flow Rate, veh/h	138	12	19	39	43	41	36	915	7	13	291	44
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	4	4	4
Cap, veh/h	352	118	188	322	106	101	604	1083	917	185	762	645
Arrive On Green	0.06	0.15	0.15	0.04	0.12	0.12	0.03	0.49	0.49	0.02	0.47	0.47
Sat Flow, veh/h	2132	781	1236	1731	855	815	2118	2224	1883	1551	1629	1379
Grp Volume(v), veh/h	138	0	31	39	0	84	36	915	7	13	291	44
Grp Sat Flow(s),veh/h/ln	2132	0	2016	1731	0	1671	2118	2224	1883	1551	1629	1379
Q Serve(g_s), s	4.4	0.0	1.0	1.5	0.0	3.6	0.7	27.9	0.1	0.3	9.0	1.4
Cycle Q Clear(g_c), s	4.4	0.0	1.0	1.5	0.0	3.6	0.7	27.9	0.1	0.3	9.0	1.4
Prop In Lane	1.00		0.61	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	352	0	306	322	0	207	604	1083	917	185	762	645
V/C Ratio(X)	0.39	0.00	0.10	0.12	0.00	0.41	0.06	0.84	0.01	0.07	0.38	0.07
Avail Cap(c_a), veh/h	352	0	467	370	0	387	667	1660	1405	260	1215	1029
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	0.0	28.4	28.0	0.0	31.4	10.3	17.4	10.3	15.0	13.4	11.4
Incr Delay (d2), s/veh	0.7	0.0	0.1	0.2	0.0	1.3	0.0	2.6	0.0	0.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.5	0.6	0.0	1.5	0.3	13.2	0.1	0.1	3.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	0.0	28.5	28.2	0.0	32.7	10.3	20.0	10.3	15.2	13.7	11.4
LnGrp LOS	C	A	C	C	A	C	B	B	B	B	B	B
Approach Vol, veh/h		169			123			958			348	
Approach Delay, s/veh		28.2			31.2			19.5			13.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.2	43.9	8.8	17.8	8.7	42.4	11.0	15.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	58.0	5.0	18.0	5.0	58.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.3	29.9	3.5	3.0	2.7	11.0	6.4	5.6				
Green Ext Time (p_c), s	0.0	8.0	0.0	0.1	0.0	1.9	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.0									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

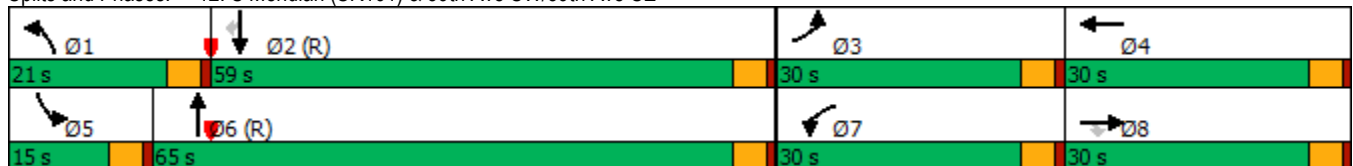
01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	211	130	44	136	12	87	1251	60	16	651	107
Future Volume (vph)	182	211	130	44	136	12	87	1251	60	16	651	107
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			3%			0%	
Storage Length (ft)	350		0	225		0	200		0	210		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			No			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		571			1339			1348			645	
Travel Time (s)		11.1			26.1			26.3			12.6	
Confl. Peds. (#/hr)									4			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	5%	5%	5%	6%	6%	6%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8									2
Detector Phase	3	8	8	7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.6	27.6	27.6	10.6	16.6		10.6	29.6		10.6	29.6	29.6
Total Split (s)	30.0	30.0	30.0	30.0	30.0		21.0	65.0		15.0	59.0	59.0
Total Split (%)	21.4%	21.4%	21.4%	21.4%	21.4%		15.0%	46.4%		10.7%	42.1%	42.1%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	3.6
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		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-Min		None	C-Min	C-Min

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 41 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE



HCM 6th Signalized Intersection Summary  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	211	130	44	136	12	87	1251	60	16	651	107
Future Volume (veh/h)	182	211	130	44	136	12	87	1251	60	16	651	107
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1716	1716	1716	1758	1758	1758	1680	1680	1680	1716	1716	1716
Adj Flow Rate, veh/h	186	215	0	45	139	12	89	1277	61	16	664	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	6	6	6	3	3	3	5	5	5	6	6	6
Cap, veh/h	209	503		59	192	16	107	2044	98	32	1996	
Arrive On Green	0.13	0.15	0.00	0.04	0.06	0.06	0.13	1.00	1.00	0.04	1.00	0.00
Sat Flow, veh/h	1634	3260	1454	1674	3114	266	1600	3100	148	1634	3260	1454
Grp Volume(v), veh/h	186	215	0	45	74	77	89	656	682	16	664	0
Grp Sat Flow(s),veh/h/ln	1634	1630	1454	1674	1670	1710	1600	1596	1653	1634	1630	1454
Q Serve(g_s), s	15.7	8.4	0.0	3.7	6.1	6.2	7.6	0.0	0.0	1.3	0.0	0.0
Cycle Q Clear(g_c), s	15.7	8.4	0.0	3.7	6.1	6.2	7.6	0.0	0.0	1.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	209	503		59	103	106	107	1052	1089	32	1996	
V/C Ratio(X)	0.89	0.43		0.76	0.72	0.73	0.83	0.62	0.63	0.49	0.33	
Avail Cap(c_a), veh/h	296	591		304	303	310	187	1052	1089	121	1996	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	1.00	0.55	0.55	0.55	0.99	0.99	0.00
Uniform Delay (d), s/veh	60.1	53.6	0.0	66.9	64.5	64.5	59.9	0.0	0.0	66.5	0.0	0.0
Incr Delay (d2), s/veh	19.0	0.4	0.0	13.6	5.6	5.8	6.8	1.5	1.5	8.3	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	3.5	0.0	1.8	2.7	2.9	3.1	0.5	0.5	0.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.1	54.0	0.0	80.6	70.0	70.3	66.6	1.5	1.5	74.8	0.4	0.0
LnGrp LOS	E	D		F	E	E	E	A	A	E	A	
Approach Vol, veh/h		401	A		196			1427			680	A
Approach Delay, s/veh		65.7			72.6			5.6			2.2	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	90.3	22.5	13.3	7.4	96.9	9.6	26.2				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	16.4	54.4	25.4	25.4	10.4	60.4	25.4	25.4				
Max Q Clear Time (g_c+I1), s	9.6	2.0	17.7	8.2	3.3	2.0	5.7	10.4				
Green Ext Time (p_c), s	0.1	4.1	0.2	0.5	0.0	9.8	0.1	0.9				

Intersection Summary

HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lanes, Volumes, Timings  
13: 5th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	188	36	52	101	6	51	204	76	2	129	30
Future Volume (vph)	45	188	36	52	101	6	51	204	76	2	129	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-3%			0%	
Storage Length (ft)	150		0	175		0	225		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1339			1162			552			965	
Travel Time (s)		26.1			22.6			12.5			21.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0		11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0		21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%		16.9%	29.0%		16.9%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

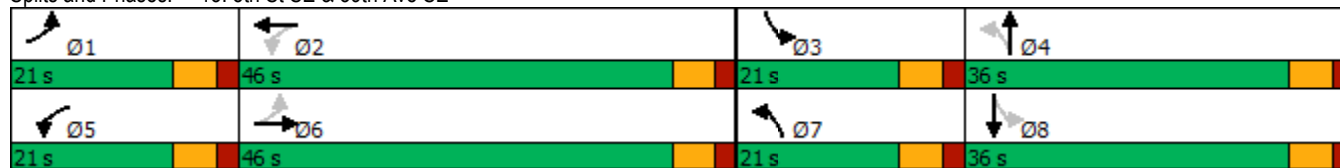
Cycle Length: 124

Actuated Cycle Length: 52

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 13: 5th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 13: 5th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	188	36	52	101	6	51	204	76	2	129	30
Future Volume (veh/h)	45	188	36	52	101	6	51	204	76	2	129	30
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1826	1826	1826	2003	2003	2003	1885	1885	1885
Adj Flow Rate, veh/h	48	202	39	56	109	6	55	219	82	2	139	32
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	5	5	5	1	1	1	1	1	1
Cap, veh/h	459	595	113	396	691	38	411	360	135	280	309	71
Arrive On Green	0.05	0.20	0.20	0.05	0.21	0.21	0.05	0.26	0.26	0.00	0.21	0.21
Sat Flow, veh/h	1767	2957	560	1739	3345	183	1908	1388	520	1795	1481	341
Grp Volume(v), veh/h	48	119	122	56	56	59	55	0	301	2	0	171
Grp Sat Flow(s),veh/h/ln	1767	1763	1755	1739	1735	1793	1908	0	1907	1795	0	1822
Q Serve(g_s), s	1.0	2.9	3.0	1.2	1.3	1.3	1.1	0.0	6.9	0.0	0.0	4.1
Cycle Q Clear(g_c), s	1.0	2.9	3.0	1.2	1.3	1.3	1.1	0.0	6.9	0.0	0.0	4.1
Prop In Lane	1.00		0.32	1.00		0.10	1.00		0.27	1.00		0.19
Lane Grp Cap(c), veh/h	459	355	353	396	358	370	411	0	494	280	0	380
V/C Ratio(X)	0.10	0.34	0.35	0.14	0.16	0.16	0.13	0.00	0.61	0.01	0.00	0.45
Avail Cap(c_a), veh/h	906	1418	1412	827	1396	1443	884	0	1151	817	0	1100
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(l)	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	14.4	17.0	17.0	14.3	16.2	16.2	14.1	0.0	16.2	15.7	0.0	17.2
Incr Delay (d2), s/veh	0.1	0.6	0.6	0.2	0.2	0.2	0.1	0.0	1.2	0.0	0.0	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(50%),veh/ln	0.4	1.1	1.1	0.4	0.5	0.5	0.4	0.0	2.8	0.0	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.5	17.6	17.6	14.5	16.4	16.4	14.3	0.0	17.4	15.7	0.0	18.0
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		289			171			356				173
Approach Delay, s/veh		17.1			15.8			16.9				18.0
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	16.3	6.1	18.9	8.7	16.0	8.7	16.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	3.0	3.3	2.0	8.9	3.2	5.0	3.1	6.1				
Green Ext Time (p_c), s	0.1	0.6	0.0	1.8	0.1	1.4	0.1	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			17.0									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
14: S Meridian (SR161) & 43rd Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	51	4	88	39	60	12	1447	110	61	656	10
Future Volume (vph)	39	51	4	88	39	60	12	1447	110	61	656	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		-4%			6%			0%			0%	
Storage Length (ft)	150		0	275		0	250		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		332			544			617			1348	
Travel Time (s)		9.1			10.6			12.0			26.3	
Confl. Peds. (#/hr)			3	3					3			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	3%	3%	3%	11%	11%	11%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases												
Detector Phase	4	4		8	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	33.6	33.6		30.6	30.6		10.6	32.6		10.6	28.6	
Total Split (s)	36.0	36.0		32.0	32.0		15.0	57.0		15.0	57.0	
Total Split (%)	25.7%	25.7%		22.9%	22.9%		10.7%	40.7%		10.7%	40.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other

Cycle Length: 140

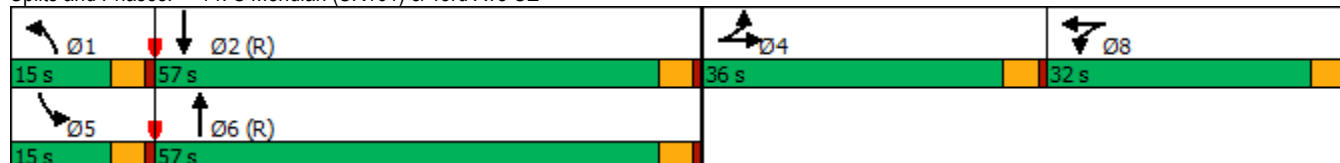
Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 14: S Meridian (SR161) & 43rd Ave SE



HCM 6th Signalized Intersection Summary  
 14: S Meridian (SR161) & 43rd Ave SE

01/23/2022











Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	51	4	88	39	60	12	1447	110	61	656	10
Future Volume (veh/h)	39	51	4	88	39	60	12	1447	110	61	656	10
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		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	1892	1892	1892	1529	1529	1529	1758	1758	1758	1646	1646	1646
Adj Flow Rate, veh/h	42	55	4	95	42	65	13	1556	118	66	705	11
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	4	4	5	5	5	3	3	3	11	11	11
Cap, veh/h	100	97	7	145	54	83	28	2082	157	81	2193	34
Arrive On Green	0.06	0.06	0.06	0.10	0.10	0.10	0.02	0.66	0.66	0.10	1.00	1.00
Sat Flow, veh/h	1802	1740	127	1456	538	832	1674	3147	237	1567	3151	49
Grp Volume(v), veh/h	42	0	59	95	0	107	13	821	853	66	350	366
Grp Sat Flow(s),veh/h/ln	1802	0	1867	1456	0	1370	1674	1670	1715	1567	1563	1637
Q Serve(g_s), s	3.2	0.0	4.3	8.8	0.0	10.7	1.1	45.8	47.0	5.8	0.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	4.3	8.8	0.0	10.7	1.1	45.8	47.0	5.8	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.61	1.00		0.14	1.00		0.03
Lane Grp Cap(c), veh/h	100	0	104	145	0	137	28	1105	1134	81	1088	1139
V/C Ratio(X)	0.42	0.00	0.57	0.65	0.00	0.78	0.46	0.74	0.75	0.82	0.32	0.32
Avail Cap(c_a), veh/h	404	0	419	285	0	268	124	1105	1134	116	1088	1139
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(l)	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	63.9	0.0	64.4	60.7	0.0	61.5	68.2	15.8	16.0	62.2	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	3.8	3.9	0.0	7.6	7.6	4.5	4.6	23.6	0.7	0.7
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(50%),veh/ln	1.5	0.0	2.2	3.4	0.0	4.0	0.5	17.6	18.5	2.7	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.1	0.0	68.3	64.6	0.0	69.1	75.7	20.3	20.6	85.8	0.7	0.7
LnGrp LOS	E	A	E	E	A	E	E	C	C	F	A	A
Approach Vol, veh/h		101			202			1687			782	
Approach Delay, s/veh		67.4			67.0			20.9			7.9	
Approach LOS		E			E			C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	102.0		12.4	11.8	97.2		18.6				
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6				
Max Green Setting (Gmax), s	10.4	52.4		31.4	10.4	52.4		27.4				
Max Q Clear Time (g_c+I1), s	3.1	2.0		6.3	7.8	49.0		12.7				
Green Ext Time (p_c), s	0.0	4.5		0.3	0.0	2.8		0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				22.3								
HCM 6th LOS				C								



Existing 2021 PM Peak Hour

Lanes, Volumes, Timings  
1: 7th St SE & College Way

01/23/2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	34	341	11	34	417
Future Volume (vph)	11	34	341	11	34	417
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-4%			0%
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	25		25			25
Link Distance (ft)	771		286			501
Travel Time (s)	21.0		7.8			13.7
Confl. Peds. (#/hr)				7	7	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	11	34	341	11	34	417
Future Vol, veh/h	11	34	341	11	34	417
Conflicting Peds, #/hr	0	0	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-4	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	12	38	383	12	38	469

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	941	396	0	0	402	0
Stage 1	396	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	295	658	-	-	1157	-
Stage 1	684	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	283	654	-	-	1149	-
Mov Cap-2 Maneuver	409	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	566	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	570	1149	-
HCM Lane V/C Ratio	-	-	0.089	0.033	-
HCM Control Delay (s)	-	-	11.9	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Lanes, Volumes, Timings  
2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↕	↖↗	↖	↖↗	↖
Traffic Volume (vph)	247	1183	1134	380	556	260
Future Volume (vph)	247	1183	1134	380	556	260
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Storage Length (ft)	250			0	0	175
Storage Lanes	2			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		35	
Link Distance (ft)		370	339		787	
Travel Time (s)		7.2	6.6		15.3	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	2%	2%	3%	3%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Detector Phase	5		6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	8.0	8.0
Minimum Split (s)	12.6		20.6	20.6	12.6	12.6
Total Split (s)	21.0		79.0	79.0	50.0	50.0
Total Split (%)	14.0%		52.7%	52.7%	33.3%	33.3%
Yellow Time (s)	3.6		3.6	3.6	3.6	3.6
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)	4.6		4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	Min		C-Min	C-Min	None	None

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 44 (29%), Referenced to phase 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

! Phase conflict between lane groups.

Splits and Phases: 2: 31st Ave SW/S Meridian (SR161)





HCM Signalized Intersection Capacity Analysis  
2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	247	1183	1134	380	556	260
Future Volume (vph)	247	1183	1134	380	556	260
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Total Lost time (s)	4.6	4.0	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3187	3286	3387	1515	3285	1515
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3187	3286	3387	1515	3285	1515
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	249	1195	1145	384	562	263
RTOR Reduction (vph)	0	0	0	136	0	188
Lane Group Flow (vph)	249	1195	1145	248	562	75
Heavy Vehicles (%)	2%	2%	3%	3%	1%	1%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Actuated Green, G (s)	16.5	150.0	88.9	88.9	30.8	30.8
Effective Green, g (s)	16.5	150.0	88.9	88.9	30.8	30.8
Actuated g/C Ratio	0.11	1.00	0.59	0.59	0.21	0.21
Clearance Time (s)	4.6		4.6	4.6	4.6	4.6
Vehicle Extension (s)	2.5		2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	350	3286	2007	897	674	311
v/s Ratio Prot	c0.08	0.36	c0.34		c0.17	
v/s Ratio Perm				0.16		0.05
v/c Ratio	0.71	0.36	0.57	0.28	0.83	0.24
Uniform Delay, d <sub>1</sub>	64.5	0.0	18.8	14.9	57.1	49.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	6.2	0.3	1.2	0.8	8.6	0.3
Delay (s)	70.7	0.3	20.0	15.6	65.7	50.1
Level of Service	E	A	B	B	E	D
Approach Delay (s)		12.4	18.9		60.8	
Approach LOS		B	B		E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			25.5	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.65			
Actuated Cycle Length (s)			150.0	Sum of lost time (s)	13.8	
Intersection Capacity Utilization			68.8%	ICU Level of Service	C	
Analysis Period (min)			15			
! Phase conflict between lane groups.						
c Critical Lane Group						

Lanes, Volumes, Timings  
 3: S Meridian (SR161) & 37th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	129	96	169	155	359	79	993	58	345	1245	58
Future Volume (vph)	60	129	96	169	155	359	79	993	58	345	1245	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	250		0	225		0	350		0
Storage Lanes	1		1	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		242			1349			645			449	
Travel Time (s)		6.6			26.3			12.6			8.7	
Confl. Peds. (#/hr)						2			2			1
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
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			Free						
Detector Phase	3	8	8	7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	8.6	10.6	10.6	10.6	35.6		10.6	28.6		10.6	31.6	
Total Split (s)	15.0	25.0	25.0	27.0	37.0		23.0	72.0		26.0	75.0	
Total Split (%)	10.0%	16.7%	16.7%	18.0%	24.7%		15.3%	48.0%		17.3%	50.0%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		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-Min		None	C-Min	

Intersection Summary

Area Type: Other

Cycle Length: 150

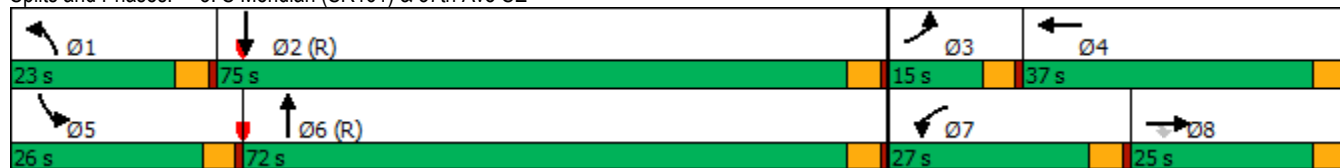
Actuated Cycle Length: 150

Offset: 28 (19%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 3: S Meridian (SR161) & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 3: S Meridian (SR161) & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	129	96	169	155	359	79	993	58	345	1245	58
Future Volume (veh/h)	60	129	96	169	155	359	79	993	58	345	1245	58
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	1786	1786	1786	1786	1786	1786	1744	1744	1744	1772	1772	1772
Adj Flow Rate, veh/h	62	134	100	176	161	0	82	1034	60	359	1297	0
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, %	1	1	1	1	1	1	4	4	4	2	2	2
Cap, veh/h	78	281	126	198	274		100	1763	102	406	2988	
Arrive On Green	0.05	0.08	0.08	0.12	0.15	0.00	0.12	1.00	1.00	0.12	0.62	0.00
Sat Flow, veh/h	1701	3393	1514	1701	1786	1514	1661	3182	185	3274	4997	0
Grp Volume(v), veh/h	62	134	100	176	161	0	82	538	556	359	1297	0
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1701	1786	1514	1661	1657	1710	1637	1612	0
Q Serve(g_s), s	5.4	5.7	9.7	15.3	12.6	0.0	7.2	0.0	0.0	16.2	21.0	0.0
Cycle Q Clear(g_c), s	5.4	5.7	9.7	15.3	12.6	0.0	7.2	0.0	0.0	16.2	21.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	78	281	126	198	274		100	918	947	406	2988	
V/C Ratio(X)	0.79	0.48	0.80	0.89	0.59		0.82	0.59	0.59	0.88	0.43	
Avail Cap(c_a), veh/h	118	461	206	254	386		204	918	947	467	2988	
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(l)	1.00	1.00	1.00	0.79	0.79	0.00	0.67	0.67	0.67	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.9	65.7	67.5	65.3	59.1	0.0	65.2	0.0	0.0	64.6	15.0	0.0
Incr Delay (d2), s/veh	21.6	1.2	10.9	20.9	1.7	0.0	10.6	1.8	1.8	16.4	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	2.5	4.2	7.8	5.8	0.0	3.2	0.5	0.5	7.7	7.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.4	66.9	78.4	86.2	60.8	0.0	75.8	1.8	1.8	81.1	15.4	0.0
LnGrp LOS	F	E	E	F	E		E	A	A	F	B	
Approach Vol, veh/h		296			337	A		1176			1656	A
Approach Delay, s/veh		76.1			74.0			7.0			29.7	
Approach LOS		E			E			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	97.3	11.5	27.6	23.2	87.7	22.1	17.0				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	18.4	70.4	10.4	32.4	21.4	67.4	22.4	20.4				
Max Q Clear Time (g_c+I1), s	9.2	23.0	7.4	14.6	18.2	2.0	17.3	11.7				
Green Ext Time (p_c), s	0.1	15.4	0.0	0.8	0.4	11.7	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
4: 5th St SE & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	329	80	33	460	177	104	249	20	238	396	67
Future Volume (vph)	83	329	80	33	460	177	104	249	20	238	396	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-3%			0%			-5%	
Storage Length (ft)	200		0	225		150	200		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			25	
Link Distance (ft)		1349			1181			965			418	
Travel Time (s)		26.3			23.0			21.9			11.4	
Confl. Peds. (#/hr)	3		1	1		3	1		3	3		1
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
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Detector Phase	1	6		5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0	26.0	11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0	46.0	21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%	37.1%	16.9%	29.0%		16.9%	29.0%	
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)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other

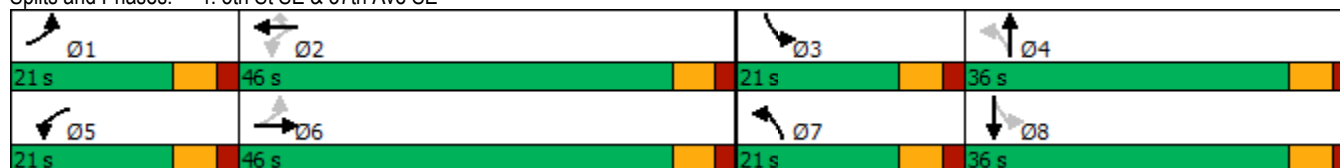
Cycle Length: 124

Actuated Cycle Length: 87.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: 5th St SE & 37th Ave SE





HCM 6th Signalized Intersection Summary  
 4: 5th St SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	329	80	33	460	177	104	249	20	238	396	67
Future Volume (veh/h)	83	329	80	33	460	177	104	249	20	238	396	67
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		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	2003	2003	2003	1885	1885	1885	2082	2082	2082
Adj Flow Rate, veh/h	87	346	84	35	484	0	109	262	0	251	417	71
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	1	1	1	1	1	1	1	1	1
Cap, veh/h	303	661	158	305	778		300	445		505	514	88
Arrive On Green	0.06	0.23	0.23	0.04	0.20	0.00	0.07	0.24	0.00	0.13	0.30	0.30
Sat Flow, veh/h	1810	2884	691	1908	3806	1697	1795	1885	0	1983	1733	295
Grp Volume(v), veh/h	87	215	215	35	484	0	109	262	0	251	0	488
Grp Sat Flow(s),veh/h/ln	1810	1805	1770	1908	1903	1697	1795	1885	0	1983	0	2027
Q Serve(g_s), s	2.4	6.7	6.9	0.9	7.5	0.0	2.9	8.0	0.0	6.0	0.0	14.4
Cycle Q Clear(g_c), s	2.4	6.7	6.9	0.9	7.5	0.0	2.9	8.0	0.0	6.0	0.0	14.4
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.00	1.00		0.15
Lane Grp Cap(c), veh/h	303	414	406	305	778		300	445		505	0	602
V/C Ratio(X)	0.29	0.52	0.53	0.11	0.62		0.36	0.59		0.50	0.00	0.81
Avail Cap(c_a), veh/h	612	1115	1093	678	2350		594	873		710	0	939
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(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.8	21.8	21.9	19.3	23.5	0.0	17.7	22.0	0.0	15.6	0.0	21.1
Incr Delay (d2), s/veh	0.5	1.0	1.1	0.2	0.8	0.0	0.7	1.2	0.0	0.8	0.0	3.1
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(50%),veh/ln	1.0	2.7	2.8	0.4	3.2	0.0	1.2	3.5	0.0	2.6	0.0	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	22.8	23.0	19.4	24.3	0.0	18.4	23.2	0.0	16.4	0.0	24.2
LnGrp LOS	B	C	C	B	C		B	C		B	A	C
Approach Vol, veh/h		517			519	A		371	A		739	
Approach Delay, s/veh		22.3			24.0			21.8			21.5	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	19.2	14.3	21.3	8.3	20.9	10.4	25.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	4.4	9.5	8.0	10.0	2.9	8.9	4.9	16.4				
Green Ext Time (p_c), s	0.1	3.3	0.4	1.4	0.0	2.6	0.2	2.8				

Intersection Summary

HCM 6th Ctrl Delay	22.4
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: 39th Ave SE & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	587	6	259	626	5	1	7	237	4	9	19
Future Volume (vph)	8	587	6	259	626	5	1	7	237	4	9	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		6%			-5%			3%			0%	
Storage Length (ft)	225		0	200		0	200		0	0		150
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			25	
Link Distance (ft)		1181			510			1162			264	
Travel Time (s)		23.0			9.9			22.6			7.2	
Confl. Peds. (#/hr)	1		1	1		1						
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
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	12.0	30.0		12.0	30.0		11.0	16.0	12.0	11.0	34.0	
Total Split (s)	23.0	42.0		23.0	42.0		22.0	22.0	23.0	22.0	22.0	
Total Split (%)	21.1%	38.5%		21.1%	38.5%		20.2%	20.2%	21.1%	20.2%	20.2%	
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)	3.0	3.0		3.0	3.0		2.0	2.0	3.0	2.0	2.0	
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)	7.0	7.0		7.0	7.0		6.0	6.0	7.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min		None	Min		None	None	None	None	None	

Intersection Summary

Area Type: Other

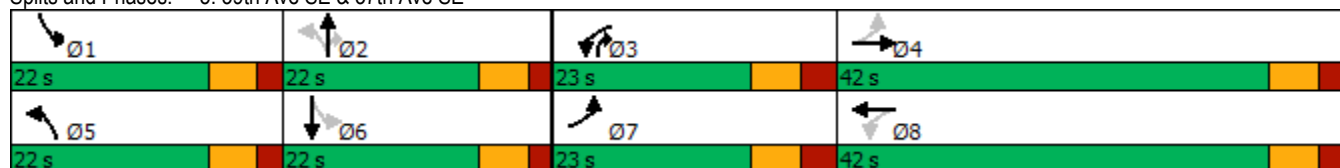
Cycle Length: 109

Actuated Cycle Length: 51.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: 39th Ave SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 5: 39th Ave SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	587	6	259	626	5	1	7	237	4	9	19
Future Volume (veh/h)	8	587	6	259	626	5	1	7	237	4	9	19
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	1673	1673	1673	2067	2067	2067	1817	1817	1817	1900	1900	1900
Adj Flow Rate, veh/h	9	624	6	276	666	5	1	7	252	4	10	20
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	0	0	0
Cap, veh/h	333	979	9	476	1667	13	328	313	459	311	100	200
Arrive On Green	0.01	0.30	0.30	0.13	0.42	0.42	0.00	0.17	0.17	0.01	0.18	0.18
Sat Flow, veh/h	1593	3226	31	1968	3995	30	1731	1817	1540	1810	565	1131
Grp Volume(v), veh/h	9	307	323	276	327	344	1	7	252	4	0	30
Grp Sat Flow(s),veh/h/ln	1593	1589	1668	1968	1963	2061	1731	1817	1540	1810	0	1696
Q Serve(g_s), s	0.3	11.0	11.0	5.8	7.7	7.7	0.0	0.2	9.1	0.1	0.0	1.0
Cycle Q Clear(g_c), s	0.3	11.0	11.0	5.8	7.7	7.7	0.0	0.2	9.1	0.1	0.0	1.0
Prop In Lane	1.00		0.02	1.00		0.01	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	333	482	506	476	819	860	328	313	459	311	0	299
V/C Ratio(X)	0.03	0.64	0.64	0.58	0.40	0.40	0.00	0.02	0.55	0.01	0.00	0.10
Avail Cap(c_a), veh/h	701	842	883	705	1040	1091	745	440	566	740	0	411
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	19.9	19.9	13.1	13.5	13.5	22.6	22.7	19.5	22.4	0.0	22.8
Incr Delay (d2), s/veh	0.0	3.0	2.8	1.1	0.7	0.6	0.0	0.0	1.0	0.0	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(50%),veh/ln	0.1	4.1	4.3	2.3	3.1	3.3	0.0	0.1	3.1	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	22.9	22.7	14.2	14.1	14.1	22.6	22.7	20.5	22.4	0.0	23.0
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		639			947			260				34
Approach Delay, s/veh		22.7			14.2			20.6				22.9
Approach LOS		C			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	17.4	15.3	27.1	6.1	17.7	7.8	34.6				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	16.0	16.0	16.0	35.0	16.0	16.0	16.0	35.0				
Max Q Clear Time (g_c+I1), s	2.1	11.1	7.8	13.0	2.0	3.0	2.3	9.7				
Green Ext Time (p_c), s	0.0	0.4	0.5	7.0	0.0	0.1	0.0	8.0				

Intersection Summary

HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
6: 10th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	663	136	138	690	4	84	6	67	14	27	114
Future Volume (vph)	33	663	136	138	690	4	84	6	67	14	27	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-5%			-6%			-4%	
Storage Length (ft)	150		0	200		0	100		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		510			1994			256				231
Travel Time (s)		9.9			38.8			5.8				6.3
Confl. Peds. (#/hr)	1		2	2		1						
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
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.3	30.3		11.3	30.3		10.5	25.5		10.5	25.5	
Total Split (s)	21.3	51.3		21.3	51.3		21.3	21.3		21.3	21.3	
Total Split (%)	18.5%	44.5%		18.5%	44.5%		18.5%	18.5%		18.5%	18.5%	
Yellow Time (s)	4.3	4.3		4.3	4.3		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 115.2

Actuated Cycle Length: 79.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: 10th St SE & 39th Ave SE

Ø1	Ø2	Ø3	Ø4
21.3 s	51.3 s	21.3 s	21.3 s
Ø5	Ø6	Ø7	Ø8
21.3 s	51.3 s	21.3 s	21.3 s



HCM 6th Signalized Intersection Summary  
6: 10th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	663	136	138	690	4	84	6	67	14	27	114
Future Volume (veh/h)	33	663	136	138	690	4	84	6	67	14	27	114
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	2067	2067	2067	2061	2061	2061	2057	2057	2057
Adj Flow Rate, veh/h	37	737	151	153	767	4	93	7	74	16	30	127
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, %	1	1	1	2	2	2	5	5	5	0	0	0
Cap, veh/h	373	1116	229	378	1664	9	284	25	267	325	42	177
Arrive On Green	0.04	0.38	0.38	0.08	0.42	0.42	0.06	0.16	0.16	0.02	0.12	0.12
Sat Flow, veh/h	1795	2959	606	1968	4005	21	1963	153	1617	1959	343	1453
Grp Volume(v), veh/h	37	446	442	153	376	395	93	0	81	16	0	157
Grp Sat Flow(s),veh/h/ln	1795	1791	1774	1968	1963	2063	1963	0	1770	1959	0	1796
Q Serve(g_s), s	0.8	13.4	13.4	3.0	9.0	9.0	2.6	0.0	2.6	0.5	0.0	5.5
Cycle Q Clear(g_c), s	0.8	13.4	13.4	3.0	9.0	9.0	2.6	0.0	2.6	0.5	0.0	5.5
Prop In Lane	1.00		0.34	1.00		0.01	1.00		0.91	1.00		0.81
Lane Grp Cap(c), veh/h	373	675	669	378	816	857	284	0	292	325	0	218
V/C Ratio(X)	0.10	0.66	0.66	0.41	0.46	0.46	0.33	0.00	0.28	0.05	0.00	0.72
Avail Cap(c_a), veh/h	720	1239	1228	683	1359	1428	638	0	430	763	0	436
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	11.7	16.8	16.8	12.3	13.7	13.7	23.0	0.0	23.8	24.2	0.0	27.5
Incr Delay (d2), s/veh	0.1	1.6	1.6	0.7	0.6	0.6	0.7	0.0	0.5	0.1	0.0	4.4
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(50%),veh/ln	0.3	5.1	5.1	1.2	3.6	3.8	1.2	0.0	1.1	0.2	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	18.4	18.4	13.0	14.3	14.3	23.6	0.0	24.3	24.3	0.0	31.9
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		925			924			174				173
Approach Delay, s/veh		18.1			14.1			23.9				31.2
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	33.3	6.8	16.2	11.2	30.8	9.6	13.4				
Change Period (Y+Rc), s	6.3	6.3	5.5	5.5	6.3	6.3	5.5	5.5				
Max Green Setting (Gmax), s	15.0	45.0	15.8	15.8	15.0	45.0	15.8	15.8				
Max Q Clear Time (g_c+I1), s	2.8	11.0	2.5	4.6	5.0	15.4	4.6	7.5				
Green Ext Time (p_c), s	0.0	7.7	0.0	0.2	0.3	9.1	0.1	0.5				

Intersection Summary

HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
7: 39th Ave SE & College Way

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	113	637	660	68	68	114
Future Volume (vph)	113	637	660	68	68	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	-5%		0%	
Storage Length (ft)	175			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		25	
Link Distance (ft)		1994	702		209	
Travel Time (s)		38.8	13.7		5.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	5%	5%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	11.3	16.3	35.3		34.5	34.5
Total Split (s)	31.3	46.3	46.3		50.5	50.5
Total Split (%)	24.4%	36.1%	36.1%		39.4%	39.4%
Yellow Time (s)	4.0	4.0	4.0		3.5	3.5
All-Red Time (s)	2.3	2.3	2.3		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3		5.5	5.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	None

Intersection Summary

Area Type: Other

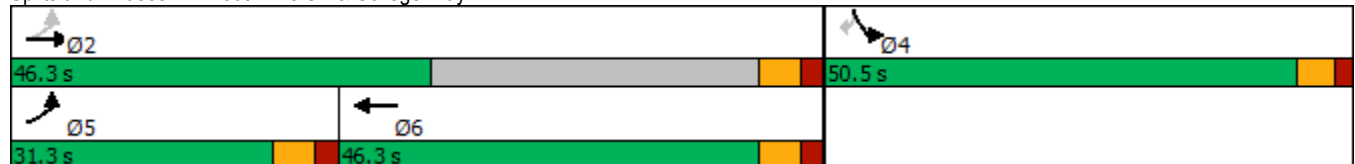
Cycle Length: 128.1

Actuated Cycle Length: 55.8

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 39th Ave SE & College Way



HCM 6th Signalized Intersection Summary  
7: 39th Ave SE & College Way

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	113	637	660	68	68	114
Future Volume (veh/h)	113	637	660	68	68	114
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
Work Zone On Approach		No	No			
Adj Sat Flow, veh/h/ln	1885	1885	2082	2082	1826	1826
Adj Flow Rate, veh/h	124	700	725	75	75	125
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	5	5
Cap, veh/h	459	2099	1242	128	227	202
Arrive On Green	0.09	0.59	0.34	0.34	0.13	0.13
Sat Flow, veh/h	1795	3676	3722	374	1739	1547
Grp Volume(v), veh/h	124	700	396	404	75	125
Grp Sat Flow(s),veh/h/ln	1795	1791	1978	2014	1739	1547
Q Serve(g_s), s	1.6	4.2	6.9	6.9	1.6	3.2
Cycle Q Clear(g_c), s	1.6	4.2	6.9	6.9	1.6	3.2
Prop In Lane	1.00			0.19	1.00	1.00
Lane Grp Cap(c), veh/h	459	2099	679	692	227	202
V/C Ratio(X)	0.27	0.33	0.58	0.58	0.33	0.62
Avail Cap(c_a), veh/h	1373	3439	1899	1934	1879	1672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.1	4.4	11.2	11.2	16.4	17.1
Incr Delay (d2), s/veh	0.3	0.1	0.8	0.8	1.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.8	2.4	2.4	0.6	2.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.4	4.5	12.0	12.0	17.5	20.8
LnGrp LOS	A	A	B	B	B	C
Approach Vol, veh/h		824	800		200	
Approach Delay, s/veh		5.0	12.0		19.6	
Approach LOS		A	B		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.7		10.9	10.1	20.6
Change Period (Y+Rc), s		* 6.3		5.5	* 6.3	* 6.3
Max Green Setting (Gmax), s		* 40		45.0	* 25	* 40
Max Q Clear Time (g_c+I1), s		6.2		5.2	3.6	8.9
Green Ext Time (p_c), s		5.3		0.9	0.3	5.4
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.7			
HCM 6th LOS			A			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Lanes, Volumes, Timings  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	481	46	10	538	26	35	6	4	43	27	98
Future Volume (vph)	110	481	46	10	538	26	35	6	4	43	27	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-4%			0%			6%	
Storage Length (ft)	125		0	125		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		384			416			287			528	
Travel Time (s)		7.5			8.1			7.8			14.4	
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 51.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

11 s	24 s	11 s	24 s
11 s	24 s	11 s	24 s



HCM 6th Signalized Intersection Summary  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	481	46	10	538	26	35	6	4	43	27	98
Future Volume (veh/h)	110	481	46	10	538	26	35	6	4	43	27	98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	2042	2042	2042	1900	1900	1900	1658	1658	1658
Adj Flow Rate, veh/h	118	517	49	11	578	28	38	6	4	46	29	105
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	2	2	2
Cap, veh/h	352	964	91	314	853	41	348	194	129	434	59	214
Arrive On Green	0.08	0.29	0.29	0.01	0.23	0.23	0.04	0.18	0.18	0.05	0.19	0.19
Sat Flow, veh/h	1795	3307	313	1945	3767	182	1810	1063	708	1579	314	1137
Grp Volume(v), veh/h	118	279	287	11	297	309	38	0	10	46	0	134
Grp Sat Flow(s),veh/h/ln	1795	1791	1828	1945	1940	2009	1810	0	1771	1579	0	1452
Q Serve(g_s), s	2.5	6.8	6.8	0.2	7.2	7.2	0.9	0.0	0.2	1.2	0.0	4.3
Cycle Q Clear(g_c), s	2.5	6.8	6.8	0.2	7.2	7.2	0.9	0.0	0.2	1.2	0.0	4.3
Prop In Lane	1.00		0.17	1.00		0.09	1.00		0.40	1.00		0.78
Lane Grp Cap(c), veh/h	352	522	533	314	439	455	348	0	323	434	0	273
V/C Ratio(X)	0.34	0.54	0.54	0.03	0.68	0.68	0.11	0.00	0.03	0.11	0.00	0.49
Avail Cap(c_a), veh/h	384	625	638	475	677	701	450	0	618	514	0	507
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(l)	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	13.9	15.3	15.3	15.1	18.2	18.2	16.1	0.0	17.3	15.8	0.0	18.7
Incr Delay (d2), s/veh	0.6	0.9	0.8	0.0	1.8	1.8	0.1	0.0	0.0	0.1	0.0	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(50%),veh/ln	0.9	2.5	2.5	0.1	3.0	3.1	0.3	0.0	0.1	0.4	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.5	16.2	16.2	15.1	20.0	20.0	16.2	0.0	17.4	15.9	0.0	20.1
LnGrp LOS	B	B	B	B	C	C	B	A	B	B	A	C
Approach Vol, veh/h		684			617			48				180
Approach Delay, s/veh		15.9			19.9			16.4				19.0
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	15.4	6.7	21.0	8.1	15.7	10.1	17.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	3.2	2.2	2.2	8.8	2.9	6.3	4.5	9.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.2	0.0	0.5	0.0	2.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				17.9								
HCM 6th LOS				B								

Lanes, Volumes, Timings  
9: 25th St SE & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	493	26	25	530	1	16	0	13	7	0	23
Future Volume (vph)	11	493	26	25	530	1	16	0	13	7	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	75		0	100		0	25		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		365			225			248			136	
Travel Time (s)		7.1			4.4			6.8			3.7	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

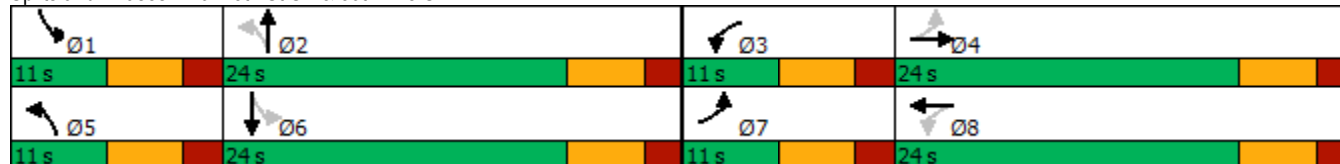
Cycle Length: 70

Actuated Cycle Length: 34.2

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 25th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 9: 25th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	493	26	25	530	1	16	0	13	7	0	23
Future Volume (veh/h)	11	493	26	25	530	1	16	0	13	7	0	23
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	1885	1885	1885	1885	1885	1885	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	12	530	28	27	570	1	17	0	14	8	0	25
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	317	862	45	333	975	2	344	0	186	346	0	168
Arrive On Green	0.02	0.25	0.25	0.03	0.27	0.27	0.02	0.00	0.12	0.01	0.00	0.10
Sat Flow, veh/h	1795	3460	183	1795	3668	6	1810	0	1610	1810	0	1610
Grp Volume(v), veh/h	12	274	284	27	278	293	17	0	14	8	0	25
Grp Sat Flow(s),veh/h/ln	1795	1791	1852	1795	1791	1884	1810	0	1610	1810	0	1610
Q Serve(g_s), s	0.2	5.5	5.5	0.4	5.5	5.5	0.3	0.0	0.3	0.2	0.0	0.6
Cycle Q Clear(g_c), s	0.2	5.5	5.5	0.4	5.5	5.5	0.3	0.0	0.3	0.2	0.0	0.6
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	317	446	461	333	476	501	344	0	186	346	0	168
V/C Ratio(X)	0.04	0.61	0.62	0.08	0.58	0.58	0.05	0.00	0.08	0.02	0.00	0.15
Avail Cap(c_a), veh/h	510	796	823	496	796	837	528	0	716	550	0	716
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(l)	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	11.3	13.5	13.5	11.0	12.9	12.9	15.6	0.0	16.0	15.9	0.0	16.5
Incr Delay (d2), s/veh	0.0	1.4	1.3	0.1	1.1	1.1	0.1	0.0	0.2	0.0	0.0	0.4
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(50%),veh/ln	0.1	1.9	2.0	0.1	1.9	1.9	0.1	0.0	0.1	0.1	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	14.9	14.8	11.1	14.1	14.0	15.7	0.0	16.2	16.0	0.0	16.9
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		570			598			31				33
Approach Delay, s/veh		14.8			13.9			15.9				16.7
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	10.7	7.3	16.1	6.9	10.2	6.6	16.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.2	2.3	2.4	7.5	2.3	2.6	2.2	7.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.4	0.0	0.1	0.0	2.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			14.4									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Volume (vph)	199	0	373	1	2	0	300	368	3	0	489	304
Future Volume (vph)	199	0	373	1	2	0	300	368	3	0	489	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			8%			-4%			6%	
Storage Length (ft)	0		0	0		0	300		0	200		0
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		507			360			460			462	
Travel Time (s)		9.9			7.0			9.0			9.0	
Confl. Peds. (#/hr)			2	2					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	24.0	24.0		16.3	28.3		11.3	28.3	28.3
Total Split (s)	36.0	36.0	36.0	36.0	36.0		26.3	46.3		21.3	46.3	46.3
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%		24.2%	42.6%		19.6%	42.6%	42.6%
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)	2.0	2.0	2.0	2.0	2.0		2.3	2.3		2.3	2.3	2.3
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)		6.0	6.0		6.0		6.3	6.3		6.3	6.3	6.3
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

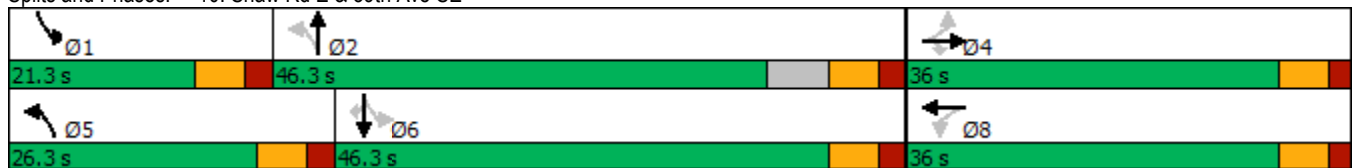
Cycle Length: 108.6

Actuated Cycle Length: 85.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Shaw Rd E & 39th Ave SE





HCM 6th Signalized Intersection Summary  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕	↗	↕	↗	↕
Traffic Volume (veh/h)	199	0	373	1	2	0	300	368	3	0	489	304
Future Volume (veh/h)	199	0	373	1	2	0	300	368	3	0	489	304
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	1523	1523	1523	2027	2027	2027	1673	1673	1673
Adj Flow Rate, veh/h	205	0	385	1	2	0	309	379	3	0	504	313
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	1	1	1
Cap, veh/h	312	0	513	62	86	0	372	1096	9	396	590	499
Arrive On Green	0.32	0.00	0.32	0.32	0.32	0.00	0.12	0.55	0.55	0.00	0.35	0.35
Sat Flow, veh/h	729	0	1605	30	268	0	1931	2009	16	1593	1673	1414
Grp Volume(v), veh/h	205	0	385	3	0	0	309	0	382	0	504	313
Grp Sat Flow(s),veh/h/ln	729	0	1605	298	0	0	1931	0	2024	1593	1673	1414
Q Serve(g_s), s	0.3	0.0	19.6	0.1	0.0	0.0	8.7	0.0	9.6	0.0	25.5	16.8
Cycle Q Clear(g_c), s	27.1	0.0	19.6	27.0	0.0	0.0	8.7	0.0	9.6	0.0	25.5	16.8
Prop In Lane	1.00		1.00	0.33		0.00	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	513	148	0	0	372	0	1105	396	590	499
V/C Ratio(X)	0.66	0.00	0.75	0.02	0.00	0.00	0.83	0.00	0.35	0.00	0.85	0.63
Avail Cap(c_a), veh/h	325	0	528	159	0	0	556	0	1105	656	733	620
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	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	27.8	24.1	0.0	0.0	19.5	0.0	11.6	0.0	27.4	24.6
Incr Delay (d2), s/veh	4.5	0.0	5.8	0.1	0.0	0.0	6.6	0.0	0.3	0.0	8.9	1.9
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(50%),veh/ln	4.6	0.0	8.0	0.0	0.0	0.0	4.2	0.0	4.0	0.0	11.1	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.0	0.0	33.6	24.1	0.0	0.0	26.1	0.0	11.9	0.0	36.3	26.4
LnGrp LOS	D	A	C	C	A	A	C	A	B	A	D	C
Approach Vol, veh/h		590			3			691			817	
Approach Delay, s/veh		34.1			24.1			18.2			32.5	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	56.2		35.3	17.6	38.5		35.3				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 15	* 40		30.0	* 20	* 40		30.0				
Max Q Clear Time (g_c+I1), s	0.0	11.6		29.1	10.7	27.5		29.0				
Green Ext Time (p_c), s	0.0	3.4		0.3	0.6	4.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			28.2									
HCM 6th LOS			C									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Lanes, Volumes, Timings  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	49	41	30	37	17	46	450	26	12	876	152
Future Volume (vph)	99	49	41	30	37	17	46	450	26	12	876	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-9%			3%			-9%			6%	
Storage Length (ft)	50		0	50		0	100		175	75		100
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			Yes			Yes
Link Speed (mph)		25			25			35				35
Link Distance (ft)		481			429			444				403
Travel Time (s)		13.1			11.7			8.6				7.9
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 (%)	0%	1%	1%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	84.0	84.0	11.0	84.0	84.0
Total Split (%)	8.5%	18.5%		8.5%	18.5%		8.5%	64.6%	64.6%	8.5%	64.6%	64.6%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min

Intersection Summary

Area Type: Other

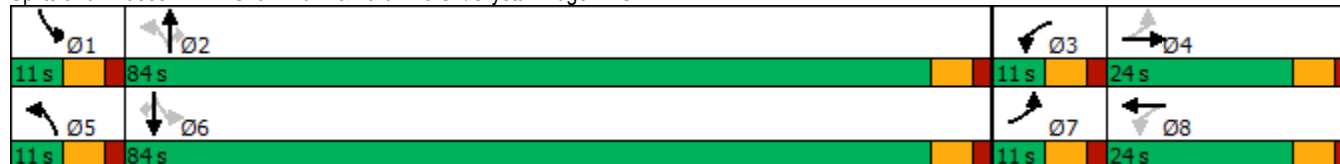
Cycle Length: 130

Actuated Cycle Length: 105.3

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE



HCM 6th Signalized Intersection Summary  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	49	41	30	37	17	46	450	26	12	876	152
Future Volume (veh/h)	99	49	41	30	37	17	46	450	26	12	876	152
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	2254	2239	2239	1847	1847	1847	2224	2224	2224	1673	1673	1673
Adj Flow Rate, veh/h	108	53	45	33	40	18	50	489	28	13	952	165
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, %	0	1	1	0	0	0	2	2	2	1	1	1
Cap, veh/h	261	121	102	198	110	49	196	1398	1185	504	1017	862
Arrive On Green	0.05	0.11	0.11	0.03	0.09	0.09	0.04	0.63	0.63	0.01	0.61	0.61
Sat Flow, veh/h	2147	1118	950	1759	1206	543	2118	2224	1885	1593	1673	1418
Grp Volume(v), veh/h	108	0	98	33	0	58	50	489	28	13	952	165
Grp Sat Flow(s),veh/h/ln	2147	0	2068	1759	0	1749	2118	2224	1885	1593	1673	1418
Q Serve(g_s), s	5.0	0.0	4.9	1.8	0.0	3.4	0.9	11.4	0.6	0.3	56.6	5.6
Cycle Q Clear(g_c), s	5.0	0.0	4.9	1.8	0.0	3.4	0.9	11.4	0.6	0.3	56.6	5.6
Prop In Lane	1.00		0.46	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	261	0	223	198	0	159	196	1398	1185	504	1017	862
V/C Ratio(X)	0.41	0.00	0.44	0.17	0.00	0.36	0.26	0.35	0.02	0.03	0.94	0.19
Avail Cap(c_a), veh/h	261	0	340	228	0	288	217	1586	1344	553	1193	1011
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	0.0	45.7	43.2	0.0	46.7	23.1	9.7	7.6	8.2	19.5	9.5
Incr Delay (d2), s/veh	1.0	0.0	1.4	0.4	0.0	1.4	0.7	0.1	0.0	0.0	12.4	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(50%),veh/ln	2.7	0.0	2.6	0.8	0.0	1.6	0.7	5.2	0.2	0.1	22.9	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.0	0.0	47.0	43.6	0.0	48.1	23.8	9.8	7.7	8.3	31.9	9.6
LnGrp LOS	D	A	D	D	A	D	C	A	A	A	C	A
Approach Vol, veh/h		206			91			567			1130	
Approach Delay, s/veh		45.4			46.5			10.9			28.3	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	74.8	9.2	17.8	9.9	72.5	11.0	16.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	78.0	5.0	18.0	5.0	78.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.3	13.4	3.8	6.9	2.9	58.6	7.0	5.4				
Green Ext Time (p_c), s	0.0	3.5	0.0	0.3	0.0	7.9	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			26.0									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

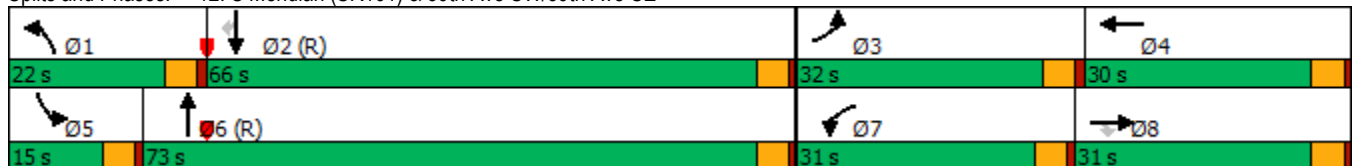
01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	410	210	138	297	44	161	942	63	38	1093	342
Future Volume (vph)	272	410	210	138	297	44	161	942	63	38	1093	342
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			3%			0%	
Storage Length (ft)	350		0	225		0	200		0	210		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			No			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		571			1339			1348			645	
Travel Time (s)		11.1			26.1			26.3			12.6	
Confl. Peds. (#/hr)			2						2			9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8									2
Detector Phase	3	8	8	7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.6	27.6	27.6	10.6	16.6		10.6	29.6		10.6	29.6	29.6
Total Split (s)	32.0	31.0	31.0	31.0	30.0		22.0	73.0		15.0	66.0	66.0
Total Split (%)	21.3%	20.7%	20.7%	20.7%	20.0%		14.7%	48.7%		10.0%	44.0%	44.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	3.6
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		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-Min		None	C-Min	C-Min

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 40 (27%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE





HCM 6th Signalized Intersection Summary  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	272	410	210	138	297	44	161	942	63	38	1093	342
Future Volume (veh/h)	272	410	210	138	297	44	161	942	63	38	1093	342
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	1772	1772	1772	1786	1786	1786	1694	1694	1694	1772	1772	1772
Adj Flow Rate, veh/h	280	423	0	142	306	45	166	971	65	39	1127	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	299	681		164	361	53	185	1672	112	54	1561	
Arrive On Green	0.18	0.20	0.00	0.10	0.12	0.12	0.11	0.55	0.55	0.06	0.93	0.00
Sat Flow, veh/h	1688	3367	1502	1701	2972	433	1613	3061	205	1688	3367	1502
Grp Volume(v), veh/h	280	423	0	142	173	178	166	510	526	39	1127	0
Grp Sat Flow(s),veh/h/ln	1688	1683	1502	1701	1697	1708	1613	1609	1656	1688	1683	1502
Q Serve(g_s), s	24.5	17.2	0.0	12.3	15.0	15.3	15.2	31.6	31.6	3.4	11.0	0.0
Cycle Q Clear(g_c), s	24.5	17.2	0.0	12.3	15.0	15.3	15.2	31.6	31.6	3.4	11.0	0.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	299	681		164	206	207	185	879	905	54	1561	
V/C Ratio(X)	0.94	0.62		0.86	0.84	0.86	0.90	0.58	0.58	0.72	0.72	
Avail Cap(c_a), veh/h	308	681		299	287	289	187	879	905	117	1561	
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(l)	1.00	1.00	0.00	0.96	0.96	0.96	0.60	0.60	0.60	0.84	0.84	0.00
Uniform Delay (d), s/veh	60.8	54.6	0.0	66.8	64.5	64.6	65.5	22.6	22.6	69.5	3.3	0.0
Incr Delay (d2), s/veh	34.0	1.6	0.0	9.3	11.9	13.6	26.2	1.7	1.6	10.6	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.3	7.4	0.0	5.8	7.1	7.4	7.6	12.2	12.6	1.6	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.8	56.2	0.0	76.1	76.4	78.2	91.7	24.3	24.2	80.1	5.8	0.0
LnGrp LOS	F	E		E	E	E	F	C	C	F	A	
Approach Vol, veh/h		703	A		493			1202			1166	A
Approach Delay, s/veh		71.6			76.9			33.6			8.3	
Approach LOS		E			E			C			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.8	74.2	31.2	22.8	9.4	86.6	19.1	34.9				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	17.4	61.4	27.4	25.4	10.4	68.4	26.4	26.4				
Max Q Clear Time (g_c+I1), s	17.2	13.0	26.5	17.3	5.4	33.6	14.3	19.2				
Green Ext Time (p_c), s	0.0	8.3	0.1	0.9	0.0	6.2	0.2	1.3				

Intersection Summary

HCM 6th Ctrl Delay	38.8
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
13: 5th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	182	136	96	163	4	70	243	59	5	464	85
Future Volume (vph)	126	182	136	96	163	4	70	243	59	5	464	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-3%			0%	
Storage Length (ft)	150		0	175		0	225		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1339			1162			552			965	
Travel Time (s)		26.1			22.6			12.5			21.9	
Confl. Peds. (#/hr)									4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0		11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0		21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%		16.9%	29.0%		16.9%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

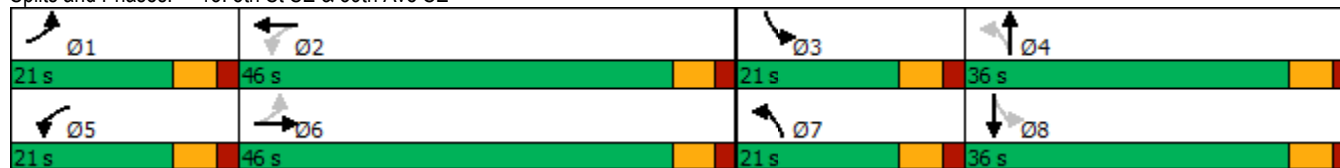
Cycle Length: 124

Actuated Cycle Length: 80.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 13: 5th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 13: 5th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	182	136	96	163	4	70	243	59	5	464	85
Future Volume (veh/h)	126	182	136	96	163	4	70	243	59	5	464	85
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	2018	2018	2018	1885	1885	1885
Adj Flow Rate, veh/h	129	186	139	98	166	4	71	248	60	5	473	87
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	3	3	3	0	0	0	1	1	1
Cap, veh/h	388	335	237	304	527	13	275	628	152	430	545	100
Arrive On Green	0.08	0.17	0.17	0.07	0.15	0.15	0.05	0.40	0.40	0.01	0.35	0.35
Sat Flow, veh/h	1781	1988	1406	1767	3519	85	1922	1569	380	1795	1548	285
Grp Volume(v), veh/h	129	165	160	98	83	87	71	0	308	5	0	560
Grp Sat Flow(s),veh/h/ln	1781	1777	1617	1767	1763	1840	1922	0	1948	1795	0	1833
Q Serve(g_s), s	4.0	5.7	6.1	3.1	2.8	2.8	1.5	0.0	7.5	0.1	0.0	19.0
Cycle Q Clear(g_c), s	4.0	5.7	6.1	3.1	2.8	2.8	1.5	0.0	7.5	0.1	0.0	19.0
Prop In Lane	1.00		0.87	1.00		0.05	1.00		0.19	1.00		0.16
Lane Grp Cap(c), veh/h	388	299	272	304	264	275	275	0	780	430	0	645
V/C Ratio(X)	0.33	0.55	0.59	0.32	0.31	0.32	0.26	0.00	0.39	0.01	0.00	0.87
Avail Cap(c_a), veh/h	638	1064	968	585	1055	1102	601	0	875	821	0	823
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(l)	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	21.2	25.5	25.6	22.0	25.3	25.4	15.1	0.0	14.3	13.9	0.0	20.2
Incr Delay (d2), s/veh	0.5	1.6	2.0	0.6	0.7	0.7	0.5	0.0	0.3	0.0	0.0	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.4	2.3	1.2	1.2	1.2	0.6	0.0	3.1	0.0	0.0	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	27.1	27.6	22.6	26.0	26.0	15.6	0.0	14.6	13.9	0.0	28.2
LnGrp LOS	C	C	C	C	C	C	B	A	B	B	A	C
Approach Vol, veh/h		454			268			379				565
Approach Delay, s/veh		25.7			24.8			14.8				28.1
Approach LOS		C			C			B				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	16.0	6.4	32.7	10.4	17.3	9.7	29.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	6.0	4.8	2.1	9.5	5.1	8.1	3.5	21.0				
Green Ext Time (p_c), s	0.2	0.9	0.0	1.8	0.1	2.0	0.1	2.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			23.9									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
 14: S Meridian (SR161) & 43rd Ave SE

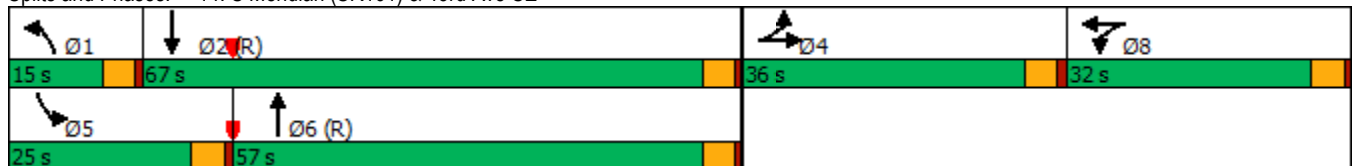
01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	122	56	215	125	80	57	993	91	150	1184	44
Future Volume (vph)	104	122	56	215	125	80	57	993	91	150	1184	44
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		-4%			6%			0%			0%	
Storage Length (ft)	150		0	275		0	250		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		332			544			617			1348	
Travel Time (s)		9.1			10.6			12.0			26.3	
Confl. Peds. (#/hr)			2	2					6			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases												
Detector Phase	4	4		8	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	33.6	33.6		30.6	30.6		10.6	32.6		10.6	28.6	
Total Split (s)	36.0	36.0		32.0	32.0		15.0	57.0		25.0	67.0	
Total Split (%)	24.0%	24.0%		21.3%	21.3%		10.0%	38.0%		16.7%	44.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 90 (60%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated

Splits and Phases: 14: S Meridian (SR161) & 43rd Ave SE





HCM 6th Signalized Intersection Summary  
 14: S Meridian (SR161) & 43rd Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	122	56	215	125	80	57	993	91	150	1184	44
Future Volume (veh/h)	104	122	56	215	125	80	57	993	91	150	1184	44
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		0.99	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	1935	1935	1935	1571	1571	1571	1730	1730	1730	1786	1786	1786
Adj Flow Rate, veh/h	107	126	58	222	129	82	59	1024	94	155	1221	45
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	2	2	2	5	5	5	1	1	1
Cap, veh/h	224	152	70	244	146	93	74	1490	137	175	1828	67
Arrive On Green	0.12	0.12	0.12	0.16	0.16	0.16	0.04	0.49	0.49	0.21	1.00	1.00
Sat Flow, veh/h	1843	1252	576	1496	896	570	1647	3042	279	1701	3338	123
Grp Volume(v), veh/h	107	0	184	222	0	211	59	553	565	155	620	646
Grp Sat Flow(s),veh/h/ln	1843	0	1828	1496	0	1466	1647	1643	1678	1701	1697	1764
Q Serve(g_s), s	8.1	0.0	14.8	21.9	0.0	21.1	5.3	38.8	38.9	13.3	0.0	0.0
Cycle Q Clear(g_c), s	8.1	0.0	14.8	21.9	0.0	21.1	5.3	38.8	38.9	13.3	0.0	0.0
Prop In Lane	1.00		0.32	1.00		0.39	1.00		0.17	1.00		0.07
Lane Grp Cap(c), veh/h	224	0	222	244	0	239	74	805	821	175	929	966
V/C Ratio(X)	0.48	0.00	0.83	0.91	0.00	0.88	0.80	0.69	0.69	0.89	0.67	0.67
Avail Cap(c_a), veh/h	386	0	383	273	0	268	114	805	821	231	929	966
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.61	0.61	0.61
Uniform Delay (d), s/veh	61.4	0.0	64.4	61.6	0.0	61.3	71.0	29.4	29.4	58.7	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	6.3	29.4	0.0	24.8	14.7	4.8	4.7	17.6	2.3	2.3
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(50%),veh/ln	3.9	0.0	7.3	10.3	0.0	9.5	2.5	16.2	16.5	6.0	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.7	0.0	70.6	91.1	0.0	86.1	85.7	34.2	34.1	76.3	2.3	2.3
LnGrp LOS	E	A	E	F	A	F	F	C	C	E	A	A
Approach Vol, veh/h		291			433			1177			1421	
Approach Delay, s/veh		67.7			88.6			36.7			10.4	
Approach LOS		E			F			D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.3	86.8		22.8	20.0	78.1		29.1				
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6				
Max Green Setting (Gmax), s	10.4	62.4		31.4	20.4	52.4		27.4				
Max Q Clear Time (g_c+I1), s	7.3	2.0		16.8	15.3	40.9		23.9				
Green Ext Time (p_c), s	0.0	10.4		1.0	0.2	5.2		0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				34.9								
HCM 6th LOS				C								

2032 Without Project AM Peak Hour

Lanes, Volumes, Timings  
1: 7th St SE & College Way

01/27/2022



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	18	219	19	58	252
Future Volume (vph)	6	18	219	19	58	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-4%			0%
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	25		25			25
Link Distance (ft)	771		286			501
Travel Time (s)	21.0		7.8			13.7
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	6	18	219	19	58	252
Future Vol, veh/h	6	18	219	19	58	252
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-4	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	2	3	3
Mvmt Flow	7	20	241	21	64	277

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	658	252	0	0	262	0
Stage 1	252	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227	-
Pot Cap-1 Maneuver	432	792	-	-	1296	-
Stage 1	795	-	-	-	-	-
Stage 2	677	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	410	792	-	-	1296	-
Mov Cap-2 Maneuver	507	-	-	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	643	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	694	1296	-
HCM Lane V/C Ratio	-	-	0.038	0.049	-
HCM Control Delay (s)	-	-	10.4	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-



Lanes, Volumes, Timings  
2: 31st Ave SW/S Meridian (SR161)

01/27/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	376	916	1389	829	201	250
Future Volume (vph)	376	916	1389	829	201	250
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Storage Length (ft)	250			0	0	175
Storage Lanes	2			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		35	
Link Distance (ft)		370	339		787	
Travel Time (s)		7.2	6.6		15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	7%	3%	3%	2%	2%
Shared Lane Traffic (%)						
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Detector Phase	5		6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	8.0	8.0
Minimum Split (s)	12.6		20.6	20.6	12.6	12.6
Total Split (s)	15.0		99.0	99.0	26.0	26.0
Total Split (%)	10.7%		70.7%	70.7%	18.6%	18.6%
Yellow Time (s)	3.6		3.6	3.6	3.6	3.6
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)	4.6		4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	Min		C-Min	C-Min	None	None

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 41 (29%), Referenced to phase 6:WBT, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 ! Phase conflict between lane groups.

Splits and Phases: 2: 31st Ave SW/S Meridian (SR161)



HCM Signalized Intersection Capacity Analysis  
 2: 31st Ave SW/S Meridian (SR161)

01/27/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↕	↖↗	↖	↖↗	↖
Traffic Volume (vph)	376	916	1389	829	201	250
Future Volume (vph)	376	916	1389	829	201	250
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Total Lost time (s)	4.6	4.0	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3038	3132	3387	1515	3252	1500
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3038	3132	3387	1515	3252	1500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	376	916	1389	829	201	250
RTOR Reduction (vph)	0	0	0	327	0	152
Lane Group Flow (vph)	376	916	1389	502	201	98
Heavy Vehicles (%)	7%	7%	3%	3%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Actuated Green, G (s)	33.3	140.0	77.7	77.7	15.2	15.2
Effective Green, g (s)	33.3	140.0	77.7	77.7	15.2	15.2
Actuated g/C Ratio	0.24	1.00	0.56	0.56	0.11	0.11
Clearance Time (s)	4.6		4.6	4.6	4.6	4.6
Vehicle Extension (s)	2.5		2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	722	3132	1879	840	353	162
v/s Ratio Prot	c0.12	0.29	c0.41		0.06	
v/s Ratio Perm				0.33		c0.07
v/c Ratio	0.52	0.29	0.74	0.60	0.57	0.60
Uniform Delay, d <sub>1</sub>	46.4	0.0	23.5	20.7	59.3	59.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>	0.5	0.2	2.7	3.1	1.7	5.2
Delay (s)	46.9	0.2	26.2	23.9	61.0	64.7
Level of Service	D	A	C	C	E	E
Approach Delay (s)		13.8	25.3		63.1	
Approach LOS		B	C		E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			25.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	13.8
Intersection Capacity Utilization			73.2%		ICU Level of Service	D
Analysis Period (min)			15			
! Phase conflict between lane groups.						
c Critical Lane Group						

Lanes, Volumes, Timings  
 3: S Meridian (SR161) & 37th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	24	29	60	32	415	17	1745	38	303	742	29
Future Volume (vph)	26	24	29	60	32	415	17	1745	38	303	742	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	250		0	225		0	350		0
Storage Lanes	1		1	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		242			1349			645			449	
Travel Time (s)		6.6			26.3			12.6			8.7	
Confl. Peds. (#/hr)						1						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	8%	8%	8%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			Free						
Detector Phase	3	8	8	7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	8.6	10.6	10.6	10.6	35.6		10.6	28.6		10.6	31.6	
Total Split (s)	15.0	25.0	25.0	27.0	37.0		15.0	68.0		20.0	73.0	
Total Split (%)	10.7%	17.9%	17.9%	19.3%	26.4%		10.7%	48.6%		14.3%	52.1%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		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-Min		None	C-Min	

Intersection Summary

Area Type: Other

Cycle Length: 140

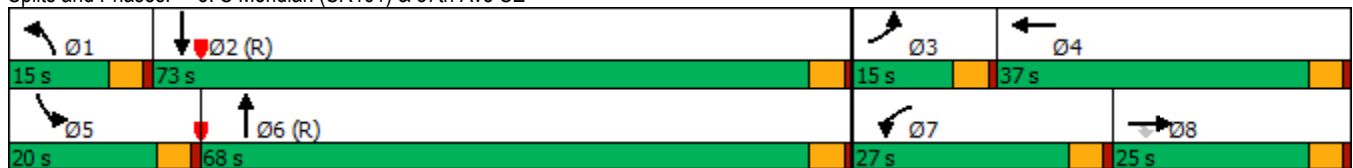
Actuated Cycle Length: 140

Offset: 44 (31%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 3: S Meridian (SR161) & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 3: S Meridian (SR161) & 37th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	24	29	60	32	415	17	1745	38	303	742	29
Future Volume (veh/h)	26	24	29	60	32	415	17	1745	38	303	742	29
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	1758	1758	1758	1772	1772	1772	1758	1758	1758	1688	1688	1688
Adj Flow Rate, veh/h	26	24	29	60	32	0	17	1745	38	303	742	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	2	2	2	3	3	3	8	8	8
Cap, veh/h	32	125	56	76	113		35	2259	49	343	3525	
Arrive On Green	0.02	0.04	0.04	0.05	0.06	0.00	0.04	1.00	1.00	0.11	0.77	0.00
Sat Flow, veh/h	1674	3340	1490	1688	1772	1502	1674	3342	73	3118	4759	0
Grp Volume(v), veh/h	26	24	29	60	32	0	17	870	913	303	742	0
Grp Sat Flow(s),veh/h/ln	1674	1670	1490	1688	1772	1502	1674	1670	1745	1559	1536	0
Q Serve(g_s), s	2.2	1.0	2.7	4.9	2.4	0.0	1.4	0.0	0.0	13.4	6.3	0.0
Cycle Q Clear(g_c), s	2.2	1.0	2.7	4.9	2.4	0.0	1.4	0.0	0.0	13.4	6.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.00
Lane Grp Cap(c), veh/h	32	125	56	76	113		35	1129	1179	343	3525	
V/C Ratio(X)	0.82	0.19	0.52	0.79	0.28		0.49	0.77	0.77	0.88	0.21	
Avail Cap(c_a), veh/h	124	487	217	270	410		124	1129	1179	343	3525	
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	1.00	1.00	0.90	0.90	0.00	0.49	0.49	0.49	1.00	1.00	0.00
Uniform Delay (d), s/veh	68.4	65.3	66.1	66.2	62.5	0.0	66.4	0.0	0.0	61.4	4.6	0.0
Incr Delay (d2), s/veh	43.2	0.7	7.3	14.6	1.3	0.0	5.2	2.6	2.5	22.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.4	1.1	2.4	1.1	0.0	0.6	0.8	0.8	6.4	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.7	66.1	73.5	80.7	63.8	0.0	71.5	2.6	2.5	84.1	4.7	0.0
LnGrp LOS	F	E	E	F	E		E	A	A	F	A	
Approach Vol, veh/h		79			92	A		1800			1045	A
Approach Delay, s/veh		83.8			74.9			3.2			27.7	
Approach LOS		F			E			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	111.7	7.3	13.5	20.0	99.2	10.9	9.8				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	10.4	68.4	10.4	32.4	15.4	63.4	22.4	20.4				
Max Q Clear Time (g_c+I1), s	3.4	8.3	4.2	4.4	15.4	2.0	6.9	4.7				
Green Ext Time (p_c), s	0.0	7.4	0.0	0.1	0.0	29.8	0.1	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			16.0									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lanes, Volumes, Timings  
4: 5th St SE & 37th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	309	29	14	344	158	82	220	13	132	186	54
Future Volume (vph)	38	309	29	14	344	158	82	220	13	132	186	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-3%			0%			-5%	
Storage Length (ft)	200		0	225		150	200		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			25	
Link Distance (ft)		1349			1181			965			418	
Travel Time (s)		26.3			23.0			21.9			11.4	
Confl. Peds. (#/hr)	1					1			4			4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Detector Phase	1	6		5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0	26.0	11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0	46.0	21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%	37.1%	16.9%	29.0%		16.9%	29.0%	
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)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other

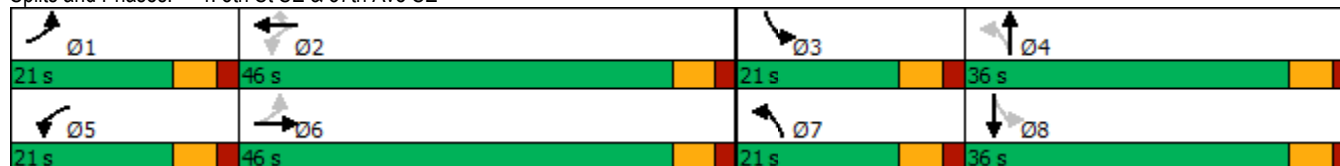
Cycle Length: 124

Actuated Cycle Length: 65.7

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: 5th St SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
4: 5th St SE & 37th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	309	29	14	344	158	82	220	13	132	186	54
Future Volume (veh/h)	38	309	29	14	344	158	82	220	13	132	186	54
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		0.99
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	1841	1841	1841	1973	1973	1973	1870	1870	1870	2037	2037	2037
Adj Flow Rate, veh/h	43	347	33	16	387	0	92	247	0	148	209	61
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	4	4	4
Cap, veh/h	320	715	68	311	737		374	381		415	337	98
Arrive On Green	0.04	0.22	0.22	0.02	0.20	0.00	0.07	0.20	0.00	0.09	0.22	0.22
Sat Flow, veh/h	1753	3228	305	1879	3749	1672	1781	1870	0	1940	1513	442
Grp Volume(v), veh/h	43	187	193	16	387	0	92	247	0	148	0	270
Grp Sat Flow(s),veh/h/ln	1753	1749	1785	1879	1874	1672	1781	1870	0	1940	0	1954
Q Serve(g_s), s	1.0	4.8	4.9	0.3	4.8	0.0	2.0	6.3	0.0	3.0	0.0	6.4
Cycle Q Clear(g_c), s	1.0	4.8	4.9	0.3	4.8	0.0	2.0	6.3	0.0	3.0	0.0	6.4
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	320	387	395	311	737		374	381		415	0	435
V/C Ratio(X)	0.13	0.48	0.49	0.05	0.53		0.25	0.65		0.36	0.00	0.62
Avail Cap(c_a), veh/h	751	1356	1384	820	2906		766	1088		805	0	1136
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(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	17.5	17.5	16.1	18.6	0.0	14.6	18.8	0.0	14.4	0.0	18.1
Incr Delay (d2), s/veh	0.2	0.9	0.9	0.1	0.6	0.0	0.3	1.9	0.0	0.5	0.0	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(50%),veh/ln	0.4	1.8	1.8	0.1	1.9	0.0	0.8	2.6	0.0	1.2	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	18.4	18.5	16.2	19.1	0.0	15.0	20.7	0.0	14.9	0.0	19.5
LnGrp LOS	B	B	B	B	B		B	C		B	A	B
Approach Vol, veh/h		423			403	A		339	A		418	
Approach Delay, s/veh		18.2			19.0			19.1			17.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	16.1	10.6	16.5	7.0	17.4	9.7	17.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	3.0	6.8	5.0	8.3	2.3	6.9	4.0	8.4				
Green Ext Time (p_c), s	0.0	2.6	0.3	1.4	0.0	2.3	0.1	1.7				

Intersection Summary

HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: 39th Ave SE & 37th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	403	1	177	591	1	0	8	298	5	4	8
Future Volume (vph)	9	403	1	177	591	1	0	8	298	5	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		6%			-5%			3%			0%	
Storage Length (ft)	225		0	200		0	200		0	0		150
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35				25
Link Distance (ft)		1181			510			1162				264
Travel Time (s)		23.0			9.9			22.6				7.2
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 (%)	4%	4%	4%	3%	3%	3%	3%	3%	3%	14%	14%	14%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt		NA
Protected Phases	7	4		3	8		5	2	3	1		6
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	3	1		6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	5.0	5.0		10.0
Minimum Split (s)	12.0	30.0		12.0	30.0		11.0	16.0	12.0	11.0		34.0
Total Split (s)	23.0	42.0		23.0	42.0		22.0	22.0	23.0	22.0		22.0
Total Split (%)	21.1%	38.5%		21.1%	38.5%		20.2%	20.2%	21.1%	20.2%		20.2%
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)	3.0	3.0		3.0	3.0		2.0	2.0	3.0	2.0		2.0
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)	7.0	7.0		7.0	7.0		6.0	6.0	7.0	6.0		6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Min		None	Min		None	None	None	None		None

Intersection Summary

Area Type: Other

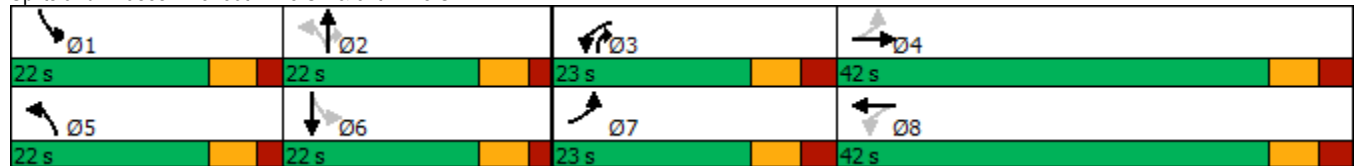
Cycle Length: 109

Actuated Cycle Length: 41.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: 39th Ave SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 5: 39th Ave SE & 37th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	403	1	177	591	1	0	8	298	5	4	8
Future Volume (veh/h)	9	403	1	177	591	1	0	8	298	5	4	8
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	1629	1629	1629	2052	2052	2052	1803	1803	1803	1693	1693	1693
Adj Flow Rate, veh/h	10	443	1	195	649	1	0	9	327	5	4	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
Percent Heavy Veh, %	4	4	4	3	3	3	3	3	3	14	14	14
Cap, veh/h	276	756	2	445	1325	2	420	399	500	334	151	340
Arrive On Green	0.01	0.24	0.24	0.11	0.33	0.33	0.00	0.22	0.22	0.01	0.33	0.33
Sat Flow, veh/h	1551	3167	7	1954	3993	6	1717	1803	1528	1612	463	1042
Grp Volume(v), veh/h	10	216	228	195	317	333	0	9	327	5	0	13
Grp Sat Flow(s),veh/h/ln	1551	1547	1627	1954	1949	2051	1717	1803	1528	1612	0	1505
Q Serve(g_s), s	0.3	7.5	7.5	4.3	7.9	7.9	0.0	0.2	11.1	0.1	0.0	0.4
Cycle Q Clear(g_c), s	0.3	7.5	7.5	4.3	7.9	7.9	0.0	0.2	11.1	0.1	0.0	0.4
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	276	369	388	445	647	680	420	399	500	334	0	491
V/C Ratio(X)	0.04	0.59	0.59	0.44	0.49	0.49	0.00	0.02	0.65	0.01	0.00	0.03
Avail Cap(c_a), veh/h	664	890	937	751	1122	1180	869	474	564	748	0	491
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	20.5	20.5	14.7	16.2	16.2	0.0	18.5	17.5	16.7	0.0	13.9
Incr Delay (d2), s/veh	0.1	3.1	3.0	0.7	1.2	1.2	0.0	0.0	2.3	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(50%),veh/ln	0.1	2.8	2.9	1.8	3.3	3.5	0.0	0.1	3.7	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	23.6	23.5	15.4	17.4	17.4	0.0	18.6	19.8	16.7	0.0	13.9
LnGrp LOS	B	C	C	B	B	B	A	B	B	B	A	B
Approach Vol, veh/h		454			845			336				18
Approach Delay, s/veh		23.4			16.9			19.8				14.7
Approach LOS		C			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	19.5	13.4	21.5	0.0	25.9	7.8	27.2				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	16.0	16.0	16.0	35.0	16.0	16.0	16.0	35.0				
Max Q Clear Time (g_c+I1), s	2.1	13.1	6.3	9.5	0.0	2.4	2.3	9.9				
Green Ext Time (p_c), s	0.0	0.3	0.4	5.0	0.0	0.0	0.0	7.7				

Intersection Summary

HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Lanes, Volumes, Timings  
6: 10th St SE & 39th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	540	52	79	648	14	100	24	104	1	1	15
Future Volume (vph)	107	540	52	79	648	14	100	24	104	1	1	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-5%			-6%			-4%	
Storage Length (ft)	150		0	200		0	100		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		510			1994			256				231
Travel Time (s)		9.9			38.8			5.8				6.3
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 (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	13%	13%	13%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.3	30.3		11.3	30.3		10.5	25.5		10.5	25.5	
Total Split (s)	21.3	51.3		21.3	51.3		21.3	21.3		21.3	21.3	
Total Split (%)	18.5%	44.5%		18.5%	44.5%		18.5%	18.5%		18.5%	18.5%	
Yellow Time (s)	4.3	4.3		4.3	4.3		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 115.2

Actuated Cycle Length: 57.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: 10th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
6: 10th St SE & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	540	52	79	648	14	100	24	104	1	1	15
Future Volume (veh/h)	107	540	52	79	648	14	100	24	104	1	1	15
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	1841	1841	1841	2037	2037	2037	2091	2091	2091	1862	1862	1862
Adj Flow Rate, veh/h	118	593	57	87	712	15	110	26	114	1	1	16
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
Percent Heavy Veh, %	4	4	4	4	4	4	3	3	3	13	13	13
Cap, veh/h	392	1076	103	421	1256	26	400	53	235	242	8	126
Arrive On Green	0.08	0.33	0.33	0.07	0.32	0.32	0.08	0.16	0.16	0.00	0.08	0.08
Sat Flow, veh/h	1753	3224	309	1940	3875	82	1991	339	1485	1774	94	1499
Grp Volume(v), veh/h	118	321	329	87	355	372	110	0	140	1	0	17
Grp Sat Flow(s),veh/h/ln	1753	1749	1785	1940	1935	2022	1991	0	1824	1774	0	1592
Q Serve(g_s), s	2.3	8.1	8.1	1.5	8.2	8.2	2.6	0.0	3.8	0.0	0.0	0.5
Cycle Q Clear(g_c), s	2.3	8.1	8.1	1.5	8.2	8.2	2.6	0.0	3.8	0.0	0.0	0.5
Prop In Lane	1.00		0.17	1.00		0.04	1.00		0.81	1.00		0.94
Lane Grp Cap(c), veh/h	392	583	596	421	627	655	400	0	288	242	0	134
V/C Ratio(X)	0.30	0.55	0.55	0.21	0.57	0.57	0.28	0.00	0.49	0.00	0.00	0.13
Avail Cap(c_a), veh/h	747	1465	1496	832	1621	1694	836	0	536	761	0	468
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(l)	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	11.1	14.6	14.6	11.0	15.0	15.0	19.7	0.0	20.6	22.5	0.0	22.8
Incr Delay (d2), s/veh	0.4	1.2	1.1	0.2	1.1	1.1	0.4	0.0	1.3	0.0	0.0	0.4
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(50%),veh/ln	0.8	2.9	2.9	0.6	3.2	3.4	1.1	0.0	1.6	0.0	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	15.8	15.8	11.2	16.2	16.1	20.1	0.0	21.9	22.5	0.0	23.2
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		768			814			250				18
Approach Delay, s/veh		15.1			15.6			21.1				23.1
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	23.7	5.6	14.0	9.9	24.2	9.5	10.0				
Change Period (Y+Rc), s	6.3	6.3	5.5	5.5	6.3	6.3	5.5	5.5				
Max Green Setting (Gmax), s	15.0	45.0	15.8	15.8	15.0	45.0	15.8	15.8				
Max Q Clear Time (g_c+I1), s	4.3	10.2	2.0	5.8	3.5	10.1	4.6	2.5				
Green Ext Time (p_c), s	0.2	7.2	0.0	0.5	0.1	6.3	0.2	0.0				

Intersection Summary

HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
7: 39th Ave SE & College Way

01/27/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	195	376	684	116	34	58
Future Volume (vph)	195	376	684	116	34	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	-5%		0%	
Storage Length (ft)	175			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		25	
Link Distance (ft)		1994	773		209	
Travel Time (s)		38.8	15.1		5.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	6%	3%	3%	40%	40%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	11.3	16.3	35.3		34.5	34.5
Total Split (s)	31.3	46.3	46.3		50.5	50.5
Total Split (%)	24.4%	36.1%	36.1%		39.4%	39.4%
Yellow Time (s)	4.0	4.0	4.0		3.5	3.5
All-Red Time (s)	2.3	2.3	2.3		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3		5.5	5.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	None

Intersection Summary

Area Type: Other

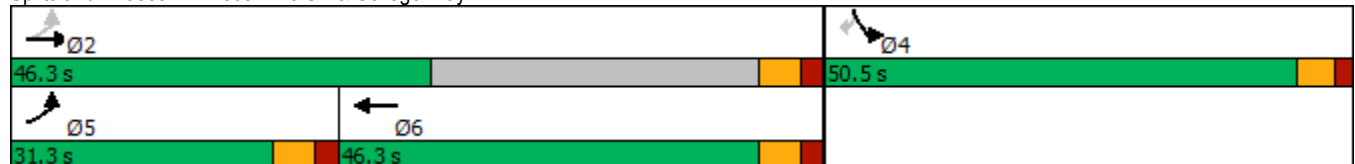
Cycle Length: 128.1

Actuated Cycle Length: 60.8

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 39th Ave SE & College Way



HCM 6th Signalized Intersection Summary  
7: 39th Ave SE & College Way

01/27/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	195	376	684	116	34	58
Future Volume (veh/h)	195	376	684	116	34	58
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1811	1811	2052	2052	1307	1307
Adj Flow Rate, veh/h	205	396	720	122	36	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	3	3	40	40
Cap, veh/h	491	2175	1220	207	101	90
Arrive On Green	0.11	0.63	0.37	0.37	0.08	0.08
Sat Flow, veh/h	1725	3532	3437	565	1245	1108
Grp Volume(v), veh/h	205	396	421	421	36	61
Grp Sat Flow(s),veh/h/ln	1725	1721	1949	1950	1245	1108
Q Serve(g_s), s	2.6	2.0	7.2	7.2	1.1	2.2
Cycle Q Clear(g_c), s	2.6	2.0	7.2	7.2	1.1	2.2
Prop In Lane	1.00			0.29	1.00	1.00
Lane Grp Cap(c), veh/h	491	2175	713	713	101	90
V/C Ratio(X)	0.42	0.18	0.59	0.59	0.36	0.68
Avail Cap(c_a), veh/h	1343	3342	1893	1894	1360	1211
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.7	3.1	10.6	10.6	17.9	18.4
Incr Delay (d2), s/veh	0.6	0.0	0.8	0.8	2.5	10.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	2.4	2.4	0.4	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.3	3.2	11.3	11.3	20.4	28.6
LnGrp LOS	A	A	B	B	C	C
Approach Vol, veh/h		601	842		97	
Approach Delay, s/veh		4.6	11.3		25.5	
Approach LOS		A	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.3		8.9	11.0	21.4
Change Period (Y+Rc), s		* 6.3		5.5	* 6.3	* 6.3
Max Green Setting (Gmax), s		* 40		45.0	* 25	* 40
Max Q Clear Time (g_c+I1), s		4.0		4.2	4.6	9.2
Green Ext Time (p_c), s		2.7		0.4	0.5	5.9
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.6			
HCM 6th LOS			A			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						



Lanes, Volumes, Timings  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	240	14	5	456	106	54	34	13	113	18	177
Future Volume (vph)	127	240	14	5	456	106	54	34	13	113	18	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-4%			0%			6%	
Storage Length (ft)	125		0	125		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		384			416			287			528	
Travel Time (s)		7.5			8.1			7.8			14.4	
Confl. Peds. (#/hr)									2	2		
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 (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 52

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

Ø1 11 s	Ø2 24 s	Ø3 11 s	Ø4 24 s
Ø5 11 s	Ø6 24 s	Ø7 11 s	Ø8 24 s

HCM 6th Signalized Intersection Summary  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	240	14	5	456	106	54	34	13	113	18	177
Future Volume (veh/h)	127	240	14	5	456	106	54	34	13	113	18	177
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	1811	1811	1811	2027	2027	2027	1870	1870	1870	1614	1614	1614
Adj Flow Rate, veh/h	140	264	15	5	501	116	59	37	14	124	20	195
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
Percent Heavy Veh, %	6	6	6	2	2	2	2	2	2	5	5	5
Cap, veh/h	332	1002	57	408	697	161	301	233	88	441	27	267
Arrive On Green	0.09	0.30	0.30	0.01	0.22	0.22	0.05	0.18	0.18	0.09	0.21	0.21
Sat Flow, veh/h	1725	3311	187	1931	3108	716	1781	1292	489	1537	129	1255
Grp Volume(v), veh/h	140	137	142	5	309	308	59	0	51	124	0	215
Grp Sat Flow(s),veh/h/ln	1725	1721	1777	1931	1926	1898	1781	0	1780	1537	0	1384
Q Serve(g_s), s	3.4	3.4	3.4	0.1	8.4	8.5	1.5	0.0	1.4	3.6	0.0	8.2
Cycle Q Clear(g_c), s	3.4	3.4	3.4	0.1	8.4	8.5	1.5	0.0	1.4	3.6	0.0	8.2
Prop In Lane	1.00		0.11	1.00		0.38	1.00		0.27	1.00		0.91
Lane Grp Cap(c), veh/h	332	521	538	408	432	426	301	0	321	441	0	294
V/C Ratio(X)	0.42	0.26	0.26	0.01	0.72	0.72	0.20	0.00	0.16	0.28	0.00	0.73
Avail Cap(c_a), veh/h	338	548	566	566	613	605	364	0	567	445	0	441
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(l)	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	15.2	14.9	14.9	16.8	20.3	20.3	17.5	0.0	19.5	16.6	0.0	20.7
Incr Delay (d2), s/veh	0.9	0.3	0.3	0.0	2.3	2.5	0.3	0.0	0.2	0.3	0.0	3.5
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(50%),veh/ln	1.2	1.2	1.3	0.0	3.6	3.6	0.6	0.0	0.6	1.2	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	15.2	15.2	16.8	22.6	22.8	17.8	0.0	19.8	16.9	0.0	24.2
LnGrp LOS	B	B	B	B	C	C	B	A	B	B	A	C
Approach Vol, veh/h		419			622			110				339
Approach Delay, s/veh		15.5			22.6			18.7				21.6
Approach LOS		B			C			B				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	16.2	6.4	23.1	9.0	18.0	10.8	18.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	5.6	3.4	2.1	5.4	3.5	10.2	5.4	10.5				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.2	0.0	0.8	0.0	2.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.1									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
9: 25th St SE & 39th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	320	9	7	530	7	25	2	24	2	0	15
Future Volume (vph)	24	320	9	7	530	7	25	2	24	2	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	75		0	100		0	25		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25				25
Link Distance (ft)		365			225			248				136
Travel Time (s)		7.1			4.4			6.8				3.7
Confl. Peds. (#/hr)			1	1			1		1	1		1
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
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1		6
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1		6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0		10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0		24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0		24.0
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%		34.3%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0		6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	Min		None	Min		None	None		None		None

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 36.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 25th St SE & 39th Ave SE

11 s	24 s	11 s	24 s
11 s	24 s	11 s	24 s

HCM 6th Signalized Intersection Summary  
 9: 25th St SE & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	320	9	7	530	7	25	2	24	2	0	15
Future Volume (veh/h)	24	320	9	7	530	7	25	2	24	2	0	15
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	1811	1811	1811	1870	1870	1870	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	26	340	10	7	564	7	27	2	26	2	0	16
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, %	6	6	6	2	2	2	5	5	5	0	0	0
Cap, veh/h	316	922	27	385	892	11	366	15	201	331	0	175
Arrive On Green	0.03	0.27	0.27	0.01	0.25	0.25	0.03	0.14	0.14	0.00	0.00	0.11
Sat Flow, veh/h	1725	3413	100	1781	3594	45	1739	112	1451	1810	0	1608
Grp Volume(v), veh/h	26	171	179	7	279	292	27	0	28	2	0	16
Grp Sat Flow(s),veh/h/ln	1725	1721	1793	1781	1777	1862	1739	0	1563	1810	0	1608
Q Serve(g_s), s	0.5	3.3	3.4	0.1	5.8	5.8	0.6	0.0	0.7	0.0	0.0	0.4
Cycle Q Clear(g_c), s	0.5	3.3	3.4	0.1	5.8	5.8	0.6	0.0	0.7	0.0	0.0	0.4
Prop In Lane	1.00		0.06	1.00		0.02	1.00		0.93	1.00		1.00
Lane Grp Cap(c), veh/h	316	465	484	385	441	462	366	0	216	331	0	175
V/C Ratio(X)	0.08	0.37	0.37	0.02	0.63	0.63	0.07	0.00	0.13	0.01	0.00	0.09
Avail Cap(c_a), veh/h	470	748	779	584	772	809	520	0	679	545	0	699
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(l)	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	11.3	12.2	12.3	11.5	13.9	13.9	15.5	0.0	15.7	16.4	0.0	16.6
Incr Delay (d2), s/veh	0.1	0.5	0.5	0.0	1.5	1.4	0.1	0.0	0.3	0.0	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(50%),veh/ln	0.1	1.1	1.1	0.0	2.0	2.1	0.2	0.0	0.2	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	12.7	12.7	11.5	15.4	15.3	15.6	0.0	15.9	16.4	0.0	16.8
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		376			578			55				18
Approach Delay, s/veh		12.6			15.3			15.8				16.8
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	11.7	6.4	17.2	7.3	10.5	7.3	16.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.0	2.7	2.1	5.4	2.6	2.4	2.5	7.8				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.5	0.0	0.0	0.0	2.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			14.4									
HCM 6th LOS			B									



Lanes, Volumes, Timings  
 10: Shaw Rd E & 39th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Volume (vph)	151	0	239	1	0	0	454	852	1	0	329	208
Future Volume (vph)	151	0	239	1	0	0	454	852	1	0	329	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			8%			-4%			6%	
Storage Length (ft)	0		0	0		0	300		0	200		0
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		322			305			698			574	
Travel Time (s)		6.3			5.9			13.6			11.2	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	5%	5%	5%	0%	0%	0%	2%	2%	2%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	24.0	24.0		16.3	28.3		11.3	28.3	28.3
Total Split (s)	36.0	36.0	36.0	36.0	36.0		26.3	46.3		21.3	46.3	46.3
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%		24.2%	42.6%		19.6%	42.6%	42.6%
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)	2.0	2.0	2.0	2.0	2.0		2.3	2.3		2.3	2.3	2.3
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)		6.0	6.0		6.0		6.3	6.3		6.3	6.3	6.3
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

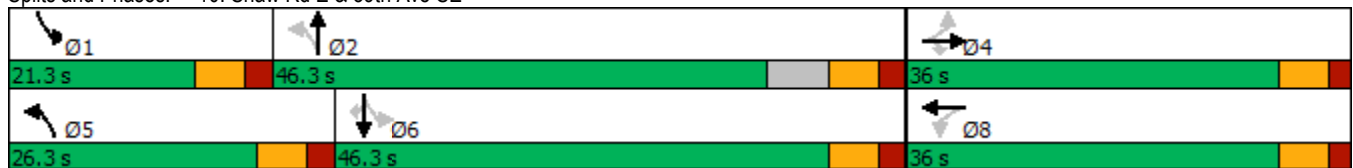
Cycle Length: 108.6

Actuated Cycle Length: 79.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Shaw Rd E & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 10: Shaw Rd E & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕	↗	↕	↗	↕
Traffic Volume (veh/h)	151	0	239	1	0	0	454	852	1	0	329	208
Future Volume (veh/h)	151	0	239	1	0	0	454	852	1	0	329	208
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	1826	1826	1826	1523	1523	1523	2027	2027	2027	1644	1644	1644
Adj Flow Rate, veh/h	170	0	269	1	0	0	510	957	1	0	370	234
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	5	5	5	0	0	0	2	2	2	3	3	3
Cap, veh/h	438	0	338	226	0	0	595	1218	1	234	493	417
Arrive On Green	0.22	0.00	0.22	0.22	0.00	0.00	0.21	0.60	0.60	0.00	0.30	0.30
Sat Flow, veh/h	1523	0	1547	553	0	0	1931	2025	2	1565	1644	1390
Grp Volume(v), veh/h	170	0	269	1	0	0	510	0	958	0	370	234
Grp Sat Flow(s),veh/h/ln	1523	0	1547	553	0	0	1931	0	2027	1565	1644	1390
Q Serve(g_s), s	0.0	0.0	11.2	0.1	0.0	0.0	11.3	0.0	24.4	0.0	13.9	9.7
Cycle Q Clear(g_c), s	5.8	0.0	11.2	5.9	0.0	0.0	11.3	0.0	24.4	0.0	13.9	9.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	438	0	338	226	0	0	595	0	1220	234	493	417
V/C Ratio(X)	0.39	0.00	0.80	0.00	0.00	0.00	0.86	0.00	0.79	0.00	0.75	0.56
Avail Cap(c_a), veh/h	743	0	679	425	0	0	755	0	1220	575	961	813
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	25.3	25.7	0.0	0.0	13.0	0.0	10.3	0.0	21.6	20.1
Incr Delay (d2), s/veh	0.6	0.0	4.3	0.0	0.0	0.0	7.9	0.0	3.7	0.0	3.3	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(50%),veh/ln	2.3	0.0	4.2	0.0	0.0	0.0	5.2	0.0	9.4	0.0	5.3	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	0.0	29.6	25.7	0.0	0.0	20.9	0.0	13.9	0.0	24.9	21.8
LnGrp LOS	C	A	C	C	A	A	C	A	B	A	C	C
Approach Vol, veh/h		439			1			1468			604	
Approach Delay, s/veh		27.3			25.7			16.4			23.7	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	47.5		20.9	20.6	26.8		20.9				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 15	* 40		30.0	* 20	* 40		30.0				
Max Q Clear Time (g_c+I1), s	0.0	26.4		13.2	13.3	15.9		7.9				
Green Ext Time (p_c), s	0.0	7.8		1.7	1.0	4.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	20.0
HCM 6th LOS	C

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	14	21	45	49	47	41	1044	8	15	327	51
Future Volume (vph)	158	14	21	45	49	47	41	1044	8	15	327	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-9%			3%			-9%			6%	
Storage Length (ft)	50		0	50		0	100		175	75		100
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			Yes			Yes
Link Speed (mph)		25			25			35				35
Link Distance (ft)		481			429			444				403
Travel Time (s)		13.1			11.7			8.6				7.9
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	64.0	64.0	11.0	64.0	64.0
Total Split (%)	10.0%	21.8%		10.0%	21.8%		10.0%	58.2%	58.2%	10.0%	58.2%	58.2%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 97

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

11 s	64 s	11 s	24 s
11 s	64 s	11 s	24 s

HCM 6th Signalized Intersection Summary  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	14	21	45	49	47	41	1044	8	15	327	51
Future Volume (veh/h)	158	14	21	45	49	47	41	1044	8	15	327	51
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	2239	2239	2239	1817	1817	1817	2224	2224	2224	1629	1629	1629
Adj Flow Rate, veh/h	163	14	22	46	51	48	42	1076	8	15	337	53
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	4	4	4
Cap, veh/h	287	101	159	295	96	90	634	1213	1027	162	857	726
Arrive On Green	0.06	0.13	0.13	0.04	0.11	0.11	0.04	0.55	0.55	0.02	0.53	0.53
Sat Flow, veh/h	2132	784	1233	1731	861	810	2118	2224	1883	1551	1629	1379
Grp Volume(v), veh/h	163	0	36	46	0	99	42	1076	8	15	337	53
Grp Sat Flow(s),veh/h/ln	2132	0	2017	1731	0	1671	2118	2224	1883	1551	1629	1379
Q Serve(g_s), s	5.0	0.0	1.4	2.1	0.0	5.0	0.8	37.9	0.2	0.4	11.0	1.7
Cycle Q Clear(g_c), s	5.0	0.0	1.4	2.1	0.0	5.0	0.8	37.9	0.2	0.4	11.0	1.7
Prop In Lane	1.00		0.61	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	287	0	261	295	0	186	634	1213	1027	162	857	726
V/C Ratio(X)	0.57	0.00	0.14	0.16	0.00	0.53	0.07	0.89	0.01	0.09	0.39	0.07
Avail Cap(c_a), veh/h	287	0	408	327	0	338	676	1451	1228	222	1062	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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	34.3	33.1	0.0	37.3	9.4	17.8	9.2	17.0	12.6	10.4
Incr Delay (d2), s/veh	2.7	0.0	0.2	0.2	0.0	2.4	0.0	6.2	0.0	0.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.7	0.9	0.0	2.2	0.3	19.0	0.1	0.1	3.7	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.1	0.0	34.6	33.3	0.0	39.7	9.4	24.0	9.2	17.2	12.9	10.4
LnGrp LOS	D	A	C	C	A	D	A	C	A	B	B	B
Approach Vol, veh/h		199			145			1126			405	
Approach Delay, s/veh		36.6			37.7			23.4			12.7	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	54.5	9.4	17.5	9.2	52.8	11.0	15.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	58.0	5.0	18.0	5.0	58.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.4	39.9	4.1	3.4	2.8	13.0	7.0	7.0				
Green Ext Time (p_c), s	0.0	8.6	0.0	0.1	0.0	2.3	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			23.6									
HCM 6th LOS			C									



Lanes, Volumes, Timings  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

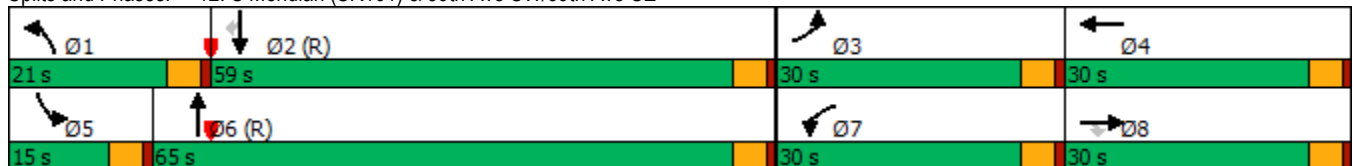
01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	249	153	52	160	14	102	1474	71	19	767	126
Future Volume (vph)	214	249	153	52	160	14	102	1474	71	19	767	126
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			3%			0%	
Storage Length (ft)	350		0	225		0	200		0	210		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			No			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		571			1339			1348			645	
Travel Time (s)		11.1			26.1			26.3			12.6	
Confl. Peds. (#/hr)									4			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	5%	5%	5%	6%	6%	6%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8									2
Detector Phase	3	8	8	7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.6	27.6	27.6	10.6	16.6		10.6	29.6		10.6	29.6	29.6
Total Split (s)	30.0	30.0	30.0	30.0	30.0		21.0	65.0		15.0	59.0	59.0
Total Split (%)	21.4%	21.4%	21.4%	21.4%	21.4%		15.0%	46.4%		10.7%	42.1%	42.1%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	3.6
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		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-Min		None	C-Min	C-Min

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 41 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE



HCM 6th Signalized Intersection Summary  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	249	153	52	160	14	102	1474	71	19	767	126
Future Volume (veh/h)	214	249	153	52	160	14	102	1474	71	19	767	126
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1716	1716	1716	1758	1758	1758	1680	1680	1680	1716	1716	1716
Adj Flow Rate, veh/h	214	249	0	52	160	14	102	1474	71	19	767	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	6	6	6	3	3	3	5	5	5	6	6	6
Cap, veh/h	236	568		66	215	19	121	1960	94	37	1889	
Arrive On Green	0.14	0.17	0.00	0.04	0.07	0.07	0.15	1.00	1.00	0.04	1.00	0.00
Sat Flow, veh/h	1634	3260	1454	1674	3110	269	1600	3099	149	1634	3260	1454
Grp Volume(v), veh/h	214	249	0	52	85	89	102	757	788	19	767	0
Grp Sat Flow(s),veh/h/ln	1634	1630	1454	1674	1670	1709	1600	1596	1652	1634	1630	1454
Q Serve(g_s), s	18.0	9.6	0.0	4.3	7.0	7.1	8.7	0.0	0.0	1.6	0.0	0.0
Cycle Q Clear(g_c), s	18.0	9.6	0.0	4.3	7.0	7.1	8.7	0.0	0.0	1.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	236	568		66	115	118	121	1009	1045	37	1889	
V/C Ratio(X)	0.91	0.44		0.79	0.74	0.75	0.85	0.75	0.75	0.52	0.41	
Avail Cap(c_a), veh/h	296	591		304	303	310	187	1009	1045	121	1889	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	0.00	0.99	0.99	0.99	0.35	0.35	0.35	0.98	0.98	0.00
Uniform Delay (d), s/veh	58.9	51.7	0.0	66.7	63.9	64.0	58.6	0.0	0.0	66.1	0.0	0.0
Incr Delay (d2), s/veh	24.6	0.4	0.0	13.9	5.5	5.7	6.2	1.8	1.8	8.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	3.9	0.0	2.1	3.1	3.3	3.5	0.5	0.5	0.7	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.6	52.1	0.0	80.6	69.4	69.7	64.8	1.8	1.8	74.2	0.6	0.0
LnGrp LOS	F	D		F	E	E	E	A	A	E	A	
Approach Vol, veh/h		463	A		226			1647			786	A
Approach Delay, s/veh		66.6			72.1			5.7			2.4	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	85.7	24.8	14.3	7.7	93.1	10.1	29.0				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	16.4	54.4	25.4	25.4	10.4	60.4	25.4	25.4				
Max Q Clear Time (g_c+I1), s	10.7	2.0	20.0	9.1	3.6	2.0	6.3	11.6				
Green Ext Time (p_c), s	0.1	4.9	0.2	0.6	0.0	12.9	0.1	1.0				

Intersection Summary

HCM 6th Ctrl Delay	18.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
13: 5th St SE & 39th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	221	42	61	119	7	60	240	90	2	152	35
Future Volume (vph)	53	221	42	61	119	7	60	240	90	2	152	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-3%			0%	
Storage Length (ft)	150		0	175		0	225		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1339			1162			552			965	
Travel Time (s)		26.1			22.6			12.5			21.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0		11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0		21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%		16.9%	29.0%		16.9%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

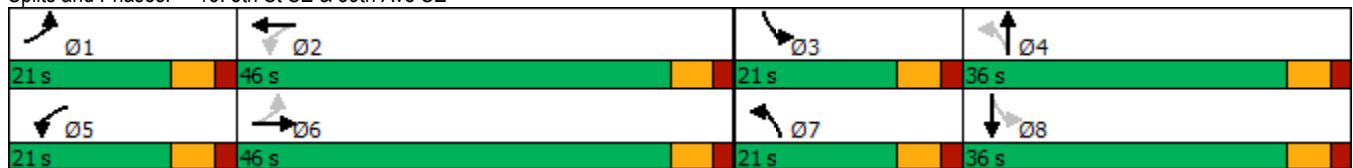
Cycle Length: 124

Actuated Cycle Length: 55.2

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 13: 5th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 13: 5th St SE & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	221	42	61	119	7	60	240	90	2	152	35
Future Volume (veh/h)	53	221	42	61	119	7	60	240	90	2	152	35
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	1856	1856	1826	1826	1826	2003	2003	2003	1885	1885	1885
Adj Flow Rate, veh/h	57	238	45	66	128	8	65	258	97	2	163	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	5	5	5	1	1	1	1	1	1
Cap, veh/h	453	589	110	383	676	42	392	364	137	245	304	71
Arrive On Green	0.05	0.20	0.20	0.06	0.20	0.20	0.06	0.26	0.26	0.00	0.21	0.21
Sat Flow, veh/h	1767	2967	552	1739	3318	206	1908	1386	521	1795	1477	344
Grp Volume(v), veh/h	57	140	143	66	66	70	65	0	355	2	0	201
Grp Sat Flow(s),veh/h/ln	1767	1763	1756	1739	1735	1789	1908	0	1907	1795	0	1821
Q Serve(g_s), s	1.3	3.5	3.6	1.5	1.6	1.6	1.3	0.0	8.5	0.0	0.0	5.0
Cycle Q Clear(g_c), s	1.3	3.5	3.6	1.5	1.6	1.6	1.3	0.0	8.5	0.0	0.0	5.0
Prop In Lane	1.00		0.31	1.00		0.12	1.00		0.27	1.00		0.19
Lane Grp Cap(c), veh/h	453	350	349	383	354	365	392	0	501	245	0	375
V/C Ratio(X)	0.13	0.40	0.41	0.17	0.19	0.19	0.17	0.00	0.71	0.01	0.00	0.54
Avail Cap(c_a), veh/h	882	1400	1395	797	1377	1420	847	0	1136	774	0	1085
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(l)	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	14.5	17.6	17.6	14.5	16.6	16.6	14.3	0.0	16.8	16.1	0.0	17.9
Incr Delay (d2), s/veh	0.1	0.7	0.8	0.2	0.3	0.3	0.2	0.0	1.9	0.0	0.0	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(50%),veh/ln	0.4	1.3	1.3	0.5	0.6	0.6	0.5	0.0	3.5	0.0	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	18.3	18.4	14.7	16.9	16.9	14.5	0.0	18.7	16.1	0.0	19.0
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		340			202			420				203
Approach Delay, s/veh		17.7			16.2			18.1				19.0
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	16.3	6.1	19.2	9.0	16.0	9.0	16.4				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	3.3	3.6	2.0	10.5	3.5	5.6	3.3	7.0				
Green Ext Time (p_c), s	0.1	0.7	0.0	2.1	0.1	1.7	0.1	1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			17.8									
HCM 6th LOS			B									



Lanes, Volumes, Timings  
 14: S Meridian (SR161) & 43rd Ave SE

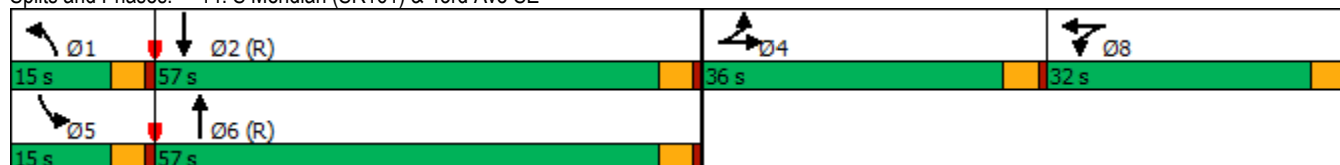
01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	60	5	104	46	71	14	1704	130	72	773	12
Future Volume (vph)	46	60	5	104	46	71	14	1704	130	72	773	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		-4%			6%			0%			0%	
Storage Length (ft)	150		0	275		0	250		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		332			544			617			1348	
Travel Time (s)		9.1			10.6			12.0			26.3	
Confl. Peds. (#/hr)			3	3					3			2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	3%	3%	3%	11%	11%	11%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases												
Detector Phase	4	4		8	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	33.6	33.6		30.6	30.6		10.6	32.6		10.6	28.6	
Total Split (s)	36.0	36.0		32.0	32.0		15.0	57.0		15.0	57.0	
Total Split (%)	25.7%	25.7%		22.9%	22.9%		10.7%	40.7%		10.7%	40.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 14: S Meridian (SR161) & 43rd Ave SE



HCM 6th Signalized Intersection Summary  
 14: S Meridian (SR161) & 43rd Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	60	5	104	46	71	14	1704	130	72	773	12
Future Volume (veh/h)	46	60	5	104	46	71	14	1704	130	72	773	12
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		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	1892	1892	1892	1529	1529	1529	1758	1758	1758	1646	1646	1646
Adj Flow Rate, veh/h	46	60	5	104	46	71	14	1704	130	72	773	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	5	5	5	3	3	3	11	11	11
Cap, veh/h	107	102	8	156	58	89	30	2035	154	87	2157	33
Arrive On Green	0.06	0.06	0.06	0.11	0.11	0.11	0.02	0.65	0.65	0.11	1.00	1.00
Sat Flow, veh/h	1802	1720	143	1456	539	832	1674	3147	238	1567	3151	49
Grp Volume(v), veh/h	46	0	65	104	0	117	14	896	938	72	383	402
Grp Sat Flow(s),veh/h/ln	1802	0	1864	1456	0	1371	1674	1670	1714	1567	1563	1637
Q Serve(g_s), s	3.4	0.0	4.8	9.6	0.0	11.7	1.2	57.3	59.8	6.3	0.0	0.0
Cycle Q Clear(g_c), s	3.4	0.0	4.8	9.6	0.0	11.7	1.2	57.3	59.8	6.3	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.61	1.00		0.14	1.00		0.03
Lane Grp Cap(c), veh/h	107	0	110	156	0	146	30	1080	1109	87	1070	1120
V/C Ratio(X)	0.43	0.00	0.59	0.67	0.00	0.80	0.46	0.83	0.85	0.82	0.36	0.36
Avail Cap(c_a), veh/h	404	0	418	285	0	268	124	1080	1109	116	1070	1120
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	63.6	0.0	64.2	60.1	0.0	61.1	68.1	18.9	19.3	61.5	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	3.9	3.9	0.0	7.8	7.4	7.4	8.0	26.1	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(50%),veh/ln	1.7	0.0	2.4	3.7	0.0	4.4	0.6	22.8	24.5	3.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.8	0.0	68.1	64.1	0.0	68.8	75.5	26.3	27.3	87.7	0.8	0.8
LnGrp LOS	E	A	E	E	A	E	E	C	C	F	A	A
Approach Vol, veh/h		111			221			1848			857	
Approach Delay, s/veh		67.2			66.6			27.2			8.1	
Approach LOS		E			E			C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	100.4		12.9	12.4	95.1		19.6				
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6				
Max Green Setting (Gmax), s	10.4	52.4		31.4	10.4	52.4		27.4				
Max Q Clear Time (g_c+I1), s	3.2	2.0		6.8	8.3	61.8		13.7				
Green Ext Time (p_c), s	0.0	5.1		0.4	0.0	0.0		0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				26.1								
HCM 6th LOS				C								

2032 Without Project PM Peak Hour

Lanes, Volumes, Timings  
1: 7th St SE & College Way

01/27/2022



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	34	402	11	34	491
Future Volume (vph)	11	34	402	11	34	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-4%			0%
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	25		25			25
Link Distance (ft)	771		286			501
Travel Time (s)	21.0		7.8			13.7
Confl. Peds. (#/hr)				7	7	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized



Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	11	34	402	11	34	491
Future Vol, veh/h	11	34	402	11	34	491
Conflicting Peds, #/hr	0	0	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-4	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	12	38	452	12	38	552

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1093	465	0	0	471
Stage 1	465	-	-	-	-
Stage 2	628	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218
Pot Cap-1 Maneuver	239	602	-	-	1091
Stage 1	636	-	-	-	-
Stage 2	536	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	229	598	-	-	1084
Mov Cap-2 Maneuver	362	-	-	-	-
Stage 1	632	-	-	-	-
Stage 2	517	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	516	1084	-
HCM Lane V/C Ratio	-	-	0.098	0.035	-
HCM Control Delay (s)	-	-	12.7	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Lanes, Volumes, Timings  
 2: 31st Ave SW/S Meridian (SR161)

01/27/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↕	↖↗	↖	↖↗	↖
Traffic Volume (vph)	291	1394	1336	448	655	306
Future Volume (vph)	291	1394	1336	448	655	306
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Storage Length (ft)	250			0	0	175
Storage Lanes	2			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		35	
Link Distance (ft)		370	339		787	
Travel Time (s)		7.2	6.6		15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	3%	3%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Detector Phase	5		6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	8.0	8.0
Minimum Split (s)	12.6		20.6	20.6	12.6	12.6
Total Split (s)	21.0		79.0	79.0	50.0	50.0
Total Split (%)	14.0%		52.7%	52.7%	33.3%	33.3%
Yellow Time (s)	3.6		3.6	3.6	3.6	3.6
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)	4.6		4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	Min		C-Min	C-Min	None	None

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 44 (29%), Referenced to phase 6:WBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 ! Phase conflict between lane groups.

Splits and Phases: 2: 31st Ave SW/S Meridian (SR161)



HCM Signalized Intersection Capacity Analysis  
 2: 31st Ave SW/S Meridian (SR161)

01/27/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↕	↖↗	↖	↖↗	↖
Traffic Volume (vph)	291	1394	1336	448	655	306
Future Volume (vph)	291	1394	1336	448	655	306
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Total Lost time (s)	4.6	4.0	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Flt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3187	3286	3387	1515	3285	1515
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3187	3286	3387	1515	3285	1515
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	291	1394	1336	448	655	306
RTOR Reduction (vph)	0	0	0	149	0	169
Lane Group Flow (vph)	291	1394	1336	299	655	137
Heavy Vehicles (%)	2%	2%	3%	3%	1%	1%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Actuated Green, G (s)	18.2	150.0	83.0	83.0	35.0	35.0
Effective Green, g (s)	18.2	150.0	83.0	83.0	35.0	35.0
Actuated g/C Ratio	0.12	1.00	0.55	0.55	0.23	0.23
Clearance Time (s)	4.6		4.6	4.6	4.6	4.6
Vehicle Extension (s)	2.5		2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	386	3286	1874	838	766	353
v/s Ratio Prot	c0.09	0.42	c0.39		c0.20	
v/s Ratio Perm				0.20		0.09
v/c Ratio	0.75	0.42	0.71	0.36	0.86	0.39
Uniform Delay, d1	63.7	0.0	24.7	18.6	55.1	48.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.7	0.4	2.3	1.2	9.1	0.5
Delay (s)	71.5	0.4	27.1	19.8	64.2	49.0
Level of Service	E	A	C	B	E	D
Approach Delay (s)		12.7	25.2		59.4	
Approach LOS		B	C		E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			27.9	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			150.0	Sum of lost time (s)	13.8	
Intersection Capacity Utilization			79.0%	ICU Level of Service	D	
Analysis Period (min)			15			
! Phase conflict between lane groups.						
c Critical Lane Group						

Lanes, Volumes, Timings  
3: S Meridian (SR161) & 37th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	152	113	199	183	423	93	1170	68	406	1467	68
Future Volume (vph)	71	152	113	199	183	423	93	1170	68	406	1467	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	250		0	225		0	350		0
Storage Lanes	1		1	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		242			1349			645			449	
Travel Time (s)		6.6			26.3			12.6			8.7	
Confl. Peds. (#/hr)						2			2			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			Free						
Detector Phase	3	8	8	7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	8.6	10.6	10.6	10.6	35.6		10.6	28.6		10.6	31.6	
Total Split (s)	15.0	25.0	25.0	27.0	37.0		23.0	72.0		26.0	75.0	
Total Split (%)	10.0%	16.7%	16.7%	18.0%	24.7%		15.3%	48.0%		17.3%	50.0%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		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-Min		None	C-Min	

Intersection Summary

Area Type: Other

Cycle Length: 150

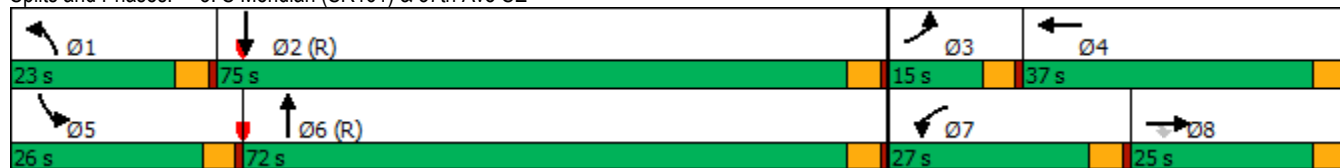
Actuated Cycle Length: 150

Offset: 28 (19%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 3: S Meridian (SR161) & 37th Ave SE





HCM 6th Signalized Intersection Summary  
 3: S Meridian (SR161) & 37th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	152	113	199	183	423	93	1170	68	406	1467	68
Future Volume (veh/h)	71	152	113	199	183	423	93	1170	68	406	1467	68
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1786	1786	1786	1786	1744	1744	1744	1772	1772	1772
Adj Flow Rate, veh/h	71	152	113	199	183	0	93	1170	68	406	1467	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	4	4	4	2	2	2
Cap, veh/h	88	311	139	221	302		112	1653	96	448	2848	
Arrive On Green	0.05	0.09	0.09	0.13	0.17	0.00	0.13	1.00	1.00	0.14	0.59	0.00
Sat Flow, veh/h	1701	3393	1514	1701	1786	1514	1661	3182	185	3274	4997	0
Grp Volume(v), veh/h	71	152	113	199	183	0	93	609	629	406	1467	0
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1701	1786	1514	1661	1657	1710	1637	1612	0
Q Serve(g_s), s	6.2	6.4	11.0	17.3	14.2	0.0	8.2	0.0	0.0	18.3	26.8	0.0
Cycle Q Clear(g_c), s	6.2	6.4	11.0	17.3	14.2	0.0	8.2	0.0	0.0	18.3	26.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	88	311	139	221	302		112	860	888	448	2848	
V/C Ratio(X)	0.80	0.49	0.82	0.90	0.61		0.83	0.71	0.71	0.91	0.52	
Avail Cap(c_a), veh/h	118	461	206	254	386		204	860	888	467	2848	
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(l)	1.00	1.00	1.00	0.72	0.72	0.00	0.50	0.50	0.50	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.3	64.8	66.9	64.3	57.7	0.0	64.1	0.0	0.0	63.8	18.2	0.0
Incr Delay (d2), s/veh	26.3	1.2	14.3	23.4	1.5	0.0	7.9	2.5	2.4	20.8	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	2.9	4.8	8.9	6.6	0.0	3.5	0.6	0.6	8.9	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.7	66.0	81.2	87.7	59.2	0.0	72.0	2.5	2.4	84.6	18.9	0.0
LnGrp LOS	F	E	F	F	E		E	A	A	F	B	
Approach Vol, veh/h		336			382	A		1331			1873	A
Approach Delay, s/veh		77.6			74.1			7.3			33.1	
Approach LOS		E			E			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.7	92.9	12.4	30.0	25.1	82.5	24.0	18.3				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	18.4	70.4	10.4	32.4	21.4	67.4	22.4	20.4				
Max Q Clear Time (g_c+I1), s	10.2	28.8	8.2	16.2	20.3	2.0	19.3	13.0				
Green Ext Time (p_c), s	0.1	17.7	0.0	0.9	0.2	14.6	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	32.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
4: 5th St SE & 37th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	388	94	39	542	208	123	293	24	280	466	79
Future Volume (vph)	98	388	94	39	542	208	123	293	24	280	466	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-3%			0%			-5%	
Storage Length (ft)	200		0	225		150	200		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			25	
Link Distance (ft)		1349			1181			965			418	
Travel Time (s)		26.3			23.0			21.9			11.4	
Confl. Peds. (#/hr)	3		1	1		3	1		3	3		1
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
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Detector Phase	1	6		5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0	26.0	11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0	46.0	21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%	37.1%	16.9%	29.0%		16.9%	29.0%	
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)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other

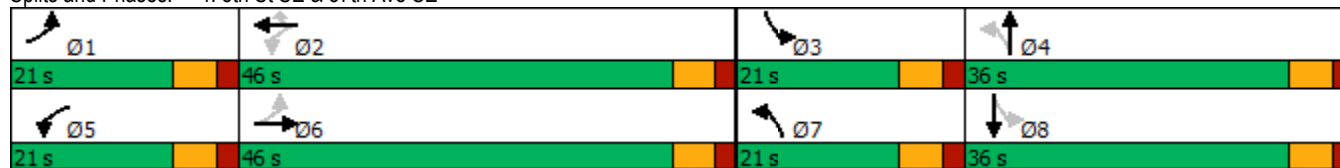
Cycle Length: 124

Actuated Cycle Length: 95.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: 5th St SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 4: 5th St SE & 37th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	388	94	39	542	208	123	293	24	280	466	79
Future Volume (veh/h)	98	388	94	39	542	208	123	293	24	280	466	79
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		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	2003	2003	2003	1885	1885	1885	2082	2082	2082
Adj Flow Rate, veh/h	103	408	99	41	571	0	129	308	0	295	491	83
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	1	1	1	1	1	1	1	1	1
Cap, veh/h	280	706	170	281	836		279	499		507	564	95
Arrive On Green	0.06	0.24	0.24	0.04	0.22	0.00	0.07	0.26	0.00	0.14	0.33	0.33
Sat Flow, veh/h	1810	2883	693	1908	3806	1697	1795	1885	0	1983	1735	293
Grp Volume(v), veh/h	103	254	253	41	571	0	129	308	0	295	0	574
Grp Sat Flow(s),veh/h/ln	1810	1805	1770	1908	1903	1697	1795	1885	0	1983	0	2028
Q Serve(g_s), s	3.3	9.4	9.5	1.2	10.4	0.0	3.9	10.9	0.0	7.8	0.0	20.2
Cycle Q Clear(g_c), s	3.3	9.4	9.5	1.2	10.4	0.0	3.9	10.9	0.0	7.8	0.0	20.2
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.00	1.00		0.14
Lane Grp Cap(c), veh/h	280	442	433	281	836		279	499		507	0	659
V/C Ratio(X)	0.37	0.57	0.58	0.15	0.68		0.46	0.62		0.58	0.00	0.87
Avail Cap(c_a), veh/h	524	954	936	586	2011		500	747		632	0	804
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(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	25.1	25.2	21.7	27.1	0.0	19.7	24.5	0.0	16.8	0.0	24.0
Incr Delay (d2), s/veh	0.8	1.2	1.3	0.2	1.0	0.0	1.2	1.2	0.0	1.1	0.0	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(50%),veh/ln	1.4	3.9	3.9	0.5	4.6	0.0	1.6	4.8	0.0	3.5	0.0	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	26.3	26.4	21.9	28.1	0.0	20.9	25.7	0.0	17.8	0.0	32.9
LnGrp LOS	C	C	C	C	C		C	C		B	A	C
Approach Vol, veh/h		610			612	A		437	A		869	
Approach Delay, s/veh		25.7			27.7			24.3			27.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	22.6	16.2	26.0	8.9	24.5	11.7	30.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	5.3	12.4	9.8	12.9	3.2	11.5	5.9	22.2				
Green Ext Time (p_c), s	0.1	4.0	0.4	1.6	0.0	3.1	0.2	2.4				

Intersection Summary

HCM 6th Ctrl Delay	26.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: 39th Ave SE & 37th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	691	7	305	737	6	1	8	279	5	11	22
Future Volume (vph)	9	691	7	305	737	6	1	8	279	5	11	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		6%			-5%			3%			0%	
Storage Length (ft)	225		0	200		0	200		0	0		150
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			25	
Link Distance (ft)		1181			510			1162			264	
Travel Time (s)		23.0			9.9			22.6			7.2	
Confl. Peds. (#/hr)	1		1	1		1						
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
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	3	1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	5.0	5.0	10.0	
Minimum Split (s)	12.0	30.0		12.0	30.0		11.0	16.0	12.0	11.0	34.0	
Total Split (s)	23.0	42.0		23.0	42.0		22.0	22.0	23.0	22.0	22.0	
Total Split (%)	21.1%	38.5%		21.1%	38.5%		20.2%	20.2%	21.1%	20.2%	20.2%	
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)	3.0	3.0		3.0	3.0		2.0	2.0	3.0	2.0	2.0	
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)	7.0	7.0		7.0	7.0		6.0	6.0	7.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min		None	Min		None	None	None	None	None	

Intersection Summary

Area Type: Other

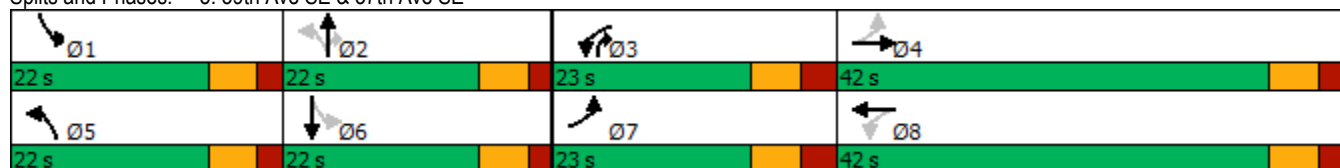
Cycle Length: 109

Actuated Cycle Length: 60.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: 39th Ave SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 5: 39th Ave SE & 37th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	691	7	305	737	6	1	8	279	5	11	22
Future Volume (veh/h)	9	691	7	305	737	6	1	8	279	5	11	22
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	1673	1673	1673	2067	2067	2067	1817	1817	1817	1900	1900	1900
Adj Flow Rate, veh/h	10	735	7	324	784	6	1	9	297	5	12	23
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	0	0	0
Cap, veh/h	306	1047	10	460	1785	14	336	346	501	310	114	218
Arrive On Green	0.01	0.32	0.32	0.13	0.45	0.45	0.00	0.19	0.19	0.01	0.20	0.20
Sat Flow, veh/h	1593	3226	31	1968	3994	31	1731	1817	1540	1810	583	1117
Grp Volume(v), veh/h	10	362	380	324	385	405	1	9	297	5	0	35
Grp Sat Flow(s),veh/h/ln	1593	1589	1668	1968	1963	2061	1731	1817	1540	1810	0	1699
Q Serve(g_s), s	0.3	15.1	15.1	7.7	10.2	10.2	0.0	0.3	12.2	0.2	0.0	1.3
Cycle Q Clear(g_c), s	0.3	15.1	15.1	7.7	10.2	10.2	0.0	0.3	12.2	0.2	0.0	1.3
Prop In Lane	1.00		0.02	1.00		0.01	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	306	516	541	460	877	921	336	346	501	310	0	332
V/C Ratio(X)	0.03	0.70	0.70	0.70	0.44	0.44	0.00	0.03	0.59	0.02	0.00	0.11
Avail Cap(c_a), veh/h	624	736	772	611	909	954	700	384	533	681	0	359
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	22.3	22.3	15.2	14.4	14.4	24.7	24.9	21.3	24.5	0.0	25.0
Incr Delay (d2), s/veh	0.0	3.7	3.5	2.4	0.7	0.7	0.0	0.0	1.6	0.0	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(50%),veh/ln	0.1	5.7	6.0	3.3	4.3	4.5	0.0	0.1	4.3	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	26.0	25.9	17.6	15.1	15.1	24.7	24.9	22.9	24.5	0.0	25.1
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		752			1114			307				40
Approach Delay, s/veh		25.8			15.8			23.0				25.0
Approach LOS		C			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	20.4	17.2	31.6	6.1	20.8	7.9	40.8				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	16.0	16.0	16.0	35.0	16.0	16.0	16.0	35.0				
Max Q Clear Time (g_c+I1), s	2.2	14.2	9.7	17.1	2.0	3.3	2.3	12.2				
Green Ext Time (p_c), s	0.0	0.2	0.5	7.5	0.0	0.1	0.0	9.1				

Intersection Summary

HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Lanes, Volumes, Timings  
6: 10th St SE & 39th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	781	160	163	813	5	99	7	79	16	32	134
Future Volume (vph)	39	781	160	163	813	5	99	7	79	16	32	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-5%			-6%			-4%	
Storage Length (ft)	150		0	200		0	100		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		510			1994			256				231
Travel Time (s)		9.9			38.8			5.8				6.3
Confl. Peds. (#/hr)	1		2	2		1						
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
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.3	30.3		11.3	30.3		10.5	25.5		10.5	25.5	
Total Split (s)	21.3	51.3		21.3	51.3		21.3	21.3		21.3	21.3	
Total Split (%)	18.5%	44.5%		18.5%	44.5%		18.5%	18.5%		18.5%	18.5%	
Yellow Time (s)	4.3	4.3		4.3	4.3		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 115.2

Actuated Cycle Length: 88.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: 10th St SE & 39th Ave SE

Ø1	Ø2	Ø3	Ø4
21.3 s	51.3 s	21.3 s	21.3 s
Ø5	Ø6	Ø7	Ø8
21.3 s	51.3 s	21.3 s	21.3 s

HCM 6th Signalized Intersection Summary  
6: 10th St SE & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	781	160	163	813	5	99	7	79	16	32	134
Future Volume (veh/h)	39	781	160	163	813	5	99	7	79	16	32	134
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	1885	1885	1885	2067	2067	2067	2061	2061	2061	2057	2057	2057
Adj Flow Rate, veh/h	43	868	178	181	903	6	110	8	88	18	36	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, %	1	1	1	2	2	2	5	5	5	0	0	0
Cap, veh/h	344	1207	247	350	1796	12	273	27	292	325	46	192
Arrive On Green	0.04	0.41	0.41	0.08	0.45	0.45	0.07	0.18	0.18	0.02	0.13	0.13
Sat Flow, veh/h	1795	2959	607	1968	3999	27	1963	147	1622	1959	350	1447
Grp Volume(v), veh/h	43	525	521	181	443	466	110	0	96	18	0	185
Grp Sat Flow(s),veh/h/ln	1795	1791	1774	1968	1963	2062	1963	0	1769	1959	0	1797
Q Serve(g_s), s	1.0	18.7	18.7	3.9	12.2	12.2	3.6	0.0	3.6	0.6	0.0	7.6
Cycle Q Clear(g_c), s	1.0	18.7	18.7	3.9	12.2	12.2	3.6	0.0	3.6	0.6	0.0	7.6
Prop In Lane	1.00		0.34	1.00		0.01	1.00		0.92	1.00		0.81
Lane Grp Cap(c), veh/h	344	731	724	350	882	926	273	0	319	325	0	238
V/C Ratio(X)	0.13	0.72	0.72	0.52	0.50	0.50	0.40	0.00	0.30	0.06	0.00	0.78
Avail Cap(c_a), veh/h	628	1061	1051	580	1163	1221	547	0	368	692	0	374
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(l)	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	12.5	18.8	18.8	14.2	14.9	14.9	26.0	0.0	27.0	27.5	0.0	31.9
Incr Delay (d2), s/veh	0.2	1.9	1.9	1.2	0.6	0.6	1.0	0.0	0.5	0.1	0.0	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(50%),veh/ln	0.4	7.4	7.3	1.6	5.0	5.3	1.7	0.0	1.5	0.3	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.6	20.7	20.8	15.4	15.5	15.5	27.0	0.0	27.5	27.6	0.0	37.3
LnGrp LOS	B	C	C	B	B	B	C	A	C	C	A	D
Approach Vol, veh/h		1089			1090			206				203
Approach Delay, s/veh		20.4			15.5			27.2				36.4
Approach LOS		C			B			C				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	40.4	7.1	19.2	12.4	37.3	10.7	15.6				
Change Period (Y+Rc), s	6.3	6.3	5.5	5.5	6.3	6.3	5.5	5.5				
Max Green Setting (Gmax), s	15.0	45.0	15.8	15.8	15.0	45.0	15.8	15.8				
Max Q Clear Time (g_c+I1), s	3.0	14.2	2.6	5.6	5.9	20.7	5.6	9.6				
Green Ext Time (p_c), s	0.0	9.3	0.0	0.3	0.3	10.3	0.2	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.1									
HCM 6th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings  
7: 39th Ave SE & College Way

01/27/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	113	750	777	68	68	114
Future Volume (vph)	113	750	777	68	68	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	-5%		0%	
Storage Length (ft)	175			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		25	
Link Distance (ft)		1994	702		209	
Travel Time (s)		38.8	13.7		5.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	5%	5%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	11.3	16.3	35.3		34.5	34.5
Total Split (s)	31.3	46.3	46.3		50.5	50.5
Total Split (%)	24.4%	36.1%	36.1%		39.4%	39.4%
Yellow Time (s)	4.0	4.0	4.0		3.5	3.5
All-Red Time (s)	2.3	2.3	2.3		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3		5.5	5.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	None

Intersection Summary

Area Type: Other

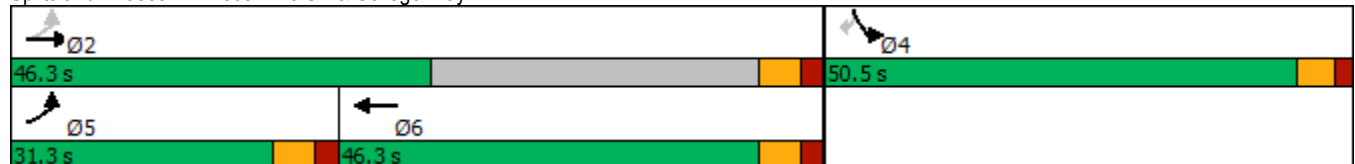
Cycle Length: 128.1

Actuated Cycle Length: 60.6

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 39th Ave SE & College Way



HCM 6th Signalized Intersection Summary  
7: 39th Ave SE & College Way

01/27/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	113	750	777	68	68	114
Future Volume (veh/h)	113	750	777	68	68	114
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			
Adj Sat Flow, veh/h/ln	1885	1885	2082	2082	1826	1826
Adj Flow Rate, veh/h	124	824	854	75	75	125
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	5	5
Cap, veh/h	435	2176	1394	122	224	199
Arrive On Green	0.09	0.61	0.38	0.38	0.13	0.13
Sat Flow, veh/h	1795	3676	3782	323	1739	1547
Grp Volume(v), veh/h	124	824	459	470	75	125
Grp Sat Flow(s),veh/h/ln	1795	1791	1978	2023	1739	1547
Q Serve(g_s), s	1.6	5.2	8.4	8.4	1.8	3.4
Cycle Q Clear(g_c), s	1.6	5.2	8.4	8.4	1.8	3.4
Prop In Lane	1.00			0.16	1.00	1.00
Lane Grp Cap(c), veh/h	435	2176	749	767	224	199
V/C Ratio(X)	0.29	0.38	0.61	0.61	0.34	0.63
Avail Cap(c_a), veh/h	1280	3202	1768	1809	1749	1556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.3	4.5	11.2	11.2	17.7	18.5
Incr Delay (d2), s/veh	0.4	0.1	0.8	0.8	1.1	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.0	2.9	3.0	0.7	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.6	4.6	12.1	12.0	18.8	22.4
LnGrp LOS	A	A	B	B	B	C
Approach Vol, veh/h		948	929		200	
Approach Delay, s/veh		5.0	12.0		21.0	
Approach LOS		A	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		33.5		11.3	10.2	23.3
Change Period (Y+Rc), s		* 6.3		5.5	* 6.3	* 6.3
Max Green Setting (Gmax), s		* 40		45.0	* 25	* 40
Max Q Clear Time (g_c+I1), s		7.2		5.4	3.6	10.4
Green Ext Time (p_c), s		6.4		0.9	0.3	6.6
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			9.7			
HCM 6th LOS			A			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Lanes, Volumes, Timings  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	561	54	12	631	31	41	7	5	51	32	115
Future Volume (vph)	130	561	54	12	631	31	41	7	5	51	32	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-4%			0%			6%	
Storage Length (ft)	125		0	125		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		384			416			287			528	
Travel Time (s)		7.5			8.1			7.8			14.4	
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 54.3

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

11 s	24 s	11 s	24 s
11 s	24 s	11 s	24 s



HCM 6th Signalized Intersection Summary  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	561	54	12	631	31	41	7	5	51	32	115
Future Volume (veh/h)	130	561	54	12	631	31	41	7	5	51	32	115
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	1885	1885	1885	2042	2042	2042	1900	1900	1900	1658	1658	1658
Adj Flow Rate, veh/h	140	603	58	13	678	33	44	8	5	55	34	124
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	2	2	2
Cap, veh/h	341	1034	99	298	932	45	320	195	122	428	58	212
Arrive On Green	0.08	0.31	0.31	0.02	0.25	0.25	0.04	0.18	0.18	0.05	0.19	0.19
Sat Flow, veh/h	1795	3301	317	1945	3766	183	1810	1093	683	1579	312	1139
Grp Volume(v), veh/h	140	327	334	13	349	362	44	0	13	55	0	158
Grp Sat Flow(s),veh/h/ln	1795	1791	1828	1945	1940	2009	1810	0	1776	1579	0	1451
Q Serve(g_s), s	3.1	8.4	8.4	0.3	9.0	9.0	1.1	0.0	0.3	1.5	0.0	5.4
Cycle Q Clear(g_c), s	3.1	8.4	8.4	0.3	9.0	9.0	1.1	0.0	0.3	1.5	0.0	5.4
Prop In Lane	1.00		0.17	1.00		0.09	1.00		0.38	1.00		0.78
Lane Grp Cap(c), veh/h	341	561	572	298	480	497	320	0	317	428	0	270
V/C Ratio(X)	0.41	0.58	0.58	0.04	0.73	0.73	0.14	0.00	0.04	0.13	0.00	0.59
Avail Cap(c_a), veh/h	358	591	603	445	640	663	406	0	586	491	0	479
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(l)	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	14.2	15.7	15.7	15.1	18.8	18.8	17.1	0.0	18.5	16.7	0.0	20.3
Incr Delay (d2), s/veh	0.8	1.3	1.3	0.1	2.8	2.7	0.2	0.0	0.1	0.1	0.0	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(50%),veh/ln	1.1	3.1	3.2	0.1	3.9	4.0	0.4	0.0	0.1	0.5	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	17.1	17.1	15.2	21.6	21.6	17.3	0.0	18.6	16.9	0.0	22.3
LnGrp LOS	B	B	B	B	C	C	B	A	B	B	A	C
Approach Vol, veh/h		801			724			57				213
Approach Delay, s/veh		16.7			21.5			17.6				20.9
Approach LOS		B			C			B				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	15.7	6.9	23.1	8.4	16.1	10.5	19.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	3.5	2.3	2.3	10.4	3.1	7.4	5.1	11.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.4	0.0	0.6	0.0	2.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.2								
HCM 6th LOS				B								

Lanes, Volumes, Timings  
9: 25th St SE & 39th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	575	31	29	621	1	19	0	15	8	0	27
Future Volume (vph)	13	575	31	29	621	1	19	0	15	8	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	75		0	100		0	25		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25				25
Link Distance (ft)		365			225			248				136
Travel Time (s)		7.1			4.4			6.8				3.7
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1		6
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1		6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0		10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0		24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0		24.0
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%		34.3%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0		6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	Min		None	Min		None	None		None		None

Intersection Summary

Area Type: Other

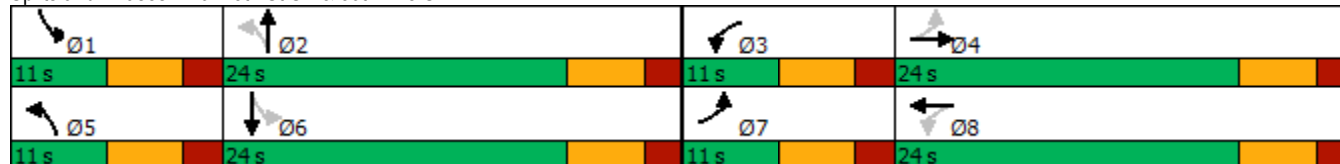
Cycle Length: 70

Actuated Cycle Length: 34.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 25th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 9: 25th St SE & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	575	31	29	621	1	19	0	15	8	0	27
Future Volume (veh/h)	13	575	31	29	621	1	19	0	15	8	0	27
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	1885	1885	1885	1885	1885	1885	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	618	33	31	668	1	20	0	16	9	0	29
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	298	928	50	318	1051	2	347	0	202	349	0	181
Arrive On Green	0.02	0.27	0.27	0.04	0.29	0.29	0.02	0.00	0.13	0.01	0.00	0.11
Sat Flow, veh/h	1795	3458	184	1795	3670	5	1810	0	1610	1810	0	1610
Grp Volume(v), veh/h	14	320	331	31	326	343	20	0	16	9	0	29
Grp Sat Flow(s),veh/h/ln	1795	1791	1852	1795	1791	1884	1810	0	1610	1810	0	1610
Q Serve(g_s), s	0.2	6.8	6.9	0.5	6.8	6.8	0.4	0.0	0.4	0.2	0.0	0.7
Cycle Q Clear(g_c), s	0.2	6.8	6.9	0.5	6.8	6.8	0.4	0.0	0.4	0.2	0.0	0.7
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	481	497	318	513	540	347	0	202	349	0	181
V/C Ratio(X)	0.05	0.67	0.67	0.10	0.64	0.64	0.06	0.00	0.08	0.03	0.00	0.16
Avail Cap(c_a), veh/h	475	750	775	462	750	789	513	0	674	538	0	674
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(l)	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	11.5	14.0	14.0	11.2	13.4	13.4	16.2	0.0	16.6	16.6	0.0	17.2
Incr Delay (d2), s/veh	0.1	1.6	1.5	0.1	1.3	1.2	0.1	0.0	0.2	0.0	0.0	0.4
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(50%),veh/ln	0.1	2.4	2.5	0.2	2.3	2.5	0.2	0.0	0.1	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	15.6	15.6	11.3	14.7	14.6	16.2	0.0	16.8	16.6	0.0	17.6
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		665			700			36				38
Approach Delay, s/veh		15.5			14.5			16.5				17.4
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	11.4	7.5	17.5	7.1	10.8	6.8	18.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.2	2.4	2.5	8.9	2.4	2.7	2.2	8.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	0.0	0.1	0.0	2.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			15.1									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
 10: Shaw Rd E & 39th Ave SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Volume (vph)	234	0	439	1	2	0	353	433	4	0	576	358
Future Volume (vph)	234	0	439	1	2	0	353	433	4	0	576	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			8%			-4%			6%	
Storage Length (ft)	0		0	0		0	300		0	200		0
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		507			360			460			462	
Travel Time (s)		9.9			7.0			9.0			9.0	
Confl. Peds. (#/hr)			2	2					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	24.0	24.0		16.3	28.3		11.3	28.3	28.3
Total Split (s)	36.0	36.0	36.0	36.0	36.0		26.3	46.3		21.3	46.3	46.3
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%		24.2%	42.6%		19.6%	42.6%	42.6%
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)	2.0	2.0	2.0	2.0	2.0		2.3	2.3		2.3	2.3	2.3
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)		6.0	6.0		6.0		6.3	6.3		6.3	6.3	6.3
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

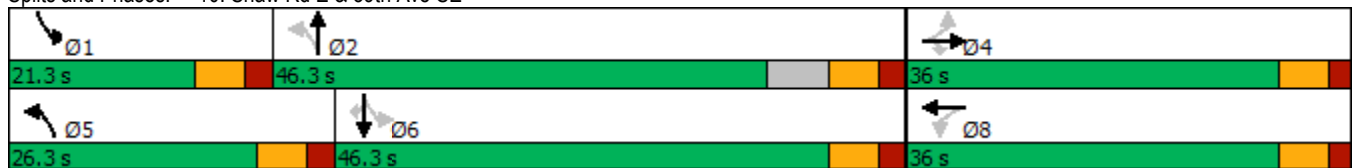
Cycle Length: 108.6

Actuated Cycle Length: 96.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Shaw Rd E & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 10: Shaw Rd E & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖		↖	↕	↗
Traffic Volume (veh/h)	234	0	439	1	2	0	353	433	4	0	576	358
Future Volume (veh/h)	234	0	439	1	2	0	353	433	4	0	576	358
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	1523	1523	1523	2027	2027	2027	1673	1673	1673
Adj Flow Rate, veh/h	241	0	453	1	2	0	364	446	4	0	594	369
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	1	1	1
Cap, veh/h	256	0	459	46	58	0	400	1197	11	386	627	530
Arrive On Green	0.29	0.00	0.29	0.29	0.29	0.00	0.16	0.60	0.60	0.00	0.37	0.37
Sat Flow, veh/h	656	0	1605	0	203	0	1931	2006	18	1593	1673	1414
Grp Volume(v), veh/h	241	0	453	3	0	0	364	0	450	0	594	369
Grp Sat Flow(s),veh/h/ln	656	0	1605	203	0	0	1931	0	2024	1593	1673	1414
Q Serve(g_s), s	0.0	0.0	29.4	0.0	0.0	0.0	14.5	0.0	12.1	0.0	36.1	23.1
Cycle Q Clear(g_c), s	30.0	0.0	29.4	30.0	0.0	0.0	14.5	0.0	12.1	0.0	36.1	23.1
Prop In Lane	1.00		1.00	0.33		0.00	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	256	0	459	104	0	0	400	0	1207	386	627	530
V/C Ratio(X)	0.94	0.00	0.99	0.03	0.00	0.00	0.91	0.00	0.37	0.00	0.95	0.70
Avail Cap(c_a), veh/h	256	0	459	104	0	0	457	0	1207	612	638	540
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	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	0.0	37.2	30.0	0.0	0.0	29.8	0.0	11.0	0.0	31.8	27.7
Incr Delay (d2), s/veh	40.2	0.0	38.4	0.1	0.0	0.0	20.6	0.0	0.3	0.0	23.4	4.2
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(50%),veh/ln	9.1	0.0	16.0	0.1	0.0	0.0	11.3	0.0	5.1	0.0	18.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.9	0.0	75.6	30.1	0.0	0.0	50.4	0.0	11.2	0.0	55.1	31.9
LnGrp LOS	F	A	E	C	A	A	D	A	B	A	E	C
Approach Vol, veh/h		694			3			814			963	
Approach Delay, s/veh		77.4			30.1			28.8			46.2	
Approach LOS		E			C			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	68.8		36.0	23.2	45.6		36.0				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 15	* 40		30.0	* 20	* 40		30.0				
Max Q Clear Time (g_c+I1), s	0.0	14.1		32.0	16.5	38.1		32.0				
Green Ext Time (p_c), s	0.0	4.1		0.0	0.4	1.2		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			49.2									
HCM 6th LOS			D									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												



Lanes, Volumes, Timings

11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/27/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	58	48	35	44	20	54	527	31	14	1030	179
Future Volume (vph)	117	58	48	35	44	20	54	527	31	14	1030	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-9%			3%			-9%			6%	
Storage Length (ft)	50		0	50		0	100		175	75		100
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			Yes			Yes
Link Speed (mph)		25			25			35				35
Link Distance (ft)		481			429			444				403
Travel Time (s)		13.1			11.7			8.6				7.9
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 (%)	0%	1%	1%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	84.0	84.0	11.0	84.0	84.0
Total Split (%)	8.5%	18.5%		8.5%	18.5%		8.5%	64.6%	64.6%	8.5%	64.6%	64.6%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min

Intersection Summary

Area Type: Other

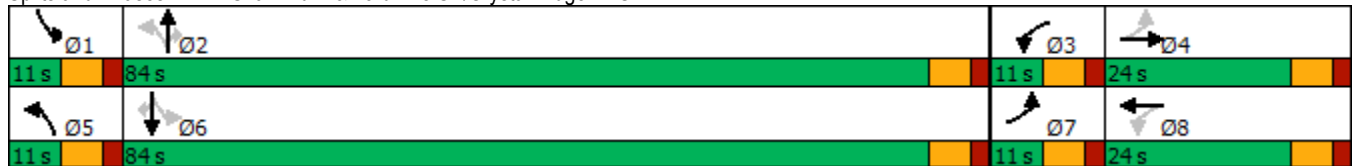
Cycle Length: 130

Actuated Cycle Length: 122

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE



HCM 6th Signalized Intersection Summary  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	58	48	35	44	20	54	527	31	14	1030	179
Future Volume (veh/h)	117	58	48	35	44	20	54	527	31	14	1030	179
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	2254	2239	2239	1847	1847	1847	2224	2224	2224	1673	1673	1673
Adj Flow Rate, veh/h	127	63	52	38	48	22	59	573	34	15	1120	195
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, %	0	1	1	0	0	0	2	2	2	1	1	1
Cap, veh/h	219	106	88	163	99	45	135	1473	1248	482	1076	912
Arrive On Green	0.04	0.09	0.09	0.03	0.08	0.08	0.04	0.66	0.66	0.02	0.64	0.64
Sat Flow, veh/h	2147	1134	936	1759	1199	549	2118	2224	1885	1593	1673	1418
Grp Volume(v), veh/h	127	0	115	38	0	70	59	573	34	15	1120	195
Grp Sat Flow(s),veh/h/ln	2147	0	2070	1759	0	1748	2118	2224	1885	1593	1673	1418
Q Serve(g_s), s	5.0	0.0	6.5	2.4	0.0	4.6	1.1	14.2	0.8	0.4	78.0	6.9
Cycle Q Clear(g_c), s	5.0	0.0	6.5	2.4	0.0	4.6	1.1	14.2	0.8	0.4	78.0	6.9
Prop In Lane	1.00		0.45	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	219	0	194	163	0	144	135	1473	1248	482	1076	912
V/C Ratio(X)	0.58	0.00	0.59	0.23	0.00	0.49	0.44	0.39	0.03	0.03	1.04	0.21
Avail Cap(c_a), veh/h	219	0	307	183	0	259	147	1473	1248	522	1076	912
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	52.7	49.0	0.0	53.2	31.5	9.3	7.0	7.7	21.7	9.0
Incr Delay (d2), s/veh	3.8	0.0	2.9	0.7	0.0	2.5	2.2	0.2	0.0	0.0	38.7	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(50%),veh/ln	1.1	0.0	3.5	1.1	0.0	2.2	1.2	6.5	0.3	0.1	38.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	0.0	55.6	49.7	0.0	55.7	33.8	9.5	7.1	7.7	60.4	9.1
LnGrp LOS	D	A	E	D	A	E	C	A	A	A	F	A
Approach Vol, veh/h		242			108			666			1330	
Approach Delay, s/veh		55.1			53.6			11.5			52.3	
Approach LOS		E			D			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	86.3	9.6	17.4	10.3	84.0	11.0	16.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	78.0	5.0	18.0	5.0	78.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.4	16.2	4.4	8.5	3.1	80.0	7.0	6.6				
Green Ext Time (p_c), s	0.0	4.3	0.0	0.4	0.0	0.0	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			41.1									
HCM 6th LOS			D									

Lanes, Volumes, Timings  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

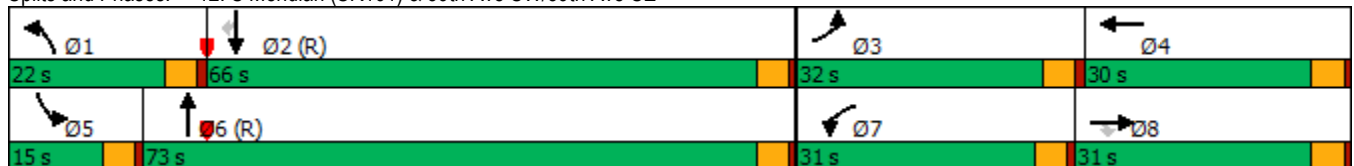
01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	483	247	163	350	52	190	1110	74	45	1287	403
Future Volume (vph)	320	483	247	163	350	52	190	1110	74	45	1287	403
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			3%			0%	
Storage Length (ft)	350		0	225		0	200		0	210		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			No			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		571			1339			1348			645	
Travel Time (s)		11.1			26.1			26.3			12.6	
Confl. Peds. (#/hr)			2						2			9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8									2
Detector Phase	3	8	8	7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.6	27.6	27.6	10.6	16.6		10.6	29.6		10.6	29.6	29.6
Total Split (s)	32.0	31.0	31.0	31.0	30.0		22.0	73.0		15.0	66.0	66.0
Total Split (%)	21.3%	20.7%	20.7%	20.7%	20.0%		14.7%	48.7%		10.0%	44.0%	44.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	3.6
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		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-Min		None	C-Min	C-Min

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 40 (27%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE



HCM 6th Signalized Intersection Summary  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	↘
Traffic Volume (veh/h)	320	483	247	163	350	52	190	1110	74	45	1287	403
Future Volume (veh/h)	320	483	247	163	350	52	190	1110	74	45	1287	403
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1786	1786	1786	1694	1694	1694	1772	1772	1772
Adj Flow Rate, veh/h	320	483	0	163	350	52	190	1110	74	45	1287	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	308	705		185	403	59	187	1607	107	57	1491	
Arrive On Green	0.18	0.21	0.00	0.11	0.14	0.14	0.08	0.35	0.35	0.07	0.89	0.00
Sat Flow, veh/h	1688	3367	1502	1701	2967	437	1613	3062	204	1688	3367	1502
Grp Volume(v), veh/h	320	483	0	163	199	203	190	583	601	45	1287	0
Grp Sat Flow(s),veh/h/ln	1688	1683	1502	1701	1697	1707	1613	1609	1657	1688	1683	1502
Q Serve(g_s), s	27.4	19.9	0.0	14.2	17.2	17.5	17.4	46.5	46.6	3.9	27.9	0.0
Cycle Q Clear(g_c), s	27.4	19.9	0.0	14.2	17.2	17.5	17.4	46.5	46.6	3.9	27.9	0.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	308	705		185	231	232	187	845	870	57	1491	
V/C Ratio(X)	1.04	0.68		0.88	0.86	0.88	1.02	0.69	0.69	0.79	0.86	
Avail Cap(c_a), veh/h	308	705		299	287	289	187	845	870	117	1491	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	0.00	0.93	0.93	0.93	0.30	0.30	0.30	0.77	0.77	0.00
Uniform Delay (d), s/veh	61.3	54.7	0.0	65.8	63.4	63.6	69.2	38.2	38.2	69.4	6.4	0.0
Incr Delay (d2), s/veh	61.5	2.6	0.0	12.5	16.7	18.5	40.0	1.4	1.4	12.7	5.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	8.7	0.0	6.8	8.5	8.8	9.4	19.5	20.1	1.9	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	122.8	57.3	0.0	78.4	80.1	82.0	109.1	39.6	39.6	82.1	11.8	0.0
LnGrp LOS	F	E		E	F	F	F	D	D	F	B	
Approach Vol, veh/h		803	A		565			1374			1332	A
Approach Delay, s/veh		83.4			80.3			49.2			14.2	
Approach LOS		F			F			D			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	71.0	32.0	25.0	9.7	83.3	21.0	36.0				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	17.4	61.4	27.4	25.4	10.4	68.4	26.4	26.4				
Max Q Clear Time (g_c+I1), s	19.4	29.9	29.4	19.5	5.9	48.6	16.2	21.9				
Green Ext Time (p_c), s	0.0	9.5	0.0	0.9	0.0	6.5	0.2	1.1				

Intersection Summary

HCM 6th Ctrl Delay	48.8
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
13: 5th St SE & 39th Ave SE

01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	214	160	113	192	5	82	286	69	6	547	100
Future Volume (vph)	148	214	160	113	192	5	82	286	69	6	547	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-3%			0%	
Storage Length (ft)	150		0	175		0	225		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1339			1162			552			965	
Travel Time (s)		26.1			22.6			12.5			21.9	
Confl. Peds. (#/hr)									4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0		11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0		21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%		16.9%	29.0%		16.9%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

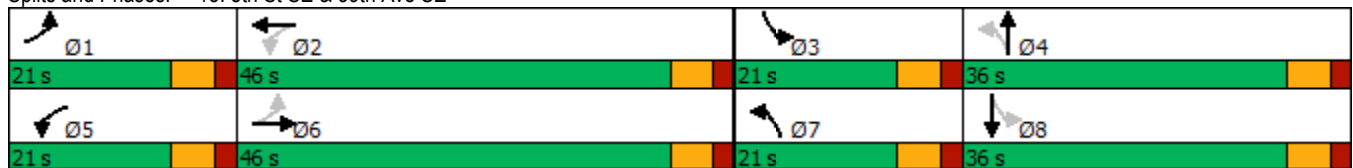
Cycle Length: 124

Actuated Cycle Length: 82

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 13: 5th St SE & 39th Ave SE





HCM 6th Signalized Intersection Summary  
 13: 5th St SE & 39th Ave SE

01/27/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	214	160	113	192	5	82	286	69	6	547	100
Future Volume (veh/h)	148	214	160	113	192	5	82	286	69	6	547	100
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	1870	1870	1870	1856	1856	1856	2018	2018	2018	1885	1885	1885
Adj Flow Rate, veh/h	151	218	163	115	196	5	84	292	70	6	558	102
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	3	3	3	0	0	0	1	1	1
Cap, veh/h	379	330	235	286	514	13	233	678	163	420	596	109
Arrive On Green	0.10	0.17	0.17	0.08	0.15	0.15	0.05	0.43	0.43	0.01	0.38	0.38
Sat Flow, veh/h	1781	1980	1413	1767	3513	89	1922	1572	377	1795	1550	283
Grp Volume(v), veh/h	151	195	186	115	98	103	84	0	362	6	0	660
Grp Sat Flow(s),veh/h/ln	1781	1777	1616	1767	1763	1839	1922	0	1949	1795	0	1833
Q Serve(g_s), s	5.3	7.7	8.2	4.1	3.8	3.8	1.9	0.0	9.8	0.2	0.0	26.1
Cycle Q Clear(g_c), s	5.3	7.7	8.2	4.1	3.8	3.8	1.9	0.0	9.8	0.2	0.0	26.1
Prop In Lane	1.00		0.87	1.00		0.05	1.00		0.19	1.00		0.15
Lane Grp Cap(c), veh/h	379	296	269	286	258	269	233	0	841	420	0	705
V/C Ratio(X)	0.40	0.66	0.69	0.40	0.38	0.38	0.36	0.00	0.43	0.01	0.00	0.94
Avail Cap(c_a), veh/h	564	944	859	505	937	977	510	0	841	763	0	731
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(l)	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	23.8	29.4	29.6	24.7	29.0	29.0	17.4	0.0	14.9	14.2	0.0	22.3
Incr Delay (d2), s/veh	0.7	2.5	3.2	0.9	0.9	0.9	0.9	0.0	0.3	0.0	0.0	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(50%),veh/ln	2.2	3.3	3.3	1.7	1.6	1.7	0.8	0.0	4.1	0.1	0.0	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	31.9	32.8	25.6	30.0	29.9	18.3	0.0	15.3	14.2	0.0	41.4
LnGrp LOS	C	C	C	C	C	C	B	A	B	B	A	D
Approach Vol, veh/h		532			316			446				666
Approach Delay, s/veh		30.1			28.4			15.9				41.2
Approach LOS		C			C			B				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.2	17.0	6.6	38.5	11.7	18.5	10.1	34.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	7.3	5.8	2.2	11.8	6.1	10.2	3.9	28.1				
Green Ext Time (p_c), s	0.2	1.1	0.0	2.1	0.2	2.4	0.1	0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			30.3									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
 14: S Meridian (SR161) & 43rd Ave SE

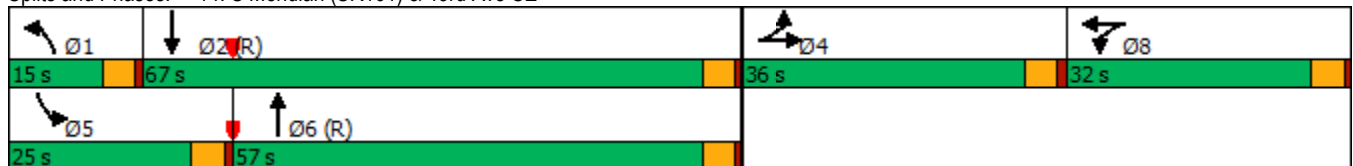
01/27/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	144	66	253	147	94	67	1170	107	177	1395	52
Future Volume (vph)	123	144	66	253	147	94	67	1170	107	177	1395	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		-4%			6%			0%			0%	
Storage Length (ft)	150		0	275		0	250		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		332			544			617			1348	
Travel Time (s)		9.1			10.6			12.0			26.3	
Confl. Peds. (#/hr)			2	2					6			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases												
Detector Phase	4	4		8	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	33.6	33.6		30.6	30.6		10.6	32.6		10.6	28.6	
Total Split (s)	36.0	36.0		32.0	32.0		15.0	57.0		25.0	67.0	
Total Split (%)	24.0%	24.0%		21.3%	21.3%		10.0%	38.0%		16.7%	44.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	

Intersection Summary























Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 90 (60%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 14: S Meridian (SR161) & 43rd Ave SE



HCM 6th Signalized Intersection Summary  
 14: S Meridian (SR161) & 43rd Ave SE

01/27/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	144	66	253	147	94	67	1170	107	177	1395	52
Future Volume (veh/h)	123	144	66	253	147	94	67	1170	107	177	1395	52
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		0.99	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	1935	1935	1935	1571	1571	1571	1730	1730	1730	1786	1786	1786
Adj Flow Rate, veh/h	123	144	66	253	147	94	67	1170	107	177	1395	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	5	5	5	1	1	1
Cap, veh/h	250	170	78	270	162	103	83	1357	124	196	1704	63
Arrive On Green	0.14	0.14	0.14	0.18	0.18	0.18	0.05	0.45	0.45	0.23	1.00	1.00
Sat Flow, veh/h	1843	1254	575	1496	894	572	1647	3043	278	1701	3336	124
Grp Volume(v), veh/h	123	0	210	253	0	241	67	631	646	177	708	739
Grp Sat Flow(s),veh/h/ln	1843	0	1828	1496	0	1466	1647	1643	1678	1701	1697	1764
Q Serve(g_s), s	9.3	0.0	16.8	25.0	0.0	24.2	6.0	51.8	52.0	15.2	0.0	0.0
Cycle Q Clear(g_c), s	9.3	0.0	16.8	25.0	0.0	24.2	6.0	51.8	52.0	15.2	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.39	1.00		0.17	1.00		0.07
Lane Grp Cap(c), veh/h	250	0	248	270	0	265	83	733	748	196	867	901
V/C Ratio(X)	0.49	0.00	0.85	0.94	0.00	0.91	0.81	0.86	0.86	0.90	0.82	0.82
Avail Cap(c_a), veh/h	386	0	383	273	0	268	114	733	748	231	867	901
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.38	0.38	0.38
Uniform Delay (d), s/veh	60.1	0.0	63.3	60.6	0.0	60.3	70.5	37.4	37.4	56.9	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	9.1	37.2	0.0	32.0	21.4	12.7	12.6	15.2	3.4	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(50%),veh/ln	4.5	0.0	8.5	12.2	0.0	11.3	3.0	23.0	23.6	6.6	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	72.4	97.8	0.0	92.3	91.9	50.0	50.1	72.1	3.4	3.3
LnGrp LOS	E	A	E	F	A	F	F	D	D	E	A	A
Approach Vol, veh/h		333			494			1344			1624	
Approach Delay, s/veh		68.3			95.1			52.1			10.8	
Approach LOS		E			F			D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.2	81.2		24.9	21.9	71.5		31.7				
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6				
Max Green Setting (Gmax), s	10.4	62.4		31.4	20.4	52.4		27.4				
Max Q Clear Time (g_c+I1), s	8.0	2.0		18.8	17.2	54.0		27.0				
Green Ext Time (p_c), s	0.0	13.4		1.1	0.1	0.0		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				41.5								
HCM 6th LOS				D								

2032 With Project AM Peak Hour

Lanes, Volumes, Timings  
1: 7th St SE & College Way

01/23/2022



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	23	219	25	75	252
Future Volume (vph)	8	23	219	25	75	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-4%			0%
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	25		25			25
Link Distance (ft)	771		286			501
Travel Time (s)	21.0		7.8			13.7
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized



Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	8	23	219	25	75	252
Future Vol, veh/h	8	23	219	25	75	252
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-4	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	2	3	3
Mvmt Flow	9	25	241	27	82	277

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	697	255	0	0	268	0
Stage 1	255	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227	-
Pot Cap-1 Maneuver	410	789	-	-	1290	-
Stage 1	792	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	383	789	-	-	1290	-
Mov Cap-2 Maneuver	483	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	678	1290	-
HCM Lane V/C Ratio	-	-	0.05	0.064	-
HCM Control Delay (s)	-	-	10.6	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Lanes, Volumes, Timings  
 2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↕↕	↕↕	↗	↖↖	↗
Traffic Volume (vph)	382	939	1396	829	201	252
Future Volume (vph)	382	939	1396	829	201	252
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Storage Length (ft)	250			0	0	175
Storage Lanes	2			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		35	
Link Distance (ft)		370	339		787	
Travel Time (s)		7.2	6.6		15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	7%	3%	3%	2%	2%
Shared Lane Traffic (%)						
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Detector Phase	5		6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	8.0	8.0
Minimum Split (s)	12.6		20.6	20.6	12.6	12.6
Total Split (s)	15.0		99.0	99.0	26.0	26.0
Total Split (%)	10.7%		70.7%	70.7%	18.6%	18.6%
Yellow Time (s)	3.6		3.6	3.6	3.6	3.6
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)	4.6		4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	Min		C-Min	C-Min	None	None

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 41 (29%), Referenced to phase 6:WBT, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 ! Phase conflict between lane groups.

Splits and Phases: 2: 31st Ave SW/S Meridian (SR161)



# HCM Signalized Intersection Capacity Analysis

## 2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↕	↖↗	↖	↖↗	↖
Traffic Volume (vph)	382	939	1396	829	201	252
Future Volume (vph)	382	939	1396	829	201	252
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Total Lost time (s)	4.6	4.0	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Fr <sub>t</sub>	1.00	1.00	1.00	0.85	1.00	0.85
Fl <sub>t</sub> Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3038	3132	3387	1515	3252	1500
Fl <sub>t</sub> Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3038	3132	3387	1515	3252	1500
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	382	939	1396	829	201	252
RTOR Reduction (vph)	0	0	0	329	0	151
Lane Group Flow (vph)	382	939	1396	500	201	101
Heavy Vehicles (%)	7%	7%	3%	3%	2%	2%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Actuated Green, G (s)	33.5	140.0	77.3	77.3	15.4	15.4
Effective Green, g (s)	33.5	140.0	77.3	77.3	15.4	15.4
Actuated g/C Ratio	0.24	1.00	0.55	0.55	0.11	0.11
Clearance Time (s)	4.6		4.6	4.6	4.6	4.6
Vehicle Extension (s)	2.5		2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	726	3132	1870	836	357	165
v/s Ratio Prot	c0.13	0.30	c0.41		0.06	
v/s Ratio Perm				0.33		c0.07
v/c Ratio	0.53	0.30	0.75	0.60	0.56	0.61
Uniform Delay, d1	46.3	0.0	23.9	21.0	59.1	59.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	2.8	3.2	1.6	5.6
Delay (s)	46.9	0.2	26.7	24.1	60.8	65.0
Level of Service	D	A	C	C	E	E
Approach Delay (s)		13.7	25.7		63.1	
Approach LOS		B	C		E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			26.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	13.8
Intersection Capacity Utilization			73.4%		ICU Level of Service	D
Analysis Period (min)			15			
! Phase conflict between lane groups.						
c Critical Lane Group						

Lanes, Volumes, Timings  
3: S Meridian (SR161) & 37th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	24	29	60	32	422	17	1745	38	326	742	29
Future Volume (vph)	26	24	29	60	32	422	17	1745	38	326	742	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	250		0	225		0	350		0
Storage Lanes	1		1	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		242			1349			645			449	
Travel Time (s)		6.6			26.3			12.6			8.7	
Confl. Peds. (#/hr)						1						1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	8%	8%	8%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			Free						
Detector Phase	3	8	8	7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	8.6	10.6	10.6	10.6	35.6		10.6	28.6		10.6	31.6	
Total Split (s)	15.0	25.0	25.0	27.0	37.0		15.0	68.0		20.0	73.0	
Total Split (%)	10.7%	17.9%	17.9%	19.3%	26.4%		10.7%	48.6%		14.3%	52.1%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		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-Min		None	C-Min	

Intersection Summary

Area Type: Other

Cycle Length: 140

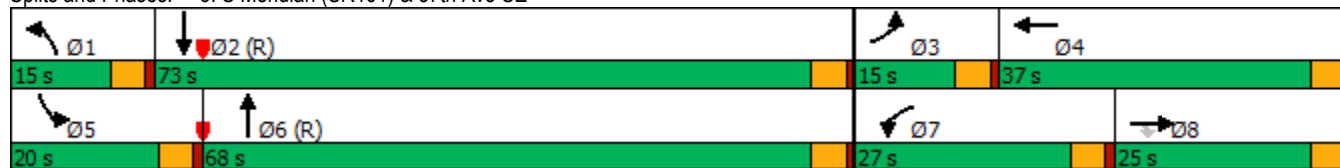
Actuated Cycle Length: 140

Offset: 44 (31%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Splits and Phases: 3: S Meridian (SR161) & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 3: S Meridian (SR161) & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	24	29	60	32	422	17	1745	38	326	742	29
Future Volume (veh/h)	26	24	29	60	32	422	17	1745	38	326	742	29
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1772	1772	1772	1758	1758	1758	1688	1688	1688
Adj Flow Rate, veh/h	26	24	29	60	32	0	17	1745	38	326	742	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	2	2	2	3	3	3	8	8	8
Cap, veh/h	32	125	56	76	113		35	2259	49	343	3525	
Arrive On Green	0.02	0.04	0.04	0.05	0.06	0.00	0.04	1.00	1.00	0.11	0.77	0.00
Sat Flow, veh/h	1674	3340	1490	1688	1772	1502	1674	3342	73	3118	4759	0
Grp Volume(v), veh/h	26	24	29	60	32	0	17	870	913	326	742	0
Grp Sat Flow(s),veh/h/ln	1674	1670	1490	1688	1772	1502	1674	1670	1745	1559	1536	0
Q Serve(g_s), s	2.2	1.0	2.7	4.9	2.4	0.0	1.4	0.0	0.0	14.5	6.3	0.0
Cycle Q Clear(g_c), s	2.2	1.0	2.7	4.9	2.4	0.0	1.4	0.0	0.0	14.5	6.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.00
Lane Grp Cap(c), veh/h	32	125	56	76	113		35	1129	1179	343	3525	
V/C Ratio(X)	0.82	0.19	0.52	0.79	0.28		0.49	0.77	0.77	0.95	0.21	
Avail Cap(c_a), veh/h	124	487	217	270	410		124	1129	1179	343	3525	
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(l)	1.00	1.00	1.00	0.90	0.90	0.00	0.47	0.47	0.47	1.00	1.00	0.00
Uniform Delay (d), s/veh	68.4	65.3	66.1	66.2	62.5	0.0	66.4	0.0	0.0	61.9	4.6	0.0
Incr Delay (d2), s/veh	43.2	0.7	7.3	14.6	1.3	0.0	4.9	2.5	2.4	35.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.4	1.1	2.4	1.1	0.0	0.6	0.8	0.8	7.4	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	111.7	66.1	73.5	80.7	63.8	0.0	71.3	2.5	2.4	97.6	4.7	0.0
LnGrp LOS	F	E	E	F	E		E	A	A	F	A	
Approach Vol, veh/h		79			92	A		1800			1068	A
Approach Delay, s/veh		83.8			74.9			3.1			33.1	
Approach LOS		F			E			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	111.7	7.3	13.5	20.0	99.2	10.9	9.8				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	10.4	68.4	10.4	32.4	15.4	63.4	22.4	20.4				
Max Q Clear Time (g_c+I1), s	3.4	8.3	4.2	4.4	16.5	2.0	6.9	4.7				
Green Ext Time (p_c), s	0.0	7.4	0.0	0.1	0.0	29.8	0.1	0.1				

Intersection Summary

HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lanes, Volumes, Timings  
4: 5th St SE & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	332	29	14	351	158	82	220	13	132	186	54
Future Volume (vph)	38	332	29	14	351	158	82	220	13	132	186	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-3%			0%			-5%	
Storage Length (ft)	200		0	225		150	200		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		1349			1181			965				418
Travel Time (s)		26.3			23.0			21.9				11.4
Confl. Peds. (#/hr)	1					1			4			4
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Detector Phase	1	6		5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0	26.0	11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0	46.0	21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%	37.1%	16.9%	29.0%		16.9%	29.0%	
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)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other

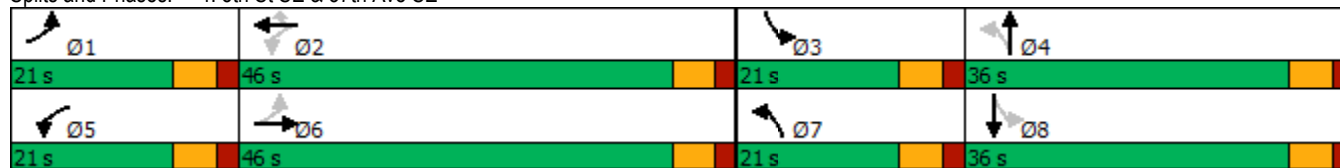
Cycle Length: 124

Actuated Cycle Length: 65.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: 5th St SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
4: 5th St SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	332	29	14	351	158	82	220	13	132	186	54
Future Volume (veh/h)	38	332	29	14	351	158	82	220	13	132	186	54
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		0.99
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	1841	1841	1841	1973	1973	1973	1870	1870	1870	2037	2037	2037
Adj Flow Rate, veh/h	43	373	33	16	394	0	92	247	0	148	209	61
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	4	4	4
Cap, veh/h	317	720	63	301	737		374	381		415	337	98
Arrive On Green	0.04	0.22	0.22	0.02	0.20	0.00	0.07	0.20	0.00	0.09	0.22	0.22
Sat Flow, veh/h	1753	3251	286	1879	3749	1672	1781	1870	0	1940	1513	442
Grp Volume(v), veh/h	43	200	206	16	394	0	92	247	0	148	0	270
Grp Sat Flow(s),veh/h/ln	1753	1749	1788	1879	1874	1672	1781	1870	0	1940	0	1954
Q Serve(g_s), s	1.0	5.2	5.2	0.3	4.9	0.0	2.0	6.3	0.0	3.0	0.0	6.4
Cycle Q Clear(g_c), s	1.0	5.2	5.2	0.3	4.9	0.0	2.0	6.3	0.0	3.0	0.0	6.4
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	317	387	396	301	737		374	381		415	0	435
V/C Ratio(X)	0.14	0.52	0.52	0.05	0.53		0.25	0.65		0.36	0.00	0.62
Avail Cap(c_a), veh/h	749	1356	1387	810	2906		766	1088		805	0	1136
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(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	17.7	17.7	16.1	18.6	0.0	14.6	18.8	0.0	14.4	0.0	18.1
Incr Delay (d2), s/veh	0.2	1.1	1.1	0.1	0.6	0.0	0.3	1.9	0.0	0.5	0.0	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(50%),veh/ln	0.4	1.9	2.0	0.1	1.9	0.0	0.8	2.6	0.0	1.2	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	18.7	18.7	16.2	19.2	0.0	15.0	20.7	0.0	14.9	0.0	19.5
LnGrp LOS	B	B	B	B	B		B	C		B	A	B
Approach Vol, veh/h		449			410	A		339	A		418	
Approach Delay, s/veh		18.4			19.1			19.1			17.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	16.1	10.6	16.5	7.0	17.4	9.7	17.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	3.0	6.9	5.0	8.3	2.3	7.2	4.0	8.4				
Green Ext Time (p_c), s	0.0	2.7	0.3	1.4	0.0	2.4	0.1	1.7				

Intersection Summary

HCM 6th Ctrl Delay	18.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: 39th Ave SE & 37th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	426	1	187	598	1	0	8	333	5	4	8
Future Volume (vph)	9	426	1	187	598	1	0	8	333	5	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		6%			-5%			3%			0%	
Storage Length (ft)	225		0	200		0	200		0	0		150
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35				25
Link Distance (ft)		1181			510			1162				264
Travel Time (s)		23.0			9.9			22.6				7.2
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 (%)	4%	4%	4%	3%	3%	3%	3%	3%	3%	14%	14%	14%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt		NA
Protected Phases	7	4		3	8		5	2	3	1		6
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	3	1		6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	5.0	5.0		10.0
Minimum Split (s)	12.0	30.0		12.0	30.0		11.0	16.0	12.0	11.0		34.0
Total Split (s)	23.0	42.0		23.0	42.0		22.0	22.0	23.0	22.0		22.0
Total Split (%)	21.1%	38.5%		21.1%	38.5%		20.2%	20.2%	21.1%	20.2%		20.2%
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)	3.0	3.0		3.0	3.0		2.0	2.0	3.0	2.0		2.0
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)	7.0	7.0		7.0	7.0		6.0	6.0	7.0	6.0		6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Min		None	Min		None	None	None	None		None

Intersection Summary

Area Type: Other

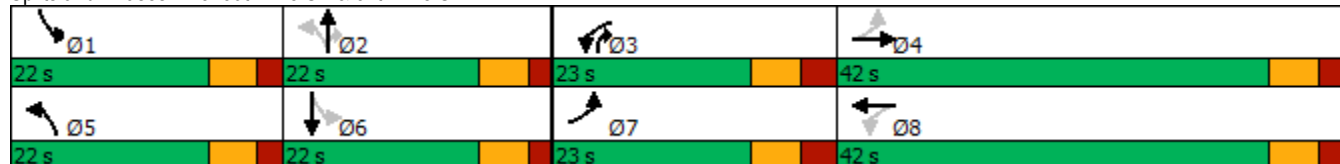
Cycle Length: 109

Actuated Cycle Length: 41.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: 39th Ave SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 5: 39th Ave SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	426	1	187	598	1	0	8	333	5	4	8
Future Volume (veh/h)	9	426	1	187	598	1	0	8	333	5	4	8
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	1629	1629	1629	2052	2052	2052	1803	1803	1803	1693	1693	1693
Adj Flow Rate, veh/h	10	468	1	205	657	1	0	9	366	5	4	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
Percent Heavy Veh, %	4	4	4	3	3	3	3	3	3	14	14	14
Cap, veh/h	272	771	2	436	1352	2	437	430	529	336	157	353
Arrive On Green	0.01	0.24	0.24	0.11	0.34	0.34	0.00	0.24	0.24	0.01	0.34	0.34
Sat Flow, veh/h	1551	3168	7	1954	3993	6	1717	1803	1528	1612	463	1042
Grp Volume(v), veh/h	10	229	240	205	321	337	0	9	366	5	0	13
Grp Sat Flow(s),veh/h/ln	1551	1547	1627	1954	1949	2051	1717	1803	1528	1612	0	1505
Q Serve(g_s), s	0.3	8.4	8.5	4.8	8.4	8.4	0.0	0.2	13.3	0.1	0.0	0.4
Cycle Q Clear(g_c), s	0.3	8.4	8.5	4.8	8.4	8.4	0.0	0.2	13.3	0.1	0.0	0.4
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	272	376	396	436	660	694	437	430	529	336	0	509
V/C Ratio(X)	0.04	0.61	0.61	0.47	0.49	0.49	0.00	0.02	0.69	0.01	0.00	0.03
Avail Cap(c_a), veh/h	638	841	884	711	1059	1114	860	448	544	726	0	509
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	21.6	21.6	15.2	16.9	16.9	0.0	18.8	18.1	17.0	0.0	14.2
Incr Delay (d2), s/veh	0.1	3.4	3.2	0.8	1.2	1.1	0.0	0.0	3.6	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(50%),veh/ln	0.1	3.2	3.3	2.0	3.6	3.8	0.0	0.1	4.7	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.0	25.0	24.8	16.0	18.1	18.0	0.0	18.8	21.7	17.0	0.0	14.2
LnGrp LOS	B	C	C	B	B	B	A	B	C	B	A	B
Approach Vol, veh/h		479			863			375				18
Approach Delay, s/veh		24.8			17.6			21.6				15.0
Approach LOS		C			B			C				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	21.4	14.0	22.7	0.0	27.8	7.8	28.8				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	16.0	16.0	16.0	35.0	16.0	16.0	16.0	35.0				
Max Q Clear Time (g_c+I1), s	2.1	15.3	6.8	10.5	0.0	2.4	2.3	10.4				
Green Ext Time (p_c), s	0.0	0.1	0.4	5.2	0.0	0.0	0.0	7.7				

Intersection Summary

HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
6: 10th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	598	52	79	665	14	100	24	104	1	1	15
Future Volume (vph)	107	598	52	79	665	14	100	24	104	1	1	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-5%			-6%			-4%	
Storage Length (ft)	150		0	200		0	100		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		510			1994			256				231
Travel Time (s)		9.9			38.8			5.8				6.3
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 (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	13%	13%	13%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.3	30.3		11.3	30.3		10.5	25.5		10.5	25.5	
Total Split (s)	21.3	51.3		21.3	51.3		21.3	21.3		21.3	21.3	
Total Split (%)	18.5%	44.5%		18.5%	44.5%		18.5%	18.5%		18.5%	18.5%	
Yellow Time (s)	4.3	4.3		4.3	4.3		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5	5.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

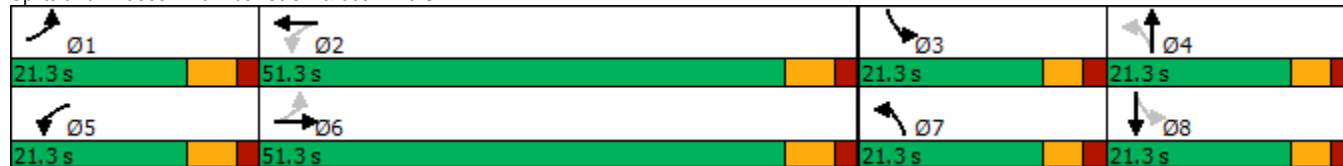
Cycle Length: 115.2

Actuated Cycle Length: 58.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: 10th St SE & 39th Ave SE





HCM 6th Signalized Intersection Summary  
6: 10th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	598	52	79	665	14	100	24	104	1	1	15
Future Volume (veh/h)	107	598	52	79	665	14	100	24	104	1	1	15
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	1841	1841	1841	2037	2037	2037	2091	2091	2091	1862	1862	1862
Adj Flow Rate, veh/h	118	657	57	87	731	15	110	26	114	1	1	16
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
Percent Heavy Veh, %	4	4	4	4	4	4	3	3	3	13	13	13
Cap, veh/h	390	1105	96	401	1280	26	396	53	233	240	8	125
Arrive On Green	0.08	0.34	0.34	0.07	0.33	0.33	0.07	0.16	0.16	0.00	0.08	0.08
Sat Flow, veh/h	1753	3256	282	1940	3878	80	1991	339	1485	1774	94	1499
Grp Volume(v), veh/h	118	352	362	87	365	381	110	0	140	1	0	17
Grp Sat Flow(s),veh/h/ln	1753	1749	1790	1940	1935	2022	1991	0	1824	1774	0	1592
Q Serve(g_s), s	2.3	9.0	9.1	1.5	8.4	8.4	2.6	0.0	3.8	0.0	0.0	0.5
Cycle Q Clear(g_c), s	2.3	9.0	9.1	1.5	8.4	8.4	2.6	0.0	3.8	0.0	0.0	0.5
Prop In Lane	1.00		0.16	1.00		0.04	1.00		0.81	1.00		0.94
Lane Grp Cap(c), veh/h	390	594	608	401	639	668	396	0	286	240	0	133
V/C Ratio(X)	0.30	0.59	0.59	0.22	0.57	0.57	0.28	0.00	0.49	0.00	0.00	0.13
Avail Cap(c_a), veh/h	740	1450	1485	807	1605	1677	828	0	531	753	0	464
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(l)	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	11.0	14.8	14.8	11.1	15.0	15.0	19.9	0.0	20.9	22.7	0.0	23.0
Incr Delay (d2), s/veh	0.4	1.4	1.3	0.3	1.1	1.1	0.4	0.0	1.3	0.0	0.0	0.4
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(50%),veh/ln	0.8	3.2	3.3	0.6	3.3	3.5	1.2	0.0	1.6	0.0	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	16.2	16.2	11.3	16.1	16.1	20.3	0.0	22.2	22.7	0.0	23.5
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		832			833			250				18
Approach Delay, s/veh		15.5			15.6			21.4				23.4
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	24.2	5.6	14.0	10.0	24.7	9.5	10.0				
Change Period (Y+Rc), s	6.3	6.3	5.5	5.5	6.3	6.3	5.5	5.5				
Max Green Setting (Gmax), s	15.0	45.0	15.8	15.8	15.0	45.0	15.8	15.8				
Max Q Clear Time (g_c+I1), s	4.3	10.4	2.0	5.8	3.5	11.1	4.6	2.5				
Green Ext Time (p_c), s	0.2	7.5	0.0	0.5	0.1	7.1	0.2	0.0				

Intersection Summary

HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
7: 39th Ave SE & College Way

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	253	376	684	150	44	75
Future Volume (vph)	253	376	684	150	44	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	-5%		0%	
Storage Length (ft)	175			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		25	
Link Distance (ft)		1994	773		209	
Travel Time (s)		38.8	15.1		5.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	6%	3%	3%	40%	40%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	11.3	16.3	35.3		34.5	34.5
Total Split (s)	31.3	46.3	46.3		50.5	50.5
Total Split (%)	24.4%	36.1%	36.1%		39.4%	39.4%
Yellow Time (s)	4.0	4.0	4.0		3.5	3.5
All-Red Time (s)	2.3	2.3	2.3		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3		5.5	5.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	None

Intersection Summary

Area Type: Other

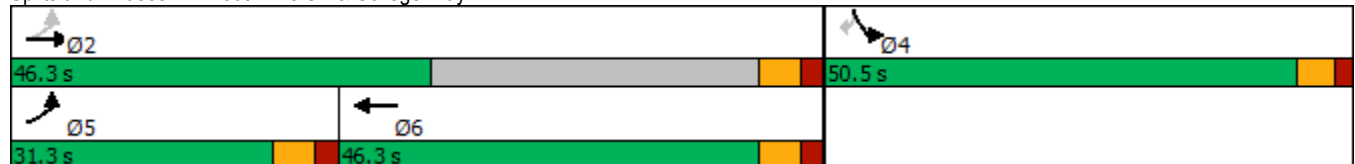
Cycle Length: 128.1

Actuated Cycle Length: 66.4

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 39th Ave SE & College Way



HCM 6th Signalized Intersection Summary  
7: 39th Ave SE & College Way

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	253	376	684	150	44	75
Future Volume (veh/h)	253	376	684	150	44	75
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1811	1811	2052	2052	1307	1307
Adj Flow Rate, veh/h	266	396	720	158	46	79
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	3	3	40	40
Cap, veh/h	505	2207	1162	255	124	110
Arrive On Green	0.14	0.64	0.37	0.37	0.10	0.10
Sat Flow, veh/h	1725	3532	3281	697	1245	1108
Grp Volume(v), veh/h	266	396	441	437	46	79
Grp Sat Flow(s),veh/h/ln	1725	1721	1949	1926	1245	1108
Q Serve(g_s), s	3.8	2.1	8.5	8.5	1.6	3.1
Cycle Q Clear(g_c), s	3.8	2.1	8.5	8.5	1.6	3.1
Prop In Lane	1.00			0.36	1.00	1.00
Lane Grp Cap(c), veh/h	505	2207	713	704	124	110
V/C Ratio(X)	0.53	0.18	0.62	0.62	0.37	0.72
Avail Cap(c_a), veh/h	1215	3023	1713	1692	1231	1095
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.7	3.3	11.8	11.8	19.2	19.9
Incr Delay (d2), s/veh	0.9	0.0	0.9	0.9	2.2	10.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.3	3.0	2.9	0.5	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.5	3.3	12.7	12.7	21.4	29.9
LnGrp LOS	A	A	B	B	C	C
Approach Vol, veh/h		662	878		125	
Approach Delay, s/veh		5.4	12.7		26.8	
Approach LOS		A	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		35.5		10.0	12.6	22.9
Change Period (Y+Rc), s		* 6.3		5.5	* 6.3	* 6.3
Max Green Setting (Gmax), s		* 40		45.0	* 25	* 40
Max Q Clear Time (g_c+I1), s		4.1		5.1	5.8	10.5
Green Ext Time (p_c), s		2.7		0.5	0.7	6.2
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			10.9			
HCM 6th LOS			B			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Lanes, Volumes, Timings  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	250	14	5	490	106	54	34	13	113	18	177
Future Volume (vph)	127	250	14	5	490	106	54	34	13	113	18	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-4%			0%			6%	
Storage Length (ft)	125		0	125		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		384			416			287			528	
Travel Time (s)		7.5			8.1			7.8			14.4	
Confl. Peds. (#/hr)									2	2		
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 (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

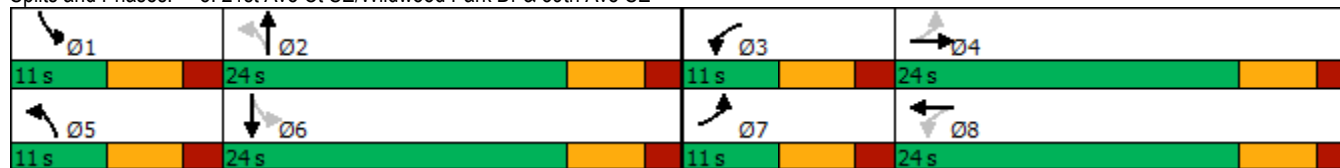
Cycle Length: 70

Actuated Cycle Length: 52.2

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	250	14	5	490	106	54	34	13	113	18	177
Future Volume (veh/h)	127	250	14	5	490	106	54	34	13	113	18	177
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	1811	1811	1811	2027	2027	2027	1870	1870	1870	1614	1614	1614
Adj Flow Rate, veh/h	140	275	15	5	538	116	59	37	14	124	20	195
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
Percent Heavy Veh, %	6	6	6	2	2	2	2	2	2	5	5	5
Cap, veh/h	327	1029	56	413	733	157	297	230	87	437	27	264
Arrive On Green	0.08	0.31	0.31	0.01	0.23	0.23	0.05	0.18	0.18	0.09	0.21	0.21
Sat Flow, veh/h	1725	3319	180	1931	3154	677	1781	1292	489	1537	129	1255
Grp Volume(v), veh/h	140	142	148	5	328	326	59	0	51	124	0	215
Grp Sat Flow(s),veh/h/ln	1725	1721	1779	1931	1926	1905	1781	0	1780	1537	0	1384
Q Serve(g_s), s	3.4	3.6	3.6	0.1	9.0	9.1	1.5	0.0	1.4	3.7	0.0	8.3
Cycle Q Clear(g_c), s	3.4	3.6	3.6	0.1	9.0	9.1	1.5	0.0	1.4	3.7	0.0	8.3
Prop In Lane	1.00		0.10	1.00		0.36	1.00		0.27	1.00		0.91
Lane Grp Cap(c), veh/h	327	533	551	413	447	443	297	0	317	437	0	292
V/C Ratio(X)	0.43	0.27	0.27	0.01	0.73	0.74	0.20	0.00	0.16	0.28	0.00	0.74
Avail Cap(c_a), veh/h	332	541	559	569	606	599	358	0	560	439	0	435
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(l)	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	15.2	14.8	14.9	16.6	20.3	20.3	17.9	0.0	19.9	16.9	0.0	21.1
Incr Delay (d2), s/veh	0.9	0.3	0.3	0.0	3.0	3.2	0.3	0.0	0.2	0.4	0.0	3.6
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(50%),veh/ln	1.2	1.3	1.3	0.0	4.0	4.0	0.6	0.0	0.6	1.3	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	15.1	15.1	16.6	23.3	23.5	18.2	0.0	20.1	17.2	0.0	24.7
LnGrp LOS	B	B	B	B	C	C	B	A	C	B	A	C
Approach Vol, veh/h		430			659			110				339
Approach Delay, s/veh		15.4			23.4			19.1				22.0
Approach LOS		B			C			B				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	16.2	6.4	23.7	9.0	18.1	10.8	19.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	5.7	3.4	2.1	5.6	3.5	10.3	5.4	11.1				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.2	0.0	0.8	0.0	2.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.5									
HCM 6th LOS			C									



Lanes, Volumes, Timings  
9: 25th St SE & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	330	9	7	564	7	25	2	24	2	0	15
Future Volume (vph)	24	330	9	7	564	7	25	2	24	2	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	75		0	100		0	25		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		365			225			248			136	
Travel Time (s)		7.1			4.4			6.8			3.7	
Confl. Peds. (#/hr)			1	1			1		1	1		1
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
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 36.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 25th St SE & 39th Ave SE

Ø1 11 s	Ø2 24 s	Ø3 11 s	Ø4 24 s
Ø5 11 s	Ø6 24 s	Ø7 11 s	Ø8 24 s

HCM 6th Signalized Intersection Summary  
 9: 25th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	330	9	7	564	7	25	2	24	2	0	15
Future Volume (veh/h)	24	330	9	7	564	7	25	2	24	2	0	15
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1870	1870	1870	1826	1826	1826	1900	1900	1900
Adj Flow Rate, veh/h	26	351	10	7	600	7	27	2	26	2	0	16
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, %	6	6	6	2	2	2	5	5	5	0	0	0
Cap, veh/h	311	955	27	389	927	11	362	15	200	328	0	174
Arrive On Green	0.03	0.28	0.28	0.01	0.26	0.26	0.03	0.14	0.14	0.00	0.00	0.11
Sat Flow, veh/h	1725	3417	97	1781	3598	42	1739	112	1451	1810	0	1608
Grp Volume(v), veh/h	26	176	185	7	296	311	27	0	28	2	0	16
Grp Sat Flow(s),veh/h/ln	1725	1721	1793	1781	1777	1863	1739	0	1563	1810	0	1608
Q Serve(g_s), s	0.5	3.5	3.5	0.1	6.2	6.2	0.6	0.0	0.7	0.0	0.0	0.4
Cycle Q Clear(g_c), s	0.5	3.5	3.5	0.1	6.2	6.2	0.6	0.0	0.7	0.0	0.0	0.4
Prop In Lane	1.00		0.05	1.00		0.02	1.00		0.93	1.00		1.00
Lane Grp Cap(c), veh/h	311	481	501	389	458	480	362	0	215	328	0	174
V/C Ratio(X)	0.08	0.37	0.37	0.02	0.65	0.65	0.07	0.00	0.13	0.01	0.00	0.09
Avail Cap(c_a), veh/h	462	737	768	584	761	798	513	0	669	538	0	689
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(l)	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	11.3	12.2	12.2	11.4	13.9	13.9	15.8	0.0	15.9	16.6	0.0	16.9
Incr Delay (d2), s/veh	0.1	0.5	0.5	0.0	1.5	1.5	0.1	0.0	0.3	0.0	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(50%),veh/ln	0.1	1.1	1.1	0.0	2.2	2.3	0.2	0.0	0.2	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	12.6	12.6	11.4	15.4	15.4	15.9	0.0	16.2	16.6	0.0	17.1
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		387			614			55				18
Approach Delay, s/veh		12.5			15.4			16.0				17.1
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	11.8	6.4	17.7	7.4	10.5	7.3	16.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.0	2.7	2.1	5.5	2.6	2.4	2.5	8.2				
Green Ext Time (p_c), s	0.0	0.1	0.0	1.6	0.0	0.0	0.0	2.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			14.4									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Volume (vph)	156	0	244	1	0	0	471	852	1	0	329	225
Future Volume (vph)	156	0	244	1	0	0	471	852	1	0	329	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			8%			-4%			6%	
Storage Length (ft)	0		0	0		0	300		0	200		0
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		322			305			698			574	
Travel Time (s)		6.3			5.9			13.6			11.2	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	5%	5%	5%	0%	0%	0%	2%	2%	2%	3%	3%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	24.0	24.0		16.3	28.3		11.3	28.3	28.3
Total Split (s)	36.0	36.0	36.0	36.0	36.0		26.3	46.3		21.3	46.3	46.3
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%		24.2%	42.6%		19.6%	42.6%	42.6%
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)	2.0	2.0	2.0	2.0	2.0		2.3	2.3		2.3	2.3	2.3
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)		6.0	6.0		6.0		6.3	6.3		6.3	6.3	6.3
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

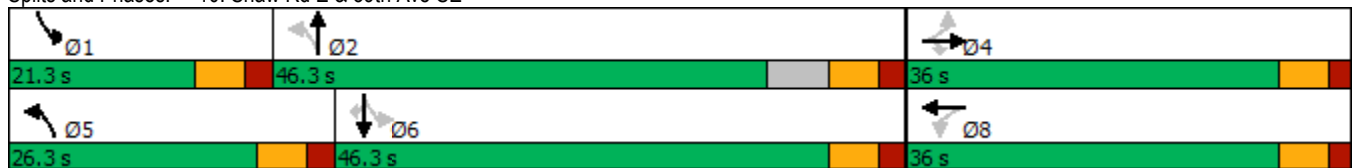
Cycle Length: 108.6

Actuated Cycle Length: 79.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Shaw Rd E & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Volume (veh/h)	156	0	244	1	0	0	471	852	1	0	329	225
Future Volume (veh/h)	156	0	244	1	0	0	471	852	1	0	329	225
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	1826	1826	1826	1523	1523	1523	2027	2027	2027	1644	1644	1644
Adj Flow Rate, veh/h	175	0	274	1	0	0	529	957	1	0	370	253
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	5	5	5	0	0	0	2	2	2	3	3	3
Cap, veh/h	439	0	341	223	0	0	601	1223	1	233	492	416
Arrive On Green	0.22	0.00	0.22	0.22	0.00	0.00	0.22	0.60	0.60	0.00	0.30	0.30
Sat Flow, veh/h	1526	0	1547	544	0	0	1931	2025	2	1565	1644	1390
Grp Volume(v), veh/h	175	0	274	1	0	0	529	0	958	0	370	253
Grp Sat Flow(s),veh/h/ln	1526	0	1547	544	0	0	1931	0	2027	1565	1644	1390
Q Serve(g_s), s	0.0	0.0	11.8	0.1	0.0	0.0	12.1	0.0	24.9	0.0	14.3	10.9
Cycle Q Clear(g_c), s	6.1	0.0	11.8	6.2	0.0	0.0	12.1	0.0	24.9	0.0	14.3	10.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	439	0	341	223	0	0	601	0	1224	233	492	416
V/C Ratio(X)	0.40	0.00	0.80	0.00	0.00	0.00	0.88	0.00	0.78	0.00	0.75	0.61
Avail Cap(c_a), veh/h	726	0	662	409	0	0	736	0	1224	566	937	793
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(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	0.0	25.9	26.3	0.0	0.0	13.3	0.0	10.4	0.0	22.2	21.1
Incr Delay (d2), s/veh	0.6	0.0	4.4	0.0	0.0	0.0	10.3	0.0	3.6	0.0	3.3	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(50%),veh/ln	2.4	0.0	4.4	0.0	0.0	0.0	5.9	0.0	9.6	0.0	5.5	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	0.0	30.3	26.4	0.0	0.0	23.7	0.0	14.0	0.0	25.6	23.1
LnGrp LOS	C	A	C	C	A	A	C	A	B	A	C	C
Approach Vol, veh/h		449			1			1487			623	
Approach Delay, s/veh		27.9			26.4			17.4			24.6	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	48.7		21.5	21.4	27.3		21.5				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 15	* 40		30.0	* 20	* 40		30.0				
Max Q Clear Time (g_c+I1), s	0.0	26.9		13.8	14.1	16.3		8.2				
Green Ext Time (p_c), s	0.0	7.6		1.7	1.0	4.7		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			21.0									
HCM 6th LOS			C									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Lanes, Volumes, Timings

11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	14	22	47	49	47	41	1049	8	15	341	51
Future Volume (vph)	158	14	22	47	49	47	41	1049	8	15	341	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-9%			3%			-9%			6%	
Storage Length (ft)	50		0	50		0	100		175	75		100
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			Yes			Yes
Link Speed (mph)		25			25			35				35
Link Distance (ft)		481			429			444				403
Travel Time (s)		13.1			11.7			8.6				7.9
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	64.0	64.0	11.0	64.0	64.0
Total Split (%)	10.0%	21.8%		10.0%	21.8%		10.0%	58.2%	58.2%	10.0%	58.2%	58.2%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 97

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

Ø1	Ø2	Ø3	Ø4
11 s	64 s	11 s	24 s
Ø5	Ø6	Ø7	Ø8
11 s	64 s	11 s	24 s



HCM 6th Signalized Intersection Summary  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	14	22	47	49	47	41	1049	8	15	341	51
Future Volume (veh/h)	158	14	22	47	49	47	41	1049	8	15	341	51
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	2239	2239	2239	1817	1817	1817	2224	2224	2224	1629	1629	1629
Adj Flow Rate, veh/h	163	14	23	48	51	48	42	1081	8	15	352	53
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	4	4	4
Cap, veh/h	285	97	160	296	95	90	621	1216	1030	161	860	728
Arrive On Green	0.06	0.13	0.13	0.04	0.11	0.11	0.04	0.55	0.55	0.02	0.53	0.53
Sat Flow, veh/h	2132	762	1252	1731	861	810	2118	2224	1883	1551	1629	1379
Grp Volume(v), veh/h	163	0	37	48	0	99	42	1081	8	15	352	53
Grp Sat Flow(s),veh/h/ln	2132	0	2014	1731	0	1671	2118	2224	1883	1551	1629	1379
Q Serve(g_s), s	5.0	0.0	1.5	2.2	0.0	5.0	0.8	38.3	0.2	0.4	11.6	1.7
Cycle Q Clear(g_c), s	5.0	0.0	1.5	2.2	0.0	5.0	0.8	38.3	0.2	0.4	11.6	1.7
Prop In Lane	1.00		0.62	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	0	258	296	0	185	621	1216	1030	161	860	728
V/C Ratio(X)	0.57	0.00	0.14	0.16	0.00	0.53	0.07	0.89	0.01	0.09	0.41	0.07
Avail Cap(c_a), veh/h	285	0	406	325	0	337	663	1445	1224	221	1058	896
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.6	0.0	34.6	33.2	0.0	37.5	9.4	17.8	9.2	17.1	12.7	10.3
Incr Delay (d2), s/veh	2.7	0.0	0.3	0.3	0.0	2.4	0.0	6.4	0.0	0.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.7	0.9	0.0	2.2	0.3	19.3	0.1	0.1	3.9	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	0.0	34.8	33.4	0.0	39.9	9.5	24.2	9.2	17.3	13.0	10.4
LnGrp LOS	D	A	C	C	A	D	A	C	A	B	B	B
Approach Vol, veh/h		200			147			1131			420	
Approach Delay, s/veh		36.9			37.8			23.5			12.8	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	54.8	9.5	17.4	9.2	53.1	11.0	15.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	58.0	5.0	18.0	5.0	58.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.4	40.3	4.2	3.5	2.8	13.6	7.0	7.0				
Green Ext Time (p_c), s	0.0	8.6	0.0	0.1	0.0	2.4	0.0	0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			23.7									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

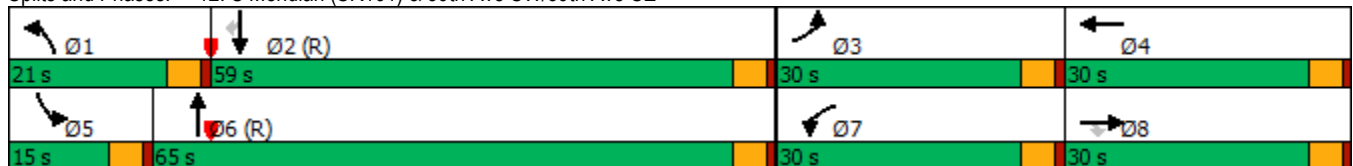
01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	261	153	55	163	14	102	1474	83	19	767	126
Future Volume (vph)	214	261	153	55	163	14	102	1474	83	19	767	126
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			3%			0%	
Storage Length (ft)	350		0	225		0	200		0	210		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			No			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		571			1339			1348			645	
Travel Time (s)		11.1			26.1			26.3			12.6	
Confl. Peds. (#/hr)									4			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	5%	5%	5%	6%	6%	6%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8									2
Detector Phase	3	8	8	7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.6	27.6	27.6	10.6	16.6		10.6	29.6		10.6	29.6	29.6
Total Split (s)	30.0	30.0	30.0	30.0	30.0		21.0	65.0		15.0	59.0	59.0
Total Split (%)	21.4%	21.4%	21.4%	21.4%	21.4%		15.0%	46.4%		10.7%	42.1%	42.1%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	3.6
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		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-Min		None	C-Min	C-Min

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 41 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE



HCM 6th Signalized Intersection Summary  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	261	153	55	163	14	102	1474	83	19	767	126
Future Volume (veh/h)	214	261	153	55	163	14	102	1474	83	19	767	126
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1716	1716	1716	1758	1758	1758	1680	1680	1680	1716	1716	1716
Adj Flow Rate, veh/h	214	261	0	55	163	14	102	1474	83	19	767	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	6	6	6	3	3	3	5	5	5	6	6	6
Cap, veh/h	236	564		70	218	19	121	1940	109	37	1886	
Arrive On Green	0.14	0.17	0.00	0.04	0.07	0.07	0.15	1.00	1.00	0.04	1.00	0.00
Sat Flow, veh/h	1634	3260	1454	1674	3115	265	1600	3071	172	1634	3260	1454
Grp Volume(v), veh/h	214	261	0	55	87	90	102	763	794	19	767	0
Grp Sat Flow(s),veh/h/ln	1634	1630	1454	1674	1670	1710	1600	1596	1648	1634	1630	1454
Q Serve(g_s), s	18.0	10.1	0.0	4.6	7.1	7.3	8.7	0.0	0.0	1.6	0.0	0.0
Cycle Q Clear(g_c), s	18.0	10.1	0.0	4.6	7.1	7.3	8.7	0.0	0.0	1.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.15	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	236	564		70	117	120	121	1008	1041	37	1886	
V/C Ratio(X)	0.91	0.46		0.79	0.74	0.75	0.85	0.76	0.76	0.52	0.41	
Avail Cap(c_a), veh/h	296	591		304	303	310	187	1008	1041	121	1886	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	0.00	0.99	0.99	0.99	0.32	0.32	0.32	0.98	0.98	0.00
Uniform Delay (d), s/veh	58.9	52.0	0.0	66.5	63.8	63.9	58.6	0.0	0.0	66.1	0.0	0.0
Incr Delay (d2), s/veh	24.6	0.4	0.0	13.3	5.5	5.7	5.7	1.8	1.7	8.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	4.2	0.0	2.2	3.2	3.3	3.5	0.5	0.5	0.7	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.6	52.5	0.0	79.7	69.3	69.6	64.3	1.8	1.7	74.2	0.6	0.0
LnGrp LOS	F	D		E	E	E	E	A	A	E	A	
Approach Vol, veh/h		475	A		232			1659			786	A
Approach Delay, s/veh		66.5			71.9			5.6			2.4	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	85.6	24.8	14.4	7.7	93.0	10.4	28.8				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	16.4	54.4	25.4	25.4	10.4	60.4	25.4	25.4				
Max Q Clear Time (g_c+I1), s	10.7	2.0	20.0	9.3	3.6	2.0	6.6	12.1				
Green Ext Time (p_c), s	0.1	4.9	0.2	0.6	0.0	13.2	0.1	1.0				

Intersection Summary

HCM 6th Ctrl Delay	18.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
13: 5th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	245	42	65	125	7	60	240	101	2	152	35
Future Volume (vph)	53	245	42	65	125	7	60	240	101	2	152	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-3%			0%	
Storage Length (ft)	150		0	175		0	225		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1339			1162			552			965	
Travel Time (s)		26.1			22.6			12.5			21.9	
Confl. Peds. (#/hr)									3	3		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0		11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0		21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%		16.9%	29.0%		16.9%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

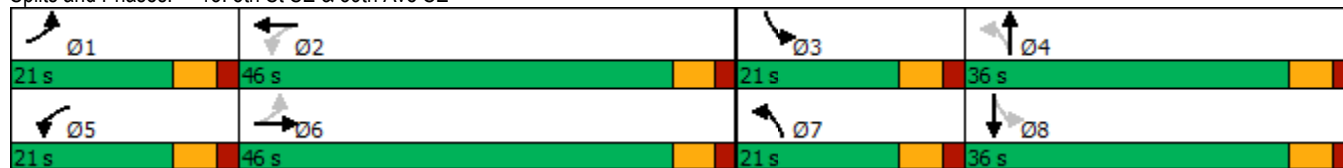
Cycle Length: 124

Actuated Cycle Length: 58.8

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Splits and Phases: 13: 5th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 13: 5th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	245	42	65	125	7	60	240	101	2	152	35
Future Volume (veh/h)	53	245	42	65	125	7	60	240	101	2	152	35
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1826	1826	1826	2003	2003	2003	1885	1885	1885
Adj Flow Rate, veh/h	57	263	45	70	134	8	65	258	109	2	163	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	5	5	5	1	1	1	1	1	1
Cap, veh/h	450	596	101	375	682	40	393	352	149	237	307	71
Arrive On Green	0.05	0.20	0.20	0.06	0.20	0.20	0.06	0.26	0.26	0.00	0.21	0.21
Sat Flow, veh/h	1767	3017	509	1739	3328	197	1908	1335	564	1795	1477	344
Grp Volume(v), veh/h	57	152	156	70	69	73	65	0	367	2	0	201
Grp Sat Flow(s),veh/h/ln	1767	1763	1764	1739	1735	1790	1908	0	1899	1795	0	1821
Q Serve(g_s), s	1.3	3.8	3.9	1.6	1.7	1.7	1.3	0.0	8.9	0.0	0.0	5.0
Cycle Q Clear(g_c), s	1.3	3.8	3.9	1.6	1.7	1.7	1.3	0.0	8.9	0.0	0.0	5.0
Prop In Lane	1.00		0.29	1.00		0.11	1.00		0.30	1.00		0.19
Lane Grp Cap(c), veh/h	450	348	348	375	355	367	393	0	501	237	0	378
V/C Ratio(X)	0.13	0.44	0.45	0.19	0.20	0.20	0.17	0.00	0.73	0.01	0.00	0.53
Avail Cap(c_a), veh/h	877	1392	1393	782	1370	1414	845	0	1125	764	0	1079
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(l)	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	14.7	17.8	17.9	14.6	16.7	16.7	14.4	0.0	17.0	16.2	0.0	17.9
Incr Delay (d2), s/veh	0.1	0.9	0.9	0.2	0.3	0.3	0.2	0.0	2.1	0.0	0.0	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(50%),veh/ln	0.4	1.4	1.5	0.6	0.6	0.6	0.5	0.0	3.7	0.0	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.8	18.7	18.8	14.9	16.9	16.9	14.5	0.0	19.1	16.2	0.0	19.0
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		365			212			432				203
Approach Delay, s/veh		18.1			16.3			18.4				19.0
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	16.4	6.1	19.4	9.1	16.0	9.0	16.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	3.3	3.7	2.0	10.9	3.6	5.9	3.3	7.0				
Green Ext Time (p_c), s	0.1	0.8	0.0	2.2	0.1	1.8	0.1	1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			18.0									
HCM 6th LOS			B									



Lanes, Volumes, Timings  
 14: S Meridian (SR161) & 43rd Ave SE

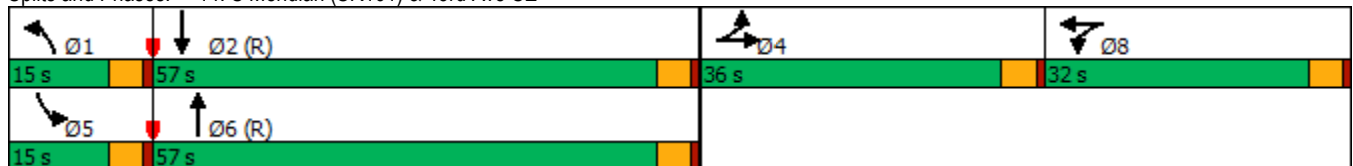
01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	60	5	108	46	71	14	1716	141	72	776	12
Future Volume (vph)	46	60	5	108	46	71	14	1716	141	72	776	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		-4%			6%			0%			0%	
Storage Length (ft)	150		0	275		0	250		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		332			544			617			1348	
Travel Time (s)		9.1			10.6			12.0			26.3	
Confl. Peds. (#/hr)			3	3					3			2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	3%	3%	3%	11%	11%	11%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases												
Detector Phase	4	4		8	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	33.6	33.6		30.6	30.6		10.6	32.6		10.6	28.6	
Total Split (s)	36.0	36.0		32.0	32.0		15.0	57.0		15.0	57.0	
Total Split (%)	25.7%	25.7%		22.9%	22.9%		10.7%	40.7%		10.7%	40.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 14: S Meridian (SR161) & 43rd Ave SE



HCM 6th Signalized Intersection Summary  
 14: S Meridian (SR161) & 43rd Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	60	5	108	46	71	14	1716	141	72	776	12
Future Volume (veh/h)	46	60	5	108	46	71	14	1716	141	72	776	12
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		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	1892	1892	1892	1529	1529	1529	1758	1758	1758	1646	1646	1646
Adj Flow Rate, veh/h	46	60	5	108	46	71	14	1716	141	72	776	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	5	5	5	3	3	3	11	11	11
Cap, veh/h	107	102	8	156	58	89	30	2022	164	87	2157	33
Arrive On Green	0.06	0.06	0.06	0.11	0.11	0.11	0.02	0.65	0.65	0.11	1.00	1.00
Sat Flow, veh/h	1802	1720	143	1456	539	832	1674	3127	254	1567	3151	49
Grp Volume(v), veh/h	46	0	65	108	0	117	14	907	950	72	385	403
Grp Sat Flow(s),veh/h/ln	1802	0	1864	1456	0	1371	1674	1670	1711	1567	1563	1637
Q Serve(g_s), s	3.4	0.0	4.8	10.0	0.0	11.7	1.2	58.8	61.7	6.3	0.0	0.0
Cycle Q Clear(g_c), s	3.4	0.0	4.8	10.0	0.0	11.7	1.2	58.8	61.7	6.3	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.61	1.00		0.15	1.00		0.03
Lane Grp Cap(c), veh/h	107	0	110	156	0	147	30	1080	1107	87	1070	1120
V/C Ratio(X)	0.43	0.00	0.59	0.69	0.00	0.80	0.46	0.84	0.86	0.82	0.36	0.36
Avail Cap(c_a), veh/h	404	0	418	285	0	268	124	1080	1107	116	1070	1120
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	63.6	0.0	64.2	60.3	0.0	61.0	68.1	19.1	19.6	61.5	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	3.9	4.4	0.0	7.8	7.4	7.9	8.7	26.1	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(50%),veh/ln	1.7	0.0	2.4	3.9	0.0	4.4	0.6	23.5	25.4	3.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.8	0.0	68.1	64.7	0.0	68.8	75.5	27.0	28.3	87.7	0.8	0.8
LnGrp LOS	E	A	E	E	A	E	E	C	C	F	A	A
Approach Vol, veh/h		111			225			1871			860	
Approach Delay, s/veh		67.2			66.8			28.0			8.1	
Approach LOS		E			E			C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	100.4		12.9	12.4	95.1		19.6				
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6				
Max Green Setting (Gmax), s	10.4	52.4		31.4	10.4	52.4		27.4				
Max Q Clear Time (g_c+I1), s	3.2	2.0		6.8	8.3	63.7		13.7				
Green Ext Time (p_c), s	0.0	5.1		0.4	0.0	0.0		0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				26.7								
HCM 6th LOS				C								

2032 With Project PM Peak Hour

Lanes, Volumes, Timings  
1: 7th St SE & College Way

01/23/2022



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	44	402	14	44	491
Future Volume (vph)	14	44	402	14	44	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-4%			0%
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Link Speed (mph)	25		25			25
Link Distance (ft)	771		286			501
Travel Time (s)	21.0		7.8			13.7
Confl. Peds. (#/hr)				7	7	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	14	44	402	14	44	491
Future Vol, veh/h	14	44	402	14	44	491
Conflicting Peds, #/hr	0	0	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-4	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	16	49	452	16	49	552

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1117	467	0	0	475	0
Stage 1	467	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	231	600	-	-	1087	-
Stage 1	635	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	219	596	-	-	1080	-
Mov Cap-2 Maneuver	352	-	-	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	499	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	511	1080	-
HCM Lane V/C Ratio	-	-	0.128	0.046	-
HCM Control Delay (s)	-	-	13.1	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-



Lanes, Volumes, Timings  
2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↗↗	↖↖	↗	↖↖	↗
Traffic Volume (vph)	294	1408	1350	448	655	309
Future Volume (vph)	294	1408	1350	448	655	309
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Storage Length (ft)	250			0	0	175
Storage Lanes	2			1	2	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		35	
Link Distance (ft)		370	339		787	
Travel Time (s)		7.2	6.6		15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	3%	3%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Detector Phase	5		6	6	4	4
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	8.0	8.0
Minimum Split (s)	12.6		20.6	20.6	12.6	12.6
Total Split (s)	21.0		79.0	79.0	50.0	50.0
Total Split (%)	14.0%		52.7%	52.7%	33.3%	33.3%
Yellow Time (s)	3.6		3.6	3.6	3.6	3.6
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)	4.6		4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	Min		C-Min	C-Min	None	None

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 44 (29%), Referenced to phase 6:WBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 ! Phase conflict between lane groups.

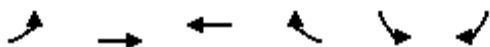
Splits and Phases: 2: 31st Ave SW/S Meridian (SR161)



# HCM Signalized Intersection Capacity Analysis

## 2: 31st Ave SW/S Meridian (SR161)

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↑↑	↑↑	↖	↖↗	↖
Traffic Volume (vph)	294	1408	1350	448	655	309
Future Volume (vph)	294	1408	1350	448	655	309
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Total Lost time (s)	4.6	4.0	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3187	3286	3387	1515	3285	1515
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3187	3286	3387	1515	3285	1515
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	294	1408	1350	448	655	309
RTOR Reduction (vph)	0	0	0	148	0	168
Lane Group Flow (vph)	294	1408	1350	300	655	141
Heavy Vehicles (%)	2%	2%	3%	3%	1%	1%
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	Free!	6		4!	
Permitted Phases				6		4
Actuated Green, G (s)	18.3	150.0	82.9	82.9	35.0	35.0
Effective Green, g (s)	18.3	150.0	82.9	82.9	35.0	35.0
Actuated g/C Ratio	0.12	1.00	0.55	0.55	0.23	0.23
Clearance Time (s)	4.6		4.6	4.6	4.6	4.6
Vehicle Extension (s)	2.5		2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	388	3286	1871	837	766	353
v/s Ratio Prot	c0.09	0.43	c0.40		c0.20	
v/s Ratio Perm				0.20		0.09
v/c Ratio	0.76	0.43	0.72	0.36	0.86	0.40
Uniform Delay, d1	63.7	0.0	25.0	18.7	55.1	48.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.9	0.4	2.4	1.2	9.1	0.5
Delay (s)	71.6	0.4	27.4	19.9	64.2	49.2
Level of Service	E	A	C	B	E	D
Approach Delay (s)		12.7	25.5		59.4	
Approach LOS		B	C		E	

### Intersection Summary

HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.8
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Lanes, Volumes, Timings  
3: S Meridian (SR161) & 37th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	152	113	199	183	437	93	1170	68	420	1467	68
Future Volume (vph)	71	152	113	199	183	437	93	1170	68	420	1467	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	250		0	225		0	350		0
Storage Lanes	1		1	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		242			1349			645			449	
Travel Time (s)		6.6			26.3			12.6			8.7	
Confl. Peds. (#/hr)						2			2			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			Free						
Detector Phase	3	8	8	7	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	4.0	6.0	6.0	6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	8.6	10.6	10.6	10.6	35.6		10.6	28.6		10.6	31.6	
Total Split (s)	15.0	25.0	25.0	27.0	37.0		23.0	72.0		26.0	75.0	
Total Split (%)	10.0%	16.7%	16.7%	18.0%	24.7%		15.3%	48.0%		17.3%	50.0%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		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-Min		None	C-Min	

Intersection Summary

Area Type: Other

Cycle Length: 150

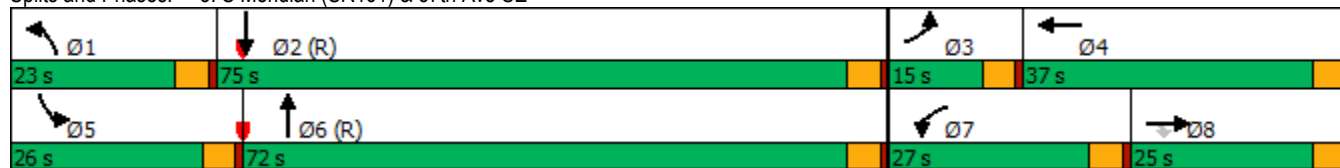
Actuated Cycle Length: 150

Offset: 28 (19%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 3: S Meridian (SR161) & 37th Ave SE



HCM 6th Signalized Intersection Summary  
 3: S Meridian (SR161) & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	152	113	199	183	437	93	1170	68	420	1467	68
Future Volume (veh/h)	71	152	113	199	183	437	93	1170	68	420	1467	68
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1786	1786	1786	1786	1744	1744	1744	1772	1772	1772
Adj Flow Rate, veh/h	71	152	113	199	183	0	93	1170	68	420	1467	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	4	4	4	2	2	2
Cap, veh/h	88	311	139	221	302		112	1641	95	460	2848	
Arrive On Green	0.05	0.09	0.09	0.13	0.17	0.00	0.13	1.00	1.00	0.14	0.59	0.00
Sat Flow, veh/h	1701	3393	1514	1701	1786	1514	1661	3182	185	3274	4997	0
Grp Volume(v), veh/h	71	152	113	199	183	0	93	609	629	420	1467	0
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1701	1786	1514	1661	1657	1710	1637	1612	0
Q Serve(g_s), s	6.2	6.4	11.0	17.3	14.2	0.0	8.2	0.0	0.0	19.0	26.8	0.0
Cycle Q Clear(g_c), s	6.2	6.4	11.0	17.3	14.2	0.0	8.2	0.0	0.0	19.0	26.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	88	311	139	221	302		112	854	882	460	2848	
V/C Ratio(X)	0.80	0.49	0.82	0.90	0.61		0.83	0.71	0.71	0.91	0.52	
Avail Cap(c_a), veh/h	118	461	206	254	386		204	854	882	467	2848	
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(l)	1.00	1.00	1.00	0.71	0.71	0.00	0.49	0.49	0.49	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.3	64.8	66.9	64.3	57.7	0.0	64.1	0.0	0.0	63.6	18.2	0.0
Incr Delay (d2), s/veh	26.3	1.2	14.3	23.2	1.5	0.0	7.7	2.5	2.4	22.2	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	2.9	4.8	8.9	6.6	0.0	3.5	0.6	0.6	9.3	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.7	66.0	81.2	87.5	59.2	0.0	71.8	2.5	2.4	85.8	18.9	0.0
LnGrp LOS	F	E	F	F	E		E	A	A	F	B	
Approach Vol, veh/h		336			382	A		1331			1887	A
Approach Delay, s/veh		77.6			73.9			7.3			33.8	
Approach LOS		E			E			A			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.7	92.9	12.4	30.0	25.7	82.0	24.0	18.3				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	18.4	70.4	10.4	32.4	21.4	67.4	22.4	20.4				
Max Q Clear Time (g_c+I1), s	10.2	28.8	8.2	16.2	21.0	2.0	19.3	13.0				
Green Ext Time (p_c), s	0.1	17.7	0.0	0.9	0.1	14.6	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
4: 5th St SE & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	402	94	39	556	208	123	293	24	280	466	79
Future Volume (vph)	98	402	94	39	556	208	123	293	24	280	466	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-3%			0%			-5%	
Storage Length (ft)	200		0	225		150	200		0	250		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			25	
Link Distance (ft)		1349			1181			965			418	
Travel Time (s)		26.3			23.0			21.9			11.4	
Confl. Peds. (#/hr)	3		1	1		3	1		3	3		1
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
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4			8		
Detector Phase	1	6		5	2	2	7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0	26.0	11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0	46.0	21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%	37.1%	16.9%	29.0%		16.9%	29.0%	
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)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min	Min	None	None		None	None	

Intersection Summary

Area Type: Other

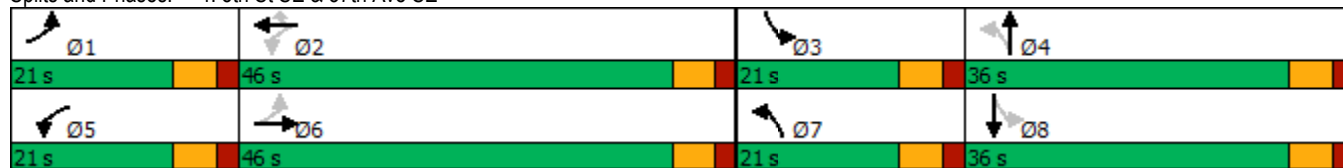
Cycle Length: 124

Actuated Cycle Length: 96.6

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: 5th St SE & 37th Ave SE





HCM 6th Signalized Intersection Summary  
4: 5th St SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	402	94	39	556	208	123	293	24	280	466	79
Future Volume (veh/h)	98	402	94	39	556	208	123	293	24	280	466	79
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		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	2003	2003	2003	1885	1885	1885	2082	2082	2082
Adj Flow Rate, veh/h	103	423	99	41	585	0	129	308	0	295	491	83
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	1	1	1	1	1	1	1	1	1
Cap, veh/h	278	722	167	279	850		277	498		505	563	95
Arrive On Green	0.06	0.25	0.25	0.04	0.22	0.00	0.07	0.26	0.00	0.14	0.32	0.32
Sat Flow, veh/h	1810	2905	674	1908	3806	1697	1795	1885	0	1983	1735	293
Grp Volume(v), veh/h	103	261	261	41	585	0	129	308	0	295	0	574
Grp Sat Flow(s),veh/h/ln	1810	1805	1774	1908	1903	1697	1795	1885	0	1983	0	2028
Q Serve(g_s), s	3.3	9.7	9.9	1.2	10.8	0.0	3.9	11.0	0.0	7.9	0.0	20.4
Cycle Q Clear(g_c), s	3.3	9.7	9.9	1.2	10.8	0.0	3.9	11.0	0.0	7.9	0.0	20.4
Prop In Lane	1.00		0.38	1.00		1.00	1.00		0.00	1.00		0.14
Lane Grp Cap(c), veh/h	278	448	441	279	850		277	498		505	0	658
V/C Ratio(X)	0.37	0.58	0.59	0.15	0.69		0.47	0.62		0.58	0.00	0.87
Avail Cap(c_a), veh/h	519	946	930	581	1995		496	741		627	0	797
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(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	25.2	25.3	21.7	27.2	0.0	19.9	24.7	0.0	16.9	0.0	24.3
Incr Delay (d2), s/veh	0.8	1.2	1.3	0.2	1.0	0.0	1.2	1.3	0.0	1.1	0.0	9.1
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(50%),veh/ln	1.4	4.1	4.1	0.5	4.7	0.0	1.6	4.9	0.0	3.6	0.0	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	26.4	26.5	22.0	28.2	0.0	21.1	26.0	0.0	18.0	0.0	33.4
LnGrp LOS	C	C	C	C	C		C	C		B	A	C
Approach Vol, veh/h		625			626	A		437	A		869	
Approach Delay, s/veh		25.8			27.8			24.5			28.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	23.0	16.3	26.1	8.9	25.0	11.7	30.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	5.3	12.8	9.9	13.0	3.2	11.9	5.9	22.4				
Green Ext Time (p_c), s	0.1	4.1	0.4	1.6	0.0	3.2	0.2	2.4				

Intersection Summary

HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: 39th Ave SE & 37th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	705	7	325	751	6	1	8	299	5	11	22
Future Volume (vph)	9	705	7	325	751	6	1	8	299	5	11	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		6%			-5%			3%			0%	
Storage Length (ft)	225		0	200		0	200		0	0		150
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35				25
Link Distance (ft)		1181			510			1162				264
Travel Time (s)		23.0			9.9			22.6				7.2
Confl. Peds. (#/hr)	1		1	1		1						
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
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt		NA
Protected Phases	7	4		3	8		5	2	3	1		6
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	3	1		6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	5.0	5.0		10.0
Minimum Split (s)	12.0	30.0		12.0	30.0		11.0	16.0	12.0	11.0		34.0
Total Split (s)	23.0	42.0		23.0	42.0		22.0	22.0	23.0	22.0		22.0
Total Split (%)	21.1%	38.5%		21.1%	38.5%		20.2%	20.2%	21.1%	20.2%		20.2%
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)	3.0	3.0		3.0	3.0		2.0	2.0	3.0	2.0		2.0
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)	7.0	7.0		7.0	7.0		6.0	6.0	7.0	6.0		6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	Min		None	Min		None	None	None	None		None

Intersection Summary

Area Type: Other

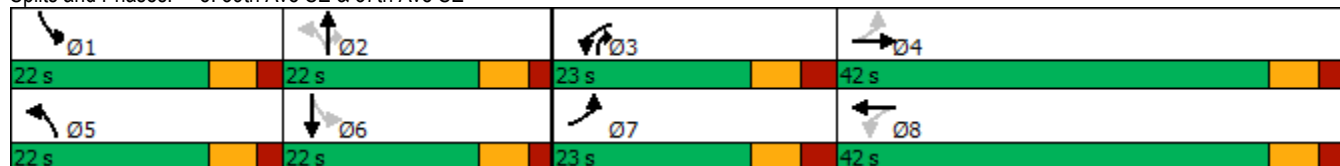
Cycle Length: 109

Actuated Cycle Length: 62.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: 39th Ave SE & 37th Ave SE



HCM 6th Signalized Intersection Summary  
5: 39th Ave SE & 37th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	705	7	325	751	6	1	8	299	5	11	22
Future Volume (veh/h)	9	705	7	325	751	6	1	8	299	5	11	22
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	1673	1673	1673	2067	2067	2067	1817	1817	1817	1900	1900	1900
Adj Flow Rate, veh/h	10	750	7	346	799	6	1	9	318	5	12	23
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	2	2	2	2	2	2	0	0	0
Cap, veh/h	302	1045	10	462	1807	14	343	360	522	311	118	227
Arrive On Green	0.01	0.32	0.32	0.14	0.45	0.45	0.00	0.20	0.20	0.01	0.20	0.20
Sat Flow, veh/h	1593	3227	30	1968	3994	30	1731	1817	1540	1810	583	1117
Grp Volume(v), veh/h	10	369	388	346	393	412	1	9	318	5	0	35
Grp Sat Flow(s),veh/h/ln	1593	1589	1668	1968	1963	2061	1731	1817	1540	1810	0	1699
Q Serve(g_s), s	0.3	16.1	16.1	8.6	10.8	10.8	0.0	0.3	13.5	0.2	0.0	1.3
Cycle Q Clear(g_c), s	0.3	16.1	16.1	8.6	10.8	10.8	0.0	0.3	13.5	0.2	0.0	1.3
Prop In Lane	1.00		0.02	1.00		0.01	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	302	515	540	462	888	932	343	360	522	311	0	346
V/C Ratio(X)	0.03	0.72	0.72	0.75	0.44	0.44	0.00	0.02	0.61	0.02	0.00	0.10
Avail Cap(c_a), veh/h	606	707	742	585	888	932	693	370	530	667	0	346
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	23.4	23.4	15.9	14.7	14.8	25.2	25.4	21.7	24.9	0.0	25.5
Incr Delay (d2), s/veh	0.0	4.2	4.0	4.0	0.7	0.7	0.0	0.0	2.0	0.0	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(50%),veh/ln	0.1	6.2	6.5	3.9	4.5	4.7	0.0	0.1	4.8	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.5	27.6	27.4	20.0	15.5	15.5	25.2	25.4	23.6	25.0	0.0	25.6
LnGrp LOS	B	C	C	B	B	B	C	C	C	C	A	C
Approach Vol, veh/h		767			1151			328				40
Approach Delay, s/veh		27.4			16.8			23.7				25.5
Approach LOS		C			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	21.6	18.1	32.5	6.1	22.0	8.0	42.6				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	16.0	16.0	16.0	35.0	16.0	16.0	16.0	35.0				
Max Q Clear Time (g_c+I1), s	2.2	15.5	10.6	18.1	2.0	3.3	2.3	12.8				
Green Ext Time (p_c), s	0.0	0.1	0.5	7.4	0.0	0.1	0.0	9.2				

Intersection Summary

HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings  
6: 10th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	815	160	163	847	5	99	7	79	16	32	134
Future Volume (vph)	39	815	160	163	847	5	99	7	79	16	32	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-5%			-6%			-4%	
Storage Length (ft)	150		0	200		0	100		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30				25
Link Distance (ft)		510			1994			256				231
Travel Time (s)		9.9			38.8			5.8				6.3
Confl. Peds. (#/hr)	1		2	2		1						
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
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3		8
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3		8
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		5.0	5.0		5.0		5.0
Minimum Split (s)	11.3	30.3		11.3	30.3		10.5	25.5		10.5		25.5
Total Split (s)	21.3	51.3		21.3	51.3		21.3	21.3		21.3		21.3
Total Split (%)	18.5%	44.5%		18.5%	44.5%		18.5%	18.5%		18.5%		18.5%
Yellow Time (s)	4.3	4.3		4.3	4.3		3.5	3.5		3.5		3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.3	6.3		6.3	6.3		5.5	5.5		5.5		5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	Min		None	Min		None	None		None		None

Intersection Summary

Area Type: Other

Cycle Length: 115.2

Actuated Cycle Length: 90.1

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: 10th St SE & 39th Ave SE

Ø1	Ø2	Ø3	Ø4
21.3 s	51.3 s	21.3 s	21.3 s
Ø5	Ø6	Ø7	Ø8
21.3 s	51.3 s	21.3 s	21.3 s

HCM 6th Signalized Intersection Summary  
6: 10th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	815	160	163	847	5	99	7	79	16	32	134
Future Volume (veh/h)	39	815	160	163	847	5	99	7	79	16	32	134
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	2067	2067	2067	2061	2061	2061	2057	2057	2057
Adj Flow Rate, veh/h	43	906	178	181	941	6	110	8	88	18	36	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, %	1	1	1	2	2	2	5	5	5	0	0	0
Cap, veh/h	335	1242	244	342	1826	12	269	26	291	322	46	191
Arrive On Green	0.04	0.42	0.42	0.08	0.46	0.46	0.07	0.18	0.18	0.02	0.13	0.13
Sat Flow, veh/h	1795	2983	586	1968	4000	26	1963	147	1622	1959	350	1447
Grp Volume(v), veh/h	43	544	540	181	462	485	110	0	96	18	0	185
Grp Sat Flow(s),veh/h/ln	1795	1791	1778	1968	1963	2062	1963	0	1769	1959	0	1797
Q Serve(g_s), s	1.0	19.7	19.7	4.0	13.0	13.0	3.7	0.0	3.7	0.6	0.0	7.7
Cycle Q Clear(g_c), s	1.0	19.7	19.7	4.0	13.0	13.0	3.7	0.0	3.7	0.6	0.0	7.7
Prop In Lane	1.00		0.33	1.00		0.01	1.00		0.92	1.00		0.81
Lane Grp Cap(c), veh/h	335	746	740	342	896	941	269	0	317	322	0	237
V/C Ratio(X)	0.13	0.73	0.73	0.53	0.52	0.52	0.41	0.00	0.30	0.06	0.00	0.78
Avail Cap(c_a), veh/h	613	1040	1032	567	1140	1197	535	0	361	681	0	366
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(l)	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	12.5	19.0	19.0	14.5	15.0	15.0	26.6	0.0	27.6	28.1	0.0	32.6
Incr Delay (d2), s/veh	0.2	2.2	2.2	1.3	0.7	0.6	1.0	0.0	0.5	0.1	0.0	5.8
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(50%),veh/ln	0.4	7.8	7.8	1.7	5.4	5.6	1.7	0.0	1.5	0.3	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.6	21.1	21.2	15.8	15.6	15.6	27.6	0.0	28.1	28.2	0.0	38.3
LnGrp LOS	B	C	C	B	B	B	C	A	C	C	A	D
Approach Vol, veh/h		1127			1128			206				203
Approach Delay, s/veh		20.8			15.6			27.8				37.4
Approach LOS		C			B			C				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	41.7	7.1	19.4	12.4	38.6	10.8	15.7				
Change Period (Y+Rc), s	6.3	6.3	5.5	5.5	6.3	6.3	5.5	5.5				
Max Green Setting (Gmax), s	15.0	45.0	15.8	15.8	15.0	45.0	15.8	15.8				
Max Q Clear Time (g_c+I1), s	3.0	15.0	2.6	5.7	6.0	21.7	5.7	9.7				
Green Ext Time (p_c), s	0.0	9.8	0.0	0.3	0.3	10.5	0.2	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			20.4									
HCM 6th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



Lanes, Volumes, Timings  
7: 39th Ave SE & College Way

01/23/2022



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	147	750	777	88	88	148
Future Volume (vph)	147	750	777	88	88	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		0%	-5%		0%	
Storage Length (ft)	175			0	0	0
Storage Lanes	1			0	1	1
Taper Length (ft)	25				25	
Right Turn on Red				Yes		Yes
Link Speed (mph)		35	35		25	
Link Distance (ft)		1994	702		209	
Travel Time (s)		38.8	13.7		5.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	5%	5%
Shared Lane Traffic (%)						
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2					4
Detector Phase	5	2	6		4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0		5.0	5.0
Minimum Split (s)	11.3	16.3	35.3		34.5	34.5
Total Split (s)	31.3	46.3	46.3		50.5	50.5
Total Split (%)	24.4%	36.1%	36.1%		39.4%	39.4%
Yellow Time (s)	4.0	4.0	4.0		3.5	3.5
All-Red Time (s)	2.3	2.3	2.3		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3		5.5	5.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	None

Intersection Summary

Area Type: Other

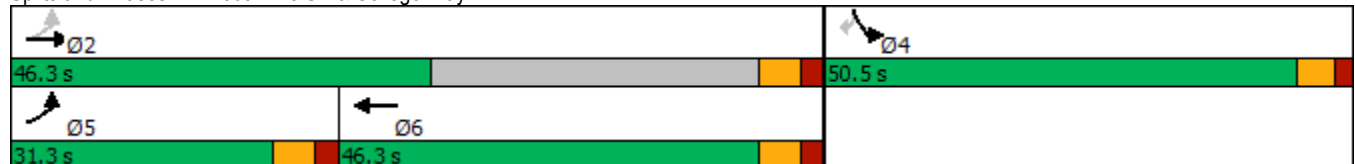
Cycle Length: 128.1

Actuated Cycle Length: 65.8

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: 39th Ave SE & College Way



HCM 6th Signalized Intersection Summary  
7: 39th Ave SE & College Way

01/23/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	147	750	777	88	88	148
Future Volume (veh/h)	147	750	777	88	88	148
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1885	1885	2082	2082	1826	1826
Adj Flow Rate, veh/h	162	824	854	97	97	163
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	5	5
Cap, veh/h	420	2140	1345	153	276	246
Arrive On Green	0.09	0.60	0.38	0.38	0.16	0.16
Sat Flow, veh/h	1795	3676	3684	407	1739	1547
Grp Volume(v), veh/h	162	824	472	479	97	163
Grp Sat Flow(s),veh/h/ln	1795	1791	1978	2008	1739	1547
Q Serve(g_s), s	2.4	5.8	9.5	9.5	2.4	4.8
Cycle Q Clear(g_c), s	2.4	5.8	9.5	9.5	2.4	4.8
Prop In Lane	1.00			0.20	1.00	1.00
Lane Grp Cap(c), veh/h	420	2140	743	755	276	246
V/C Ratio(X)	0.39	0.39	0.63	0.63	0.35	0.66
Avail Cap(c_a), veh/h	1183	2959	1634	1659	1616	1438
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	5.1	12.4	12.4	18.1	19.1
Incr Delay (d2), s/veh	0.6	0.1	0.9	0.9	0.9	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.3	3.5	3.5	1.0	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.9	5.2	13.3	13.3	19.1	22.8
LnGrp LOS	A	A	B	B	B	C
Approach Vol, veh/h		986	951		260	
Approach Delay, s/veh		5.8	13.3		21.4	
Approach LOS		A	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		35.2		13.2	10.7	24.5
Change Period (Y+Rc), s		* 6.3		5.5	* 6.3	* 6.3
Max Green Setting (Gmax), s		* 40		45.0	* 25	* 40
Max Q Clear Time (g_c+I1), s		7.8		6.8	4.4	11.5
Green Ext Time (p_c), s		6.4		1.1	0.4	6.7
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			10.9			
HCM 6th LOS			B			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Lanes, Volumes, Timings  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	581	54	12	651	31	41	7	5	51	32	115
Future Volume (vph)	130	581	54	12	651	31	41	7	5	51	32	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-4%			0%			6%	
Storage Length (ft)	125		0	125		0	50		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		384			416			287			528	
Travel Time (s)		7.5			8.1			7.8			14.4	
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

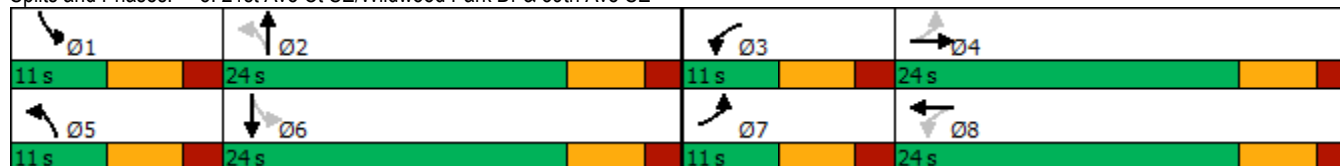
Cycle Length: 70

Actuated Cycle Length: 54.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 8: 21st Ave Ct SE/Wildwood Park Dr & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	581	54	12	651	31	41	7	5	51	32	115
Future Volume (veh/h)	130	581	54	12	651	31	41	7	5	51	32	115
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	1885	1885	1885	2042	2042	2042	1900	1900	1900	1658	1658	1658
Adj Flow Rate, veh/h	140	625	58	13	700	33	44	8	5	55	34	124
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	2	2	2
Cap, veh/h	337	1051	97	294	950	45	318	194	121	426	58	210
Arrive On Green	0.08	0.32	0.32	0.02	0.25	0.25	0.04	0.18	0.18	0.05	0.18	0.18
Sat Flow, veh/h	1795	3313	307	1945	3772	178	1810	1093	683	1579	312	1139
Grp Volume(v), veh/h	140	337	346	13	360	373	44	0	13	55	0	158
Grp Sat Flow(s),veh/h/ln	1795	1791	1829	1945	1940	2010	1810	0	1776	1579	0	1451
Q Serve(g_s), s	3.1	8.7	8.7	0.3	9.4	9.4	1.1	0.0	0.3	1.5	0.0	5.5
Cycle Q Clear(g_c), s	3.1	8.7	8.7	0.3	9.4	9.4	1.1	0.0	0.3	1.5	0.0	5.5
Prop In Lane	1.00		0.17	1.00		0.09	1.00		0.38	1.00		0.78
Lane Grp Cap(c), veh/h	337	568	580	294	489	506	318	0	315	426	0	268
V/C Ratio(X)	0.42	0.59	0.60	0.04	0.74	0.74	0.14	0.00	0.04	0.13	0.00	0.59
Avail Cap(c_a), veh/h	354	587	600	439	636	659	402	0	582	488	0	476
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(l)	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	14.2	15.8	15.8	15.0	18.9	18.9	17.3	0.0	18.7	16.9	0.0	20.5
Incr Delay (d2), s/veh	0.8	1.5	1.5	0.1	3.2	3.1	0.2	0.0	0.1	0.1	0.0	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(50%),veh/ln	1.1	3.3	3.4	0.1	4.1	4.2	0.4	0.0	0.1	0.5	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	17.3	17.3	15.1	22.1	22.0	17.5	0.0	18.8	17.0	0.0	22.5
LnGrp LOS	B	B	B	B	C	C	B	A	B	B	A	C
Approach Vol, veh/h		823			746			57				213
Approach Delay, s/veh		16.9			21.9			17.8				21.1
Approach LOS		B			C			B				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	15.8	6.9	23.4	8.4	16.1	10.5	19.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	3.5	2.3	2.3	10.7	3.1	7.5	5.1	11.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.4	0.0	0.6	0.0	2.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			19.5									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
9: 25th St SE & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	595	31	29	641	1	19	0	15	8	0	27
Future Volume (vph)	13	595	31	29	641	1	19	0	15	8	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	75		0	100		0	25		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			75			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			25				25
Link Distance (ft)		365			225			248				136
Travel Time (s)		7.1			4.4			6.8				3.7
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1		6
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1		6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0		10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0		24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0		24.0
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%		34.3%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0		2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0		6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Recall Mode	None	Min		None	Min		None	None		None		None

Intersection Summary

Area Type: Other

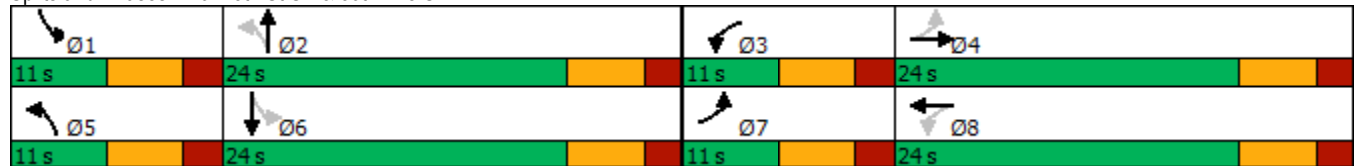
Cycle Length: 70

Actuated Cycle Length: 34.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 9: 25th St SE & 39th Ave SE





HCM 6th Signalized Intersection Summary  
 9: 25th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	595	31	29	641	1	19	0	15	8	0	27
Future Volume (veh/h)	13	595	31	29	641	1	19	0	15	8	0	27
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	640	33	31	689	1	20	0	16	9	0	29
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	295	949	49	315	1071	2	345	0	202	347	0	181
Arrive On Green	0.02	0.27	0.27	0.04	0.29	0.29	0.02	0.00	0.13	0.01	0.00	0.11
Sat Flow, veh/h	1795	3465	179	1795	3670	5	1810	0	1610	1810	0	1610
Grp Volume(v), veh/h	14	331	342	31	336	354	20	0	16	9	0	29
Grp Sat Flow(s),veh/h/ln	1795	1791	1853	1795	1791	1884	1810	0	1610	1810	0	1610
Q Serve(g_s), s	0.2	7.1	7.1	0.5	7.1	7.1	0.4	0.0	0.4	0.2	0.0	0.7
Cycle Q Clear(g_c), s	0.2	7.1	7.1	0.5	7.1	7.1	0.4	0.0	0.4	0.2	0.0	0.7
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	295	490	507	315	523	550	345	0	202	347	0	181
V/C Ratio(X)	0.05	0.67	0.68	0.10	0.64	0.64	0.06	0.00	0.08	0.03	0.00	0.16
Avail Cap(c_a), veh/h	470	743	769	457	743	782	509	0	668	534	0	668
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(l)	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	11.4	14.0	14.0	11.1	13.4	13.4	16.3	0.0	16.8	16.7	0.0	17.4
Incr Delay (d2), s/veh	0.1	1.6	1.6	0.1	1.3	1.3	0.1	0.0	0.2	0.0	0.0	0.4
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(50%),veh/ln	0.1	2.5	2.6	0.2	2.4	2.6	0.2	0.0	0.1	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	15.7	15.6	11.3	14.7	14.7	16.4	0.0	16.9	16.7	0.0	17.8
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		687			721			36				38
Approach Delay, s/veh		15.5			14.5			16.6				17.6
Approach LOS		B			B			B				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	11.4	7.6	17.9	7.1	10.9	6.8	18.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.2	2.4	2.5	9.1	2.4	2.7	2.2	9.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.7	0.0	0.1	0.0	2.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			15.1									
HCM 6th LOS			B									

Lanes, Volumes, Timings  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Volume (vph)	244	0	449	1	2	0	363	433	4	0	576	368
Future Volume (vph)	244	0	449	1	2	0	363	433	4	0	576	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			8%			-4%			6%	
Storage Length (ft)	0		0	0		0	300		0	200		0
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		507			360			460			462	
Travel Time (s)		9.9			7.0			9.0			9.0	
Confl. Peds. (#/hr)			2	2					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		10.0	10.0		5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	24.0	24.0		16.3	28.3		11.3	28.3	28.3
Total Split (s)	36.0	36.0	36.0	36.0	36.0		26.3	46.3		21.3	46.3	46.3
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%		24.2%	42.6%		19.6%	42.6%	42.6%
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)	2.0	2.0	2.0	2.0	2.0		2.3	2.3		2.3	2.3	2.3
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)		6.0	6.0		6.0		6.3	6.3		6.3	6.3	6.3
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min

Intersection Summary

Area Type: Other

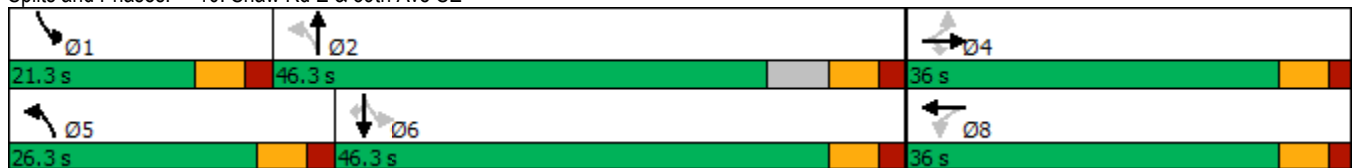
Cycle Length: 108.6

Actuated Cycle Length: 97.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Shaw Rd E & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 10: Shaw Rd E & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖		↖	↕	↗
Traffic Volume (veh/h)	244	0	449	1	2	0	363	433	4	0	576	368
Future Volume (veh/h)	244	0	449	1	2	0	363	433	4	0	576	368
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	1523	1523	1523	2027	2027	2027	1673	1673	1673
Adj Flow Rate, veh/h	252	0	463	1	2	0	374	446	4	0	594	379
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	1	1	1
Cap, veh/h	254	0	455	45	57	0	408	1204	11	384	625	528
Arrive On Green	0.28	0.00	0.28	0.28	0.28	0.00	0.17	0.60	0.60	0.00	0.37	0.37
Sat Flow, veh/h	656	0	1604	0	203	0	1931	2006	18	1593	1673	1414
Grp Volume(v), veh/h	252	0	463	3	0	0	374	0	450	0	594	379
Grp Sat Flow(s),veh/h/ln	656	0	1604	203	0	0	1931	0	2024	1593	1673	1414
Q Serve(g_s), s	0.0	0.0	30.0	0.0	0.0	0.0	15.3	0.0	12.1	0.0	36.5	24.3
Cycle Q Clear(g_c), s	30.0	0.0	30.0	30.0	0.0	0.0	15.3	0.0	12.1	0.0	36.5	24.3
Prop In Lane	1.00		1.00	0.33		0.00	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	254	0	455	103	0	0	408	0	1214	384	625	528
V/C Ratio(X)	0.99	0.00	1.02	0.03	0.00	0.00	0.92	0.00	0.37	0.00	0.95	0.72
Avail Cap(c_a), veh/h	254	0	455	103	0	0	451	0	1214	608	633	535
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	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	37.9	30.4	0.0	0.0	30.5	0.0	10.9	0.0	32.2	28.4
Incr Delay (d2), s/veh	54.0	0.0	46.6	0.1	0.0	0.0	22.1	0.0	0.3	0.0	24.3	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	17.3	0.1	0.0	0.0	11.8	0.0	5.1	0.0	18.3	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.8	0.0	84.4	30.5	0.0	0.0	52.7	0.0	11.1	0.0	56.5	33.3
LnGrp LOS	F	A	F	C	A	A	D	A	B	A	E	C
Approach Vol, veh/h		715			3			824				973
Approach Delay, s/veh		88.4			30.5			30.0				47.5
Approach LOS		F			C			C				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	69.7		36.0	24.0	45.8		36.0				
Change Period (Y+Rc), s	* 6.3	* 6.3		6.0	* 6.3	* 6.3		6.0				
Max Green Setting (Gmax), s	* 15	* 40		30.0	* 20	* 40		30.0				
Max Q Clear Time (g_c+I1), s	0.0	14.1		32.0	17.3	38.5		32.0				
Green Ext Time (p_c), s	0.0	4.1		0.0	0.3	1.0		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			53.4									
HCM 6th LOS			D									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Lanes, Volumes, Timings  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	58	49	35	44	20	55	536	31	14	1039	179
Future Volume (vph)	117	58	49	35	44	20	55	536	31	14	1039	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-9%			3%			-9%			6%	
Storage Length (ft)	50		0	50		0	100		175	75		100
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			Yes			Yes
Link Speed (mph)		25			25			35				35
Link Distance (ft)		481			429			444				403
Travel Time (s)		13.1			11.7			8.6				7.9
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 (%)	0%	1%	1%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	84.0	84.0	11.0	84.0	84.0
Total Split (%)	8.5%	18.5%		8.5%	18.5%		8.5%	64.6%	64.6%	8.5%	64.6%	64.6%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
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)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 122

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE



HCM 6th Signalized Intersection Summary  
 11: Shaw Rd E & 23rd Ave SE/Crystal Ridge Dr SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	58	49	35	44	20	55	536	31	14	1039	179
Future Volume (veh/h)	117	58	49	35	44	20	55	536	31	14	1039	179
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	2254	2239	2239	1847	1847	1847	2224	2224	2224	1673	1673	1673
Adj Flow Rate, veh/h	127	63	53	38	48	22	60	583	34	15	1129	195
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, %	0	1	1	0	0	0	2	2	2	1	1	1
Cap, veh/h	219	105	89	162	99	45	135	1473	1248	476	1076	912
Arrive On Green	0.04	0.09	0.09	0.03	0.08	0.08	0.04	0.66	0.66	0.02	0.64	0.64
Sat Flow, veh/h	2147	1124	945	1759	1199	549	2118	2224	1885	1593	1673	1418
Grp Volume(v), veh/h	127	0	116	38	0	70	60	583	34	15	1129	195
Grp Sat Flow(s),veh/h/ln	2147	0	2069	1759	0	1748	2118	2224	1885	1593	1673	1418
Q Serve(g_s), s	5.0	0.0	6.5	2.4	0.0	4.6	1.1	14.6	0.8	0.4	78.0	6.9
Cycle Q Clear(g_c), s	5.0	0.0	6.5	2.4	0.0	4.6	1.1	14.6	0.8	0.4	78.0	6.9
Prop In Lane	1.00		0.46	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	219	0	194	162	0	144	135	1473	1248	476	1076	912
V/C Ratio(X)	0.58	0.00	0.60	0.23	0.00	0.49	0.44	0.40	0.03	0.03	1.05	0.21
Avail Cap(c_a), veh/h	219	0	307	182	0	259	147	1473	1248	516	1076	912
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	52.8	49.0	0.0	53.2	31.5	9.4	7.0	7.7	21.7	9.0
Incr Delay (d2), s/veh	3.8	0.0	2.9	0.7	0.0	2.5	2.3	0.2	0.0	0.0	41.4	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(50%),veh/ln	1.1	0.0	3.6	1.1	0.0	2.2	1.2	6.6	0.3	0.1	39.3	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.7	0.0	55.7	49.7	0.0	55.7	33.8	9.6	7.1	7.8	63.1	9.1
LnGrp LOS	D	A	E	D	A	E	C	A	A	A	F	A
Approach Vol, veh/h		243			108			677			1339	
Approach Delay, s/veh		55.2			53.6			11.6			54.6	
Approach LOS		E			D			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	86.4	9.6	17.4	10.3	84.0	11.0	16.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	78.0	5.0	18.0	5.0	78.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.4	16.6	4.4	8.5	3.1	80.0	7.0	6.6				
Green Ext Time (p_c), s	0.0	4.4	0.0	0.4	0.0	0.0	0.0	0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			42.3									
HCM 6th LOS			D									



Lanes, Volumes, Timings  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

01/23/2022

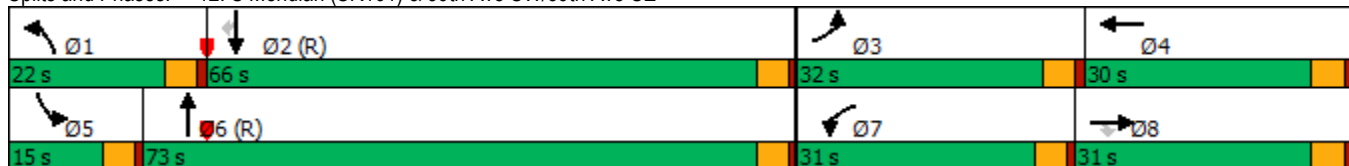


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	490	247	169	357	52	190	1110	81	45	1287	403
Future Volume (vph)	320	490	247	169	357	52	190	1110	81	45	1287	403
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			3%			0%	
Storage Length (ft)	350		0	225		0	200		0	210		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			No			Yes			Yes
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		571			1339			1348			645	
Travel Time (s)		11.1			26.1			26.3			12.6	
Confl. Peds. (#/hr)			2						2			9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8									2
Detector Phase	3	8	8	7	4		1	6		5	2	2
Switch Phase												
Minimum Initial (s)	5.0	6.0	6.0	6.0	5.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.6	27.6	27.6	10.6	16.6		10.6	29.6		10.6	29.6	29.6
Total Split (s)	32.0	31.0	31.0	31.0	30.0		22.0	73.0		15.0	66.0	66.0
Total Split (%)	21.3%	20.7%	20.7%	20.7%	20.0%		14.7%	48.7%		10.0%	44.0%	44.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6		3.6	3.6		3.6	3.6	3.6
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)	4.6	4.6	4.6	4.6	4.6		4.6	4.6		4.6	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		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-Min		None	C-Min	C-Min

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 40 (27%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated

Splits and Phases: 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE



HCM 6th Signalized Intersection Summary  
 12: S Meridian (SR161) & 39th Ave SW/39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	490	247	169	357	52	190	1110	81	45	1287	403
Future Volume (veh/h)	320	490	247	169	357	52	190	1110	81	45	1287	403
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	1772	1772	1772	1786	1786	1786	1694	1694	1694	1772	1772	1772
Adj Flow Rate, veh/h	320	490	0	169	357	52	190	1110	81	45	1287	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	1	1	1	4	4	4	2	2	2
Cap, veh/h	308	700		191	410	59	187	1590	116	57	1484	
Arrive On Green	0.18	0.21	0.00	0.11	0.14	0.14	0.08	0.35	0.35	0.07	0.88	0.00
Sat Flow, veh/h	1688	3367	1502	1701	2975	430	1613	3041	222	1688	3367	1502
Grp Volume(v), veh/h	320	490	0	169	202	207	190	587	604	45	1287	0
Grp Sat Flow(s),veh/h/ln	1688	1683	1502	1701	1697	1709	1613	1609	1653	1688	1683	1502
Q Serve(g_s), s	27.4	20.2	0.0	14.7	17.5	17.8	17.4	47.1	47.1	3.9	28.8	0.0
Cycle Q Clear(g_c), s	27.4	20.2	0.0	14.7	17.5	17.8	17.4	47.1	47.1	3.9	28.8	0.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	308	700		191	234	235	187	842	865	57	1484	
V/C Ratio(X)	1.04	0.70		0.88	0.87	0.88	1.02	0.70	0.70	0.79	0.87	
Avail Cap(c_a), veh/h	308	700		299	287	289	187	842	865	117	1484	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	0.00	0.92	0.92	0.92	0.26	0.26	0.26	0.77	0.77	0.00
Uniform Delay (d), s/veh	61.3	55.1	0.0	65.6	63.3	63.4	69.2	38.5	38.5	69.4	6.7	0.0
Incr Delay (d2), s/veh	61.5	2.9	0.0	13.8	17.2	19.0	37.5	1.3	1.2	12.7	5.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	8.9	0.0	7.1	8.7	9.0	9.3	19.7	20.3	1.9	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	122.8	58.0	0.0	79.4	80.5	82.4	106.6	39.8	39.8	82.1	12.2	0.0
LnGrp LOS	F	E		E	F	F	F	D	D	F	B	
Approach Vol, veh/h		810	A		578			1381			1332	A
Approach Delay, s/veh		83.6			80.9			49.0			14.6	
Approach LOS		F			F			D			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	70.7	32.0	25.3	9.7	83.1	21.5	35.8				
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Green Setting (Gmax), s	17.4	61.4	27.4	25.4	10.4	68.4	26.4	26.4				
Max Q Clear Time (g_c+I1), s	19.4	30.8	29.4	19.8	5.9	49.1	16.7	22.2				
Green Ext Time (p_c), s	0.0	9.4	0.0	0.9	0.0	6.5	0.2	1.0				

Intersection Summary

HCM 6th Ctrl Delay	49.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
13: 5th St SE & 39th Ave SE

01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	228	160	120	205	5	82	286	75	6	547	100
Future Volume (vph)	148	228	160	120	205	5	82	286	75	6	547	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-3%			0%	
Storage Length (ft)	150		0	175		0	225		0	150		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1339			1162			552			965	
Travel Time (s)		26.1			22.6			12.5			21.9	
Confl. Peds. (#/hr)									4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	26.0		11.0	26.0		11.0	25.0		11.0	25.0	
Total Split (s)	21.0	46.0		21.0	46.0		21.0	36.0		21.0	36.0	
Total Split (%)	16.9%	37.1%		16.9%	37.1%		16.9%	29.0%		16.9%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	

Intersection Summary

Area Type: Other

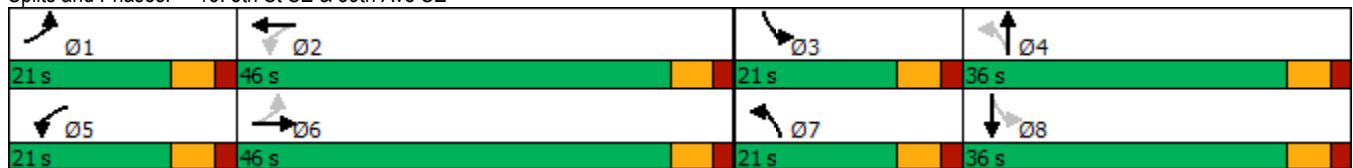
Cycle Length: 124

Actuated Cycle Length: 82.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Splits and Phases: 13: 5th St SE & 39th Ave SE



HCM 6th Signalized Intersection Summary  
 13: 5th St SE & 39th Ave SE

01/23/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	228	160	120	205	5	82	286	75	6	547	100
Future Volume (veh/h)	148	228	160	120	205	5	82	286	75	6	547	100
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	1870	1870	1870	1856	1856	1856	2018	2018	2018	1885	1885	1885
Adj Flow Rate, veh/h	151	233	163	122	209	5	84	292	77	6	558	102
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	3	3	3	0	0	0	1	1	1
Cap, veh/h	381	347	233	291	545	13	228	660	174	409	592	108
Arrive On Green	0.09	0.17	0.17	0.08	0.15	0.15	0.05	0.43	0.43	0.01	0.38	0.38
Sat Flow, veh/h	1781	2035	1366	1767	3519	84	1922	1538	406	1795	1550	283
Grp Volume(v), veh/h	151	202	194	122	104	110	84	0	369	6	0	660
Grp Sat Flow(s),veh/h/ln	1781	1777	1624	1767	1763	1840	1922	0	1944	1795	0	1833
Q Serve(g_s), s	5.3	8.1	8.6	4.3	4.1	4.1	2.0	0.0	10.2	0.2	0.0	26.6
Cycle Q Clear(g_c), s	5.3	8.1	8.6	4.3	4.1	4.1	2.0	0.0	10.2	0.2	0.0	26.6
Prop In Lane	1.00		0.84	1.00		0.05	1.00		0.21	1.00		0.15
Lane Grp Cap(c), veh/h	381	303	277	291	273	285	228	0	834	409	0	701
V/C Ratio(X)	0.40	0.67	0.70	0.42	0.38	0.38	0.37	0.00	0.44	0.01	0.00	0.94
Avail Cap(c_a), veh/h	562	930	850	498	922	963	500	0	834	747	0	719
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(l)	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	23.7	29.7	29.9	24.5	29.0	29.0	17.8	0.0	15.4	14.6	0.0	22.8
Incr Delay (d2), s/veh	0.7	2.5	3.2	1.0	0.9	0.8	1.0	0.0	0.4	0.0	0.0	20.4
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(50%),veh/ln	2.2	3.5	3.4	1.8	1.7	1.8	0.9	0.0	4.3	0.1	0.0	14.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	32.2	33.1	25.5	29.9	29.9	18.8	0.0	15.8	14.6	0.0	43.1
LnGrp LOS	C	C	C	C	C	C	B	A	B	B	A	D
Approach Vol, veh/h		547			336			453				666
Approach Delay, s/veh		30.3			28.3			16.3				42.9
Approach LOS		C			C			B				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.2	17.8	6.6	38.8	12.0	19.0	10.2	35.2				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	15.0	40.0	15.0	30.0	15.0	40.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	7.3	6.1	2.2	12.2	6.3	10.6	4.0	28.6				
Green Ext Time (p_c), s	0.2	1.2	0.0	2.1	0.2	2.4	0.1	0.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			31.0									
HCM 6th LOS			C									

Lanes, Volumes, Timings  
 14: S Meridian (SR161) & 43rd Ave SE

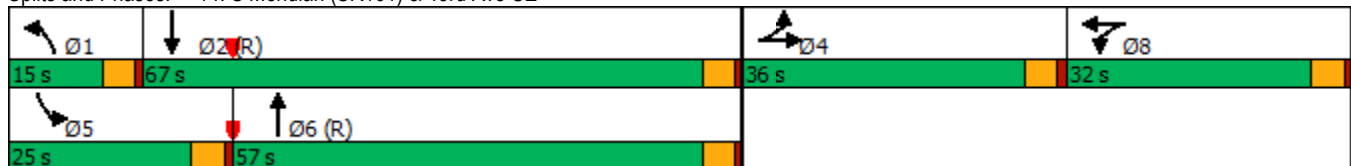
01/23/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	144	66	260	147	94	67	1177	113	177	1401	52
Future Volume (vph)	123	144	66	260	147	94	67	1177	113	177	1401	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		-4%			6%			0%			0%	
Storage Length (ft)	150		0	275		0	250		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		332			544			617			1348	
Travel Time (s)		9.1			10.6			12.0			26.3	
Confl. Peds. (#/hr)			2	2					6			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		1	6		5	2	
Permitted Phases												
Detector Phase	4	4		8	8		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	33.6	33.6		30.6	30.6		10.6	32.6		10.6	28.6	
Total Split (s)	36.0	36.0		32.0	32.0		15.0	57.0		25.0	67.0	
Total Split (%)	24.0%	24.0%		21.3%	21.3%		10.0%	38.0%		16.7%	44.7%	
Yellow Time (s)	3.6	3.6		3.6	3.6		3.6	3.6		3.6	3.6	
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)	4.6	4.6		4.6	4.6		4.6	4.6		4.6	4.6	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 90 (60%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated























Splits and Phases: 14: S Meridian (SR161) & 43rd Ave SE





HCM 6th Signalized Intersection Summary  
 14: S Meridian (SR161) & 43rd Ave SE

01/23/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	144	66	260	147	94	67	1177	113	177	1401	52
Future Volume (veh/h)	123	144	66	260	147	94	67	1177	113	177	1401	52
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		0.99	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	1935	1935	1935	1571	1571	1571	1730	1730	1730	1786	1786	1786
Adj Flow Rate, veh/h	123	144	66	260	147	94	67	1177	113	177	1401	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	5	5	5	1	1	1
Cap, veh/h	250	170	78	273	163	104	83	1344	129	196	1698	63
Arrive On Green	0.14	0.14	0.14	0.18	0.18	0.18	0.05	0.44	0.44	0.23	1.00	1.00
Sat Flow, veh/h	1843	1254	575	1496	894	572	1647	3028	290	1701	3337	124
Grp Volume(v), veh/h	123	0	210	260	0	241	67	638	652	177	711	742
Grp Sat Flow(s),veh/h/ln	1843	0	1828	1496	0	1466	1647	1643	1675	1701	1697	1764
Q Serve(g_s), s	9.3	0.0	16.8	25.8	0.0	24.1	6.0	52.9	53.2	15.2	0.0	0.0
Cycle Q Clear(g_c), s	9.3	0.0	16.8	25.8	0.0	24.1	6.0	52.9	53.2	15.2	0.0	0.0
Prop In Lane	1.00		0.31	1.00		0.39	1.00		0.17	1.00		0.07
Lane Grp Cap(c), veh/h	250	0	248	273	0	268	83	730	744	196	863	897
V/C Ratio(X)	0.49	0.00	0.85	0.95	0.00	0.90	0.81	0.87	0.88	0.90	0.82	0.83
Avail Cap(c_a), veh/h	386	0	383	273	0	268	114	730	744	231	863	897
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(l)	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	60.1	0.0	63.3	60.6	0.0	60.0	70.5	37.9	38.0	56.9	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	9.1	41.1	0.0	30.2	21.4	13.8	13.8	14.9	3.5	3.4
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(50%),veh/ln	4.5	0.0	8.5	12.9	0.0	11.2	3.0	23.7	24.3	6.6	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	72.4	101.8	0.0	90.2	91.9	51.7	51.8	71.8	3.5	3.4
LnGrp LOS	E	A	E	F	A	F	F	D	D	E	A	A
Approach Vol, veh/h		333			501			1357			1630	
Approach Delay, s/veh		68.3			96.2			53.7			10.8	
Approach LOS		E			F			D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.2	80.9		24.9	21.9	71.2		32.0				
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6				
Max Green Setting (Gmax), s	10.4	62.4		31.4	20.4	52.4		27.4				
Max Q Clear Time (g_c+I1), s	8.0	2.0		18.8	17.2	55.2		27.8				
Green Ext Time (p_c), s	0.0	13.6		1.1	0.1	0.0		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				42.3								
HCM 6th LOS				D								

# Appendix C

## Trip Generation Calculations

## Pierce College Puyallup Campus Master Plan Trip Generation Summary

<b>DAILY</b>								
Land Use	Units <sup>1</sup>	ITE LUC <sup>2</sup>	Trip Rate <sup>2</sup>	Directional Distribution <sup>2</sup>		Trips Generated		
				In	Out	In	Out	Total
<b>Proposed Use:</b>								
Junior/ Community College (Expansion)	72,000 GFA	540	20.25	50%	50%	729.0	729.0	1,458.0
<b>NET NEW DAILY TRIP GENERATION =</b>						<b>729.0</b>	<b>729.0</b>	<b>1,458.0</b>
<b>AM PEAK HOUR</b>								
Land Use	Units <sup>1</sup>	ITE LUC <sup>2</sup>	Trip Rate <sup>2</sup>	Directional Distribution <sup>2</sup>		Trips Generated		
				In	Out	In	Out	Total
<b>Proposed Use:</b>								
Junior/ Community College (Expansion)	72,000 GFA	540	2.07	77%	23%	114.7	34.3	149.0
<b>NET NEW AM PEAK HOUR TRIP GENERATION =</b>						<b>114.7</b>	<b>34.3</b>	<b>149.0</b>
<b>PM PEAK HOUR</b>								
Land Use	Units <sup>1</sup>	ITE LUC <sup>2</sup>	Trip Rate <sup>2</sup>	Directional Distribution <sup>2</sup>		Trips Generated		
				In	Out	In	Out	Total
<b>Proposed Use:</b>								
Junior/ Community College (Expansion)	72,000 GFA	540	1.86	50%	50%	66.9	67.0	133.9
<b>NET NEW PM PEAK HOUR TRIP GENERATION =</b>						<b>66.9</b>	<b>67.0</b>	<b>133.9</b>

**Notes:**

<sup>1</sup> GFA = Gross Floor Area.

<sup>2</sup> Land Use Code, trip rates and directional distributions based on ITE *Trip Generation Manual*, 10th Edition (2017).

## 9.6 Parking Analysis

## MEMORANDUM

**DATE:** January 27, 2022

**TO:** Andy Hartung, AIA, McGranahan Architects

**FROM:** Michael J Read, P.E., Principal, TENW

**SUBJECT:** Pierce College Puyallup Campus Master Plan - Parking Analysis  
TENW Project No. 2020-158

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This memorandum summarizes the results of a recent 2015 campus parking utilization study conducted at the Pierce College Puyallup campus by Transportation Engineering Northwest, LLC (TENW) in October 2015, with estimated demand and parking code analysis as part of proposed 2021 Campus Master Plan for the College. The following elements are documented in this memorandum:

- Survey methodology and types of data collected,
- Existing parking supply and demand at the campus,
- Proposed campus expansion and increased parking supply, and
- Evaluation of increased demand to proposed supply.

### Survey Methodology

The main purpose of the Pierce College Parking and Trip Generation Study was to provide a detailed understanding of utilization of existing parking supply available to the campus, to determine what demand profiles are currently exhibited, and to gather other utilization characteristics necessary to support and identify future parking and access needs in the context of master planning efforts by the College. In addition to peak parking demand counts, vehicular trip generation over a 7-day period was collected to determine peak campus trip generation rates during peak arrival and dismissal periods and to determine the overall distribution or access/egress patterns of existing students, employees, and guests to the campus.

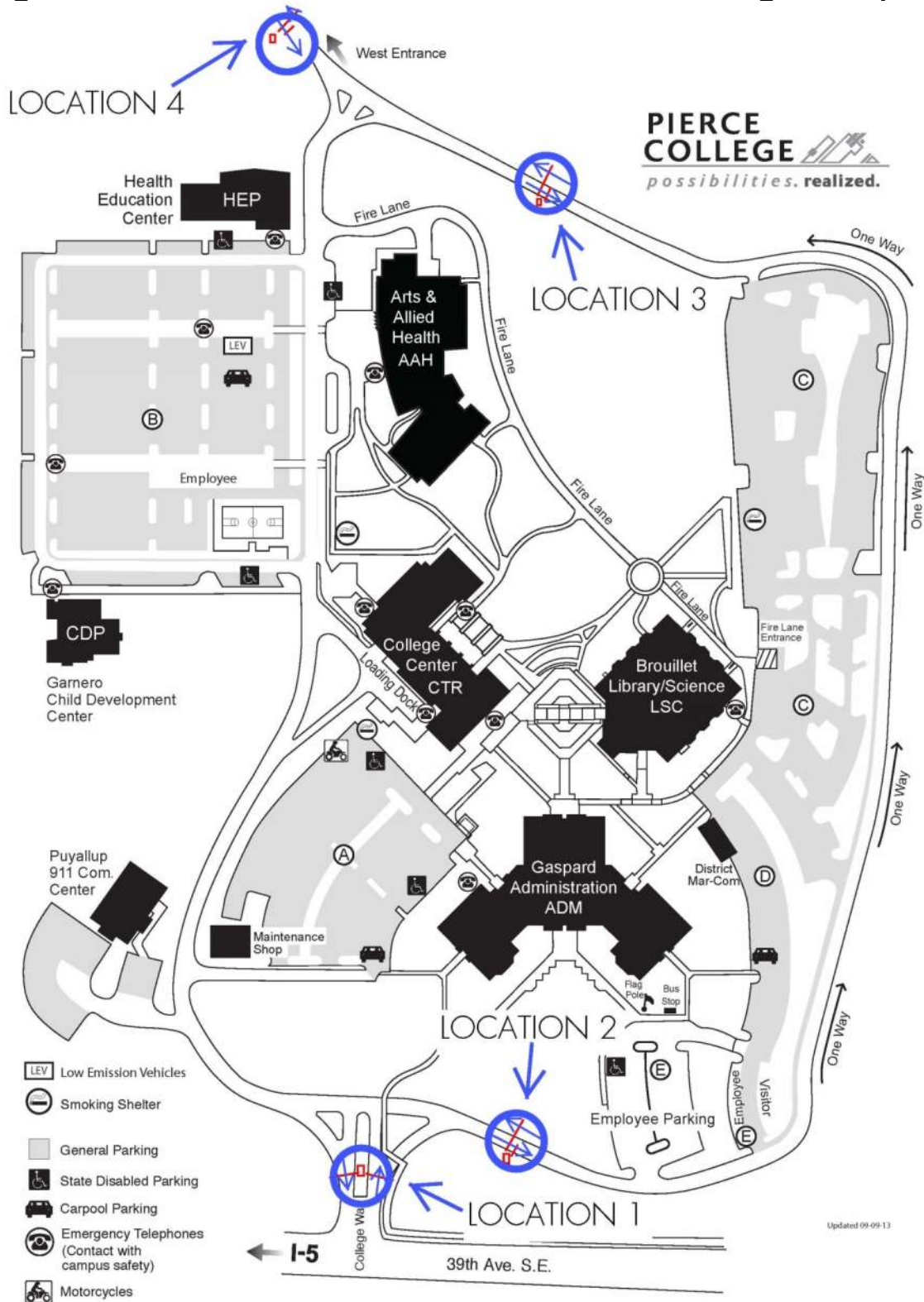
To accomplish this data need, automated machine counters were placed at four separate locations throughout campus to capture all entering/exiting vehicles as well as internal distribution of traffic (see **Figure 1** for locations of 7-day machine count locations). In addition, direct counts of parking occupancy levels by Pierce College security personnel and TENW staff were made during peak class periods to determine the utilization and adequacy of existing on-site parking supply.

### Observation Periods

Several weeks after the beginning of Fall Quarter in 2015, TENW began the parking and trip generation surveys (the Fall quarter is the highest demand of any class period). Between Sunday, October 4<sup>th</sup> and Saturday, October 10<sup>th</sup>, hourly directional counts were conducted.



Figure 1 – Machine Count Locations on Pierce College Campus



## Campus Parking “Zone” Designations

Existing parking zones currently utilized by Pierce College (zones A through E shown on **Figure 1**) were used as the basis for parking zone designations. Parking “outside” these zones was also noted during data collection efforts. In the Fall of 2015, there were 1,331 stalls provided on-site at the Puyallup campus of Pierce College; 1,133 general, 31 ADA, 17 carpool, 104 employee, 14 visitor, and 32 miscellaneous stalls. In addition to these stalls within parking lots, parallel parking along the one-way ring roadway along the eastern edge of campus (spanning from the southern edge of Zone D north to the northwestern corner of Zone C. These parallel stalls are included within Zone C general parking supply.

**Figure 2** overviews the existing configuration of parking throughout the Pierce College Puyallup campus and the location of designated parallel parking. Additional “overflow” parking that currently occurs on campus is also demonstrated on **Figure 2** that occurs between 10:00 a.m. and 1:00 p.m. when scheduled classes on campus peak during typical weekdays.

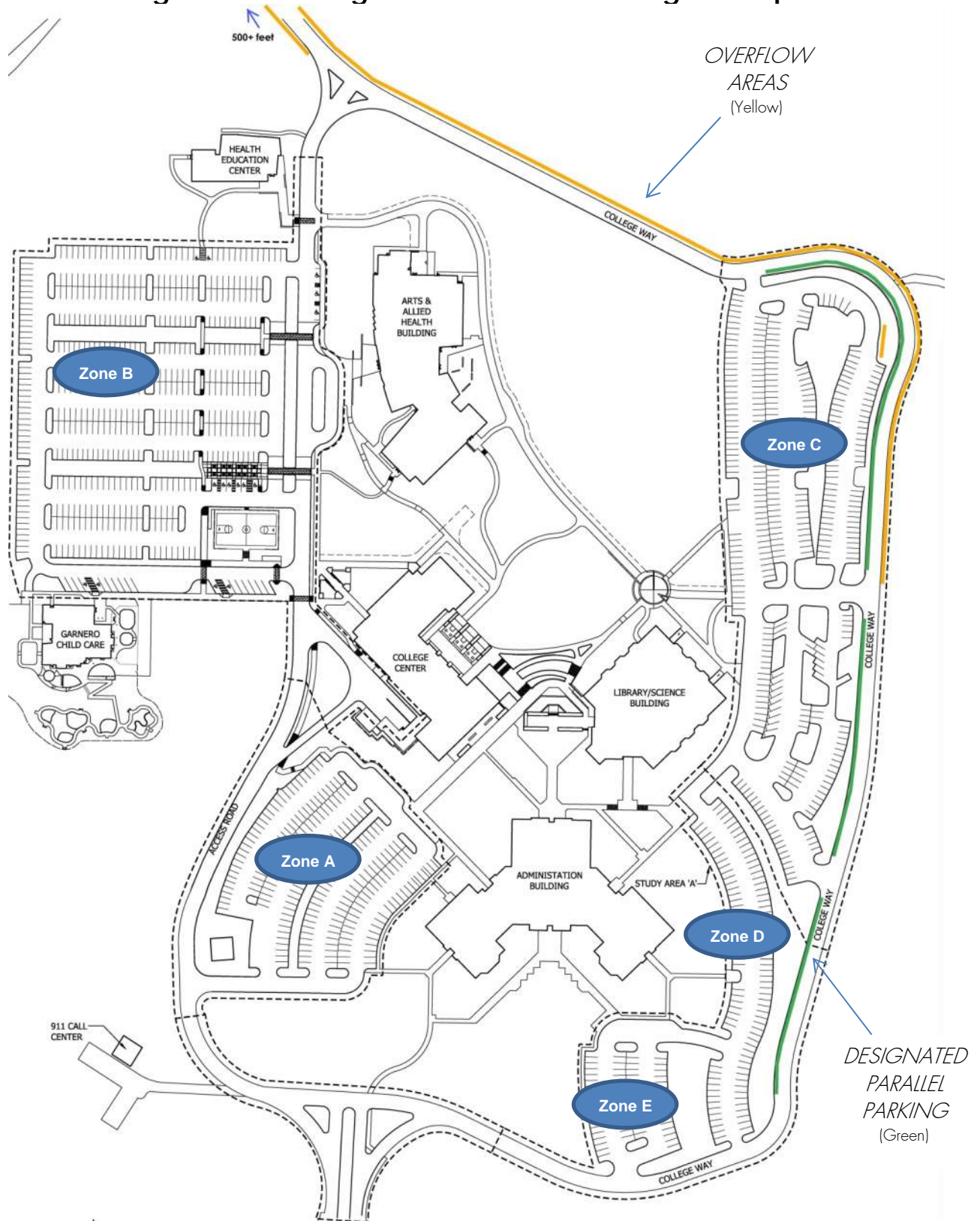
**Table 3** summarizes parking counts collected by Pierce College security personnel during the week of October 5<sup>th</sup>, 2015. As shown, during the 11:00 a.m. counts each day, between 20 and 90 stalls were found to be parked in the “overflow” locations along the eastern frontage road and beyond the northwestern gate that serves the campus. Peak parking on campus occurred on Wednesday, October 7<sup>th</sup>, with 1,437 stalls after 11:00 a.m.; a peak utilization rate of 108 percent campus-wide with 106 parked vehicles outside of designated stalls. Based on peak average observations, a parking demand ratio of 5.6 stalls per 1,000 square-feet of gross floor area was determined based on total gross floor area.

**Table 3**  
**Pierce College Supply & Utilization Results**  
**Fall Quarter 2015**

Parking Lot	Total Stalls	Average Peak Observed Demand	Percent Utilization
<i>Average Weekday 11:00 AM</i>			
Zone A	198	199	101%
Zone B	514	508	99%
Zone C	436	472	108%
Zone D	78	78	100%
<u>Zone E</u>	<u>105</u>	<u>106</u>	<u>101%</u>
Totals	1,331	1,363	103%
<i>Average Weekday 2:00 PM</i>			
Zone A	198	188	95%
Zone B	514	417	81%
Zone C	436	352	81%
Zone D	78	66	85%
<u>Zone E</u>	<u>105</u>	<u>107</u>	<u>102%</u>
Totals	1,331	1,130	85%

Source: TENW summary of data collected by Pierce College security staff with supplemental TENW observations, October 2015, Tuesday through Thursday.

Figure 2 – Parking Zones at Pierce College Campus



## Master Plan Evaluation

As part of the 2021 Master Plan for Pierce College, new buildings with up to approximately 71,688 square-foot (SF) in gross floor area has been identified and include new classroom space (54,400 SF), storage (8,000 SF) removal of an existing portable building (-2,772 SF), maintenance shop expansion (1,600 SF), and supporting new buildings as part of the athletic field development (10,460). In total, approximately 315,440 SF of building area at the Pierce College Campus would be provided (including buildings with in the athletic field development).

As part of the Master Plan, 600 new stalls are planned to be constructed to serve the existing campus and would provide a total on-site supply of approximately 1,931 parking spaces on campus. Based upon the observed peak parking generation rates from 2015, peak parking demand is estimated at 1,708 stalls to serve the 304,980 SF of the main campus. With a total supply proposed of 1,931 stalls, no parking deficits are expected to occur on the main campus.

An additional 78 stalls would also be constructed to serve the new athletic field development in the northwest quadrant of the site. Given this proposed facility is part of the College program and only school-related games, training, etc. would be provided, the observed parking generation rate of 5.4 stalls per 1,000 SF was applied to this new program, and would estimate a peak parking demand of 57 stalls. As shown, adequate parking supply would be provided at this new program area. It should be noted, that this is a conservative approach, as the published parking generation per ITE for Junior/Community College (Land Use Code 540) is 3.71 stalls per 1,000 SF, in *Parking Generation, 5<sup>th</sup> Edition, 2019*.

Implementation of carpool incentives (preferential parking with increased student cost/fee for parking), implement class scheduling techniques to “smooth” out peak periods of campus use by students or, increased student/class size through now on-line learning portals are all effective tools that the College could consider to reduce overall peak demand, and potentially reduce the capital investment of increased parking supply.

## Parking Code Evaluation

Per Puyallup Municipal Code, 20.55.010 Number of parking spaces required, the colleges is required to provide a minimum of one space for each 50 square feet of classroom space, plus one space for each 300 square feet of office space. For the existing 300 seat auditorium, the City would also require an additional 1 stall per every 5 seats. A parking code analysis is provided in **Attachment A**. As shown, City code would require a minimum of 1,993 stalls.

However, based on peak observed parking demand, adequate on-site supply would be provided based on application of peak observed parking demand during the highest Fall quarter period at Pierce College. For the athletic fields, one space for every five seat is required if seating is proposed for attendees. The parking code evaluation for the athletic field facilities will be determined once programming has been determined.

If you have any questions, please feel free to contact me at (206) 361-7333, ext. 101 or mikeread@tenw.com.

# Attachment A

Parking Code Analysis per City Standards



BUILDING NAME	CLASSROOM SPACE		OFFICE SPACE		AUDITORIUM	
	SQ. FT	PARKING SPACES REQUIRED	SQ. FT	PARKING SPACES REQUIRED	SEATS	PARKING SPACES REQUIRED
Arts & Allied Health Building	16,496	330	2,035	7	300	60
Center Building	12,053	241	2,972	10		
Garnero Child Development Center Building	2,744	55	244	1		
Gaspard Administration Building	10,544	211	7,993	27		
Health Education Center	949	19	256	1		
Library Science Building	33,262	665	2,311	8		
Pierce College Portable Faculty Offices	2,772	55		0		
NEW: STEM Building	14,700	294	2,775	9		0
<b>SUBTOTALS*</b>	93,520	1871	18,586	62	300	60
<b>TOTAL PARKING REQUIRED UNDER CODE</b>						1,993

\*Total parking spaces associated with classroom, office, and auditorium uses were rounded up to the next whole number

\*\*PMC 20.55.010(27)(c) Colleges, universities, vocational schools and adult extension schools shall provide one space for each 50 square feet of classroom space, plus one space for each 300 square feet of office space, plus auditorium parking as required in subsection (29) of this section, if auditorium facilities are provided

\*\*\*PMC 20.55.010(29) Theaters and auditoriums: one space for each five seats. A "seat" means 18 lineal inches of bench seating or seven square feet of seating floor area where there are no permanent seats

# 9.7 PMC 20.55.010(27) Parking Calculations Analysis

BUILDING NAME	CLASSROOM SPACE		OFFICE SPACE		AUDITORIUM	
	SQ. FT	PARKING SPACES REQUIRED	SQ. FT	PARKING SPACES REQUIRED	SEATS	PARKING SPACES REQUIRED
Arts & Allied Health Building	16,496	330	2,035	7	300	60
Center Building	12,053	241	2,972	10		
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Library Science Building	33,262	665	2,311	8		
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NEW: STEM Building	14,700	294	2,775	9		0
<b>SUBTOTALS*</b>	93,520	1871	18,586	62	300	60
<b>TOTAL PARKING REQUIRED UNDER CODE</b>						1,993

\*Total parking spaces associated with classroom, office, and auditorium uses were rounded up to the next whole number

\*\*PMC 20.55.010(27)(c) Colleges, universities, vocational schools and adult extension schools shall provide one space for each 50 square feet of classroom space, plus one space for each 300 square feet of office space, plus auditorium parking as required in subsection (29) of this section, if auditorium facilities are provided

\*\*\*PMC 20.55.010(29) Theaters and auditoriums: one space for each five seats. A "seat" means 18 lineal inches of bench seating or seven square feet of seating floor area where there are no permanent seats

# 9.8 Bicycle Parking Study

# PROJECT MEMO



**TO:** Andy Hartung  
 McGranahan Architects  
**DATE:** December 11, 2021  
**FROM:** Reese Carlson & Wayne Carlson  
 AHBL, Inc.  
**PROJECT NO.:** 2190297.30  
**PROJECT NAME:** Pierce College  
**SUBJECT:** Bicycle Parking

PMC 20.55.016(2) stipulates that “[A]ll commercial, industrial, institutional, and recreational uses which require 25 or more parking spaces pursuant to this title shall provide a designated bicycle parking area to accommodate a minimum of five bicycle spaces. Such bicycle parking areas shall provide a secure facility (e.g., rack, posts) to which to lock bicycles and shall be located so as to be reasonably convenient to the on-site use and not interfere with pedestrian and automobile traffic. Prior to issuing permits for facilities requiring 100 or more parking spaces pursuant to this title and/or uses with high expected bicycle traffic (e.g., schools) the city may require reasonable additional bicycle parking capacity over and above the minimum five spaces.

On Saturday, December 11, 2021, we conducted an on-site inventory of the bicycle parking spaces on Pierce College’s Puyallup Campus. In total we found seven bicycle racks that provide parking for a total of 98 bicycles.

Figure 1 is an inventory that includes the capacity, location, and a photo for each bicycle rack located on campus. Figure 2 of this memorandum depicts the location of each bicycle rack on the campus map.

**Figure 1: Bicycle Rack Inventory**

BICYCLE RACK NO.	COUNT	ADJACENT TO	
Bicycle Rack #1	20	Administration Building (Front)	





BICYCLE RACK NO.	COUNT	ADJACENT TO	
Bicycle Rack #2	14	Health Education Center (Front)	
Bicycle Rack #3	14	Arts & Allied Health Building (Front)	
Bicycle Rack #4	8	Arts & Allied Health Building (Rear)	



BICYCLE RACK NO.	COUNT	ADJACENT TO	
Bicycle Rack #5	14	College Center Building (Rear)	
Bicycle Rack #6	14	College Center Building (Front)	
Bicycle Rack #7	14	Library Sciences Building (Rear)	
<b>TOTAL SPACES</b>	<b>98</b>		





Figure 2: Bicycle Rack Locations



c: Helen Stanton, AHBL

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# 9.9 Sewer System and North Basin Sanitary Sewer Pump Station Report



## ***Sewer System and North Basin Sanitary Sewer Pump Station Report***

*PREPARED FOR:*

McGranahan Architects  
Contact: Mr. Andy Hartung  
2111 Pacific Avenue, Suite 100  
Tacoma, WA 98402

*PROJECT:*

Pierce College - Puyallup  
Master Plan  
Puyallup, WA  
2190297.10

*PREPARED BY:*

Andrew Coito-Poile  
Project Engineer

*REVIEWED BY:*

William J. Fierst, PE  
Principal

*DATE:*

April 2021



## **Sewer System and North Basin Sanitary Sewer Pump Station Report**

*PREPARED FOR:*

McGranahan Architects  
Contact: Mr. Andy Hartung  
2111 Pacific Avenue, Suite 100  
Tacoma, WA 98402

*PROJECT:*

Pierce College - Puyallup  
Master Plan  
Puyallup, WA  
2190297.10

*PREPARED BY:*

Andrew Coito-Poile  
Project Engineer

*REVIEWED BY:*

William J. Fierst, PE  
Principal

*DATE:*

April 2021



04/30/2021

I hereby state that this [Sanitary Sewer Pump Station Report](#) for the [Pierce College – Puyallup Master Plan](#) project has been prepared by me or under my supervision, and meets the standard of care and expertise that is usual and customary in this community for professional engineers. I understand that [City of Puyallup](#) does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me.

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## Appendices

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### Appendix A

#### Exhibits

A-1.....	Campus FTE's
A-2.....	Pump Station Discharge Test
A-3.....	North Basin Analysis
A-4.....	Minor Head Loss Calculations
A-5.....	Velocity Head Loss Calculations
A-6.....	Wet Well Storage Calculations
A-7.....	Pump Performance Data Sheet
A-8.....	Existing Pump Station As-Builts
A-9.....	39'th Street Sewer Outfall As-Builts

## 1.0 Introduction

This report addresses describes the existing private sanitary sewer the capacity of the two existing sanitary sewer pump stations that serve Pierce College Puyallup Campus (PCPC). This report accompanies the PCPC Master Plan that describes future growth of the campus through 2031. PCPC is bounded by 39th Avenue Southeast to the south, Wildwood park Drive to the north and east,, and Bradley Lake and commercial properties to the west in Puyallup, Washington.

PCFS consists of approximately ten existing buildings including one portable. Several additional buildings and building additions are planned in the near future. There will be six new buildings, and three building additions planned in the next ten years. The campus currently has approximately 2,559 full time equivalent (FTE) including staff and students, and in year 2031, the Washington State Board for Technical and Community Colleges expects the campus to have 2,978 FTEs. The FTE's were proportioned for the campus by building square footage tributary to each sewer basin. A brief description of each campus sewer basin follows in Section 2.0.

## 2.0 Sewer Basins

The PCPC campus consist of three sanitary sewer basins including two pump station basins; the north basin and the south basin, as well as one gravity sewer basin. All three basin combine at a manhole located at the southwest corner of the campus by the 911 Emergency Building. From there all sewer flows continue to the southwest for approximately 245 feet where flows enter a manhole. Sewer flows then continue south for approximately 170 feet before entering a manhole in the right of way along 39<sup>th</sup> Street approximately 325 feet west of the PCPC main entrance. The sewer conveyance system continues to the south side of the right of way before entering an 18-inch public sewer main. See Exhibit A-8, 39th Street Sewer Outfall As-Builts for more information.

### 2.1 North Basin

The north basin is the largest sanitary sewer basin on campus. It serves four existing buildings including the Child Development Center (CDP), the College Center Building (CTR), the Arts and Allied Health Building (AAH), and the Health Education Center (HEP). All four buildings are connected to gravity sewer services that convey sewage to a pump station that is located south of the HEP, west of AAH, and adjacent to the main drive access loop - College Way.

The north basin will have five new buildings and one addition over the next ten years. The new buildings that will be constructed in the north basin include the STEM Building, a storage building, a classroom building, a student resident hall, a gym, and an addition to the CDP. All new buildings will be tributary to the existing north basin will convey sewage to the pump station via gravity sewer piping.

The north basin pump station outfalls via a 4-inch force main to an existing manhole located at the south side of the campus adjacent to main drive access loop - College Way and north of the 911 Emergency Building. Gravity sewer then continue to the south where they ultimately leave the campus at 39th Avenue Southeast. See section 3.0 of this report for further analysis of the north basin pump station capacity.

### 2.2 South Basin

The south basin serves two existing buildings including the Library Sciences Building (LSC), and a portable. The two buildings are connected to gravity sewer services that convey sewage to a pump station that is located south of the LSC and adjacent to the main entry to the building.

The south basin pump station outfalls via a 4-inch force main to an existing manhole located at the north side of the Administration Building (ADM). At the pump station outfall, the south basin combines with sewer flows from the ADM and continues west via gravity sewer piping to a manhole located north of the 911 emergency building where it joins with flows from the north basin force main outfall. Gravity flows then continue to the south where they ultimately leave the campus at 39th Avenue Southeast.

The south basin is projected to decrease in FTE's over the next ten years. Therefore, further calculations have not been provided to show it will have sufficient capacity for future growth. See Exhibit A-1 for further information detailing the south basin's decrease in FTE's between the years 2021 and 2031 from 640 to 553 respectively.

### **2.3 Gravity Basin**

The gravity basin entirely serves three existing buildings including the Maintenance Building, the 911 Emergency Building, and the Administration Building (ADM). However, the south basin outfalls to the gravity basin and ultimately the north basin does as well.

The gravity basin begins at an existing manhole located at the north side of the ADM. The gravity piping combines flows from ADM with sewer force main outfall from the south basin and continues west to a manhole located north of the 911 emergency building where it joins with flows from the north basin. Gravity flows then continue to the south where they ultimately leave the campus at 39th Avenue Southeast.

The gravity basin and the south basin that it also serves are both projected to decrease in FTE's over the next ten years. Therefore, further calculations have not been provided to show it will have sufficient capacity for future growth. See Exhibit A-1 for further information detailing the south basin's decrease in FTE's between 2021 and 2031.

### **3.0 North Pump Station**

The existing pump station consists of a 6-foot diameter wetwell, with two 6-inch impeller non-clog explosion proof pumps with 4-inch discharge. Per the as-builts two 30 horsepower Myers submersible pumps Model 4RCX were selected for the existing pump station growth. See Exhibit A-7 for existing pump station as-builts. The 4-inch force main conveys sewage approximately 1,231 feet in length over an elevation gain of approximately 50 feet. See Exhibit A-4 and A-7 for more information. The pump station was constructed in the early 2000's.

A test was performed in the field to pump's flow rate and to help determine where the pump is operating on the pump curve. See Exhibit A-2 for the pump discharge test. The pump test occurred on January 20, 2021. The existing pump ran for 4.08 minutes, pumping 846 gallons of sewage. The pump's flow rate was calculated to be 207 gallons per minute (gpm) at an estimated head of 129 feet. Based on the velocity head loss calculations found in Exhibit A-5, the pump station is operating at 5.74 feet per second (fps). Therefore, the pump is within the optimal operating range of 2-8 fps.

The future 2031 projected flow tributary to the pump station was developed using sewage flow per FTE as defined in Table G2-2 of the Washington Department of Ecology's *Criteria for Sewage Works Design* (CSWD). A flow of 15 gallons per day was selected for a community college discharge facility with a peak factor of 3.57 per Table C1-1 of the CSWD. Table G2-2 also notes a 15-hour operation day, however 16 hours was used based on the College's standard operating hours. The 2031 FTE projection for the north basin is 2,081 FTE's which equates to 31,215 gallons per day of sewage and a peak design flow rate of 116.16 gpm. See Exhibit A-3, Basin Analysis for more information.

Per the attached calculations, the existing Myers Model 4RCX that operates at 207 gpm will meet the peak demand of 116.16 gpm required for the College's projected FTE growth through the year 2031. See Exhibit A-6, Wet Well Storage Calculations for more information.

### 3.1 Wetwell Capacity

The north pump station wetwell capacity was calculated to ensure that the pump will operate at or below the recommended number of starts per hour in the existing and future conditions. As noted in section 3.0, The future 2031 projected flow tributary to the pump station was developed using sewage flow per FTE as defined in Table G2-2 of the CSWD. The daily volume of sewage for 2031 divided by the wet well volume of 854 gallons determined the average flow rate for the north basin. See Exhibit A-6, Wet Well Calculations for wet well volume calculation. Wet Well The pump cycle time was then calculated as the time for the wet well to fill plus the time to empty the wet well while the pump is operating. See Exhibit A-6, Wet Well Storage Calculations for more information.

Per the attached calculations, the existing Myers Model 4RCX pump and 6-foot diameter wet well will have 1.92 starts per hour at the calculated average flow rate in the year 2031. The optimal operating range for a sanitary sewer pump is less than 12 starts per hour, therefore the existing pump is adequately sized for the College's future 2031 FTE growth.

### 4.0 Conclusion

The existing north basin pump station has adequate capacity for the College's FTE growth through the year 2031. Additionally, the existing south basin pump station has adequate capacity for the College's FTE growth through the year 2031.

This analysis is based on data and records either supplied to or obtained by AHBL. These documents are referenced within the text of the analysis. The analysis has been prepared using procedures and practices within the standard accepted practices of the industry.

AHBL, Inc.



Andrew Coito-Poile  
Project Engineer

ACP/lsk

April 2021

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# Appendix A

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## Exhibits

A-1.....	Campus FTE's
A-2.....	Pump Station Discharge Test
A-3.....	North Basin Analysis
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A-5.....	Velocity Head Loss Calculations
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Pierce College Puyallup Master Plan - Campus FTE's

Project: 2190297.10

Date: April 2021

Information from Master Plan

Year	Total FTE's	Total Building Area (SF)	FTE/SF	Total North Basin Building Area (SF)	Total Proportioned FTE (North Basin)
2018	2559	253111	0.0101	146855	1485
2031	2978	452817	0.0066	316444	2081

*North Basin (Tributary to Lift Station adjacent to CDP Building) - Existing*

Bldg	Area (SF)	Floors	Total Area (SF)	Proportioned FTE 2018	Proportioned FTE 2031
CDP	7735	1	7735	78	51
HEP	8320	2	16640	168	109
AAH	30800	2	61600	623	405
CTC	30,440	2	60880	616	400

*North Basin (Tributary to Lift Station adjacent to CDP Building) - Future*

CDP	3120	1	3120	N/A	21
GYM	15147	1	15147	N/A	100
Storage	2585	1	2585	N/A	17
Classroom					
North	22960	3	68880	N/A	453
STEM	26619	3	79857	N/A	525
<b>Total</b>			<b>316444</b>	<b>1485</b>	<b>2081</b>

*South Campus (Tributary to Lift Station adjacent to LSC Building) - Existing*

Bldg	Area (SF)	Floors	Total Area (SF)	Proportioned FTE 2018	Proportioned FTE 2031
LSC	30282	2	60564	612	398
Portable	2772	1	2772	28	to be demolished

*South Campus (Tributary to Lift Station adjacent to LSC Building) - Future*

Classroom					
South	11789	2	23578	N/A	155
<b>Total</b>			<b>86914</b>	<b>640</b>	<b>553</b>

*South Campus (Gravity Sewer) - Existing*

Bldg	Area (SF)	Floors	Total Area (SF)	Proportioned FTE 2015	Proportioned FTE 2031
Maint.	1600	1	1600	16	11
911	1100	1	1100	11	7
ADM	42920	1	42920	434	282

*South Campus (Gravity Sewer) - Future*

Maint.	1144	1	1144	N/A	8
ADM					
Addition	6611	1	6611	N/A	43
<b>Total</b>			<b>53375</b>	<b>434</b>	<b>344</b>

<b>Grand Total</b>			<b>456733</b>	<b>2559</b>	<b>2978.00</b>
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**Pierce College Puyallup Pump Station Pump Discharge Test (1)**

	Time (min.)	Height of sewage pumped (ft.)	Volume of Sewage Pumped (CF)	Volume of Sewage Pumped (gal.)	Pump Rate (gal./min.)
Pump Turned "On"	0	0	0.00	0.00	0.00
Pump Turned "Off"	4.08	4	113.04	845.65	207.27
<b>Total</b>	<b>4.08</b>	<b>4</b>	<b>113.04</b>	<b>845.65</b>	

207.27 Ave. Pumprate (gal./min.)

(1) Test Performed on 1/20/21 @ approximately 11:00am.

(2) The pump station wetwell has inside dimensions 72" diameter manhole. The wetwell area is 28.26 SF.

**Pierce College Puyallup Pump Station  
Exhibit A-3: North Basin Analysis**

2190297.10  
4/29/2021

**Anticipated Wastewater Flows to the Proposed Wastewater Pump Station  
Based on FTE, Criteria for Sewage Works Design**

	Students + Faculty (FTE)	Flow per FTE (gpd/FTE)	Flow (gpd)	Flow (gpm)	Peak Factor	Design Flow (gpm)	Design Flow (cfs)
Pierce College							
2018 FTEs	1,485	15	22,275	23.20	3.68	85.45	0.190
FTE Growth	596	15	8,940	9.31			
<b>2031 FTE Projections</b>	<b>2,081</b>		<b>31,215</b>	<b>32.52</b>	<b>3.57</b>	<b>116.2</b>	<b>0.259</b>

- \* Flow per FTE per Table G2-2.WSDOE's Criteria for Sewage Works.  
Flow rates include normal infiltration.
- \* Peak Factor per Figure C1-1. WSDOE's Criteria for Sewage Works.  
Ratio of Peak Hourly Flow to Design Average Flow.

**Pierce College Fort Steilacoom Pump Station  
Exhibit A-4: Minor Head Loss Calculations**

2190297.10  
3/18/2021

Total Static Head (TSH)	
Pump On Elevation	503.25 ft
Pump Off Elevation	499.75 ft
High Point Elevation	549.00 ft
Added Static from Low Point in System	0.00 ft
Calculated High Point Incl. Added Static	549.00 ft
TSH(off) =	49.25 ft
TSH (on) =	45.75 ft

Note: Friction loss calculations assume no gravity flow in the pump off condition.

**Friction Losses in Pipe (Hazen and Williams Formula)**

$$f = 0.2083 * (100/C)^{1.85} * (q^{1.85}/d^{4.8655})$$

f = friction head in feet of fluid per 100 feet of pipe  
C = constant accounting for surface roughness  
q = flow in gallons per minute  
d = inside diameter of pipe

Length of force main to gravity outfall located near the campus 911 Communications Call Center.

Force Main Length = 1231 LF  
(includes piping in wetwell and vaults)  
C = 140 OLD HDPE PIPE  
**Fiction Loss = 76.05 ft**

**Minor Losses**

$H_L = C_L * V^2/2g$   
H<sub>L</sub> = Minor Head Loss V = Velocity  
C<sub>L</sub> = Loss Coefficient g = acceleration of gravity

Fitting	*C <sub>L</sub>	Number	C <sub>L</sub> (Total)
gate valve (fully open)	0.2	2	0.4
swing check valve	2.5	1	2.5
45 degree elbow	0.4	4	1.6
90 degree elbow/tee	0.9	2	1.8
**22.5 degree elbow	0.1	0	0
**11.25 degree elbow	0.05	1	0.05
Ball/Plug Valve	0.05	0	0

Length: 1231 ft  
Diameter: 3.84 in  
Velocity: 5.74 ft/s  
**Minor Losses = 3.25 ft**

\*Note: C<sub>L</sub> values from Fundamentals of Hydraulic Engineering (Prashun, 1987) and Fundamentals of Fluid Mechanics (Munson et.al. 1994)

\*\*Note: C<sub>L</sub> values are interpolated from the given tables

Total Head	
<b>Total Head Loss =</b>	<b>128.55 ft</b>
(at Pump Off)	



**Pierce College Puyallup Pump Station**  
**Exhibit A-5: Velocity Head Loss Calculations**

2190297.10  
 4/29/2021

Pump Rate 207 GPM  
 Pump Rate 0.461 CFS  
 Pipe Condition OLD (Enter "NEW" or "OLD")  
 C= 140 (Value Used for this project)  
 Pipe Inside Diameter 3.84 inches

**Full Build Out Conditions**

Pumping Condition	Pipe size (in)	Cross Sectional Area (sf)	Velocity (ft/s)	Pipe Length (ft)	C	<i>f</i>	friction head loss in pipe (ft)	TSH (ft)	Volume in pipe (cf)	Minor Losses (ft)	TOTAL HEAD LOSS (ft)
Off	3.84	0.0804	5.74	1231	140	3.0891	76.05	49.25	98.95	3.25	128.55
On	3.84	0.0804	5.74	1231	140	3.0891	76.05	45.75	98.95	3.25	125.05

Flow (gpm)	Flow (cfs)	Cross Sectional Area (sf)	Velocity (ft/s)	Pipe Length (ft)	C	<i>f</i>	friction head loss in pipe	TSH (off) (ft)	TSH (on) (ft)	Minor Losses (ft)	OFF CONDITION TOTAL HEAD LOSS (ft)	ON CONDITION TOTAL HEAD LOSS (ft)
0	0.000	0.0804	0.00	1231	140	0.0000	0.00	49.25	45.75	0.00	49.25	45.75
15	0.033	0.0804	0.42	1231	140	0.0240	0.59	49.25	45.75	0.02	49.86	46.36
30	0.067	0.0804	0.83	1231	140	0.0867	2.13	49.25	45.75	0.07	51.45	47.95
45	0.100	0.0804	1.25	1231	140	0.1835	4.52	49.25	45.75	0.15	53.92	50.42
60	0.134	0.0804	1.67	1231	140	0.3125	7.69	49.25	45.75	0.27	57.22	53.72
75	0.167	0.0804	2.08	1231	140	0.4722	11.63	49.25	45.75	0.43	61.30	57.80
90	0.201	0.0804	2.50	1231	140	0.6617	16.29	49.25	45.75	0.62	66.16	62.66
105	0.234	0.0804	2.91	1231	140	0.8800	21.67	49.25	45.75	0.84	71.75	68.25
120	0.268	0.0804	3.33	1231	140	1.1266	27.74	49.25	45.75	1.09	78.08	74.58
135	0.301	0.0804	3.75	1231	140	1.4009	34.49	49.25	45.75	1.38	85.12	81.62
150	0.335	0.0804	4.16	1231	140	1.7024	41.91	49.25	45.75	1.71	92.87	89.37
165	0.368	0.0804	4.58	1231	140	2.0306	49.99	49.25	45.75	2.07	101.31	97.81
180	0.402	0.0804	5.00	1231	140	2.3853	58.73	49.25	45.75	2.46	110.44	106.94
195	0.435	0.0804	5.41	1231	140	2.7660	68.10	49.25	45.75	2.89	120.24	116.74
207	0.462	0.0804	5.74	1231	140	3.0891	76.05	49.25	45.75	3.25	128.56	125.06
225	0.502	0.0804	6.24	1231	140	3.6043	88.74	49.25	45.75	3.84	141.83	138.33
240	0.535	0.0804	6.66	1231	140	4.0614	99.99	49.25	45.75	4.37	153.62	150.12

Note: This table used to develop system curve.



Project Pierce College Payallup Project No. 2190297.10  
 Subject M.P. Pump Station Phone \_\_\_\_\_  
 With/To Existing Condition (2018) Fax # \_\_\_\_\_  
 Address \_\_\_\_\_ # Faxed Pages \_\_\_\_\_  
 Date 4/30/2021 By ACP

- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo

Civil Engineers

2018 FTE's  
 Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

Daily Volume = 22,275 gal./day (from Exhibit A-3)

Wet Well Volume

$$\text{Area} = \pi R^2 = 3.14 \cdot (72''/12)^2 = 28.26 \text{ SF}$$

$$\text{Pump Off} = 503.79$$

$$\text{Pump On} = 499.75$$

$$\begin{aligned} \text{Volume} &= (503.79 - 499.75) \cdot 28.26 \text{ SF} = 114.17 \text{ ft}^3 \cdot 7.481 \text{ gal/ft}^3 \\ &= \underline{\underline{854.11 \text{ gal}}} \end{aligned}$$

Avg Pump Starts (for 2018 condition)

$$\begin{aligned} \text{Avg flow} &= \frac{\text{Daily flow}}{\text{Operation Time}} = \frac{22,275 \text{ gal/day}}{16 \text{ hr} \cdot 60 \text{ min/hr}} \\ &= 23.20 \text{ gal./min.} \end{aligned}$$

$$\text{Pump Rate} = 207.27 \text{ gpm}$$

$$\text{Cycle Time} = (\text{time to fill on to off}) + (\text{time to empty on to off w/ continuous flow})$$

$$= (854.11 \text{ gal.} / 23.20 \text{ gal./min.}) + (854.11 \text{ gal.} / (207.27 \text{ gal./min.} - 23.20 \text{ gal./min.}))$$

$$= 36.81 \text{ min} + 4.64 \text{ min}$$

$$= 41.45 \text{ min}$$

$$\text{Average Starts Per day} = 16 \text{ hr} / (41.45 \cdot \frac{1 \text{ hr}}{60 \text{ min}}) = 23.16 \text{ starts}$$

$$\text{Average Start Per hour} = 23.16 \text{ starts} / 16 \text{ hr} = \underline{\underline{1.45 \text{ starts/hr}}}$$



Project Pierce College Puyallup  
 Subject M.P. Pump Station  
 With/To Future Condition (2031)  
 Address \_\_\_\_\_  
 Date \_\_\_\_\_

Project No. \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Fax # \_\_\_\_\_  
 # Faxed Pages \_\_\_\_\_  
 By \_\_\_\_\_

- Page \_\_\_\_ of \_\_\_\_
- Calculations
- Fax
- Memorandum
- Meeting Minutes
- Telephone Memo

Civil Engineers  
 Structural Engineers  
 Landscape Architects  
 Community Planners  
 Land Surveyors

Daily Volume = 31,215 gal./day (from Exhibit A-3, 2031 FTE's)

Wet Well Volume = 854.11 (see Page 1, Exhibit A-3)  
 ↳ total pumping volume in pump station

Avg Pump Starts (for 2031 Condition)

$$\text{Avg flow} = \frac{\text{Daily flow}}{\text{operation time}} = \frac{31,215 \text{ gal/day}}{16 \text{ hr} \cdot 60 \text{ min/hr}}$$

$$= 32.52 \text{ gal./min.}$$

$$\text{Pump Rate} = 207.27 \text{ gpm}$$

Cycle Time = (time to fill on to off) + (time to empty on to off w/ continuous flow)

$$= (854.11 \text{ gal.} / 32.52 \text{ gal./min.}) + (854.11 \text{ gal.} / (207.27 \text{ gal./min.} - 32.52 \text{ gal./min.}))$$

$$= 26.26 \text{ min} + 4.89 \text{ min}$$

$$= 31.15 \text{ min}$$

$$\text{Average Starts Per Day} = 16 / (31.15 \cdot \frac{1 \text{ hr}}{60 \text{ min}}) = 30.82 \text{ starts}$$

$$\text{Average Starts Per Day} = 30.82 \text{ starts} / 16 \text{ hr} = \underline{\underline{1.92 \text{ starts/hr}}}$$

**Pierce College Puyallup Pump Station  
Exhibit A-6: Wet Well Storage**

2190297.10  
4/15/2021

	2015 FLOW RATES		2031 FLOW PROJECTIONS	
			QTY	UNIT
VOLUME OF SEWER PER DAY	22,275	GAL	31,215	GAL
ASSUMED FLOW PERIOD DURING DAY	16.00	HR	16.00	HR
AVERAGE SEWER FLOW = (Q <sub>s</sub> )	23.20	GPM	32.52	GPM
V=FROM PUMP ON TO PUMP OFF	854	GAL	854	GAL
Q <sub>R</sub> = PUMP RATE*	207.00	GPM	207.00	GPM
PEAKING FACTOR	3.68		3.57	
Q <sub>p</sub> = PEAK FLOW	85.45	GPM	116.16	GPM
Q <sub>s</sub> = AVERAGE FLOW	23.20	GPM	32.52	GPM
CYCLE TIME (AVERAGE FLOW)	41.45	MIN	31.16	MIN
CYCLE TIME (PEAK FLOW)	17.02	MIN	16.75	MIN
<b>PUMP STARTS (AVERAGE FLOW TOTAL)</b>	<b>23.16</b>	PER DAY	<b>30.81</b>	PER DAY
<b>PUMP STARTS (PEAK FLOW TOTAL)</b>	<b>56.40</b>	PER DAY	<b>57.30</b>	PER DAY
TIME TO PUMP DOWN (AVERAGE FLOW TOTAL)	4.65	MIN	4.89	MIN
TIME TO PUMP DOWN (PEAK FLOW TOTAL)	7.03	MIN	9.40	MIN
TIME TO FILL (AVERAGE FLOW TOTAL)	36.81	MIN	26.26	MIN
TIME TO FILL (PEAK FLOW TOTAL)	9.99	MIN	7.35	MIN

Measured existing pump rate.

Existing pump station has adequate capacity for FTE growth through 2031.

\*FLOW RATE BASED ON FIELD MEASUREMENTS ON 1/20/2021



**Myers**<sup>®</sup>  
ENGINEERED PRODUCTS

# 4RC and 4RCX

## 4" NON-CLOG WASTEWATER PUMPS

*Standard (4RC) and Explosion-Proof (4RCX) Construction*



3450 RPM



1150 & 1750 RPM



APPROVED  
(4RCX only)



## THE RIGHT CHOICE

The 4RC and 4RCX (explosion-proof) submersible wastewater pumps are the right choice when difficult to pump fibrous or stringy solids are to be expected. The 4RC/4RCX series provides smooth, vibration-free operation when operating at heads higher than peak efficiency. The pump is for use in municipal lift stations, treatment plants and industrial waste water applications.

Myers offers a complete line of wastewater pumps, lift-out rail assemblies, controls and accessories to meet your needs. Call your Myers distributor or the Myers sales office at 419-289-1144 for more details.

***Passes stringy trash, fibrous wastes, slurries, and other difficult to pump solids that standard enclosed or semi-open impellers cannot.***

- Recessed impeller design has completely open passage in volute.
- Pumping action is by vortex; solids can't get caught in impeller volute.
- Operates without vibration or cavitation over entire performance curve. Operates near shutoff without harming pump.

## Durable motor will deliver many years of reliable service.

- Recessed impeller greatly increases bearing life by reducing radial load.
- Oil-filled motor for maximum heat dissipation and constant bearing lubrication.
- Heat sensor thermostats imbedded in windings protect motor from overheat conditions.
- Seal leak probes warn of moisture entry; helps prevent costly motor burnout.

AVAILABLE WITH OPTIONAL FM APPROVAL FOR USE IN CLASS 1, GROUPS C AND D HAZARDOUS LOCATIONS (4RCX ONLY).



### Product Capabilities

Capacities To	1250 gpm	78.8 lps
Heads To	265 ft.	80.8 m
Solids Handling	3 in.	76 mm
Liquids Handling	Raw unscreened sewage, fibrous wastewater, effluent, storm water	
Intermittent Liquid Temp.	up to 140°F	up to 60°C
Winding Insulation Temp. (Class H)	356°F	180°C
Motor Electrical Data	1150 rpm 3–15 HP, 200/230/460/575V, 3 phase, 60 Hz 1750 rpm 10–40 HP, 200/230/460/575V, 3 phase, 60 Hz 3450 rpm 20–60 HP, 230/460/575 volts, 3 phase, 60 Hz	
Third Party Approvals	FM, Class 1, Div. 1, Groups C & D (4RCX only)	
Acceptable pH Range	6–9	
Specific Gravity	.9–1.1	
Viscosity	28 – 35 SSU	
Discharge, Horizontal	4 in.	101.6 mm
Flanged Centerline	125 lb. ANSI	

NOTE: Consult factory for applications outside of these recommendations.

### Construction Materials

Motor Housing, Seal Housing, Cord Cap and Volute Case	Cast iron, Class 30, ASTM A48
Recessed, Impeller	Ductile iron, Class 65, ASTM A536
Power and Control Cord	35 ft. SOOW
Mechanical Seals	Double tandem, type 21
	Standard Optional
	Carbon and ceramic Lower tungsten carbide, silicon carbide
Pump, Motor Shaft	416 SST
Fasteners	300 series SST

# ADVANTAGES BY DESIGN

## POWER & CONTROL CORDS

SOOW, FM and CSA approved oil-resistant cable.

## CABLE ENTRY SYSTEM

Provides triple seal protection. Cable jacket sealed by compression grommet. Individual wires sealed by epoxy potting. Terminal board separates motor chamber from cord cap.

## BALL BEARINGS

Upper and lower ball bearings support shaft and rotor and take axial and radial loads.

## HEAT SENSOR

Protects motor from burnout due to excessive heat from any overload condition. Automatically resets when motor has cooled.

## MOTOR STATOR

Heat shrunk into housing for perfect alignment and best heat transfer. Oil-filled motor conducts heat and lubricates bearings.

## SHAFT SEALS

Double tandem mechanical shaft seals protect motor. Oil-filled seal chamber provides continuous lubrication.

## HEAVY 416 SST SHAFT

Corrosion resistant.

## SEAL LEAK PROBES

Detect water in seal housing. Activate warning light in control panel.

## SLEEVE BEARING

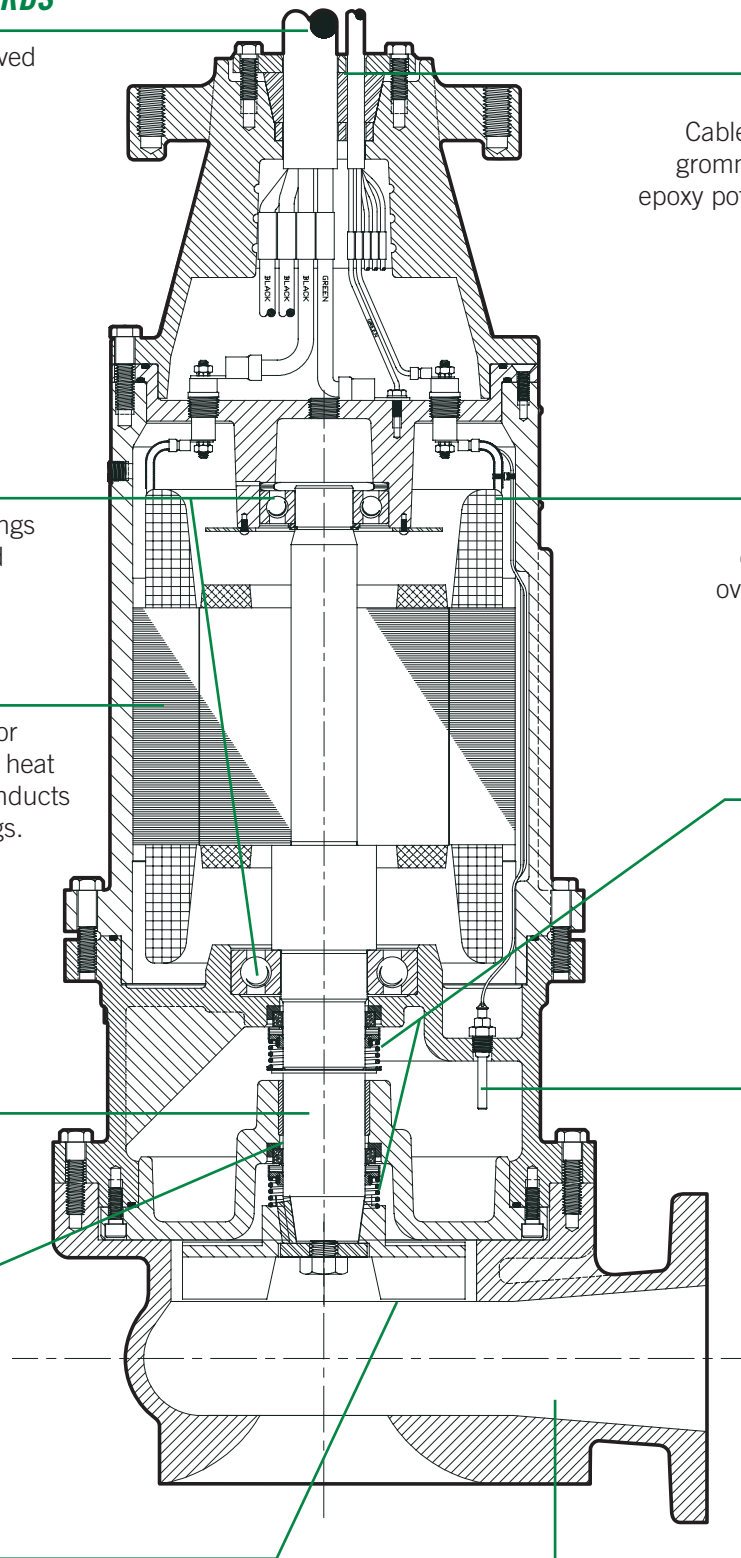
Takes radial shock load; provides flame path.

## RECESSED IMPELLER

Handles stringy trash and slurries without clogging or binding. Pump-out vanes help keep trash from seal; reduces pressure at seal faces.

## VOLUTE CASE

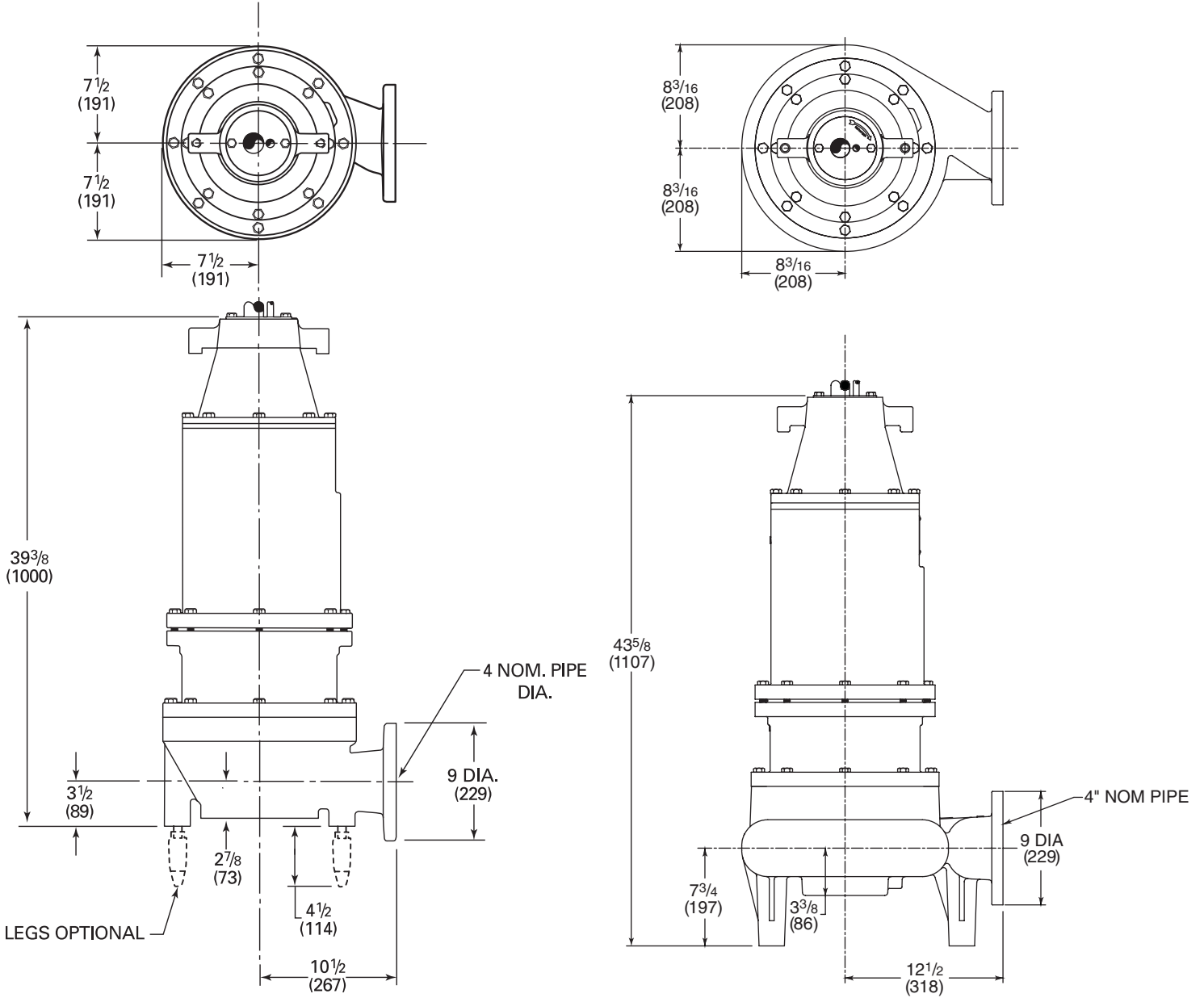
Handles 3" solids. Completely open from inlet to discharge. 4" ANSI 125 lb. flange.



# PUMP DIMENSIONS

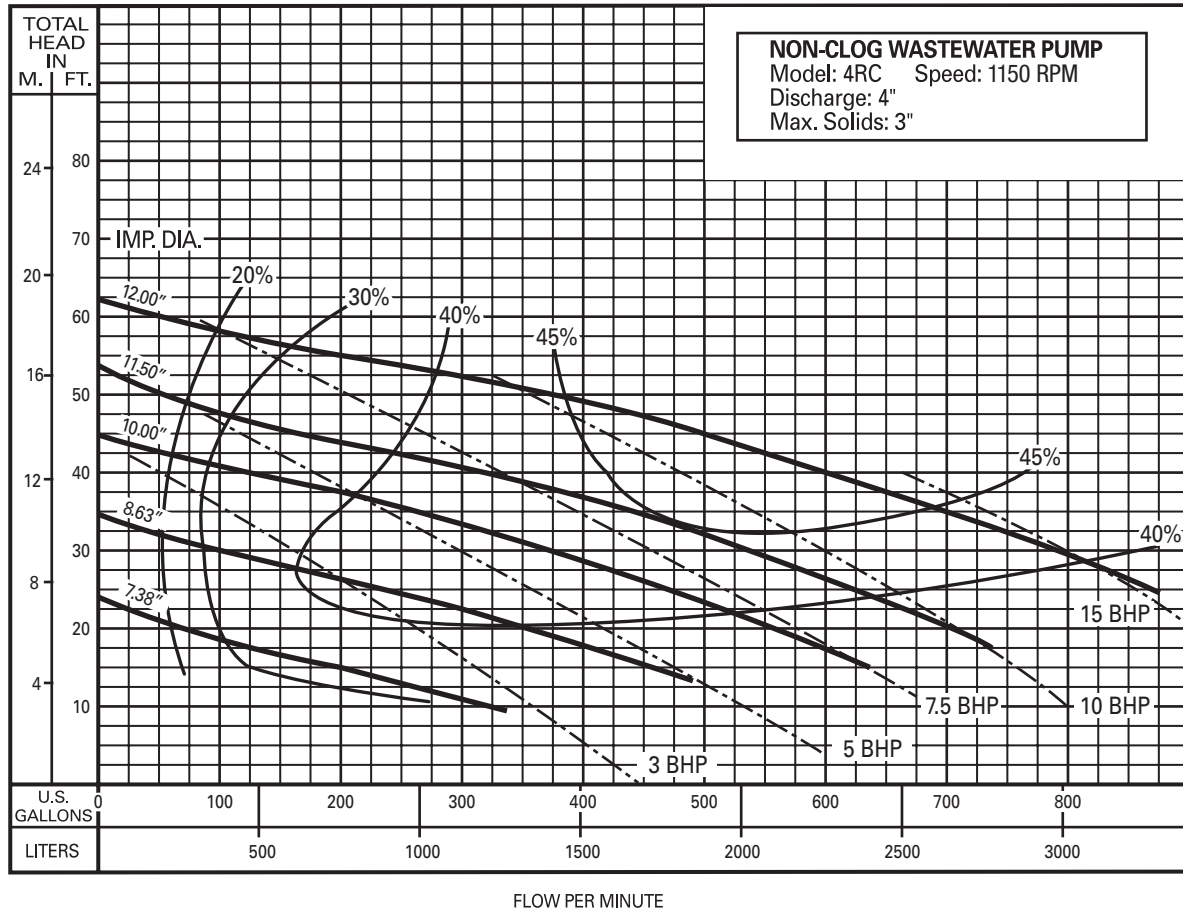
## 3450 RPM

## 1150 & 1750 RPM



Dimensions in inches  
( ) Dimensions in mm

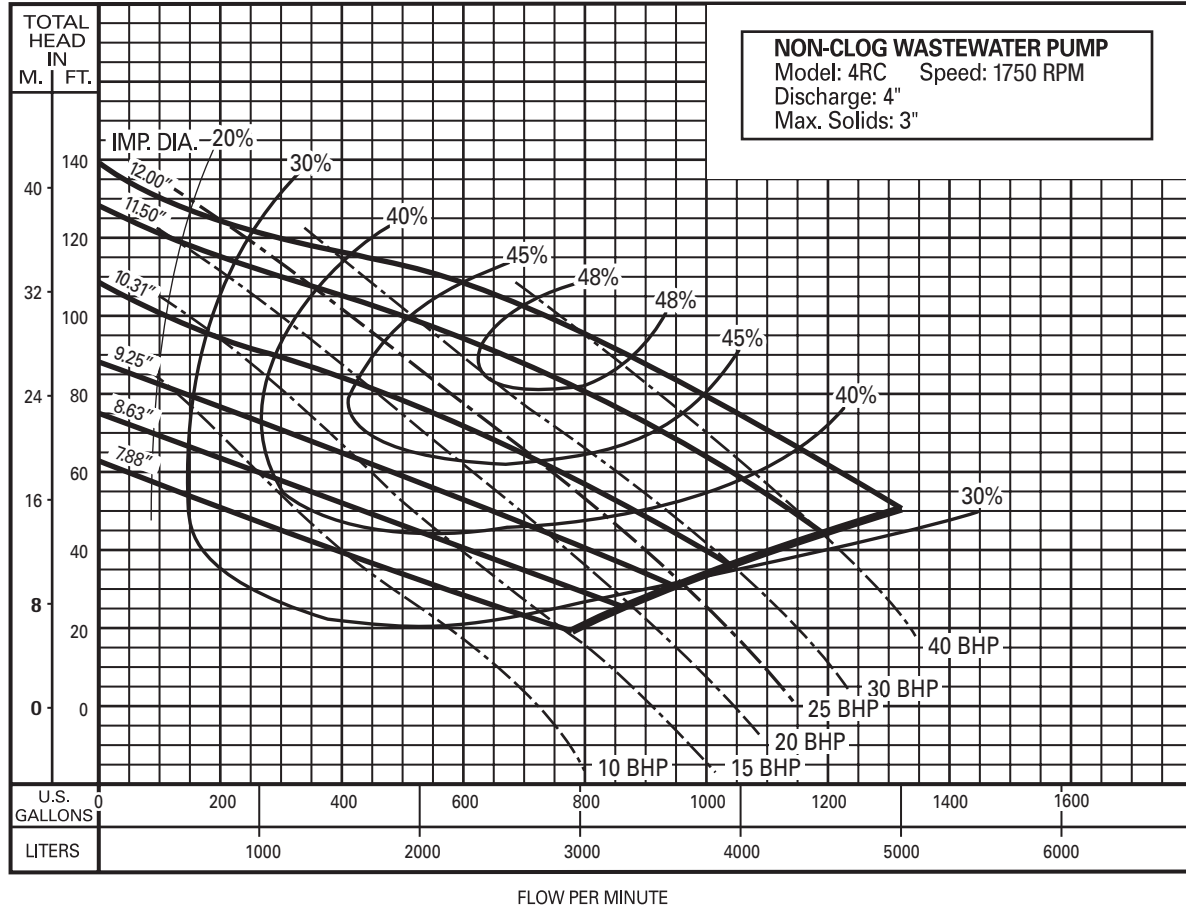
# 1150 RPM PERFORMANCE CURVE



Available Models		Motor Electrical Data												
Standard	Explosion Proof	HP	Volts	Phase	Hertz	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC Code Letter	Service Factor
4RC30M6-03	4RCX30M6-03	3	200	3	60	106	13.3	15.6	3.4	4.1	36.7	4.6	K	1.2
4RC30M6-23	4RCX30M6-23	3	230	3	60	92	11.6	13.6	3.4	4.1	36.7	4.6	K	1.2
4RC30M6-43	4RCX30M6-43	3	460	3	60	46	5.8	6.8	3.4	4.1	36.7	4.6	K	1.2
4RC30M6-53	4RCX30M6-53	3	575	3	60	36.8	4.6	5.4	3.4	4.1	36.7	4.6	K	1.2
4RC50M6-03	4RCX50M6-03	5	200	3	60	106	19.3	23	4.8	5.8	36.7	6.7	J	1.2
4RC50M6-23	4RCX50M6-23	5	230	3	60	92	16.8	20	4.8	5.8	36.7	6.7	J	1.2
4RC50M6-43	4RCX50M6-43	5	460	3	60	46	8.4	10	4.8	5.8	36.7	6.7	J	1.2
4RC50M6-53	4RCX50M6-53	5	575	3	60	37	6.7	8	4.8	5.8	36.7	6.7	J	1.2
4RC75M6-03	4RCX75M6-03	7.5	200	3	60	197	27	32.2	6.8	8.4	68.5	9.4	H	1.2
4RC75M6-23	4RCX75M6-23	7.5	230	3	60	172	23.6	28	6.8	8.4	68.5	9.4	H	1.2
4RC75M6-43	4RCX75M6-43	7.5	460	3	60	86	11.8	14	6.8	8.4	68.5	9.4	H	1.2
4RC75M6-53	4RCX75M6-53	7.5	575	3	60	69	9.4	11.2	6.8	8.4	68.5	9.4	H	1.2
4RC100M6-03	4RCX100M6-03	10	200	3	60	197	34.3	41.4	8.8	10.9	68.5	12.0	H	1.2
4RC100M6-23	4RCX100M6-23	10	230	3	60	172	30	36	8.8	10.9	68.5	12.0	H	1.2
4RC100M6-43	4RCX100M6-43	10	460	3	60	86	15	18	8.8	10.9	68.5	12.0	H	1.2
4RC100M6-53	4RCX100M6-53	10	575	3	60	69	12	14.4	8.8	10.9	68.5	12.0	H	1.2
4RC150M6-03	4RCX150M6-03	15	200	3	60	276	48	59.8	13.0	15.7	95.6	17.5	H	1.2
4RC150M6-23	4RCX150M6-23	15	230	3	60	240	44	52	13.0	15.7	95.6	17.5	H	1.2
4RC150M6-43	4RCX150M6-43	15	460	3	60	120	22	26	13.0	15.7	95.6	17.5	H	1.2
4RC150M6-53	4RCX150M6-53	15	575	3	60	96	17.6	20.8	13.0	15.7	95.6	17.5	H	1.2

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
3	3	69	66	60	51	72	74	63	55
5	3	82	81	77	68	74	72	66	56
7.5	3	84	83	79	71	75	73	66.5	56.5
10	3	87	86	82	75	76	74	67	57
15	3	88	88	86.5	82.5	76	74.5	68	57.5

# 1750 RPM PERFORMANCE CURVE

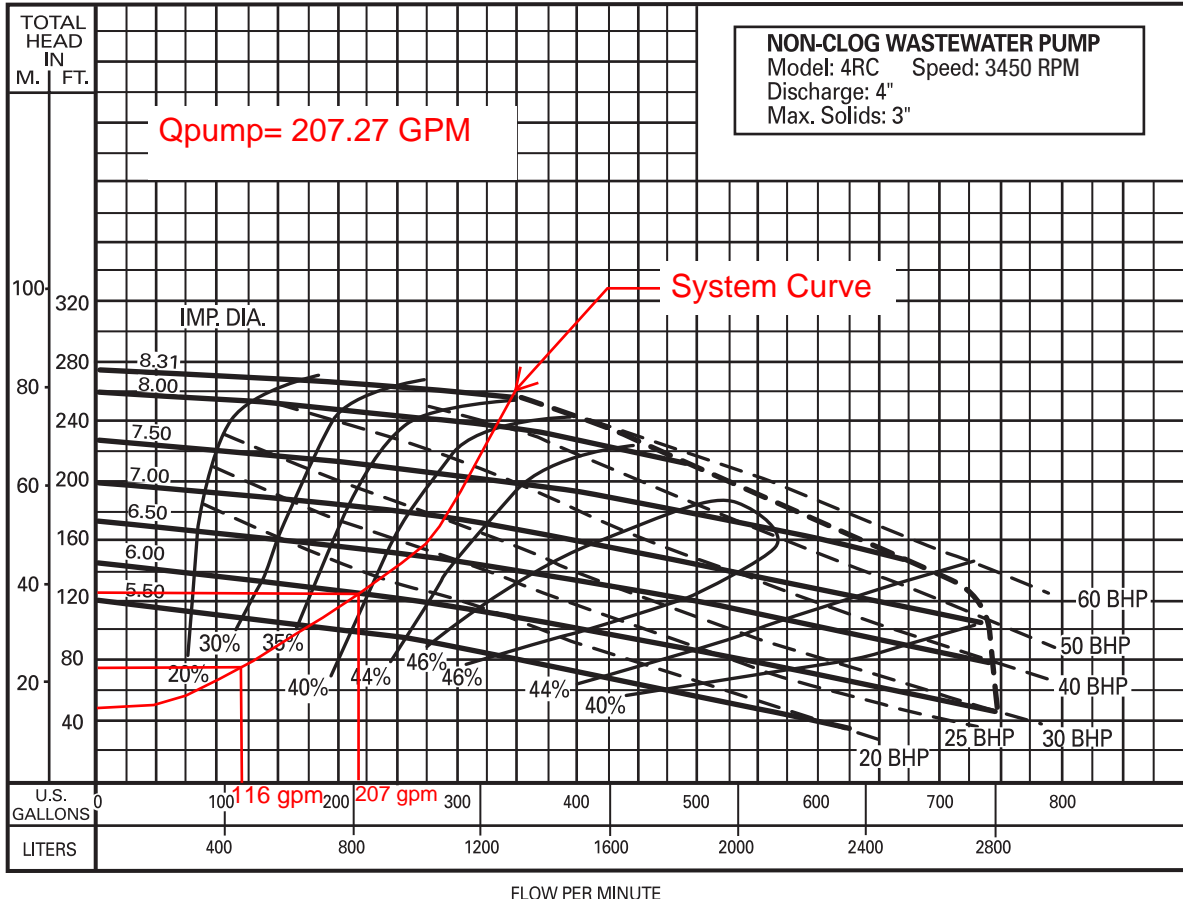


Available Models		Motor Electrical Data												
Standard	Explosion Proof	HP	Volts	Phase	Hertz	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC Code Letter	Service Factor
4RC100M4-03	4RCX100M4-03	10	200	3	60	334	35.9	40.6	9.5	11.4	116	12.4	N	1.2
4RC100M4-23	4RCX100M4-23	10	230	3	60	290	31.2	35.3	9.5	11.4	116	12.4	N	1.2
4RC100M4-43	4RCX100M4-43	10	460	3	60	145	15.6	17.7	9.5	11.4	116	12.4	N	1.2
4RC100M4-53	4RCX100M4-53	10	575	3	60	116	12.5	14.1	9.5	11.4	116	12.4	N	1.2
4RC150M4-03	4RCX150M4-03	15	200	3	60	334	50.6	61	15.0	18.6	115.5	17.5	E	1.2
4RC150M4-23	4RCX150M4-23	15	230	3	60	290	44	53	15.0	18.6	115.5	17.5	E	1.2
4RC150M4-43	4RCX150M4-43	15	460	3	60	145	22	26.5	15.0	18.6	115.5	17.5	E	1.2
4RC150M4-53	4RCX150M4-53	15	575	3	60	116	17.6	21.2	15.0	18.6	115.5	17.5	E	1.2
4RC200M4-03	4RCX200M4-03	20	200	3	60	334	62.5	75	21.2	26.1	115.5	23.9	G	1.2
4RC200M4-23	4RCX200M4-23	20	230	3	60	290	60	72	21.2	26.1	115.5	23.9	G	1.2
4RC200M4-43	4RCX200M4-43	20	460	3	60	145	30	36	21.2	26.1	115.5	23.9	G	1.2
4RC200M4-53	4RCX200M4-53	20	575	3	60	116	24	28.8	21.2	26.1	115.5	23.9	G	1.2
4RC250M4-03	4RCX250M4-03	25	200	3	60	575	78.3	92.2	26.9	33.3	180.1	30.3	G	1.2
4RC250M4-23	4RCX250M4-23	25	230	3	60	452	76	92	26.9	33.3	180.1	30.3	G	1.2
4RC250M4-43	4RCX250M4-43	25	460	3	60	226	38	46	26.9	33.3	180.1	30.3	G	1.2
4RC250M4-53	4RCX250M4-53	25	575	3	60	181	30.4	36.8	26.9	33.3	180.1	30.3	G	1.2
4RC300M4-03	4RCX300M4-03	30	200	3	60	575	92.2	110.7	33.3	41.3	180.1	37.4	G	1.2
4RC300M4-23	4RCX300M4-23	30	230	3	60	452	94	114	33.3	41.3	180.1	37.4	G	1.2
4RC300M4-43	4RCX300M4-43	30	460	3	60	226	47	57	33.3	41.3	180.1	37.4	G	1.2
4RC300M4-53	4RCX300M4-53	30	575	3	60	181	37.6	45.6	33.3	41.3	180.1	37.4	G	1.2
4RC400M4-43	4RCX400M4-43	40	460	3	60	290	61	74	43.2	53.0	231.1	48.6	G	1.2

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
10	3	81	79	74	65	79	77	72	64
15	3	85	84	79	69	88	86	78	68
20	3	88	87.5	81	72.5	91	89	79	69
25	3	87	86	81	73	91	89	80	70
30	3	87	86	83	79	91	89	82	73
40	3	86	86	88	87.5	90	89	86	80



# 3450 RPM PERFORMANCE CURVE



Available Models		Motor Electrical Data												
Standard	Explosion-Proof	HP	Volts	Phase	Hz	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC Code Letter	Service Factor
4RC200M2-23	4RCX200M2-23	20	230	3	60	406	68	80	24.0	27.5	162	27.1	G	1.2
4RC200M2-43	4RCX200M2-43	20	460	3	60	203	34	40	24.0	27.5	162	27.1	z	1.2
4RC200M2-53	4RCX200M2-53	20	575	3	60	162	27.2	32	24.0	27.5	162	27.1	G	1.2
4RC250M2-23	4RCX250M2-23	25	230	3	60	406	83	96	28.6	32.5	162	33.1	G	1.2
4RC250M2-43	4RCX250M2-43	25	460	3	60	203	41.5	48	28.6	32.5	162	33.1	G	1.2
4RC250M2-53	4RCX250M2-53	25	575	3	60	162	33.2	38.4	28.6	32.5	162	33.1	G	1.2
4RC300M2-23	4RCX300M2-23	30	230	3	60	406	95	115	33.4	38.6	162	37.8	G	1.2
4RC300M2-43	4RCX300M2-43	30	460	3	60	203	47.5	57.5	33.4	38.6	162	37.8	G	1.2
4RC300M2-53	4RCX300M2-53	30	575	3	60	162	38	46	33.4	38.6	162	37.8	G	1.2
4RC400M2-43	4RCX400M2-43	40	460	3	60	275	59	70	42.0	49.5	217	47.0	G	1.2
4RC400M2-53	4RCX400M2-53	40	575	3	60	220	47.2	56	42.0	49.5	217	47.0	G	1.2
4RC500M2-43	4RCX500M2-43	50	460	3	60	275	74	89	51.0	61.0	217	58.9	D	1.2
4RC500M2-53	4RCX500M2-53	50	575	3	60	220	59.2	71.2	51.0	61.0	217	58.9	D	1.2
4RC600M2-43	4RCX600M2-43	60	460	3	60	275	89	89	61.0	61.0	217	70.8	C	1.0
4RC600M2-53	4RCX600M2-53	60	575	3	60	220	71.2	71.2	61.0	61.0	217	70.8	C	1.0

Motor Efficiencies and Power Factor									
HP	Phase	Motor Efficiency %				Power Factor %			
		Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
20	3	65	63	58	50	83.5	83	82	80
25	3	67	66	61	54	85	85	84.5	82
30	3	71	70	66	60	86	86.5	86	84
40	3	75.5	75	72	66	86.6	87.7	87.5	86
50	3	75	75.4	74.3	69.5	84.6	86.8	87.8	87.5
60	3	75	75	75.5	72	84.6	84.6	87.5	87.7

**PUMP MODEL** — Pump shall be Myers Model Numbers 4RC/4RCX Non-Clog Submersible Pump with recessed type impeller. All openings in pump shall be large enough to pass a 3" diameter sphere. Discharge flange shall be four (4) inch standard. The pump and motor assembly shall be FM listed for Class 1, Groups C and D explosion-proof service (4RCX only).

**OPERATING CONDITIONS** — Pump shall have a capacity of \_\_\_\_\_ GPM at a total head of \_\_\_\_\_ feet and shall use a \_\_\_\_\_ HP motor operating at \_\_\_\_\_ RPM.

**MOTOR** — Pump motor shall be of the sealed submersible type rated \_\_\_\_\_ HP at \_\_\_\_\_ RPM, 60 Hertz. Motor shall be for three phase 200 volts \_\_\_\_\_, 230 volts \_\_\_\_\_, 460 volts \_\_\_\_\_ or 575 volts \_\_\_\_\_. Motor shall be NEMA B type.

Stator winding shall be of the open type with Class H insulation good for 180°C (356°F) maximum operating temperature. Winding housing shall be filled with a clean high dielectric oil that lubricates bearings and seals and transfers heat from windings and rotor to outer shell. Air-filled motors that do not have the superior heat dissipating capabilities of oil-filled motors shall not be considered equal.

Motor shall have two heavy duty ball bearings to support pump shaft and take radial and thrust loads and a sleeve guide bushing directly above the lower seal to take radial load and act as flame path for seal chamber. Ball bearings shall be designed for 50,000 hours B-10 life. Stator shall be heat shrunk into motor housing.

A heat sensor thermostat shall be attached to and imbedded in the winding and be connected in series with the motor starter contactor coil to stop motor if temperature of winding is more than 302°F. Thermostat to reset automatically when motor cools to safe operating temperature. Three heat sensors to be used on 3 phase motors. The common pump motor shaft shall be of 416 stainless steel.

**SEALS** — Motor shall be protected by two mechanical seals mounted in tandem with a seal chamber between the seals. Seal chamber shall be oil filled to lubricate seal face and to transmit heat from shaft to outer shell.

Seal face shall be carbon and ceramic and lapped to a flatness of one light band. Lower seal faces shall be \_\_\_\_\_ carbide (optional).

A double electrode shall be mounted in the seal chamber to detect any water entering the chamber through the lower seal. Water in the chamber shall cause a red light to turn on at the control box. This signal shall not stop the motor but shall act as a warning only, indicating service is required.

**IMPELLER** — The impeller shall be ductile iron and of the recessed type. Pump-out vanes shall be used on back shroud. Impeller shall be dynamically balanced. Impeller shall be driven by stainless steel key and impeller held in position with lock screw and washer.

Impeller and motor shall have top lift-out of case so that the assembly can be removed without disturbing any piping.

**PUMP CASE** — The volute case shall be cast iron and have a flanged center line discharge. Discharge flange shall be 4" standard with bold holes straddling center line. The pump case shall have a minimum of 3" diameter openings to allow for free passage of a 3" diameter spherical solid.

**PUMP AND MOTOR CASTING** — All castings shall be of high tensile cast iron and shall be treated with phosphate and chromate rinse. All fasteners shall be 302 stainless steel.

**BEARING END CAP** — Upper motor bearing cap shall be a separate casting for easy mounting and replacement.

**POWER CABLES** — Power cord and control cord shall be triple sealed. The power and control conductor shall be single strand sealed with epoxy potting compound and then clamped in place with rubber seal bushing to seal outer jacket against leakage and to provide for strain pull. A third sealing area shall be provided by a terminal board to separate the cable entry chamber from the motor chamber. Cords shall withstand a pull of 300 pounds.

Insulation of power and control cords shall be type SO or SOOW. Both control and power cords shall have a green carrier ground conductor that attaches to motor frame.



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[www.femyers.com](http://www.femyers.com)



MATCH LINE SHEET C4.3

SE 1/4 SEC. 3 AND SW 1/4 SECTION 2, T. 19 N., R. 4 E., W.M.

STRUCTURE DATA						
STRUCTURE	STATION	OFFSET	RIM	I.E. IN	I.E. OUT	
SSMH #3	A 15+87.00	6.0' FT	521.54	510.50-S & E	510.40-N	
SS STUB #1	A 15+87.00	37.5' FT			511.14-W	
SSMH #4	A 13+39.33	8.0' FT	528.87	523.87-S & W	522.77-N	
SSMH #5	A 13+04.90	8.0' FT	532.22	525.86-SE & W	525.98-N	
SS STUB #2	A 13+04.90	30.0' FT			526.38-E	
SSMH #7	D 42+44.30	5.0' FT	532.93	523.97-S	523.87-E	
SSCO #2	D 42+44.30	122.0' FT	533.7		528.90-W	
SSMH #8	SEE PLAN		553.01	549.01	548.68-SW	
SSMH #9 (EX.)	SEE PLAN		554.01	544.5	543.9-SW	

PIPE DATA				
FROM	TO	LENGTH	SIZE	SLOPE
SSMH #3	SSMH #2	216	8" PVC	0.0200
SS STUB #1	SSMH #3	32	8" PVC	0.02
SSMH #1	SSMH #5	216	8" PVC	0.0568
SSMH #5	SSMH #4	66	8" PVC	0.0408
SS STUB #2	SSMH #5	36	8" PVC	0.02
SSMH #7	SSMH #4	291	8" PVC	0.0041
SSCO #2	SSMH #7	177	8" PVC	0.0088
SSMH #8	SSMH #9	63	8" PVC	0.0624

GENERAL NOTES:

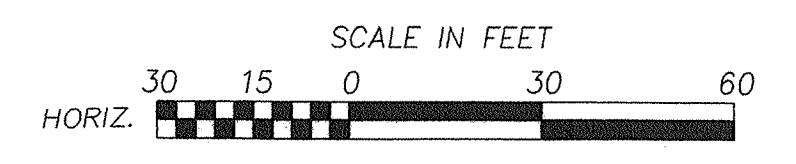
- SEE GENERAL AND STANDARD NOTES SHEET C5.12 & C5.13 FOR MATERIAL SPECIFICATIONS AND ADDITIONAL REQUIREMENTS.
- SEE SHEET C0.2 FOR HORIZONTAL CONTROL.
- ALL GATE VALVES SHALL BE PER CITY STANDARD NO. 307, SEE SHEET C5.8 FOR DETAIL.
- ALL THRUST BLOCKING SHALL BE PER CITY STANDARD NO. 308, SEE SHEET C5.9 FOR DETAIL.
- ALL SANITARY SEWER MANHOLES SHALL BE PER CITY STANDARD NO. 401, SEE SHEET C5.10 FOR DETAIL.
- SEE SHEET C4.5 FOR SEWER FORCE MAIN PROFILE.
- GAS MAIN ALIGNMENT SHOWN SCHEMATICALLY. COORDINATE WITH PSE ON GAS MAIN DESIGN AND CONSTRUCTION.

SANITARY SEWER NOTES:

- CONSTRUCT SIDE SEWER PER CITY STANDARD NO. 405.1, SEE SHEET C5.10 FOR DETAIL.
- CONSTRUCT SEWER MAIN CLEAN OUT (FOR DEAD END LINE) PER CITY STANDARD NO. 404, SEE SHEET C5.10 FOR DETAIL.
- CONSTRUCT BEND (MOMM) IN 4" DIA. SANITARY SEWER FORCE MAIN WITH THRUST-BLOCKING. PER DETAILS 308.1 & 308.3 ON SHEET C5.9. SEE SANITARY SEWER FORCE MAIN BEND-TABLE THIS SHEET FOR BEND LOCATIONS. FOLDED MAIN TO HDPE C.O.P.#5
- CONSTRUCT NEW SANITARY SEWER MANHOLE 3'-FT OFF CURB. SET RIM ELEVATION TO MATCH EXISTING PAVEMENT. RESTORE PAVEMENT AND CURB. ELEVATION DATA IS APPROXIMATE. CONTRACTOR SHALL VERIFY ELEVATIONS AND SET FORCE MAIN ELEVATION TO PROVIDE 42-IN MINIMUM COVER. OUTLET IE FOR 8-IN GRAVITY SEWER LINE SHALL BE SET TO MATCH CROWN WITH FORCE MAIN. CHANNEL MANHOLE PER WSDOT STANDARD SPECIFICATIONS. MANHOLE SHALL BE COATED WITH TMIH 120 VINYL ESTER ANTIUM POLYMORPHIC RESIN OR APPROVED EQUAL WHICH IS RESISTANT TO SULFURIC ACID AND HYDROGEN SULFIDE.
- BACKFILL TO LEVEL WITH BOTTOM OF CURB AND COMPACT APPROXIMATELY 5'-FT BEYOND EDGE OF CURB TO PROVIDE COVER FOR FORCE MAIN. EXTEND EXISTING 8-INCH DUCTILE IRON STORM PIPE BEYOND TOE OF FILL. PLACE 12-INCH THICK MEDIUM RIP RAP TO 1'-FT ABOVE TOP OF PIPE, 5'-FT BEYOND END OF PIPE, AND 5'-FT WIDTH.

WATER CONSTRUCTION NOTES:

- A 15+55.00 (8' LT)  
2-INCH WATER SERVICE CONNECTION PER CITY STANDARD NO. 302, SEE SHEET C5.8 FOR DETAIL.  
1-DOUBLE STRAP SADDLE  
1-2" GATE VALVE  
25-LF 1/2" 2" SERVICE LINE
- A 15+59.00 (21.5' LT)  
2-INCH WATER SERVICE METER AND METER BOX PER CITY STANDARD NO. 302, SEE SHEET C5.8 FOR DETAIL.
- A 15+66.00 (21.5' LT)  
2" DOW PER CITY STANDARD NO. 309, SEE SHEET C5.9 FOR DETAILS.  
SEE LANDSCAPE PLANS FOR CONTINUATION OF IRRIGATION SYSTEM.
- A 15+46.00 (8.0' LT)  
1-8" X 8" X 8" TEE (M/JFLX/MJ)  
1-8" GATE VALVE (FLX/MJ)  
THRUST BLOCKING
- A 15+46.00 (15.0' RT)  
FIRE HYDRANT ASSEMBLY, PER CITY STANDARD NO. 304, SEE SHEET C5.8 FOR DETAIL.
- A 14+50.50 (8.0' LT)  
1-8" X 8" X 8" TEE (M/JFLX/MJ)  
1-8" GATE VALVES (FLX/MJ)  
THRUST BLOCKING
- A 13+83.93 (8.0' LT)  
1-8" X 8" X 8" TEE (FLX/FL)  
3-8" GATE VALVES (FLX/MJ)  
THRUST BLOCKING
- D 42+58.83 (8.0' RT)  
1-8" X 8" X 8" TEE (M/JFLX/MJ)  
1-8" GATE VALVE (FLX/MJ)  
THRUST BLOCKING
- D 42+58.83 (48' LT)  
2-INCH BLOW OFF ASSEMBLY, PER CITY STANDARD NO. 305, SEE SHEET C5.8 FOR DETAIL.  
1-8" BLIND FLANGE  
1-2" BLOW OFF ASSEMBLY W/DOUBLE STRAP SADDLE, METER BOX, 2" GATE VALVE  
THRUST BLOCKING  
VALVE MARKER POST, CITY STANDARD NO. 306, SEE SHEET C5.8 FOR DETAIL.
- D 43+85.78 (8.0' RT)  
1-8" X 8" X 8" TEE (M/JFLX/FL)  
1-8" GATE VALVE (FLX/MJ)  
1-8" BLIND FLANGE  
THRUST BLOCKING
- D 43+85.78 (23.0' LT)  
FIRE HYDRANT ASSEMBLY, PER CITY STANDARD NO. 304, SEE SHEET C5.8 FOR DETAIL.
- A 13+12.00 (8.0' LT)  
1-8" X 8" X 8" TEE (M/JFLX/MJ)  
1-8" GATE VALVE (FLX/MJ)  
THRUST BLOCKING
- A 13+12.00 (32.0' RT)  
FIRE HYDRANT ASSEMBLY, PER CITY STANDARD NO. 304, SEE SHEET C5.8 FOR DETAIL.
- A 11+71.11 (2.9' RT)  
SEWER FORCE MAIN CROSSING  
MAINTAIN 18" MIN. SEPARATION
- A 11+52.83 (8.9' RT)  
1-8" 45° BEND (M/JM/MJ)  
THRUST BLOCKING
- O 150+68.09 (1.07' LT)  
1-8" X 8" X 8" TEE (FLX/FLX/MJ)  
2-8" GATE VALVES (FLX/MJ)  
THRUST BLOCKING



SANITARY SEWER FORCE MAIN BEND TABLE			
SS BEND #	TYPE	STATION	OFFSET
SS BEND #1	45°	A 15+13.21	49.0' LT
SS BEND #4	45°	A 14+88.71	22.4' LT
SS BEND #5	111.4°	SEE PLAN	

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T. PATRICK ALLEN  
STATE OF WASHINGTON  
REG. # 16874  
PROFESSIONAL ENGINEER  
11/21/03

EXPIRES: 11/21/03

Pierce College Puyallup

College Center Building

Pierce College Puyallup, Washington

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C.O.P.#5 FORCED MAIN  
REVISIONS TO H.D.P.E.

REVISION NUMBER	DATE	DESCRIPTION	REVISION EDITION	CLOSING DATE
1		Gas Line Revised		

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date May 2003  
designed by MJJ  
drawn by LER/JMB  
checked by TPA  
approved by TPA

Sheet Title  
**UTILITY PLAN**

Sheet No.  
**C4.2**  
21 of 41  
Job No.

State Project No.  
**2000-050 G (1-1)**

**Fire Hydrant/FDC location APPROVED**

BY M. J. J.  
CITY OF PUYALLUP  
ENGINEERING DEPARTMENT

DATE 6-02-03

NOTE:  
THIS APPROVAL IS VOID AFTER 1 YEAR FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS.

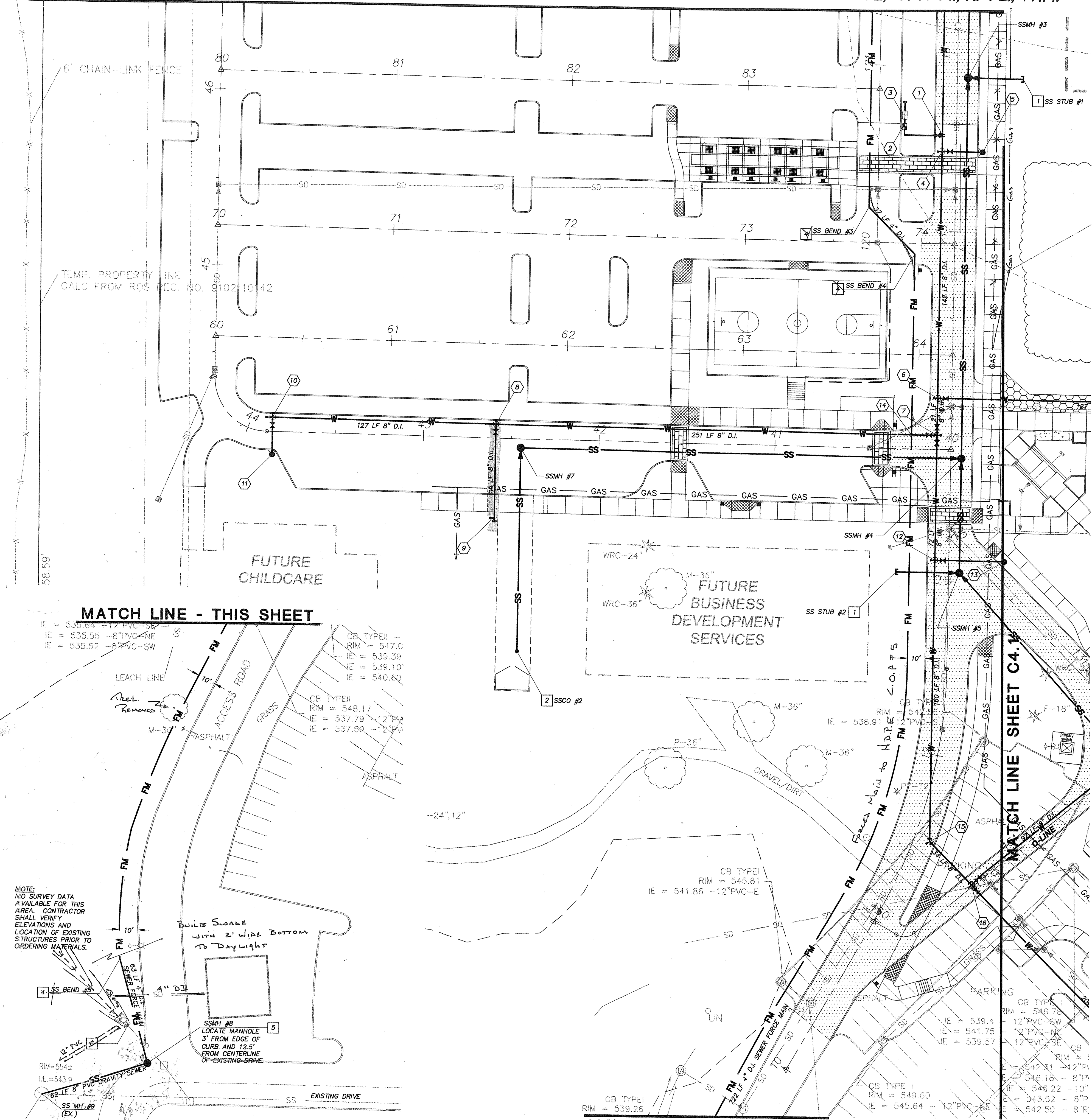
FIELD CHANGES TO THESE PLANS AS DETERMINED BY THE CITY ENGINEER.

**APPROVED**

BY M. J. J.  
CITY OF PUYALLUP  
ENGINEERING DEPARTMENT

DATE 6/02/03

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MATCH LINE - THIS SHEET

CB TYPE I	RIM	I.E.
12" PVC-SW	547.0	535.64
8" PVC-NE	539.39	535.55
8" PVC-SW	539.10	535.52

NOTE:  
NO SURVEY DATA AVAILABLE FOR THIS AREA. CONTRACTOR SHALL VERIFY ELEVATIONS AND LOCATION OF EXISTING STRUCTURES PRIOR TO ORDERING MATERIALS.

BUILD SWALE WITH 2" WIDE BOTTOM TO DAYLIGHT

LOCATE MANHOLE 3' FROM EDGE OF CURB AND 12.5' FROM CENTERLINE OF EXISTING DRIVE.

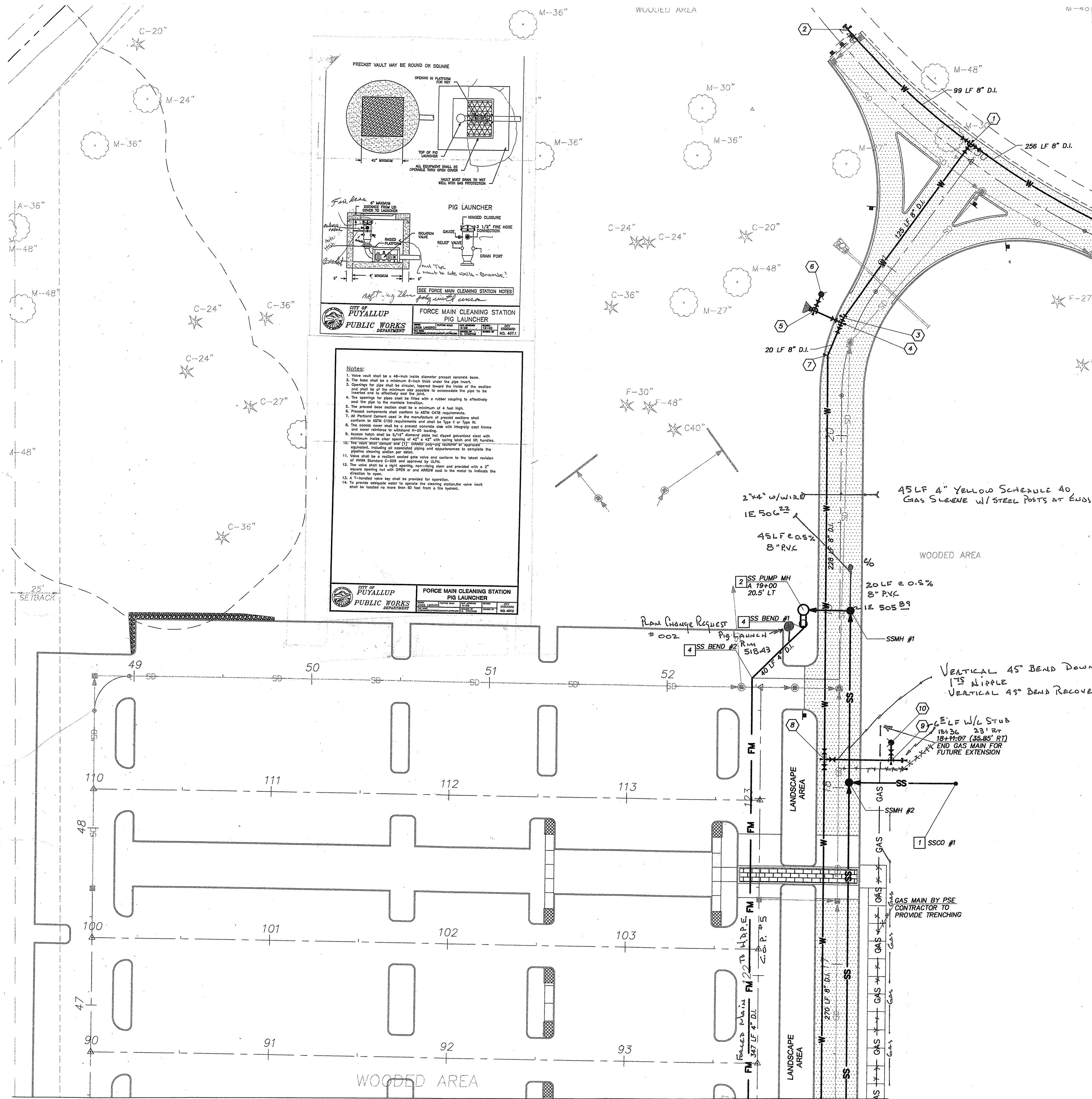
MATCH LINE - THIS SHEET

CB TYPE I	RIM	I.E.
12" PVC-SW	546.78	539.4
12" PVC-SW	546.18	541.75
12" PVC-NE	543.52	539.57



May 28, 2003 - 8:57am  
 P:\CADD\ACAD\1096 Pierce College\Sheets\1  
 PC-utility.dwg

SE 1/4 SEC. 3 AND SW 1/4 SECTION 2, T. 19 N., R. 4 E., W.M.



**STRUCTURE DATA**

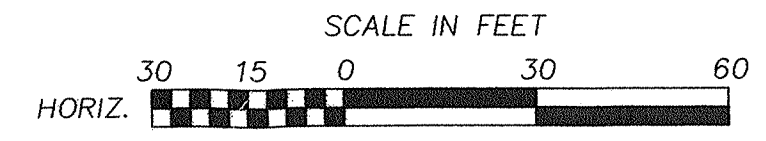
STRUCTURE	STATION	OFFSET	RIM	I.E. IN	I.E. OUT
PUMP STATION	A 19+00.0	20.5' LT	514.75	505.26 - E	
SSMH #1	A 19+00.0	6.0' RT	514.00	505.49 - S	505.39 - W
SSMH #2	A 19+03.0	6.0' RT	517.32	505.98 - N	505.98 - S
SSCO #1	A 19+03.0	66.0' RT	-	-	506.32 - W

**PIPE DATA**

FROM	TO	LENGTH	SIZE	SLOPE
SSMH #2	SSMH #1	37	8" PVC	0.005
SSCO #1	SSMH #2	60	8" PVC	0.004
SSMH #1	PUMP	27	8" PVC	0.005

**GENERAL NOTES:**

1. SEE GENERAL AND STANDARD NOTES SHEETS C5.12 & C5.13 FOR MATERIAL SPECIFICATIONS AND ADDITIONAL REQUIREMENTS.
2. SEE SHEET C0.2 FOR HORIZONTAL CONTROL.
3. ALL GATE VALVES SHALL BE PER CITY STANDARD NO. 307, SEE SHEET C5.8 FOR DETAIL.
4. ALL THRUST BLOCKING SHALL BE PER CITY STANDARD NO. 308, SEE SHEET C5.9 FOR DETAIL.
5. ALL SANITARY SEWER MANHOLES SHALL BE PER CITY STANDARD NO. 401, SEE SHEET C5.10 FOR DETAIL.
6. GAS MAIN ALIGNMENT SHOWN SCHEMATICALLY. COORDINATE WITH PSE ON GAS MAIN DESIGN AND CONSTRUCTION.



**SANITARY SEWER FORCE MAIN BEND TABLE**

SS BEND #	STATION	OFFSET
SS BEND #1	A 18+89.43	20.5' LT
SS BEND #2	A 18+60.83	49.0' LT

**SANITARY SEWER NOTES:**

1. CONSTRUCT SEWER MAIN CLEAN OUT (FOR DEAD END LINE) PER CITY STANDARD NO. 404, SEE SHEET C5.10 FOR DETAIL.
2. CONSTRUCT SANITARY SEWER PUMP STATION & VALVE VAULT, SEE SHEET C5.11 FOR DETAIL.
3. CONSTRUCT 45° BEND (M/M/J) IN 4" HDPE SANITARY SEWER FORCE MAIN WITH THRUST BLOCKING, PER DETAILS 308.1 & 308.3 ON SHEET C5.9. SEE SANITARY SEWER FORCE MAIN BEND TABLE THIS SHEET FOR BEND LOCATIONS.

**WATER CONSTRUCTION NOTES:**

1. B 249+93.89 (8.0' LT)  
 1-8" X 8" X 8" TEE (FLXFL)  
 3-8" GATE VALVES (FLX/M)  
 THRUST BLOCKING
2. B 248+95.00 (8' LT), 2-INCH BLOW OFF ASSEMBLY, PER CITY STANDARD NO. 305, SEE SHEET C5.8 FOR DETAIL.  
 1-8" BLIND FLANGE  
 1-2" BLOW OFF ASSEMBLY W/DOUBLE STRAP SADDLE, METER BOX, 2" GATE VALVE  
 THRUST BLOCKING  
 VALVE MARKER POST PER CITY STANDARD NO. 306, SEE SHEET C5.8 FOR DETAIL.
3. A 20+63.82 (8.35' LT)  
 1-8" D.I. 11.25" BEND (M/M/J)  
 THRUST BLOCKING
4. A 20+61.05 (8.38' LT)  
 1-8" X 8" X 8" TEE (FLXFL)  
 2-8" GATE VALVES (FLX/M)  
 THRUST BLOCKING
5. A 20+61.05 (29.5' LT)  
 1-8" X 8" X 8" TEE (M/M/FLX/M)  
 1-8" BLIND FLANGE  
 THRUST BLOCKING
6. A 20+66 (29.5' LT)  
 1-FIRE HYDRANT ASSEMBLY, PER CITY STANDARD NO. 304, SEE SHEET C5.8 FOR DETAIL. BASE ELEVATION 510.60
7. A 20+42.89 (10.28' LT)  
 1-8" D.I. 22.50" BEND (M/M/J) (1.5 Bends)  
 THRUST BLOCKING
8. A 18+16.00 (8.0' LT)  
 1-8" X 8" X 8" TEE (FLXFL)  
 3-8" GATE VALVES (FLX/M)  
 THRUST BLOCKING
9. A 18+16.00 (29.5' RT)  
 1-8" X 8" X 8" TEE (M/M/FLX/M)  
 1-8" GATE VALVE (FLX/M)  
 1-8" BLIND FLANGE  
 THRUST BLOCKING
10. A 18+26.00 (29.5' RT)  
 1-FIRE HYDRANT ASSEMBLY, PER CITY STANDARD NO. 304, SEE SHEET C5.8 FOR DETAIL. BASE ELEVATION 517.65.

MATCH LINE SHEET C4.4

MATCH LINE SHEET C4.2

**Fire Hydrant/FDC location APPROVED**

BY M. D. Ford  
 CITY OF PUYALLUP  
 ENGINEERING DEPARTMENT

DATE 6-02-03

NOTE:  
 THIS APPROVAL IS VOID AFTER 1 YEAR FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS.

FIELD CHANGES TO THESE PLANS AS DETERMINED BY THE CITY ENGINEER.

**APPROVED**

BY [Signature]  
 CITY OF PUYALLUP  
 ENGINEERING DEPARTMENT

DATE 6/02/03

NOTE:  
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Field conditions may dictate changes to these plans as determined by the city engineer.

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**T. PATRICK ALLEN**  
 REGISTERED PROFESSIONAL ENGINEER  
 5/20/03  
 EXPIRES: 11/21/03

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**SANITARY SEWER EXTENSION**  
 REVISIONS: Pig LAUNCHER  
 C.D.P. 13 GAS SUBMIT  
 REVISION NUMBER DATE REVISION EDITION CLOSING DATE  
 1 5/20/03 1 1  
 2 6/2/03 2 1  
 C.D.P.'S Force Main to H.D.P.E.  
 Gas Line Revision

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date May 2003  
 designed by MJJ  
 drawn by LER/JMB  
 checked by TPA  
 approved by TPA

Sheet Title  
**UTILITY PLAN**

Sheet No.  
**C4.3**  
 22 of 41

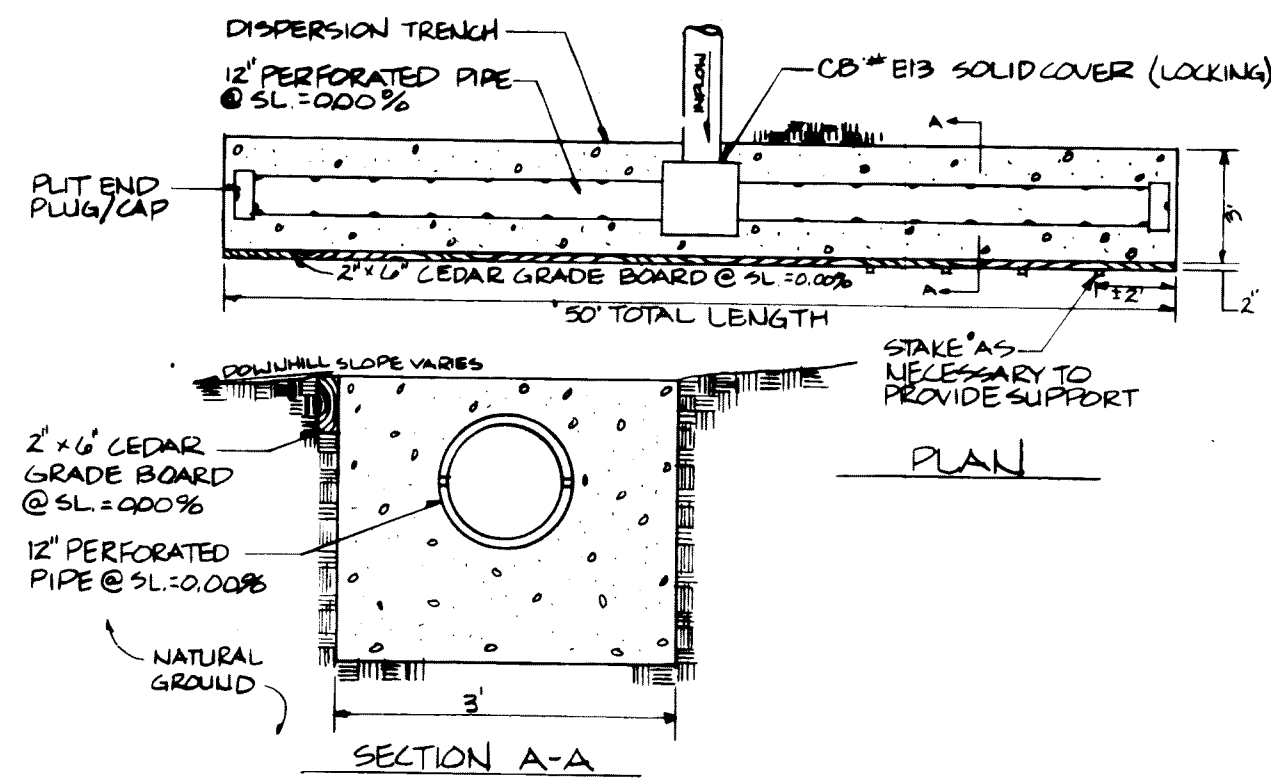
Job No.

State Project No.  
 2000-050 G (1-1)

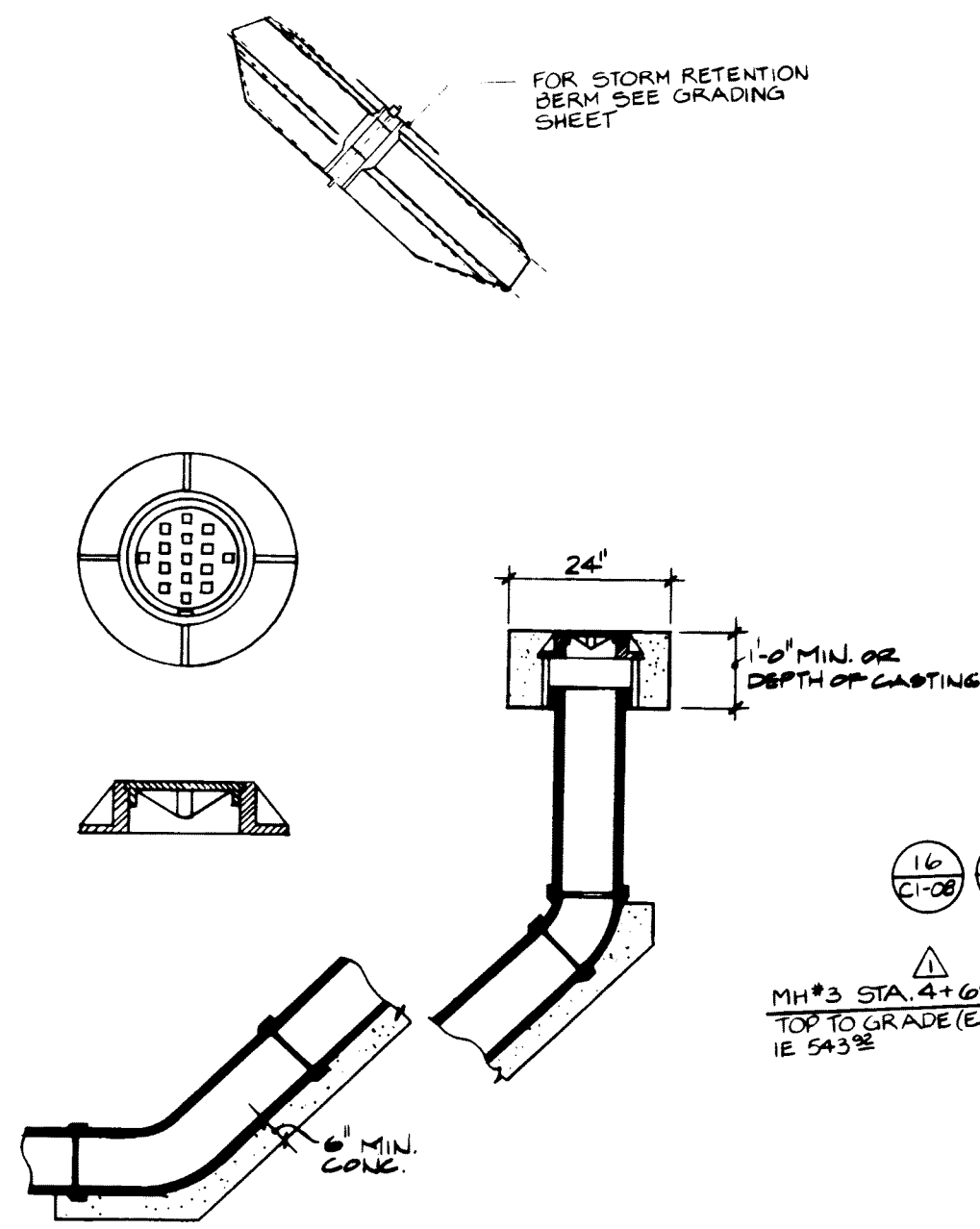




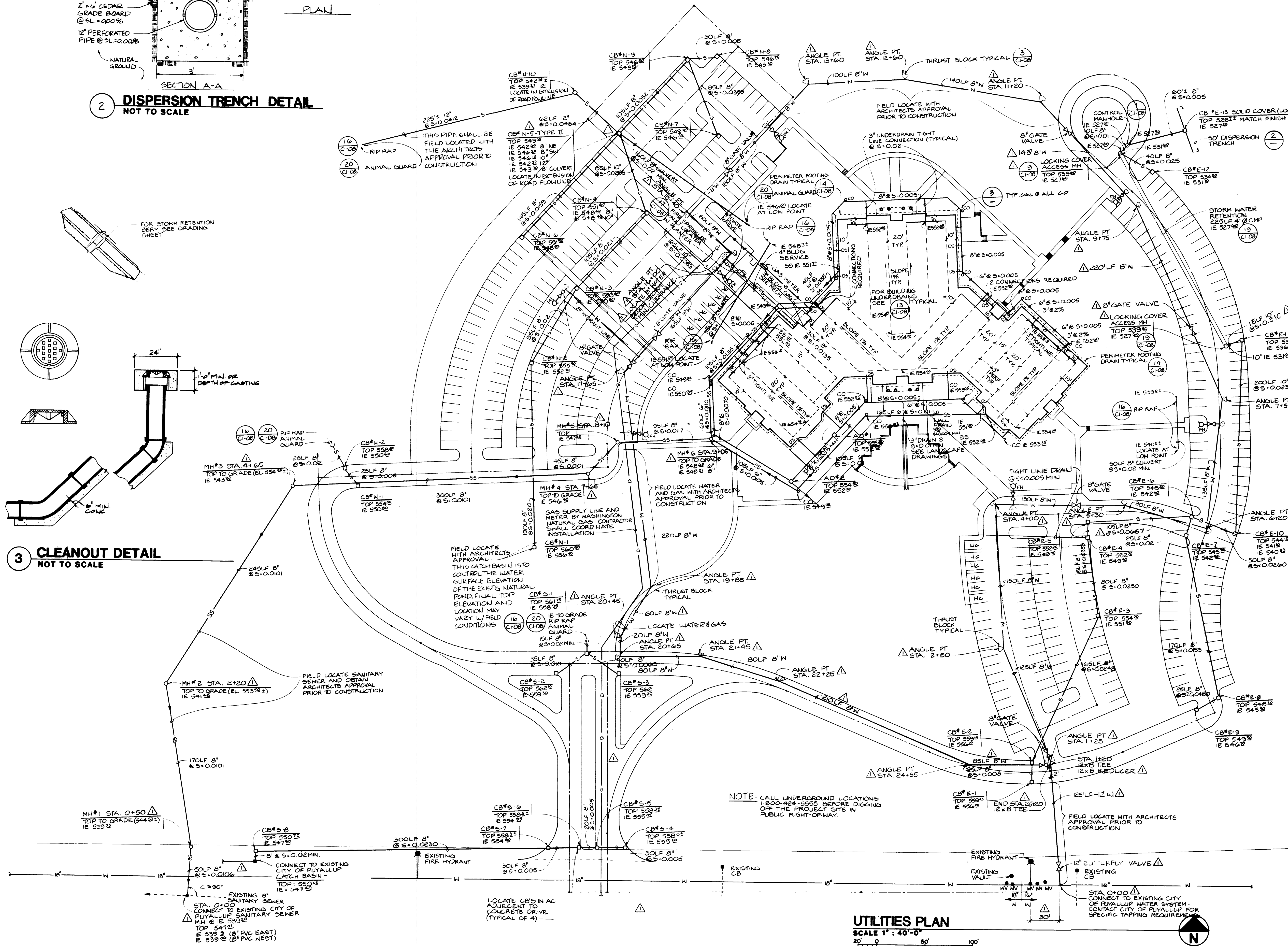




2 DISPERSION TRENCH DETAIL  
NOT TO SCALE



3 CLEANOUT DETAIL  
NOT TO SCALE



- LEGEND**
- CB CATCH BASIN
  - OMH MANHOLE
  - YFH FIRE HYDRANT
  - CO CLEAN OUT
  - WV WATER VALVE
  - SS SANITARY SEWER
  - S STORM DRAINAGE
  - N WATER
  - FD FOOTING DRAIN
  - UD UNDERDRAIN
  - EC EXISTING CONTOUR
  - FG FINISH GRADE CONTOUR
  - AD AREA DRAIN
  - TB THRUST BLOCK
  - FS FIRE SPRINKLER SERVICE
  - EW EXISTING WATER VALVE
  - G GAS
  - C CENTER LINE
  - CL CUT OR FILL SLOPE
  - CHS CONTROL SWING HUB STACK
  - THW TOP WALL ELEVATION
  - SE SPOT ELEVATION
  - SL SLOPE
  - YL YIELD
  - SL SPEED LIMIT
  - CS CROSSWALK STEPPING
  - HE TYPICAL HANDICAP SYMBOL REQUIRED

- GENERAL NOTES**
1. SEE TYPICAL DETAIL (12) FOR BEDDING REQUIREMENTS.
  2. SEE TYPICAL DETAIL FOR CATCH BASIN PIPING.
  3. DOWN SPOUT CONNECTION TO HEADER SHALL BE SAME SIZE AS DOWN SPOUT AT 5.00 MIN.
  4. UNDERDRAIN AND FOOTING DRAIN CONNECTION LINES SHALL BE 3" TIGHTLINE AT 5.00 MIN.
  5. LOCATE DOWNSPOUT POSITIONS FROM ARCHITECTURAL & MECHANICAL DRAWINGS.
  6. SEE MECHANICAL PLANS FOR WATER & SANITARY SEWER STUD LOCATIONS.
  7. BUILDING FINISH FLOOR IS ELEVATION 556.00
  8. TOP ELEVATION OF CATCH BASINS ADJACENT TO 35TH AVENUE SOUTHEAST IS APPROXIMATE AND SHALL BE ADJUSTED TO MATCH FIELD CONDITIONS.
  9. DISPERSION TRENCH SHALL BE CONSTRUCTED WITH MINIMUM DAMAGE TO NATURAL VEGETATION.
  10. SEE MECHANICAL AND ELECTRICAL SITE PLANS FOR ADDITIONAL UTILITIES.
  11. SEE SHEET CI-03 FOR DATUM.
  12. SEE LANDSCAPE SECTION FOR RESTORATION OF DISTURBED AREAS.
  13. TOP ELEVATION OF MANHOLE RIMS IN UNIMPROVED AREA SHALL BE ADJUSTED TO MEET FIELD REQUIREMENTS.
  14. SEE TYPICAL DETAIL (3) FOR CLEANOUT FOR ADD. NOTES SEE SH. CI-04.

NOTE: CALL UNDERGROUND LOCATIONS 1-800-424-5555 BEFORE DIGGING OFF THE PROJECT SITE IN PUBLIC RIGHT-OF-WAY.

UTILITIES PLAN  
SCALE 1" = 40'-0"  
20' 0" 50' 0" 100'

**APPROVED**

WATER SYSTEM	STORM LAYOUT
SANITARY SEWER	STORM DRAIN
DETENTION SYSTEM	LANDSCAPING
PLANNING COMMISSION / CITY COUNCIL	BUILDING SETBACKS
FIRE LINE/DOUBLE BACKFLOW PREVENTOR	

City Engineer: *Thad Gonyea* DATE: 6-21-09  
PLANNING DIRECTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

THIS APPROVAL IS SUBJECT TO THE MATERIAL AND CONSTRUCTION BEING IN COMPLIANCE WITH STATE AND LOCAL STANDARDS AND IS VALID ONE (1) YEAR FROM THIS APPROVAL DATE.

IF SHEET IS LESS THAN 30" x 42"  
IT IS A REDUCED PRINT.  
SCALE REDUCED ACCORDINGLY.

DRAWING NUMBER  
Pierce College Phase 1  
DRAWING NUMBER  
56 SE

PHASE 1  
CONSTRUCTION DOCUMENTS  
NO. 05719

MMA  
ARCHITECTURE  
PLANNING  
INTERIOR

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NATIONAL PROFESSIONAL ENGINEER

# 9.10 Wetlands Report

# **MSGS ARCHITECTS**

## **PIERCE COLLEGE – PUYALLUP CAMPUS REVISED WETLAND RECONNAISSANCE AND VERIFICATION REPORT**

PREPARED FOR:

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Figure 1. Wetland Reconnaissance Map





## **1. INTRODUCTION**

Grette Associates, LLC has been contracted by MSGS Architects to perform a wetland reconnaissance and verification investigation of a 43.79-acre site located near Puyallup, Washington. The site is located north of the existing Pierce College – Puyallup campus, approximately  $\frac{3}{4}$  mile east of Meridian Ave E and between Bradley Lake Park and Wildwood Park Drive. The site is in the center of the E  $\frac{1}{2}$  of Section 03, Township 19 North, Range 04 East W.M., within the City of Puyallup (Pierce County Parcel Nos. 0419031062, 0419034023). The investigations also included areas of Pierce County Parcel No. 041903418, which is immediately to the south of 0419034023 and also is part of the Pierce College campus, where features extended onto the former.

Grette Associates staff biologists visited the site on April 25, 2006 and conducted a transect survey of the site. The purpose of the investigation was to verify the presence and boundaries of previously delineated wetlands and to document any unidentified wetland areas. The wetlands encountered were not delineated according to US Army Corps of Engineers and Ecology standard methods. Wetland biologists used site topography, vegetation, hydrology, and soils to determine coarse boundaries which were flagged and surveyed during the investigations using a Trimble Pro-XR Differential Global Positioning System (dGPS) unit, as were transect endpoints (Figure 1).

The goal of this work was to provide sufficient spatial and descriptive information to locate and categorize these wetlands for planning purposes for future site use. Complete wetland delineations will be required if development is proposed in or near the buffer areas determined in this report or according to current Puyallup Municipal Code (PMC) at that time. It also is recommended that categorizations be verified at that time using current data and categorization methods required by the City of Puyallup.

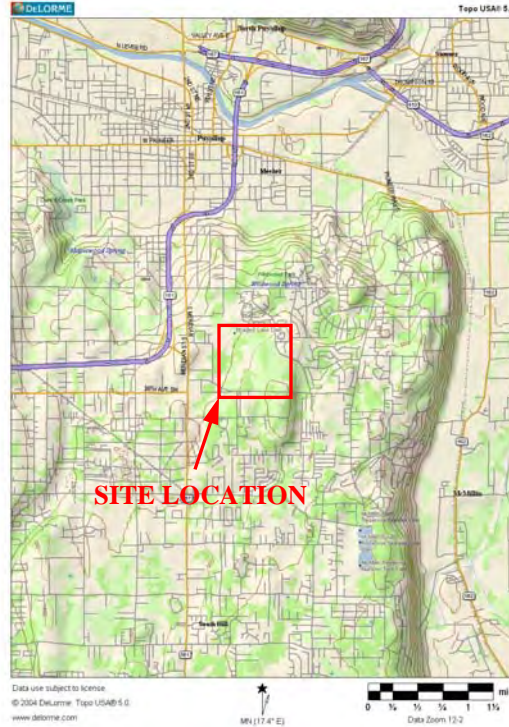
## **2. BASELINE INFORMATION**

The site is approximately 43.79 acres in size, and is located west of Wildwood Park Drive between a residential neighborhood to the north and 39<sup>th</sup> Ave SE to the south. To access the site from Interstate 5 southbound, take Exit 127 to Highway 512 east. Take the Highway 161 (Meridian Ave) exit, and turn right onto Meridian Avenue. Turn left onto 37<sup>th</sup> Ave SE, which will become 39<sup>th</sup> Ave SE. Areas of the site may be accessed from the Pierce College Campus, Wildwood Park Drive, or the street ends to the south off of Rainier Boulevard S, which is accessed from Wildwood Park Drive at the north end of the site.

Figure 2. Area Vicinity Map.



Figure 3. Site Location Map.



### Site Characteristics

The site is generally undeveloped, with the exceptions of an unpaved access road running from east to west along the 31<sup>st</sup> Ave E alignment, and a mowed pipeline right of way on the south property line of parcel 0419034023. Along much of the access road, a fence line runs immediately south of the access road and delineates the Pierce College property from a property to the south.

North of the access road, the topography of the property is generally flat then sloping downhill toward the residential neighborhood to the north; it also gradually slopes uphill from west to east. There are two main vegetation assemblages in this area. Much of the vegetation north of the access road is characterized as an evergreen canopy dominated by Douglas fir with some western red cedar and few deciduous trees. The understory is composed of shrubs including evergreen huckleberry, salal, Indian plum, and vine maple, and groundcover consisting of sword fern, bracken fern and stinging nettle. Invasive species including Himalayan and trailing blackberry were observed in this assemblage.

Along the north property line, where the topography slopes downhill, the canopy is dominated by red alder and big leaf maple with few Douglas fir; the shrub understory is predominantly salmonberry, vine maple, and Indian plum. Groundcover includes bleeding heart, stinging nettle, and willow herb. Groundcover in areas of more open

canopy includes grasses, particularly along the north property line, and includes some reed canary grass. Invasive blackberry species also are present in this assemblage.

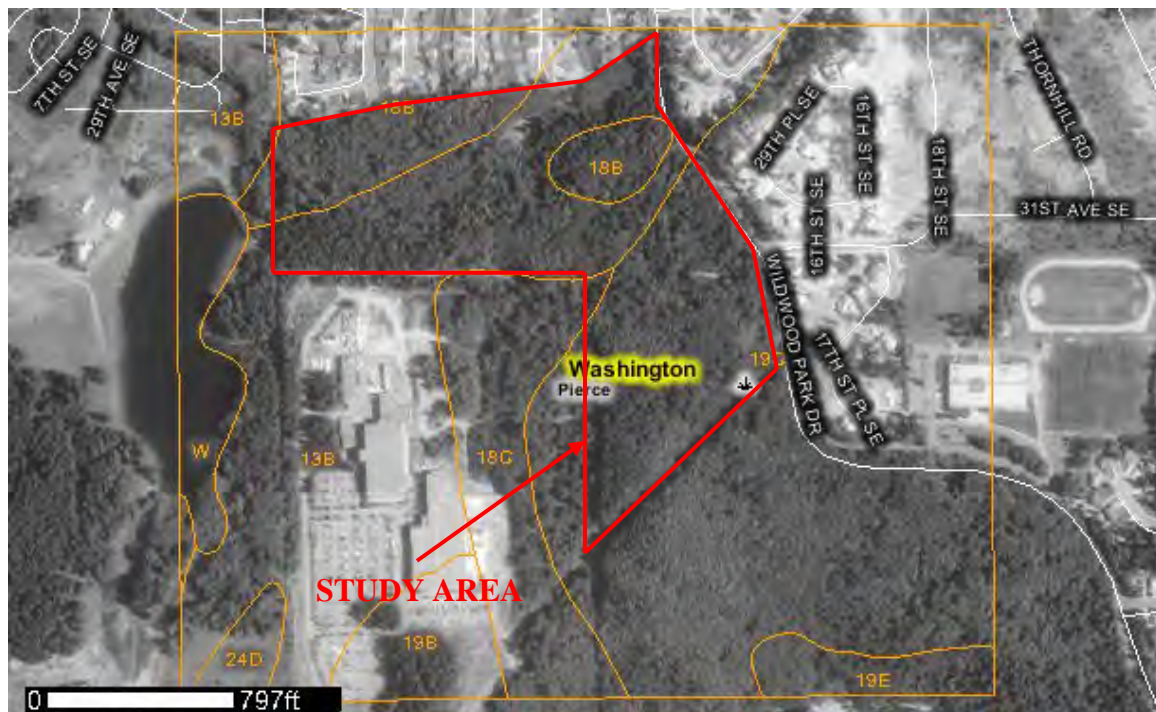
South of the access road, topography is generally flat, although it did slope gently downward to the south at approximately the pipeline right of way. The vegetation in this area is similar to the evergreen-dominated assemblage to the north of the access road and also includes relatively more hemlock and red elderberry. A maintained pipeline right of way marked the southern extent of the investigations; wetland areas that extended south of the right of way were flagged, but no additional transects were walked in this area.

### *Existing Information*

Prior to the field investigations, several public resources were consulted to determine if previously identified wetlands exist on the site. These resources include the Natural Resource Conservation Service's (NRCS) Soil Survey of Pierce County, Washington, the U. S. Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI), and Pierce County's County Wetland Inventory (CWI). The information gathered from these resources is described below.

The NRCS's Soil Survey of Pierce County, Washington identifies three soil series present on the subject property (Zulauf 1979) (Figure 4). The three soil series identified on the site are Indianola loamy sand, Everett gravelly sandy loam, and Kapowsin gravelly loam. All three of these series are identified as *not hydric* on Pierce County's Hydric Soils List (NRCS 2001). Similarly, none of these soils are listed on the list of Hydric Soils of Washington (NRCS 1995).

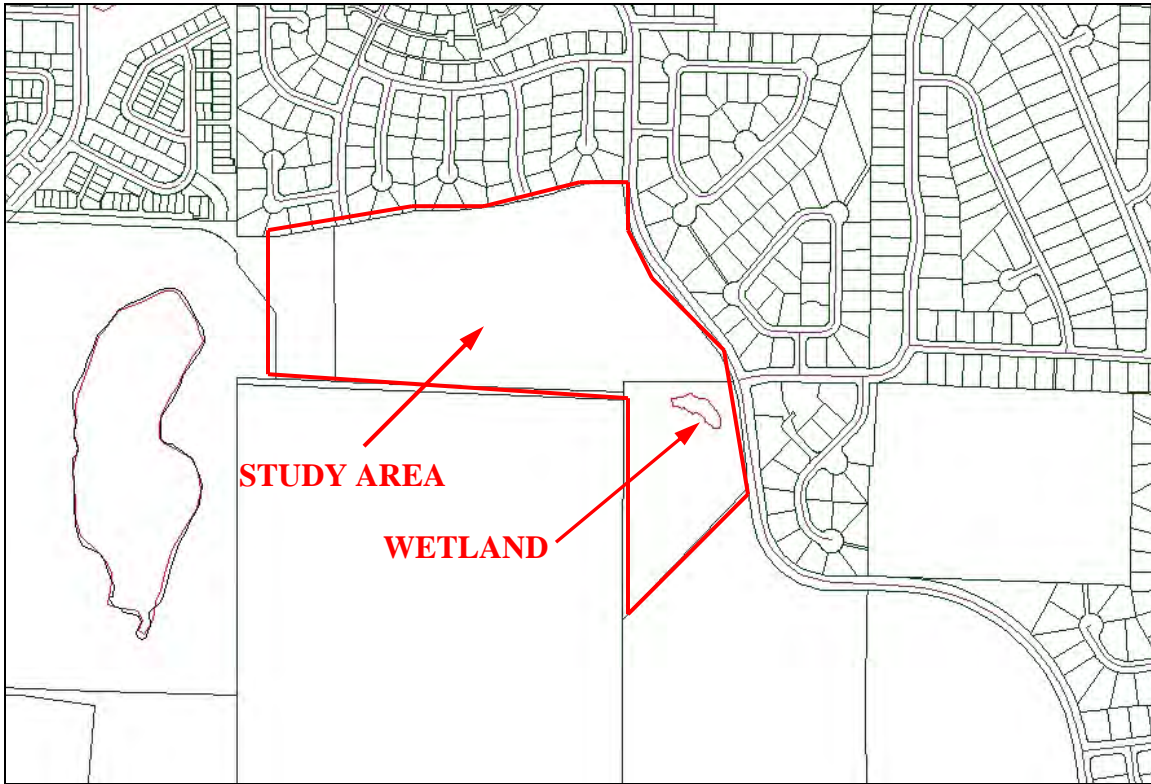
**Figure 4. NRCS Soil Survey Map.**







**Figure 6. Pierce County Wetland Inventory map**



In addition to these wetland resources, both the Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species database and the Washington State Department of Natural Resources (WDNR) Natural Heritage Program were queried to determine if state or federally listed plant or animal species are present on the property. According to these databases, there are no such plant or animal species on the site. Furthermore, there are no natural heritage wetlands or high quality native ecosystems on the site.

### **3. METHODS**

The access road along the 31<sup>st</sup> Ave S alignment was used as a baseline for six north-south transects; five of which were to the north of the access road (transects 1-5) and one of which was south of the it (transect 6). The transects were spaced roughly 300- to 400-ft apart (Figure 1). The biologists walked each transect together looking for indicators of wetland areas based on vegetation, hydrology, and topographic features. When draws or other features were observed from transects, they were followed off of the transects to determine whether they supported wetland areas.

Wetlands identified were coarsely delineated with surveyor's flagging, and each flag was located with the dGPS unit. Each wetland was generally assessed for habitat attributes, vegetation community type and complexity, presence of priority species or habitats (as defined by the WDFW) and hydrologic characteristics. Based on this assessment, each wetland was categorized using the criteria in Section 21.06.810 of the PMC. Buffer width recommendations are as stated in Section 21.06.830 of the PMC.



## 4. RESULTS

Five wetland areas were identified during this effort, four of which had been previously delineated or flagged. There were no wetland areas located along transects 1, 2, 5, or 6. The wetlands range in approximate area from 2,400 to 38,900 square feet. Table 1 below summarizes the results of the wetland investigation.

**Table 1. Pierce College – Puyallup Campus Wetland Summary.**

Wetland	Approximate Size (Sq. Ft.)*	Previously Flagged	Category	PMC Buffer Width (Ft)
A	14,763	Yes	III	50
B	5,058	No	III	50
C	2,365	Yes	III	Not Regulated
D	9,774	Yes	III	50
E	38,870	Yes	III	50

\*This is an approximate area based on the reconnaissance field flagging; precise wetlands areas would require a full delineation.

### 4.1 Wetland A

Wetland A is a large wetland area that had been previously delineated as Wetland A/B (Entranco 2003) was flagged adjacent to the access road between transects 1 and 2 (Figure 1). The verification generally agrees with the flagging from the previous delineation. Wetland A is approximately 14,763 square feet in size, and is classified as a Palustrine Scrub-Shrub, Seasonally Flooded wetland. Around the margins the canopy included red alder, pacific dogwood, black cottonwood, and western red cedar; but the majority of the wetland area was shrub-scrub vegetation including red-osier dogwood and salmonberry.

Wetland A is situated in a wide low spot and includes some standing water and areas of thick mud; there also are high spots due to decomposing fallen trees. Hydrology is likely supported from groundwater and runoff from the surrounding areas; there does not appear to be surface water flowing into or out of this area. High spots resulted in areas of drier vegetation including Indian plum and vine maple within the wetland area.

The wetland likely provides several important water quality functions such as filtration of pollutants from runoff originating from the property to the south, and trapping of sediment from the dirt access road running through the south portion of the wetland. However these functions are probably limited due to the location of the wetland within the landscape (the wetland is hydrologically isolated). The wetland also likely provides general wildlife habitat functions such foraging, cover, and nesting/breeding as it is part of a larger, relatively undisturbed forested corridor.

Based on the coarse assessment of wetland boundaries and characteristics observed in the field, Wetland A is a Category III wetland and would be subject to a 50-ft buffer under the current PMC.

## **4.2 Wetland B**

Wetland B is the only wetland area that was not either previously flagged or delineated. It is located at the sloping south end of transect 3 adjacent to residential development and the street end for 13<sup>th</sup> Street SE, and is approximately 5,058 square feet (Figure 1). Wetland B is classified as a Palustrine Forested/Emergent, Seasonally Flooded wetland. The canopy on the hillside is primarily red alder with a grassy understory; there are also large black cottonwoods and Himalayan blackberry along the edges of the wetland near the street.

Wetland B is situated on a slope that flattens out at the north edge of the property. Hydrology appears to be supported by a seep that comes from the slope and collects in a wet swale at the street end. The swale leads west along the north property line, gradually dissipating approximately 50 feet west of the wetland edge.

The water quality functions provided by Wetland B are likely limited due to its relatively small size and lack of hydrologic connection to other surface waters. The wetland may filter small amounts of runoff from the residential areas to the north, however storm drains in these areas direct most stormwater runoff away from the wetland. Similarly, the wetland likely provides little wildlife habitat function because of its small size and close proximity to residential development.

Based on the coarse assessment of wetland boundaries and characteristics observed in the field, Wetland B is a Category III wetland and would be subject to a 50-ft buffer under the current PMC.

## **4.3 Wetland C**

Wetland C is located at the northeast corner of the fenceline between the Pierce College property and the adjacent property (Figure 1). Wetland C is classified as a Palustrine Forested/Scrub-Shrub, Seasonally Flooded wetland. There was previous wetland flagging at this site, but it does not appear to correspond to any Entranco delineation reports. Wetland C is approximately 2,365 square feet, which includes part of the access road/walking path. Vegetation is mostly mixed shrub, ferns, and emergent ground cover with a few red alder and western red cedar. Shrubs include salmonberry and red elderberry, ferns include sword fern and bracken fern, and emergent ground cover includes slough sedge, reed canary grass, and creeping buttercup.

Wetland C is located in a small depression, and hydrology appears to be supported by groundwater or runoff from adjacent areas. There does not appear to be water flowing into or out of this area. Much of the wetland is located on the access road/walking path and within the area disturbed to construct the fence.

As with Wetlands A and B, Wetland C is limited in its ability to provide water quality functions because of its relatively small size and hydrologic isolation. The buffer areas surrounding the wetland are densely vegetated and relatively flat, preventing the wetland from filtering out pollutants or trapping sediment from in-flowing runoff. The wetland likely provides general habitat to birds and small mammals, however a property line

fence bisects the wetland and likely interrupts the movement of large mammals into and out of the wetland. Deer were observed during the investigation elsewhere on the site.

Based on the coarse assessment of wetland boundaries and characteristics observed in the field, Wetland C is a Category III wetland. As Wetland C is a Category III wetland less than 2,500 square feet in size, it is below the minimum size of wetlands regulated by the PMC and therefore no buffer is applied. However, as mentioned previously this size is based on a coarse determination and would need to be field delineated prior to extensive land use planning.

#### **4.4 Wetland D**

Wetland D is located at the south end of transect 6 (Figure 1). It spans the pipeline right of way and includes forested and shrub-scrub assemblages on either side of it. The portion of Wetland D within the study area (north of the pipeline right-of-way) is approximately 9,774 square feet in size. Wetland D is classified as a Palustrine Forested, Seasonally Flooded wetland. The portion of the wetland south of the right-of-way was investigated to gauge the accuracy of the previous delineation. The verification generally agrees with the flagging from the previous delineation in this area. The areas immediately on either side of the right of way include a red alder and big leaf maple canopy with understory dominated by red-osier dogwood, slough sedge, salmonberry and sparse common rush, which is more common at the far south end of the wetland. The right of way appears to undergo regular vegetation maintenance and is dominated by reed canary grass. There are a number of large snags at the far south end of the wetland near the parking lot retaining wall.

Wetland D is located in depression, and there are large areas of standing water on either side of the pipeline right of way. Hydrology appears to be supported by groundwater as well as runoff from adjacent areas. Water also enters the wetland from several culverts from the adjacent parking lot to the south.

Water quality functions provided by Wetland D likely include toxin removal, sediment trapping and erosion control, as stormwater from the adjacent parking lot appears to be directed into the wetland. Wetland D also likely provides a high degree of organic productivity due to its dense vegetation and highly stratified vegetative canopy, as well as offering a high degree of wildlife habitat, habitat connectivity and native plant diversity. Deer and deer sign were observed in this area.

Based on the coarse assessment of wetland boundaries and characteristics observed in the field, Wetland D is a Category III wetland and would be subject to a 50-ft buffer under the current PMC.

#### **4.5 Wetland E**

Wetland E is located at the east edge of the property adjacent to Wildwood Park Drive (Figure 1). It also extends to either side of the pipeline right of way and is approximately 38,870 square feet in size. The area south of the right of way was previously delineated as Wetland C (Entranco 2001). The verification generally agrees with flagging from the previous delineation in this area. The species composition is similar to Wetland D,

although areas of dense willow were noted within the north portion of Wetland E. Wetland E is classified as a Palustrine Scrub-Shrub, Seasonally Flooded wetland.

Wetland E is located in depression. Hydrology appears to be supported by groundwater as well as runoff from Wildwood Park Drive and adjacent areas. There does not appear to be a surface water outlet from this area.

Wetland E likely provides toxin removal, sediment trapping and groundwater recharge functions, as stormwater runoff from Wildwood Park Drive likely enters the wetland and there is no surface water outlet from the wetland. Wetland E also likely provides a high degree of organic productivity due to its dense vegetation, as well as offering a high degree of wildlife habitat, habitat connectivity and native plant diversity.

Based on the coarse assessment of wetland boundaries and characteristics observed in the field, Wetland E is a Category III wetland and would be subject to a 50-ft buffer under the current PMC.

#### **4.6 Pond**

An existing pond is located immediately south of Wildwood Park Drive, southeast of the primary study area for this investigation (Figure 1). The pond is located opposite Wildwood Park Drive from the entrance to Ferrucci Junior High School, and is approximately 35,616 square feet in size (Entranco 2002).

The pond consists of a sparse canopy of young red alder and western red cedar over a dense understory of Scouler's and Hooker's willow, salmonberry and Himalayan blackberry. Small areas of open water are scattered throughout the wetland, as are numerous standing snags. Buffer vegetation around the perimeter of the pond includes big leaf maple, red alder, western red cedar and Indian plum.

Functions likely provided by the pond include pollution filtration, stormwater retention, groundwater recharge amphibian breeding, and general wildlife habitat. The pond does not contain a surface water outlet and is not contiguous with any other surface waters.

While the pond boundaries were not investigated, the characteristics observed in the field confirm that the pond is a Category III wetland and would be subject to a 50-ft buffer under the current PMC.

#### **4.6 Wetland A/B**

Wetland A/B was previously delineated in 2002 (Entranco 2002b). This Wetland A/B should not be confused with the wetland delineated in 2003 as "Wetland A/B", which is referred to in this investigation as Wetland A. Wetland A/B is located northwest of the maintenance building in the southwest corner of the campus (Figure 1, not shown). The wetland is approximately 13,978 square feet in size and is classified as a Palustrine Forested, Seasonally Flooded wetland.

The vegetation community consists of a canopy of large, mature red alder and sparse western red cedar over a shrub understory of primarily salmonberry. Emergent wetland

species present are small-fruited bulrush and skunk cabbage. Buffer vegetation around the perimeter of the wetland consists of big leaf maple, red alder and Douglas fir over salmonberry.

According to the Entranco report (2002b), the wetland consists of two large depressions separated by a narrow upland berm. This characteristic indicates that the two depressions may have been created to function as a stormwater detention facility. Areas of open water are present beneath the forested canopy. While no specific culverts or drainages were observed entering the wetland, it is likely that stormwater from the parking areas and access roads is diverted into this area.

Wetland A/B likely performs several water quality functions such as stormwater retention, toxin filtration, sediment trapping, and groundwater recharge. Wildlife functions likely include large and small mammal foraging and cover, amphibian breeding, small bird and raptor nesting and foraging, and general habitat connectivity.

While the boundaries of Wetland A/B were not investigated, the characteristics observed in the field confirm that Wetland A/B is a Category III wetland and would be subject to a 50-ft buffer under the current PMC.

## **5. REFERENCES**

- Entranco, Inc. 2002a. Draft Wetland Delineation Report: Pierce College – Task 7. Prepared for Pierce College, February 27, 2002. Olympia, Washington.
- Entranco, Inc. 2003. Draft Wetland Delineation Report: Pierce College. Prepared for Pierce College, May 2003. Olympia, Washington.
- Natural Resources Conservation Service (NRCS). 1995. Hydric Soils of Washington. U.S. Department of Agriculture. Washington D.C.
- Natural Resources Conservation Service (NRCS). 2001. Hydric Soils List: Pierce County, Washington. U.S. Department of Agriculture. Washington D.C.
- U.S. Geological Survey (USGS). The National Map [map online]. National Wetlands Inventory [27 June 2006]. URL: <http://nmviewogc.cr.usgs.gov/viewer.htm> Interactive Layer = “Hydrography - Wetlands”.
- Zulauf, A.S. 1979. Soil Survey of Pierce County, Washington. United States Department of Agriculture, Soil Conservation Service in cooperation with Washington State Department of Natural Resources, and Washington State University, Agriculture Research Center. Washington, D.C.



# 9.11 SEPA Checklist

## **SEPA ENVIRONMENTAL CHECKLIST**

### ***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:***

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:***

Please adjust the format of this template as needed. 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:***

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

1. Name of proposed project, if applicable: [Pierce College Puyallup Campus Master Plan Update](#)
2. Name of applicant: [Pierce College Puyallup](#)
3. Address and phone number of applicant and contact person:

Applicant:

Sylvia James  
Vice President Administrative Services  
Pierce College  
1601 39th Avenue SE  
Puyallup, WA 98374  
253-964-6510  
[sjames@pierce.ctc.edu](mailto:sjames@pierce.ctc.edu)

Contact Person:

Helen Stanton  
AHBL, Inc.  
2215 North 30th Street, Suite 300  
Tacoma, WA 98403  
253-383-2422  
[hstanton@ahbl.com](mailto:hstanton@ahbl.com)

4. Date checklist prepared: [April 1, 2021](#)
5. Agency requesting checklist: [City of Puyallup](#)
6. Proposed timing or schedule (including phasing, if applicable):  
The proposed development covered in the Master Plan is for near-term development to occur within the next 1-10 years. Most developments are dependent on funding sources and opportunities as to when in this time frame they will occur. Near term development (1-10 Years) covered in the Master Plan includes: STEM building, Brouillet Library/Science Building renovation and expansion, surface parking expansion, new parking structure, Gaspard Administration Building remodel, Storage facility, Maintenance Shop expansion, reconfigure main entrance drive and transit loop, remove portable, Communication Center acquisition, Gender inclusive restrooms, Athletic Field development.  
  
The most immediate development within the Master Plan includes the STEM Building and the parking expansion. The STEM Building design phase will begin in May 2021 pending selection of the Design-Build team, phased construction is anticipated to start in May 2022 and be completed in the Summer of 2023. The surface parking expansion is scheduled for design, permitting, and construction beginning in Spring 2021.
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.  
[No, all currently anticipated projects are outlined in the proposed Master Plan.](#)
8. List any environmental information you know about that has been prepared, or will be

prepared, directly related to this proposal.

- Traffic Impact Analysis, Prepared by Transportation Engineering NorthWest, January 2021
- Pierce College – Puyallup Campus Revised Wetland Reconnaissance and Verification Report, Prepared by Grette Associates, November 2006. No impacts to previous delineated wetlands are proposed through this Master Plan.

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. To our knowledge, there are no other applications for governmental approval that directly cover the proposed site.

10. List any government approvals or permits that will be needed for your proposal, if known.

- Land Use Permit – Modification to Master Plan from City of Puyallup
- SEPA Determination from City of Puyallup
- Site Development/Building Permits from City of Puyallup
- NPDES Permit from Department of Ecology

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.)

The Pierce College Puyallup Campus currently has five main buildings; Gaspard Administration Building, Brouillet Library/Science Building, College Center Building, Arts and Allied Health Building, and the Health Education Center. These five buildings total 242,597 gross square feet. The College campus also has four smaller buildings; Maintenance Building, Portable Building, City of Puyallup Communication Center, and the Faculty Office Building. These four buildings total 13,207 gross square feet. The proposed projects within the Master Plan would expand the college campus by approximately an additional 77,700 SF. Cumulatively, this expansion would result in a total of approximately 333,504 SF of building area.

The proposed building developments included in the Master Plan includes

- A new three story STEM Building of approximately 54,433 SF
- Expansion of the Brouillet Library/Science Building by approximately 6,000 SF
- A new single story storage facility of approximately 8,000 SF
- Removal of the existing portable building
- Expansion of the Maintenance shop by approximately 1,600 SF
- New athletic fields and associated building facilities of approximately 10,460 SF

Also included in the Master Plan is a new vertical parking structure of approximately 142,640 SF and surface parking expansions which will add approximately 203,281 SF of surface parking area.



Figure 1 – Pierce College Development 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.

The site is located at 1601 – 39th Avenue Southeast in the City of Puyallup. Assessor’s Tax Parcel Numbers: 041902-3011, 041902-3012, 041902-3013, 041903-1061, 041903-1062, 041903-4013, 041903-4018, 041903-4023.





Figure 2 - Vicinity Map

## B. Environmental Elements

### 1. Earth

- a. General description of the site:  
(circle one): Flat, rolling, hilly, steep slopes, mountainous, other \_\_\_\_\_
- b. What is the steepest slope on the site (approximate percent slope)?  
The site generally slopes gently upward from the northwest to the southeast. The steepest slope on the site is approximately 22 percent.
- 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.  
According to the US Department of Agriculture Natural Resource Conservation Web Soil Survey, the majority of the site is Everett very gravelly sandy loam and Indianola loamy sand with a small portion containing Kapowsin gravelly ashy loam.
- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.  
There are no known indications of unstable soils.
- 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.  
Grading and filling may be necessary for construction of proposed improvements identified in the Master Plan. All fill will be from clean sources.
- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.  
Temporary erosion could occur during construction activities associated with grading, filling, and excavating. The site development permit will include a Temporary Erosion Control Plan that will include construction procedures and best management practices.
- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?  
  
Approximately 25%.
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:  
Construction activity will utilize Best Management Practices (BMP's) and stormwater management design criteria set forth in the City's adopted stormwater management manual. Proposed development will utilize stormwater BMP's such as inlet protection, silt fence, construction entrances, and a sediment pond.

### 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.

Construction activities have the potential to create temporary dust emissions during earth-moving activities and exhaust emissions due to the combustion of gasoline and diesel fuels. Dust and exhaust emissions are expected to be minimal, localized, and temporary. After construction, emissions will be generated by vehicles accessing the site.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.  
Other than vehicle emissions from adjacent traffic, there is no source of off-site emissions that will affect the proposal.
- c. Proposed measures to reduce or control emissions or other impacts to air, if any:  
During construction, temporary measures will be applied where necessary, which may include limiting the idling of construction equipment, water sprays to control dust, limiting vehicle speeds, and general maintenance of construction equipment. Due to the large distance between construction areas and nearby uses, construction impacts will be less noticeable.

### 3. Water

- a. Surface Water:
  - 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.  
A 2006 Wetland Reconnaissance and Verification Report prepared by Grette Associates LLC identified five wetlands on the project site. The wetlands range in area from 2,400 square feet to 38,900 square feet.
  - 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.  
Yes, work will be performed within 200 feet of wetlands that were established during approval of the previous Master Plan for Pierce College Puyallup. There will be no work within previously delineated wetland areas.
  - 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.  
No fill or dredge material will be placed in or removed from surface waters or wetlands.
  - 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.  
No surface water withdrawals or diversions are involved with the proposal.
  - 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.  
According to FEMA Firm Panel 53053C0342E, effective March 7, 2017, the property does not lie 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.  
No waste materials will be discharged to surface waters as a result of the proposal.

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.  
No groundwater will be withdrawn.
- 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.  
The site is connected to sanitary sewer. No waste material will be discharged in to the ground.

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.  
Stormwater will be generated by the creation of new impervious surfaces (rooftops and paving) associated with the campus expansion activities identified in the Master Plan.

Two new storm-water ponds are proposed as part of the Campus expansion. One is in the northwest corner of the project site adjacent to the proposed athletic field and the other north of College Way adjacent to the existing eastern parking area and proposed new parking lot near the proposed new STEM Building.

- 2) Could waste materials enter ground or surface waters? If so, generally describe.  
It is not expected that waste materials will enter ground or surface waters.
- 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.  
The proposal will not alter existing drainage patterns.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

All storm drainage treatment features will be designed to meet or exceed the City of Puyallup's surface water management requirements.

#### 4. Plants

a. Check the types of vegetation found on the site:

- 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?  
Approximately 5.6 acres of existing vegetation will be disturbed for the construction of the new buildings. A further 15.45 acres will be removed with future development of the athletic fields.
- c. List threatened and endangered species known to be on or near the site.  
To our knowledge, no threatened or endangered plant species are on or near the site.
- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:  
New landscaping will utilize a mixture of native and ornamental plantings consistent with the landscape master plan (Appendix K of the Master Plan).
- e. List all noxious weeds and invasive species known to be on or near the site.  
Himalayan and trailback blackberry.

## 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:

birds: hawk, heron, eagle, songbirds, other:  
mammals: deer, bear, elk, beaver, other: **Small mammals**  
fish: bass, salmon, trout, herring, shellfish, other \_\_\_\_\_

- b. List any threatened and endangered species known to be on or near the site.  
The Washington Department of Fish and Wildlife's Priority Habitat and Species (WDFW PHS) online mapping system was utilized to assess the presence of threatened and endangered species. There are no identified threatened or endangered animal species within the project site.
- c. Is the site part of a migration route? If so, explain.  
The site lies within the Pacific Flyway for Migratory Birds.
- d. Proposed measures to preserve or enhance wildlife, if any:  
No impacts are expected and no significant measures are proposed.
- e. List any invasive animal species known to be on or near the site.  
To our knowledge, no invasive animal species are on or near the 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.  
New buildings will use electricity and natural gas to meet needs for heating, lighting, appliances, etc.



- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.  
No, the potential use of solar energy will not be impacted.
- 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:  
The construction and operation of the proposed campus expansion will conform to applicable portions of the State of Washington Energy Code. Energy efficient methods will be used for the mechanical and lighting systems. The on-site lighting will include the use of LED fixtures.

## 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.  
There is potential for construction equipment and personal vehicles to leak fuel, oil, or other fluids necessary to operate the equipment/vehicles. This risk is typical of construction activities and is minimal.
- 1) Describe any known or possible contamination at the site from present or past uses.  
Washington Department of Ecology "What's In My Neighborhood" database identified two known contaminants within 0.5 miles of the project site.
    - Site Name: Air Products Manufacturing Corp, Cleanup Site ID: 5022, Status: No Further Action
    - Site Name: Microchip Technology Inc, Cleanup Site ID: 6308, Status: Cleanup Started
  - 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 is a 60-foot wide gas easement right-of-way operated by El Paso Natural Gas Company which diagonally bisects parcel 041903-402-3. The El Paso Natural Gas Company is legally permitted to operate and maintain its pipeline within the easement. The El Paso Pipeline Group regularly maintains the right-of-way.
  - 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.  
Chemicals typical of construction activities including gasoline and diesel fuels for vehicle use. The laboratory associated with the STEM Building may include some chemicals in the storage and distribution of medical gases including oxygen and nitrous oxide.
  - 4) Describe special emergency services that might be required.  
The proposal will not require special emergency services beyond what is already available at the site.
  - 5) Proposed measures to reduce or control environmental health hazards, if any:  
Any soils contaminated by spills would be excavated and disposed of in a manner consistent with the level of contamination and in accordance with federal, state, and local regulatory requirements.

b. Noise

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

The predominant noise in the area is from traffic on 39th Avenue Southeast and the 5th/7th Street Connector. The noise generated by these roads is not anticipated to have an impact on the proposed development at the campus.

- 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.

Temporary, short-term noise impacts typical of construction projects will occur with operation of equipment during construction. Construction will normally occur between the hours of 7:00 a.m. and 6:00 p.m.

- 3) Proposed measures to reduce or control noise impacts, if any:

To mitigate general noise impacts during the clearing/grading, measures will include locating stationary equipment away from receiving properties, turning off idling construction equipment, requiring contractors to rigorously maintain all equipment, and training construction crews to avoid unnecessarily loud actions near residential areas will be employed.

**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.

The site is occupied by the existing Pierce Collage – Puyallup campus. Surrounding land uses are predominantly residential to the north and east, office uses to the west, and industrial and vacant last uses to the south. The site is bounded by 39th Avenue Southeast to the south and Wildwood Park Drive to the northeast.

- 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?

To our knowledge the project site has not been used as working farmland or working forest lands. No agricultural or forest land will be converted.

- 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:

No, the proposal will not impact any working farm or forest land operations.

- c. Describe any structures on the site.

Administration Building: 42,920 sq. ft.

Arts and Allied Health Building: 61,597 sq. ft.

College Center Building: 60,880 sq. ft.

Garnero Child Development Center: 7,735 sq. ft.

Health Education Center: 16,636 sq. ft.

Library Sciences Building: 60,564 sq. ft.

Portable Faculty Office Building: 2,772 sq. ft.

Maintenance Building: 1,600 sq. ft.

911 Call Center: 1,100 sq. ft.

- d. Will any structures be demolished? If so, what?  
No structures are proposed to be demolished.
- e. What is the current zoning classification of the site?  
PF – Public Facilities
- f. What is the current comprehensive plan designation of the site?  
PF – Public Facilities
- g. If applicable, what is the current shoreline master program designation of the site?  
The site is not within a shoreline master program designated area.
- h. Has any part of the site been classified as a critical area by the city or county? If so, specify.  
Yes, according to the wetland delineation included within the Master Plan most recently approved by the City, there are five on-site wetlands.
- i. Approximately how many people would reside or work in the completed project?  
Approximately 182 full time equivalent staff would work in the completed project.
- j. Approximately how many people would the completed project displace?  
The proposal will not displace any employees or residents.
- k. Proposed measures to avoid or reduce displacement impacts, if any:  
No special measures are proposed as no displacement impacts are expected.
- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:  
The proposed project includes the renovation of existing and construction of new facilities on the existing campus, therefore proposed uses are compatible with the existing use of the property. The existing college campus use is consistent with the City of Puyallup's Public Facilities Comprehensive Plan designation.
- m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:  
No special measures are required as no impacts will occur.

## 9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.  
The proposal does not include a housing component.
- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.  
Not applicable, the proposal would not eliminate any housing.
- c. Proposed measures to reduce or control housing impacts, if any:  
Not applicable, the proposal does not include a housing component.

## 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?  
The tallest proposed structure is the new STEM Building. The building height for the proposed STEM building is 48 feet. The height of all other proposed structures at the campus site will not exceed the 50-foot height limit for the zone.
- b. What views in the immediate vicinity would be altered or obstructed?  
Views will not be significantly impacted by the proposed project. The new facilities at the campus site will be constructed within the interior of the site and there is significant vegetative screening surrounding the site, therefore views from adjacent properties are not anticipated to be impacted.
- c. Proposed measures to reduce or control aesthetic impacts, if any:  
Design features will be included to ensure consistency in design throughout the campus. Additionally, new buildings are set back from property lines and the public way and should not be readily visible from neighboring properties.

## 11. Light and Glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?  
The lighting master plan (Appendix J of the Master Plan) describes a wide variety of lighting fixtures for the site that include pole mounted, building mounted, and bollard or ground mounted. The lighting plan also shows intensity throughout the site.  
  
Site lighting is intended to minimize light trespass and uses different optics within the fixtures to only illuminate areas where necessary to address safety and security on pathways, drive aisles, crosswalks, and within parking areas.
- b. Could light or glare from the finished project be a safety hazard or interfere with views?  
No, it is not expected that lighting could pose a safety hazard or interfere with views. The shorter light fixtures used for pathway lighting and around the crosswalks have a low glare rating for pedestrian safety since they could be within the same line of sight for a driver. The parking lot light fixtures have a higher glare rating but are mounted to 28' so the light fixture glare is not in the same line of sight as pedestrians walking through the parking lot.
- c. What existing off-site sources of light or glare may affect your proposal?  
No off-site sources of light or glare will have an effect on the proposal.
- d. Proposed measures to reduce or control light and glare impacts, if any:  
All future lighting fixtures meet or will meet IES "full cutoff" requirements, which requires that no light is transmitted above the height of the fixture. Site lighting is intended to minimize light trespass and uses different optics within the fixtures to only illuminate areas where needed to address safety and security on pathways, drive isles, crosswalks and within parking lots.

## 12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?  
The closest recreational uses to the proposed project site, include Bradley Lake Park, immediately south of the 5th/7th Street connector access drive and less than ¼ mile west of the campus. Other recreational uses within the immediate vicinity include Manorwood Park, located approximately ¼ mile east of the project site and Wildwood Park, located approximately ½ mile north of the project site.
- b. Would the proposed project displace any existing recreational uses? If so, describe.  
No recreational uses will be displaced.
- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:  
Athletic fields are proposed to be constructed in the northwest corner of the campus.

## 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.  
The Washington State Department of Archaeology and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD) online database identified multiple properties within 0.5 miles are identified as having “no determination” and one site as having “determined eligible.”
- 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.  
The DAHP WISAARD did not identify evidence of historic, archeological, scientific, or cultural landmarks, or evidence of such on or within the vicinity of project site.
- 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.  
The proposal utilized the Washington Information System for Architectural and Archaeological Records Data (WISAARD) online database to assess potential impacts to cultural and historic resources on and near the proposal.
- 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.  
No disturbance to cultural or historical resources is expected. The Washington State Department of Archaeology and Historic Preservation will be notified if any cultural or archeological objects are found during the site development work. If cultural or archaeological resources are found, then all site work will stop until Washington State Department of Archaeology and Historic Preservation provides guidance.



## 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.  
The site is currently accessed primarily from 39th Avenue Southeast along the southern boundary of the property. There is also a second access from the 5th/7th Street connection at the northwest corner of Bradley Lake Park.
- 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?  
There is one bus line directly serving the College (Pierce Transit Route 4). It is an 11-minute bus ride to the South Hill Mall Transit Center, where there is increased access to buses.
- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?  
The proposed parking expansion would see an addition of 112 parking spaces in a new parking lot sited north of the Health Education Center, an addition of 76 parking spaces in a new parking lot sited east of the Child Development Center, and an additional 16 parking spaces in the southeast corner of the site. A new vertical parking structure depicted in the western portion of the site will add approximately 500 additional parking spaces. No parking will be eliminated.
- 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).  
According to the Traffic Impact Analysis prepared by Transportation Engineering NorthWest (January 2021), the proposal is not require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways.
- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.  
The proposal is not in the immediate vicinity of water, rail, or air transportation.
- 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?  
The Traffic Impact Analysis prepared by Transportation Engineering NorthWest in January 2021 shows the new weekday trips the proposed Pierce College Puyallup Campus expansion would generate during a typical weekday would be 1,438 (719 in and 719 out). Weekday morning peak hour new trips generated is projected to be 147 (113.2 in and 33.8 out). Weekday afternoon peak hour new trips generated is projected to be 132.1 (66 in and 66.1 out).
- 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.  
This proposal will not impact, nor be impacted by, the movement of agricultural and forest products within the vicinity of the project site.
- h. Proposed measures to reduce or control transportation impacts, if any:  
The College will pay the required traffic impact fees set by the City of Puyallup under PMC 21.20.130.

**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.  
The proposed development may result in an increased need for public safety services such as police and fire as student enrollment numbers increase with the College expansion.
- b. Proposed measures to reduce or control direct impacts on public services, if any.  
No special measures are proposed.

**16. Utilities**

- a. Circle utilities currently available at the site:  
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other \_\_\_\_\_
- 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.  
Water Purveyor: City of Puyallup  
Sewer Purveyor: City of Puyallup  
Electricity: Puget Sound Energy  
Natural Gas: Puget Sound Energy  
Telephone: Centurylink Communications  
Fire: East Pierce Fire and Rescue

**C. Signature**

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: Helen Stanton

Position and Agency/Organization: Land Use Planner, AHBL Inc

Date Submitted: April 30, 2021