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CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

TYPE I Minor Site Plan Amendment
FINDINGS, CONCLUSIONS AND DECISION
DuPont Corporate Park
DuPont File No. PLNG 2017-038

SUMMARY OF REQUEST: Type I Minor Site Plan Amendment Approval.

PROJECT DESCRIPTION: The following project description received Type III Land Use Approval in May 2017:

The 93.16-acre site currently contains one warehouse building and two office use buildings totaling 1,010,000 square feet. The proposed development would replace two existing office buildings totaling approximately 660,000 square feet, with up to 1,355,000 square feet of high-cube warehouse/distribution center use and 100,000 square feet of office use in three new buildings. One existing 340,711-square foot building in the northerly portion of the site, which is currently used for warehousing, would remain as part of the proposed project. Vehicular access would continue to be provided via the two existing driveways on Center Drive and the existing driveway on Wharf Road along with a potential future second access to driveway to Wharf Road. Existing parking and access drives would be demolished and replaced with new parking and access drives. Parking lot and perimeter landscaping will be provided. The project will provide approximately 966 parking spaces.

The proposed site plan amendment seeks the following changes:

The application for site plan amendment proposes to allow the option for fulfillment center warehouse use for the three new buildings totaling up to 1,250,000 square feet. Consistent with the original proposal (PLNG 2017-006), the three new buildings would replace the two existing office buildings currently located on the site and one existing warehouse building (340,711 square feet) will remain. The overall size of the new buildings for the fulfillment center use has reduced from the previous proposal by approximately 8 percent. The amended proposal provides 955 parking spaces, representing a reduction of 1 percent. There are no changes to the location of buildings, parking, or access, or landscaping/open space.

LOCATION: The site is commonly known as the "Intel" property, located at 2800 to 2980 Center Drive, in the City of DuPont, WA

APPLICANT:
Bruce Haas
Industrial Redevelopment, LLC
3300 Irvine Avenue, Suite 111
Newport Beach, CA 92660

REPRESENTATIVE:
Dan Balmelli, PE
Barghausen Consulting Engineers
18215-72nd Ave So
Kent, WA 98032

SUMMARY OF DECISION: Type I Minor Site Plan Amendment is approved subject to the conditions listed in Section 6.

CITY CONTACT:
Jeffrey S. Wilson, AICP
Community Development Director
City of DuPont
1700 Civic Drive
DuPont, WA 98327-9603
Office: (253) 912-5393 / Fax: (253) 964-1455
jwilson@dupontwa.gov / www.dupontwa.gov

1. SUMMARY OF RECORD

The following were submitted with the Minor Site Plan Amendment application:

1. Land Use Application Form
2. Cover Letter prepared by Barghausen Consulting Engineers dated October 27, 2017
3. Preliminary Site Plan (Option 12-Fulfillment Center) dated October 25, 2017, prepared by Craft Architects
4. Traffic Impact Analysis dated December 6, 2017 prepared by TENW.
5. City Interpretation issued December 7, 2017
6. Review of December 2017 TENW Traffic Impact Analysis Memorandum by Geralyn Reinhart, PE, dated December 11, 2017
7. SEPA Addendum issued December 12, 2017

The following historical plans and documents are relevant to the review and decision for the minor site plan amendment:

8. Type III Site Plan Approval Decision dated May 30, 2017 (*Decision*)
9. Preliminary Site Plan prepared by Craft Architects dated March 3, 2017
10. Trip Generation Report prepared by TENW dated March 24, 2017
11. SEPA MDNS dated April 10, 2017

2. FINDINGS OF FACT

1. DMC 25.10.190(S) defines Site Plan Amendments as follows:

   "Site plan amendment, major" means an amendment to an approved and valid site plan that substantially changes the character, basic design, density, open space or other requirements and conditions of the approved and valid site plan.

   "Site plan amendment, minor" means an amendment to an approved and valid site plan that affects only the precise dimensions or siting of building (i.e., lot coverage, height, setbacks) but does not affect the basic character or arrangement and number of buildings approved in the plan, the density of the development or the amount and quality of open space and landscaping. Proposed dimensional amendments shall not vary more than 10 percent from the original, but shall not exceed the standards of the applicable district.

   There are no changes to the basic character or arrangement and number of buildings from the approved plan, or the amount and quality of open space and landscaping. The reduction in building size and parking varies from the approved project by less than 10 percent.

2. Site Plan Amendments are processed in accordance with DMC 25.150.050 and are processed as a Type I procedure as set forth in DMC 25.175.010.

3. Pursuant to DMC 25.175.010(7)(b), administrative approvals for which previous environmental review has been completed in connection with other project permits, are excluded from the Notice of Application and Notice of Decision requirements.

4. The City issued a SEPA Mitigated Determination of Nonsignificance (SEPA MDNS) on April 10, 2017 that included 31 mitigation measures intended to minimize many of the potential impacts caused by the development.

5. The April/May 2017 proposed project included a Trip Generation Report prepared by TENW dated March 24, 2017, which included detailed trip generation for truck/nontruck trips based on information found in the (then) current ITE *Trip Generation* manual (9th Edition). The City concluded in both its SEPA MDNS and Type III Site

Plan Review Decision that the values presented in the TENW memorandum are reasonable/acceptable as long as the type of highcube warehouse is transload, short-term, or cold storage, and not a fulfillment center or parcel hub, which have different trip generating characteristics. Should either of these latter uses be the tenant further analysis could be needed (see *Decision*, Findings T1 – T4 and *SEPA MDNS* Mitigation Measure #31).

6. The project received Type III Site Plan Approval on May 30, 2017 that included 78 conditions of approval. The approval found that based on the evidence in the Record and subject to compliance with the conditions of approval, the application meets the performance standards for uses permitted in the MRP zone. The land use approval included Condition #1A, which reads as follows:

   1A. Based upon evidence in the Record, including without limitation the City's Transportation Engineering Consultant's March 28, 2017 memorandum (Exhibit "R"), the Site Plan approved by this Decision is expressly limited to a use/user or combination of users considered to be transload, short-term, or cold storage types of highcube warehouse facilities, and not a fulfillment center or parcel hub, which have different trip generating characteristics. Any proposed change of use to operate a fulfillment center or parcel hub on the property would first require a Site Plan Amendment, as provided in DMC 25.150.050, which must include either an updated Trip Generation Report or a Transportation Impact Analysis that analyzes the potential impacts associated with fulfillment center or parcel hub types of high-cube warehouse facilities.

7. The ITE *Trip Generation* Manual (10th Edition) was recently issued and it provides data for Land Use Code (LUC) 155 (High-Cube Fulfillment Center Warehouse) that was not previously available. Therefore, such use can now be evaluated under the manual. That evaluation is set forth in the December 6, 2017 TENW Traffic Impact Analysis submitted with the application for minor site plan amendment.

8. The TIA states it was prepared to address SEPA Mitigation Measure #3 and #31, and Condition of Approval #1A in the Final Decision of the Hearing Examiner. The revised project resulted in an increase in vehicular trips over the previous proposal. All of the signalized study intersections are anticipated to operate at Level of Service (LOS) D or better in 2018 with or without the project, which meets the City's adopted LOS standards. The stop-controlled southbound left-turn at the intersection of International Place/Center Drive is anticipated to operate at LOS E in 2018 during the PM peak hour with the project should the adjacent vacant property north of Center Drive on International Place be developed. Although LOS E is below the City standard, a signal has been previously approved for the International Place/Center Drive intersection (City TIP project #18), which would improve operations to LOS A during the PM peak hour.

   The northbound and southbound stop-controlled left-turn movements at the intersection of Hamilton Ave/Center Drive are anticipated to operate at LOS F during the PM peak hour in 2018 with the project. Since other options are available for the north and southbound approaches, traffic would likely self-balance based on the location providing the most efficient egress at a given time during the PM peak hour. Based on the results of the analysis, no project-specific off-site transportation mitigation is proposed for concurrency or SEPA purposes.

9. The City issued an Interpretation of "fulfillment center" and "parcel hub" use type in the absence of a definition in City code. The Interpretation concluded that:

   "A "fulfillment center" or "parcel hub", is similar in nature and activity to "warehouse/ distribution" as defined in DMC Section 25.10.230 and therefore will be considered one and the same as "warehouse/distribution" for all applications of land use regulations pursuant to DMC Chapter 25."

   The Interpretation was issued on December 7, 2017 and requires a 14 day appeal period. As of this writing no appeals have been filed.

10. The City issued a SEPA Addendum dated December 12, 2017 to address the site plan amendment and new Traffic Impact Assessment. To ensure the onsite circulation supports the distribution of traffic for egress away from Hamilton Ave/Center Drive, the following mitigation measure was added:

    "32. The internal site circulation shall accommodate multiple points of egress for employees from the site during the PM peak hour to minimize impacts at the Hamilton Ave/Center Drive driveway location."

    There is no comment or appeal period required for a SEPA Addendum per WAC 197-11-600(4)(C).

3. ANALYSIS & CONCLUSIONS OF CONSISTENCY WITH CITY OF DUPONT COMPREHENSIVE PLAN

The project was previously evaluated for consistency with the City of DuPont Comprehensive Plan and found to be generally consistent. The proposed amendment does not change the previous findings that, as conditioned, the proposal is found to be consistent. The city zoning code and Condition #48 in the *Decision*, require that each use be evaluated for compliance with DMC 25.45.020(1)(a)(i) to minimize significant adverse impacts. See the City *Staff Report* dated April 25, 2017 and the *Decision* for applicable Comprehensive Plan policies.

4. ANALYSIS AND CONCLUSIONS OF CONSISTENCY WITH DEVELOPMENT REGULATIONS

DMC 25.150 requires that Site Plans be reviewed for consistency with DMC Title 25.75 through 25.95 and 25.105 through 25.125. The proposal reviewed under the previous Type III land use approval process was found to be consistent, as conditioned. The site plan amendment includes a minor reduction in building size (approximately 104,000 square feet, or approximately 8 percent) and reduction of 11 parking spaces (approximately 1 percent); however there is no change to the site plan itself, including access, landscaping and location of parking areas. Therefore, the consistency review would typically be limited to the relevant project changes, in this case parking as there is no code requirement that regulates building size. In Condition #1A of the Hearing Examiner's Decision for PLNG2017-006, however (see Finding #6, above), the consistency review is expanded to include evaluation of the updated Transportation Impact Analysis that analyzes the potential impacts associated with fulfillment center.

A. <u>DMC Chapter 25.95 – Parking</u>

DMC 25.95.030 stipulates the minimum and maximum parking spaces required for the proposed type of use. The fulfillment center has been interpreted to be most similar to a warehouse type use. For warehouse uses, DMC 25.95.030 requires a minimum of 0.3 and a maximum of 1 parking space per worker at maximum shift. While the amended project has not identified a specific user, it intends to meet this requirement by providing a total of 955 spaces, which would allow for 955 workers at maximum shift. Condition #50 of the Hearing Examiner's Decision for PLNG2017-006, requires that each application for building permit be required to identify the uses and employee forecast to ensure compliance with DMC 25.95.030.

Staff Analysis: As conditioned, the amended proposal meets the City requirements for the required number of parking spaces.

B. <u>Evaluation of Traffic Impact Analysis Per Condition #1A</u>

The TENW December 6, 2017 TIA was reviewed and evaluated by the City's traffic consultant, Geralyn Reinhart, P.E. See the Memorandum provided in the Record (Item #6). The TIA concluded, and Ms. Reinhart concurred, that although the revised project resulted in an increase in vehicular trips over the previous proposal, all of the signalized study

intersections are anticipated to operate at Level of Service (LOS) D or better in 2018 with or without the project, which meets the City's adopted LOS standards.

The only identified intersections to be impacted are two stop-controlled intersections:

(1) The stop-controlled southbound left-turn at the intersection of International Place/Center Drive is anticipated to operate at LOS E in 2018 during the PM peak hour with the project should the adjacent vacant property north of Center Drive on International Place be developed. Although LOS E is below the City standard, and would occur when the vacant property north of Center Drive on International Place is developed. A signal has been previously approved for the International Place/Center Drive intersection (City TIP project #18) to be constructed by the developer, which would improve operations to LOS A during the PM peak hour.

(2) The northbound and southbound stop-controlled left-turn movements at the intersection of Hamilton Ave/Center Drive are anticipated to operate at LOS F during the PM peak hour in 2018 with the project. Since other options are available for the north and southbound approaches, traffic would likely self-balance based on the location providing the most efficient egress at a given time during the PM peak hour. Based on the results of the analysis, no project-specific off-site transportation mitigation is proposed for concurrency or SEPA purposes.

Ms. Reinhart concluded that onsite circulation patterns need to allow for the "self-balancing" of the employee PM peak egress trips. Therefore, she recommended a new mitigation measure, which was included in the SEPA Addendum and reads as follows:

> *"32. The internal site circulation shall accommodate multiple points of egress for employees from the site during the PM peak hour to minimize impacts at the Hamilton Ave/Center Drive driveway location."*

Staff Analysis: The applicant has met the requirements of Condition of Approval #1A of the Hearing Examiner's Decision for PLNG2017-006 by providing an updated Traffic Impact Analysis that evaluates trip generation for a fulfillment center use. Fulfillment centers have peak seasons for employment and truck trips which should be addressed for potential impacts, if any. Parking and/or queuing of delivery trucks and vehicles are not allowed to occur within the public rights of way. Unless written approval is granted by the City, queuing on City streets shall not be allowed.

5. CONCLUSIONS

Based on the Findings and Analysis summarized above, the City finds that the site plan amendment, as conditioned, does not change the previous determination of compliance with the goals and policies of the 2015 Comprehensive Plan and consistency with City development regulations DMC Title 25.75 through 25.95 and 25.105 through 25.125. It also meets the requirements outlined in Condition #1A of the Type III Site Plan Approval Decision dated May 30, 2017. The City has determined the site plan amendment meets the standards and criteria necessary to obtain approval by the City.

6. DECISION

Based on the findings and conclusions in this report, the Minor Site Plan Amendment is approved for the DuPont Corporate Park project, subject to the following conditions.

1. All Conditions of Approval as described in the Findings, Conclusions and Decision dated May 30, 2017 are adopted in full and included as a condition of approval for this Minor Site Plan Amendment, with one exception. Condition #1A is satisfied by this amendment and is no longer applicable.

2. The Mitigation Measures, numbered 1-31, included in the MDNS issued on April 10, 2017 are hereby adopted in full, incorporated by reference, and included as Conditions of Approval for the Site Plan amendment approved by this Decision. It is recognized that the December 6, 2017 TIA responded to Mitigation Measure #3 (regarding the intersection of Wharf Road SW and Steilacoom-DuPont Road SW) and met the requirement for the fulfillment

center use. Any subsequent modification of use may require additional analysis and/or mitigation to maintain the operation and function of the intersection at pre-development level of service, consistent with Mitigation Measure #3. It is further recognized that the December 6, 2017 TIA submitted with the site plan amendment application has fully satisfied Mitigation Measure #31.

3. The SEPA Addendum issued December 12, 2017, is also incorporated by reference, including Mitigation Measure #32.

4. Compliance with DMC Chapter 25.75 Commute Trip Reduction will be required. A Transportation Management Plan and Parking Management Plan (the Plan) will be required to address and mitigate for impacts during the peak season. The Plan shall be submitted to and approved by the City prior to Certificate of Occupancy. The Plan is to be updated each year to address any change in employment and trip generation.

5. Trucks and vehicles are prohibited from parking on all public rights of way while waiting to access the property, unless temporary approval is granted by the City.

12/12/2017

Jeffrey S. Wilson, AICP
Planning Director, City of DuPont

Date

Appeals
Consistent with DMC 25.175.010 and 25.175.060(4), this decision by the director may be appealed to the City hearing examiner. Only parties of record may file an administrative appeal. An appeal must be filed within 14 days after issuance of this decision. The instructions for filing an appeal are found in DMC 25.175.060(4).

City of DuPont
Planning Division
Land Use Application

1700 Civic Drive
DuPont, WA 98327
www.dupontwa.gov

Phone: (253) 912-5393
Fax: (253) 964-1455

City File Number: _____

All information listed in this application, or by applicable ordinance, must be submitted in order for a land use application to be determined complete. Only a complete land use application will be processed for conformance with adopted policies and requirements.

General Information:

Project name: Dupont Corporate Park

Applicant name: Bruce Haas, Industrial Redevelopment, LLC

Address: 3300 Irvine Avenue, Suite 111, Newport Beach, CA 92660

Phone number: (714) 508-7371 Fax number: bruce@industrialredevelopment.com

Applicant's representative: Dan Balmelli, Barghausen Consulting Engineers

Address: 18215-72nd Avenue South, Kent, WA 98032

Phone number: (425) 251-6222 Fax number: (425) 251-8782
dbalmelli@barghausen.com

Description of proposal. Be specific.

Construction of three new fulfillment center warehouse buildings totaling approximately 1,250,000 square feet along with associated grading activities, landscaping, construction of paved parking areas and truck maneuvering, water and sanitary sewer extensions, storm drainage facility, franchise utility improvements and roadway improvements. Demolition of existing building will also be part of the project. This is an amendment to the site plan review approval issued by the city dated April 10, 2017.

Site Information:

Assessor's Parcel Number(s): 011923-4023

Area of site in square feet: 4,058,050 square feet

Area of streets and alleys: N/A

Area of storm drainage improvements and conveyance lines: 3,094,450 square feet

Area of open space and neighborhood green tracts: N/A

Area of critical areas and buffers: N/A

Area of building floors: 1,250,000 square feet (A, B, C), not including existing building

Area of impervious surfaces: 3,094,450 square feet

Area of landscaping: 963,600 square feet

Building height: not to exceed 70-foot

Number of dwelling units: N/A

Number of employees: approximately 500

Number of disabled, compact and standard parking stalls: 664 stalls / 263 trailer stalls

Description and area of all proposed tracts: N/A

Required Plans, Information and Fee:

(Quantity and minimum scale of each item or drawing is indicated in parenthesis. Plans shall be no larger than 24 by 36 inch sheet size)

1. [ ] Vicinity Map (include as part of site plan).
2. [X] Site Plan drawn at 1 inch = 20 feet extending 100 feet beyond the property lines (eight copies).
3. [ ] Landscape Plans identifying: location, size and species of all landmark, historic and specimen trees; trees to be retained, specific tree protection measures drawn at 1 inch = 20 feet (seven copies).
4. [ ] Grading Plan with estimated dimensions and quantities of work involved drawn at 1 inch = 20 feet horizontal with 2' contour intervals (seven copies).
5. [ ] Storm Drainage and Utility Plan drawn at 1 inch = 20 feet (seven copies).
6. [ ] Preliminary Stormwater Management Report and calculations (three copies).
7. [ ] Roadway cross sections, (seven copies of single line drawing with dimensions).
8. [ ] One each 8 by 11 inch reduction of all drawings.
9. [ ] Average daily trips generated by the proposal based on the International Transportation Engineers Trip Generation Manual (two copies).
10. [ ] Building Elevations drawn at ¼ inch = 1 foot or larger. Identify building materials and colors (eight copies).
11. [ ] Title report of subject lot that is less than 30 days old to identify all encumbrances (two copies).
12. [ ] Draft of proposed covenants, conditions and restrictions related to the maintenance of open space or commonly owned improvements, if applicable (two copies).
13. [ ] Letter of Sewer Availability from Pierce County (two copies).
14. [ ] Letter of Water Availability from City of DuPont (two copies).
15. [ ] One site drawing showing the refuse enclosure(s) that is approved via signature and date by LeMay, Inc. Contact person is Charlie Maxwell, Public Relations Director, 253-537-8687.
16. [ ] Completed Environmental Checklist (two copies).
17. [X] Completed Land Use Application (one copy).
18. [ ] Completed Agent Affidavit (one copy).
19. [X] Filing fee(s). Type I - $1,500

Note:

Fill out and return this application with all material listed in the Required Plans, Information and Fee section. Submittal of all required plans, information and fees constitutes a complete application. You will be contacted by the City within 28 days of formal application submittal regarding whether the application is complete. Site work may not start until all necessary permits have been obtained. Paper or electronic drawings of the proposal may be requested for presentation purposes.

Daniel K. Balmelli 10/26/2017 Dan Balmelli

(Applicant Signature) (Date) (Print name)

October 27, 2017

Jeff Wilson
City of DuPont Planning Division
1700 Civic Drive
DuPont, WA 98327

RE: Site Plan Amendment Review Application Package for
DuPont Corporate Center Redevelopment Project located at
2800 to 2980 Center Drive, DuPont, Pierce County, Washington
Tax Parcel No: 011923-4023
Our Job No. 17178

Dear Jeff;

On behalf of Industrial Redevelopment, LLC, Barghausen Consulting Engineers, Inc. is submitting for Site Plan Amendment Review for the proposed DuPont Corporate Center project located along Center Drive. A SEPA Mitigated Determination of Non-Significance was issued for the proposed redevelopment project on April 10, 2017. The site plan has been revised to allow for fulfillment center warehouse use for three new buildings totaling up to 1,250,000 square feet. The fulfillment center warehouse buildings will replace the two existing office buildings currently located on the site. The existing warehouse building will remain as part of the proposal.

The following plans and documents are enclosed for review:

1. Three (3) each revised Preliminary Architectural Site Plan at 11 x 17
2. One (1) each revised Preliminary Architectural Site Plan at 8-1/2 x 11
3. Three (3) each Updated Trip Generation Report
4. One (1) each Type I Land Use Application for Site Plan Amendment
5. One (1) each CD Containing PDF Document Files
6. One (1) each Check for Type I Application Fee of $1,500 for Site Plan Amendment Review

We believe that the enclosed plans and documents compile a complete application package for Site Plan Amendment review for the DuPont Corporate Center project. Please review at your earliest convenience and please feel free to contact me if you have any questions or need any additional information. Thank you.

Sincerely,

Daniel K. Balmelli

Daniel K. Balmelli, P.E.
Executive Vice President

BSD/dm/bd
17178c.012.doc
enc: As Noted
cc: Bruce Haas, Industrial Redevelopment, LLC
Mark Wurtsbaugh, CRG Real Estate
Betsy Dyer, Barghausen Consulting Engineers, Inc.

GENERAL INFORMATION:

ZONE: MRP (MANUFACTURING AND RESEARCH PARK)

PARKING:

BUILDING C:

PARKING REQUIRED	=	300 STALLS
PARKING PROVIDED	=	358 STALLS
TRAILERS REQUIRED	=	200–250 STALLS
TRAILERS PROVIDED	=	260 STALLS

EXISTING BUILDING:

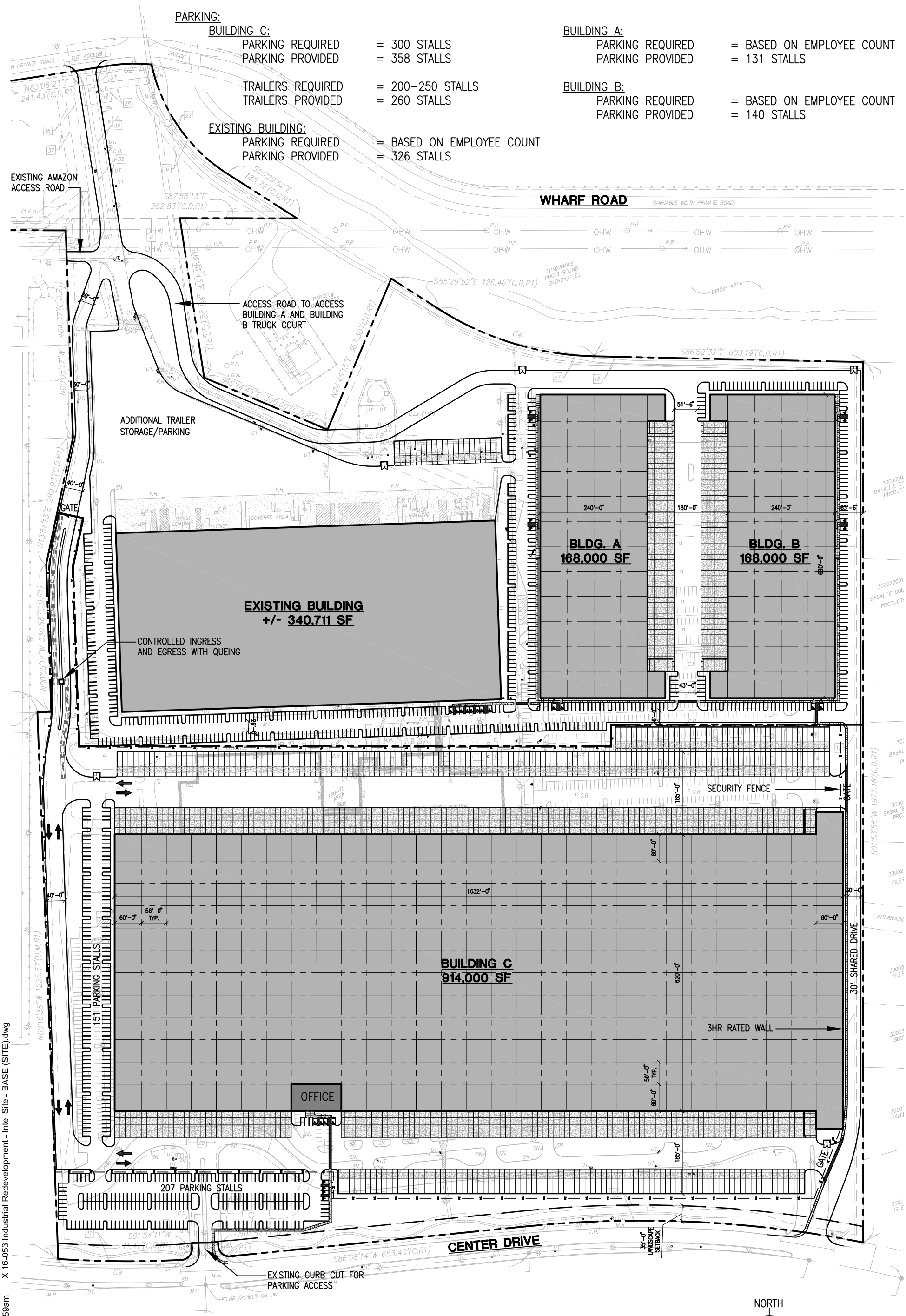
PARKING REQUIRED	=	BASED ON EMPLOYEE COUNT
PARKING PROVIDED	=	326 STALLS

BUILDING A:

PARKING REQUIRED	=	BASED ON EMPLOYEE COUNT
PARKING PROVIDED	=	131 STALLS

BUILDING B:

PARKING REQUIRED	=	BASED ON EMPLOYEE COUNT
PARKING PROVIDED	=	140 STALLS



CRAFT architects

INTEL PRELIMINARY SITE PLAN (OPTION 12 - FULFILLMENT CENTER)

DUPONT, WASHINGTON

10/25/17 1"=200'

X 16-053 Industrial Redevelopment - Intel Site - BASE (SITE).dwg

10/25/17 - 7:59am

DuPont Corporate Center

DuPont, WA

Transportation Impact Analysis

December 6, 2017

Prepared for:

Industrial Development, LLC
3300 Irvine Ave, Suite 111
Newport Beach, CA 92660

Prepared by:

TENW

Transportation Engineering NorthWest

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

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EXECUTIVE SUMMARY

This Transportation Impact Analysis (TIA) documents the traffic impacts associated with the proposed DuPont Corporate Center development project.

Project History. A SEPA Mitigated Determination of Nonsignificance (MDNS) was issued for the DuPont Corporate Center site in 1995 for the development of a combination of office and manufacturing uses (Intel DuPont Campus). An MDNS was also issued by the City in April 2017 for the development of 1,355,000 SF of high-cube warehouse/distribution center and 100,000 SF of office use that would replace the existing two office buildings formerly occupied by Intel. The MDNS included Mitigation measure (#3) that required an update to the March 24, 2017 TIA to analyze the intersection of Wharf Road and DuPont-Steilacoom Rd. In May 2017, the Hearing Examiner issued its Condition of Approval. Mitigation Measure #29 in the MDNS and the Hearing Examiner's Condition of Approval 1A required that any fulfillment center use would require a Site Plan Amendment and a Transportation Impact Analysis to analyze the potential impacts of such use (together the "Conditional Approvals").

Although a specific user or tenant has not been identified for the site that would occupy 100% of the future space as a fulfillment center, the project applicant would like to address the ability to develop high-cube fulfillment center use consistent with the definition in ITE *Trip Generation* (10th edition). Therefore, the project applicant is submitting a site plan amendment to address the Conditional Approvals reflecting an updated development scenario of up to 1,250,000 square feet (SF) of high-cube fulfillment center warehouse use which would replace the existing 660,000 SF of office use (formerly occupied by Intel). Similar to the previously approved redevelopment proposal, the existing 370,847 SF warehouse/office building would remain. The project is anticipated to be completed and occupied in 2018.

To satisfy Mitigation Measure #29 in the MDNS (issued in April 2017) and the Hearing Examiner's Condition of Approval 1A (issued in May 2017), this TIA analyzes the transportation impacts associated with the development of 1,250,000 SF of high-cube fulfillment center use on the DuPont Corporate Center site. All other uses such as transload, short-term storage, or cold storage types of high-cubed warehouse facilities were not conditioned and therefore are not impacted or addressed by this TIA.

Trip Generation. As high-cube fulfillment center, the proposed DuPont Corporate Center project is estimated to generate a total of 10,225 weekday daily trips, with 738 trips occurring during the weekday AM peak hour and 1,713 trips occurring during the weekday PM peak hour. These are gross trips and do not include credit for any existing uses or entitlements. In addition, the applicant reserves the right to reevaluate trip generation in the future once a specific user/tenant has been identified.

The trip generation of the proposed fulfillment center plus the existing warehouse/office building to remain was compared to the originally entitled Intel Campus (1998) Phase 1 trip generation forecasts. The proposed fulfillment center warehouse use plus the existing building to remain is estimated to generate 2,234 additional weekday daily trips, 590 fewer weekday AM peak hour trips, and an 810 additional weekday PM peak hour trips when compared to the originally entitled Intel Campus (1998) Phase 1 trips.

It should be noted that the trip generation estimates documented in this TIA for the proposed high-cube fulfillment center use are likely conservative since the ITE trip rates include a data point that was collected in December during the peak traffic holiday season.

Intersection LOS Analysis. A level of service (LOS) analysis was conducted at thirteen existing off-site study intersections during the PM peak hour. Since the development of 1,250,000 SF of fulfillment center on the DuPont Corporate Center site would not be expected to exceed the previously entitled and mitigated trip generation for the Intel DuPont Campus site during the AM peak hour, detailed intersection LOS analysis was not conducted for the AM peak hour.

The results of the PM peak hour LOS analysis showed that all of the signalized study intersections are anticipated to operate at LOS D or better in 2018 without or with the project, which meets the City's adopted LOS standards.

The stop-controlled southbound left-turn at the intersection of International Place/Center Drive is anticipated to operate at LOS E in 2018 with the project during the PM peak hour. A signal has been previously approved for the International Place/Center Drive intersection (TIP Project #18, to be constructed by others), which would improve operations to LOS A during the PM peak hour.

The northbound and southbound stop-controlled left-turn movements at the intersection of Hamilton Ave/Center Drive are anticipated to operate at LOS F during the PM peak hour in 2018 with the project. Since other options are available for both the northbound and southbound approaches, traffic would likely self-balance based on the location providing the most efficient egress at a given time during the PM peak hour. Northbound left-turns from the residential neighborhood on the south side of Center Drive could use the signalized intersection of Bronson Ave/Center Drive to access Center Drive. Similarly, southbound left-turns from the proposed DuPont Corporate Center site could use the signalized site access at Manchester Pl/Center Drive to access Center Drive.

It should be noted that the level of service (LOS) analysis documented in this TIA for the proposed high-cube fulfillment center use is likely conservative since the trip generation estimates are based on ITE trip rates that include a data point collected in December during the peak traffic holiday season.

Mitigation. Based on the results of the analysis shown in this report, no project-specific off-site transportation mitigation is proposed for concurrency or SEPA purposes.

Mitigation Measure #3 in the MDNS (April 2017) required the analysis of the intersection of DuPont-Steilacoom Rd/Wharf Rd. Based on the results presented in this report, with 1,250,000 sf of high-cube fulfillment center on the DuPont Corporate Campus site (highest PM peak hour trip generation of all the high-cube uses), the intersection of DuPont-Steilacoom Rd/Wharf Rd is anticipated to operate at LOS C during the PM peak hour. Therefore, no mitigation is proposed at this intersection.

INTRODUCTION

This Transportation Impact Analysis (TIA) has been prepared for the proposed DuPont Corporate Center development located at approximately 2800 Center Drive in DuPont, WA (see Figure 1).

Project History

The DuPont Corporate Center site is bounded by Center Drive (to the south), Wharf Road (to the north), and Manchester Place (to the east) as shown in Figure 1.

A SEPA Mitigated Determination of Nonsignificance (MDNS) and Conditional Use Permit were issued in 1995 for the Intel DuPont Campus, which included the development of a combination of office and manufacturing uses on the existing site. The existing site (now referred to as DuPont Corporate Center) currently contains a 370,847 square foot (SF) building occupied by warehousing and office uses and two office buildings (formerly occupied by Intel) totaling approximately 660,000 SF.

The City of DuPont issued a SEPA Mitigated Determination of Non-Significance (MDNS) for the proposed redevelopment of the DuPont Corporate Center on April 10, 2017. The proposed redevelopment included the construction of up to 1,355,000 SF of high-cube warehouse/distribution center use and 100,000 SF of office use, which would replace the existing two office buildings (660,000 SF). The existing 370,847 SF building (currently used for warehousing/office) was proposed to remain on the site as part of the proposed redevelopment project. Vehicular access to the redeveloped site was proposed to continue to be provided via the two existing full access driveways on Center Drive at Hamilton Ave and Manchester Place, and also via the existing full access driveway on Wharf Road. The preliminary SEPA site plan is included in Figure 2.

Updated Land Use Proposal

Although a specific user or tenant for the proposed DuPont Corporate Center project has not yet been identified, the project applicant would like the ability to develop, in addition to all other previously approved high-cube uses, high-cube fulfillment center use consistent with the definition in the most recent version of the ITE *Trip Generation* Manual (10th edition) for Land Use Code (LUC) 155 (High-Cube Fulfillment Center Warehouse).

Mitigation Measure #29 in the SEPA MDNS for the DuPont Corporate Center project states the following:

> *"Transportation impacts have been evaluated for high-cube warehouse uses with office space. If at any point in time the uses and trip generation are different from what is identified in the March 24, 2017, Trip Generation report, the City may require an updated traffic report and additional mitigation prior to issuance of a Certificate of Occupancy for a new use or change of use."*

Section 1A of the Hearing Examiner's "Conditions of Approval" to the Site Plan Approval dated May 31, 2017, requires further land use processes in order to permit a fulfilment center use, as follows:

> *1A. Based upon evidence in the Record, including without limitation the City's Transportation Engineering Consultant's March 28, 2017 memorandum (Exhibit "R"), the Site Plan approved by this Decision is expressly limited to a use/user or combination of users considered to be transload, short-term, or cold storage types of high-cube warehouse*

facilities, and not a fulfillment center or parcel hub, which have different trip generating characteristics. Any proposed change of use to operate a fulfillment center or parcel hub on the property would first require a Site Plan Amendment, as provided in DMC 25.150.050, which must include either an updated Trip Generation Report or a Transportation Impact Analysis that analyzes the potential impacts associated with fulfillment center or parcel hub types of high-cube warehouse facilities.

At the time of the prior trip studies and DuPont Corporate Center review, the ITE *Trip Generation* Manual (9th edition), did not provide a Land Use Code (LUC) for a High-Cube Fulfillment Center Warehouse use. The ITE *Trip Generation* Manual (10th edition) was issued in September 2017, and it provides data for Land Use Code (LUC) 155 (High-Cube Fulfillment Center Warehouse). Therefore, such use can now be evaluated under the Manual and that evaluation is presented in this transportation impact analysis report.

This TIA also analyzes the intersection of DuPont-Steilacoom Rd/Wharf Road to satisfy Mitigation Measure #3 in the MDNS. Mitigation Measure #3 in the SEPA MDNS for the DuPont Corporate Center project states the following:

> *"The March 24, 2017 Trip Generation Report shall be updated to analyze the intersection of Wharf Road SW and Steilacoom-DuPont Road SW. If warranted, the applicant may be responsible for additional mitigation measures to the intersection of Wharf Road SW and Steilacoom-DuPont Road SW to maintain its operation and function at pre-development level of service."*

The applicant is submitting a site plan amendment reflecting an updated development scenario of up to 1,250,000 square feet (SF) of high-cube fulfillment center warehouse use on the DuPont Corporate Center which would replace the existing 660,000 SF of office use. The existing 370,847 SF warehouse/office building would remain on the site as part of the proposed project and vehicular access to the site would continue to be provided via the two existing full access driveways on Center Drive and also via the existing full access driveway on Wharf Road. The project is estimated to be completed and occupied in 2018.

Project Approach

The specific items used in the evaluation of traffic impacts were defined through scoping with the City of DuPont based on the City's Traffic Impact Analysis Guidelines. To analyze the traffic impacts from the DuPont Corporate Center project, the following tasks were undertaken:

- Assessed existing conditions through field reconnaissance and reviewed existing planning documents.
- Described existing roads, pedestrian facilities, and transit facilities in the project vicinity.
- Documented existing traffic volumes and intersection levels of service (LOS) at 13 study intersections during the weekday PM peak hour.
- Documented future planned roadway improvements in the project vicinity.
- Developed weekday daily, AM peak hour, and PM peak hour trip generation estimates.
- Distributed and assigned weekday AM and PM peak hour project-generated trips.

- Analyzed weekday PM peak hour LOS for the future year 2018 conditions without and with the project at 13 study intersections.
- Analyzed weekday PM peak hour LOS and queueing at the proposed site access driveways on Center Drive and Wharf Road.
- Documented traffic mitigation.

Primary Data and Information Sources

- Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.
- 2017 PM peak hour traffic counts, ATD and TC2
- *Highway Capacity Manual (HCM),* 6th Edition, 2016.
- Sound Transit website, November 2017.
- City of DuPont 2018-2023 Transportation Improvement Program (TIP).
- City of DuPont Traffic Impact Analysis Guidelines.

Figure 1: Project Site Vicinity

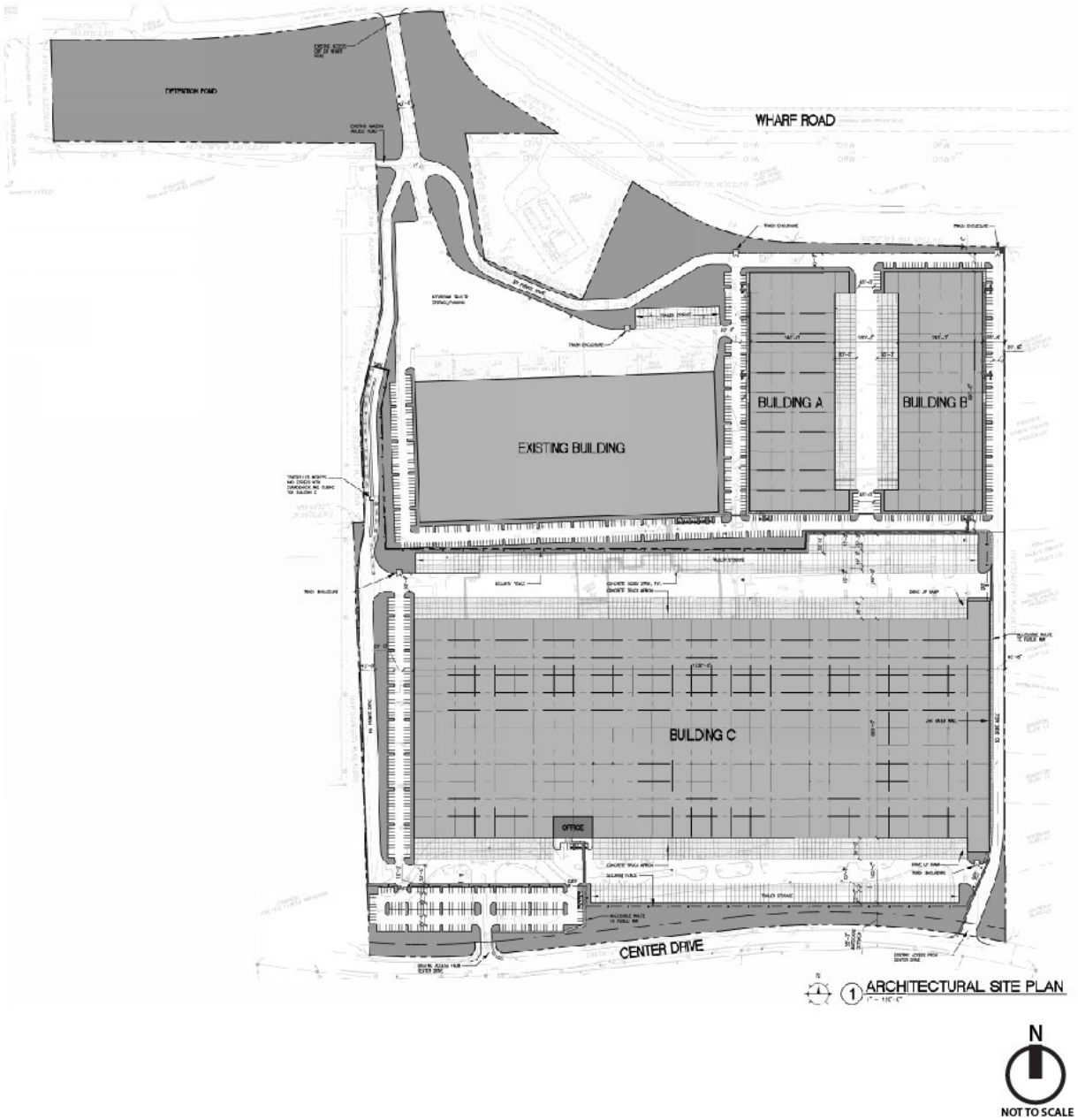


Figure 2: Preliminary Site Plan

EXISTING CONDITIONS

Roadway Network

The primary roadways serving the site are Center Drive, DuPont-Steilacoom Rd, and Wharf Rd as shown in Figure 1 and described below.

Center Drive is a four-lane principal arterial with turn-pockets at major intersections. Center Drive includes sidewalks or mixed-use pathways on both sides of the street. Designated bicycle lanes also exist on both sides of Center Drive. The posted speed limit on Center Drive is 35 mph.

DuPont-Steilacoom Road is a north-south principal arterial that consists of two to three lanes with a posted speed limit of 35 to 45 mph. There are limited sidewalks along DuPont-Steilacoom Road.

Wharf Road is an east-west two-lane roadway that provides local access to existing industrial warehouses. There are no sidewalks on either side of the street and the posted speed limit on Wharf Road is 25 mph.

Transit Service

Transit service to and from the project vicinity is provided by Sound Transit. The nearest public transit stops are located at DuPont Station, located on the southeast corner Wilmington Drive and Palisade Blvd. DuPont Station currently services Sound Transit Route 592 with service to/from Olympia and downtown Seattle. AM peak period service for Route 592 at DuPont Station is currently provided from approximately 4 a.m. to 8 a.m. with 15 to 20 minute headways. During the PM peak period, buses currently arrive at DuPont Station between 4 p.m. and 8 p.m. with 15 to 20 minute headways.

Bicycle & Pedestrian Facilities

Pedestrian facilities in the study area primarily include sidewalks and mixed-use pathways. Along the project frontage, Center Drive includes a mixed-use pathway along both the north and south sides of the roadway. Marked crosswalks, curb ramps, and pedestrian push-buttons are located at all signalized study intersections along Center Drive. Designated bicycle lanes also exist on both sides of Center Drive along the project frontage.

Existing Traffic Volumes

Existing weekday PM peak hour traffic volumes at the study intersections were based on counts completed by All Traffic Data (ATD) and the City of DuPont (TC^2) in October 2017. Figure 3 illustrates the existing 2017 PM peak hour traffic volumes at the study intersections. Appendix A includes the existing PM peak hour turning movement count data.

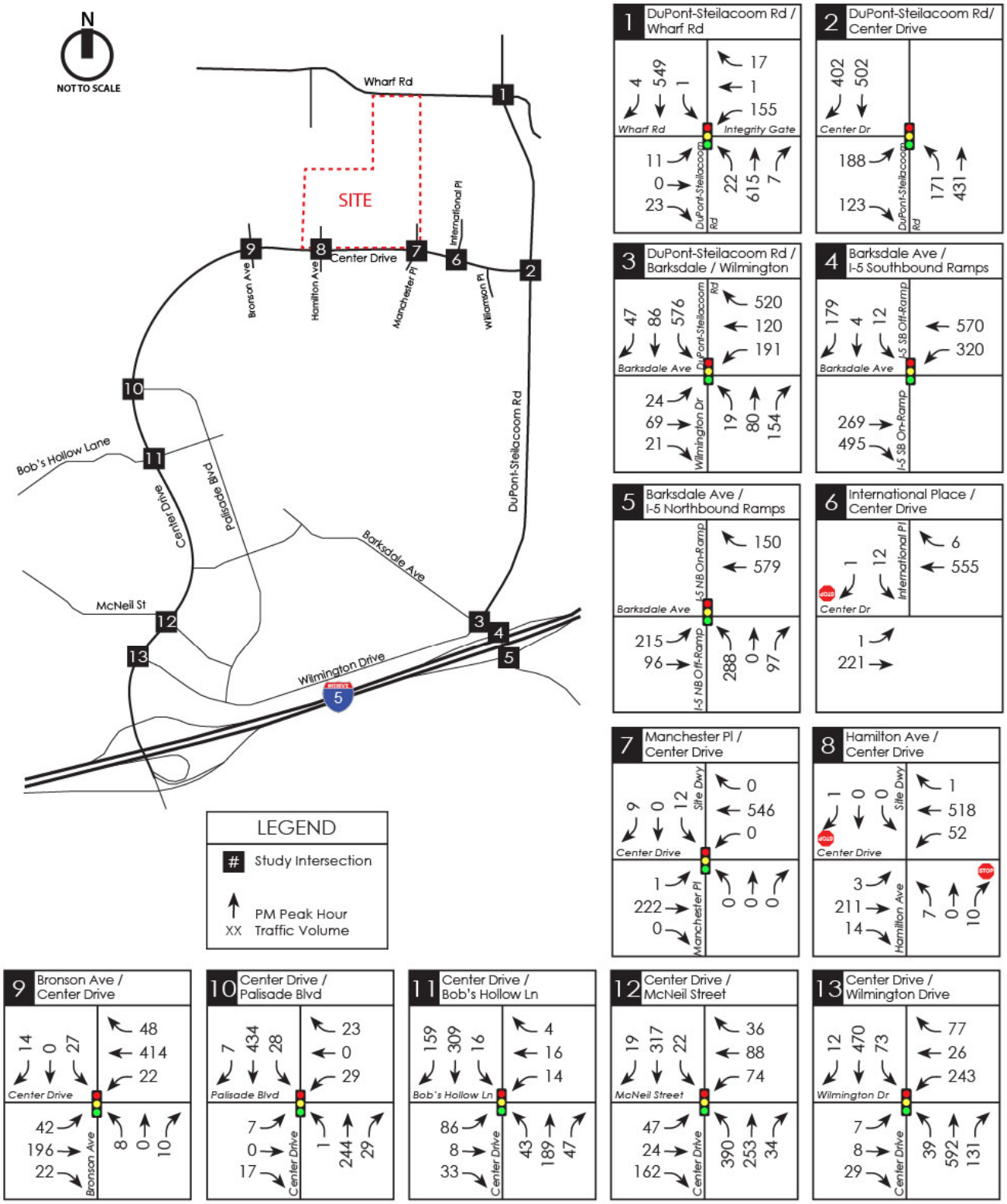


Figure 3: 2017 Existing PM Peak Hour Traffic Volumes

Existing Level of Service

Per direction from the City, an existing weekday PM peak hour level of service (LOS) analysis was conducted at the following study intersections:

1. DuPont-Steilacoom Rd / Wharf Rd (signalized)
2. DuPont-Steilacoom Rd / Center Dr (signalized)
3. DuPont-Steilacoom Rd / Barksdale Ave / Wilmington Dr (signalized)
4. Barksdale Ave / I-5 Southbound Ramps (signalized)
5. Barksdale Ave / I-5 Northbound Ramps (signalized)
6. International Pl / Center Dr (two-way stop controlled)
7. Manchester Pl / Center Dr (signalized)
8. Hamilton Ave / Center Dr (two-way stop controlled)
9. Bronson Ave / Center Dr (signalized)
10. Center Dr / Palisade Blvd (signalized)
11. Center Dr / Bob's Hollow Ln (signalized)
12. Center Dr / McNeil St (signalized)
13. Center Dr / Wilmington Dr (signalized)

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 represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only).

The LOS reported at 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 (and for the overall intersection at all-way stop controlled intersections. Additional v/c ratio criteria apply to lane group or movement LOS only). Table 1 outlines the current HCM (6th Edition) LOS criteria for signalized and stop-controlled intersections based on these methodologies.

Table 1
LOS Criteria for Signalized and Stop-Controlled Intersections[1]

SIGNALIZED INTERSECTIONS			STOP-CONTROLLED INTERSECTIONS		
Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio[2] ≤ 1.0	> 1.0	Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio[3] ≤ 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, 6th Edition, Transportation Research Board, 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.

Level of service calculations for intersections were based on methodology and procedures outlined in the 6th Edition *Highway Capacity Manual*, Transportation Research Board (HCM 6th Edition) using *Synchro 10* traffic analysis software. Existing signal timing at the study intersections was provided by WSDOT and the City of DuPont. TENW confirmed the existing geometry and signal phasing at the study intersection based on a field visit in October 2017.

The 2017 existing weekday PM peak hour LOS analysis results at the study intersection are summarized in Table 2. The LOS worksheets are included in Appendix B.

Table 2
2017 Existing PM Peak Hour Level of Service Summary

Study Intersection	PM Peak Hour LOS[1]	PM Peak Hour Delay (sec)
Signalized		
1. DuPont-Steilacoom Rd / Wharf Rd	B	14.0
2. DuPont-Steilacoom Rd / Center Dr	B	10.3
3. DuPont-Steilacoom Rd / Barksdale Ave / Wilmington Dr	C	21.7
4. Barksdale Ave / I-5 Southbound Ramps	C	29.3
5. Barksdale Ave / I-5 Northbound Ramps	C	32.6
7. Manchester Pl / Center Drive	A	4.8
9. Bronson Ave / Center Drive	A	6.2
10. Center Drive / Palisade Blvd	A	6.8
11. Center Drive / Bob's Hollow Ln	A	9.8
12. Center Drive / McNeil Street	B	12.8
13. Center Drive / Wilmington Drive	B	12.0
Two-Way Stop Controlled		
6. International Pl / Center Drive		
Eastbound left-turn	A	8.9
Southbound left-right	C	15.5
8. Hamilton Ave / Center Drive		
Eastbound left-turn	A	8.8
Westbound left-turn	A	7.9
Northbound left-turn	C	16.7
Northbound right-turn	A	9.3
Southbound left-thru	--	--
Southbound right-turn	B	10.3

1. LOS at Intersections 4 and 5 reported using Synchro 10 methodology. For all other intersections, the reported LOS is based on HCM 6th Edition methodology.

The City of DuPont's adopted LOS standard is LOS D. As shown in Table 2, all signalized study intersections currently operate at LOS C or better during the weekday PM peak hour. The controlled movements at the two-way stop controlled intersections also currently operate at LOS C or better during the PM peak hour.

FUTURE CONDITIONS

Planned Transportation Improvements

This section documents the planned transportation improvements in the study area. Based on a review of the City of DuPont's current 2018-2023 *Transportation Improvement Program* (TIP), there are multiple planned projects in the study area:

#1: Center Drive Overlay from Powerline Rd to Hamilton Ave. This funded project includes design and construction of an asphalt overlay on Center Drive from Powerline Rd to Hamilton Ave for pavement preservation. The project is anticipated to be completed by 2020.

#2: Center Drive Overlay from Palisade Blvd to Powerline Rd. This funded project includes design and construction of an asphalt overlay on Center Drive between Palisade Blvd and Powerline Rd for pavement preservation. The project is anticipated to be completed by 2021.

#3: Center Drive Overlay from Kincaid St to Palisade Blvd. This funded project includes design and construction of an asphalt overlay on Center Drive between Kincaid St and Palisade Blvd for pavement preservation. The project is anticipated to be completed by 2019.

#4: Center Drive Overlay from McNeil St to Kincaid St. This funded project includes design and construction of an asphalt overlay on Center Drive between McNeil St and Kincaid St for pavement preservation. The project is anticipated to be completed by 2021.

#5: Center Drive Overlay from I-5 to McNeil Street. This project includes design and construction of an asphalt overlay on Center Drive between I-5 and McNeil Street for pavement preservation. The project is anticipated to be completed by 2023.

#7: I-5 Exit 119 Reconstruction. This project includes working with WSDOT to reconstruct Exit 119 and add capacity. The project is anticipated to be completed by 2022.

#8: DuPont Steilacoom Road/Center Drive Intersection Improvements. This project includes the construction of dual northbound left-turn lanes and associated signal improvements. This project is anticipated to be completed by 2019.

#9: DuPont-Steilacoom Road Improvements. This project includes roadway widening on DuPont-Steilacoom Road from Wharf Rd to I-5 Exit 119. The project is anticipated to be completed by 2022.

#10: Center Drive Traffic Signal Coordination. This project includes coordination of the signalized intersections along Center Drive from I-5 to DuPont-Steilacoom Road during peak periods. The project is anticipated to be completed by 2019.

#18: Center Drive/International Place Traffic Signal. This developer funded project would install a traffic signal and left-turn lanes at Center Dr/International Place. The project is anticipated to be completed by 2020.

Project Trip Generation

Trip Generation for Updated Proposal

Trip generation estimates for the site plan amendment reflect 1,250,000 SF of fulfillment center use on the DuPont Corporate Center site and were based on methodology documented in the most recent edition of the Institute of Transportation Engineers (ITE) *Trip Generation* Manual (10th edition) for high-cube fulfillment center warehouse use (LUC 155).

Truck trips associated with the proposed high-cube fulfillment center warehouse use were estimated based on truck trip rates documented in the ITE *High-Cube Warehouse Vehicle Trip Generation Analysis* (October 2016). No trip reductions for internal or pass-by trips were applied to the proposed use.

The resulting gross weekday daily, AM peak hour, and PM peak hour trip generation estimates for the DuPont Corporate Center project as high-cube fulfillment center use (without applying any credit for the existing or entitled uses) are summarized in Table 3. The detailed trip generation calculations are included in Appendix C.

Table 3
Trip Generation for Updated Proposal
(1,250,000 SF high-cube fulfillment center)

	Total Trips Generated		
Weekday Time Period	In	Out	Total
Daily	5,113	5,112	10,225
AM Peak Hour	509	229	738
PM Peak Hour	531	1,182	1,713

As shown in Table 3, as high-cube fulfillment center, the proposed DuPont Corporate Center project is estimated to generate a total of 10,225 weekday daily trips, with 738 trips occurring during the weekday AM peak hour and 1,713 trips occurring during the weekday PM peak hour.

It should be noted that the trip generation data in the most recent edition of ITE Trip Generation for high-cube fulfillment center warehouse (LUC 155) includes a data point which was taken during the December holiday shopping season. Therefore, the trip generation estimates documented in this TIA for the proposed fulfillment center are likely conservative.

Trip Generation for Existing Building to Remain

Based on information provided by the project applicant, the existing building to remain on the DuPont Corporate Center site includes a total of 370,847 SF with 299,765 SF of warehousing use and 71,082 SF of general office use. Trip generation estimates for the existing building were based on methodology documented in the most recent edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th edition) for Warehousing (LUC 150) and General Office (LUC 710).

Truck trips associated with the existing warehouse use were estimated based on truck trip rates documented in the ITE Trip Generation Handbook (September 2017) for LUC 150. No trip reductions for internal or pass-by trips were applied to the existing warehouse/office use to remain.

The resulting weekday daily, AM peak hour, and PM peak hour trip generation estimates for the existing building to remain on the Intel DuPont Campus site (warehouse/office) are included in Appendix C. As shown in Appendix C, the existing building to remain is estimated to generate a total of 1,281 weekday daily trips, with 154 trips occurring during the weekday AM peak hour and 146 trips occurring during the weekday PM peak hour.

Comparison to Previously Approved Trip Generation

The City of DuPont issued a SEPA Mitigated Determination of Non-Significance (MDNS) for the proposed redevelopment of the DuPont Corporate Center on April 10, 2017. The MDNS was based on a redevelopment scenario that included the construction of up to 1,355,000 SF of high-cube warehouse/distribution center use and 100,000 SF of office use, which would replace the two existing office buildings (660,000 SF). A comparison of the previously approved trip generation to the current proposal is provided in Appendix C.

As shown in Appendix C, the previously approved development proposal (1,355,000 SF high-cube warehouse/distribution center use plus 100,000 SF office) was estimated to generate 3,589 new weekday daily trips, with 355 new trips occurring during the AM peak hour and 362 new trips occurring during the PM peak hour.

As also shown in Appendix C, the updated proposal of 1,250,000 SF high-cube fulfillment center warehouse use is estimated to generate 6,636 additional weekday daily trips, 383 additional weekday AM peak hour trips, and 1,351 additional weekday PM peak hour trips when compared to the previously approved (April 2017) trip generation for the DuPont Corporate Center redevelopment.

Comparison to Entitled Intel Trip Generation

A SEPA Mitigated Determination of Nonsignificance (MDNS) and Conditional Use Permit were issued in 1995 for the Intel DuPont Campus, which included the development of a combination of office and manufacturing uses on the existing site. The 9/21/95 EIS for Intel included a TIA that reflected a total of 18,542 weekday daily trips, 2,964 weekday AM peak hour trips, and 2,167 weekday PM peak hour trips at full buildout (year 2003). However, the City required that the trip generation for the proposed fulfillment center documented in this TIA be compared to only the trip generation for the Intel DuPont Campus Phase 1 (1998) trip generation, which reflects a total of 9,272 weekday daily trips, 1,482 weekday AM peak hour trips, and 1,049 weekday PM peak hour trips.

Table 4 provides a comparison of the previously entitled trip generation for the Intel DuPont Campus Phase 1 (1998) site to the trip generation forecasts for the updated development proposal of 1,250,000 SF of high-cube fulfillment center warehouse use on the DuPont Corporate Center site (and accounting for the existing office/warehouse building to remain).

Table 4
Trip Generation Comparison – Intel 1998 Phase 1 vs. Updated Proposal

Weekday Time Period / Scenario	Total Trips Generated
WEEKDAY DAILY	
(A) Intel Campus Phase 1 (1998)	9,272
(B) Existing office/warehouse building to remain	1,281
(C) Proposed DuPont Corporate Center (fulfillment center)	10,225
Subtotal Existing + Proposed	*11,506*
Proposed + Existing less Intel Phase 1 = (C+B) less (A)	**+2,234**
WEEKDAY AM PEAK HOUR	
(A) Intel Campus Phase 1 (1998)	1,482
(B) Existing office/warehouse building to remain	154
(C) Proposed DuPont Corporate Center (fulfillment center)	738
Subtotal Existing + Proposed	*892*
Proposed + Existing less Intel Phase 1 = (C+B) less (A)	**-590**
WEEKDAY PM PEAK HOUR	
(A) Intel Campus Phase 1 (1998)	1,049
(B) Existing office/warehouse building to remain	146
(C) Proposed DuPont Corporate Center (fulfillment center)	1,713
Subtotal Existing + Proposed	*1,859*
Proposed + Existing less Intel Phase 1 = (C+B) less (A)	**+810**

As shown in Table 4, the proposed 1,250,000 SF high-cube fulfillment center warehouse use plus the existing office/warehouse building to remain is estimated to generate 2,234 additional weekday daily trips, 590 fewer weekday AM peak hour trips, and 810 additional weekday PM peak hour trips when compared to the entitled Intel Campus (1998) Phase 1 trips.

During the AM peak hour, the development of 1,250,000 SF of fulfillment center on the DuPont Corporate Center site would not be expected to exceed the previously entitled and mitigated trip generation for the Intel DuPont Campus site during the AM peak hour. Therefore, detailed intersection LOS analysis was not conducted for the AM peak hour.

It should be noted that the trip generation estimates documented in this TIA for the proposed high-cube fulfillment center use are likely conservative since the ITE trip rates include a data point that was collected in December during the peak traffic holiday season.

Project Trip Distribution and Assignment

The distribution of AM and PM peak hour project trips from the DuPont Corporate Center project was estimated separately for trucks and passenger (non-truck) vehicles based on the trip distribution documented in the *DuPont Corporate Park (Project Granite) Transportation Impact Analysis* (October 15, 2012). Heavy vehicle (truck) project trips were assumed to be distributed only to/from DuPont-Steilacoom Road since trucks are prohibited from using Center Drive west of the project site.

The estimated AM peak hour trip distribution and assignment of passenger vehicle (non-truck) project trips is illustrated in Figure 4 and the estimated AM peak hour distribution and assignment of heavy vehicle (truck) project trips is illustrated in Figure 5.

The estimated PM peak hour trip distribution and assignment of passenger vehicle (non-truck) project trips is illustrated in Figure 6 and the estimated PM peak hour distribution and assignment of heavy vehicle (truck) project trips is illustrated in Figure 7.

Future Traffic Operations

Future Traffic Volumes

The DuPont Corporate Center project is anticipated to be completed and occupied in 2018. Year 2018 No Action (without project) traffic volumes were estimated by including traffic from the following pipeline development projects identified by the City:

- Village IV
- Williamson Pl
- International Pl
- Patriot's Landing
- Civic Center Phase 2
- Civic Center Phase 3
- NW Logistics
- DuPont Storage

The AM and PM peak hour volumes for each of the pipeline projects above at the study intersections were provided by the City. Based on direction from the City, an annual background growth rate of 5 percent was also applied to the existing volumes to estimate the future background traffic volumes. The resulting 2018 No Action PM peak hour volumes at the study intersections are shown in Figure 8.

The 2018 With-Project PM peak hour traffic volumes were determined by adding the trip assignment from the proposed project (shown in Figure 6 and Figure 7) to the future 2018 No Action traffic volumes (shown in Figure 8). The resulting total With-Project PM peak hour traffic volumes at the study intersections are shown on Figure 9.

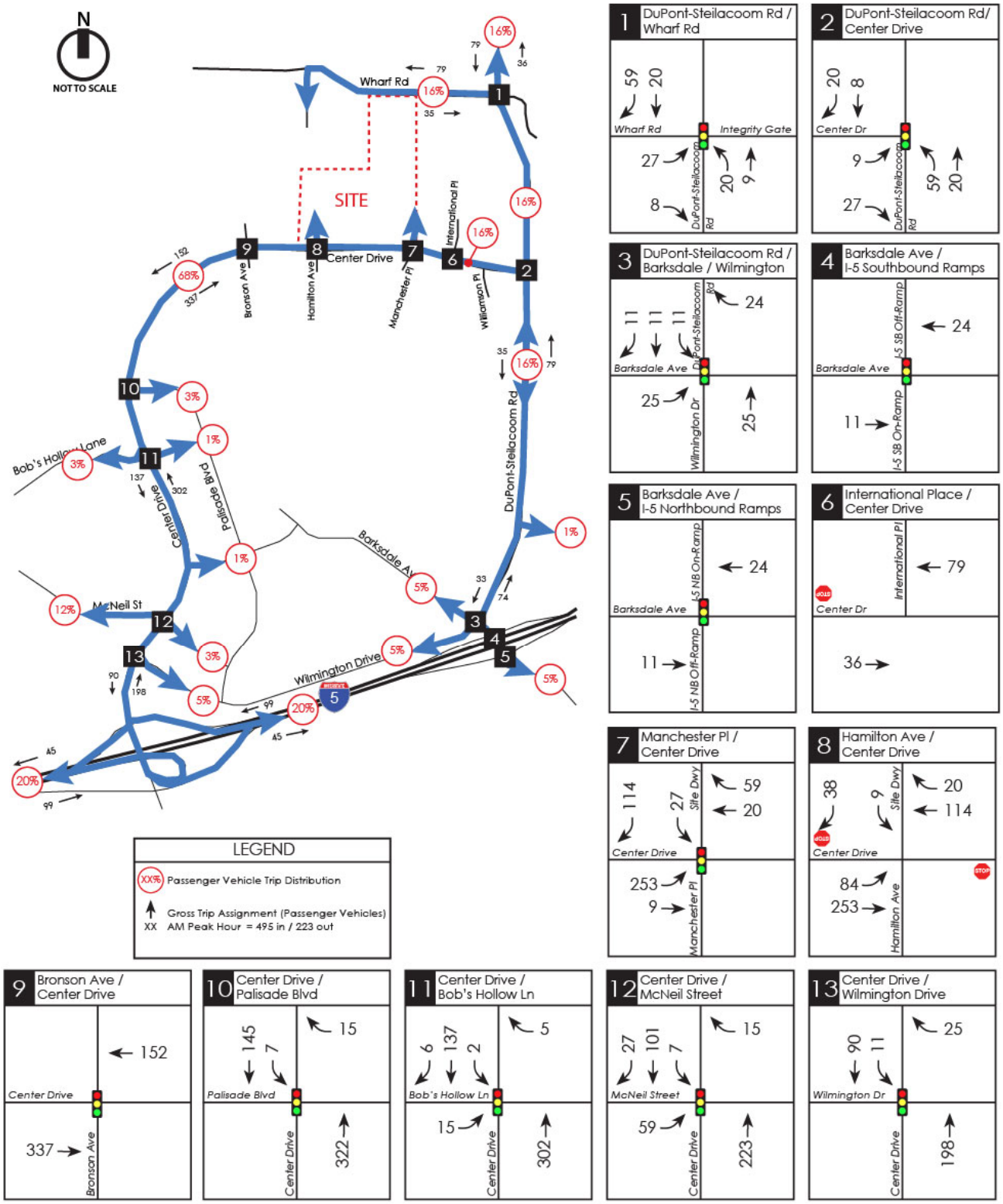


Figure 4: AM Peak Hour Project Trip Distribution and Assignment - Passenger Vehicles

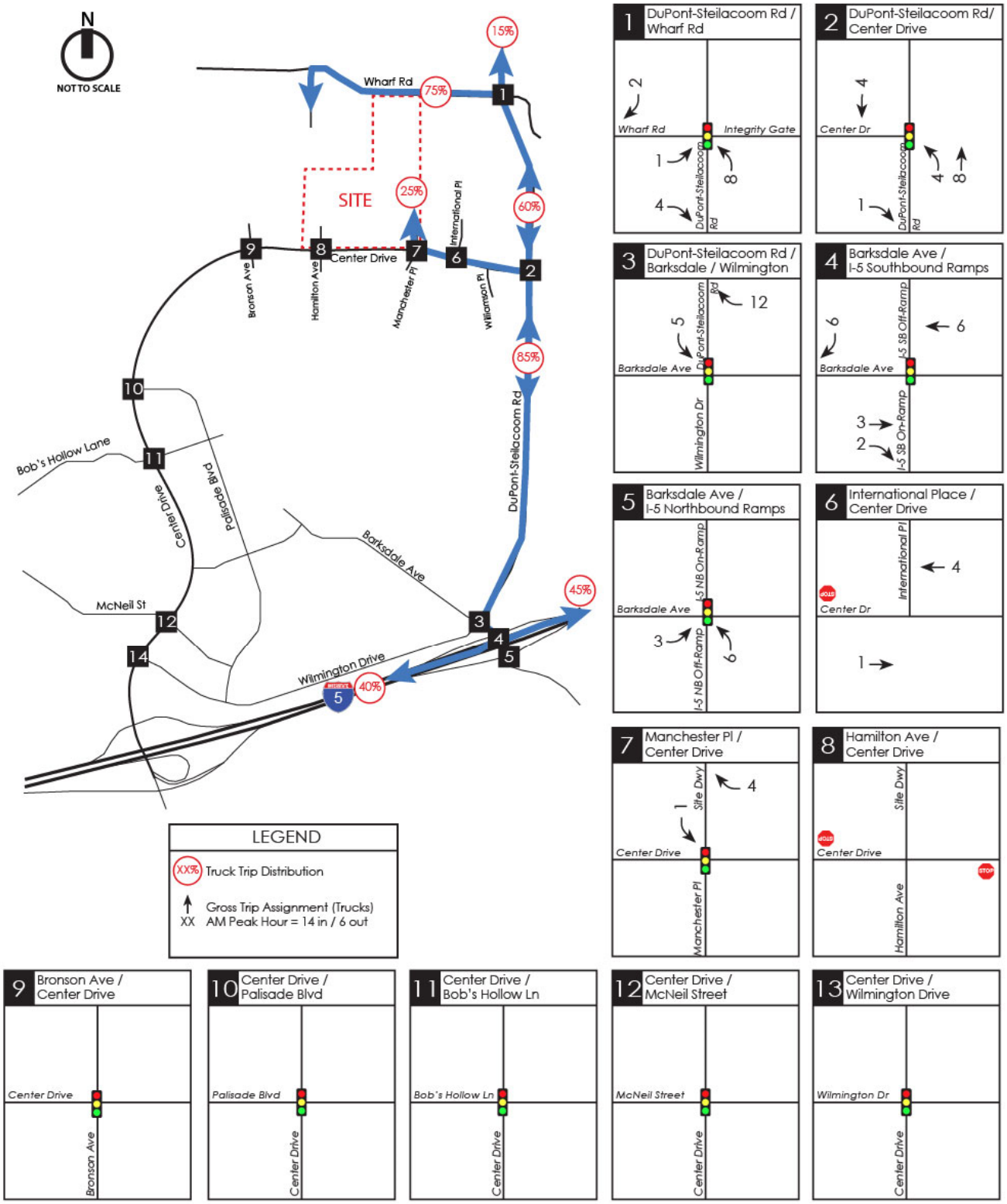


Figure 5: AM Peak Hour Project Trip Distribution and Assignment - Heavy Vehicles

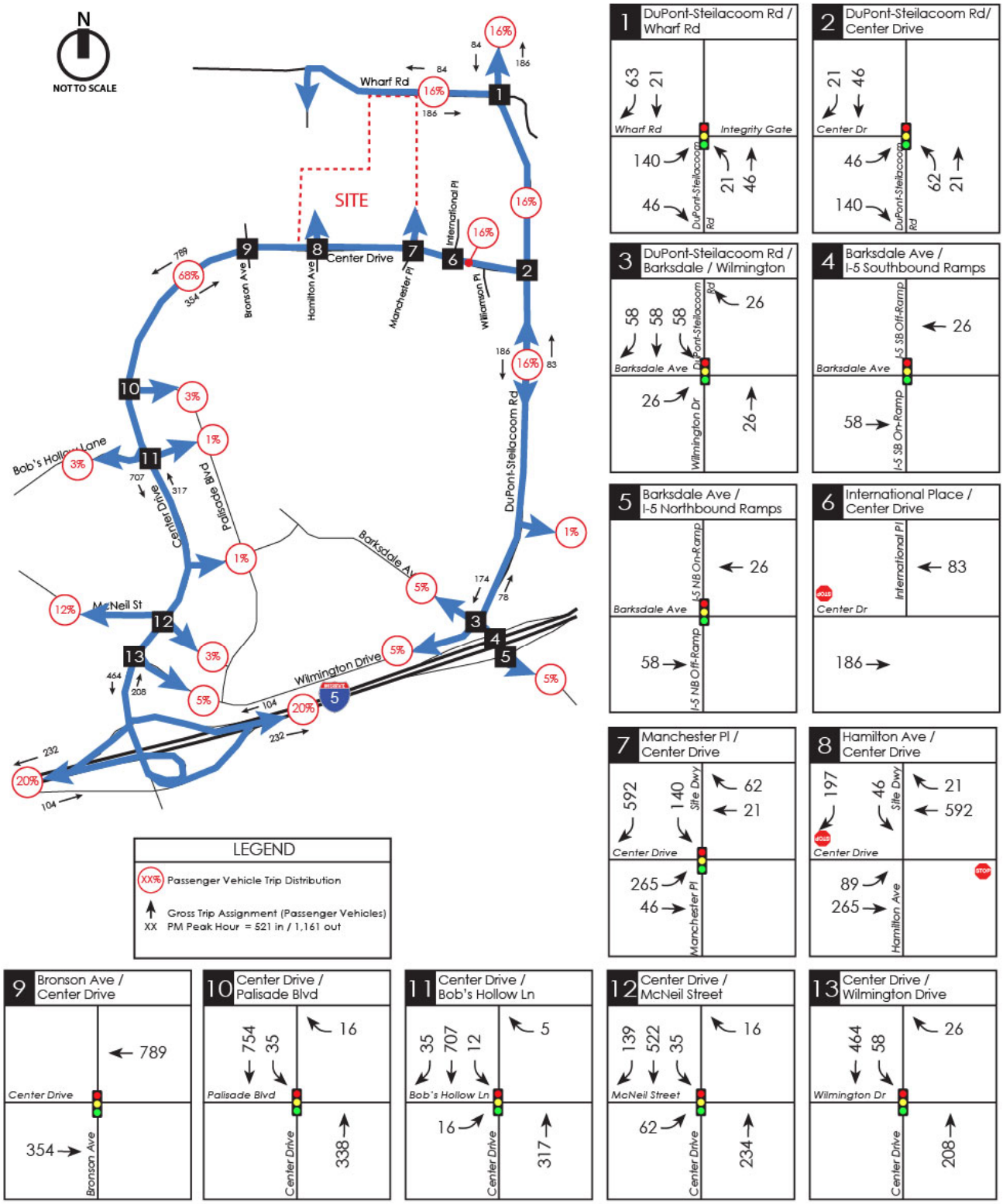


Figure 6: PM Peak Hour Project Trip Distribution and Assignment – Passenger Vehicles

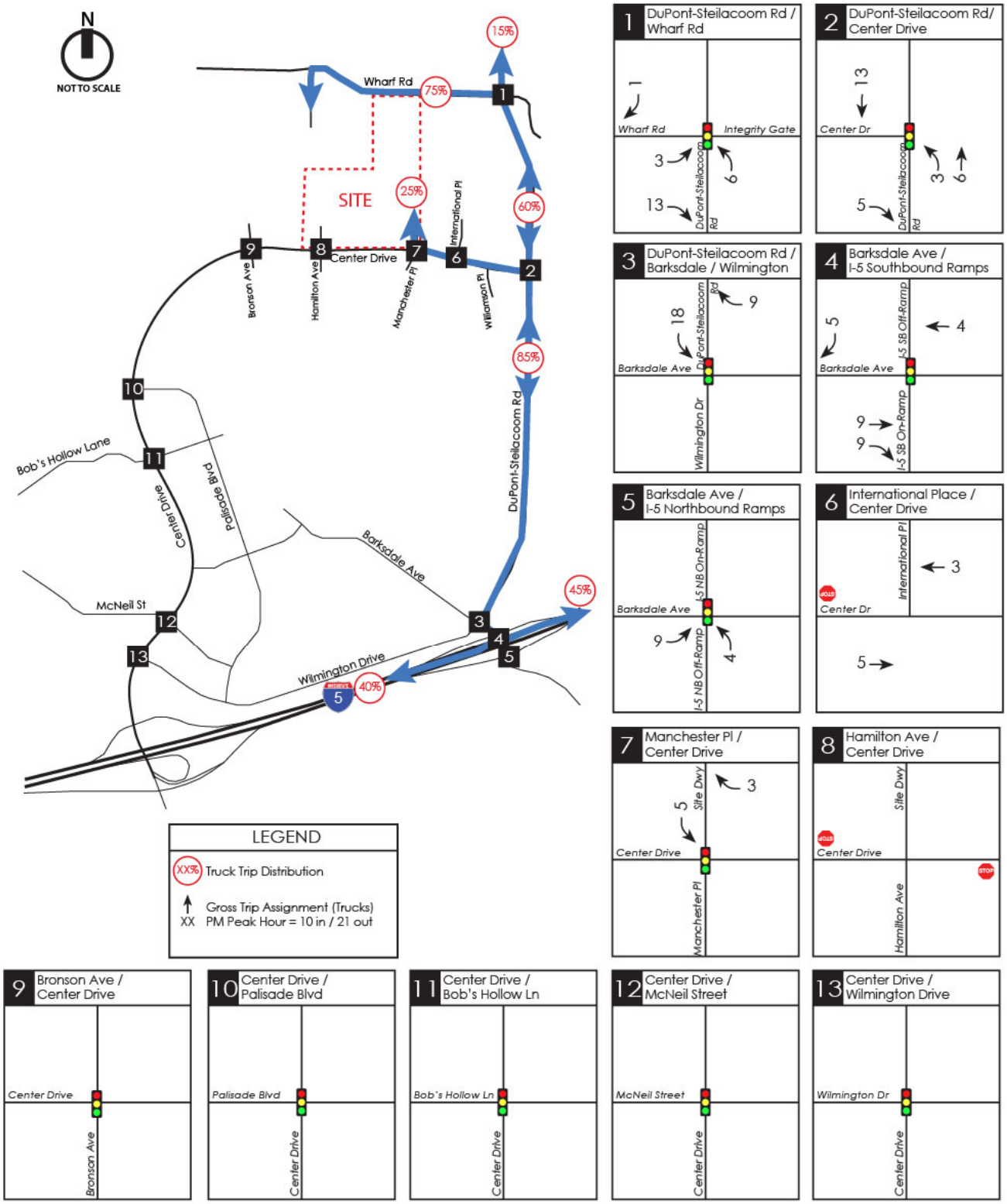


Figure 7: PM Peak Hour Project Trip Distribution and Assignment - Heavy Vehicles

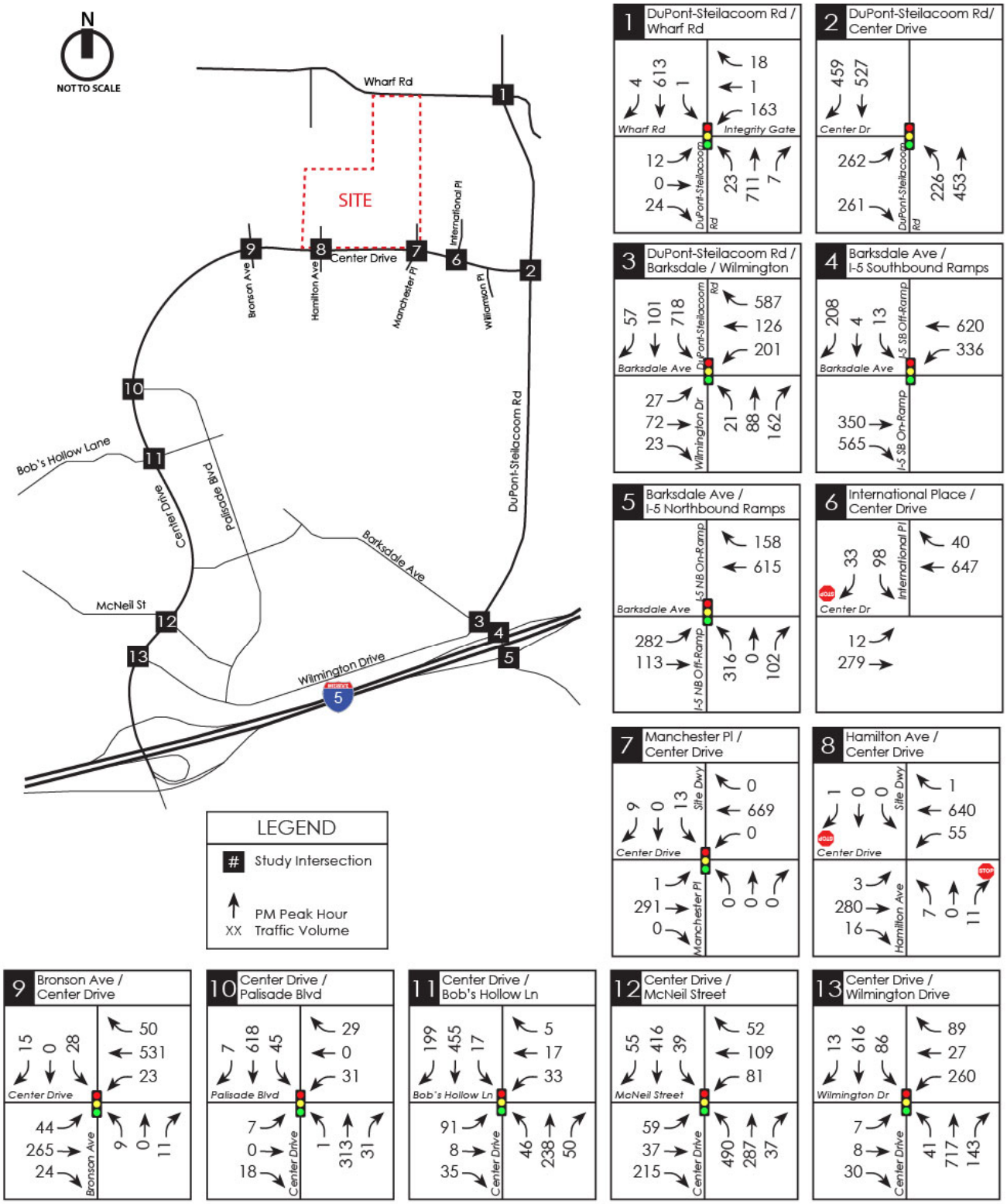


Figure 8: 2018 No Action PM Peak Hour Traffic Volumes

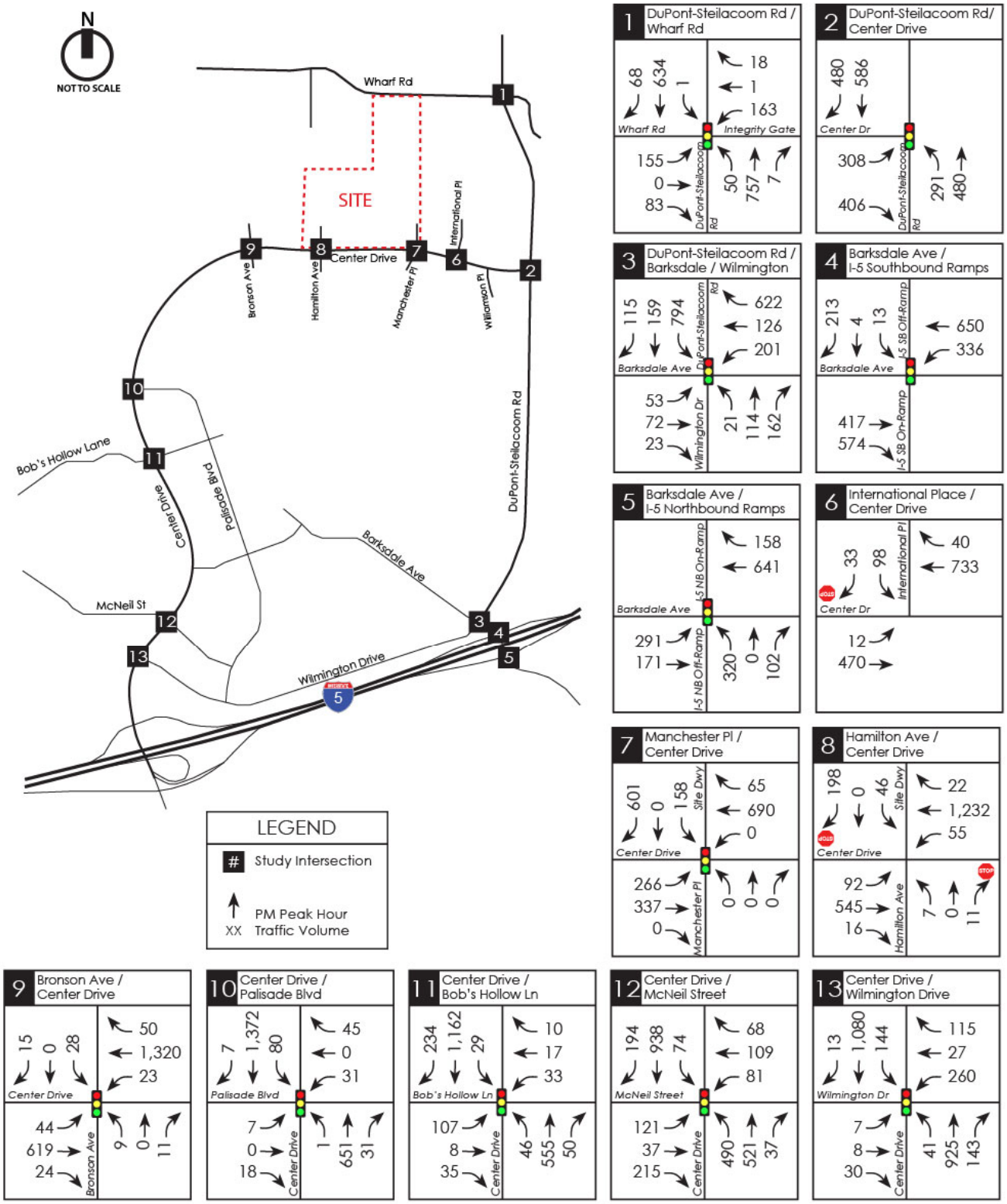


Figure 9: 2018 With Project PM Peak Hour Traffic Volumes

Future Level of Service at Study Intersections

A Level of Service (LOS) analysis was conducted for future year (2018) weekday PM peak hour No Action (without project) and With-Project conditions. The roadway network and traffic signal timing assumed in the future year 2018 analysis was based on existing conditions since there are no planned improvements at any of the study intersections that are anticipated to be completed by 2018. The LOS analysis at the proposed site access locations on Center Drive at Manchester Place and Hamilton Ave assume that the north leg would be reconfigured to allow for one inbound lane and two outbound lanes. The PHF and % Heavy Vehicle assumptions in the LOS analysis were also based on existing conditions.

It should be noted that in the future with the completion of TIP project #10 (Center Drive Traffic Signal Coordination Study), the signal timing along the Center Drive corridor could be optimized which may result in improved LOS at the study intersections.

The future 2018 weekday PM peak hour LOS results at the study intersections without and with the proposed DuPont Corporate Center project are summarized in Table 5. The LOS worksheets are included in Appendix B.

Table 5
Future 2018 PM Peak Hour Level of Service Summary

Study Intersection	2018 Future No Action LOS [1]	2018 Future No Action Delay (sec)	2018 Future With Project LOS [1]	2018 Future With Project Delay (sec)
Signalized				
1. DuPont-Steilacoom Rd / Wharf Rd	B	15.3	C	26.6
2. DuPont-Steilacoom Rd / Center Dr	B	13.7	B	18.4
3. DuPont-Steilacoom Rd / Barksdale Ave / Wilmington Dr	C	23.3	C	31.3
4. Barksdale Ave / I-5 Southbound Ramps	C	33.1	C	32.7
5. Barksdale Ave / I-5 Northbound Ramps	D	48.7	D	51.8
7. Manchester Pl / Center Drive	A	4.7	C	21.5
9. Bronson Ave / Center Drive	A	6.5	A	7.4
10. Center Drive / Palisade Blvd	A	7.1	A	7.4
11. Center Drive / Bob's Hollow Ln	B	10.3	B	14.0
12. Center Drive / McNeil Street	B	19.3	D	45.0
13. Center Drive / Wilmington Drive	B	13.3	B	15.3
Two-Way Stop Controlled				
6. International Pl / Center Drive				
Eastbound left-turn	A	9.4	A	9.8
Southbound left-right	D	27.0	E	42.8
8. Hamilton Ave / Center Drive				
Eastbound left-turn	A	9.3	C	15.3
Westbound left-turn	A	8.2	A	9.2
Northbound left-turn	C	20.4	F	>100
Northbound right-turn	A	9.6	B	10.7
Southbound left-thru	--	--	F	>100
Southbound right-turn	B	10.9	D	29.6

1. LOS at Intersections 4 and 5 reported using Synchro 10 methodology. For all other intersections, the reported LOS is based on HCM 6th Edition methodology.

As shown in Table 5, the 11 signalized study intersections are anticipated to operate at LOS D or better in 2018 without or with the DuPont Corporate Center project, which meets the City of DuPont's LOS standards.

As also shown in Table 5, the stop-controlled southbound left-turn at the intersection of International Place/Center Drive (#6) is anticipated to operate at LOS E with the DuPont Corporate Center project during the PM peak hour. However, a signal has been previously approved for the International Place/Center Drive intersection (TIP Project #18, to be constructed by others), which would improve operations to LOS A during the PM peak hour.

As also shown in Table 5, the northbound and southbound stop-controlled left-turn movements at the intersection of Hamilton Ave/Center Drive are anticipated to operate at LOS F with the DuPont Corporate Center project as high-cube fulfillment center use. Since other options are available for

both the northbound and southbound approaches to Hamilton Ave/Center Drive, traffic would likely self-balance based on the location providing the most efficient egress at a given time during the PM peak hour. Northbound left-turns from the residential neighborhood on the south side of Center Drive could use the signalized intersection of Bronson Ave/Center Drive to access Center Drive. Similarly, southbound left-turns from the proposed DuPont Corporate Center site could use the signalized site access at Manchester Pl/Center Drive to access Center Drive.

It should be noted that the level of service (LOS) analysis documented in this TIA for the proposed high-cube fulfillment center use is likely conservative since the trip generation estimates are based on ITE trip rates that include a data point collected in December during the peak traffic holiday season.

Non-Motorized Impacts

The project's use of non-motorized and transit facilities in the study area is anticipated to be similar to the level of use associated with existing commercial uses in the area. Based on existing counts, there is currently minimal pedestrian and bicycle activity in the study area. It can be assumed that transit use in the vicinity is also relatively low. Therefore, the project's impact on non-motorized and transit facilities is not expected to be significant.

MITIGATION MEASURES

Based on the results of the analysis shown in this report, no project-specific off-site transportation mitigation is proposed for concurrency or SEPA purposes for an updated development scenario of up to 1,250,000 SF of high-cube fulfillment center use on the DuPont Corporate Center site.

Mitigation Measure #3 in the MDNS (April 2017) required the analysis of the intersection of DuPont-Steilacoom Rd/Wharf Rd. Based on the results presented in this report, with 1,250,000 sf of high-cube fulfillment center on the DuPont Corporate Campus site (highest PM peak hour trip generation of all the high-cube uses), the intersection of DuPont-Steilacoom Rd/Wharf Rd is anticipated to operate at LOS C during the PM peak hour. Therefore, no mitigation is proposed at this intersection.

Appendix A

Existing Peak Hour Traffic Count Data

Prepared for: **PH Consulting LLC**

#1

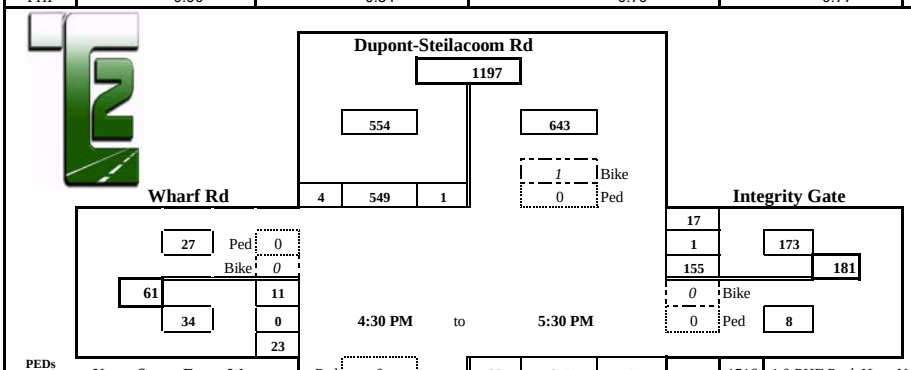
Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Dupont-Steilacoom Rd & Wharf Rd
Location: Dupont, Washington
Date of Count: Tues 9/05/2017
Checked By: Jess

Time Interval Ending at	From North on (SB) Dupont-Steilacoom Rd				From South on (NB) Dupont-Steilacoom Rd				From East on (WB) Integrity Gate				From West on (EB) Wharf Rd				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	2	150	3	11	9	110	5	0	31	0	3	0	4	0	18	335
4:30 P	0	0	121	0	5	2	120	1	0	22	0	6	2	4	0	13	289
4:45 P	0	0	142	0	9	10	181	1	0	32	0	5	2	3	0	5	379
5:00 P	1	1	150	3	5	7	149	1	0	34	0	7	0	3	0	8	363
5:15 P	2	0	144	1	5	3	145	3	0	53	0	2	2	3	0	6	360
5:30 P	2	0	113	0	2	2	140	2	1	36	1	3	2	2	0	4	303
5:45 P	0	0	129	0	5	5	161	2	0	35	0	1	0	0	1	2	336
6:00 P	1	0	120	0	5	5	129	5	0	40	0	4	4	2	0	10	315
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	6	3	1069	7	47	43	1135	20	1	283	1	31	12	21	1	66	2680
	Peak Hour: 4:30 PM to 5:30 PM																
Total	5	1	549	4	21	22	615	7	1	155	1	17	6	11	0	23	1405
Approach	554				644				173				34				1405
%HV	0.9%				3.3%				0.6%				17.6%				2.3%
PHF	0.90				0.84				0.79				0.77				0.93



PEDs Across:	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06	NO PEDS				0
INT 07					0
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	0	0	0	0

Special Notes

Bicycles From:	N	S	E	W	
INT 01					0
INT 02					0
INT 03		1			1
INT 04	1				1
INT 05					0
INT 06					0
INT 07					0
INT 08	1		1		2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	1	1	0	4

1516 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.77	17.6%
Check	WB	0.79	0.6%
In: 1405	NB	0.84	3.3%
Out: 1405	SB	0.90	0.9%
	T Int.	0.93	2.3%

Conditions:

PHC17102M_07p

#2

Prepared for: **Geralyn Reinart, P.E.**

Traffic Count Consultants, Inc.

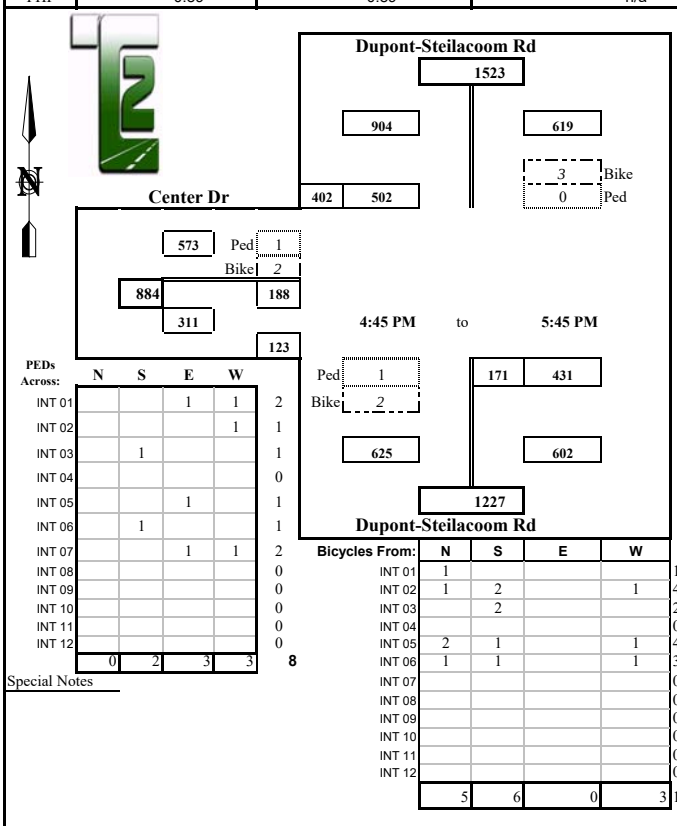
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Dupont-Steilacoom Rd & Center Dr **Date of Count:** Tues 10/03/2017

Location: DuPont, Washington **Checked By:** Jess

Time Interval Ending at	From North on (SB) Dupont-Steilacoom Rd				From South on (NB) Dupont-Steilacoom Rd				From East on (WB) 0				From West on (EB) Center Dr				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	0	110	50	8	37	91	0	0	0	0	0	7	50	0	32	370
4:30 P	1	0	111	79	7	25	99	0	0	0	0	0	4	35	0	35	384
4:45 P	2	0	123	77	9	35	123	0	0	0	0	0	1	47	0	33	438
5:00 P	2	0	157	97	6	26	114	0	0	0	0	0	2	52	0	20	466
5:15 P	4	0	123	106	5	35	95	0	0	0	0	0	1	50	0	31	440
5:30 P	3	0	111	99	5	47	122	0	0	0	0	0	5	43	0	24	446
5:45 P	1	0	111	100	3	63	100	0	0	0	0	0	1	43	0	48	465
6:00 P	3	0	115	91	1	39	99	0	0	0	0	0	1	48	0	28	420
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	17	0	961	699	44	307	843	0	0	0	0	0	22	368	0	251	3429
	Peak Hour: 4:45 PM to 5:45 PM																
Total	10	0	502	402	19	171	431	0	0	0	0	0	9	188	0	123	1817
Approach	904				602				0				311				1817
%HV	1.1%				3.2%				n/a				2.9%				2.1%
PHF	0.89				0.89				n/a				0.85				0.97



PEDs Across:	N	S	E	W	
INT 01			1	1	2
INT 02				1	1
INT 03		1			1
INT 04					0
INT 05			1		1
INT 06		1			1
INT 07			1	1	2
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	2	3	3	8

Special Notes

Bicycles From:	N	S	E	W	
INT 01	1				1
INT 02	1	2		1	4
INT 03		2			2
INT 04					0
INT 05	2	1		1	4
INT 06	1	1		1	3
INT 07					0
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	5	6	0	3	14

1864 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.85	2.9%
Check	WB	n/a	n/a
In: 1817	NB	0.89	3.2%
Out: 1817	SB	0.89	1.1%
	T Int.	0.97	2.1%

N U's	S U's	E U's	W U's
0	0	0	1

GRT17115TM_05p

#3

Prepared for: **Geralyn Reinart, P.E.**

Traffic Count Consultants, Inc.

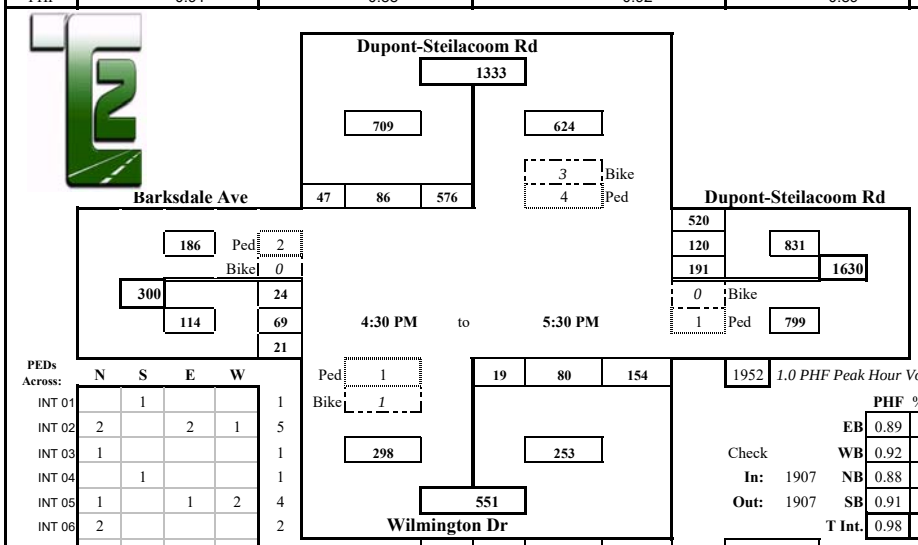
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Dupont-Steilacoom Rd/Wilmington Dr & Dupont-Steilacoom Rd/Barksdale Ave **Date of Count:** Tues 10/03/2017

Location: DuPont, Washington **Checked By:** Jess

Time Interval Ending at	From North on (SB) Dupont-Steilacoom Rd				From South on (NB) Wilmington Dr				From East on (WB) Dupont-Steilacoom Rd				From West on (EB) Barksdale Ave				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	6	156	14	10	0	5	13	30	7	41	14	114	0	7	25	5	434
4:30 P	5	135	21	10	0	7	14	37	7	31	22	116	1	8	21	2	424
4:45 P	3	145	16	14	1	4	24	39	1	39	31	139	0	8	19	5	483
5:00 P	4	150	24	12	0	4	20	48	7	46	33	119	0	7	19	6	488
5:15 P	4	162	22	11	0	5	21	36	5	58	20	120	0	4	17	6	482
5:30 P	8	119	24	10	1	6	15	31	4	48	36	142	0	5	14	4	454
5:45 P	2	140	20	9	0	6	27	32	5	45	23	146	0	9	13	4	474
6:00 P	3	132	23	13	0	5	13	30	3	54	27	120	0	9	17	6	449
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	35	1139	164	89	2	42	147	283	39	362	206	1016	1	57	145	38	3688
	Peak Hour: 4:30 PM to 5:30 PM																
Total	19	576	86	47	2	19	80	154	17	191	120	520	0	24	69	21	1907
Approach	709				253				831				114				1907
%HV	2.7%				0.8%				2.0%				n/a				2.0%
PHF	0.91				0.88				0.92				0.89				0.98



PEDs Across:	N	S	E	W	
INT 01		1			1
INT 02	2		2	1	5
INT 03	1				1
INT 04		1			1
INT 05	1		1	2	4
INT 06	2				2
INT 07					0
INT 08	2		1		3
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	8	2	4	3	17

Special Notes

Bicycles From:	N	S	E	W	
INT 01	1				1
INT 02	1				1
INT 03					0
INT 04					0
INT 05	2				2
INT 06	1	1			2
INT 07		1		1	2
INT 08	1				1
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	6	2	0	1	9

1952 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.89	n/a
Check	WB	0.92	2.0%
In: 1907	NB	0.88	0.8%
Out: 1907	SB	0.91	2.7%
	T Int.	0.98	2.0%

Conditions:

GRT17115TM_06p

#4

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

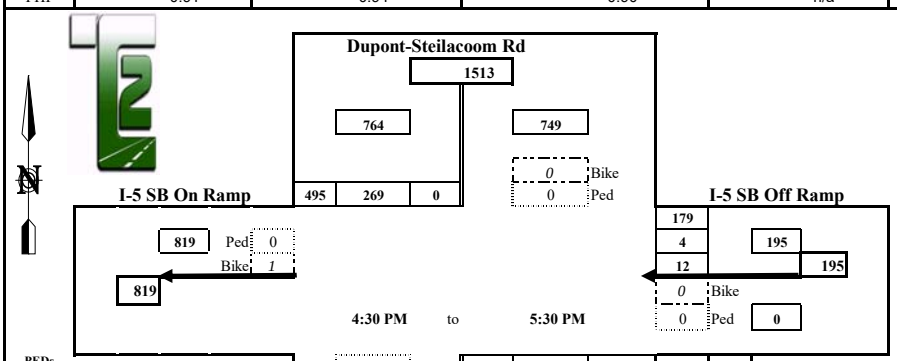
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Dupont-Steilacoom Rd & I-5 SB Ramps **Date of Count:** Thurs 10/26/2017

Location: DuPont, Washington **Checked By:** Jess

Time Interval Ending at	From North on (SB) Dupont-Steilacoom Rd				From South on (NB) Dupont-Steilacoom Rd				From East on (WB) I-5 SB Off Ramp				From West on (EB) I-5 SB On Ramp				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
3:45 P	10	0	81	107	1	73	88	0	2	8	1	48	0	0	0	0	406
4:00 P	5	0	65	89	4	80	107	0	2	9	0	43	0	0	0	0	393
4:15 P	5	0	71	112	0	110	109	0	1	6	0	44	0	0	0	0	452
4:30 P	4	0	62	112	5	71	134	0	0	3	0	41	0	0	0	0	423
4:45 P	5	0	89	122	2	93	125	0	6	2	3	44	0	0	0	0	478
5:00 P	1	0	67	136	1	74	163	0	2	3	0	41	0	0	0	0	484
5:15 P	3	0	71	128	3	87	124	0	4	3	0	45	0	0	0	0	458
5:30 P	7	0	42	109	1	66	158	0	6	4	1	49	0	0	0	0	429
5:45 P	5	0	64	112	0	67	138	0	3	3	0	44	0	0	0	0	428
6:00 P	4	0	35	92	2	89	125	0	2	2	0	56	0	0	0	0	399
6:15 P	2	0	104	99	3	54	91	0	4	2	1	42	0	0	0	0	393
6:30 P	6	0	52	78	0	63	73	0	8	4	1	52	0	0	0	0	323
Total Survey	57	0	803	1296	22	927	1435	0	40	49	7	549	0	0	0	0	5066
Peak Hour:	4:30 PM to 5:30 PM																
Total	16	0	269	495	7	320	570	0	18	12	4	179	0	0	0	0	1849
Approach	764				890				195				0				1849
%HV	2.1%				0.8%				9.2%				n/a				2.2%
PHF	0.91				0.94				0.90				n/a				0.96



PEDs Across:	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07					0
INT 08					0
INT 09				1	1
INT 10				1	1
INT 11					0
INT 12					0
	0	0	0	2	2

Special Notes

Bicycles From:	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04	1				1
INT 05		1			1
INT 06					0
INT 07					0
INT 08		1		1	2
INT 09					0
INT 10		1			1
INT 11					0
INT 12					0
	1	3	0	1	5

1936 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	n/a	n/a
Check	WB	0.90	9.2%
In: 1849	NB	0.94	0.8%
Out: 1849	SB	0.91	2.1%
	T Int.	0.96	2.2%

Conditions:

SCJ17109TMS_09p2

#5

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

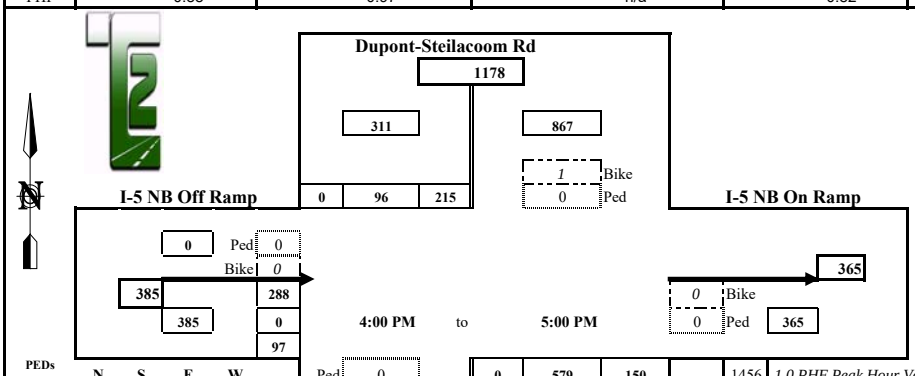
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Dupont-Steilacoom Rd/Clark Rd & I-5 NB Ramps **Date of Count:** Thurs 10/26/2017

Location: DuPont, Washington **Checked By:** Jess

Time Interval Ending at	From North on (SB) Dupont-Steilacoom Rd				From South on (NB) Clark Rd				From East on (WB) I-5 NB On Ramp				From West on (EB) I-5 NB Off Ramp				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
3:45 P	10	67	31	0	1	0	119	35	0	0	0	0	0	46	0	38	336
4:00 P	3	52	20	0	1	0	119	34	0	0	0	0	4	59	1	32	317
4:15 P	3	56	27	0	0	0	143	43	0	0	0	0	0	63	0	24	356
4:30 P	4	42	21	0	0	0	156	29	0	0	0	0	3	63	0	32	343
4:45 P	2	66	22	0	0	0	137	51	0	0	0	0	3	67	0	19	362
5:00 P	1	51	26	0	1	0	143	27	0	0	0	0	1	95	0	22	364
5:15 P	1	45	16	0	0	0	143	21	0	0	0	0	3	78	0	35	338
5:30 P	5	49	14	0	0	0	140	17	0	0	0	0	1	71	0	42	333
5:45 P	4	34	25	0	0	0	140	10	0	0	0	0	0	82	0	29	320
6:00 P	3	32	11	0	0	0	135	13	0	0	0	0	2	68	0	31	290
6:15 P	2	65	22	0	0	0	124	5	0	0	0	0	3	43	0	16	275
6:30 P	3	61	15	0	0	0	96	6	0	0	0	0	1	29	0	25	232
Total Survey	41	620	250	0	3	0	1595	291	0	0	0	0	21	764	1	345	3866
Peak Hour: 4:00 PM to 5:00 PM																	
Total	10	215	96	0	1	0	579	150	0	0	0	0	7	288	0	97	1425
Approach	311				729				0				385				1425
%HV	3.2%				0.1%				n/a				1.8%				1.3%
PHF	0.88				0.97				n/a				0.82				0.98



PEDs Across:	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07					0
INT 08					0
INT 09					0
INT 10		1	2		3
INT 11					0
INT 12					0
	0	1	2	0	3

Special Notes

Bicycles From:	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05	1	1			2
INT 06					0
INT 07					0
INT 08		1			1
INT 09					0
INT 10		1			1
INT 11					0
INT 12					0
	1	3	0	0	4

1456 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.82	1.8%
Check	WB	n/a	n/a
In: 1425	NB	0.97	0.1%
Out: 1425	SB	0.88	3.2%
	T Int.	0.98	1.3%

Conditions:

SCJ17109TMS_10p2

#6

Prepared for: **PH Consulting LLC**

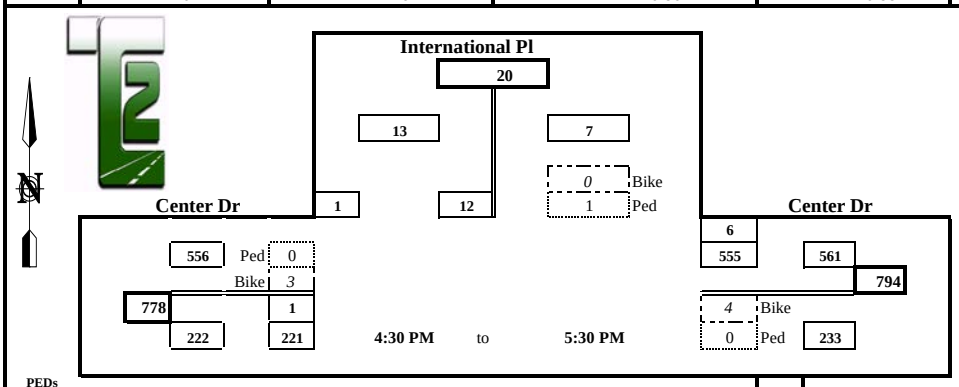
Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: International Pl & Center Dr
Location: Dupont, Washington
Date of Count: Tues 10/03/2017
Checked By: Jess

Time Interval Ending at	From North on (SB) International Pl				From South on (NB) 0				From East on (WB) Center Dr				From West on (EB) Center Dr				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	3	0	6	0	0	0	0	2	0	91	0	5	0	55	0	155
4:30 P	0	2	0	1	0	0	0	0	2	0	86	0	4	0	48	0	137
4:45 P	0	7	0	1	0	0	0	0	4	0	108	3	1	0	54	0	173
5:00 P	0	4	0	0	0	0	0	0	2	0	164	0	3	0	52	0	220
5:15 P	0	1	0	0	0	0	0	0	3	0	139	1	3	0	63	0	204
5:30 P	0	0	0	0	0	0	0	0	1	0	144	2	2	1	52	0	199
5:45 P	1	1	0	1	0	0	0	0	0	0	106	1	4	0	62	0	171
6:00 P	1	2	0	3	0	0	0	0	0	0	132	1	3	0	59	0	197
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	3	20	0	12	0	0	0	0	14	0	970	8	25	1	445	0	1456
Peak Hour: 4:30 PM to 5:30 PM																	
Total	0	12	0	1	0	0	0	0	10	0	555	6	9	1	221	0	796
Approach	13				0				561				222				796
%HV	n/a				n/a				1.8%				4.1%				2.4%
PHF	0.41				n/a				0.86				0.88				0.90



880 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.88	4.1%
WB	0.86	1.8%
NB	n/a	n/a
SB	0.41	n/a
T Int.	0.90	2.4%

Check In: 796 Out: 796

PEDs Across:

	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06	1				1
INT 07					0
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	0	0	0	1

Special Notes

Bicycles From:

	N	S	E	W	
INT 01				1	1
INT 02					0
INT 03			1	1	2
INT 04			1	1	2
INT 05					0
INT 06			2	1	3
INT 07	1		1		2
INT 08				1	1
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	0	5	5	11

PHC17102M_01p

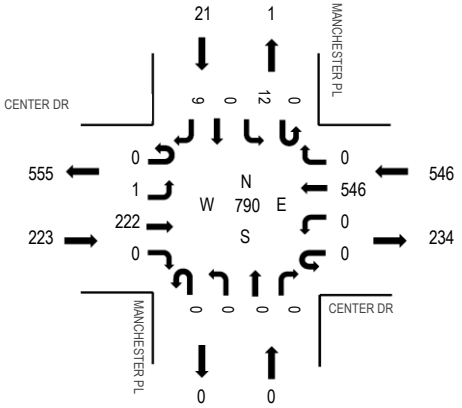
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 3 MANCHESTER PL & CENTER DR PM
Date and Start Time: Tuesday, October 3, 2017
Peak Hour: 04:45 PM - 05:45 PM

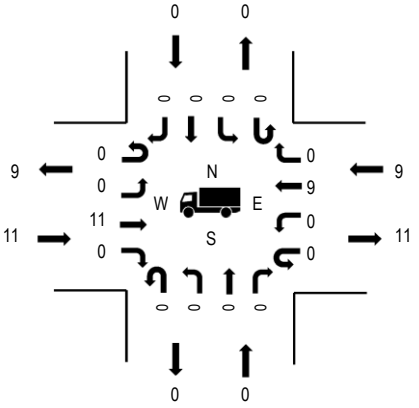
#7

Peak Hour

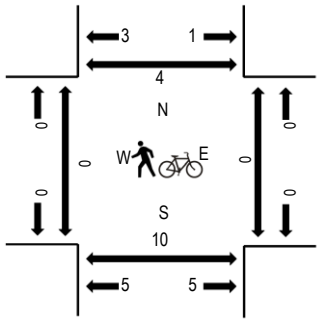
All Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	4.9%	0.84
WB	1.6%	0.82
NB	0.0%	0.00
SB	0.0%	0.88
All	2.5%	0.89

Traffic Counts - All Vehicles

Interval Start Time	CENTER DR Eastbound				CENTER DR Westbound				MANCHESTER PL Northbound				MANCHESTER PL Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	55	0	0	0	94	0	0	1	0	0	0	3	0	3	156	682
4:15 PM	0	0	47	0	0	0	93	0	0	0	0	0	0	0	0	5	145	729
4:30 PM	0	0	50	0	0	0	98	0	0	0	0	0	0	3	0	7	158	782
4:45 PM	0	0	51	0	0	0	167	0	0	0	0	0	0	4	0	1	223	790
5:00 PM	0	0	66	0	0	0	132	0	0	0	0	0	0	2	0	3	203	760
5:15 PM	0	0	52	0	0	0	141	0	0	0	0	0	0	2	0	3	198	
5:30 PM	0	1	53	0	0	0	106	0	0	0	0	0	0	4	0	2	166	
5:45 PM	0	0	54	0	0	0	137	0	0	0	0	0	0	2	0	0	193	
Count Total	0	1	428	0	0	0	968	0	0	1	0	0	0	20	0	24	1,442	
Peak Hour	0	1	222	0	0	0	546	0	0	0	0	0	0	12	0	9	790	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	6	0	2	0	8	4:00 PM	0	0	0	0	0
4:15 PM	5	0	3	0	8	4:15 PM	0	9	0	0	9
4:30 PM	1	0	5	0	6	4:30 PM	0	0	0	1	1
4:45 PM	2	0	4	0	6	4:45 PM	0	2	0	0	2
5:00 PM	5	0	3	0	8	5:00 PM	0	0	0	0	0
5:15 PM	2	0	2	0	4	5:15 PM	0	6	0	2	8
5:30 PM	2	0	0	0	2	5:30 PM	0	2	0	2	4
5:45 PM	4	0	0	0	4	5:45 PM	0	4	0	0	4
Count Total	27	0	19	0	46	Count Total	0	23	0	5	28
Peak Hour	11	0	9	0	20	Peak Hour	0	10	0	4	14

#8

Prepared for: **PH Consulting LLC**

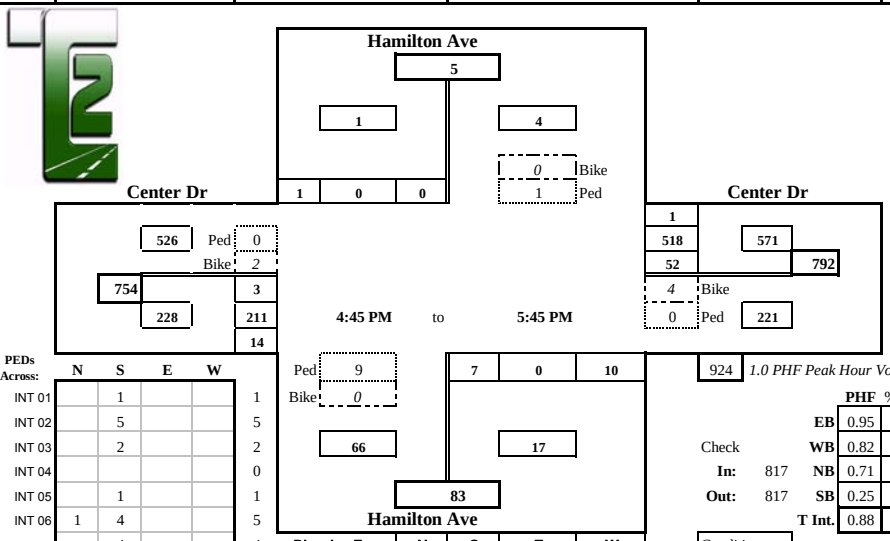
Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Hamilton Ave & Center Dr
Location: Dupont, Washington
Date of Count: Tues 10/03/2017
Checked By: Jess

Time Interval Ending at	From North on (SB) Hamilton Ave				From South on (NB) Hamilton Ave				From East on (WB) Center Dr				From West on (EB) Center Dr				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	0	0	0	1	0	7	2	11	88	0	5	0	49	3	159
4:30 P	0	0	0	2	0	1	0	1	2	9	87	0	4	1	46	3	150
4:45 P	0	0	0	0	0	0	0	6	1	3	96	0	1	6	41	0	152
5:00 P	0	0	0	0	0	2	0	1	3	17	156	1	3	1	50	3	231
5:15 P	0	0	0	1	0	0	0	3	2	11	132	0	3	1	57	2	207
5:30 P	0	0	0	0	0	1	0	4	2	14	130	0	3	1	50	7	207
5:45 P	0	0	0	0	0	4	0	2	0	10	100	0	2	0	54	2	172
6:00 P	0	0	0	0	0	4	0	2	0	13	131	0	4	6	45	1	202
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	3	0	13	0	26	12	88	920	1	25	16	392	21	1480
Peak Hour:	4:45 PM to 5:45 PM																
Total	0	0	0	1	0	7	0	10	7	52	518	1	11	3	211	14	817
Approach	1				17				571				228				817
%HV	n/a				n/a				1.2%				4.8%				2.2%
PHF	0.25				0.71				0.82				0.95				0.88



924 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.95	4.8%
WB	0.82	1.2%
NB	0.71	n/a
SB	0.25	n/a
T Int.	0.88	2.2%

Check In: 817 Out: 817

Conditions:

PEDs Across:	N	S	E	W	
INT 01		1			1
INT 02		5			5
INT 03		2			2
INT 04					0
INT 05		1			1
INT 06	1	4			5
INT 07		4			4
INT 08		3			3
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	20	0	0	21

Bicycles From:	N	S	E	W	
INT 01				1	1
INT 02					0
INT 03			1	1	2
INT 04			1	1	2
INT 05					0
INT 06			2		2
INT 07			1	1	2
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	0	5	4	9

Special Notes

PHC17102M_03p

#9

Prepared for: **PH Consulting LLC**

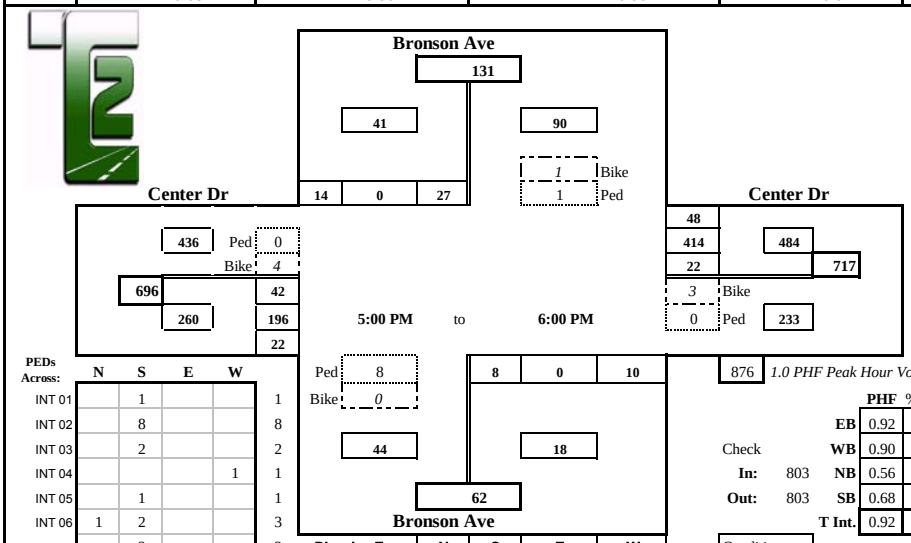
Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Bronson Ave & Center Dr
Location: Dupont, Washington
Date of Count: Tues 10/03/2017
Checked By: Jess

Time Interval Ending at	From North on (SB) Bronson Ave				From South on (NB) Bronson Ave				From East on (WB) Center Dr				From West on (EB) Center Dr				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	2	4	0	5	0	8	0	4	2	4	87	0	3	0	36	4	152
4:30 P	2	3	0	6	0	0	0	6	2	3	83	3	2	2	44	5	155
4:45 P	1	5	0	6	0	2	0	2	3	7	99	1	2	3	37	3	165
5:00 P	2	3	0	0	1	3	0	4	3	8	135	4	1	3	49	5	214
5:15 P	1	3	0	2	0	1	0	1	2	3	118	8	2	4	51	6	197
5:30 P	2	8	0	2	2	4	0	4	1	5	123	6	1	4	51	10	217
5:45 P	4	7	0	4	0	2	0	1	0	11	68	14	0	12	48	3	170
6:00 P	0	9	0	6	1	1	0	4	0	3	105	20	2	22	46	3	219
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	14	42	0	31	4	21	0	26	13	44	818	56	13	50	362	39	1489
Peak Hour: 5:00 PM to 6:00 PM																	
Total	7	27	0	14	3	8	0	10	3	22	414	48	5	42	196	22	803
Approach	41				18				484				260				803
%HV	17.1%				16.7%				0.6%				1.9%				2.2%
PHF	0.68				0.56				0.90				0.92				0.92



PEDs Across:	N	S	E	W	
INT 01		1			1
INT 02		8			8
INT 03		2			2
INT 04				1	1
INT 05		1			1
INT 06	1	2			3
INT 07		3			3
INT 08		2			2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	19	0	1	21

Special Notes

Bicycles From:	N	S	E	W	
INT 01					0
INT 02					0
INT 03		1	1		2
INT 04			1	1	2
INT 05	1				1
INT 06			2	1	3
INT 07			1	1	2
INT 08				2	2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	1	1	5	5	12

876 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.92	1.9%
Check	WB	0.90	0.6%
In: 803	NB	0.56	16.7%
Out: 803	SB	0.68	17.1%
	T Int.	0.92	2.2%

Conditions:

PHC17102M_04p

#10

Prepared for: **Geralyn Reinart, P.E.**

Traffic Count Consultants, Inc.

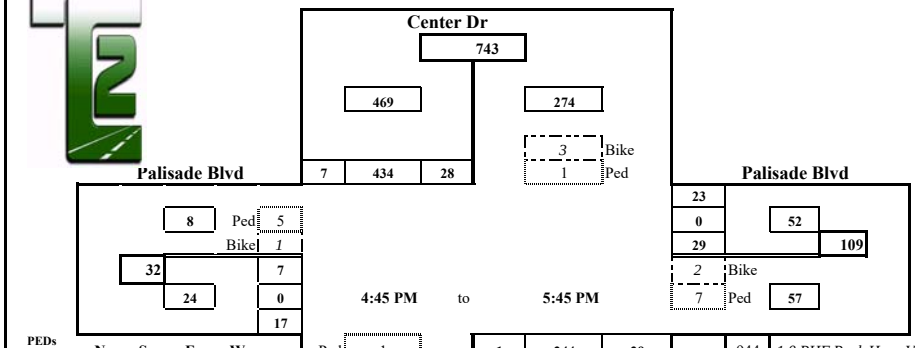
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Center Dr & Palisade Blvd **Date of Count:** Tues 10/03/2017

Location: DuPont, Washington **Checked By:** Jess

Time Interval Ending at	From North on (SB) Center Dr				From South on (NB) Center Dr				From East on (WB) Palisade Blvd				From West on (EB) Palisade Blvd				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	3	5	89	0	3	1	40	1	0	3	0	4	0	0	0	0	143
4:30 P	0	6	92	0	3	4	49	3	0	3	0	2	0	0	0	0	159
4:45 P	0	5	86	2	0	2	39	4	0	2	0	5	0	1	0	3	149
5:00 P	0	8	134	2	1	0	53	7	0	5	0	7	0	5	0	15	236
5:15 P	1	5	114	0	2	0	57	5	0	3	0	3	0	0	0	0	187
5:30 P	1	11	118	3	2	0	67	7	0	13	0	4	0	2	0	0	225
5:45 P	0	4	68	2	0	1	67	10	0	8	0	9	0	0	0	2	171
6:00 P	0	6	100	0	2	0	69	2	0	4	0	3	0	0	0	1	185
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	5	50	801	9	13	8	441	39	0	41	0	37	0	8	0	21	1455
	Peak Hour: 4:45 PM to 5:45 PM																
Total	2	28	434	7	5	1	244	29	0	29	0	23	0	7	0	17	819
Approach	469				274				52				24				819
%HV	0.4%				1.8%				n/a				n/a				0.9%
PHF	0.81				0.88				0.76				0.30				0.87



PEDs Across:	N	S	E	W	
INT 01			2		2
INT 02					0
INT 03	1		4		5
INT 04		1	1		2
INT 05	1		2	1	4
INT 06			3	4	7
INT 07			1		1
INT 08	2		3	1	6
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	4	1	16	6	27

Special Notes

	PHF	%HV
EB	0.30	n/a
WB	0.76	n/a
NB	0.88	1.8%
SB	0.81	0.4%
T Int.	0.87	0.9%

Check In: 819 Out: 819

Bicycles From:	N	S	E	W		N U's	S U's	E U's	W U's
INT 01	2	1		2	5	0			
INT 02					0	0			
INT 03		2			2	1			
INT 04	1	2		1	4	0			
INT 05	1				1	0			
INT 06		2			2	0			
INT 07	1		2		3	0			
INT 08	1	2		1	4	0			
INT 09					0				
INT 10					0				
INT 11					0				
INT 12					0				
	6	9	2	4	21	1	0	0	0

GRT17115TM_04p

#11

Prepared for: **Geralyn Reinart, P.E.**

Traffic Count Consultants, Inc.

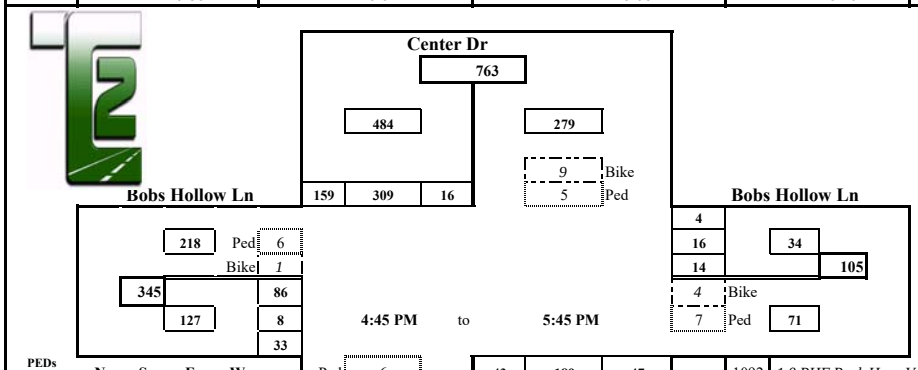
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Center Dr & Bobs Hollow Ln **Date of Count:** Tues 10/03/2017

Location: DuPont, Washington **Checked By:** Jess

Time Interval Ending at	From North on (SB) Center Dr				From South on (NB) Center Dr				From East on (WB) Bobs Hollow Ln				From West on (EB) Bobs Hollow Ln				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	3	4	63	23	0	7	26	4	0	2	5	1	5	15	1	6	157
4:30 P	0	2	69	25	0	9	33	10	0	4	2	0	3	26	5	7	192
4:45 P	1	1	67	29	0	8	29	10	0	2	5	1	0	15	2	4	173
5:00 P	1	7	97	47	1	14	41	14	0	5	6	2	0	21	6	13	273
5:15 P	1	2	75	43	1	9	38	12	0	5	5	0	0	23	0	9	221
5:30 P	1	4	78	42	2	13	55	7	0	1	1	1	1	21	1	8	232
5:45 P	0	3	59	27	0	7	55	14	0	3	4	1	0	21	1	3	198
6:00 P	0	5	58	47	0	5	52	5	0	3	3	6	2	17	2	6	209
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	7	28	566	283	4	72	329	76	0	25	31	12	11	159	18	56	1655
Peak Hour: 4:45 PM to 5:45 PM																	
Total	3	16	309	159	4	43	189	47	0	14	16	4	1	86	8	33	924
Approach	484				279				34				127				924
%HV	0.6%				1.4%				n/a				0.8%				0.9%
PHF	0.80				0.92				0.65				0.79				0.85



1092 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.79	0.8%
WB	0.65	n/a
NB	0.92	1.4%
SB	0.80	0.6%
T Int.	0.85	0.9%

Check In: 924 Out: 924

PEDs Across:	N	S	E	W	
INT 01				1	1
INT 02	3	4	1	1	9
INT 03			2		2
INT 04		2	1	2	5
INT 05	3	2	1		6
INT 06	1	2	3	2	8
INT 07	1		2	2	5
INT 08		2	2		4
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	8	12	12	8	40

Special Notes

Bicycles From:	N	S	E	W		N U's	S U's	E U's	W U's
INT 01		1		1	2			0	
INT 02				2	2			0	
INT 03			1	1	2			0	
INT 04					0			0	
INT 05	3				3			1	
INT 06	4	1	4	1	10			0	
INT 07	2				2			0	
INT 08	2	1			3			0	
INT 09					0				
INT 10					0				
INT 11					0				
INT 12					0				
	11	3	5	5	24	0	0	1	0

GRT17115TM_03p

#12

Prepared for: **Geralyn Reinart, P.E.**

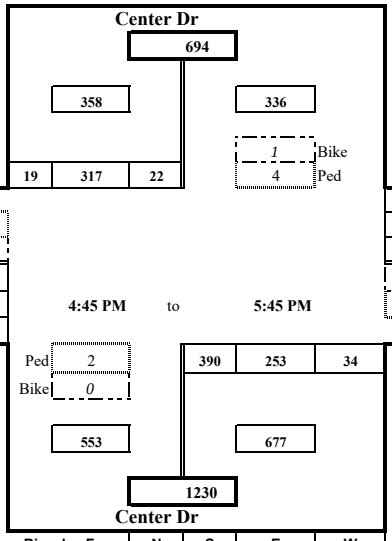
Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Center Dr & McNeil St
Location: DuPont, Washington
Date of Count: Tues 10/03/2017
Checked By: Jess

Time Interval Ending at	From North on (SB) Center Dr				From South on (NB) Center Dr				From East on (WB) McNeil St				From West on (EB) McNeil St				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	2	6	67	2	0	66	25	8	0	20	18	3	1	7	8	36	266
4:30 P	0	3	79	3	2	82	58	8	0	12	18	5	1	5	10	52	335
4:45 P	0	6	66	8	0	70	41	8	2	41	24	10	1	7	4	45	330
5:00 P	0	4	97	5	1	102	73	10	1	20	21	9	0	6	5	50	402
5:15 P	0	6	84	7	1	79	50	7	1	28	18	9	3	14	8	39	349
5:30 P	0	6	83	4	0	105	61	11	0	9	24	10	0	11	6	33	363
5:45 P	0	6	53	3	0	104	69	6	1	17	25	8	0	16	5	40	352
6:00 P	0	4	56	6	0	93	66	9	2	16	21	7	0	7	3	37	325
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	2	41	585	38	4	701	443	67	7	163	169	61	6	73	49	332	2722
Peak Hour: 4:45 PM to 5:45 PM																	
Total	0	22	317	19	2	390	253	34	3	74	88	36	3	47	24	162	1466
Approach	358				677				198				233				1466
%HV	n/a				0.3%				1.5%				1.3%				0.5%
PHF	0.84				0.91				0.90				0.95				0.91



1608 *1.0 PHF Peak Hour Volume*

		PHF	%HV
	EB	0.95	1.3%
Check	WB	0.90	1.5%
In: 1466	NB	0.91	0.3%
Out: 1466	SB	0.84	n/a
	T Int.	0.91	0.5%

Conditions:

PEDs Across:	N	S	E	W	
INT 01	1		2		3
INT 02	3	1	1		5
INT 03	1		1		2
INT 04			3		3
INT 05			2		2
INT 06	4		4		8
INT 07		2	2		4
INT 08		2	3		5
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	9	5	18	0	32

Special Notes

Bicycles From:	N	S	E	W	
INT 01					0
INT 02		1	1		2
INT 03				1	1
INT 04	1			2	3
INT 05					0
INT 06					0
INT 07				1	1
INT 08	2				2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	3	1	1	4	9

GRT17115TM_02p

#13

Prepared for: **Geralyn Reinart, P.E.**

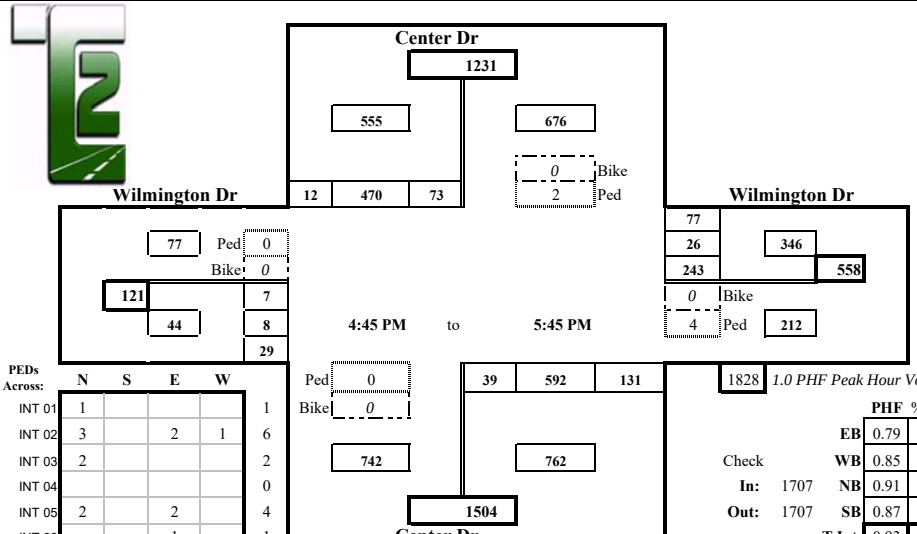
Traffic Count Consultants, Inc.

Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Center Dr & Wilmington Dr
Location: DuPont, Washington
Date of Count: Tues 10/03/2017
Checked By: Jess

Time Interval Ending at	From North on (SB) Center Dr				From South on (NB) Center Dr				From East on (WB) Wilmington Dr				From West on (EB) Wilmington Dr				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	3	18	109	2	0	8	94	23	1	47	5	12	0	0	1	6	325
4:30 P	1	19	120	2	4	13	115	38	2	34	6	15	0	2	2	11	377
4:45 P	3	19	132	2	0	12	119	41	0	75	1	9	0	1	1	6	418
5:00 P	2	28	129	3	2	8	159	43	1	55	7	14	0	2	1	8	457
5:15 P	1	7	144	3	2	11	125	28	0	74	5	16	0	2	2	7	424
5:30 P	0	19	99	4	1	12	153	23	1	41	10	22	0	2	1	11	397
5:45 P	1	19	98	2	1	8	155	37	0	73	4	25	0	1	4	3	429
6:00 P	2	25	83	2	1	13	145	30	0	47	6	26	0	0	4	2	383
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	13	154	914	20	11	85	1065	263	5	446	44	139	0	10	16	54	3210
Peak Hour: 4:45 PM to 5:45 PM																	
Total	4	73	470	12	6	39	592	131	2	243	26	77	0	7	8	29	1707
Approach	555				762				346				44				1707
%HV	0.7%				0.8%				0.6%				n/a				0.7%
PHF	0.87				0.91				0.85				0.79				0.93



1828 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.79	n/a
WB	0.85	0.6%
NB	0.91	0.8%
SB	0.87	0.7%
T Int.	0.93	0.7%

Check In: 1707 Out: 1707

PEDs Across:	N	S	E	W	
INT 01	1				1
INT 02	3		2	1	6
INT 03	2				2
INT 04					0
INT 05	2		2		4
INT 06			1		1
INT 07			1		1
INT 08	1		5		6
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	9	0	11	1	21

Special Notes

Bicycles From:	N	S	E	W		N U's	S U's	E U's	W U's
INT 01					0	0			1
INT 02					0	1			0
INT 03			1		1	0			2
INT 04					0	0			2
INT 05					0	0			0
INT 06					0	0			0
INT 07					0	0			0
INT 08	2	1			3	0			1
INT 09					0				
INT 10					0				
INT 11					0				
INT 12					0				
	2	1	1	0	4	1	0	0	6

GRT17115TM_01p

Appendix B

Level of Service (LOS) Worksheets at Study Intersections

2017 Existing

Lanes, Volumes, Timings
1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate

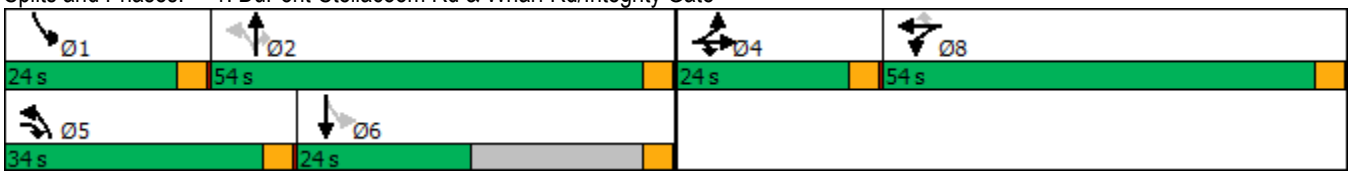
12/06/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	23	155	1	17	22	615	7	1	549	4
Future Volume (vph)	11	0	23	155	1	17	22	615	7	1	549	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	130		200	0		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		2971			479			2587			638	
Travel Time (s)		81.0			13.1			39.2			9.7	
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 (%)	18%	18%	18%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Split	NA	pt+ov	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4	4 5	8	8		5	2		1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4	4 5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
Total Split (s)	24.0	24.0		54.0	54.0	54.0	34.0	54.0	54.0	24.0	24.0	
Total Split (%)	15.4%	15.4%		34.6%	34.6%	34.6%	21.8%	34.6%	34.6%	15.4%	15.4%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	

Intersection Summary

Area Type: Other
Cycle Length: 156
Actuated Cycle Length: 79.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate



HCM 6th Signalized Intersection Summary
1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate

12/06/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	0	23	155	1	17	22	615	7	1	549	4
Future Volume (veh/h)	11	0	23	155	1	17	22	615	7	1	549	4
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	1633	1633	1633	1885	1885	1885	1856	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	12	0	25	167	1	0	24	661	0	1	590	4
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, %	18	18	18	1	1	1	3	3	3	1	1	1
Cap, veh/h	55	0	85	226	1		488	1177		430	1140	8
Arrive On Green	0.04	0.00	0.04	0.13	0.13	0.00	0.03	0.63	0.00	0.00	0.61	0.61
Sat Flow, veh/h	1555	0	1384	1785	11	1598	1767	1856	1572	1795	1870	13
Grp Volume(v), veh/h	12	0	25	168	0	0	24	661	0	1	0	594
Grp Sat Flow(s),veh/h/ln	1555	0	1384	1796	0	1598	1767	1856	1572	1795	0	1883
Q Serve(g_s), s	0.6	0.0	1.4	7.1	0.0	0.0	0.4	16.0	0.0	0.0	0.0	14.2
Cycle Q Clear(g_c), s	0.6	0.0	1.4	7.1	0.0	0.0	0.4	16.0	0.0	0.0	0.0	14.2
Prop In Lane	1.00		1.00	0.99		1.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	55	0	85	227	0		488	1177		430	0	1148
V/C Ratio(X)	0.22	0.00	0.30	0.74	0.00		0.05	0.56		0.00	0.00	0.52
Avail Cap(c_a), veh/h	395	0	387	1139	0		1115	1177		883	0	1148
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	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.0	0.0	35.4	33.2	0.0	0.0	6.6	8.2	0.0	7.2	0.0	8.8
Incr Delay (d2), s/veh	2.0	0.0	1.9	4.7	0.0	0.0	0.0	1.9	0.0	0.0	0.0	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	0.3	0.0	0.5	3.3	0.0	0.0	0.1	5.2	0.0	0.0	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	0.0	37.3	37.9	0.0	0.0	6.7	10.1	0.0	7.2	0.0	10.4
LnGrp LOS	D	A	D	D	A		A	B		A	A	B
Approach Vol, veh/h		37			168	A		685	A		595	
Approach Delay, s/veh		37.8			37.9			10.0			10.4	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.1	54.0		6.8	6.0	52.1		14.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	20.0	50.0		20.0	30.0	20.0		50.0
Max Q Clear Time (g_c+I1), s	2.0	18.0		3.4	2.4	16.2		9.1
Green Ext Time (p_c), s	0.0	4.5		0.1	0.0	1.3		1.1

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

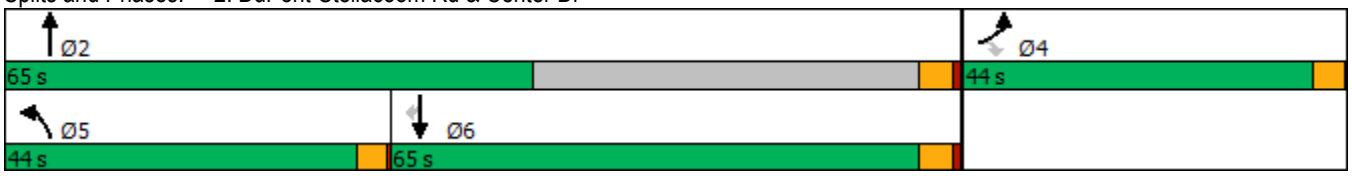
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	188	123	171	431	502	402
Future Volume (vph)	188	123	171	431	502	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	250			225
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			45	45	
Link Distance (ft)	703			3999	2587	
Travel Time (s)	13.7			60.6	39.2	
Confl. Peds. (#/hr)	3	3				3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	8.0	13.0	42.0	42.0
Total Split (s)	44.0	44.0	44.0	65.0	65.0	65.0
Total Split (%)	28.8%	28.8%	28.8%	42.5%	42.5%	42.5%
Yellow Time (s)	3.5	3.5	3.5	4.0	4.0	4.0
All-Red Time (s)	0.5	0.5	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min

Intersection Summary

Area Type: Other
Cycle Length: 153
Actuated Cycle Length: 67.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: DuPont-Steilacoom Rd & Center Dr



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	188	123	171	431	502	402
Future Volume (veh/h)	188	123	171	431	502	402
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1885	1885
Adj Flow Rate, veh/h	194	0	176	444	518	214
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	1	1
Cap, veh/h	254	226	227	1161	743	628
Arrive On Green	0.14	0.00	0.13	0.63	0.39	0.39
Sat Flow, veh/h	1767	1572	1767	1856	1885	1592
Grp Volume(v), veh/h	194	0	176	444	518	214
Grp Sat Flow(s),veh/h/ln	1767	1572	1767	1856	1885	1592
Q Serve(g_s), s	4.1	0.0	3.8	4.6	8.9	3.7
Cycle Q Clear(g_c), s	4.1	0.0	3.8	4.6	8.9	3.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	254	226	227	1161	743	628
V/C Ratio(X)	0.76	0.00	0.77	0.38	0.70	0.34
Avail Cap(c_a), veh/h	1813	1614	1813	2856	2902	2450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	0.0	16.4	3.6	9.9	8.3
Incr Delay (d2), s/veh	1.8	0.0	2.1	0.2	1.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.3	0.3	2.4	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.9	0.0	18.6	3.8	11.0	8.6
LnGrp LOS	B	A	B	A	B	A
Approach Vol, veh/h	194			620	732	
Approach Delay, s/veh	17.9			8.0	10.3	
Approach LOS	B			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		29.4		9.6	9.0	20.4
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		60.0		40.0	40.0	60.0
Max Q Clear Time (g_c+I1), s		6.6		6.1	5.8	10.9
Green Ext Time (p_c), s		2.7		0.3	0.1	4.1

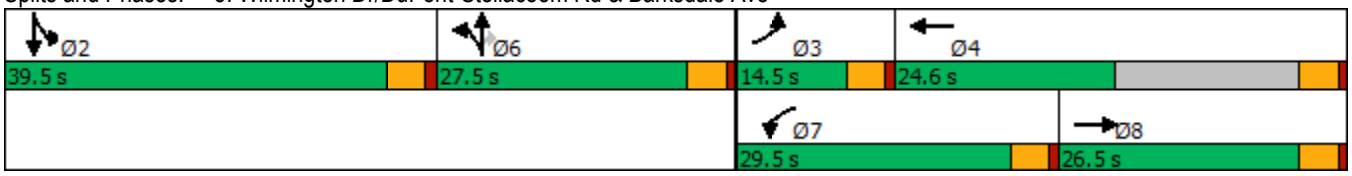
Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	69	21	191	120	520	19	80	154	576	86	47
Future Volume (vph)	24	69	21	191	120	520	19	80	154	576	86	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	125		150	125		100	625		0
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)		25			25			30			35	
Link Distance (ft)		584			367			965			849	
Travel Time (s)		15.9			10.0			21.9			16.5	
Confl. Peds. (#/hr)			2			7			1			2
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 (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	3%	3%	3%
Shared Lane Traffic (%)										38%		
Turn Type	Prot	NA		Prot	NA	Free	Split	NA	Perm	Split	NA	
Protected Phases	3	8		7	4		6	6		2	2	
Permitted Phases						Free			6			
Detector Phase	3	8		7	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.5	26.5		10.5	25.6		27.5	27.5	27.5	27.5	27.5	
Total Split (s)	14.5	26.5		29.5	24.6		27.5	27.5	27.5	39.5	39.5	
Total Split (%)	11.8%	21.5%		24.0%	20.0%		22.4%	22.4%	22.4%	32.1%	32.1%	
Yellow Time (s)	3.5	3.5		3.5	3.6		3.5	3.5	3.5	3.5	3.5	
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)	4.5	4.5		4.5	4.6		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	None	None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123
Actuated Cycle Length: 80
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Wilmington Dr/DuPont-Steilacoom Rd & Barksdale Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	69	21	191	120	520	19	80	154	576	86	47
Future Volume (veh/h)	24	69	21	191	120	520	19	80	154	576	86	47
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	1870	1870	1870	1885	1885	1885	1856	1856	1856
Adj Flow Rate, veh/h	24	70	21	195	122	0	19	82	0	696	0	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, %	0	0	0	2	2	2	1	1	1	3	3	3
Cap, veh/h	60	174	52	254	437		258	271		937	492	0
Arrive On Green	0.03	0.12	0.12	0.14	0.23	0.00	0.14	0.14	0.00	0.27	0.00	0.00
Sat Flow, veh/h	1810	1400	420	1781	1870	1585	1795	1885	1598	3534	1856	0
Grp Volume(v), veh/h	24	0	91	195	122	0	19	82	0	696	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1820	1781	1870	1585	1795	1885	1598	1767	1856	0
Q Serve(g_s), s	0.7	0.0	2.6	5.9	3.0	0.0	0.5	2.2	0.0	10.1	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	2.6	5.9	3.0	0.0	0.5	2.2	0.0	10.1	0.0	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	60	0	227	254	437		258	271		937	492	0
V/C Ratio(X)	0.40	0.00	0.40	0.77	0.28		0.07	0.30		0.74	0.00	0.00
Avail Cap(c_a), veh/h	324	0	716	797	669		739	776		2213	1162	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.5	0.0	22.5	23.1	17.6	0.0	20.7	21.4	0.0	18.8	0.0	0.0
Incr Delay (d2), s/veh	4.2	0.0	1.1	4.8	0.3	0.0	0.1	0.6	0.0	1.2	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	0.4	0.0	1.1	2.7	1.2	0.0	0.2	0.9	0.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	23.7	27.9	17.9	0.0	20.8	22.0	0.0	20.0	0.0	0.0
LnGrp LOS	C	A	C	C	B		C	C		B	A	A
Approach Vol, veh/h		115			317	A		101	A		696	
Approach Delay, s/veh		25.1			24.0			21.8			20.0	
Approach LOS		C			C			C			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		19.3	6.4	17.7		12.5	12.5	11.6				
Change Period (Y+Rc), s		4.5	4.5	4.6		4.5	4.5	* 4.6				
Max Green Setting (Gmax), s		35.0	10.0	20.0		23.0	25.0	* 22				
Max Q Clear Time (g_c+I1), s		12.1	2.7	5.0		4.2	7.9	4.6				
Green Ext Time (p_c), s		2.6	0.0	0.5		0.4	0.5	0.4				

Intersection Summary	
HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

Notes

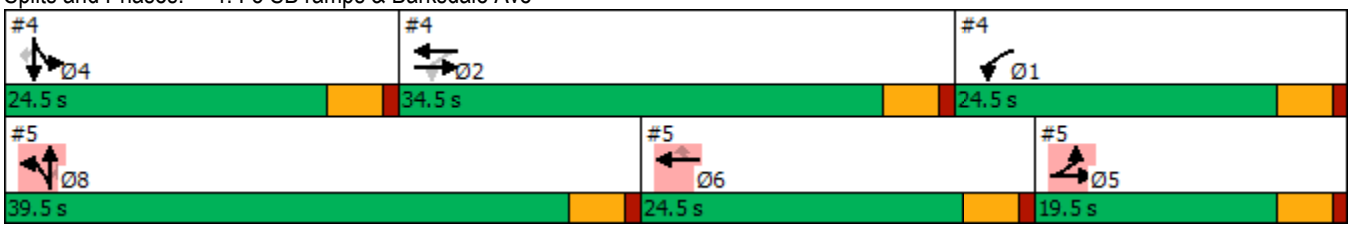
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	269	495	320	570	0	0	0	0	12	4	179
Future Volume (vph)	0	269	495	320	570	0	0	0	0	12	4	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			319			290			206	
Travel Time (s)		8.3			7.3			6.6			4.7	
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 (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	9%	9%	9%
Shared Lane Traffic (%)												
Turn Type		NA	Free	pm+pt	NA					Split	NA	Perm
Protected Phases		2		1	2					4	4	
Permitted Phases			Free	2								4
Detector Phase		2		1	2					4	4	4
Switch Phase												
Minimum Initial (s)		6.0		6.0	6.0					6.0	6.0	6.0
Minimum Split (s)		20.5		10.5	20.5					10.5	10.5	10.5
Total Split (s)		34.5		24.5	34.5					24.5	24.5	24.5
Total Split (%)		41.3%		29.3%	41.3%					29.3%	29.3%	29.3%
Yellow Time (s)		3.5		3.5	3.5					3.5	3.5	3.5
All-Red Time (s)		1.0		1.0	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0						0.0	0.0
Total Lost Time (s)		4.5			4.5						4.5	4.5
Lead/Lag		Lag			Lag					Lead	Lead	Lead
Lead-Lag Optimize?		Yes			Yes					Yes	Yes	Yes
Recall Mode		Min		None	Min					None	None	None

Intersection Summary

Area Type: Other
Cycle Length: 83.5
Actuated Cycle Length: 60.4
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: I-5 SB ramps & Barksdale Ave



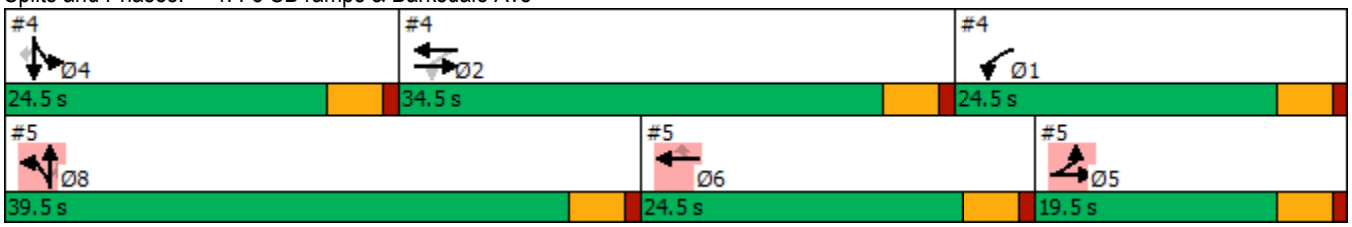
Lane Group	Ø5	Ø6	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases	5	6	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	6.0	10.0
Minimum Split (s)	14.5	20.5	30.5
Total Split (s)	19.5	24.5	39.5
Total Split (%)	23%	29%	47%
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lead
Lead-Lag Optimize?		Yes	Yes
Recall Mode	None	Min	None

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	269	495	320	570	0	0	0	0	12	4	179
Future Volume (vph)	0	269	495	320	570	0	0	0	0	12	4	179
Satd. Flow (prot)	0	3539	1583	0	1847	0	0	0	0	0	1679	1482
Flt Permitted					0.762						0.963	
Satd. Flow (perm)	0	3539	1583	0	1433	0	0	0	0	0	1679	1482
Satd. Flow (RTOR)			516									196
Lane Group Flow (vph)	0	280	516	0	927	0	0	0	0	0	17	186
Turn Type		NA	Free	pm+pt	NA					Split	NA	Perm
Protected Phases		2		1	2					4	4	
Permitted Phases			Free	2								4
Total Split (s)		34.5		24.5	34.5					24.5	24.5	24.5
Total Lost Time (s)		4.5			4.5						4.5	4.5
Act Effct Green (s)		44.3	60.4		44.3						7.0	7.0
Actuated g/C Ratio		0.73	1.00		0.73						0.12	0.12
v/c Ratio		0.11	0.33		0.88						0.09	0.54
Control Delay		2.5	0.5		15.0						26.8	10.8
Queue Delay		0.0	0.0		42.2						0.0	0.0
Total Delay		2.5	0.5		57.2						26.8	10.8
LOS		A	A		E						C	B
Approach Delay		1.2			57.2						12.2	
Approach LOS		A			E						B	

Intersection Summary	
Cycle Length: 83.5	
Actuated Cycle Length: 60.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 29.3	Intersection LOS: C
Intersection Capacity Utilization 71.4%	ICU Level of Service C
Analysis Period (min) 15	

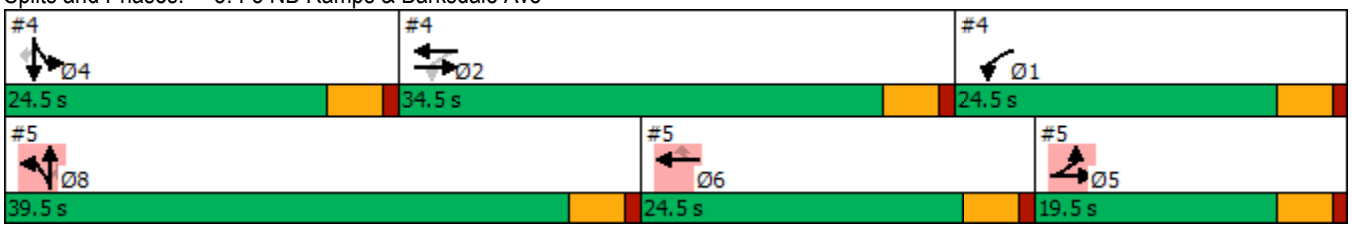
Splits and Phases: 4: I-5 SB ramps & Barksdale Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	96	0	0	579	150	288	0	97	0	0	0
Future Volume (vph)	215	96	0	0	579	150	288	0	97	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		319			191			232			212	
Travel Time (s)		7.3			4.3			5.3			4.8	
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 (%)	3%	3%	3%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)	29%											
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	5			6		8	8				
Permitted Phases						6			8			
Detector Phase	5	5			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	10.0			6.0	6.0	10.0	10.0	10.0			
Minimum Split (s)	14.5	14.5			20.5	20.5	30.5	30.5	30.5			
Total Split (s)	19.5	19.5			24.5	24.5	39.5	39.5	39.5			
Total Split (%)	23.4%	23.4%			29.3%	29.3%	47.3%	47.3%	47.3%			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5	3.5	3.5			
All-Red Time (s)	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			
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Lead/Lag					Lag	Lag	Lead	Lead	Lead			
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes			
Recall Mode	None	None			Min	Min	None	None	None			

Intersection Summary	
Area Type:	Other
Cycle Length: 83.5	
Actuated Cycle Length: 60.4	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 5: I-5 NB Ramps & Barksdale Ave



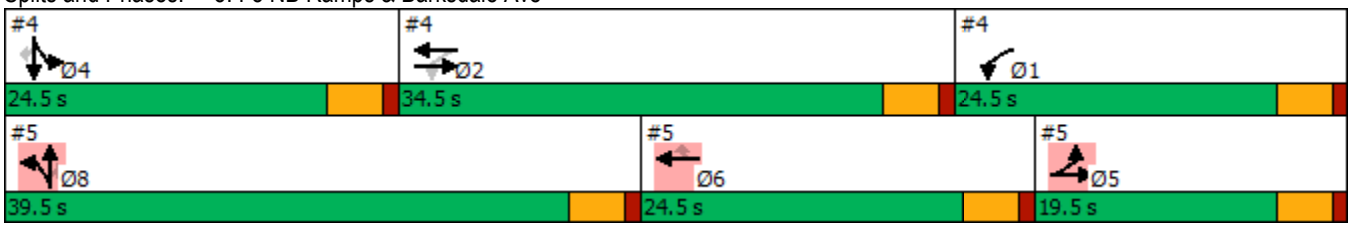
Lane Group	Ø1	Ø2	Ø4
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases	1	2	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	6.0	6.0	6.0
Minimum Split (s)	10.5	20.5	10.5
Total Split (s)	24.5	34.5	24.5
Total Split (%)	29%	41%	29%
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lead
Lead-Lag Optimize?		Yes	Yes
Recall Mode	None	Min	None

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	96	0	0	579	150	288	0	97	0	0	0
Future Volume (vph)	215	96	0	0	579	150	288	0	97	0	0	0
Satd. Flow (prot)	1665	1719	0	0	1900	1615	0	1770	1583	0	0	0
Flt Permitted	0.950	0.981						0.950				
Satd. Flow (perm)	1665	1719	0	0	1900	1615	0	1770	1583	0	0	0
Satd. Flow (RTOR)						153			137			
Lane Group Flow (vph)	155	162	0	0	591	153	0	294	99	0	0	0
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	5			6		8	8				
Permitted Phases						6			8			
Total Split (s)	19.5	19.5			24.5	24.5	39.5	39.5	39.5			
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Act Effct Green (s)	11.5	11.5			20.2	20.2		15.1	15.1			
Actuated g/C Ratio	0.19	0.19			0.33	0.33		0.25	0.25			
v/c Ratio	0.49	0.50			0.93	0.24		0.67	0.20			
Control Delay	27.4	27.4			46.6	4.9		28.3	2.8			
Queue Delay	0.0	0.0			3.0	0.0		0.0	0.0			
Total Delay	27.4	27.4			49.6	4.9		28.3	2.8			
LOS	C	C			D	A		C	A			
Approach Delay		27.4			40.4			21.9				
Approach LOS		C			D			C				

Intersection Summary	
Cycle Length: 83.5	
Actuated Cycle Length: 60.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 32.6	Intersection LOS: C
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: I-5 NB Ramps & Barksdale Ave



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	221	555	6	12	1
Future Volume (vph)	1	221	555	6	12	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		35	35		25	
Link Distance (ft)		651	481		285	
Travel Time (s)		12.7	9.4		7.8	
Confl. Peds. (#/hr)	4			5	5	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	221	555	6	12	1
Future Vol, veh/h	1	221	555	6	12	1
Conflicting Peds, #/hr	4	0	0	5	5	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	4	2	2	0	0
Mvmt Flow	1	246	617	7	13	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	629	0	-	0	756	321
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	4.18	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.24	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	936	-	-	-	348	681
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	932	-	-	-	344	675
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	884	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.5
HCM LOS			C

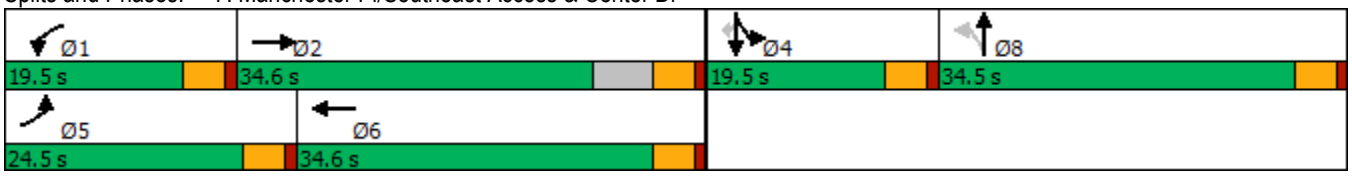
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	932	-	-	-	357
HCM Lane V/C Ratio	0.001	-	-	-	0.04
HCM Control Delay (s)	8.9	-	-	-	15.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	222	0	0	546	0	0	0	0	12	0	9
Future Volume (vph)	1	222	0	0	546	0	0	0	0	12	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
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)		1390			651			359			405	
Travel Time (s)		27.1			12.7			9.8			11.0	
Confl. Peds. (#/hr)						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 (%)	5%	5%	5%	2%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA					Split	NA	Perm
Protected Phases	5	2		1	6			8		4	4	
Permitted Phases							8					4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		4.0	4.0		6.0	6.0	6.0
Minimum Split (s)	8.5	27.6		8.5	27.6		8.5	8.5		20.5	20.5	20.5
Total Split (s)	24.5	34.6		19.5	34.6		34.5	34.5		19.5	19.5	19.5
Total Split (%)	21.7%	30.6%		17.2%	30.6%		30.5%	30.5%		17.2%	17.2%	17.2%
Yellow Time (s)	3.5	3.6		3.5	3.6		3.5	3.5		3.5	3.5	3.5
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
Total Lost Time (s)	4.5	4.6		4.5	4.6			4.5			4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	None

Intersection Summary

Area Type: Other
Cycle Length: 113.1
Actuated Cycle Length: 34.1
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Manchester Pl/Southeast Access & Center Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	222	0	0	546	0	0	0	0	12	0	9
Future Volume (veh/h)	1	222	0	0	546	0	0	0	0	12	0	9
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	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	249	0	0	613	0	0	0	0	13	0	9
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	2	2	2	0	0	0	0	0	0
Cap, veh/h	7	2028	0	7	1403	0	0	8	0	62	0	55
Arrive On Green	0.00	0.58	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.03	0.00	0.03
Sat Flow, veh/h	1739	3561	0	1781	3647	0	0	1900	0	1810	0	1610
Grp Volume(v), veh/h	1	249	0	0	613	0	0	0	0	13	0	9
Grp Sat Flow(s),veh/h/ln	1739	1735	0	1781	1777	0	0	1900	0	1810	0	1610
Q Serve(g_s), s	0.0	0.8	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.8	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	2028	0	7	1403	0	0	8	0	62	0	55
V/C Ratio(X)	0.14	0.12	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.21	0.00	0.16
Avail Cap(c_a), veh/h	1458	4362	0	1120	4468	0	0	2389	0	1138	0	1012
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	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	2.2	0.0	0.0	5.3	0.0	0.0	0.0	0.0	11.2	0.0	11.2
Incr Delay (d2), s/veh	8.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.7	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	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	2.2	0.0	0.0	5.5	0.0	0.0	0.0	0.0	12.9	0.0	12.6
LnGrp LOS	C	A	A	A	A	A	A	A	A	B	A	B
Approach Vol, veh/h		250			613			0			22	
Approach Delay, s/veh		2.3			5.5			0.0			12.8	
Approach LOS		A			A						B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	18.5		5.3	4.5	14.0		0.0
Change Period (Y+Rc), s	4.5	4.6		4.5	4.5	4.6		4.5
Max Green Setting (Gmax), s	15.0	30.0		15.0	20.0	30.0		30.0
Max Q Clear Time (g_c+I1), s	0.0	2.8		2.2	2.0	5.0		0.0
Green Ext Time (p_c), s	0.0	1.6		0.0	0.0	4.2		0.0

Intersection Summary	
HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	211	14	52	518	1	7	0	10	0	0	1
Future Volume (vph)	3	211	14	52	518	1	7	0	10	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		954			1390			531			530	
Travel Time (s)		18.6			27.1			14.5			14.5	
Confl. Peds. (#/hr)	3		11	13		5	11		13	5		3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	211	14	52	518	1	7	0	10	0	0	1
Future Vol, veh/h	3	211	14	52	518	1	7	0	10	0	0	1
Conflicting Peds, #/hr	3	0	11	13	0	5	11	0	13	5	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	125	-	-	0	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	1	1	1	0	0	0	0	0	0
Mvmt Flow	3	240	16	59	589	1	8	0	11	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	595	0	0	269	0	0	691	-	154	852	988	311
Stage 1	-	-	-	-	-	-	267	-	-	713	713	-
Stage 2	-	-	-	-	-	-	424	-	-	139	275	-
Critical Hdwy	4.2	-	-	4.12	-	-	7.5	-	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	-	-	6.5	5.5	-
Follow-up Hdwy	2.25	-	-	2.21	-	-	3.5	-	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	957	-	-	1299	-	-	335	0	871	256	249	691
Stage 1	-	-	-	-	-	-	721	0	-	394	438	-
Stage 2	-	-	-	-	-	-	584	0	-	856	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	952	-	-	1283	-	-	315	-	850	239	233	681
Mov Cap-2 Maneuver	-	-	-	-	-	-	315	-	-	239	233	-
Stage 1	-	-	-	-	-	-	710	-	-	391	416	-
Stage 2	-	-	-	-	-	-	550	-	-	831	676	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	12.3	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	315	850	952	-	-	1283	-	-	-	681
HCM Lane V/C Ratio	0.025	0.013	0.004	-	-	0.046	-	-	-	0.002
HCM Control Delay (s)	16.7	9.3	8.8	-	-	7.9	-	-	0	10.3
HCM Lane LOS	C	A	A	-	-	A	-	-	A	B
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0.1	-	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	196	22	22	414	48	8	0	10	27	0	14
Future Volume (vph)	42	196	22	22	414	48	8	0	10	27	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
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)		649			954			509			673	
Travel Time (s)		12.6			18.6			13.9			18.4	
Confl. Peds. (#/hr)	2		8	8		2	4		3	3		4
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 (%)	2%	2%	2%	1%	1%	1%	17%	17%	17%	17%	17%	17%
Parking (#/hr)											0	
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.6	22.6		10.6	32.6		10.6	10.6		37.6	37.6	37.6
Total Split (s)	19.6	34.6		19.6	34.6		24.6	24.6		24.6	24.6	24.6
Total Split (%)	24.9%	43.9%		24.9%	43.9%		31.2%	31.2%		31.2%	31.2%	31.2%
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
Total Lost Time (s)	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	Min		None	Min		None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 78.8	
Actuated Cycle Length: 41.1	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 9: Bronson Ave/Amazon & Center Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	196	22	22	414	48	8	0	10	27	0	14
Future Volume (veh/h)	42	196	22	22	414	48	8	0	10	27	0	14
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	0.99		0.99	0.98		0.99	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1648	1648	1648	1648	1648	1648
Adj Flow Rate, veh/h	46	213	24	24	450	52	9	0	11	29	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	1	1	1	17	17	17	17	17	17
Cap, veh/h	633	1357	151	755	1272	146	219	0	42	324	0	75
Arrive On Green	0.06	0.42	0.42	0.04	0.39	0.39	0.05	0.00	0.05	0.05	0.00	0.00
Sat Flow, veh/h	1781	3220	359	1795	3233	372	638	0	779	1285	0	1397
Grp Volume(v), veh/h	46	116	121	24	248	254	20	0	0	29	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1802	1795	1791	1814	1417	0	0	1285	0	1397
Q Serve(g_s), s	0.4	1.1	1.2	0.2	2.8	2.8	0.0	0.0	0.0	0.2	0.0	0.0
Cycle Q Clear(g_c), s	0.4	1.1	1.2	0.2	2.8	2.8	0.3	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.20	0.45		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	633	749	759	755	705	714	261	0	0	324	0	75
V/C Ratio(X)	0.07	0.16	0.16	0.03	0.35	0.36	0.08	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1464	1887	1913	1643	1902	1926	1118	0	0	1117	0	989
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.4	5.1	5.1	4.7	6.0	6.0	12.8	0.0	0.0	12.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.0	0.3	0.3	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	0.2	0.0	0.5	0.5	0.1	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.5	5.2	5.2	4.7	6.3	6.3	12.9	0.0	0.0	13.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		283			526			20			29	
Approach Delay, s/veh		5.0			6.3			12.9			13.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	16.5		6.1	6.4	15.7		6.1
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6
Max Green Setting (Gmax), s	15.0	30.0		20.0	15.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.2	3.2		2.6	2.4	4.8		2.3
Green Ext Time (p_c), s	0.0	1.3		0.1	0.1	3.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	17	29	0	23	1	244	29	28	434	7
Future Volume (vph)	7	0	17	29	0	23	1	244	29	28	434	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	150		0	175		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			284			1025			1049	
Travel Time (s)		8.9			7.7			20.0			20.4	
Confl. Peds. (#/hr)	4		5	5		4			9			6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	10.0		4.0	10.0	
Minimum Split (s)	33.5	33.5		33.5	33.5	33.5	8.5	23.5		8.5	28.5	
Total Split (s)	34.5	34.5		34.5	34.5	34.5	24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%		27.9%	27.9%	27.9%	19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 36.3
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Center Dr & Palisade Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	17	29	0	23	1	244	29	28	434	7
Future Volume (veh/h)	7	0	17	29	0	23	1	244	29	28	434	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	8	0	20	33	0	0	1	280	33	32	499	8
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	1	1	1
Cap, veh/h	208	3	105	397	0	149	6	1227	143	57	1493	24
Arrive On Green	0.09	0.00	0.09	0.09	0.00	0.00	0.00	0.38	0.38	0.03	0.41	0.41
Sat Flow, veh/h	419	35	1134	1455	0	1610	1781	3201	374	1795	3607	58
Grp Volume(v), veh/h	28	0	0	33	0	0	1	154	159	32	248	259
Grp Sat Flow(s),veh/h/ln	1588	0	0	1455	0	1610	1781	1777	1798	1795	1791	1874
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.6	1.6	0.5	2.6	2.6
Cycle Q Clear(g_c), s	0.4	0.0	0.0	0.5	0.0	0.0	0.0	1.6	1.6	0.5	2.6	2.6
Prop In Lane	0.29		0.71	1.00		1.00	1.00		0.21	1.00		0.03
Lane Grp Cap(c), veh/h	316	0	0	397	0	149	6	681	689	57	741	776
V/C Ratio(X)	0.09	0.00	0.00	0.08	0.00	0.00	0.15	0.23	0.23	0.56	0.33	0.33
Avail Cap(c_a), veh/h	1858	0	0	1794	0	1762	1300	3890	3936	1310	3921	4103
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	0.0	0.0	11.5	0.0	0.0	13.6	5.7	5.7	13.1	5.5	5.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	10.6	0.2	0.2	8.5	0.3	0.3
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	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.3	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	0.0	0.0	11.6	0.0	0.0	24.2	5.9	5.9	21.6	5.8	5.8
LnGrp LOS	B	A	A	B	A	A	C	A	A	C	A	A
Approach Vol, veh/h		28			33			314			539	
Approach Delay, s/veh		11.6			11.6			6.0			6.7	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.4	15.0		7.0	4.5	15.8		7.0
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	2.5	3.6		2.4	2.0	4.6		2.5
Green Ext Time (p_c), s	0.0	2.3		0.1	0.0	4.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	8	33	14	16	4	43	189	47	16	309	159
Future Volume (vph)	86	8	33	14	16	4	43	189	47	16	309	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	125		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		305			330			1772			1025	
Travel Time (s)		8.3			9.0			34.5			20.0	
Confl. Peds. (#/hr)	14		7	7		14			11			7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	29.5	29.5		30.5	30.5		10.6	22.6		10.6	19.6	
Total Split (s)	34.5	34.5		34.5	34.5		24.6	64.6		24.6	64.6	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		19.9%	52.2%		19.9%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5		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	
Total Lost Time (s)		4.5			4.5		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	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.7
Actuated Cycle Length: 39.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Center Dr & Bob's Hollow Ln

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	8	33	14	16	4	43	189	47	16	309	159
Future Volume (veh/h)	86	8	33	14	16	4	43	189	47	16	309	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.99		0.98	1.00		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	101	9	39	16	19	5	51	222	55	19	364	187
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	375	54	88	247	239	48	475	955	231	572	680	343
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.07	0.34	0.34	0.03	0.30	0.30
Sat Flow, veh/h	858	240	389	426	1056	212	1795	2849	689	1795	2294	1158
Grp Volume(v), veh/h	149	0	0	40	0	0	51	138	139	19	283	268
Grp Sat Flow(s),veh/h/ln	1487	0	0	1694	0	0	1795	1791	1748	1795	1791	1660
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	0.6	1.9	1.9	0.2	4.4	4.5
Cycle Q Clear(g_c), s	2.7	0.0	0.0	0.6	0.0	0.0	0.6	1.9	1.9	0.2	4.4	4.5
Prop In Lane	0.68		0.26	0.40		0.12	1.00		0.39	1.00		0.70
Lane Grp Cap(c), veh/h	517	0	0	534	0	0	475	601	586	572	531	493
V/C Ratio(X)	0.29	0.00	0.00	0.07	0.00	0.00	0.11	0.23	0.24	0.03	0.53	0.54
Avail Cap(c_a), veh/h	1484	0	0	1608	0	0	1426	3210	3132	1592	3210	2976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.0	0.0	0.0	10.2	0.0	0.0	7.3	8.0	8.0	7.7	9.8	9.9
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.6	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	0.8	0.0	0.0	0.2	0.0	0.0	0.2	0.5	0.5	0.1	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.2	0.0	0.0	10.3	0.0	0.0	7.4	8.2	8.2	7.7	10.4	10.6
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	B	B
Approach Vol, veh/h		149			40			328			570	
Approach Delay, s/veh		11.2			10.3			8.0			10.4	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	15.8		12.1	6.9	14.5		12.1
Change Period (Y+Rc), s	4.6	4.6		4.5	4.6	4.6		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	2.2	3.9		4.7	2.6	6.5		2.6
Green Ext Time (p_c), s	0.0	1.3		0.7	0.1	2.9		0.1

Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	24	162	74	88	36	390	253	34	22	317	19
Future Volume (vph)	47	24	162	74	88	36	390	253	34	22	317	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	185		0	250		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		678			647			731			886	
Travel Time (s)		18.5			17.6			14.2			17.3	
Confl. Peds. (#/hr)	5		2	2		5			11			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 (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	27.5	27.5	10.5	28.5	28.5	10.5	10.5	23.5		10.5	24.5	
Total Split (s)	34.5	34.5	24.5	34.5	34.5	24.5	24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%	19.8%	27.9%	27.9%	19.8%	19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 58
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Center Drive & McNeil Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	24	162	74	88	36	390	253	34	22	317	19
Future Volume (veh/h)	47	24	162	74	88	36	390	253	34	22	317	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	52	26	89	81	97	7	429	278	37	24	348	21
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, %	1	1	1	2	2	2	1	1	1	0	0	0
Cap, veh/h	320	131	744	242	191	343	510	1421	187	63	685	41
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.28	0.45	0.45	0.04	0.20	0.20
Sat Flow, veh/h	934	718	1585	611	1046	1572	1795	3177	418	1810	3458	208
Grp Volume(v), veh/h	78	0	89	178	0	7	429	155	160	24	181	188
Grp Sat Flow(s),veh/h/ln	1652	0	1585	1657	0	1572	1795	1791	1804	1810	1805	1861
Q Serve(g_s), s	0.0	0.0	1.3	2.4	0.0	0.1	9.1	2.1	2.2	0.5	3.6	3.6
Cycle Q Clear(g_c), s	1.4	0.0	1.3	3.8	0.0	0.1	9.1	2.1	2.2	0.5	3.6	3.6
Prop In Lane	0.67		1.00	0.46		1.00	1.00		0.23	1.00		0.11
Lane Grp Cap(c), veh/h	451	0	744	433	0	343	510	801	807	63	358	369
V/C Ratio(X)	0.17	0.00	0.12	0.41	0.00	0.02	0.84	0.19	0.20	0.38	0.51	0.51
Avail Cap(c_a), veh/h	1265	0	1633	1335	0	1225	891	2665	2684	898	2686	2769
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	6.1	15.0	0.0	12.4	13.6	6.7	6.8	19.0	14.4	14.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	1.5	0.0	0.0	1.4	0.4	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	0.5	0.0	0.3	1.3	0.0	0.0	3.0	0.5	0.5	0.2	1.2	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	6.1	15.2	0.0	12.4	15.0	6.8	6.8	20.4	14.8	14.8
LnGrp LOS	B	A	A	B	A	B	B	A	A	C	B	B
Approach Vol, veh/h		167			185			744			393	
Approach Delay, s/veh		9.8			15.1			11.6			15.2	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	22.5		11.9	16.0	12.5		11.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	2.5	4.2		3.4	11.1	5.6		5.8
Green Ext Time (p_c), s	0.0	1.2		0.4	0.5	1.4		0.7

Intersection Summary	
HCM 6th Ctrl Delay	12.8
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	8	29	243	26	77	39	592	131	73	470	12
Future Volume (vph)	7	8	29	243	26	77	39	592	131	73	470	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	100		0	110		0	150		0
Storage Lanes	0		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			25			35			35	
Link Distance (ft)		217			1462			556			731	
Travel Time (s)		5.9			39.9			10.8			14.2	
Confl. Peds. (#/hr)	2					2			4			
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 (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	10.5		33.5	33.5		10.5	26.5		10.5	22.5	
Total Split (s)	34.5	34.5		34.5	34.5		24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 55.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 13: Center Drive & Wilmington Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	8	29	243	26	77	39	592	131	73	470	12
Future Volume (veh/h)	7	8	29	243	26	77	39	592	131	73	470	12
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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	8	9	31	261	28	83	42	637	141	78	505	13
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, %	0	0	0	1	1	1	1	1	1	1	1	1
Cap, veh/h	454	101	347	518	112	333	490	937	207	418	1256	32
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.06	0.32	0.32	0.09	0.35	0.35
Sat Flow, veh/h	1300	374	1290	1375	418	1240	1795	2912	644	1795	3568	92
Grp Volume(v), veh/h	8	0	40	261	0	111	42	391	387	78	253	265
Grp Sat Flow(s),veh/h/ln	1300	0	1664	1375	0	1659	1795	1791	1765	1795	1791	1869
Q Serve(g_s), s	0.2	0.0	0.8	7.3	0.0	2.2	0.6	7.9	7.9	1.1	4.5	4.5
Cycle Q Clear(g_c), s	2.4	0.0	0.8	8.1	0.0	2.2	0.6	7.9	7.9	1.1	4.5	4.5
Prop In Lane	1.00		0.77	1.00		0.75	1.00		0.36	1.00		0.05
Lane Grp Cap(c), veh/h	454	0	448	518	0	446	490	577	568	418	631	658
V/C Ratio(X)	0.02	0.00	0.09	0.50	0.00	0.25	0.09	0.68	0.68	0.19	0.40	0.40
Avail Cap(c_a), veh/h	1039	0	1197	1137	0	1193	1252	2576	2538	1125	2576	2688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	11.4	14.4	0.0	11.9	8.4	12.3	12.3	8.5	10.2	10.2
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.5	0.5	0.1	0.2	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	0.0	0.2	2.0	0.0	0.7	0.2	2.5	2.4	0.3	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	0.0	11.5	14.7	0.0	12.1	8.4	12.8	12.8	8.6	10.4	10.3
LnGrp LOS	B	A	B	B	A	B	A	B	B	A	B	B
Approach Vol, veh/h		48			372			820			596	
Approach Delay, s/veh		11.7			13.9			12.6			10.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	17.9		15.7	6.8	19.2		15.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0				
Max Q Clear Time (g_c+I1), s	3.1	9.9		4.4	2.6	6.5		10.1				
Green Ext Time (p_c), s	0.1	3.3		0.1	0.0	2.0		0.8				

Intersection Summary	
HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Notes

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

2018 No Action

Lanes, Volumes, Timings
1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate

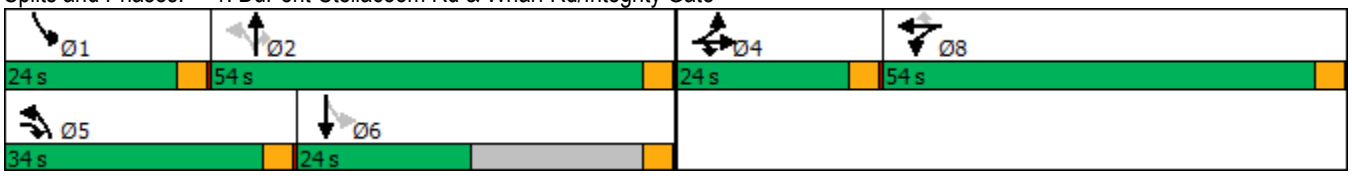
12/06/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	24	163	1	18	23	711	7	1	613	4
Future Volume (vph)	12	0	24	163	1	18	23	711	7	1	613	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	130		200	0		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		2971			479			2587			638	
Travel Time (s)		81.0			13.1			39.2			9.7	
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 (%)	18%	18%	18%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Split	NA	pt+ov	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4	4 5	8	8		5	2		1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4	4 5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
Total Split (s)	24.0	24.0		54.0	54.0	54.0	34.0	54.0	54.0	24.0	24.0	
Total Split (%)	15.4%	15.4%		34.6%	34.6%	34.6%	21.8%	34.6%	34.6%	15.4%	15.4%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	

Intersection Summary

Area Type: Other
Cycle Length: 156
Actuated Cycle Length: 79.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate



HCM 6th Signalized Intersection Summary
1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate

12/06/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	0	24	163	1	18	23	711	7	1	613	4
Future Volume (veh/h)	12	0	24	163	1	18	23	711	7	1	613	4
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	1633	1633	1633	1885	1885	1885	1856	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	13	0	26	175	1	0	25	765	0	1	659	4
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, %	18	18	18	1	1	1	3	3	3	1	1	1
Cap, veh/h	56	0	87	235	1		436	1168		355	1131	7
Arrive On Green	0.04	0.00	0.04	0.13	0.13	0.00	0.03	0.63	0.00	0.00	0.60	0.60
Sat Flow, veh/h	1555	0	1384	1786	10	1598	1767	1856	1572	1795	1872	11
Grp Volume(v), veh/h	13	0	26	176	0	0	25	765	0	1	0	663
Grp Sat Flow(s),veh/h/ln	1555	0	1384	1796	0	1598	1767	1856	1572	1795	0	1883
Q Serve(g_s), s	0.6	0.0	1.4	7.5	0.0	0.0	0.4	20.7	0.0	0.0	0.0	17.1
Cycle Q Clear(g_c), s	0.6	0.0	1.4	7.5	0.0	0.0	0.4	20.7	0.0	0.0	0.0	17.1
Prop In Lane	1.00		1.00	0.99		1.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	56	0	87	236	0		436	1168		355	0	1138
V/C Ratio(X)	0.23	0.00	0.30	0.75	0.00		0.06	0.66		0.00	0.00	0.58
Avail Cap(c_a), veh/h	392	0	385	1130	0		1056	1168		804	0	1138
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	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.2	0.0	35.5	33.2	0.0	0.0	7.4	9.3	0.0	8.4	0.0	9.6
Incr Delay (d2), s/veh	2.0	0.0	1.9	4.6	0.0	0.0	0.1	2.9	0.0	0.0	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.5	3.5	0.0	0.0	0.1	6.9	0.0	0.0	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.2	0.0	37.4	37.8	0.0	0.0	7.4	12.2	0.0	8.4	0.0	11.8
LnGrp LOS	D	A	D	D	A		A	B		A	A	B
Approach Vol, veh/h		39			176	A		790	A		664	
Approach Delay, s/veh		38.0			37.8			12.0			11.8	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	54.0		6.9	6.1	52.0		14.4				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	20.0	50.0		20.0	30.0	20.0		50.0				
Max Q Clear Time (g_c+I1), s	2.0	22.7		3.4	2.4	19.1		9.5				
Green Ext Time (p_c), s	0.0	5.4		0.1	0.0	0.4		1.2				

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

Notes

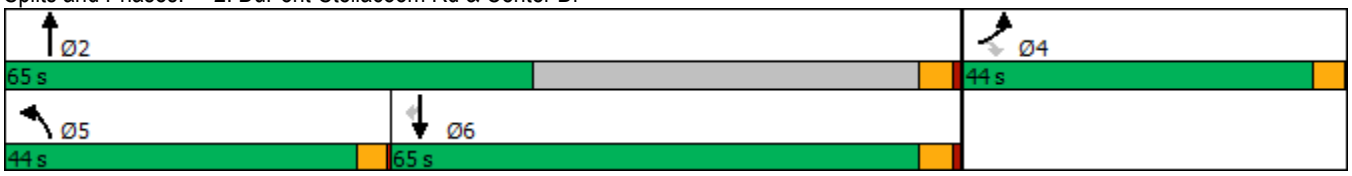
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	262	261	226	453	527	459
Future Volume (vph)	262	261	226	453	527	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	250			225
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			45	45	
Link Distance (ft)	703			3999	2587	
Travel Time (s)	13.7			60.6	39.2	
Confl. Peds. (#/hr)	3	3				3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	8.0	13.0	42.0	42.0
Total Split (s)	44.0	44.0	44.0	65.0	65.0	65.0
Total Split (%)	28.8%	28.8%	28.8%	42.5%	42.5%	42.5%
Yellow Time (s)	3.5	3.5	3.5	4.0	4.0	4.0
All-Red Time (s)	0.5	0.5	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min

Intersection Summary

Area Type: Other
Cycle Length: 153
Actuated Cycle Length: 85
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: DuPont-Steilacoom Rd & Center Dr



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	262	261	226	453	527	459
Future Volume (veh/h)	262	261	226	453	527	459
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1885	1885
Adj Flow Rate, veh/h	270	29	233	467	543	195
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	1	1
Cap, veh/h	338	301	290	1164	721	609
Arrive On Green	0.19	0.19	0.16	0.63	0.38	0.38
Sat Flow, veh/h	1767	1572	1767	1856	1885	1591
Grp Volume(v), veh/h	270	29	233	467	543	195
Grp Sat Flow(s),veh/h/ln	1767	1572	1767	1856	1885	1591
Q Serve(g_s), s	7.2	0.8	6.3	6.2	12.4	4.3
Cycle Q Clear(g_c), s	7.2	0.8	6.3	6.2	12.4	4.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	338	301	290	1164	721	609
V/C Ratio(X)	0.80	0.10	0.80	0.40	0.75	0.32
Avail Cap(c_a), veh/h	1425	1268	1425	2245	2280	1925
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	19.1	16.5	20.0	4.6	13.3	10.8
Incr Delay (d2), s/veh	1.7	0.1	2.0	0.2	1.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.7	2.3	1.1	4.1	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.8	16.6	22.0	4.8	14.9	11.1
LnGrp LOS	C	B	C	A	B	B
Approach Vol, veh/h	299			700	738	
Approach Delay, s/veh	20.4			10.5	13.9	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		36.1		13.5	12.1	24.0
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		60.0		40.0	40.0	60.0
Max Q Clear Time (g_c+I1), s		8.2		9.2	8.3	14.4
Green Ext Time (p_c), s		2.9		0.4	0.2	4.2

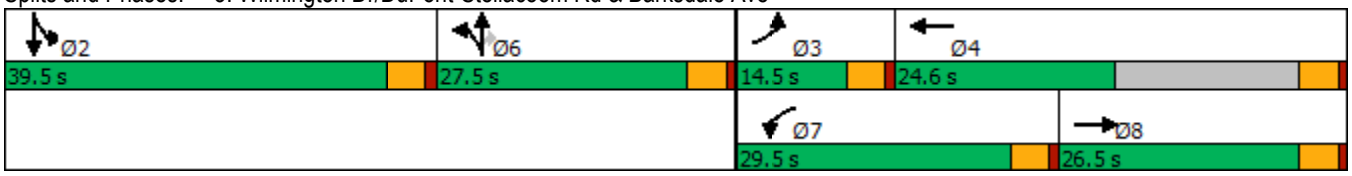
Intersection Summary	
HCM 6th Ctrl Delay	13.7
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	72	23	201	126	587	21	88	162	718	101	57
Future Volume (vph)	27	72	23	201	126	587	21	88	162	718	101	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	125		150	125		100	625		0
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)		25			25			30			35	
Link Distance (ft)		584			367			965			849	
Travel Time (s)		15.9			10.0			21.9			16.5	
Confl. Peds. (#/hr)			2			7			1			2
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 (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	3%	3%	3%
Shared Lane Traffic (%)										39%		
Turn Type	Prot	NA		Prot	NA	Free	Split	NA	Perm	Split	NA	
Protected Phases	3	8		7	4		6	6		2	2	
Permitted Phases						Free			6			
Detector Phase	3	8		7	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.5	26.5		10.5	25.6		27.5	27.5	27.5	27.5	27.5	
Total Split (s)	14.5	26.5		29.5	24.6		27.5	27.5	27.5	39.5	39.5	
Total Split (%)	11.8%	21.5%		24.0%	20.0%		22.4%	22.4%	22.4%	32.1%	32.1%	
Yellow Time (s)	3.5	3.5		3.5	3.6		3.5	3.5	3.5	3.5	3.5	
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)	4.5	4.5		4.5	4.6		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	None	None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123
Actuated Cycle Length: 88.2
Natural Cycle: 105
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Wilmington Dr/DuPont-Steilacoom Rd & Barksdale Ave



HCM 6th Signalized Intersection Summary
3: Wilmington Dr/DuPont-Steilacoom Rd & Barksdale Ave

12/06/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	72	23	201	126	587	21	88	162	718	101	57
Future Volume (veh/h)	27	72	23	201	126	587	21	88	162	718	101	57
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	1870	1870	1870	1885	1885	1885	1856	1856	1856
Adj Flow Rate, veh/h	28	73	23	205	129	0	21	90	0	861	0	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, %	0	0	0	2	2	2	1	1	1	3	3	3
Cap, veh/h	67	159	50	262	420		250	262		1090	572	0
Arrive On Green	0.04	0.11	0.11	0.15	0.22	0.00	0.14	0.14	0.00	0.31	0.00	0.00
Sat Flow, veh/h	1810	1382	435	1781	1870	1585	1795	1885	1598	3534	1856	0
Grp Volume(v), veh/h	28	0	96	205	129	0	21	90	0	861	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1817	1781	1870	1585	1795	1885	1598	1767	1856	0
Q Serve(g_s), s	0.9	0.0	3.1	6.9	3.6	0.0	0.6	2.7	0.0	13.9	0.0	0.0
Cycle Q Clear(g_c), s	0.9	0.0	3.1	6.9	3.6	0.0	0.6	2.7	0.0	13.9	0.0	0.0
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	67	0	209	262	420		250	262		1090	572	0
V/C Ratio(X)	0.42	0.00	0.46	0.78	0.31		0.08	0.34		0.79	0.00	0.00
Avail Cap(c_a), veh/h	291	0	642	715	601		663	696		1987	1043	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.3	0.0	25.8	25.6	20.1	0.0	23.3	24.2	0.0	19.7	0.0	0.0
Incr Delay (d2), s/veh	4.1	0.0	1.6	5.1	0.4	0.0	0.1	0.8	0.0	1.3	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	0.5	0.0	1.4	3.2	1.5	0.0	0.3	1.2	0.0	5.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	0.0	27.3	30.7	20.5	0.0	23.5	25.0	0.0	21.0	0.0	0.0
LnGrp LOS	C	A	C	C	C		C	C		C	A	A
Approach Vol, veh/h		124			334	A		111	A		861	
Approach Delay, s/veh		28.7			26.8			24.7			21.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.7	6.8	18.6		13.2	13.6	11.8				
Change Period (Y+Rc), s		4.5	4.5	4.6		4.5	4.5	* 4.6				
Max Green Setting (Gmax), s		35.0	10.0	20.0		23.0	25.0	* 22				
Max Q Clear Time (g_c+I1), s		15.9	2.9	5.6		4.7	8.9	5.1				
Green Ext Time (p_c), s		3.3	0.0	0.5		0.4	0.5	0.4				

Intersection Summary	
HCM 6th Ctrl Delay	23.3
HCM 6th LOS	C

Notes

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

User approved volume balancing among the lanes for turning movement.

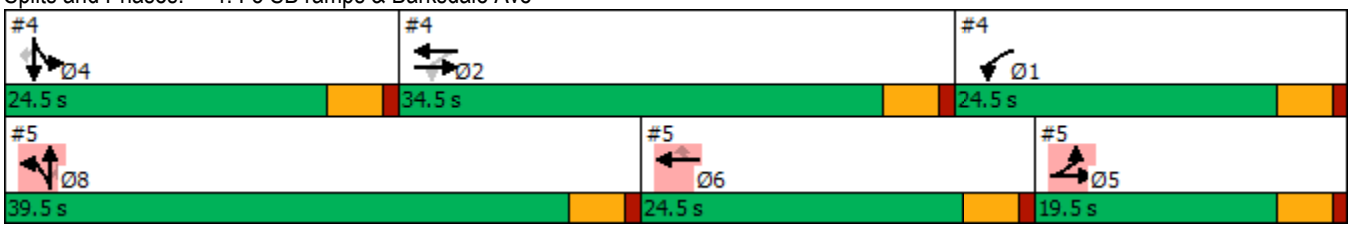
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	350	565	336	620	0	0	0	0	13	4	208
Future Volume (vph)	0	350	565	336	620	0	0	0	0	13	4	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			319			290			206	
Travel Time (s)		8.3			7.3			6.6			4.7	
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 (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	9%	9%	9%
Shared Lane Traffic (%)												
Turn Type		NA	Free	pm+pt	NA					Split	NA	Perm
Protected Phases		2		1	2					4	4	
Permitted Phases			Free	2								4
Detector Phase		2		1	2					4	4	4
Switch Phase												
Minimum Initial (s)		6.0		6.0	6.0					6.0	6.0	6.0
Minimum Split (s)		20.5		10.5	20.5					10.5	10.5	10.5
Total Split (s)		34.5		24.5	34.5					24.5	24.5	24.5
Total Split (%)		41.3%		29.3%	41.3%					29.3%	29.3%	29.3%
Yellow Time (s)		3.5		3.5	3.5					3.5	3.5	3.5
All-Red Time (s)		1.0		1.0	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0						0.0	0.0
Total Lost Time (s)		4.5			4.5						4.5	4.5
Lead/Lag		Lag			Lag					Lead	Lead	Lead
Lead-Lag Optimize?		Yes			Yes					Yes	Yes	Yes
Recall Mode		Min		None	Min					None	None	None

Intersection Summary

Area Type: Other
Cycle Length: 83.5
Actuated Cycle Length: 62.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: I-5 SB ramps & Barksdale Ave



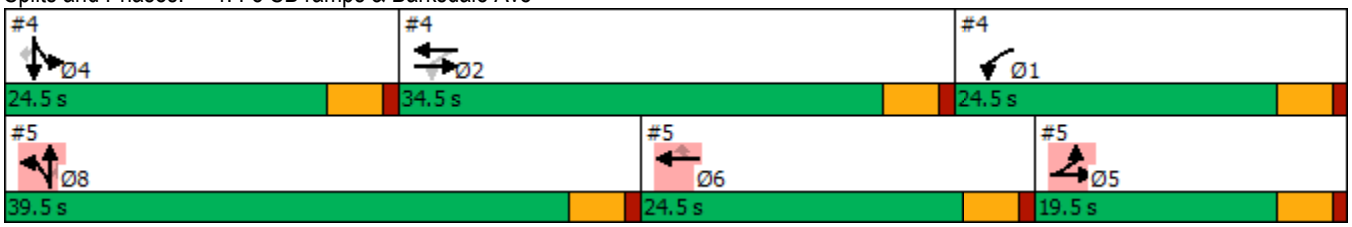
Lane Group	Ø5	Ø6	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases	5	6	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	6.0	10.0
Minimum Split (s)	14.5	20.5	30.5
Total Split (s)	19.5	24.5	39.5
Total Split (%)	23%	29%	47%
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lead
Lead-Lag Optimize?		Yes	Yes
Recall Mode	None	Min	None

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	350	565	336	620	0	0	0	0	13	4	208
Future Volume (vph)	0	350	565	336	620	0	0	0	0	13	4	208
Satd. Flow (prot)	0	3539	1583	0	1849	0	0	0	0	0	1679	1482
Flt Permitted					0.731						0.963	
Satd. Flow (perm)	0	3539	1583	0	1375	0	0	0	0	0	1679	1482
Satd. Flow (RTOR)			589									217
Lane Group Flow (vph)	0	365	589	0	996	0	0	0	0	0	18	217
Turn Type		NA	Free	pm+pt	NA					Split	NA	Perm
Protected Phases		2		1	2					4	4	
Permitted Phases			Free	2								4
Total Split (s)		34.5		24.5	34.5					24.5	24.5	24.5
Total Lost Time (s)		4.5			4.5						4.5	4.5
Act Effct Green (s)		46.3	62.8		46.3						7.4	7.4
Actuated g/C Ratio		0.74	1.00		0.74						0.12	0.12
v/c Ratio		0.14	0.37		0.98						0.09	0.59
Control Delay		2.7	0.7		28.7						27.6	12.1
Queue Delay		0.0	0.0		39.4						0.0	0.0
Total Delay		2.7	0.7		68.1						27.6	12.1
LOS		A	A		E						C	B
Approach Delay		1.4			68.1						13.3	
Approach LOS		A			E						B	

Intersection Summary	
Cycle Length: 83.5	
Actuated Cycle Length: 62.8	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 33.1	Intersection LOS: C
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 4: I-5 SB ramps & Barksdale Ave

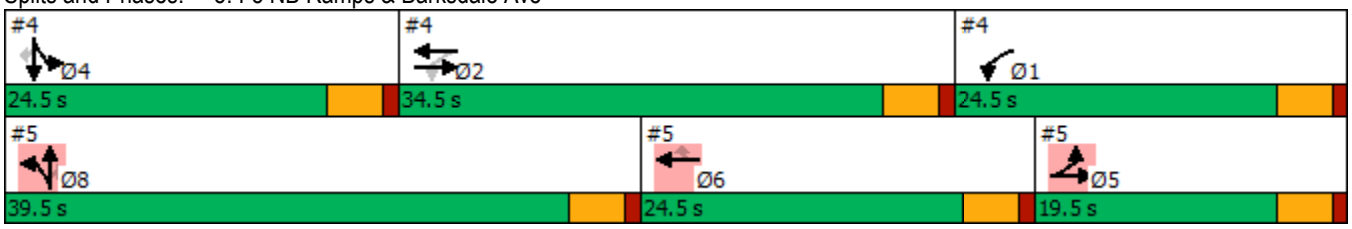


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	113	0	0	615	158	316	0	102	0	0	0
Future Volume (vph)	282	113	0	0	615	158	316	0	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		319			191			232			212	
Travel Time (s)		7.3			4.3			5.3			4.8	
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 (%)	3%	3%	3%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)	31%											
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	5			6		8	8				
Permitted Phases						6			8			
Detector Phase	5	5			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	10.0			6.0	6.0	10.0	10.0	10.0			
Minimum Split (s)	14.5	14.5			20.5	20.5	30.5	30.5	30.5			
Total Split (s)	19.5	19.5			24.5	24.5	39.5	39.5	39.5			
Total Split (%)	23.4%	23.4%			29.3%	29.3%	47.3%	47.3%	47.3%			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5	3.5	3.5			
All-Red Time (s)	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			
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Lead/Lag					Lag	Lag	Lead	Lead	Lead			
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes			
Recall Mode	None	None			Min	Min	None	None	None			

Intersection Summary

Area Type: Other
Cycle Length: 83.5
Actuated Cycle Length: 62.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 5: I-5 NB Ramps & Barksdale Ave



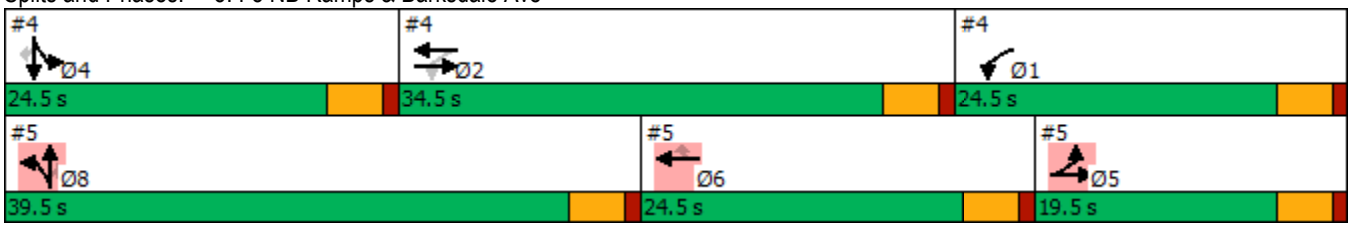
Lane Group	Ø1	Ø2	Ø4
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases	1	2	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	6.0	6.0	6.0
Minimum Split (s)	10.5	20.5	10.5
Total Split (s)	24.5	34.5	24.5
Total Split (%)	29%	41%	29%
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lead
Lead-Lag Optimize?		Yes	Yes
Recall Mode	None	Min	None

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	113	0	0	615	158	316	0	102	0	0	0
Future Volume (vph)	282	113	0	0	615	158	316	0	102	0	0	0
Satd. Flow (prot)	1665	1716	0	0	1900	1615	0	1770	1583	0	0	0
Flt Permitted	0.950	0.979						0.950				
Satd. Flow (perm)	1665	1716	0	0	1900	1615	0	1770	1583	0	0	0
Satd. Flow (RTOR)						160			137			
Lane Group Flow (vph)	199	204	0	0	628	161	0	322	104	0	0	0
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	5			6		8	8				
Permitted Phases						6			8			
Total Split (s)	19.5	19.5			24.5	24.5	39.5	39.5	39.5			
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Act Effct Green (s)	12.4	12.4			20.3	20.3		16.5	16.5			
Actuated g/C Ratio	0.20	0.20			0.32	0.32		0.26	0.26			
v/c Ratio	0.61	0.60			1.02	0.26		0.70	0.20			
Control Delay	31.0	30.6			69.6	5.2		29.5	3.0			
Queue Delay	0.0	0.0			19.1	0.0		0.0	0.0			
Total Delay	31.0	30.6			88.7	5.2		29.5	3.0			
LOS	C	C			F	A		C	A			
Approach Delay		30.8			71.6			23.0				
Approach LOS		C			E			C				

Intersection Summary	
Cycle Length: 83.5	
Actuated Cycle Length: 62.8	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 48.7	Intersection LOS: D
Intersection Capacity Utilization 71.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: I-5 NB Ramps & Barksdale Ave



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	279	647	40	98	33
Future Volume (vph)	12	279	647	40	98	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		35	35		25	
Link Distance (ft)		651	481		285	
Travel Time (s)		12.7	9.4		7.8	
Confl. Peds. (#/hr)	4			5	5	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	279	647	40	98	33
Future Vol, veh/h	12	279	647	40	98	33
Conflicting Peds, #/hr	4	0	0	5	5	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	4	2	2	0	0
Mvmt Flow	13	310	719	44	109	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	768	0	-	0	932	391
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	186	-
Critical Hdwy	4.18	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.24	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	829	-	-	-	269	614
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	833	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	825	-	-	-	262	609
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	829	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	27
HCM LOS			D

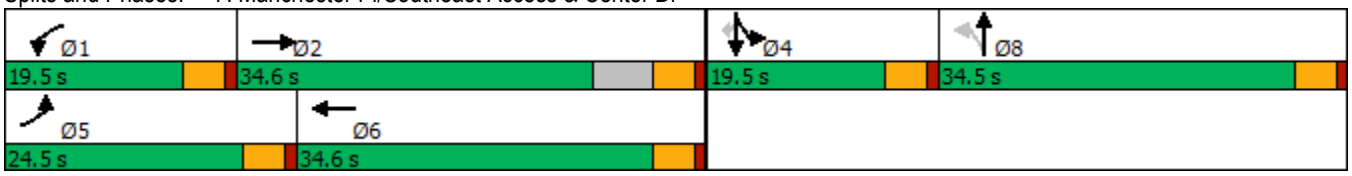
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	825	-	-	-	306
HCM Lane V/C Ratio	0.016	-	-	-	0.476
HCM Control Delay (s)	9.4	-	-	-	27
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	2.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	291	0	0	669	0	0	0	0	13	0	9
Future Volume (vph)	1	291	0	0	669	0	0	0	0	13	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
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)		1390			651			359			405	
Travel Time (s)		27.1			12.7			9.8			11.0	
Confl. Peds. (#/hr)						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 (%)	5%	5%	5%	2%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA					Split	NA	Perm
Protected Phases	5	2		1	6			8		4	4	
Permitted Phases							8					4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		4.0	4.0		6.0	6.0	6.0
Minimum Split (s)	8.5	27.6		8.5	27.6		8.5	8.5		20.5	20.5	20.5
Total Split (s)	24.5	34.6		19.5	34.6		34.5	34.5		19.5	19.5	19.5
Total Split (%)	21.7%	30.6%		17.2%	30.6%		30.5%	30.5%		17.2%	17.2%	17.2%
Yellow Time (s)	3.5	3.6		3.5	3.6		3.5	3.5		3.5	3.5	3.5
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
Total Lost Time (s)	4.5	4.6		4.5	4.6			4.5			4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	None

Intersection Summary

Area Type: Other
Cycle Length: 113.1
Actuated Cycle Length: 37.4
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Manchester Pl/Southeast Access & Center Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	291	0	0	669	0	0	0	0	13	0	9
Future Volume (veh/h)	1	291	0	0	669	0	0	0	0	13	0	9
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	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	1	327	0	0	752	0	0	0	0	15	0	9
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	2	2	2	0	0	0	0	0	0
Cap, veh/h	7	2128	0	7	1560	0	0	7	0	66	0	59
Arrive On Green	0.00	0.61	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.04	0.00	0.04
Sat Flow, veh/h	1739	3561	0	1781	3647	0	0	1900	0	1810	0	1610
Grp Volume(v), veh/h	1	327	0	0	752	0	0	0	0	15	0	9
Grp Sat Flow(s),veh/h/ln	1739	1735	0	1781	1777	0	0	1900	0	1810	0	1610
Q Serve(g_s), s	0.0	1.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Cycle Q Clear(g_c), s	0.0	1.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	2128	0	7	1560	0	0	7	0	66	0	59
V/C Ratio(X)	0.15	0.15	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.23	0.00	0.15
Avail Cap(c_a), veh/h	1338	4003	0	1028	4100	0	0	2192	0	1044	0	929
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	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.9	2.1	0.0	0.0	5.2	0.0	0.0	0.0	0.0	12.2	0.0	12.1
Incr Delay (d2), s/veh	10.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.7	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	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	2.2	0.0	0.0	5.4	0.0	0.0	0.0	0.0	13.9	0.0	13.3
LnGrp LOS	C	A	A	A	A	A	A	A	A	B	A	B
Approach Vol, veh/h		328			752			0			24	
Approach Delay, s/veh		2.2			5.4			0.0			13.7	
Approach LOS		A			A						B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	20.5		5.5	4.5	16.0		0.0
Change Period (Y+Rc), s	4.5	4.6		4.5	4.5	4.6		4.5
Max Green Setting (Gmax), s	15.0	30.0		15.0	20.0	30.0		30.0
Max Q Clear Time (g_c+I1), s	0.0	3.0		2.2	2.0	5.9		0.0
Green Ext Time (p_c), s	0.0	2.1		0.0	0.0	5.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	4.7
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	280	16	55	640	1	7	0	11	0	0	1
Future Volume (vph)	3	280	16	55	640	1	7	0	11	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		954			1390			531			530	
Travel Time (s)		18.6			27.1			14.5			14.5	
Confl. Peds. (#/hr)	3		11	13		5	11		13	5		3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	280	16	55	640	1	7	0	11	0	0	1
Future Vol, veh/h	3	280	16	55	640	1	7	0	11	0	0	1
Conflicting Peds, #/hr	3	0	11	13	0	5	11	0	13	5	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	125	-	-	0	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	1	1	1	0	0	0	0	0	0
Mvmt Flow	3	318	18	63	727	1	8	0	13	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	733	0	0	349	0	0	847	-	194	1037	1214	380
Stage 1	-	-	-	-	-	-	346	-	-	859	859	-
Stage 2	-	-	-	-	-	-	501	-	-	178	355	-
Critical Hdwy	4.2	-	-	4.12	-	-	7.5	-	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	-	-	6.5	5.5	-
Follow-up Hdwy	2.25	-	-	2.21	-	-	3.5	-	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	848	-	-	1214	-	-	259	0	821	188	183	624
Stage 1	-	-	-	-	-	-	649	0	-	322	376	-
Stage 2	-	-	-	-	-	-	526	0	-	812	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	844	-	-	1199	-	-	242	-	801	174	170	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	-	-	174	170	-
Stage 1	-	-	-	-	-	-	639	-	-	319	354	-
Stage 2	-	-	-	-	-	-	492	-	-	787	623	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	13.8	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	242	801	844	-	-	1199	-	-	-	615
HCM Lane V/C Ratio	0.033	0.016	0.004	-	-	0.052	-	-	-	0.002
HCM Control Delay (s)	20.4	9.6	9.3	-	-	8.2	-	-	0	10.9
HCM Lane LOS	C	A	A	-	-	A	-	-	A	B
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0.2	-	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	265	24	23	531	50	9	0	11	28	0	15
Future Volume (vph)	44	265	24	23	531	50	9	0	11	28	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
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)		649			954			509			673	
Travel Time (s)		12.6			18.6			13.9			18.4	
Confl. Peds. (#/hr)	2		8	8		2	4		3	3		4
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 (%)	2%	2%	2%	1%	1%	1%	17%	17%	17%	17%	17%	17%
Parking (#/hr)											0	
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.6	22.6		10.6	32.6		10.6	10.6		37.6	37.6	37.6
Total Split (s)	19.6	34.6		19.6	34.6		24.6	24.6		24.6	24.6	24.6
Total Split (%)	24.9%	43.9%		24.9%	43.9%		31.2%	31.2%		31.2%	31.2%	31.2%
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
Total Lost Time (s)	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	Min		None	Min		None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 78.8	
Actuated Cycle Length: 42.1	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 9: Bronson Ave/Amazon & Center Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	265	24	23	531	50	9	0	11	28	0	15
Future Volume (veh/h)	44	265	24	23	531	50	9	0	11	28	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		0.99	0.99		0.99	0.98		0.99	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1648	1648	1648	1648	1648	1648
Adj Flow Rate, veh/h	48	288	26	25	577	54	10	0	12	30	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	1	1	1	17	17	17	17	17	17
Cap, veh/h	581	1387	124	711	1297	121	220	0	43	325	0	77
Arrive On Green	0.07	0.42	0.42	0.04	0.39	0.39	0.06	0.00	0.06	0.06	0.00	0.00
Sat Flow, veh/h	1781	3295	295	1795	3308	309	644	0	773	1291	0	1397
Grp Volume(v), veh/h	48	154	160	25	312	319	22	0	0	30	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1814	1795	1791	1826	1416	0	0	1291	0	1397
Q Serve(g_s), s	0.4	1.6	1.6	0.2	3.6	3.7	0.0	0.0	0.0	0.2	0.0	0.0
Cycle Q Clear(g_c), s	0.4	1.6	1.6	0.2	3.6	3.7	0.4	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.17	0.45		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	581	748	763	711	702	716	263	0	0	325	0	77
V/C Ratio(X)	0.08	0.21	0.21	0.04	0.44	0.45	0.08	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	1404	1879	1918	1592	1894	1930	1114	0	0	1113	0	984
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.5	5.2	5.2	4.7	6.4	6.4	12.8	0.0	0.0	12.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.1	0.0	0.4	0.4	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.3	0.3	0.0	0.7	0.7	0.1	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.6	5.3	5.4	4.7	6.8	6.8	13.0	0.0	0.0	13.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		362			656			22			30	
Approach Delay, s/veh		5.2			6.7			13.0			13.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	16.5		6.2	6.5	15.7		6.2
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6
Max Green Setting (Gmax), s	15.0	30.0		20.0	15.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.2	3.6		2.6	2.4	5.7		2.4
Green Ext Time (p_c), s	0.0	1.8		0.1	0.1	3.9		0.0

Intersection Summary	
HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	18	31	0	29	1	313	31	45	618	7
Future Volume (vph)	7	0	18	31	0	29	1	313	31	45	618	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	150		0	175		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			284			1025			1049	
Travel Time (s)		8.9			7.7			20.0			20.4	
Confl. Peds. (#/hr)	4		5	5		4			9			6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	10.0		4.0	10.0	
Minimum Split (s)	33.5	33.5		33.5	33.5	33.5	8.5	23.5		8.5	28.5	
Total Split (s)	34.5	34.5		34.5	34.5	34.5	24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%		27.9%	27.9%	27.9%	19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 41.2
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Center Dr & Palisade Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	18	31	0	29	1	313	31	45	618	7
Future Volume (veh/h)	7	0	18	31	0	29	1	313	31	45	618	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	8	0	21	36	0	0	1	360	36	52	710	8
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	1	1	1
Cap, veh/h	194	6	108	385	0	152	6	1286	128	85	1598	18
Arrive On Green	0.09	0.00	0.09	0.09	0.00	0.00	0.00	0.39	0.39	0.05	0.44	0.44
Sat Flow, veh/h	378	59	1146	1458	0	1610	1781	3261	324	1795	3628	41
Grp Volume(v), veh/h	29	0	0	36	0	0	1	195	201	52	350	368
Grp Sat Flow(s),veh/h/ln	1583	0	0	1458	0	1610	1781	1777	1808	1795	1791	1877
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.0	2.2	2.2	0.8	4.0	4.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	0.6	0.0	0.0	0.0	2.2	2.2	0.8	4.0	4.0
Prop In Lane	0.28		0.72	1.00		1.00	1.00		0.18	1.00		0.02
Lane Grp Cap(c), veh/h	307	0	0	385	0	152	6	701	713	85	789	827
V/C Ratio(X)	0.09	0.00	0.00	0.09	0.00	0.00	0.16	0.28	0.28	0.61	0.44	0.44
Avail Cap(c_a), veh/h	1751	0	0	1690	0	1661	1225	3665	3729	1235	3694	3873
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	0.0	12.2	0.0	0.0	14.5	6.0	6.0	13.6	5.7	5.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	12.0	0.3	0.3	7.0	0.5	0.5
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	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.5	0.4	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.3	0.0	0.0	12.3	0.0	0.0	26.5	6.2	6.3	20.6	6.1	6.1
LnGrp LOS	B	A	A	B	A	A	C	A	A	C	A	A
Approach Vol, veh/h		29			36			397			770	
Approach Delay, s/veh		12.3			12.3			6.3			7.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	16.0		7.2	4.5	17.3		7.2
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	2.8	4.2		2.5	2.0	6.0		2.6
Green Ext Time (p_c), s	0.1	3.0		0.1	0.0	6.1		0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	8	35	33	17	5	46	238	50	17	455	199
Future Volume (vph)	91	8	35	33	17	5	46	238	50	17	455	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	125		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		305			330			1772			1025	
Travel Time (s)		8.3			9.0			34.5			20.0	
Confl. Peds. (#/hr)	14		7	7		14			11			7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	29.5	29.5		30.5	30.5		10.6	22.6		10.6	19.6	
Total Split (s)	34.5	34.5		34.5	34.5		24.6	64.6		24.6	64.6	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		19.9%	52.2%		19.9%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5		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	
Total Lost Time (s)		4.5			4.5		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	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.7
Actuated Cycle Length: 50.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Center Dr & Bob's Hollow Ln

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	8	35	33	17	5	46	238	50	17	455	199
Future Volume (veh/h)	91	8	35	33	17	5	46	238	50	17	455	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.99		0.98	1.00		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	107	9	41	39	20	6	54	280	59	20	535	234
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	349	48	85	327	148	33	432	1159	240	584	859	374
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.07	0.39	0.39	0.03	0.36	0.36
Sat Flow, veh/h	877	221	388	811	681	152	1795	2946	610	1795	2419	1055
Grp Volume(v), veh/h	157	0	0	65	0	0	54	168	171	20	396	373
Grp Sat Flow(s),veh/h/ln	1486	0	0	1644	0	0	1795	1791	1765	1795	1791	1683
Q Serve(g_s), s	2.3	0.0	0.0	0.0	0.0	0.0	0.7	2.4	2.5	0.3	7.0	7.0
Cycle Q Clear(g_c), s	3.4	0.0	0.0	1.1	0.0	0.0	0.7	2.4	2.5	0.3	7.0	7.0
Prop In Lane	0.68		0.26	0.60		0.09	1.00		0.35	1.00		0.63
Lane Grp Cap(c), veh/h	482	0	0	509	0	0	432	705	695	584	636	598
V/C Ratio(X)	0.33	0.00	0.00	0.13	0.00	0.00	0.13	0.24	0.25	0.03	0.62	0.62
Avail Cap(c_a), veh/h	1299	0	0	1365	0	0	1249	2812	2771	1470	2812	2643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	0.0	12.1	0.0	0.0	7.2	7.8	7.8	7.3	10.2	10.2
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.7	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	1.0	0.0	0.0	0.4	0.0	0.0	0.2	0.6	0.7	0.1	2.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.0	0.0	12.2	0.0	0.0	7.3	7.9	7.9	7.3	10.9	11.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	B	B
Approach Vol, veh/h		157			65			393			789	
Approach Delay, s/veh		13.2			12.2			7.8			10.9	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	19.6		12.8	7.2	18.2		12.8
Change Period (Y+Rc), s	4.6	4.6		4.5	4.6	4.6		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	2.3	4.5		5.4	2.7	9.0		3.1
Green Ext Time (p_c), s	0.0	1.7		0.8	0.1	4.4		0.3

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	37	215	81	109	52	490	287	37	39	416	55
Future Volume (vph)	59	37	215	81	109	52	490	287	37	39	416	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	185		0	250		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		678			647			731			886	
Travel Time (s)		18.5			17.6			14.2			17.3	
Confl. Peds. (#/hr)	5		2	2		5			11			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 (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	27.5	27.5	10.5	28.5	28.5	10.5	10.5	23.5		10.5	24.5	
Total Split (s)	34.5	34.5	24.5	34.5	34.5	24.5	24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%	19.8%	27.9%	27.9%	19.8%	19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 62
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Center Drive & McNeil Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	37	215	81	109	52	490	287	37	39	416	55
Future Volume (veh/h)	59	37	215	81	109	52	490	287	37	39	416	55
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	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	65	41	117	89	120	13	538	315	41	43	457	60
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, %	1	1	1	2	2	2	1	1	1	0	0	0
Cap, veh/h	269	145	825	211	201	378	594	1597	206	96	717	94
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.33	0.50	0.50	0.05	0.22	0.22
Sat Flow, veh/h	843	773	1585	601	1076	1572	1795	3186	411	1810	3207	419
Grp Volume(v), veh/h	106	0	117	209	0	13	538	176	180	43	256	261
Grp Sat Flow(s),veh/h/ln	1616	0	1585	1677	0	1572	1795	1791	1806	1810	1805	1821
Q Serve(g_s), s	0.0	0.0	2.0	3.2	0.0	0.3	15.0	2.8	2.9	1.2	6.7	6.8
Cycle Q Clear(g_c), s	2.7	0.0	2.0	5.9	0.0	0.3	15.0	2.8	2.9	1.2	6.7	6.8
Prop In Lane	0.61		1.00	0.43		1.00	1.00		0.23	1.00		0.23
Lane Grp Cap(c), veh/h	413	0	825	412	0	378	594	898	905	96	404	407
V/C Ratio(X)	0.26	0.00	0.14	0.51	0.00	0.03	0.91	0.20	0.20	0.45	0.63	0.64
Avail Cap(c_a), veh/h	978	0	1439	1036	0	987	687	2057	2074	693	2073	2092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	6.6	19.6	0.0	15.2	16.7	7.2	7.2	24.0	18.4	18.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	13.2	0.0	0.0	1.2	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.6	2.2	0.0	0.1	7.3	0.8	0.8	0.5	2.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	0.0	6.6	19.9	0.0	15.2	29.9	7.2	7.3	25.2	19.0	19.0
LnGrp LOS	B	A	A	B	A	B	C	A	A	C	B	B
Approach Vol, veh/h		223			222			894			560	
Approach Delay, s/veh		12.2			19.6			20.9			19.5	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	30.7		14.3	21.8	16.2		14.3
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	3.2	4.9		4.7	17.0	8.8		7.9
Green Ext Time (p_c), s	0.0	1.3		0.6	0.3	2.0		0.8

Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	8	30	260	27	89	41	717	143	86	616	13
Future Volume (vph)	7	8	30	260	27	89	41	717	143	86	616	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	100		0	110		0	150		0
Storage Lanes	0		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			25			35			35	
Link Distance (ft)		217			1462			556			731	
Travel Time (s)		5.9			39.9			10.8			14.2	
Confl. Peds. (#/hr)	2					2			4			
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 (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	10.5		33.5	33.5		10.5	26.5		10.5	22.5	
Total Split (s)	34.5	34.5		34.5	34.5		24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 64.8
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 13: Center Drive & Wilmington Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	8	30	260	27	89	41	717	143	86	616	13
Future Volume (veh/h)	7	8	30	260	27	89	41	717	143	86	616	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		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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	8	9	32	280	29	96	44	771	154	92	662	14
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, %	0	0	0	1	1	1	1	1	1	1	1	1
Cap, veh/h	428	101	359	504	106	351	441	1056	211	387	1392	29
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.06	0.36	0.36	0.09	0.39	0.39
Sat Flow, veh/h	1284	365	1298	1374	384	1270	1795	2972	594	1795	3587	76
Grp Volume(v), veh/h	8	0	41	280	0	125	44	465	460	92	330	346
Grp Sat Flow(s),veh/h/ln	1284	0	1663	1374	0	1653	1795	1791	1774	1795	1791	1872
Q Serve(g_s), s	0.2	0.0	0.9	9.2	0.0	2.9	0.7	10.9	10.9	1.4	6.7	6.7
Cycle Q Clear(g_c), s	3.1	0.0	0.9	10.0	0.0	2.9	0.7	10.9	10.9	1.4	6.7	6.7
Prop In Lane	1.00		0.78	1.00		0.77	1.00		0.33	1.00		0.04
Lane Grp Cap(c), veh/h	428	0	460	504	0	457	441	636	631	387	695	726
V/C Ratio(X)	0.02	0.00	0.09	0.56	0.00	0.27	0.10	0.73	0.73	0.24	0.48	0.48
Avail Cap(c_a), veh/h	873	0	1035	980	0	1029	1086	2230	2209	973	2230	2330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	12.9	16.7	0.0	13.7	8.9	13.5	13.5	9.3	11.1	11.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.6	0.6	0.1	0.2	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	0.0	0.3	2.6	0.0	1.0	0.2	3.6	3.5	0.4	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	13.0	17.0	0.0	13.8	8.9	14.1	14.1	9.4	11.3	11.2
LnGrp LOS	B	A	B	B	A	B	A	B	B	A	B	B
Approach Vol, veh/h		49			405			969			768	
Approach Delay, s/veh		13.3			16.0			13.9			11.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	21.6		17.8	7.2	23.2		17.8
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	3.4	12.9		5.1	2.7	8.7		12.0
Green Ext Time (p_c), s	0.1	4.1		0.1	0.0	2.7		0.9

Intersection Summary	
HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

Notes

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

2018 With-Project

Lanes, Volumes, Timings
1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate

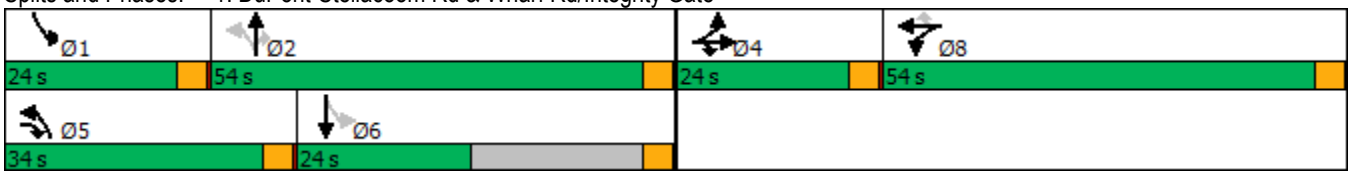
12/06/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	0	83	163	1	18	50	757	7	1	634	68
Future Volume (vph)	155	0	83	163	1	18	50	757	7	1	634	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	130		200	0		0
Storage Lanes	0		1	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		2971			479			2587			638	
Travel Time (s)		81.0			13.1			39.2			9.7	
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 (%)	18%	18%	18%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Split	NA	pt+ov	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4	4 5	8	8		5	2		1	6	
Permitted Phases						8	2		2	6		
Detector Phase	4	4	4 5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
Total Split (s)	24.0	24.0		54.0	54.0	54.0	34.0	54.0	54.0	24.0	24.0	
Total Split (%)	15.4%	15.4%		34.6%	34.6%	34.6%	21.8%	34.6%	34.6%	15.4%	15.4%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	

Intersection Summary

Area Type: Other
Cycle Length: 156
Actuated Cycle Length: 95.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate



HCM 6th Signalized Intersection Summary
1: DuPont-Steilacoom Rd & Wharf Rd/Integrity Gate

12/06/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	0	83	163	1	18	50	757	7	1	634	68
Future Volume (veh/h)	155	0	83	163	1	18	50	757	7	1	634	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	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1633	1633	1633	1885	1885	1885	1856	1856	1856	1885	1885	1885
Adj Flow Rate, veh/h	167	0	89	175	1	0	54	814	0	1	682	73
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, %	18	18	18	1	1	1	3	3	3	1	1	1
Cap, veh/h	210	0	244	229	1		283	1033		225	865	93
Arrive On Green	0.14	0.00	0.14	0.13	0.13	0.00	0.04	0.56	0.00	0.00	0.52	0.52
Sat Flow, veh/h	1555	0	1384	1786	10	1598	1767	1856	1572	1795	1674	179
Grp Volume(v), veh/h	167	0	89	176	0	0	54	814	0	1	0	755
Grp Sat Flow(s),veh/h/ln	1555	0	1384	1796	0	1598	1767	1856	1572	1795	0	1853
Q Serve(g_s), s	9.3	0.0	5.1	8.5	0.0	0.0	1.2	31.1	0.0	0.0	0.0	29.8
Cycle Q Clear(g_c), s	9.3	0.0	5.1	8.5	0.0	0.0	1.2	31.1	0.0	0.0	0.0	29.8
Prop In Lane	1.00		1.00	0.99		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	210	0	244	230	0		283	1033		225	0	958
V/C Ratio(X)	0.79	0.00	0.36	0.76	0.00		0.19	0.79		0.00	0.00	0.79
Avail Cap(c_a), veh/h	347	0	365	1000	0		801	1033		623	0	958
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	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	0.0	32.5	37.8	0.0	0.0	14.3	15.7	0.0	14.6	0.0	17.7
Incr Delay (d2), s/veh	6.7	0.0	0.9	5.2	0.0	0.0	0.3	6.1	0.0	0.0	0.0	6.5
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	3.9	0.0	1.8	4.1	0.0	0.0	0.4	12.6	0.0	0.0	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.3	0.0	33.5	43.0	0.0	0.0	14.6	21.8	0.0	14.6	0.0	24.2
LnGrp LOS	D	A	C	D	A		B	C		B	A	C
Approach Vol, veh/h		256			176	A		868	A		756	
Approach Delay, s/veh		40.5			43.0			21.3			24.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.1	54.0		16.1	7.7	50.4		15.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	20.0	50.0		20.0	30.0	20.0		50.0
Max Q Clear Time (g_c+I1), s	2.0	33.1		11.3	3.2	31.8		10.5
Green Ext Time (p_c), s	0.0	5.0		0.8	0.1	0.0		1.2

Intersection Summary	
HCM 6th Ctrl Delay	26.6
HCM 6th LOS	C

Notes

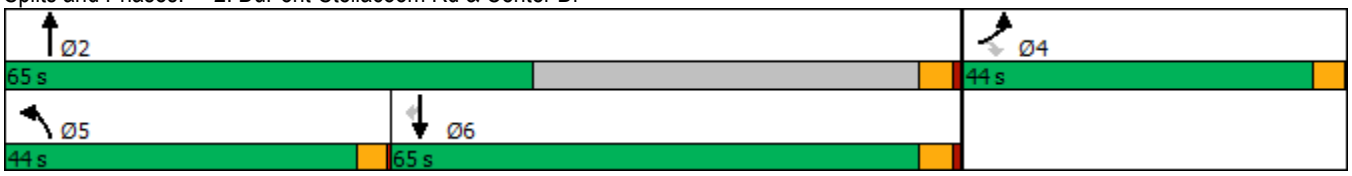
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	308	406	291	480	586	480
Future Volume (vph)	308	406	291	480	586	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	250			225
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Right Turn on Red		Yes				Yes
Link Speed (mph)	35			45	45	
Link Distance (ft)	703			3999	2587	
Travel Time (s)	13.7			60.6	39.2	
Confl. Peds. (#/hr)	3	3				3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	8.0	8.0	8.0
Minimum Split (s)	25.0	25.0	8.0	13.0	42.0	42.0
Total Split (s)	44.0	44.0	44.0	65.0	65.0	65.0
Total Split (%)	28.8%	28.8%	28.8%	42.5%	42.5%	42.5%
Yellow Time (s)	3.5	3.5	3.5	4.0	4.0	4.0
All-Red Time (s)	0.5	0.5	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Min	Min	Min

Intersection Summary

Area Type: Other
Cycle Length: 153
Actuated Cycle Length: 106.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: DuPont-Steilacoom Rd & Center Dr



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	308	406	291	480	586	480
Future Volume (veh/h)	308	406	291	480	586	480
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1885	1885
Adj Flow Rate, veh/h	318	119	300	495	604	177
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	1	1
Cap, veh/h	376	335	348	1207	740	625
Arrive On Green	0.21	0.21	0.20	0.65	0.39	0.39
Sat Flow, veh/h	1767	1572	1767	1856	1885	1592
Grp Volume(v), veh/h	318	119	300	495	604	177
Grp Sat Flow(s),veh/h/ln	1767	1572	1767	1856	1885	1592
Q Serve(g_s), s	11.4	4.2	10.8	8.4	18.8	5.0
Cycle Q Clear(g_c), s	11.4	4.2	10.8	8.4	18.8	5.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	376	335	348	1207	740	625
V/C Ratio(X)	0.85	0.36	0.86	0.41	0.82	0.28
Avail Cap(c_a), veh/h	1074	956	1074	1692	1719	1451
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	24.9	22.1	25.5	5.5	17.9	13.7
Incr Delay (d2), s/veh	2.0	0.2	2.5	0.2	2.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	4.2	2.0	7.2	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.9	22.3	28.0	5.7	20.1	13.9
LnGrp LOS	C	C	C	A	C	B
Approach Vol, veh/h	437			795	781	
Approach Delay, s/veh	25.6			14.1	18.7	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		47.8		18.0	17.0	30.8
Change Period (Y+Rc), s		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		60.0		40.0	40.0	60.0
Max Q Clear Time (g_c+I1), s		10.4		13.4	12.8	20.8
Green Ext Time (p_c), s		3.1		0.6	0.2	4.7

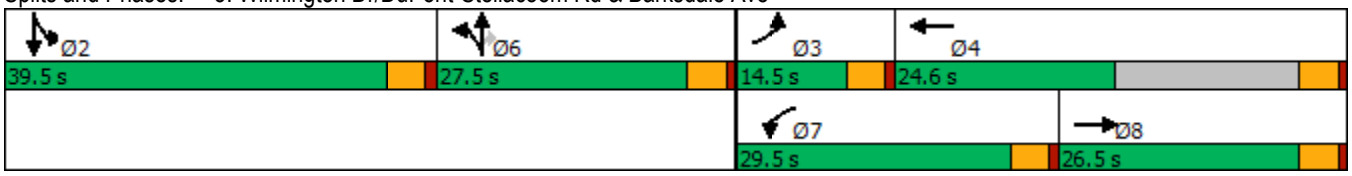
Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	72	23	201	126	622	21	114	162	794	159	115
Future Volume (vph)	53	72	23	201	126	622	21	114	162	794	159	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	125		150	125		100	625		0
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)		25			25			30			35	
Link Distance (ft)		584			367			965			849	
Travel Time (s)		15.9			10.0			21.9			16.5	
Confl. Peds. (#/hr)			2			7			1			2
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 (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	3%	3%	3%
Shared Lane Traffic (%)										32%		
Turn Type	Prot	NA		Prot	NA	Free	Split	NA	Perm	Split	NA	
Protected Phases	3	8		7	4		6	6		2	2	
Permitted Phases						Free			6			
Detector Phase	3	8		7	4		6	6	6	2	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.5	26.5		10.5	25.6		27.5	27.5	27.5	27.5	27.5	
Total Split (s)	14.5	26.5		29.5	24.6		27.5	27.5	27.5	39.5	39.5	
Total Split (%)	11.8%	21.5%		24.0%	20.0%		22.4%	22.4%	22.4%	32.1%	32.1%	
Yellow Time (s)	3.5	3.5		3.5	3.6		3.5	3.5	3.5	3.5	3.5	
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)	4.5	4.5		4.5	4.6		4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	None		None	None	None	Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123
Actuated Cycle Length: 92.3
Natural Cycle: 115
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Wilmington Dr/DuPont-Steilacoom Rd & Barksdale Ave



HCM 6th Signalized Intersection Summary
3: Wilmington Dr/DuPont-Steilacoom Rd & Barksdale Ave

12/06/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	72	23	201	126	622	21	114	162	794	159	115
Future Volume (veh/h)	53	72	23	201	126	622	21	114	162	794	159	115
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	1870	1870	1870	1885	1885	1885	1856	1856	1856
Adj Flow Rate, veh/h	54	73	23	205	129	0	21	116	0	544	534	117
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, %	0	0	0	2	2	2	1	1	1	3	3	3
Cap, veh/h	96	137	43	252	352		221	232		717	598	131
Arrive On Green	0.05	0.10	0.10	0.14	0.19	0.00	0.12	0.12	0.00	0.41	0.41	0.41
Sat Flow, veh/h	1810	1381	435	1781	1870	1585	1795	1885	1598	1767	1474	323
Grp Volume(v), veh/h	54	0	96	205	129	0	21	116	0	544	0	651
Grp Sat Flow(s),veh/h/ln	1810	0	1816	1781	1870	1585	1795	1885	1598	1767	0	1796
Q Serve(g_s), s	2.3	0.0	3.9	8.8	4.7	0.0	0.8	4.5	0.0	20.8	0.0	26.5
Cycle Q Clear(g_c), s	2.3	0.0	3.9	8.8	4.7	0.0	0.8	4.5	0.0	20.8	0.0	26.5
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	96	0	181	252	352		221	232		717	0	729
V/C Ratio(X)	0.56	0.00	0.53	0.81	0.37		0.10	0.50		0.76	0.00	0.89
Avail Cap(c_a), veh/h	230	0	509	567	476		526	552		788	0	801
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	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	33.6	32.7	27.8	0.0	30.6	32.2	0.0	20.0	0.0	21.8
Incr Delay (d2), s/veh	5.1	0.0	2.4	6.2	0.6	0.0	0.2	1.7	0.0	3.9	0.0	11.8
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	1.1	0.0	1.8	4.2	2.1	0.0	0.4	2.1	0.0	8.5	0.0	12.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	0.0	36.0	38.9	28.4	0.0	30.8	33.9	0.0	24.0	0.0	33.5
LnGrp LOS	D	A	D	D	C		C	C		C	A	C
Approach Vol, veh/h		150			334	A		137	A		1195	
Approach Delay, s/veh		38.0			34.9			33.4			29.2	
Approach LOS		D			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		36.3	8.7	19.4		14.1	15.6	12.4				
Change Period (Y+Rc), s		4.5	4.5	4.6		4.5	4.5	* 4.6				
Max Green Setting (Gmax), s		35.0	10.0	20.0		23.0	25.0	* 22				
Max Q Clear Time (g_c+I1), s		28.5	4.3	6.7		6.5	10.8	5.9				
Green Ext Time (p_c), s		3.3	0.0	0.5		0.5	0.5	0.4				

Intersection Summary	
HCM 6th Ctrl Delay	31.3
HCM 6th LOS	C

Notes

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

User approved volume balancing among the lanes for turning movement.

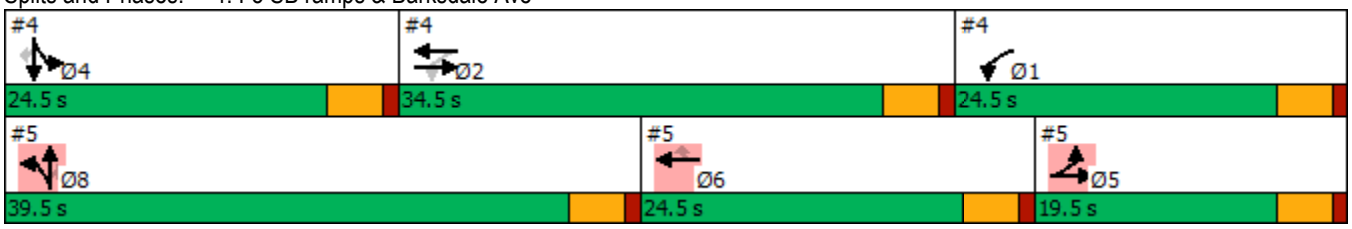
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	417	574	336	650	0	0	0	0	13	4	213
Future Volume (vph)	0	417	574	336	650	0	0	0	0	13	4	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			319			290			206	
Travel Time (s)		8.3			7.3			6.6			4.7	
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 (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	9%	9%	9%
Shared Lane Traffic (%)												
Turn Type		NA	Free	pm+pt	NA					Split	NA	Perm
Protected Phases		2		1	2					4	4	
Permitted Phases			Free	2								4
Detector Phase		2		1	2					4	4	4
Switch Phase												
Minimum Initial (s)		6.0		6.0	6.0					6.0	6.0	6.0
Minimum Split (s)		20.5		10.5	20.5					10.5	10.5	10.5
Total Split (s)		34.5		24.5	34.5					24.5	24.5	24.5
Total Split (%)		41.3%		29.3%	41.3%					29.3%	29.3%	29.3%
Yellow Time (s)		3.5		3.5	3.5					3.5	3.5	3.5
All-Red Time (s)		1.0		1.0	1.0					1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0						0.0	0.0
Total Lost Time (s)		4.5			4.5						4.5	4.5
Lead/Lag		Lag			Lag					Lead	Lead	Lead
Lead-Lag Optimize?		Yes			Yes					Yes	Yes	Yes
Recall Mode		Min		None	Min					None	None	None

Intersection Summary

Area Type: Other
Cycle Length: 83.5
Actuated Cycle Length: 63.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: I-5 SB ramps & Barksdale Ave



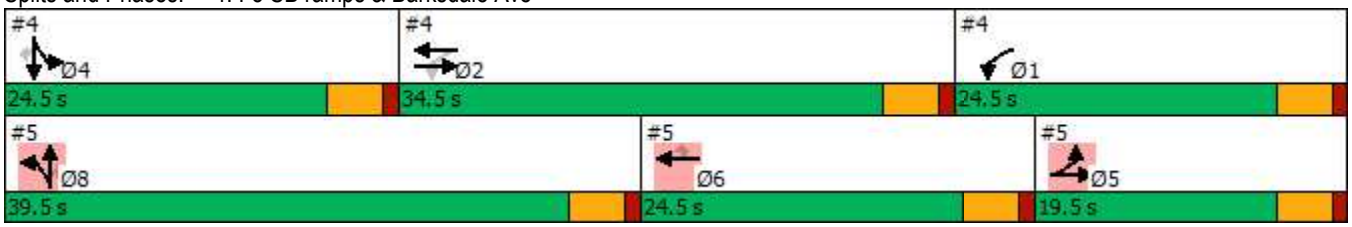
Lane Group	Ø5	Ø6	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases	5	6	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	6.0	10.0
Minimum Split (s)	14.5	20.5	30.5
Total Split (s)	19.5	24.5	39.5
Total Split (%)	23%	29%	47%
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lead
Lead-Lag Optimize?		Yes	Yes
Recall Mode	None	Min	None

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	417	574	336	650	0	0	0	0	13	4	213
Future Volume (vph)	0	417	574	336	650	0	0	0	0	13	4	213
Satd. Flow (prot)	0	3539	1583	0	1849	0	0	0	0	0	1679	1482
Flt Permitted					0.709						0.963	
Satd. Flow (perm)	0	3539	1583	0	1334	0	0	0	0	0	1679	1482
Satd. Flow (RTOR)			598									222
Lane Group Flow (vph)	0	434	598	0	1027	0	0	0	0	0	18	222
Turn Type		NA	Free	pm+pt	NA					Split	NA	Perm
Protected Phases		2		1	2					4	4	
Permitted Phases			Free	2								4
Total Split (s)		34.5		24.5	34.5					24.5	24.5	24.5
Total Lost Time (s)		4.5			4.5						4.5	4.5
Act Effct Green (s)		47.4	63.9		47.4						7.4	7.4
Actuated g/C Ratio		0.74	1.00		0.74						0.12	0.12
v/c Ratio		0.17	0.38		1.04						0.09	0.60
Control Delay		2.7	0.7		43.8						27.9	12.2
Queue Delay		0.0	0.0		24.6						0.0	0.0
Total Delay		2.7	0.7		68.4						27.9	12.2
LOS		A	A		E						C	B
Approach Delay		1.5			68.4						13.4	
Approach LOS		A			E						B	

Intersection Summary	
Cycle Length: 83.5	
Actuated Cycle Length: 63.9	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 32.7	Intersection LOS: C
Intersection Capacity Utilization 80.6%	ICU Level of Service D
Analysis Period (min) 15	

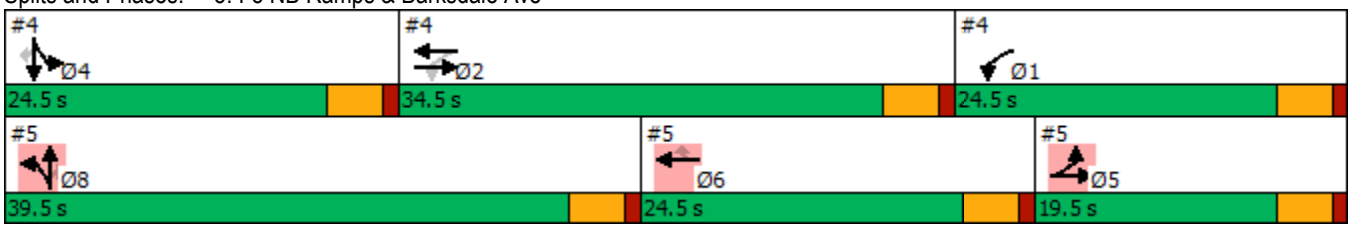
Splits and Phases: 4: I-5 SB ramps & Barksdale Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	291	171	0	0	641	158	320	0	102	0	0	0
Future Volume (vph)	291	171	0	0	641	158	320	0	102	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		319			191			232			212	
Travel Time (s)		7.3			4.3			5.3			4.8	
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 (%)	3%	3%	3%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)	22%											
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	5			6		8	8				
Permitted Phases						6			8			
Detector Phase	5	5			6	6	8	8	8			
Switch Phase												
Minimum Initial (s)	10.0	10.0			6.0	6.0	10.0	10.0	10.0			
Minimum Split (s)	14.5	14.5			20.5	20.5	30.5	30.5	30.5			
Total Split (s)	19.5	19.5			24.5	24.5	39.5	39.5	39.5			
Total Split (%)	23.4%	23.4%			29.3%	29.3%	47.3%	47.3%	47.3%			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5	3.5	3.5			
All-Red Time (s)	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			
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Lead/Lag					Lag	Lag	Lead	Lead	Lead			
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes			
Recall Mode	None	None			Min	Min	None	None	None			

Intersection Summary	
Area Type:	Other
Cycle Length: 83.5	
Actuated Cycle Length: 63.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 5: I-5 NB Ramps & Barksdale Ave



Lane Group	Ø1	Ø2	Ø4
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases	1	2	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	6.0	6.0	6.0
Minimum Split (s)	10.5	20.5	10.5
Total Split (s)	24.5	34.5	24.5
Total Split (%)	29%	41%	29%
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lead
Lead-Lag Optimize?		Yes	Yes
Recall Mode	None	Min	None

Intersection Summary

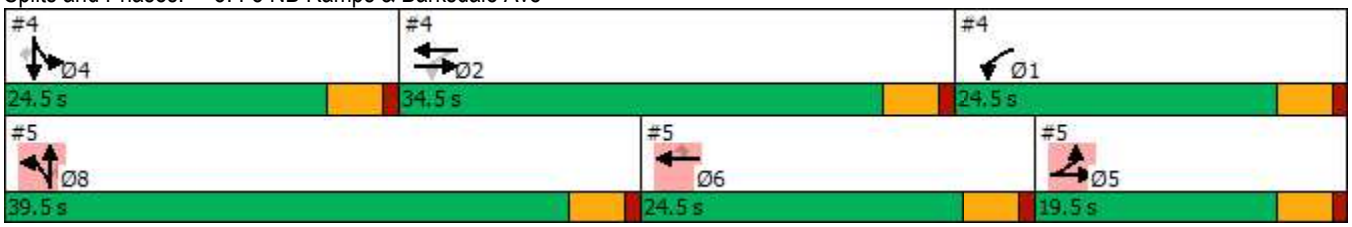
Lanes, Volumes, Timings
5: I-5 NB Ramps & Barksdale Ave

12/06/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	291	171	0	0	641	158	320	0	102	0	0	0
Future Volume (vph)	291	171	0	0	641	158	320	0	102	0	0	0
Satd. Flow (prot)	1665	1730	0	0	1900	1615	0	1770	1583	0	0	0
Flt Permitted	0.950	0.987						0.950				
Satd. Flow (perm)	1665	1730	0	0	1900	1615	0	1770	1583	0	0	0
Satd. Flow (RTOR)						154			137			
Lane Group Flow (vph)	232	239	0	0	654	161	0	327	104	0	0	0
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	5			6		8	8				
Permitted Phases						6			8			
Total Split (s)	19.5	19.5			24.5	24.5	39.5	39.5	39.5			
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Act Effct Green (s)	13.2	13.2			20.3	20.3		16.8	16.8			
Actuated g/C Ratio	0.21	0.21			0.32	0.32		0.26	0.26			
v/c Ratio	0.68	0.67			1.09	0.26		0.70	0.20			
Control Delay	34.1	33.3			89.1	5.7		30.2	3.0			
Queue Delay	0.0	0.0			5.8	0.0		0.1	0.0			
Total Delay	34.1	33.3			94.8	5.7		30.2	3.0			
LOS	C	C			F	A		C	A			
Approach Delay		33.7			77.2			23.7				
Approach LOS		C			E			C				

Intersection Summary	
Cycle Length: 83.5	
Actuated Cycle Length: 63.9	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 51.8	Intersection LOS: D
Intersection Capacity Utilization 75.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: I-5 NB Ramps & Barksdale Ave



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	470	733	40	98	33
Future Volume (vph)	12	470	733	40	98	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		35	35		25	
Link Distance (ft)		651	481		285	
Travel Time (s)		12.7	9.4		7.8	
Confl. Peds. (#/hr)	4			5	5	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	470	733	40	98	33
Future Vol, veh/h	12	470	733	40	98	33
Conflicting Peds, #/hr	4	0	0	5	5	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	4	2	2	0	0
Mvmt Flow	13	522	814	44	109	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	863	0	-	0	1133	438
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	4.18	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.24	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	763	-	-	-	200	572
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	738	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	759	-	-	-	195	567
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	734	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	42.8
HCM LOS			E

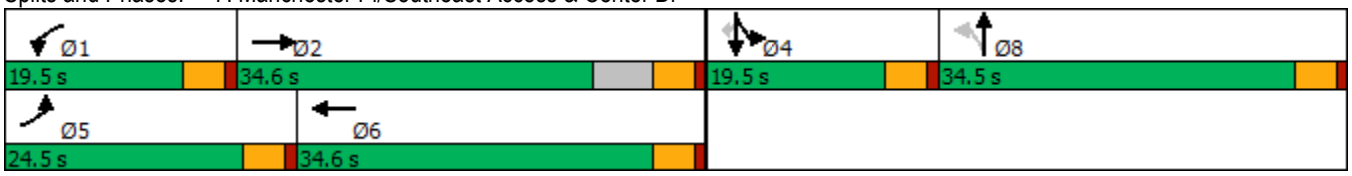
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	759	-	-	-	234
HCM Lane V/C Ratio	0.018	-	-	-	0.622
HCM Control Delay (s)	9.8	-	-	-	42.8
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	3.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	266	337	0	0	690	65	0	0	0	158	0	601
Future Volume (vph)	266	337	0	0	690	65	0	0	0	158	0	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
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)		1390			651			359			405	
Travel Time (s)		27.1			12.7			9.8			11.0	
Confl. Peds. (#/hr)						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 (%)	5%	5%	5%	2%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA					Split	NA	Perm
Protected Phases	5	2		1	6			8		4	4	
Permitted Phases							8					4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	4.0	8.0		4.0	8.0		4.0	4.0		6.0	6.0	6.0
Minimum Split (s)	8.5	27.6		8.5	27.6		8.5	8.5		20.5	20.5	20.5
Total Split (s)	24.5	34.6		19.5	34.6		34.5	34.5		19.5	19.5	19.5
Total Split (%)	21.7%	30.6%		17.2%	30.6%		30.5%	30.5%		17.2%	17.2%	17.2%
Yellow Time (s)	3.5	3.6		3.5	3.6		3.5	3.5		3.5	3.5	3.5
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
Total Lost Time (s)	4.5	4.6		4.5	4.6			4.5			4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	None

Intersection Summary

Area Type: Other
Cycle Length: 113.1
Actuated Cycle Length: 72.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Manchester Pl/Southeast Access & Center Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	266	337	0	0	690	65	0	0	0	158	0	601
Future Volume (veh/h)	266	337	0	0	690	65	0	0	0	158	0	601
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1870	1870	1870	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	299	379	0	0	775	73	0	0	0	178	0	339
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	2	2	2	0	0	0	0	0	0
Cap, veh/h	359	2104	0	3	1063	100	0	3	0	435	0	387
Arrive On Green	0.21	0.61	0.00	0.00	0.32	0.32	0.00	0.00	0.00	0.24	0.00	0.24
Sat Flow, veh/h	1739	3561	0	1781	3280	309	0	1900	0	1810	0	1610
Grp Volume(v), veh/h	299	379	0	0	420	428	0	0	0	178	0	339
Grp Sat Flow(s),veh/h/ln	1739	1735	0	1781	1777	1812	0	1900	0	1810	0	1610
Q Serve(g_s), s	9.8	2.9	0.0	0.0	12.4	12.4	0.0	0.0	0.0	4.9	0.0	12.0
Cycle Q Clear(g_c), s	9.8	2.9	0.0	0.0	12.4	12.4	0.0	0.0	0.0	4.9	0.0	12.0
Prop In Lane	1.00		0.00	1.00		0.17	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	2104	0	3	576	588	0	3	0	435	0	387
V/C Ratio(X)	0.83	0.18	0.00	0.00	0.73	0.73	0.00	0.00	0.00	0.41	0.00	0.88
Avail Cap(c_a), veh/h	585	2104	0	449	897	915	0	959	0	457	0	406
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	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.6	5.2	0.0	0.0	17.8	17.8	0.0	0.0	0.0	19.0	0.0	21.7
Incr Delay (d2), s/veh	5.4	0.0	0.0	0.0	1.8	1.8	0.0	0.0	0.0	0.6	0.0	18.2
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	4.1	0.7	0.0	0.0	4.7	4.8	0.0	0.0	0.0	2.0	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	5.2	0.0	0.0	19.6	19.5	0.0	0.0	0.0	19.6	0.0	39.9
LnGrp LOS	C	A	A	A	B	B	A	A	A	B	A	D
Approach Vol, veh/h		678			848			0			517	
Approach Delay, s/veh		15.3			19.5			0.0			32.9	
Approach LOS		B			B						C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	40.7		18.8	16.8	23.9		0.0
Change Period (Y+Rc), s	4.5	4.6		4.5	4.5	4.6		4.5
Max Green Setting (Gmax), s	15.0	30.0		15.0	20.0	30.0		30.0
Max Q Clear Time (g_c+I1), s	0.0	4.9		14.0	11.8	14.4		0.0
Green Ext Time (p_c), s	0.0	2.4		0.3	0.6	4.7		0.0

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	545	16	55	1232	22	7	0	11	46	0	198
Future Volume (vph)	92	545	16	55	1232	22	7	0	11	46	0	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		954			1390			531			530	
Travel Time (s)		18.6			27.1			14.5			14.5	
Confl. Peds. (#/hr)	3		11	13		5	11		13	5		3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	22.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	545	16	55	1232	22	7	0	11	46	0	198
Future Vol, veh/h	92	545	16	55	1232	22	7	0	11	46	0	198
Conflicting Peds, #/hr	3	0	11	13	0	5	11	0	13	5	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	125	-	-	0	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	1	1	1	0	0	0	0	0	0
Mvmt Flow	105	619	18	63	1400	25	8	0	13	52	0	225

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1430	0	0	650	0	0	1688	-	345	2077	2404	729
Stage 1	-	-	-	-	-	-	851	-	-	1544	1544	-
Stage 2	-	-	-	-	-	-	837	-	-	533	860	-
Critical Hdwy	4.2	-	-	4.12	-	-	7.5	-	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	-	-	6.5	5.5	-
Follow-up Hdwy	2.25	-	-	2.21	-	-	3.5	-	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	456	-	-	939	-	-	62	0	657	~ 32	34	370
Stage 1	-	-	-	-	-	-	325	0	-	122	178	-
Stage 2	-	-	-	-	-	-	332	0	-	503	376	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	454	-	-	927	-	-	18	-	641	~ 24	24	364
Mov Cap-2 Maneuver	-	-	-	-	-	-	18	-	-	~ 24	24	-
Stage 1	-	-	-	-	-	-	247	-	-	93	165	-
Stage 2	-	-	-	-	-	-	117	-	-	374	286	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0.4	129.1	191.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	18	641	454	-	-	927	-	-	24	364
HCM Lane V/C Ratio	0.442	0.02	0.23	-	-	0.067	-	-	2.178	0.618
HCM Control Delay (s)	$ 315.1	10.7	15.3	-	-	9.2	-	-	$ 886.2	29.6
HCM Lane LOS	F	B	C	-	-	A	-	-	F	D
HCM 95th %tile Q(veh)	1.2	0.1	0.9	-	-	0.2	-	-	6.5	4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	619	24	23	1320	50	9	0	11	28	0	15
Future Volume (vph)	44	619	24	23	1320	50	9	0	11	28	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
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)		649			954			509			673	
Travel Time (s)		12.6			18.6			13.9			18.4	
Confl. Peds. (#/hr)	2		8	8		2	4		3	3		4
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 (%)	2%	2%	2%	1%	1%	1%	17%	17%	17%	17%	17%	17%
Parking (#/hr)											0	
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.6	22.6		10.6	32.6		10.6	10.6		37.6	37.6	37.6
Total Split (s)	19.6	34.6		19.6	34.6		24.6	24.6		24.6	24.6	24.6
Total Split (%)	24.9%	43.9%		24.9%	43.9%		31.2%	31.2%		31.2%	31.2%	31.2%
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
Total Lost Time (s)	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	Min		None	Min		None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 78.8	
Actuated Cycle Length: 58.5	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 9: Bronson Ave/Amazon & Center Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	619	24	23	1320	50	9	0	11	28	0	15
Future Volume (veh/h)	44	619	24	23	1320	50	9	0	11	28	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		0.99	1.00		0.99	0.98		0.99	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1648	1648	1648	1648	1648	1648
Adj Flow Rate, veh/h	48	673	26	25	1435	54	10	0	12	30	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	1	1	1	17	17	17	17	17	17
Cap, veh/h	370	2054	79	602	1985	75	156	0	40	236	0	73
Arrive On Green	0.06	0.59	0.59	0.04	0.56	0.56	0.05	0.00	0.05	0.05	0.00	0.00
Sat Flow, veh/h	1781	3487	135	1795	3519	132	646	0	775	1294	0	1397
Grp Volume(v), veh/h	48	343	356	25	729	760	22	0	0	30	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1845	1795	1791	1860	1421	0	0	1294	0	1397
Q Serve(g_s), s	0.4	4.2	4.2	0.2	12.8	12.9	0.0	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.4	4.2	4.2	0.2	12.8	12.9	0.6	0.0	0.0	0.9	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.07	0.45		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	370	1047	1087	602	1010	1050	197	0	0	236	0	73
V/C Ratio(X)	0.13	0.33	0.33	0.04	0.72	0.72	0.11	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	886	1246	1294	1166	1256	1305	740	0	0	739	0	653
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.3	4.5	4.5	3.6	6.9	6.9	19.5	0.0	0.0	19.6	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.2	0.0	1.6	1.5	0.2	0.0	0.0	0.2	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	0.8	0.8	0.0	3.0	3.1	0.2	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	4.7	4.6	3.6	8.4	8.4	19.7	0.0	0.0	19.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		747			1514			22			30	
Approach Delay, s/veh		4.7			8.3			19.7			19.8	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	29.8		6.8	7.2	28.7		6.8
Change Period (Y+Rc), s	4.6	4.6		4.6	4.6	4.6		4.6
Max Green Setting (Gmax), s	15.0	30.0		20.0	15.0	30.0		20.0
Max Q Clear Time (g_c+I1), s	2.2	6.2		2.9	2.4	14.9		2.6
Green Ext Time (p_c), s	0.0	4.3		0.1	0.1	8.9		0.0

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	18	31	0	45	1	651	31	80	1372	7
Future Volume (vph)	7	0	18	31	0	45	1	651	31	80	1372	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		90	150		0	175		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		326			284			1025			1049	
Travel Time (s)		8.9			7.7			20.0			20.4	
Confl. Peds. (#/hr)	4		5	5		4			9			6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Detector Phase	4	4		8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	10.0		4.0	10.0	
Minimum Split (s)	33.5	33.5		33.5	33.5	33.5	8.5	23.5		8.5	28.5	
Total Split (s)	34.5	34.5		34.5	34.5	34.5	24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%		27.9%	27.9%	27.9%	19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5			4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 62.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Center Dr & Palisade Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	18	31	0	45	1	651	31	80	1372	7
Future Volume (veh/h)	7	0	18	31	0	45	1	651	31	80	1372	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		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	1900	1900	1900	1900	1900	1900	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	8	0	21	36	0	0	1	748	36	92	1577	8
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	1	1	1
Cap, veh/h	107	13	94	253	0	132	3	2075	100	122	2442	12
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.00	0.00	0.60	0.60	0.07	0.67	0.67
Sat Flow, veh/h	275	159	1141	1468	0	1610	1781	3450	166	1795	3654	19
Grp Volume(v), veh/h	29	0	0	36	0	0	1	385	399	92	773	812
Grp Sat Flow(s),veh/h/ln	1576	0	0	1468	0	1610	1781	1777	1839	1795	1791	1882
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	6.0	6.0	2.7	13.7	13.7
Cycle Q Clear(g_c), s	0.9	0.0	0.0	1.1	0.0	0.0	0.0	6.0	6.0	2.7	13.7	13.7
Prop In Lane	0.28		0.72	1.00		1.00	1.00		0.09	1.00		0.01
Lane Grp Cap(c), veh/h	214	0	0	253	0	132	3	1069	1106	122	1197	1257
V/C Ratio(X)	0.14	0.00	0.00	0.14	0.00	0.00	0.30	0.36	0.36	0.76	0.65	0.65
Avail Cap(c_a), veh/h	934	0	0	907	0	889	656	1963	2031	661	1978	2079
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	0.0	0.0	23.4	0.0	0.0	27.1	5.5	5.5	24.9	5.3	5.3
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	45.4	0.2	0.2	9.2	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	0.3	0.0	0.0	0.4	0.0	0.0	0.1	1.5	1.6	1.4	2.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	0.0	0.0	23.6	0.0	0.0	72.5	5.8	5.7	34.1	6.0	5.9
LnGrp LOS	C	A	A	C	A	A	E	A	A	C	A	A
Approach Vol, veh/h		29			36			785			1677	
Approach Delay, s/veh		23.6			23.6			5.8			7.5	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.2	37.2		9.0	4.6	40.8		9.0
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	4.7	8.0		2.9	2.0	15.7		3.1
Green Ext Time (p_c), s	0.2	6.9		0.1	0.0	20.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	8	35	33	17	10	46	555	50	29	1162	234
Future Volume (vph)	107	8	35	33	17	10	46	555	50	29	1162	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	125		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		305			330			1772			1025	
Travel Time (s)		8.3			9.0			34.5			20.0	
Confl. Peds. (#/hr)	14		7	7		14			11			7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	29.5	29.5		30.5	30.5		10.6	22.6		10.6	19.6	
Total Split (s)	34.5	34.5		34.5	34.5		24.6	64.6		24.6	64.6	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		19.9%	52.2%		19.9%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5		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	
Total Lost Time (s)		4.5			4.5		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	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.7
Actuated Cycle Length: 91.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 11: Center Dr & Bob's Hollow Ln

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	8	35	33	17	10	46	555	50	29	1162	234
Future Volume (veh/h)	107	8	35	33	17	10	46	555	50	29	1162	234
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.99		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1900	1900	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	126	9	41	39	20	12	54	653	59	34	1367	275
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	273	28	66	222	109	52	254	1940	175	528	1700	336
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.05	0.58	0.58	0.04	0.57	0.57
Sat Flow, veh/h	995	148	347	773	572	273	1795	3319	300	1795	2977	589
Grp Volume(v), veh/h	176	0	0	71	0	0	54	352	360	34	813	829
Grp Sat Flow(s),veh/h/ln	1490	0	0	1618	0	0	1795	1791	1828	1795	1791	1775
Q Serve(g_s), s	5.2	0.0	0.0	0.0	0.0	0.0	0.9	7.6	7.6	0.6	26.6	28.0
Cycle Q Clear(g_c), s	7.7	0.0	0.0	2.5	0.0	0.0	0.9	7.6	7.6	0.6	26.6	28.0
Prop In Lane	0.72		0.23	0.55		0.17	1.00		0.16	1.00		0.33
Lane Grp Cap(c), veh/h	367	0	0	384	0	0	254	1047	1068	528	1022	1013
V/C Ratio(X)	0.48	0.00	0.00	0.19	0.00	0.00	0.21	0.34	0.34	0.06	0.80	0.82
Avail Cap(c_a), veh/h	669	0	0	705	0	0	639	1443	1473	937	1443	1430
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	0.0	25.4	0.0	0.0	11.8	8.0	8.0	6.0	12.6	12.9
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.2	0.0	0.0	0.3	0.1	0.1	0.0	1.8	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	2.9	0.0	0.0	1.1	0.0	0.0	0.3	2.4	2.5	0.2	9.1	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	0.0	25.5	0.0	0.0	12.1	8.1	8.1	6.1	14.3	15.1
LnGrp LOS	C	A	A	C	A	A	B	A	A	A	B	B
Approach Vol, veh/h		176			71			766			1676	
Approach Delay, s/veh		28.0			25.5			8.4			14.6	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	48.1		18.7	8.6	47.1		18.7				
Change Period (Y+Rc), s	4.6	4.6		4.5	4.6	4.6		4.5				
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0				
Max Q Clear Time (g_c+I1), s	2.6	9.6		9.7	2.9	30.0		4.5				
Green Ext Time (p_c), s	0.0	3.8		0.8	0.1	12.5		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	37	215	81	109	68	490	521	37	74	938	194
Future Volume (vph)	121	37	215	81	109	68	490	521	37	74	938	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	185		0	250		0	150		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		678			647			731			886	
Travel Time (s)		18.5			17.6			14.2			17.3	
Confl. Peds. (#/hr)	5		2	2		5			11			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 (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8						
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	27.5	27.5	10.5	28.5	28.5	10.5	10.5	23.5		10.5	24.5	
Total Split (s)	34.5	34.5	24.5	34.5	34.5	24.5	24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%	19.8%	27.9%	27.9%	19.8%	19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
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	
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 102.5
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Center Drive & McNeil Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	37	215	81	109	68	490	521	37	74	938	194
Future Volume (veh/h)	121	37	215	81	109	68	490	521	37	74	938	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	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	1870	1870	1870	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	133	41	196	89	120	19	538	573	41	81	1031	213
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, %	1	1	1	2	2	2	1	1	1	0	0	0
Cap, veh/h	251	57	678	179	191	387	433	2004	143	111	1225	252
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.24	0.59	0.59	0.06	0.41	0.41
Sat Flow, veh/h	947	309	1585	634	1038	1572	1795	3388	242	1810	2978	614
Grp Volume(v), veh/h	174	0	196	209	0	19	538	302	312	81	624	620
Grp Sat Flow(s),veh/h/ln	1256	0	1585	1672	0	1572	1795	1791	1839	1810	1805	1787
Q Serve(g_s), s	1.8	0.0	6.7	0.0	0.0	0.8	20.0	6.9	6.9	3.6	25.8	25.9
Cycle Q Clear(g_c), s	11.3	0.0	6.7	9.5	0.0	0.8	20.0	6.9	6.9	3.6	25.8	25.9
Prop In Lane	0.76		1.00	0.43		1.00	1.00		0.13	1.00		0.34
Lane Grp Cap(c), veh/h	308	0	678	370	0	387	433	1059	1088	111	742	735
V/C Ratio(X)	0.56	0.00	0.29	0.56	0.00	0.05	1.24	0.29	0.29	0.73	0.84	0.84
Avail Cap(c_a), veh/h	553	0	959	657	0	666	433	1297	1331	437	1307	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	0.0	15.6	31.4	0.0	23.9	31.4	8.3	8.3	38.2	21.9	22.0
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.5	0.0	0.0	127.0	0.1	0.1	3.5	1.0	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	3.3	0.0	2.4	3.9	0.0	0.3	23.5	2.3	2.4	1.7	10.2	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	0.0	15.7	31.9	0.0	23.9	158.4	8.4	8.4	41.7	22.9	23.0
LnGrp LOS	C	A	B	C	A	C	F	A	A	D	C	C
Approach Vol, veh/h		370			228			1152			1325	
Approach Delay, s/veh		23.8			31.2			78.5			24.1	
Approach LOS		C			C			E			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.6	53.5		19.8	24.5	38.6		19.8
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	5.6	8.9		13.3	22.0	27.9		11.5
Green Ext Time (p_c), s	0.1	2.4		1.0	0.0	6.1		0.8

Intersection Summary	
HCM 6th Ctrl Delay	45.0
HCM 6th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	8	30	260	27	115	41	925	143	144	1080	13
Future Volume (vph)	7	8	30	260	27	115	41	925	143	144	1080	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	100		0	110		0	150		0
Storage Lanes	0		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			25			35			35	
Link Distance (ft)		217			1462			556			731	
Travel Time (s)		5.9			39.9			10.8			14.2	
Confl. Peds. (#/hr)	2					2			4			
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 (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	10.5		33.5	33.5		10.5	26.5		10.5	22.5	
Total Split (s)	34.5	34.5		34.5	34.5		24.5	64.5		24.5	64.5	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		19.8%	52.2%		19.8%	52.2%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
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)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 123.5
Actuated Cycle Length: 79.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 13: Center Drive & Wilmington Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	8	30	260	27	115	41	925	143	144	1080	13
Future Volume (veh/h)	7	8	30	260	27	115	41	925	143	144	1080	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	1900	1900	1900	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	8	9	32	280	29	124	44	995	154	155	1161	14
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, %	0	0	0	1	1	1	1	1	1	1	1	1
Cap, veh/h	365	98	348	466	84	357	308	1267	196	355	1629	20
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.05	0.41	0.41	0.09	0.45	0.45
Sat Flow, veh/h	1252	365	1298	1374	311	1331	1795	3106	480	1795	3625	44
Grp Volume(v), veh/h	8	0	41	280	0	153	44	573	576	155	574	601
Grp Sat Flow(s),veh/h/ln	1252	0	1663	1374	0	1642	1795	1791	1796	1795	1791	1877
Q Serve(g_s), s	0.3	0.0	1.1	11.3	0.0	4.4	0.8	16.4	16.4	2.8	15.2	15.2
Cycle Q Clear(g_c), s	4.7	0.0	1.1	12.4	0.0	4.4	0.8	16.4	16.4	2.8	15.2	15.2
Prop In Lane	1.00		0.78	1.00		0.81	1.00		0.27	1.00		0.02
Lane Grp Cap(c), veh/h	365	0	447	466	0	441	308	730	732	355	805	844
V/C Ratio(X)	0.02	0.00	0.09	0.60	0.00	0.35	0.14	0.79	0.79	0.44	0.71	0.71
Avail Cap(c_a), veh/h	668	0	849	799	0	838	825	1829	1834	797	1829	1917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	0.0	16.1	20.8	0.0	17.3	10.3	15.2	15.2	11.3	13.1	13.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.5	0.0	0.2	0.1	0.7	0.7	0.3	0.4	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	0.0	0.4	3.4	0.0	1.6	0.3	5.7	5.7	0.9	5.1	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	16.2	21.2	0.0	17.5	10.4	15.9	15.9	11.6	13.5	13.5
LnGrp LOS	B	A	B	C	A	B	B	B	B	B	B	B
Approach Vol, veh/h		49			433			1193			1330	
Approach Delay, s/veh		16.7			19.9			15.7			13.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	28.5		20.3	7.6	30.9		20.3
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	20.0	60.0		30.0	20.0	60.0		30.0
Max Q Clear Time (g_c+I1), s	4.8	18.4		6.7	2.8	17.2		14.4
Green Ext Time (p_c), s	0.2	5.5		0.1	0.0	5.6		1.0

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

Notes

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

Appendix C

Trip Generation Calculations

DuPont Corporate Center
Trip Generation Comparison

WEEKDAY DAILY

Land Use / Scenario	TOTAL Trips			TRUCK Trips			PASSENGER Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
(A) Previously Approved (April 2017)[1]	1,794	1,795	3,589	433	434	867	1,361	1,361	2,722
(B) Intel 1998 Phase 1 [2]	4,636	4,636	9,272	35	35	70	4,601	4,601	9,202
(C) Existing Office/Warehouse to Remain [3]	640	641	1,281	52	52	104	588	589	1,177
(D) Proposed Use (1,250,000 SF fulfillment center)	5,113	5,112	10,225	450	450	900	4,663	4,662	9,325
Subtotal Existing + Proposed	5,753	5,753	11,506	502	502	1,004	5,251	5,251	10,502
Proposed less Approved [D less A]	***3,319***	***3,317***	***6,636***	***17***	***16***	***33***	***3,302***	***3,301***	***6,603***
Proposed + Existing less Intel Phase 1 [(C+D) less (B)]	***+1,117***	***+1,117***	***+2,234***	***+467***	***+467***	***+934***	***+650***	***+650***	***+1,300***

WEEKDAY AM PEAK HOUR

Land Use / Scenario	TOTAL Trips			TRUCK Trips			PASSENGER Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
(A) Previously Approved (April 2017)[1]	281	74	355	28	13	41	253	61	314
(B) Intel 1998 Phase 1 [2]	1,056	426	1,482	8	8	16	1,048	418	1,466
(C) Existing Office/Warehouse to Remain [3]	127	27	154	9	3	12	118	24	142
(D) Proposed Use (1,250,000 SF fulfillment center)	509	229	738	14	6	20	495	223	718
Subtotal Existing + Proposed	636	256	892	23	9	32	613	247	860
Proposed less Approved [D less A]	***228***	***155***	***383***	***-14***	***-7***	***-21***	***242***	***162***	***404***
Proposed + Existing less Intel Phase 1 [(C+D) less (B)]	***-420***	***-170***	***-590***	***+15***	***1***	***+16***	***-435***	***-171***	***-606***

WEEKDAY PM PEAK HOUR

Land Use / Scenario	TOTAL Trips			TRUCK Trips			PASSENGER Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
(A) Previously Approved (April 2017)[1]	85	277	362	17	37	54	68	240	308
(B) Intel 1998 Phase 1 [2]	197	852	1,049	1	1	2	196	851	1,047
(C) Existing Office/Warehouse to Remain [3]	30	116	146	4	9	13	26	107	133
(D) Proposed Use (1,250,000 SF fulfillment center)	531	1,182	1,713	10	21	31	521	1,161	1,682
Subtotal Existing + Proposed	561	1,298	1,859	14	30	44	547	1,268	1,815
Proposed less Approved [D less A]	**446**	**905**	**1,351**	**-7**	**-16**	**-23**	**453**	**921**	**1,374**
Proposed + Existing less Intel Phase 1 [(C+D) less (B)]	***+364***	***+446***	***+810***	***+13***	***+29***	***+42***	***+351***	***+417***	***+768***

Notes:

1. SEPA approved trip generation from the MDNS issued 4/10/17 for 1,355,000 SF high-cube warehouse/distribution center plus 100,000 SF office.
2. 1998 projections as documented in the 1995 Environmental Checklist for Intel DuPont Campus.
3. Existing building to remain (370,847 SF) currently occupied by 299,765 SF warehouse use and 71,082 office use.

DuPont Corporate Center
Weekday Trip Generation Estimate for Proposed Use (1,250,000 SF High-Cube Fulfillment Center Warehouse)

					Directional Split 3		TOTAL Trip Generation			Truck Trip Generation				Non-Truck Trip Generation		
Land Use	Size	Units [1]	ITE LUC [2]	Trip Rate [2]	Enter	Exit	Enter	Exit	Total	% Trucks[4]	Enter	Exit	Total	Enter	Exit	Total
DAILY																
Proposed Use:																
High-Cube Fulfillment Center Warehouse	1,250,000	GFA	155	8.18	50%	50%	5,113	5,112	10,225	8.8%	450	450	900	4,663	4,662	9,325
AM PEAK HOUR																
Proposed Use:																
High-Cube Fulfillment Center Warehouse	1,250,000	GFA	155	0.59	69%	31%	509	229	738	2.7%	14	6	20	495	223	718
PM PEAK HOUR																
Proposed Use:																
High-Cube Fulfillment Center Warehouse	1,250,000	GFA	155	1.37	31%	69%	531	1,182	1,713	1.8%	10	21	31	521	1,161	1,682

[1] GFA = Gross Floor Area.
[2] Land Use Code and trip rates based on ITE *Trip Generation* Manual, 10th Edition, 2017.
[3] Directional split based on LUC 152 in ITE *Trip Generation* Manual, 9th Edition, 2012.
[4] Percent trucks based on ITE *High-Cube Warehouse Vehicle Trip Generation Analysis* , October 2016.

DuPont Corporate Center
Weekday Trip Generation Estimate for Existing Building to Remain (370,847 SF)

					Directional Split		TOTAL Trip Generation			Truck Trip Generation				Non-Truck Trip Generation		
Land Use	**Size**	**Units [1]**	**ITE LUC [2]**	**Trip Rate [2]**	**Enter**	**Exit**	**Enter**	**Exit**	**Total**	**Trip Rate[3]**	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
DAILY																
Existing Building to Remain:																
General Office	71,082	GFA	710	equation	50%	50%	381	381	762	--	--	--	--	381	381	762
Warehousing	299,765	GFA	150	equation	50%	50%	259	260	519	20%	52	52	104	207	208	415
						SUBTOTAL	640	641	1,281		52	52	104	588	589	1,177
						TOTAL DAILY	**640**	**641**	**1,281**	--	**52**	**52**	**104**	**588**	**589**	**1,177**
AM PEAK HOUR																
Existing Building to Remain:																
General Office	71,082	GFA	710	equation	86%	14%	80	13	93	--	--	--	--	80	13	93
Warehousing	299,765	GFA	150	equation	77%	23%	47	14	61	20%	9	3	12	38	11	49
						SUBTOTAL	127	27	154		9	3	12	118	24	142
						TOTAL AM PEAK HOUR	**127**	**27**	**154**	--	**9**	**3**	**12**	**118**	**24**	**142**
PM PEAK HOUR																
Existing Building to Remain:																
General Office	71,082	GFA	710	equation	16%	84%	13	69	82	--	--	--	--	13	69	82
Warehousing	299,765	GFA	150	equation	27%	73%	17	47	64	20%	4	9	13	13	38	51
						SUBTOTAL	30	116	146		4	9	13	26	107	133
						TOTAL PM PEAK HOUR	**30**	**116**	**146**	--	**4**	**9**	**13**	**26**	**107**	**133**

[1] GFA = Gross Floor Area.
[2] Land Use Code, trip rates, and directional split based on ITE *Trip Generation* Manual, 10th Edition, 2017.
[3] Truck trip rates based on ITE *Trip Generation* Handbook, 3rd Edition, 2017.

DuPont Corporate Center
Weekday Trip Generation Estimate - SEPA APPROVED (April 2017)

					Directional Split		TOTAL Trip Generation			Truck Trip Generation				Non-Truck Trip Generation		
Land Use	**Size**	**Units [1]**	**ITE LUC [2]**	**Trip Rate [2]**	**Enter**	**Exit**	**Enter**	**Exit**	**Total**	**Trip Rate[3]**	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
DAILY																
A) Proposed Use:																
High-Cube Warehouse / Dist Center	1,355,000	GFA	152	1.68	50%	50%	1,138	1,138	2,276	0.64	433	434	867	705	704	1,409
Office	100,000	GFA	710	equation	50%	50%	656	657	1,313	--	--	--	--	656	657	1,313
	1,455,000				**Subtotal Proposed:**		**1,794**	**1,795**	**3,589**		**433**	**434**	**867**	**1,361**	**1,361**	**2,722**
B) Existing Use to be demo'd (TOTAL):																
Office [4]	660,000	GFA	710	equation	50%	50%	2,754	2,755	5,509	--	--	--	--	2,754	2,755	5,509
Net New Daily Trip Generation (A minus B)							**-960**	**-960**	**-1,920**		**433**	**434**	**867**	**-1,393**	**-1,394**	**-2,787**
AM PEAK HOUR																
A) Proposed Use:																
High-Cube Warehouse / Dist Center	1,355,000	GFA	152	equation	69%	31%	113	51	164	0.03	28	13	41	85	38	123
Office	100,000	GFA	710	equation	88%	12%	168	23	191	--	--	--	--	168	23	191
	1,455,000				**Subtotal Proposed:**		**281**	**74**	**355**		**28**	**13**	**41**	**253**	**61**	**314**
B) Existing Use to be demo'd (TOTAL):																
Office [4]	660,000	GFA	710	equation	88%	12%	762	104	866	--	--	--	--	762	104	866
Net New AM Peak Hour Trip Generation (A minus B)							**-481**	**-30**	**-511**		**28**	**13**	**41**	**-509**	**-43**	**-552**
PM PEAK HOUR																
A) Proposed Use:																
High-Cube Warehouse / Dist Center	1,355,000	GFA	152	equation	31%	69%	53	119	172	0.04	17	37	54	36	82	118
Office	100,000	GFA	710	equation	17%	83%	32	158	190	--	--	--	--	32	158	190
	1,455,000				**Subtotal Proposed:**		**85**	**277**	**362**		**17**	**37**	**54**	**68**	**240**	**308**
B) Existing Use to be demo'd (TOTAL):																
Office [4]	660,000	GFA	710	equation	17%	83%	139	679	818	--	--	--	--	139	679	818
Net New PM Peak Hour Trip Generation (A minus B)							**-54**	**-402**	**-456**		**17**	**37**	**54**	**-71**	**-439**	**-510**

[1] GFA = Gross Floor Area.
[2] Land Use Code and trip rates based on ITE *Trip Generation* Manual, 9th Edition, 2012.
[3] Truck trip rates based on ITE *Trip Generation* Manual, 9th Edition, 2012.
[4] The existing office buildings total approximately 660,000 SF. All of the office has been vacant for more than one year except for ~180k that was recently vacated by Intel.

Unique History … Vibrant Future

CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

DuPont Municipal Code

Code Interpretation Determination

Date:	**December 6, 2017**
File No.	PLNG2017-037
To:	Interpretations File No. 2017-01
From:	Jeffrey S. Wilson, AICP JSW Director
Subject:	**For implementation of the DuPont Municipal Code (DMC), since "fulfillment centers" or "parcel hubs" are not defined terms, what land use definition are they regulated by pursuant to the DMC**
Date Issued/Posted:	***December7, 2017***
Effective Date:	**December 22, 2017 (unless appealed in a timely manner)**

Issue Outline:

On May 31, 2017, the City Hearing Examiner issued a decision on a land use application for a "site plan review" under File No. PLNG2017-006 that created new land uses terms that are used in, or defined in the DuPont Municipal Code. Specifically, following statement was contained in the conditions of approval "…the Site Plan approved by this Decision is expressly limited to a use/user or combination of users considered to be transload, short-term, or cold storage types of high cube warehouse facilities, and not a fulfillment center or parcel hub, which have different trip generating characteristics." The land uses described in the above condition are not terms used in, or defined in the DMC.

Specifically, the question has been asked regarding what land use classification/definition the city would apply to terms "fulfillment center" or "parcel hub" for purposes of administrating the DMC? Currently the DMC does not define the terms "fulfillment center" or "parcel hub," nor are these terms used in the DMC as part of any land use regulation. The terms "fulfillment center" or "parcel hub" are not defined terms, nor were they defined by the Hearing Examiner in his decision on File No. PLNG2017-006. Additionally, there terms are not defined in the Meriam-Webster Dictionary as terms of common usage.

Therefore, an interpretation is necessary to determine how the terms "fulfillment center" and "parcel hub" will be defined for the purposes of determining land use designation they are and which land use regulations will apply.

Relevant Code Sections:

A. DMC 25.05.040(9) which states: "The community development director or his/her designee are hereby authorized to make code interpretations. Where these rules do not clarify a boundary, definition, use standard, or procedure, the director shall make the determination. The director's determination in these instances may be appealed pursuant to DMC 25.175, Administration of Development Regulations.

Analysis:

Without specific guidance from the DMC, it is appropriate to refer to common definitions to implement terms, which are not defined in the DMC. However, when terms are not defined in common use dictionaries, then an analysis and conclusion must be reached by reviewing similar terms or activities already codified in the DMC.

In this instance, the Merriam-Webster dictionary does not define either "fulfillment center" or "parcel hub." Therefore, my analysis will be based on the definition of similar activities regulated and defined in the DMC. In this instance, for purposes of defining "fulfillment center" or "parcel hub," I will defer to the defined term of "warehouse/distribution" which is defined in DMC Section 25.10.230 as "Warehouse/distribution" means a building or land use in which goods, merchandise or equipment are stored for eventual distribution.

The general activities carried on within a "parcel hub" or "fulfillment center" which include but are not limited to the receiving and distribution of products or other similar materials based on common understanding of these facilities is directly consistent with the DMC adopted definition for a "warehouse/distribution" type facility.

THEREFORE, THE FOLLOWING INTERPRETATION IS HEREBY ISSUED:

A "FULFILLMENT CENTER" OR "PARCEL HUB," IS SIMILAR IN NATURE AND ACTIVITY TO "WAREHOUSE/DISTRIBUTION" AS DEFINED IN DMC SECTION 25.10.230 AND THEREFORE WILL BE CONSIDERED ONE AND THE SAME AS "WAREHOUSE/DISTRIBUTION" FOR ALL APPLICATIONS OF LAND USE REGULATIONS PURSUANT TO DMC CHAPTER 25.

Appeal Procedures:

Pursuant to DuPont Municipal Code (DMC) Section 25.175.010(3), the director of community development, or designee, may issue written interpretation for any section of DMC Titles 23, Environment, 24, Subdivisions. Or 25, Land Use Code, at any such time as the code is silent regarding an issue, duplicative or conflicts within itself. Such interpretation shall be processed as a Type I action and may be appealed to the hearing examiner pursuant to DMC Section 25.175.060.(4).

Should anyone wish to appeal this interpretation, a written appeal, accompanied by the required appeal fee (see City of DuPont fee handout) must be submitted within 14 after the date of the final decision (days of the date of issuance/posting of this interpretation).

The deadline for filing an appeal of this interpretation is: DECEMBER 21, 2017.

A written appeal must contain the following:

1. The appellant's name, address and phone number;
2. A statement describing the appellant's standing to appeal;
3. Identification of the application that is the subject of the appeal;

4. The appellant's statement of grounds for appeal and the facts upon which the appeal is based with specific references to the facts in the record;
5. The specific relief sought;
6. A statement that the appellant has read the appeal and believes the contents to be true, followed by the appellant's signature.

Notice: 1) Posted on the City of DuPont Website

Geralyn Reinart, P.E.
831 Sprague Street
Edmonds, WA. 98020
(206) 285-9035
Traffic & Transportation Engineering Services

MEMORANDUM

December 11, 2017

TO: Jeff Wilson, AICP
Community Development Director

FROM: Geralyn Reinart, P.E.

SUBJECT: DuPont Corporate Center – Review of December 2017 Traffic Impact Analysis

---

The following summarizes my review of the traffic impact analysis (TIA) for DuPont Corporate Center. The traffic analysis was prepared by Transportation Engineering Northwest (TENW) and is dated December 6, 2017. This update was completed per the April 2017 MDNS (condition #31) for the project site to address traffic impacts associated with the development of a fulfillment center (as compared to the proposal from earlier this year for a 'high-cube distribution center'). (*Note: a fulfillment center differs from other high-cube warehouse facilities, i.e., those handing cold, transload and short-term storage, in that it is involved in the direct distribution of ecommerce product to end users as noted in the Trip Generation manual for LUC 155. These facilities typically handle smaller packages and quantities than other types of high-cube facilities.)*

Preliminary trip generation associated with the development of a fulfillment center and the revised site plan was submitted for review. Based on the information provided in the updated trip generation and the prior basis for review of the site, it was determined that development of the site as a fulfillment center would generate more traffic during the PM peak hour than both the earlier 2017 proposal and the original use of the property (phase 1 Intel development); therefore the preparation of a TIA was requested to address the PM peak hour impacts. TENW was provided with the specific elements to be included in the updated analysis in addition to the general requirements for a TIA per the City's guidelines. Some of the more notable elements for inclusion in the TIA were as follows:

1. Analysis of the following intersections for existing and future conditions (with and without the project):
   - Center Drive/Wilmington
   - Center Drive/McNeil
   - Center Drive/Bob's Hollow
   - Center Drive/Palisade

- Center Drive/Bronson
- Center Drive/Hamilton
- Center Drive/Manchester
- Center Drive/International
- Center Drive/DuPont-Steilacoom Road
- Wharf Road/DuPont-Steilacoom Road
- Barksdale/DuPont-Steilacoom Road
- Barksdale/I-5 SB Ramp
- Barksdale/I-5 NB Ramp

2. Use of 5% annual background traffic for future volumes plus the pipeline trips.
3. Use of the general trip distribution as shown in the April 2017 proposal and prior projects in the area subject to any localized changes/modifications that may result from access/parking lot changes.
4. Use of City-provided peak hour counts, as available, or recent counts available from other consultants performing work within the City or for WSDOT.
5. Inclusion of separate trip assignments for both truck traffic and non-truck traffic.
6. Use of the peak hour and heavy vehicle factors from the peak hour counts to represent current operating conditions.

The current proposal for a fulfillment center would construct an area about 200,000 square feet less than the prior proposal (1.25 million square feet as compared to 1.355 million square feet of distribution center plus 100,000 square feet of office space for the prior proposal). As in the prior proposal, access to the site will be provided from the two existing accesses along Center Drive (at Manchester Place and Hamilton Avenue) and via Wharf Road. Trip generation for the project utilized the recently released 10th Edition of the ITE *Trip Generation* manual for LUC 155. The project could potentially generate 10,225 daily trips, 738 AM peak hour trips and 1713 PM peak hour trips. Both the daily and PM peak hour trips values are greater than the April 2017 proposal and the Intel phase 1 development. The AM peak hour trips are greater than the April 2017 proposal, but less than the Intel phase 1 development. (See detailed trip generation in Appendix "C" of the TIA for specific values.)

My general comments with respect to the updated analysis are as follows:

- The analysis was prepared by a consultant fully qualified and experienced in the preparation of analyses of this nature, and completed in a format and manner that is traditionally used in traffic impact analyses. The study summarized the existing and future conditions in the vicinity (including pipeline development), along with the impacts of the project; all elements requested by the City were included in the analysis and presented in an acceptable format.
- All identified critical intersections impacted by the project were included in the analysis for the PM peak hour.
- Pipeline trips provided by the City were utilized as requested along with the 5% annual traffic growth rate.

My specific comments with respect to the analysis are as follows:

1. **Page 1, paragraph 2 (last sentence)** – *"Mitigation Measure #29", should read*

"Mitigation Measure #31". This has no bearing on the results.

2. **Page 1, paragraph 5** – the analysis states "*the applicant reserves the right to reevaluate trip generation in the future once a specific user/tenant has been identified*". I would concur that it would be beneficial to update the trip generation once a user is known.
3. **Page 7, Figure 2** – it appears from the site plan that the parking lot on the southwest corner of the site may not be able to access Manchester Place; as such, all employees using this lot could only access it from the Hamilton Avenue driveway which would have a bearing on peak hour operations (see subsequent comment #13).
4. **Page 11, Table 3** – the level of service results, as shown, were checked and are presented accurately with some limited minor comments (see 'Level of service' comments below). All intersections are currently operating within acceptable levels per the City's standard.
5. **Page 13, Table 3 and Page 15, Table 4** – the trip generation values shown in both of these tables were checked and all values are correctly presented. The values shown in these tables are further detailed in Appendix "C". The truck values for the fulfillment center were based on ITE's technical report (October 2016) that provided detailed information with respect to the amount of truck traffic generated by high-cube warehouses. These values are acceptable.
6. **Page 15, Paragraph 3** – the consultant notes that the trip generation for a fulfillment center includes a data point for the peak holiday season and therefore the values shown in Table 4 are likely conservative. I would concur with this statement. The trip generation data provided for fulfillment center is very limited and the user is advised to use caution due to the small sample size.
7. **Page 17, Figure 4** – the AM peak hour trip assignment for passenger vehicles is accurate as presented and reflects prior trip distributions. The driveway assignments for the project accesses also appear to be reasonably proportioned.
8. **Page 18, Figure 5** – the truck AM trip distribution is consistent with the April 2017 assignment with the exception that 25% of the entering and exiting trucks were assigned to the Center Drive/Manchester Place access and 75% via Wharf Road. The April 2017 distribution assigned 100% of the entering trucks to Wharf Road, with 75% of the exiting trucks via Wharf Road and 25% of the exiting trucks via Manchester Place. This modification may be due to the new site plan design. Either way, this distribution complies with the City's truck routes.
9. **Page 19, Figure 6 and Page 20, Figure 7** – the PM peak hour trip assignments are acceptable; see comments #7 and #8, above.
10. **Page 21, Figure 8** – the future 'no-action' volumes were checked and all are accurately presented with one exception. The pipeline trips for the eastbound left-turns at Center Drive/Bobs Hollow Lane were reversed with the westbound volumes (a difference of 18 trips). See subsequent comment below with respect to "Level of Service'.
11. **Page 22, Figure 9** – see comment #10, above.
12. **Page 23, Paragraph 1** – the last sentence states that the "PHF and % Heavy Vehicle assumptions in the LOS analyses were also based on existing conditions". The 'with project' heavy vehicle percentages should have been checked to determine if the project truck trips would have an impact on these

percentages. See subsequent "Level of Service" comments with respect to this issue.

13. **Page 24, Table 5** – the overall level of service at all signalized intersections would be acceptable with or without the project for the 2018 horizon year, although some movements at the Barksdale Avenue/I-5 ramps are below LOS "D" (this is also an existing condition). This is consistent with prior analyses and reflects the timing patterns that are used by WSDOT. This also occurred at Center Drive/McNeil Street for the northbound left-turn movement. The southbound movement on International Place at Center Drive is projected at LOS "E" for the future condition and mitigation for this condition (traffic signal installation) has previously been identified as part of the Northwest Logistics development.

    Level of service "F" for the 2018 'with project' condition for the northbound and southbound stop controlled left-turn movements on Hamilton Avenue at Center Drive has been identified. TENW has noted that "since other options are available for both the northbound and southbound approaches to Hamilton Ave/Center Drive, traffic would likely self-balance based on the location providing the most efficient egress at a given time during the PM peak hour." I would concur that northbound left-turns from the neighborhood on the south side of Center Drive could use Bronson Avenue/Center Drive (which is signalized) to turn left. It is unclear from the site plan whether or not southbound left-turning vehicles exiting from the site could use Manchester Place/Center Drive (see comment #3). If access to Manchester Place is not available, the Applicant needs to further address this issue such that internal circulation is provided for this self-balancing.

    The City of DuPont considers level of service "D" to be acceptable. Appropriate mitigation should be proposed to maintain this level of service upon completion of the development. **Exceptions to level of service "D" will be considered by the City at those locations where the potential mitigation (such as a traffic signal) is not reasonable or desirable**.

14. **Page 26, Mitigation Measures** – no mitigation is recommended by TENW since all locations were either operating at an acceptable level of service or 'other options' are available. The TIA included an analysis of the Wharf Road/ DuPont-Steilacoom Road intersection per mitigation measure #3 from the April 2017 MDNS and found an acceptable level of service. Pending further information with respect to Comments #3 and #13 above, I would concur that no mitigation with respect to the off-site intersections would be needed.

Level of service calculations – the following are comments associated with the LOS calculations (some of these are associated with prior comments):

1. Some minor signal timing typographical errors were noted; however this would have little bearing on the results.
2. The eastbound and westbound left-turn volumes on Bobs Hollow Lane at Center Drive for the future conditions are incorrect (pipeline trips were reversed – see comment #10 and #11, above). The small number of trips

involved in this error would not result in any significant change to the level of service results. As such, no further action is needed.

3. The heavy vehicle factors for the 2018 'with project' conditions should have been checked for accuracy (see comment #12, above) to reflect the truck trips associated with the project. This would have affected some of the movements at the DuPont-Steilacoom Road/Center Drive, Barksdale Avenue /DuPont-Steilacoom Road, Barksdale Avenue /I-5 Ramps, and Manchester Place/Center Drive intersections. Having stated this, the number of additional trucks as a percent of all vehicles would have only impacted the heavy vehicle factor by approximately one to two percent (on some movements). This small of an impact would have a negligible impact to the overall level of service at these locations and have limited bearing on the final results.
4. All volume-to-capacity ratios were good, with one exception. The northbound left-turn movement on Center Drive at McNeil Street is over capacity for the future 'with project' condition thereby reflecting a large amount of delay for this movement. This condition can be rectified with signal re-timing and therefore does not require any further analysis.

Final Comments

The TIA is acceptable as presented and addresses the items that were requested; no re-submittal is needed. None of the errors noted were of the magnitude that would require re-analysis or would create any significant change to the results. Having stated that, the Applicant (or Consultant) needs to address the issue of the LOS condition at Hamilton Avenue/Center Drive for the southbound movement as noted above (i.e., either confirmation that access to Manchester Place is available from the southwest parking lot or further discussion of potential mitigation for the LOS "F" condition).

These are my preliminary comments pending further discussion with you. Please give me a call if to discuss them when you get a chance.

Cc: Lisa Klein, AHBL

Unique History ... Vibrant Future

CITY OF DUPONT

Department of Community Development
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ADDENDUM
SEPA MITIGATED DETERMINATION OF NON-SIGNIFICANCE (MDNS)
DuPont Corporate Park
City File No. PLNG 2017-006 and PLNG 2017-038

FROM:

Jeffrey S. Wilson, AICP
Planning Director and City SEPA Official
City of DuPont
1700 Civic Drive
DuPont, WA 98327
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LOCATION:

The site is commonly known as the "Intel" property, located at 2800 to 2980 Center Drive, in the City of DuPont, WA; NW ¼ Sec 25, T19N, R1E, WM, Pierce County, WA, Assessor's Parcel number 011923-4023

APPLICANT:

Bruce Haas
Industrial Redevelopment, LLC
3300 Irvine Avenue, Suite 111
Newport Beach, CA 92660

SEPA ENVIRONMENTAL REVIEW PROCESS:
The City issued a SEPA Mitigated Determination of Non-significance (SEPA MDNS) on April 10, 2017 that included 31 mitigation measures (PLNG2017-006, see *Original Proposal*, below). The applicant has filed for a minor site plan amendment (PLNG2017-038, see *Amended Proposal*, below). SEPA regulations allow for a SEPA addendum to be prepared when there is not a substantial change the analysis of significant impacts (WAC 197-11-600(4)(C). An addendum is defined in the State's SEPA Rules as follows:

> *An environmental document used to provide additional information or analysis that does not substantially change the analysis of significant impacts and alternatives in the existing environmental document.*

ORIGINAL PROPOSAL: The original proposal (PLNG2017-006) was to replace two existing office buildings totaling approximately 660,000 square feet, with up to 1,355,000 square feet of high cube warehouse/distribution center use and 100,000 square feet of office use in three new buildings. One existing 340,711 square foot building, which is currently used for warehousing, will remain.

AMENDED PROPOSAL: The proposed amendment (PLNG2017-038) is for a reduction in building size of approximately 104, 000 SF and a reduction in parking of 11 spaces from the plans approved under PLNG2017-006. It also seeks to include a fulfillment center as a potential use of the property. There are no other changes to the basic character or arrangement and number of buildings from the approved plan, or the amount and quality of open space and landscaping. The reduction in building size and parking varies from the approved project by less than 10 percent.

The ITE Trip Generation Manual (10th Edition) was recently issued and it provides data for Land Use Code (LUC) 155 (High-Cube Fulfillment Center Warehouse) that was not previously available. Therefore, such use can now be evaluated under the manual. That evaluation is set forth in the December 6, 2017 TENW Traffic Impact Analysis (TIA) submitted with the application for minor site plan amendment (PLNG2017-006).

The TIA states it was prepared to address SEPA Mitigation Measure #3 and #31, and Condition of Approval #1A in the Final Decision of the Hearing Examiner. The revised project resulted in an increase in vehicular trips over the previous proposal. All of the signalized study intersections are anticipated to operate at Level of Service (LOS) D or better in 2018

with or without the project, which meets the City's adopted LOS standards. The stop-controlled southbound left-turn at the intersection of International Place/Center Drive is anticipated to operate at LOS E in 2018 during the PM peak hour with the project should the adjacent vacant property north of Center Drive on International Place be developed. Although LOS E is below the City standard, a signal has been previously approved for the International Place/Center Drive intersection (City TIP project #18), which would improve operations to LOS A during the PM peak hour.

The northbound and southbound stop-controlled left-turn movements at the intersection of Hamilton Ave/Center Drive are anticipated to operate at LOS F during the PM peak hour in 2018 with the project. Since other options are available for both the north and southbound approaches, traffic would likely self-balance based on the location providing the most efficient egress at a given time during the PM peak hour. Based on the results of the analysis, no project-specific off-site transportation mitigation is proposed for concurrency or SEPA purposes. To ensure the onsite circulation supports the distribution of traffic for egress away from Hamilton Ave/Center Drive, the following additional mitigation measure is required:

32. The internal site circulation shall accommodate multiple points of egress for employees from the site during the PM peak hour to minimize impacts at the Hamilton Ave/Center Drive driveway location.

The City finds the changes in the site plan and the recommendations in the Traffic Impact Analysis do not substantially change the analysis of significant impacts and alternatives in the existing environmental document. With the addition of Mitigation Measure #32, the MDNS remains the appropriate determination.

If you have questions, please contact Jeffrey S. Wilson, City of DuPont SEPA Official at (253) 912-5393.

10/12/2017

Jeffrey S. Wilson, AICP — Date
Planning Director, City of DuPont